Clean Energy
North America’s leader in clean transportation

Pennsylvania Public Utilities Commission
NGV EV Forum

cleanenergyfuels.com

May 31, 2012
Company Profile

Largest Alternative Transportation Fuel Provider

500+ Fleet Customers
25,680 Natural Gas Vehicles
298 Natural Gas Fueling Stations

Compressed Natural Gas (CNG)

- Taxis
- Refuse Vehicles
- Airport Transit

Liquefied Natural Gas (LNG)

- Sea Ports
- Public Transit
- Heavy Duty Trucking
Company Profile

- Comprehensive offering for natural gas vehicle fueling
- 2011 Revenues of $292.7 million
- 155.6 million gallons sold 2011
- 1100+ employees
- Presence across North America and 26 countries worldwide
- Creating the market and capitalizing on its future growth
The Breadth of Clean Energy’s Capabilities

- Fueling Services
- Vehicles & Conversion
- Engineering & Construction
- Grants & Finance
- Compressors & Equipment
- Service & Support
- LNG Technology & Construction
Fueling Services

With more than 10 years’ experience, Clean Energy offers a variety of options under short- or long-term fueling contracts.

• CNG (compressed natural gas) fueling from pipeline natural gas or from LCNG supply

• LNG (liquefied natural gas) fueling delivered by tanker trailer for vehicle fueling or industrial use; plants in CA and TX, sourced nationwide

• RNG (renewable natural gas) derived from organic waste streams that can be delivered by pipeline for compression or liquefaction

• Variable- or fixed-rate pricing options
Engineering & Construction

With hundreds of fueling stations built, Clean Energy provides best-practice approaches to each station project.

- Inhouse engineering
- Innovative, experienced CNG station design
- Licensed in 26 states
- Faster to open: standard designs, inhouse execution, factory-direct equipment sourcing
Compressors & Equipment — IMW Industries

With more than 1,200 units in 24 countries, IMW is a global leader in CNG compressor and equipment design, manufacturing and installation.

- “Oil Free” compression technology virtually eliminates fueling system and vehicle maintenance problems
- Manufacturing in North America and China
- Factory-direct sourcing provides seamless integration for station needs
- Custom configuration ensures optimum performance and reliability
Service & Support

With more than 200 fueling stations monitored nationwide, Clean Energy Sentinel™ Service provides 24/7 monitoring and response.

- From time & materials to all-inclusive, fixed costs
- Over 150 factory-trained technicians, not outsourced labor
- Remote equipment/station monitoring through two high-tech operations centers
- Multi-million-dollar inventory of critical items
- Best value, flexible service-level options and terms
Grants & Finance

With more than $250 million secured, Clean Energy obtains valuable public/private financing for stations and fleets.

- Grant support at federal, state and local levels nationwide
- Funding for infrastructure construction and vehicle financing
- Clean Energy Leasing subsidiary provides fleet financing options
- Arranged financing for more than 4,500 vehicles
Vehicles & Conversion —
BAF

With more than 12,000 vehicles on the road, technology leader BAF provides best-practice, qualified and certified conversions in all states.

- Only QVM (Qualified Vehicle Modifier) certified by Ford with full factory warranty
- All engine families CARB- or EPA-approved
- Chosen by AT&T, Verizon for nationwide CNG van programs
- Service and support provided nationwide
- Only vehicle modifier conducting full crash tests on conversion vehicle types
LNG Technology & Construction — NorthStar

Having installed two-thirds of the LNG fueling stations in North America, NorthStar is the acknowledged leader in LNG/LCNG technology and construction.

