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**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

1. Please provide a copy of any and all analyses, reports, studies or other documentation that analyze or review the economic feasibility (as in profitability) of Delta to own, manage, and/or operate a natural gas ("CNG" or "natural gas") fueling station for the public's use.

Response:

See attached.

Sponsoring Witness:

Matthew D. Wesolosky

	93013	20000	20000	100000 CNG	170000	170000	200000		
	50/50	all st	50/50	all st	50/50	all st	50/50	needed	25000 mcf annually
cost	1200000	1200000	1200000	1200000	1300000	1300000	1800000		mcf
revenue	30000	30000	150000	150000	340000	340000	400000	delta	6000
Gas cost	15000	15000	50000	50000	85000	85000	100000	berea	2500 eventually 6000
interest	25800	18000	25800	18000	27950	19500	38700	college	2000
O&M	20000	20000	20000	20000	20000	20000	20000		
prop tax	12000	12000	12000	12000	13000	13000	18000		
deprec	60000	60000	60000	60000	65000	65000	90000		
Trans cost	4000	4000	20000	20000	34000	34000	40000		
pre tax	-106800	-99000	-37800	-30000	95050	103500	93300		
net inc	-66216	-61380	-23436	-18600	58931	64170	57846		
ROE	-0.11036	-0.1023	-0.03906	-0.031	0.090663077	0.098723077	0.064273333		
Trans rev	4000	4000	20000	20000	34000	34000	40000		
net of tax	2480	2480	12400	12400	21080	21080	24800		
combined	-63736	-58900	-11036	-6200	80011	85250	82646		
comb roe	-0.106226667	-0.098166667	-0.018393333	-0.010333333	0.123093846	0.131153846	0.091828889		



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2. Please provide a copy of any and all analyses, reports, studies or other documentation that analyze or review the marketability for Delta to operate and attract customers to the CNG facilities as proposed in the application.

Response:

No such analysis or review has been performed.

Sponsoring Witness:

John B. Brown



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3. Please state whether Delta has contacted any of its current ratepayers - whether by flyers, bill inserts, meetings (such as Chambers' of Commerce, Kiwanis Club, etc.), or otherwise - to determine if those ratepayers would be receptive to the construction of CNG facilities.

Response:

Discussions have been held with Berea College, the City of Berea, Berea Community School and Madison County Schools to determine receptivity to the proposed CNG facilities. They all displayed interest in considering acquisition of CNG vehicles if Delta develops a station for fueling vehicles with CNG.

There have been no flyers, bill inserts or general meetings yet as we wanted to be certain on timing of CNG facilities being available to the general public before doing such contacts.

We did not, and do not, wish to excite our customers with promises of CNG that we could not deliver. Public contact should occur after the CNG station is more certain to be a reality (after receipt of a favorable order from the Commission).

Sponsoring Witness:

Glenn R. Jennings



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4. Please provide a detailed explanation with accompanying materials documenting Delta's in-house technical experience in owning and operating a CNG fueling station for private use.

Response:

Delta has had, and operated, a CNG station for company use (see Response to PSC 15).

Delta personnel are familiar with operating compressors, pressurized pipelines, storage tanks and related equipment. Operating gas equipment and providing gas service is what Delta personnel have done since the Company's formation 65 years ago.

Delta's personnel have managed Delta and its operations since the Company's inception. Current management personnel will manage the proposed CNG station as a routine part of their jobs as needed.

Delta's personnel have managed financial areas since the Company's inception. Current financial personnel will manage the financial aspects of the proposed CNG station as a routine part of their jobs as needed.

Also, see Testimony of Delta's three witnesses documenting their experience.

Sponsoring Witness:

Glenn R. Jennings



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5. Please provide a detailed explanation with accompanying materials documenting Delta's in-house technical experience in owning and operating a CNG fueling station for the public's use.

Response:

See the response to Item 4.

Sponsoring Witness:

Glenn R. Jennings



**DELTA NATURAL GAS COMPANY, INC.
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6. Please provide a detailed explanation with accompanying materials documenting Delta's in-house managerial experience in owning and operating a CNG fueling station for private use.

Response:

See the response to Item 4.

Sponsoring Witness:

Glenn R. Jennings



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7. Please provide a detailed explanation with accompanying materials documenting Delta's in-house managerial experience in owning and operating a CNG fueling station for the public's use.

Response:

See the response to Item 4.

Sponsoring Witness:

Glenn R. Jennings



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8. Please provide a detailed explanation with accompanying materials documenting Delta's in-house financial experience in owning and operating a CNG fueling station for private use.

Response:

See the response to Item 4.

Sponsoring Witness:

Glenn R. Jennings



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9. Please provide a detailed explanation with accompanying materials documenting Delta's in-house financial experience in owning and operating a CNG fueling station for the public's use.

Response:

See the response to Item 4.

Sponsoring Witness:

Glenn R. Jennings



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10. Please provide the number of Delta's customers who have transportation vehicles that operate on CNG as:
 - a. an exclusive fuel basis, and
 - b. a dual fueled basis (hereinafter "dual fuel" or "bi-fuel" shall both be considered the same).

Response:

See the response to PSC-1 Item 7. Delta does not know the number of Delta's customers who have transportation vehicles that operate on CNG.

Sponsoring Witness:

John B. Brown



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11. Please provide the number of people in Delta's customer base who have transportation vehicles that operate on CNG as:
 - a. either an exclusive fuel, and
 - b. a dual fueled basis.

Response:

See the response to Item 10.

Sponsoring Witness:

John B. Brown



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12. Please describe the need as defined under KRS 278.020 and current PSC precedent which exists for Delta to obtain this certificate for public convenience and necessity.

Response:

In the April 30, 2013, order in Case No. 2012-00470, *In the Matter of: Application Jessamine-South Elkhorn Water District for a Certificate of Public Convenience and Necessity to Construct and Finance a Waterworks Improvements Project Pursuant to KRS 278.020 and 278.300*, the Commission said:

“Need” is defined as

. . . substantial inadequacy of existing service, involving a consumer market sufficiently large to make it economically feasible for the new system or facility to be constructed and operated.

. . . the inadequacy must be due either to a substantial deficiency of service facilities, beyond what could be supplied by normal improvements in the ordinary course of business; or to indifference, poor management or disregard of the rights of consumers, persisting over such a period of time as to establish an inability or unwillingness to render adequate service.

