A Practical Fuel Crisis Solution

The two largest U.S. economic crises of this decade are the home mortgage meltdown and skyrocketing energy costs from dependence on foreign oil. Of the two, the latter is the most far reaching - effecting every person, business, community and nation. Compressed natural gas (CNG) is the only alternative energy technology mature enough to have a substantial impact in the short term. It isn't tied to oil supply or prices, has sufficient supply to avoid oil-like price increases and would reduce pollution. With relatively minor improvements, CNG can be the dominate alternate fuel in the long term. Natural Gas Vehicles (NGVs) are **the lowest cost per mile of all other emerging technologies,** lower than hybrid, hydrogen and electric vehicles.

Although NGVs have widespread adoption in many countries, are the cleanest fuel available and are experiencing unprecedented demand; they have been mostly used only for fleet vehicles in the U.S. because of several key consumer barriers:

- Auto makers won't invest heavily in NGVs without a better public refueling infrastructure and utilities won't create the infrastructure without more vehicles.
- High cost of conversion.
- Lengthy and expensive EPA certification process.
- Limited range of NGVs.
- Consumer concerns the current price advantage will evaporate (like diesel or ethanol).

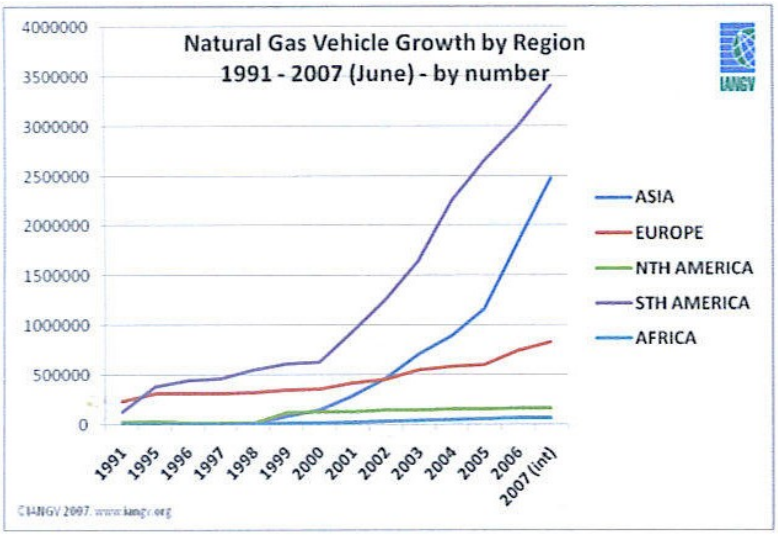
We have prepared a strategic white paper that documents a low-cost strategy for breaking through these barriers and capturing the national benefits available from widespread conversion to natural gas:

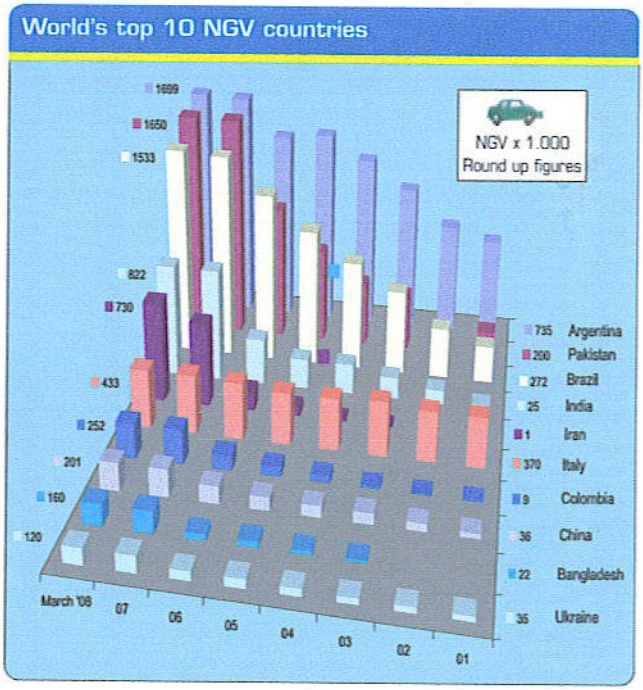
- **Substantial reduction in U.S. dependence on foreign oil** – CNG can have some short term impact, but more importantly, is our **best long term alternative**.
- **Significantly reduce automobile pollution** – NGVs are the cleanest federally certified passenger vehicles available, with the exception of zero emission electrified vehicles.
- Save the **average citizen 50-75% on fuel costs** with an **investment payback of about 1 year** that doesn't require the purchase of a new vehicle.
- **Quick "demand" side solution** to the oil crisis that is practical.
- **Replace expensive gasoline with natural gas that's domestically produced** (99% from the U.S. and Canada), is readily available and has sufficient reserves.
- **Increase U.S. natural gas vehicle adoption** from being a small time global player to a major player with leading technologies.
- Create **political good will** by doing something beneficial for the average consumer and better for the environment.
- Create the short term critical mass to develop **new technology in fuel cylinders and home compressor system**s that make CNG the most attractive long term alternative fuel.
- Define **alternate strategies** that can either be bootstrapped in phases with validation milestones or accelerated to create needed new technology as quickly as possible.