- Turnkey provider from design and permitting through construction and commissioning
- Factory-direct, proprietary equipment sourcing and manufacturing
- Low-cost, reliable station operation and maintenance
Sample Customers
NGV Markets
Transit

- **Early Successful Market**
  - CE fuels 6,000+ NG buses & Paratransit
  - 83,000 units nationwide
  - 1 billion gallons/year

- **30% of new Transit Orders are NG**
  - $1.50/gallon savings
  - 1 year simple payback

- **Cummins I SLG NG Engine**
  - No DPF or Urea Injection
Airports

- **CE at 32 Airports**
  - 8 in Design & Permitting phase
  - Predominately Retail
  - 2 billion gallons/year
- **Emission Mitigation a Driver**
  - NGVs generate substantial offsets for airside & landside vehicles
- **High Fuel Consuming Vehicles**
  - Taxi & Shared Ride Operators
  - Hotel/Parking Shuttles
  - Rental Car & Terminal Buses
Refuse

- **Rapidly Growing Market**
  - We have 63 refuse customers
  - We fuel 3,000+ NG trucks
  - 200,000 truck addressable market
  - 2 billion gallons/year

- **Incremental truck cost has rapidly dropped**
  - Accelerating adoption

- **Model return-to-base fleet**
  - WM and Republic are partners

- **Time-fill stations**
  - Provides lowest cost station
  - Most efficient fueling (labor) solution
  - CE built the first for WM in 1998
Heavy Duty Trucking
Heavy Duty Trucking Market

- **Largest opportunity**
  - 8,000,000 trucks
  - 1,300+ NG trucks nationwide
    - CE fuels 90+%
    - 30 billion gallons/year (4.2 TCF)

- **Ports of LA & Long Beach drove the market in 2007**
  - CE helped shape the policy
  - Built several LNG stations
  - Built Boron, CA LNG plant
  - $100+ million investment

- **Port proved to regional trucking firms that NG can meet rigorous trucking duty cycles**
NG Trucking Market Drivers - Engines

- Engines Available Today
  - Westport (Cummins ISX) 15-liter
  - Cummins-Westport ISLG 9-liter
  - Navistar ESI 9-liter
  - Navistar DT (ESI) 7.6-liter
  - Ford BAF 6.7-liter
  - GM 6-liter

- Publicly Announced
  - Cummins 15-liter (~2014)
  - Cummins-Westport 12-liter (Q1 2013)
  - Volvo 13-liter (Early 2013)
  - Navistar 13-liter (Early 2013)

- OEM’s
  - International, Freightliner, Kenworth, Peterbilt, Mack, Ford, GM, Autocar, Capacity, Ottawa, and Volvo

2010 Compliant with simple, maintenance-free catalyst
No DPF
No SCR
## NG Trucking Market Drivers - Economics

### Assumptions

Annual Fuel usage/truck: 15,000 DGEs (=17,500 GGEs)

<table>
<thead>
<tr>
<th>Fuel Savings/DGE</th>
<th>$0.50</th>
<th>$0.75</th>
<th>$1.00</th>
<th>$1.25</th>
<th>$1.50</th>
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<tbody>
<tr>
<td>Monthly Savings</td>
<td>$625</td>
<td>$937</td>
<td>$1,250</td>
<td>$1,562</td>
<td>$1,875</td>
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<tr>
<td>Savings over 5 years</td>
<td>$37,500</td>
<td>$50,000</td>
<td>$62,500</td>
<td>$75,000</td>
<td>$112,800</td>
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<tr>
<td>Savings over 7 years</td>
<td>$52,500</td>
<td>$70,000</td>
<td>$87,500</td>
<td>$105,000</td>
<td>$157,500</td>
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7 year ROI %

<table>
<thead>
<tr>
<th>Incremental Cost</th>
<th>$30,000</th>
<th>$40,000</th>
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<tbody>
<tr>
<td>ROI%</td>
<td>17.6%</td>
<td>8.07%</td>
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<tr>
<td></td>
<td>33.8%</td>
<td>22.0%</td>
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<tr>
<td></td>
<td>48.1%</td>
<td>33.8%</td>
</tr>
<tr>
<td></td>
<td>61.5%</td>
<td>44.6%</td>
</tr>
<tr>
<td></td>
<td>74.5%</td>
<td>54.9%</td>
</tr>
</tbody>
</table>