Id. at 4, citing *Kentucky Utilities Co. v. Public Service Commission*, 252 S.W.2d 885 (Ky. 1952).

Sponsoring Witness:

Counsel



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13. Please state the average miles that a transportation vehicle, which operates exclusively on natural gas, will operate on a full tank before it requires refueling.

Response:

Approximately 225 miles. This is based on a 15 gge tank and a vehicle fuel economy of 15 miles per gallon.

Sponsoring Witness:

Jonathan W. Morpew



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14. Please provide the name, owner, operator and location of the closest natural gas filling station in driving distance in miles to Delta's proposed natural gas filling station that is open to the public for refueling.

Response:

According to the U.S Department of Energy -- Energy Efficiency and Renewable Energy Alternative Fuels Data Center Alternative Fueling Station Locator <http://www.afdc.energy.gov/locator/stations>, the closest natural gas filling station to Berea, Kentucky is City of Somerset; 244 Chappells Dairy Rd; Somerset, KY 42503.

Sponsoring Witness:

John B. Brown



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15. Please provide the name, owner, operator and location of all CNG fueling stations within the following driving miles in proximity to Delta's proposed CNG fueling stations that are open to the public for refueling:
- a. 50 miles,
 - b. 100 miles,
 - c. 150 miles,
 - d. 200 miles,
 - e. 250 miles, and
 - f. 300 miles.

Response:

See the attached printouts listing CNG fueling stations within 300 miles of Berea, Kentucky, according to the U.S Department of Energy -- Energy Efficiency and Renewable Energy Alternative Fuels Data Center Alternative Fueling Station Locator <http://www.afdc.energy.gov/locator/stations>. Note that the CNG Station opened by Carrollton Utilities has not yet been added to this list. Carrollton Utilities is located at 225 6th Street, Carrollton, KY 41008. Carrollton is about 136 miles from Berea.

Sponsoring Witness:

John B. Brown

Public CNG Stations
Sorted by Miles to Berea, Kentucky
US Department of Energy

Fuel	Station Name	Street Address	City	State	ZIP	Miles Berea	Station Phone	Groups With Access Code	Access Days Time	Quick/Time
CNG	City of Somerset	244 Chappells Dairy Rd	Somerset	KY	42503	37	606-679-0509	Public - credit card at all times	8am-4:30pm M-F; contact station to arrange fo	Q
CNG	Natural Fuels LLC	591 E Monticello Pike	Huntsville	TN	37756	81	423-663-9300	Public - see hours	8am-5pm M-F; fueling available after hours in	Q
CNG	Clean N' Green - Waste Management	7501 Grade Ln	Louisville	KY	40219	88	800-950-3835	Public - credit card at all times	24 hours daily; also accept Clean N' Green ca	Q
CNG	AMP Americas	7507 Highway 31 E	Sellersburg	IN	47172	97	312-300-6700	Public - credit card at all times	24 hours daily; also accept AMP Americas Fue	Q
CNG	PBG Energy	1818 Holiday Dr	Athens	TN	37303	146	865-643-8000	Public - credit card at all times	24 hours daily	Q
CNG	IGS CNG Services	10 Spring St	Charleston	WV	25302	156	877-742-4476	Public - credit card at all times	24 hours daily	Q
CNG	Piedmont Natural Gas - Nashville - Public Access	100 Century Blvd	Nashville	TN	37214	165	615-947-8386	Public - credit card at all times	8am-5pm M-F; contact station to arrange for a	Q
CNG	City of Asheville	45 McCormick Pl	Asheville	NC	28801	168	828-259-5700	Public - credit card at all times	24 hours daily	Q
CNG	PSNC Energy	15 Overland Industrial Blvd	Asheville	NC	28806	170	877-776-2427	Public - credit card at all times	24 hours daily; also accept PSNC card key - c	Q
CNG	Quasar	2506 Jackson Pk	Columbus	OH	43223	175	216-986-9999	Public - see hours	7am-5pm M-F, 7am-12pm Sat; also accept Qu	Q
CNG	NC - CNG	2618 Hendersonville Rd	Arden	NC	28704	177	828-654-8300	Public - credit card at all times	24 hours daily	Q
CNG	Greene's Auto & Truck Service - Citizens Energy Group	111 W Raymond St	Indianapolis	IN	46225	180	317-786-6253	Public - card key after hours	8am-5pm M-F; contact Mark Ryan at 317-927-	Q
CNG	Vectren Energy Delivery Eco-Fuel Center	1 N Main St	Evansville	IN	47711	181	812-491-4737	Public - credit card at all times	24 hours daily; also accept Vectren company c	Q
CNG	CNG Trans	2727 Brice Rd	Columbus	OH	43232	181	614-398-3401	Public - credit card at all times	24 hours daily	Q
CNG	Northville NG Fuels	7800 Colonel H Weir Cook Memo	Indianapolis	IN	46241	183	877-264-3835	Public - credit card at all times	24 hours daily; also accept EFS card	Q
CNG	Langsdale Facility - Citizens Energy Group	2150 Dr Martin Luther King Jr St	Indianapolis	IN	46202	184	317-927-6000	Public - card key at all times	24 hours daily; contact Mark Ryan at 317-927-	B
CNG	City of Dublin	6351 Shier-Rings Rd	Dublin	OH	43016	185	614-410-4757	Public - card key at all times	24 hours daily; call 614-659-5196 to arrange fo	Q
CNG	Henderson County	320 Williams St	Hendersonville	NC	28792	186	828-697-4809	Public - credit card at all times	24 hours daily	Q
CNG	Northville NG Fuels	1767 S Old US 41	Vincennes	IN	47591	191	877-264-3835	Public - credit card at all times	24 hours daily	Q
CNG	Quasar	6400 Maysville Pk	Zanesville	OH	43701	198	216-986-9999	Public - see hours	7am-5pm M-F, 7am-12pm Sat; also accept Qu	Q
CNG	CNG Auto Sales	600 W Church St	Newark	OH	43055	199	740-327-7255	Public - card key at all times	24 hours daily; call station to arrange for card	Q
CNG	Freedom Waste Service	10129 US Highway 62 W	Princeton	KY	42445	206	270-365-6200	Public - call ahead	7:30am-3:30pm M-F	T
CNG	City of Hickory	1441 9th Ave NE	Hickory	NC	28601	208	828-323-7573	Public - credit card at all times	24 hours daily	Q
CNG	Greer Commission of Public Works - Public Access	115 Duke St	Greer	SC	29650	215	864-449-2515	Public - credit card at all times	24 hours daily	Q
CNG	Piedmont Natural Gas - Greenville - Public Access	100 Woodruff Industrial Ln	Greenville	SC	29607	219	864-505-6448	Public - credit card at all times	24 hours daily; also accept Fleet One cards	Q
CNG	Piedmont Natural Gas - Spartanburg - Public Access	501 W Blackstock Rd	Spartanburg	SC	29301	222	864-286-7911	Public - credit card at all times	24 hours daily; also accept Fleet One cards	Q
CNG	Sunoco - Midwest Clean Fuel	2501 Lafayette Rd	Crawfordsville	IN	47933	223	765-362-4770	Public - see hours	24 hours daily	Q
CNG	CNG Auto Sales	501 N 3rd St	Coshocton	OH	43812	228	740-327-7255	Public - card key at all times	24 hours daily; call station to arrange for card	Q
CNG	PSNC Energy	121 Houston Rd	Troutman	NC	28166	231	877-776-2427	Public - credit card at all times	24 hours daily; also accept PSNC card key - c	Q
CNG	CNG Fuels Inc	6650 State Rd 38 E	Lafayette	IN	47905	235	260-229-2323	Public - credit card at all times	24 hours daily; also accept EFS and Comdata	Q
CNG	PSNC Energy	800 Gaston Rd	Gastonia	NC	28056	239	704-810-3282	Public - credit card at all times	24 hours daily; also accept PSNC card key - c	Q
CNG	City of Athens Gas Department - Public Access	1755 Trigreen Dr	Athens	AL	35611	240	256-434-6122	Public - credit card at all times	24 hours daily	Q
CNG	Piedmont Natural Gas - Winston-Salem	2300 Lowery St	Winston-Salem	NC	27101	248	864-286-7911	Public - credit card at all times	24 hours daily; also accept Fleet One cards	Q
CNG	Piedmont Natural Gas - Charlotte - Public Access Front	112 Verbena St	Charlotte	NC	28217	252	704-587-3128	Public - credit card at all times	24 hours daily; also accept Fleet One cards	Q
CNG	Piedmont Natural Gas - Charlotte - Public Access Rear	112 Verbena St	Charlotte	NC	28217	252	704-587-3128	Public - credit card at all times	7am-4:30pm M-F	Q
CNG	IGS Energy CNG Services - Bridgeport	50 Genesis Blvd	Bridgeport	WV	26330	252	877-742-4476	Public - credit card at all times	24 hours daily	Q
CNG	Davidson County	925 N Main St	Lexington	NC	27292	255	336-242-2250	Public - see hours	8:30am-4:30pm M-F	Q
CNG	Quasar	2072 Secrest Rd	Wooster	OH	44691	256	216-986-9999	Public - see hours	7am-5pm M-F, 7am-12pm Sat; also accept Qu	Q
CNG	York County Natural Gas Authority	975 W Main St	Rock Hill	SC	29730	257	803-323-5321	Public - credit card at all times	24 hours daily	B
CNG	City of Rock Hill - Public Access	757 S Anderson Rd	Rock Hill	SC	29730	259	803-325-2500	Public - credit card at all times	24 hours daily	Q
CNG	Piedmont Natural Gas - High Point - Public Access	2623 Uwharrie Rd	High Point	NC	27263	264	704-309-7536	Public - credit card at all times	24 hours daily; also accept Fleet One cards	Q
CNG	Piedmont Natural Gas - Greensboro - Public Access Front	2611 Greengate Dr	Greensboro	NC	27406	271	336-271-5030	Public - credit card at all times	24 hours daily; also accept Fleet One cards	Q
CNG	Piedmont Natural Gas - Greensboro - Public Access Rear	2611 Greengate Dr	Greensboro	NC	27406	271	336-271-5030	Public - credit card at all times	7am-4:30pm M-F	Q