This can be a **VERY PROFITABLE** business at even low volumes, and a **$12+ BILLION** industry (if all we do is catch up to Brazil, Argentina or Pakistan, of all places) and the timing is perfect. To receive the white paper, fax/email a signed copy of the non-disclosure memo to: Bi-FuelCNG@comcast.net or Fax (801)295-7975. For questions contact brucecollet@comcast.net, (801)298-3844, cell (801)554-3791, or for technical questions, c_bringhurst@comcast.net or cell (801)949-2139.

Market

A review of **world statistics** for natural gas vehicles demonstrates the economics for NGVs are real (even for poorer nations), but also some very interesting anomalies. The graph at right[1] best summarizes how Asian and South American penetration has grown dramatically in the last decade. While Europe and North America, who both have environmental priorities for which CNG is an ideal solution, have been comparatively flat. However, Europe is taking aggressive action and the European Union has an objective to replace at least 10% of liquid fuels consumption with natural gas by year 2020. This represents some 24 million NGVs around the continent.[2] The list of third-world countries with higher NGV penetration[3] is embarrassing given the environmental advantages of NGVs; the quantity and price of already available U.S. natural gas; and our early entry and technological advantages. The obvious conclusion is that the U.S. has HUGE potential if a few key market "blockers" can be removed:





- CNG Conversion cost. Currently is $7-12,000 to convert a vehicle to natural gas.
- Expensive fuel cylinders. Applying available technology to design and produce less expensive fuel cylinders (currently $1200 for 6 gal cylinder in high volume) and home refueling stations (currently $4,500-9,000).
- Consumer confidence in the long term cost savings on natural gas. Awareness has already increased dramatically, but recent price gouging by public refueling stations in California have made consumers wary.
- EPA certification process. Simplifying and streamlining certification (currently about $200,000 for initial certification of one make/model/engine/year) - although not required for Bi-Fuel's success, this would dramatically accelerate the achievement of the national objectives in the executive summary.
- Catch 22. Both the auto industry and CNG infrastructure providers will respond positively when NGV adoption begins to significantly increase and a solution is demonstrated to be viable.

The **U.S. MARKET** penetration, currently only 130,000 vehicles, has been almost exclusively fleet applications (both commercial and government). Consumers have had very limited new-car options, typically the vehicles certified for fleet use and sold thru fleet converters. The EPA has to certify every

[1] International Association of NGV website http://www.iangv.org/stats/NV_Statistics_files/sheet006.htm
[2] Website for Worlds Fair of NGVs, http://www.ngvworldfair.com/
[3] Website www.NGVgroup.com , June 2008 Gas Vehicles Report – Note current volumes are on the LEFT!

Make/Model/Year/engine vehicle sold in the U.S. and the current listing[4] has mostly GMC, Chevy and Ford vehicles. The majority of certifications are owned by 6 companies (not the auto manufacturers) and the only foreign car certified is the dedicated Honda Civic GX (yet just Toyota recently surpassed GM as the largest auto manufacturer in the world). The majority of certifications are for large engine vehicles suitable for fleet use, but because they also require large fuel cylinders for any reasonable range, they are prohibitively expensive for most consumers. Honda's dedicated NGV (Honda Civic GX) and their financing the development of a marginally acceptable (high price and slow flow) home refueling compressor have put them in an excellent market position. However, a take-over of the California public refueling stations and subsequent price gouging is threatening consumer confidence.

Although auto-makers have supported CNG conversions, the majority of conversions are done to new cars after production by independent conversion companies, who also focus on other applications (heavy equipment, forklifts, ice making machines, etc.) They have traditionally ignored used car applications because of the cost of certification, lower economic life, and fledging consumer demand. However, gasoline price increases have caused the stock of the largest distributor to increase from a traditional range of $10-$17 to $36[5] this year. Zack's comments on the company are:

> "Fuel Systems Solutions, Inc. (NASDAQ: FSYS) makes its second appearance on the Zacks #1 Rank Top Performers List in the past three weeks. Analysts have boosted second-quarter earnings estimates by 53% in two months, including a gain of 30% in the past 30 days. Expectations for the full year are up 17.2% in the past month… with strong demand for its products that allow internal combustion engines to operate on natural gas."[6]

Most players in the industry, which has traditionally been a slow-growth specialty business, are small companies, joined by a flurry of recent mom & pop illegal converters (which the EPA is aggressively targeting). The supply of components is highly fragmented with several tiers of distributors between converters and manufacturers.

Gasoline cost increases of the last year have increased projected U.S. growth rates in NGVs. However, this is still insufficient to make a meaningful contribution to the current oil crisis. To achieve an order of magnitude increase and the enormous benefits available in NGVs, a multi-faceted approach that addresses each of the above market blockers in a holistic and synergistic manner is needed. However, if done correctly, the market size could easily be in the billions (doubling the current 120,000 NGVs would be a $.96 billion market; catching up with Columbia's 250k NGVs would be a $2 bil market; Italy with 430k = $3.4 bil; Iran 730k = $5.8 bil; Brazil, Pakistan and Argentina 1.5mil+ = $12 bil+)

For readers wanting to do additional research on NGV statistics, two sites that are loaded with data are the Natural Gas Vehicle Assn www.ngv.com and the U.S. Government site for official energy statistics http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html . Between the two, they have about all the facts needed to really understand the market, as well as a lot of background information.