Calculations: Investment (incremental), Benefit (savings per gallon). Payback /Amortized Monthly Investment over 84 months.
American Natural Gas Highway
Pilot-Flying J
490 Interstate Locations Coast-to-Coast, 7 Billion Gallons per Year
America’s Natural Gas Highway
Coast-to-Coast & Border-to-Border on LNG
Pilot Locations In Pennsylvania
CLNE Locations to be opened this year

- Bristol, PA
- Bucks County, PA
- Carlisle, PA (ANGH)
- Mill Hall, PA (ANGH)
- Smithton, PA (ANGH)
- Philadelphia, PA
- Washington, PA
- York, PA
Fleet Targets for Natural Gas Trucking
Air Quality Benefits
Clean Air Initially Paved the way for NGVs

- South Coast AQMD Fleet Rules
- First to meet EPA’s 2010 Heavy-Duty Truck Rules
- Honda Civic GX received the top green car of the year award for 8 consecutive years running topping EVs and PHEVs
  - Remember, lifecycle emissions (coal v. natural gas)
  - 2012 UCS study showing EV emissions benefits varying by region
- Cummins-Westport Q4 announcement to reduce NOx emissions to “nearer zero” levels at 0.05 g/bhp-hr by 2014-15.
- NGV particulate not a listed Toxic Air Contaminant
- CARB analysis shows HD NGVs with up to a 23% GHG reduction, LD NGVs up to a 29% GHG reduction.
Cleaner Criteria Emissions than 2010 Diesel

- CNG/LNG continues to provide superior NOx benefits, **35% better** emissions over 2010 Standard with **75% better** emissions potential by 2014.

- Lower NOx emissions translates into lower secondary PM emissions.

- CNG/LNG PM emissions almost “non-detectable” at **0.002 g/bhp-hr** using a three-way catalyst, not a DPF, making it more reliable.

- CNG/LNG particulate matter, unlike diesel, is not identified by Cal EPA as a Toxic Air Contaminant which can cause cancer or reproductive harm.

Natural Gas is a low to ultra low carbon fuel

Carbon Intensity by Fuel Type

Sources: California Air Resources Board, Low Carbon Fuel Standard, Table 6. Carbon Intensity Lookup Table. 2010.

*Lower bound estimate for electricity reflects CARB number and upper bound estimate reflects UC Davis' correction of CARB's figure by reflecting marginal power generation of California grid.
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Utilities should be “enablers”, not “competitors”
Utility Involvement for NGVs and EVs

- There are private firms who desire to invest private capital in the fueling infrastructure side of both EV and NGV markets.
  - A Better Place
  - Ecotality
  - NRG EV Services
Private Firms risking shareholder dollars