Public CNG Stations .
Sorted by Miles to Berea, Kentucky
US Department of Energy

Fuel	Station Name	Street Address	City	State	ZIP	Miles Berea	Station Phone	Groups With Access Code	Access Days Time	Quick/Time
CNG	Clean Energy - Stark Area Regional Transit Authority	1600 Gateway Blvd SE	Canton	OH	44707	272	562-493-2804	Public - credit card at all times	24 hours daily	Q
CNG	Cullman - Jefferson Gas	1550 County Rd 715	Hanceville	AL	35077	276	256-737-1600	Public - credit card at all times	24 hours daily	Q
CNG	Clean N' Green - Waste Management	200 Rangos Ln	Washington	PA	15301	283	724-222-3272	Public - credit card at all times	24 hours daily; also accept Clean N' Green ca	Q
CNG	Clean Energy - Cleveland Hopkins International Airport	18899 Snow Rd	Brook Park	OH	44017	296	562-493-2804	Public - credit card at all times	24 hours daily	Q



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16. Please provide the name, owner, operator and location of all CNG fueling stations within the following driving miles in proximity to Delta's proposed CNG fueling stations that are open to the private for refueling:
- a. 50 miles,
 - b. 100 miles,
 - c. 150 miles,
 - d. 200 miles,
 - e. 250 miles, and
 - f. 300 miles.

Response:

Delta does not have information responsive to this question.

Sponsoring Witness:

John B. Brown



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17. Reference the answer to the prior question. Identify the private enterprises or customers that are eligible for refueling at those CNG stations.

Response:

See the response to Item 16.

Sponsoring Witness:

John B. Brown



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18. Please state the following for any and all transportation vehicles that run exclusively on natural gas and are commercially available for sale to the general public:
- a. Make,
 - b. Model,
 - c. Year of manufacture,
 - d. Engine size,
 - e. Fuel tank size,
 - f. Difference in price of the vehicle versus the same vehicle with the above characteristics which operates only on:
 - i. Gasoline, or
 - ii. Diesel,
 - g. Difference in torque of the vehicle versus the same vehicle with the above characteristics listed as a. through e. but operates on:
 - i. Gasoline, or
 - ii. Diesel.

Response:

Delta will only be purchasing and utilizing dual fuel vehicles.