COMPETITORS are fragmented into several groupings in the in the CNG and LNG (Liquefied Natural Gas) world, most of which are specializing in either:

1. Selling conversion kits and components.
2. Commercial fleet vehicle conversions.
3. Fuel cylinder and home compressor manufacturers.
4. Small commuter converters, many of which are not using EPA certified kits.

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[4] See entire list at: http://www.ngvamerica.org/pdfs/marketplace/MP.Analyses.NGVs-a.pdf

[5] On any stock analysis site, graph the price of FSYS

[6] http://finance.comcast.net/stocks/news_body.html?ID_NOTATION=1551818&ID_NEWS=80261490 or check NEWS on any stock quote site.

There are only 6 companies that hold all the EPA certificates (Baytech Corp. (112), ECO Fuel (42) BAF Technologies (12), IMPCO (12), Campbell Parnell Tech (2), Fuel Tek Conversion Corp. (1) and American Honda (1). The vast majority of certified vehicles are GM vehicles, with only 16 for Ford and 1 Honda. The Honda Civic GX is the only foreign vehicle certified.

The only public company selling kits is IMPCO out of California. They have been in the business since 1958 and have 900+ employees. They are owned by Fuel Systems (a public company, symbol FSYS) that has about $270 mil/yr revenue, $60 mil is IMPCO, the rest is mostly BRC, an Italian distributor. Their stock has recently gone from $10-17 range to $40 that has to be on anticipated increases in business as their annual report to the S.E.C. discloses significant financial weaknesses. IMPCO's business is about 1/3 to OEMs and 2/3 to distributors. They make about 25% gross margins on their sales. They hold bi-fuel certifications only on 2007/2008 Chevy/GMC 6.0 liter engines, 2009 certificates are held by Baytech. If the stock run-up is any indication, they are probably experiencing significant growth in their existing markets and unlikely to be searching for new ones (i.e., be doing something similar to our approach).

Other certificate holders and independent converters are non-public, so no financial information is available. Fleet owners may be contacted by either certificate holders or independent converters. Only independent converters appear to be doing any consumer conversions.

There are 3 major fuel cylinder manufacturers in the U.S (Luxfer Gas Cylinders, Lincoln Composites and Structural Composites Industries - SCI). It does not appear that 3600 PSI fuel cylinders (standard in the U.S.) are available in Asia (where most 2900 PSI cylinders are manufactured) because of the low sales volume and the higher pressure. One or more will be vendors until we develop our next generation fuel cylinders.

The only home compressor stations currently available are from Fuel Maker (a Canadian company) and are priced at $4,500 for an in-garage unit that pumps at .4 gal/hour and $10,000 for a larger one. Again, these can be purchased and resold in the interim but are not effective solutions.

There are only two converters in Utah (our initial market) with websites. Go Natural (changed name from SNO Motion) which has a focus on domestic vehicles and small fleet conversions. They buy kits from distributors, using existing certifications. The other is Natural Drive, whose main focus is a dedicated 2008 Chevy Impala aimed at fleet companies. In addition, there are a couple dozen independent certified technicians that have done conversions, some of which the EPA has challenged as the vehicles weren't certified. There is a lot of confusion in the business regarding what's legal or not.

Market growth beyond any one company's ability to capture is possible on the CNG to gasoline price differential alone, without addressing the **top concerns** of prospective NGV owners. However, addressing these concerns would accelerate it even more. The top concerns (each of which are ameliorated by our strategy) are:

- Limited range – e.g., 150 miles for a 6 gallon cylinder on a 25 MPG vehicle, 180 miles for a 12 gallon cylinder on a 15 MPG vehicle.
- Limited number of public refueling stations.
- High expense of conversion to CNG.
- Limited choice of CNG vehicles with only one foreign vehicle (Honda Civic GX).
- That the CNG price differential will evaporate (e.g., current California problem).
- Performance issues – 5-15% less power, hard starting in cold weather.
- Trunk space is significantly reduced for fuel cylinders.
- Financing has traditionally been unavailable.

The **primary benefit** of NGVs driving the current large increase in demand is the price differential between CNG and gasoline. There are several ways to calculate or state this benefit. For example, assuming a car gets 25 MPG using either fuel, gasoline at $4.00/gallon and CNG at $1.30/gallon:

- The miles per gallon equivalent is 76.9 MPGe versus 25 MPG.
- The cost per mile driven is $.05 versus $.16.
- The CNG consumer gets 19.2 MP$ (miles per dollar of fuel) versus 6.3 for gasoline.