- Air and Gas Technologies
  CNG and LNG Station Provider
- Allsup
  CNG Station; Owner/Operator
- ALT
  LNG Plant Owner; LNG Fuel Provider
- American CNG
  CNG and LNG Station Owner/Provider
- American Natural Gas
  LNG Station Owner
- Atlas Copco-Greenfield Compression
  Equipment Provider
- AVSG LP
  CNG Station Network; Owner/Operator
- CH-4
  LNG Station; Owner/Operator
- Chart Industries
  LNG Equipment Provider; Station Installer
- Chesapeake Energy
  CNG Station Owner/Operator
- Clean Energy Fuels
  CNG, LNG Fuel Provider; Station Network Owner/Operator
- CN Gas Group Corp.
  CNG Equipment & Stations/US Agira Representative
- Encana
  CNG & LNG; Station Owner
- Engineered Energy Solutions
  Engineering and Design Firm, CNG Station Owner/Operator
- Enviro Express Natural Gas LLC
  LNG Station; Owner/Truck Operator
- Integrys
  - Pinnacle Gas Systems LLC;
    CNG Fuel Station Owner/Operator
  - Trillium USA
    CNG Fuel Station Owner/Operator
- General Electric
  CNG and LNG Equipment Provider
- General Physics
  LNG Equipment Provider; Station Installer, Operator
- Go Natural Gas
  CNG Station; Owner/Operator
- Gulf Oil
  CNG Station Owner
- Kwik Trip Inc.
  CNG Station; Owner/Operator
- Lehigh Gas
  CNG Station; Owner/Operator
- Linde
  LNG Fuel Provider; Equipment Supplier
- Love’s
  CNG Station Owner
- Mansfield Gas Equipment System, Inc.
  CNG Station; Supplier/Owner/Operator
- Peake Fuel Solutions
  CNG and LNG Station Equipment Supplier for Stations and Home Refueling
- Questar Corporation
  Questar Fueling; Owner/Operator
- Nopetro
  CNG and LNG Fueling Systems
- OnCue Express
  CNG Network; Owner/Operator
- Petrocard Systems
  CNG Station; Owner/Operator
- Prometheus Energy Company
  LNG Fuel Provider; LNG Supply
- Republic Industries
  CNG Station; Owner/Operator
- Shell
  LNG Fuel Provider
- Speedy Fuels
  LNG Station; Owner/Operator
- US Air - CNG Systems
  CNG Equipment & Stations
- Vocational Energy
  CNG Station Provider; Refuse
- Waste Management, Inc.
  Public Access; Station Owner
- Wisegas, Inc.
  CNG Station; Owner/Operator
- Zeit Energy
  CNG Station; Owner/Operator
Utility Participation Confuses the Market, Leads to Unfair Competition

- Captured rate base (v. shareholder dollars)
- Low Cost of Capital (based on captured rate base)
- Name Branding (household name)
- Cross-subsidized marketing and service
  - (i.e., BDMs, envelope stuffers, cost of service)
- Guaranteed rate of return on capital regardless of project success
- Failure to include full cost allocation of service
- Discourages private capital investments for needed infrastructure
- Limited to service territory
- Not core business of the utility
  - Leads to delay in market adoption of NGVs and utility program failure
Failed Utility Programs

Several utility programs failed over the past 15 years, most of which led to an opportunity for Clean Energy to take over, upgrade and rebrand:

- SoCalGas
- SDG&E
- Long Beach Gas
- Public Service Company of New Mexico
- Public Service Company of Colorado (Denver)
- Puget Sound Energy (Seattle) – all of the public stations closed because the utility was not allowed to charge a compression fee.
- Lone Star Energy (Dallas)
- CenterPoint Energy (Houston) – shut down all but 2 stations and intended to close those if CE did not purchase them (deal closed in 2008 for $100,000)
- Regional Transportation Commission of Nevada (Las Vegas)
- National Grid
- Terasen
Ways Utilities Can “Enable” the NGV market

- **Home refueling**
  - Offer to finance home refueling appliances to commercial and residential customers in order to help develop the market for a limited period of time.

- **Customer Information and Outreach**
  - Participate in national and state NGV organizations (e.g., NGV America, state NGV Coalition).
  - Provide information and advertising to customers – advertising (e.g., cost-saving, environmental and energy security benefits).
  - Sponsor fueling station map books.

- **Demonstration and Deployment**
  - Purchase and offer demo NGVs for limited time fleet customer evaluation.

- **Utility Fleet Purchases**
  - Work through AGA/NGV America to aggregate orders for utility fleet vehicles in order to create an incentive for OEMs and QVMs to produce vehicles.
  - Maximize alternative fuel vehicle fleet purchases (e.g., EV or NGV).
  - Include alternative fuel MD and HD utility vehicles.

- **Infrastructure on Utility Bases**
  - Where cost-effective, construct natural gas fleet fueling facilities at utility bases and provide public access.
  - Encourage utilities to develop a cost based dedicated transportation rate for service to NGV refueling stations.

- **Utility Incentives**
  - Design a utility incentive that would grow NGV system throughput and provide timely service establishment to NGV customers on the utility side of the meter.
Thank you

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