- a.-c. Honda currently produces a car (Honda Civic) dedicated to natural gas only.
- d.-g. Delta does not have that information.

Sponsoring Witness:

Jonathan W. Morphew



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19. Please provide the number of natural gas filling stations in the Commonwealth of Kentucky that are open to the general public.

Response:

See the response to Item 15.

Sponsoring Witness:

John B. Brown



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20. Please provide the specific locations for each and every natural gas filling station in the Commonwealth of Kentucky that are open to the general public.

Response:

See the response to Item 15.

Sponsoring Witness:

John B. Brown



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21. Please provide the number of certified mechanics in the Commonwealth of Kentucky who are qualified to repair a vehicle that:
- a. Operates exclusively on natural gas, and
 - b. Operates as a dual fueled vehicle.

Response:

- a. & b. Delta does not have information responsive to this question.

Sponsoring Witness:

Jonathan W. Morphew



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22. Please provide the location of each and every certified mechanic in the Commonwealth of Kentucky identified in the prior question.

Response:

Delta does not have information responsive to this question.

Sponsoring Witness:

Jonathan W. Morphew



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23. Please provide a listing of each and every local, state or federal agency, department, cabinet or other governmental authority which will have some level of oversight of the fueling stations proposed by Delta.

Response:

At this time, Delta believes that the following agencies, departments, cabinets or governmental authorities may have some level of oversight over the proposed CNG Station: Kentucky Public Service Commission, Berea Planning Commission, Kentucky Revenue Cabinet, Kentucky Department of Agriculture, Kentucky Department of Housing, Buildings & Construction, Kentucky Department for Environmental Protection, Kentucky Labor Cabinet, and the Kentucky State Fire Marshall.

Sponsoring Witness:

Counsel



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24. For each governmental entity identified in the above question, please provide the following:
- a. Every law, rule, regulation, code, ordinance, or other legal authority that the governmental entity can exercise against or over Delta.
 - b. Every permit, license, application or otherwise that Delta must obtain to own and operate a natural gas fueling station for the public's use.
 - c. Any penalties, charges, liens, or other costs to which Delta may be exposed to with regard to any failure to comply with, or violation of, any of the authorities listed in subpart a. of this application.

Response:

All of the information requested in Item 24 is in the public record and is as available to the Attorney General as it is to Delta.

Sponsoring Witness:

Counsel



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25. Please describe the types of safety issues that relate to a CNG fueling station facility that are unlike those which pertain to a traditional gasoline or diesel fueling station.

Response:

The response to PSC-1, Item 9 lists the safety issues which exist when operating a CNG station. Delta is not aware of the safety issues specific to gasoline or diesel fueling stations.

Sponsoring Witness:

Jonathan W. Morphew



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26. Please describe any and all differences involved in fueling a vehicle with CNG versus diesel or gasoline, including the following:
- a. Fueling time,
 - b. Safety issues, whether at the pump or at the facilities,
 - c. Additional measures, whether utilization of the fueling pump or otherwise, necessary for the public customer,
 - d. Any and all other issues.

Response:

- a. Requires the same amount of time as fueling with gasoline or diesel.
- b. See response to PSC-1 Item 9.
- c. Delta does not understand what information is sought by this question and therefore has no knowledge of any additional measures that are necessary.
- d. Not applicable

Sponsoring Witness:

Jonathan W. Morphew



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27. Please distinguish a liquefied petroleum gas (LPG) fueling station from a CNG fueling station by addressing the following:
- a. Any and all applicable law,
 - b. Chemical properties of LPG versus CNG (including molecular composition, BTU content, gaseous versus liquefied state, volatilization point, complications or ease in fueling, user safety, etc.)
 - c. Safety issues,
 - d. Facilities (as in setback requirements for the equipment, including, but not limited to compressors, holding tanks, public fueling pumps, etc.),
 - e. Vehicular access to the public,
 - f. Other issues.

Response:

a-f Delta has not researched liquefied petroleum gas (LPG) fueling stations.

Sponsoring Witness:

John B. Brown



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28. Please describe any safety issues related to running a natural gas pipeline to a CNG fueling station versus running a natural gas pipeline to any other facility or structure in Delta's current distribution system.

Response:

The safety issues are the same.

Sponsoring Witness:

Jonathan W. Morphew



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29. Does Delta contemplate installing a liquefied natural gas fueling station for the public use in the future?

Response:

Delta is not presently contemplating installing a liquefied natural gas fueling station for the public use.

Sponsoring Witness:

John B. Brown



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30. Has the Applicant contacted the Commonwealth's State Fire Marshal's Office regarding the proposed CNG facility?

Response:

No.

Sponsoring Witness:

Jonathan W. Morphew



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31. Describe in detail the plans for the construction of the fueling station. Provide the following:
- a. A complete architectural rendering,
 - b. A complete set of architectural blueprints, depicting all fixtures, appurtenances, supporting building(s), supporting equipment (including compressors, safety equipment, etc.) utility connections, etc.

Response:

- a. & b. Delta cannot provide this information at this time. This information will be provided by the vendor when the contract is awarded and upon receiving authorization from the Public Service Commission to begin the project.

Sponsoring Witness:

Jonathan W. Morphew



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32. In addition to the prior question, answer the following:
- a. Will it be a standalone structure?
 - b. Will it be built and attached a traditional diesel and gasoline fueling station?
 - i. If so, will it be isolated, as in fenced off? If yes, explain in detail.
 - ii. Describe in detail any and all changes and/or modifications that the CNG facilities will be required of a traditional fueling station.
 - iii. If the CNG facilities will not be built on traditional diesel and gasoline fueling station, why not?
 - c. How will it be operated and maintained?
 - d. If and when CNG sales are offered to the public, please explain in detail how those services will be extended for delivery and payment (i.e. staffing, payment options, number of pumps, etc.).

Response:

- a. Yes.
- b. No. (i) Not applicable; (ii) not applicable; (iii) There is no traditional diesel and gasoline fueling station at the location proposed for Delta's CNG Station.
- c. Delta personnel will operate and maintain the station.
- d. The station will be available for service 24 hours a day, 7 days a week, 365 days a year. There will be two dispensers capable of fueling up to three autos and one commercial vehicle simultaneously. The station will be a "Self Serve" station, operated by credit card only. It will not require Delta personnel on site for operation.