There are many additional **benefits** that make NGVs attractive:

- There are significant Federal[7] and State tax credits:
  - 50-80% of incremental cost of conversion Federal Tax credit on new dedicated vehicles (usually not applicable for used cars, most likely the main reason Honda went dedicated).
  - $1,000 Federal tax credit for a home refueling station (applicable for us).
  - A $0.50/gallon Federal tax credit to sellers of CNG.
  - Utah[8] (our initial market) - 50% of the incremental cost of conversion - $2,500 – 3,000 limit, can be carried forward 5 years.
- NGVs are clean – "Compared with vehicles fueled by conventional diesel and gasoline, natural gas vehicles can produce significantly lower amounts of harmful emissions such as nitrogen oxides, particulate matter, and toxic and carcinogenic pollutants as well as the greenhouse gas carbon dioxide. The U.S. Environmental Protection Agency has called the natural gas Honda Civic GX the cleanest internal-combustion vehicle on Earth."[9]
- CNG is safer than gasoline – fuel cylinders are almost impossible to rupture and CNG dissipates upward because it's lighter than air.
- Natural gas reduces wear on engines and extends the time between oil changes.
- NGVs can be refueled at home during the night for the 46 million homes that have natural gas (this benefit is significantly enhanced by our strategy to offer a low cost compressor).
- Use of at-home natural gas is at regulated prices, insulating the consumer from short term spot market fluctuations (most utilities have long term supplies at locked in prices).
- Many locations give NGVs preferential parking and HOV lane privileges.

Strategy to Explode the NGV Market

Consumer demand for alternative fuels has already been ignited by high gasoline prices. NGV adoption can't explode without a solution that addresses all of the key blockers, which this strategy does. The price advantage of CNG will remain or even increase in the foreseeable future. CNG is already positioned to be the fuel of choice on the energy supply side (domestic, stable regulated pricing, etc.) and demand for NGVs will increase even more dramatically if:

1. The cost to convert to CNG is reduced. Some reductions will automatically occur over time with increasing demand, but significant short term reductions are available by:
   a. Direct sourcing conversion kits from one or more of the 3 Asian manufacturers that currently supply the bulk of the market. Most U.S. converters have not had the volume or relationships to establish direct sourcing and the industry is fractionated with several supplier layers. Kits that currently cost a small converter $3,000 to $6,000 from the local distributor (licensed by the certification holder) come thru a U.S. master distributor (and frequently an Italian world distributor) are sourced in Asia. They could be landed in the U.S. $500 or less in any material volume - a whopping 80% reduction. Initial customer surveys indicate the price point at which order-of-magnitude increases in NGV sales could be expected are $5,000 for a conversion (including fuel cylinder, compressor and tax incentives).

[7] For more information, see http://www.ngvamerica.org/incentives/index.html
[8] See CNGUtah website, http://www.cngutah.com/why.html
[9] U.S. Dept of Energy, Energy Effeciency and Renewable Energy http://www.eere.energy.gov/afdc/fuels/natural_gas_benefits.html

b. Focusing conversions on selected popular high-volume high-MPG used and new cars. High-MPG vehicles because they have much longer range with the expensive 6 gallon fuel cylinder size currently available (gas guzzlers are better addressed after new cylinder technology makes larger or dual cylinders more affordable).

WHY USED VEHICLES INSTEAD OF JUST NEW?

i. Adoption solely thru new cars only will take decades, even if all manufacturers had NGV offerings today, because the refueling infrastructure doesn't exist, rollout can't easily be geographically focused (although Honda is experimenting in California) and it takes over a decade to retire the majority of a new model year (new cars are 2.6% of the total fleet each year[10], 60% of vehicles are older than 7 years and increasing each year since 1999, median auto age is 8.5 yrs up from 6.5 yrs in 1990[11]).

ii. The total investment can be much less. The ability to buy used versus new reduces the consumer's total NGV solution by $5-20,000, which dramatically expands the market and facilitates much faster adoption than just new car offerings. We anticipate auto manufacturers will expand their offerings, which would only help Bi-Fuel by lending credibility and educational advertising from which we would reap spin-off benefits.

iii. Consumers are buying for their commuter car to save money on fuel, they are function driven and most would probably prefer a used car, particularly if the payback is faster.

iv. Conversions for used cars are of high interest to consumers (as shown by illegal conversions and skyrocketing pricing on used NGVs) and key to getting large short term national impact. Note, a 2001 used Chevrolet Cavalier valued at $3,200 with CNG in December 2007 is currently selling for over $10,000

v. This market has been ignored by converters because of the high cost of certification and a more limited remaining life. However, with the gasoline to CNG differential now available, it can be very profitable and several may enter this market.

vi. The conversion after-market will remain viable for decades, even if auto manufacturers had NGV versions of all their models. .

c. Offering one vehicle selection in each functional body style – economy sedan, family sedan, mini-van, SUV, pickup, etc. This would provide an acceptable solution for the average consumer who desperately want/need to reduce fuel costs. Initial market research indicates that gas saving potential will over-rule model/make preferences and consumers will buy if their category needs are met.

d. Performing conversions in centralized locations with critical mass and to which "lean manufacturing principles" can be applied.

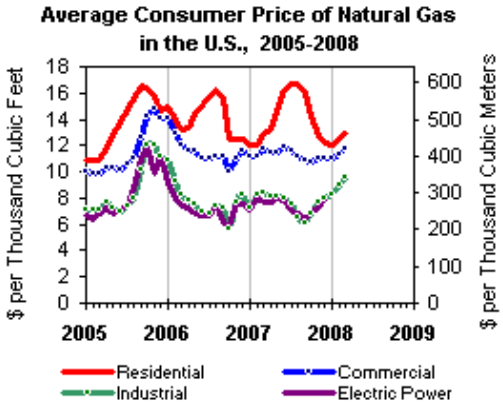
e. Redesigning CNG fuel cylinders. Fuel cylinders in the U.S. are at higher pressure (3,600 PSI [lbs per square inch] versus 2,900 PSI internationally), so most low-cost fuel cylinders can't be used in our markets and foreign manufacturers don't see enough U.S. volume to justify redesign. The higher pressures were adopted to increase the range and it's more likely other countries will adopt higher pressures than vice versa. Technology exists to produce fuel cylinders at less than half the current cost.

2. Consumer concerns about the continuing price advantage of CNG and NGV negatives are addressed.

[10] Per Wikipedia website http://en.wikipedia.org/wiki/Passenger_vehicles_in_the_United_States

[11] Per Wikipedia website http://en.wikipedia.org/wiki/Passenger_vehicles_in_the_United_States

a. Reducing the cost of home fueling stations – addresses both CNG price concerns and limited availability of public refueling stations. Although public refueling stations are important, reasonably priced home refueling stations are crucial for market growth and consumer confidence. The purchase of the California public refueling stations by T. Boone Pickens and subsequent price gouging[12] have slowed consumer adoption and hampered Honda's sales in that market (California public station prices average $2.90/gal versus $1.50/gal home price). Home refueling stations guarantee consumers the ability to purchase gas at the regulated price, which forecasts show will retain its advantage relative to gasoline. Everyone knows the price of gasoline has quadrupled the last few years, the graph[13] at right shows natural gas prices have been flat with seasonal variations and would not be materially influenced by NGV consumption. The second graph illustrates production in the lower 48 has broken a several year trend and been increasing. Therefore, there is little risk of regulated natural gas prices increasing dramatically like gasoline and a substantial differential should be available into the foreseeable future. Although the existing home refueling products are reasonable for early growth, our customer surveys indicate $3,000 is the threshold price for much higher adoption and it needs 3-4 times the .4 gal/hour flow available, which is achievable with current technology. (Our analysis of why Honda's $10 million investment missed their design criteria and the market so far is available upon request).



b. Larger fuel cylinder capacities. Because fuel cylinders need to be redesigned for cost-savings anyway, it will be feasible to also increase capacity options at the same time. Some minor improvement in sacrificed trunk space can be made by the cars selected for conversion, but initial customer surveys already indicate the majority of NGV owners would sacrifice even additional space for additional fuel capacity. Multiple car families already have a alternate car with available trunk space.

c. Performance issues are minimized by dual fuel systems – i.e., gasoline if needed. Additionally, Honda has demonstrated that NGV performance can actually be better than gasoline if the car is tuned exclusively for natural gas. Consumers wanting the performance from natural gas could be given it at the expense of gasoline performance or just switch to gasoline when needed.

3. An NVG growth spurt based on the above would start a self-fueling explosion in the market. Expanded new car offerings, availability of significant used car conversion offerings and the associated marketing will increase public awareness and in-turn increase acceptance and growth. Increased NGVs will spur additional infrastructure.
4. Support auto manufacturers wanting to make new CNG offerings.
    a. Fuel cylinder technology will be the new state-of-the-art and more attractive than existing products, creating an opportunity as an OEM supplier.

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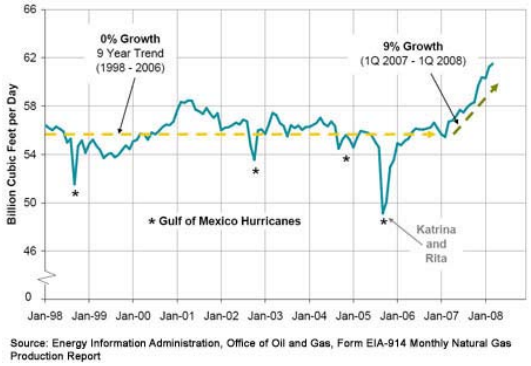
[12] Quotes from the Los Angeles Times (see http://www.latimes.com/news/opinion/la-oe-rubenstein29-2008jul29,0,2980323.story (highlighting added): "Pickens owns Clean Energy Fuels Corp., a natural gas fueling station company that is the sole backer of the stealthy Proposition 10 on California's November ballot. This measure would authorize the sale of $5 billion in general fund bonds to provide alternative energy rebates and incentives -- but by the time the principal and the interest is paid off, it would squander at least $9.8 billion in taxpayer money on Pickens' self-serving natural gas agenda. The initiative deceptively reads like it's supporting all alternative-fuel vehicles and renewable energy sources. But a closer read finds a laundry list of cash grabs -- from $200 million for a liquefied natural gas terminal to $2.5 billion for rebates of up to $50,000 for each natural gas vehicle."