Sponsoring Witness:

Jonathan W. Morphew



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33. Please reference the testimony in general of John B. Brown, CFO, Treasurer and Secretary of Delta. Identify any and all certifications that he has in operating and running a CNG fueling station.

Response:

None. Delta is not aware of any available certifications applicable to a CFO, Treasurer or Secretary of a company owning and operating a CNG fueling station.

Sponsoring Witness:

John B. Brown



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34. Please reference the testimony of John B. Brown at page 2, Has Delta ever requested from the Commission approval for a tariff for CNG vehicles?

Response:

Delta has not requested from the Commission approval for a tariff strictly for CNG vehicles. Our present tariffs can be applied to CNG vehicles or stations. See the response to PSC-1 Item 6 for the challenges in applying our present tariffs for the resale of natural gas as a motor vehicle fuel.

Sponsoring Witness:

John B. Brown



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35. Please reference the testimony of John B. Brown at page 2, lines 21-22. Admit or deny that the cost for a dual fueled vehicle (whether diesel or gasoline) is more expensive than a diesel or gasoline vehicle, based on the same year, make, model and engine size.

Response:

See the response to PSC-1, Item 4.

Sponsoring Witness:

Matthew D. Wesolosky



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36. Please reference the testimony of John B. Brown at page 2, lines 21-22. Please explain in detail the witnesses' assertion that its customers can "take advantage of compressed natural gas as a more cost effective transportation fuel."
- a. Does this assertion infer that the CNG vehicle owner will experience lower costs in operating the vehicle?
 - b. If so, explain in complete detail the following:
 - i. Estimated cost for fuel over the expectant life of the vehicle,
 - ii. Cost for operations, maintenance and repair over the expectant life of the vehicle,
 - iii. Costs for insurance,
 - iv. Any other costs not listed above.

Response:

- a. This statement refers to the fact that CNG is less expensive per gallon equivalent than gasoline or diesel. See Brown Testimony Exhibit II page 30 "The Economic Advantages" and Exhibit III page 15 "2.3 The Fuel Price Paradigm – Historical Price Differentials." Since 2000, the retail price difference between gasoline and CNG at refueling stations has averaged around \$0.71 per gasoline gallon equivalent.
- b. Delta has not estimated these amounts.

Sponsoring Witness:

John B. Brown



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37. Reference the prior question. Provide any analyses, reports, studies, etc. that definitively demonstrates that natural gas is more cost effective as a transport fuel. Information should include, at a minimum, the purchase price/cost for a CNG vehicle versus a non-CNG traditional vehicle, a comparison for the next ten (10) years (or for as many years as available) of the projected cost for natural gas versus diesel and gasoline, and the estimated year for breakeven point for the cost for the purchase of the vehicle for the customer given the price for the fuels in the ten (10) period.

Response:

Delta has no such analyses, reports, studies, etc. other than the exhibit referred to in response to Item 36.

Sponsoring Witness:

John B. Brown



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38. Please provide the projected cost for natural gas, gasoline (RBOB), and diesel for as many years as available from the EIA, Delta's own forecasts, and any other forecasts relied upon by Delta in this application.

Response:

Delta did not rely on forecasts from the EIA or other entities to develop this application. Exhibit III of the Brown testimony includes forecasted pricing for natural gas and gasoline.

Sponsoring Witness:

Matthew D. Wesolosky



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39. Please reference the testimony of John B. Brown at pages 2 and 3. Provide any and all information Delta reviewed, analyzed, or studied regarding the “two cities in Kentucky [that] have taken the lead in opening stations in the state” regarding CNG facilities for fueling vehicles for the public use. (See also page 6 at lines 12 – 15 regarding the “Carrollton CNG station,” The City of Somerset Fuel Center and Public CNG refueling at Waste Management of Kentucky in Louisville.”)
- a. List the following for “the two other cities”:
- i. The names of the cities,
 - ii. The number of the CNG facilities each facility operates,
 - iii. The location of the facilities,
 - iv. The types of customers (as in general public, private enterprises (with names for each and every one)),
 - v. The numbers, on a daily, weekly, monthly and yearly basis that fuel at each location,
 - vi. The volume of CNG that is dispensed at each and every location on a daily, weekly, monthly and yearly basis,
 - vii. The provider of CNG to each location,
 - viii. The number and types of safety incidents for each location,
 - ix. The number and types of any violation of law, such as failure(s) to issue permits, failure(s) to obtain permits, etc. for each location,
 - x. List any financial penalties, fines or costs assessed for each location associated with any violation in questions vii. and viii. asked above,
 - xi. The total net profit achieved to date for each city for each location as well as collectively for each city, and
 - xii. Whether each city obtained a grant or other financial incentive from the Commonwealth or the Federal government.

Response:

i-iii Delta is aware of only two cities, Carrollton and Somerset, that currently operate public CNG stations in Kentucky. Each city operates one station. See the response to Item 15 for the addresses of these stations.

iv-xii Delta does not have the information responsive to these questions.

Sponsoring Witness:

John B. Brown



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40. Reference the prior question. If the aforementioned facilities are not for the public's use, provide all of the same the information as it relates to private use.

Response:

See the response to Item 39.

Sponsoring Witness:

John B. Brown



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41. Describe any and all differences that Delta would experience if it is granted the application versus those of “the two cities.” The answer should list any legal requirements, financial requirements, etc.

Response:

Delta believes that the most significant difference in legal requirements when comparing the two cities to Delta is the fact that the cities are not subject to the jurisdiction of the Kentucky Public Service Commission and Delta is subject to such jurisdiction. In addition, Delta, unlike the cities, does not have the ability to raise funds to be utilized for the CNG Station through taxation.

Sponsoring Witness:

Counsel



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42. Please reference the testimony of John B. Brown at page 3. The date of the article, attached as Exhibit I, is 11 December 2012. Provide any updates to the information if it exists.

Response:

According to AltFuelPrices.com, there are currently 45 (Exhibit I) public filling stations in Utah selling CNG at a gasoline gallon equivalent ranging from \$1.49 to \$2.09 (Exhibit II).

Utahgasprices.com shows average current gasoline price in Utah to be \$3.00 per gallon (Exhibit III).