[13] From Dept of Energy website http://www.eia.doe.gov/oil_gas/natural_gas/info_glance/natural_gas.html

b. The number of new NGVs offered will increase proportional to the market growth until eventually (10-20 years) most demand is satisfied by new car offerings. The strategies defined herein will position Bi-Fuel as a leading supplier of world-class products in the CNG conversion industry and the largest U.S. converter of used cars. This will undoubtedly lead to Bi-Fuel becoming a trusted supplier to the auto manufacturers.



Source: Energy Information Administration, Office of Oil and Gas, Form EIA-914 Monthly Natural Gas Production Report

5. Facilitate the availability of reasonable financing. We already have commitments from a credit union in our initial market and it is likely several others will enter the market.
6. Aggressively pursue EPA certification reform. Environmental agencies, who should be the primary proponents of NGVs because of the substantial reduction in pollution, have instead been primary blockers with high cost and lengthy certification processes. There is a definite need for political pressure in the U.S. to reduce or simplify the EPA certification process. For example, if State emissions testing show reductions across all measured pollutants on a dual-fuel vehicle, why is any certification at all required? Although such is not a requirement for the results defined herein (in fact certification works in Bi-Fuel's favor by limiting market entrants), it would dramatically accelerate the shift away from foreign oil and national benefits outlined earlier.

Business Definition

Bi-Fuel CNG, Inc. was created to implement the strategies defined above and initially will be primarily an importer of components and converter of select gasoline powered used vehicles to dual fuel Natural Gas Vehicles (NGVs). Founders have identified the technologies necessary, selected an initial market and products for rollout. Most of the cars to be converted will be purchased on the used car market, transported to centralized conversion locations, converted to NGVs and sold to a waiting buyer's list. Current owners of the selected models will also be targeted for conversion.

Bi-Fuel will also be involved in the design, engineering and sourcing (or manufacture) of new products supporting the CNG conversion marketplace. Initially, that will be fuel cylinders and a less expensive home refueling station, but additional innovations are likely as the market grows. Bi-Fuel CNG would morph from a conversion/engineering/development entity to an industry leading technology and components supplier.

WHY UTAH? The initial marketing area would be the Interstate 15 corridor in Utah, then rolled out to other areas based on a number of factors that will be weighed during the initial market rollout (availability of public fueling stations, market size and concentration, etc.). California is one obvious choice because of size and environmental issues, but would best be addressed after the home compressor station is redesigned because of the current ownership and price gouging of public refueling stations. Utah is the ideal initial market for a number of reasons:

- Utah has one of the lowest prices of natural gas in the nation (just recently increased from $.64 to $.85 at the Questar public refueling stations, $.90 to 1.10 at home), rather high gasoline prices ($4.17 as of July versus the national average of $4.01) and therefore one of the highest CNG price multiples of 4.85 (national average 3+).
- The State offers tax credit incentives of 50% of the cost of conversion up to $2,500 on used vehicles, $3,000 on new.
- Utah has one of the largest concentration of public refueling stations and has recently passed a law requiring government owned private stations to open their facilities to the public. The public stations are owned by Questar, the local utility, so pricing is regulated.
- It has been a hot-bed for uncertified applications of CNG (some of which could be shut down) and an importer of NGVs from other markets - demonstrating high demand.

- There is less need for a lower priced home refueling station in Utah than most other locations (due to the # of public refueling stations and their low price).
- It has local political support – there are significant State financial incentives and the Governor recently converted his SUV to CNG.
- Local financing institutions have recently begun offering customers financing on CNG conversions (a traditional industry problem).
- It has a population of about 2 million (an ideal initial market size) in a very concentrated market with less than 6,000 NGVs.
- The state-of-the-art Stir Welding technology that will be used in re-designed fuel cylinders was developed at a local university which is anxious to license and support its adoption.
- Utah is also well suited for the manufacture of fuel cylinders, having developed world-class carbon fiber technology in aerospace firms.
- It has the active support of Questar, the local natural gas supplier.
- It is home to a large popular internet blog on NGVs (www.cngchat.com).

Bi-Fuel is prepared to establish sales and operations centers from scratch, but one of the purposes of this paper is to identify strategic partners that would be interested in collaborating in this effort.

PHASED APPROACH FOR BOOTSTRAPPING. The phased approach would have 3 marketing and 4 development phases. The first two phases of each will be in sync, but subsequent marketing phases will be tied to market demand and learnings, while subsequent development phases will be directly tied to funding.