Sponsoring Witness:

John B. Brown

[Stations](#) > [Compressed Natural Gas \(CNG\)](#)

Compressed Natural Gas (CNG) stations and prices for the USA, by state

Alt Fuel Prices.com found 51 states with public Compressed Natural Gas (CNG) stations (748 stations total). They are all listed below, with the number of stations in each state given in parentheses. Click on a state name to see the stations in that state.

We also found that there are 13409 publicly available alternative fuel stations in the USA. [Click here to see a map with all types of alternative fuel stations.](#)

States with Compressed Natural Gas (CNG) stations

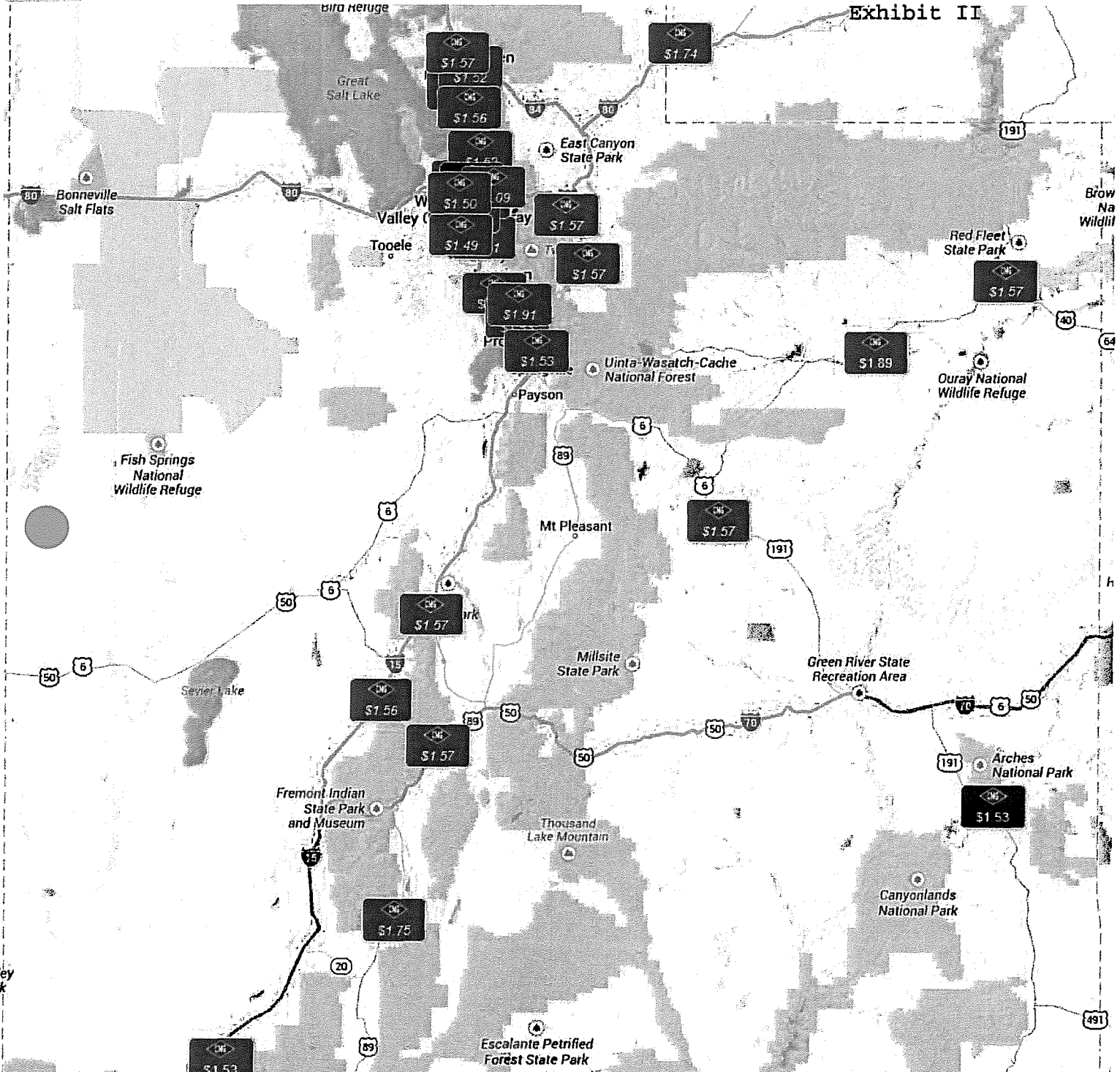
(1)	Alaska (1)	Alabama (5)	(1)
Arkansas (6)	(1)	Arizona (10)	California (170)
Colorado (28)	Connecticut (8)	Delaware (1)	Florida (14)
Georgia (10)	Iowa (3)	Idaho (4)	Illinois (12)
Indiana (14)	Kansas (3)	Kentucky (3)	Louisiana (15)
Massachusetts (12)	(1)	Maryland (2)	Maine (1)
Michigan (17)	Minnesota (6)	Missouri (5)	Mississippi (4)
North Carolina (25)	Nebraska (5)	New Hampshire (1)	New Jersey (6)
New Mexico (7)	Nevada (6)	New York (45)	Ohio (14)
(2)	Oklahoma (79)	Oregon (3)	Pennsylvania (31)
Rhode Island (3)	South Carolina (5)	Tennessee (8)	Texas (40)
Utah (45)	Virginia (6)	Vermont (1)	Washington (7)
Wisconsin (41)	West Virginia (3)	Wyoming (7)	

About AltFuelPrices.com

AltFuelPrices.com was founded in 2007 to facilitate finding Alternative Fuel stations and prices. We are a community of users dedicated to Alternative Fuel. Pricing data is obtained from both station operators and station users. We hope you find this service useful, and that it makes your transition to Alternative Fuel that much easier!

Sitemap

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Legend: Station operational | Operational, price older than 30 days | Non-operational

Prices and station status are updated by people like you. Click on a price icon for more information!