Bi-Fuel will begin by direct sourcing of the conversion kits and getting one popular used car make/model/year/engine EPA certified. A likely first selection would be the Toyota Corolla, although this could change to satisfy a strategic partner. The Corolla is the #1selling car, perceived as economical and reliable, maintains value well, and is ubiquitous. The target conversion price to the consumer would be $5,000 (versus the $7-8,000 for small GM cars currently available) with over 50% profits (see "Revenue and Gross Profits" section). Bi-Fuel would engineer, develop and certify this first application, sourcing the components from one of the 3 largest suppliers in Asia. The initial market would be Utah. See "Funding Requirements" at the end of this paper for a detailed breakdown of the funding needs. The phases are:

- Development, Marketing and Operations Phase 1 – One vehicle certified, sell in Utah, 6 to 8 months and requiring $1.9 to 3.5 million.
    - Finalize manufacturer selection and direct sourcing of first kit.
    - Obtain facilities and equipment for conversion and sales.
    - Certification and training of initial workforce.
    - Sales initiated as soon as a certified kit is available for installation.
    - Utah rollout of first vehicle - about 6 months.
    - Fuel cylinders may have to be included at near cost to meet consumer pricing objective and will have normal profit margins when the new fuel cylinders are available (development phase 2).
    - Initial Design on new fuel cylinders and home refueling stations.
    - Obtain licensing and collaboration using thin walled stainless sheeting, Stir welding and other technology to be utilized.
- Development, Marketing and Operations Phase 2 – five vehicles certified, sell in Utah, 6 to 8 months and requiring $4 to 8 million, but $3.5 to 4 million of that can be provided by Phase 1 profits and some debt financing should be available on inventory buildup.
    - Certification of 4 additional vehicles, one in each body style category.
    - Validate vehicle selections in Utah.
    - Develop marketing and operational plan for staging national roll-out.

- Marketing Phase 3 – the national rollout can begin following Phase 2. The selection of specific markets and funding requirements (primarily for inventory and conversion facilities) will be identical during Phase 2 above.
    - Staged national rollout.
    - New home refueling stations a high priority for areas without many public refueling stations.
    - Obtain facilities and equipment for conversion operations.
    - Training and certification of people.

The 2 additional phases of development can be done at any point in the evolution of the company and will bring the associated price reductions. The compressor stations are the most critical to allow customers to refuel at home at the regulated price. The fuel cylinder development will provide increased range and reduced prices. See "Funding Requirements" for a detailed breakdown:

- Development Phase Three – New Home Compressor Station, 4-6 months and $.8 to 1.4 million. As soon as the new units can be produced, they can be incorporated into the product line and appropriate price reductions realized.
    - Engineering and prototyping.
    - Evaluate where manufacturing can occur (presume will be advantageous to outsource manufacturing from the start).
    - System certification.
    - Preparation of marketing materials.
- Development Phase Four – new Fuel Cylinder, 4 to 6 months and $.4 to 2.3 million. As soon as the new fuel cylinders can be produced, they can be incorporated into the product line and appropriate price reductions (and/or better profit margins) realized.
    - Engineering and prototyping of the new fuel cylinder.
    - Evaluate where manufacturing can occur (presume will be advantageous to at least begin production in Utah, perhaps later licensing major Chinese manufacturers and moving there.)
    - Purchase or out-source cylinder winding equipment.
    - Purchase tooling for metal cylinder core forming.
    - Purchase or out-source carbon fiber winding equipment and oven curing systems.
    - Preparation of marketing materials.

ACCELERATED DEVELOPMENT

This approach would begin all development immediately and introduce new products and price reductions into the product line as soon as they are available. Development of new fuel cylinders and home refueling stations would be initiated immediately. This approach would require 6-10 months and $3 to 6.5 million, but could also provide the largest short term impact on the national objectives outlined in the executive summary and substantially increase the percentage of NGVs that replace gasoline in the long term. This accelerated approach will create additional hurdles for potential competitors.

Our preference would be to use the accelerated approach, and we feel comfortable it could be accomplished with $5 million in funding since not every item would be at their maximum level.

Marketing would still be done in the same 3 phases. The national rollout (marketing phase 3 above) could begin as soon as the sales and operational processes are stabilized and would still proceed in a logical sequence. However, earlier availability of a low-cost home refueling station may materially change the rollout priorities and facilitate far faster NGV penetration (e.g., large population centers with natural gas piped to homes could be target markets even if lacking in public refueling station infrastructure).

Product Strategy

The first and easiest cost reduction to achieve is in the conversion kits. Most U.S. converters import through several layers of distribution. Our staff has over 20 years experience in working in Asia and are experts in this area. Preliminary inquiries through existing contacts in Asia indicate that cost reductions of about 70% are achievable with reasonable volume commitments. Because U.S. growth has been slow, the manufacturers have virtually ignored the U.S. market and most converters don't have the contacts and relationships to establish direct manufacturer relationships on their own. Installers are forced to purchase through the entities holding the EPA certificates or their authorized local distributors. Even if the exact kit is assembled in Asia and purchased anywhere earlier in the distribution chain, the certification cannot legally be used. (Although this is fairly common in the industry and an activity the EPA is trying to prevent.)

For example, kits usually cost the converter/installer between $3,000 and $6,000, because the certification holder is recovering costs on low volumes. This same kit costs about $500 landed directly from the factory (obviously fluctuates with the exchange rate).

Bi-Fuel will design, certify and purchase our own kits directly from one of three Asian manufacturers currently supplying the majority of the market. Since we hold the certification, import directly and will have single model high volume sales, , we can price significantly lower and still make excellent margins.

The redesigned home compressor station is not critical for the initial rollout in Utah, but becomes critical when doing a national rollout for reasons documented in the Market section above.