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UtahGasPrices.com



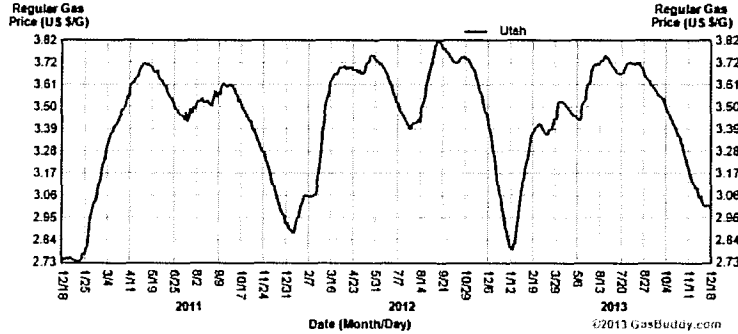
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[Search Gas Prices](#) | [Report Gas Prices](#) | [Gas Price Heat Map](#) | [Trip Cost Calculator](#) | [Gas Price Charts](#) | [Fuel Logbook](#) | [Master Station List](#)

Historical Price Charts

Quick charts: [1 Month](#) | [3 Month](#) | [6 Month](#) | [9 Month](#) | [1 Year](#) | [18 month](#) | [2 Years](#) | [3 Years](#) | [4 Years](#) | [5 Years](#) | [8 Years](#) | [9 Years](#) | [10 Years](#) | [11 Years](#)

36 Month Average Retail Price Chart



[Add this chart to your website](#) [Link to this Chart](#)

Chart Settings

Area 1:

Area 2:

Area 3:

Time Period:

Show Crude Oil Price

[US \\$/G](#) | [Canadian c/L](#)

Get Gas Price Data

- Historical gas price data (2001 - Present)
- Zip, County, Metro, State, Nationwide Averages
- Instant access to your data

[Get Historical Gas Price Data](#)

Step One - Select a single city in order to identify price trends or to identify the historical price most accurately. Select multiple cities to compare pump prices between cities.

Step Two - Selection of time duration will define how long into history the prices will be displayed. In some cities only limited price history information is available and in those cases the line will be flat for extended periods.

Step Three - When comparing US cities to Canadian cities you have a choice of price units. The standard unit of measure in the US is dollars per gallon and in Canada the standard is cents/liter. Comparison of US and Canadian cities is done using recent currency exchange rates and uses the conversion factor of 1 US gallon being equal to 3.78 liters. For simple plotting of US cities use dollars per gallon (\$/G) and for simple plotting of Canadian cities use cents/liter (c/L).

Step Four - Click the "Create Chart!" button to create the chart.

"Consumers working together to save on gas"

Gas Prices

- Search Gas Prices
- Report Gas Prices
- Trip Cost Calculator
- Map Gas Prices
- Gas Price Charts
- Average Gas Prices by State
- Fuel Logbook
- Master Station List

Forums

- Message Forum
 - Favorite Topics
 - Browse Other Forums
 - Manage Favorite Topics
 - Manage Ignored Members
- Community
- My Point Statistics

Points & Prizes

- Prize Give-away
- Recent Prize Winners
- All Time / 30 Day Leaders
- Half-Year Leaders
- Consecutive Day Leaders
- Utah Points Leaders
- How to Earn Points

Awards



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43. Please reference the testimony of John B. Brown at page 3. Admit that the authorization for a public utility in Utah to provide CNG facilities was done pursuant to the authority by specific legislative action passed in 2009.
- a. Is Delta aware of the reason(s) for Utah passing the legislation in Utah?

Response:

Yes. Delta understands that the 2009 legislation was passed in Utah primarily due to the fact that clean air is a priority of the residents and leadership of Utah. They were willing to subsidize the initial building of CNG infrastructure due to their belief that all residents of Utah benefit from cleaner air.

Sponsoring Witness:

John B. Brown



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44. Please reference the testimony of John B. Brown at page 4, lines 25 -27. At what year does Delta forecast, project or otherwise believe that the CNG stations “will bring in more revenues than expenses incurred?”

Response:

See the response to PSC-1, Item 10.

Sponsoring Witness:

Matthew D. Wesolosky



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45. Please reference the testimony of John B. Brown at page 5, lines 5 – 6. Provide all analyses, reports or studies upon which Delta relied with its statement that the “exhaust emissions from natural gas vehicles are much lower than of gasoline and diesel vehicles.”

Response:

Brown Exhibit I CNG “would be more environmentally friendly than traditional petroleum burning engines”

Brown Exhibit II page 30 “The Emissions Equation”

Brown Exhibit III page 2 “In general, states with policies to promote reduction in greenhouse gases and other emissions may be more likely to welcome rate-basing NGV vehicles as a means of supporting their emissions policies.”

Brown Exhibit III page 13 “Reductions in life cycle emissions with use of NGV compared to conventional fuels.”

In addition, on page 5 of Mr. Brown’s Direct Testimony, Delta listed several websites providing information about natural gas vehicles. See the exhibits attached to this response for information from those websites regarding emissions.

Exhibit I – U S Department of Energy
Exhibit II – Natural Gas Vehicles for America
Exhibit III – Kentucky Clean Fuels Coalition
Exhibit IV – America’s Natural Gas Alliance
Exhibit V – CNG Now

Sponsoring Witness:

John B. Brown

U.S. Department of Energy - Energy Efficiency and Renewable Energy
Alternative Fuels Data Center

Natural Gas Benefits and Considerations

Compressed and liquefied natural gas are clean, domestically produced alternative fuels. Using these fuels in natural gas vehicles increases energy security and can lower emissions. Using [renewable natural gas](#) provides even more benefits. Like any alternative fuel, there are some considerations to take into account when contemplating the use of CNG or LNG.

Energy Security

In 2011, the United States imported about 45% of the petroleum it consumed, and transportation accounted for more than 70% of total U.S. petroleum consumption. With much of the world's petroleum reserves located in politically volatile countries, the United States is vulnerable to supply disruptions. However, because U.S. natural gas reserves are abundant, this alternative fuel can be domestically produced and used to offset the petroleum currently being imported for transportation use.

Vehicle Performance


[Natural gas vehicles](#) (NGVs) are similar to gasoline or diesel vehicles with regard to power, acceleration, and cruising speed. The driving range of NGVs is generally less than that of comparable gasoline and diesel vehicles because, with natural gas, less overall energy content can be stored in the same size tank as the more energy-dense gasoline or diesel fuels. Extra natural gas storage tanks or the use of LNG can help increase range for larger vehicles.

In heavy-duty vehicles, dual-fuel, compression-ignited engines are slightly more fuel-efficient than spark-ignited dedicated natural gas engines. However, a dual-fuel engine increases the complexity of the fuel-storage system by requiring storage of both types of fuel.