The redesigned fuel cylinder is important to reduce this expensive component and provide additional range.

Core Competencies and People

The founders are ideally suited for promulgation of this business.

Bruce Collet has over 35 years of executive, management, entrepreneurial and consulting experience in a variety of industries (manufacturing, construction, oil & gas, utilities, transportation, financial services, and software would all have application to Bi-Fuel). He has run a financial entity buying over $1mil/day of receivables and was an owner in a small specialty manufacturer he took through development of a complex new product and orchestrated an increase in sales from $2 to 10 million in 18 months. He was involved in the preliminary design stages of Alaskan gas pipeline that was planned in the late 70's but never built. He has done strategy and marketing consulting engagements with gas utilities, oil companies and auto manufacturers. He has done strategy, business process redesign and marketing consulting with dozens of Fortune 500 companies and is particularly skilled at adapting best practices in one industry or arena to another application.

Craig Bringhurst began developing these ideas after his own purchase of an NGV. Craig has a strong engineering background, experience in high pressure vessels and compressors, a life-long dedication to sourcing a wide variety of projects from Asia. He has twenty-five years of intense product development, manufacturing and process engineering in a variety of industries including 5 years in the oil refinery industry. Craig has more than 16 years of management experience in engineering and manufacturing; 18 years in developing automation, process controls, and instrumentation systems for retail products and eight years in retail product design and development. He is an expert in cost containment/reduction, "Lean Manufacturing" practices and automation through sourcing in Asia and Latin America. He has spent the last 12 years transitioning products in, out, and between these vastly different cultures to optimize the profits and quality of various consumer and industrial product lines. He has audited, inspected, and worked with over 300 facilities in Asia.

Trent Timothy has 11 years of varied sales experience. He has been involved in both residential and commercial real estate sales as a licensed REALTOR. Trent spent 2 years as general manager of property management firm, responsible for all aspects of operations. He has been a sales manager, consultant and business owner. Trent spent several months selling autos to get a basic understanding of the business and how to apply his skills to this venture.

We are putting together a coalition of many of the certified technicians in Utah and anticipate their full support as all of our conversion certifications will be adding to the options available in the marketplace.

The functions/roles/expertise that will be needed are mostly available locally (as employees or consultants) and will include: high pressure engineer, compressor engineer, manufacturing engineer, automotive engineer, automotive electrical, automotive fuel systems, CNG certified technicians, auto mechanic, production supervision, cylinder specialist, regulators and relief devices, natural gas industry, certification trainer, auto financing, used car market, buyer, transportation, lobbyist, grant writer, regulatory and legal.

A small cadre of advisors and early supporters has been assembled, but this is expected to be dwarfed by the distribution of this document to a wide audience of parties with potential interest. We are aggressively seeking strategic partnering relationships.

Facilities and Equipment

Initial facilities will be in Utah, and several potential strategic partners are being approached. Because this strategy centralizes conversion, only minimal people and facilities are required.

Development facilities can be minimal, including shop area, car bay, lab/workshop area, some office space and storage for tools and equipment. Sales facilities can also be minimal in the Phase 1 as we anticipate heavy initial demand and probable strategic partnering with one or more dealerships. Manufacturing and warehousing space would be necessary should we determine advantageous to do our own manufacturing.

Business Processes

The business is a relatively simple and streamlined business, with the following core processes.

- New Product development
- Procurement
    - Purchase & inventory of cars for conversion
    - Sourcing of components
    - Transportation of vehicles
    - Certification of new vehicles
- Conversions to CNG
- Sale and financing of converted cars
- Manufacture of components – limited at first, with fuel cylinder manufacturing likely later
- Administrative and Support processes

Financials

One of the main reasons this business is presented as a strategic white paper instead of as a business plan is that financial results will be significantly different, depending on the strategic partner(s) selected (industry, resources willing to contribute, investment objectives, investment amount, development schedule, profitability requirements, etc.)

We have included the estimated Funding Requirements for each of the phases defined above, except the national roll-out. We have included ranges instead of point estimates since many of the items have very wide ranges depending on the outcome of preliminary investigations and design. These estimates are believed to be very conservative and we are comfortable the maximums will not be necessary on many of the items.

We have also included estimates of the Revenue and Gross Margins available in this business. These are estimated for each of the phases as cost reductions should occur with volume and development effort. Gross profits are available from the markup of purchased cars (average 18%), the conversion to CNG (50% increasing to 70%) and compressor sales (30% increasing to 60%). These margins are all available with conversion pricing at 25% or more under the current industry averages. Note that these are also cash contribution margins since generally accepted accounting principles (GAAP) in the U.S. do not allow capitalization of any R&D expenditures (International GAAP does, and would have amortization included as an additional product cost). This demonstrates that very attractive gross profit margins are available – a combination of the low margin dealer markup and the much higher margin on the conversion. See the schedule for details. Support of specific estimates is available on request.

Next Steps

To discuss strategic partnering, email Bruce at brucecollet@comcast.net, call at (801)298-3844, cell (801)554-3791 or Fax (801)295-7975. For technical questions, email Craig at c_bringhurst@comcast.net or cell (801)949-2139.