Lower Emissions

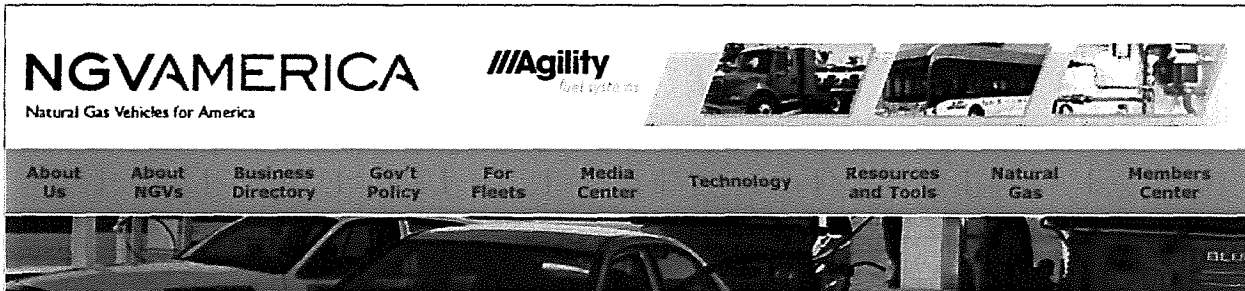
Compared with vehicles fueled by conventional diesel and gasoline, natural gas vehicles can produce lower levels of some [emissions](#). And because CNG fuel systems are completely sealed, CNG vehicles produce no evaporative emissions.

Infrastructure and Vehicle Availability

A wide variety of new, heavy-duty natural gas vehicles are available from U.S. original equipment manufacturers (OEM). For options, see the [Heavy-Duty Vehicle and Engine Search](#). The number of light-duty natural gas vehicles from original equipment manufacturers are limited but growing. For availability see the [Light-Duty Vehicle Search](#) or [Clean Cities 2013 Vehicle Buyer's Guide](#) .

Fleets and consumers also have the option of economically and reliably converting existing gasoline or diesel vehicles for natural gas operation using qualified system retrofitters. It is critical that all vehicle and engine [conversions](#) meet the emissions and safety [regulations](#) and standards instituted by the U.S. Environmental Protection Agency, the National Highway Traffic Safety Administration, and state agencies like the California Air Resources Board.

Although the United States has an extensive natural distribution system in place, vehicle fueling infrastructure is limited. Therefore, fleets may need to install their own [natural gas infrastructure](#), which can be costly. Finding partners who will commit to use the infrastructure can improve the payback period.



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- ▶ **About NGVs**
- For Consumers
- Converting your vehicle
- Available Vehicles and Engines
- Find a fueling location
- NGVs and the Environment**

NGVs and the Environment

Vehicle emissions contribute to two significant problems facing our country today: urban air pollution and climate change. A change must be made to ensure the health of our communities today and the health of our environment tomorrow. Fortunately, clean-burning natural gas is a proven and increasingly available vehicle fuel that can significantly improve local air quality and reduce greenhouse gases. Read on to learn why natural gas is the right alternative for our health and our environment.

Overview

- Natural gas is the cleanest burning alternative transportation fuel commercially available today.
- Natural gas can reduce greenhouse gas emissions by 20%–30% when compared to diesel and gasoline, according to studies by the California Air Resources Board (CARB) and other organizations.
- Medium- and heavy-duty natural gas engines retrofitted to repower existing fleets were the first engines to satisfy the U.S. Environmental Protection Agency's (EPA's) demanding 2010 emission standards for nitrogen oxides.
- The light-duty Honda Civic Natural Gas has been awarded the title "Greenest Vehicle" for eight consecutive years by the American Council for An Energy-Efficient Economy (ACEEE).
- Natural gas primarily consists of methane (around 90%), with small amounts of ethane, propane, and other gases. Methane is lighter than air and burns almost completely, creating carbon dioxide and water as byproducts.
- Natural gas rises and disperses quickly, so in the event of a leak or emergency venting, surrounding ecosystems and water systems are not threatened.

Emission Benefits

Here is a look at the emission benefits of a number of natural gas vehicles (NGVs), ranging from light-duty passenger vehicles to heavy-duty fleet vehicles. The charts below provide an easy look at the emission benefits of various NGVs compared to older in-use vehicles and to new diesel or gasoline vehicles.

The oldest production NGV is the Honda Civic Natural Gas (formerly the Civic GX). The compressed natural gas (CNG) powered Civic is recognized by the EPA as the cleanest commercially available internal-combustion vehicle on earth. It is rated by the California Air Resources Board to meet the stringent AT-PZEV standard, and it has also been awarded the title "Greenest Vehicle" for eight consecutive years by the American Council for An Energy-Efficient Economy (ACEEE).

Compared to its gasoline-burning counterpart, the Civic Natural Gas produces 95% fewer emissions of non-methane hydrocarbons and 75% fewer emissions of nitrogen oxides—emissions that contribute to ozone depletion. Most available light-duty NGV models have been certified to meet the Federal Tier 2, Bin 2 standard (only Bin 1, which requires zero emissions, is more demanding).

Honda is not the only company producing low-emission NGVs. Around 50 different manufacturers in the U.S. produce 100 models of light-, medium-, and heavy-duty natural gas vehicles and engines. Many of these manufacturers specialize in replacing fleet vehicles that run on gasoline or diesel—such as school buses, waste collection trucks, and delivery vans—with those that run on CNG. These new CNG fleet vehicles have the greatest emission benefits because they spend much more time on the road than non-fleet vehicles, are more fuel efficient than older fleet vehicles, and generally operate in more densely populated urban areas.

While new natural gas fleets will enjoy the most significant emission reductions, another

effective strategy for reducing emissions is to repower or retrofit in-use medium- and heavy-duty vehicles with natural gas engines. These engines have been certified to extremely low levels and were first to satisfy the EPA's demanding 2010 emission standards for nitrogen oxides.

In the coming years, diesel engine manufacturers are expected to rely on credits as emission standards become more demanding. CNG engine manufacturers, on the other hand, are expected to continue to meet emission standards, and stay ahead of them, as new fuel efficiency strategies are researched and developed.

According to Argonne National Labs, new natural gas vehicles provide the following benefits compared to in-use gasoline and diesel fueled vehicles.

Vehicle Type	NMHC	CO	NOx	PM2.5
LD NGV	75%	74%	94%	3%
Heavy-duty NGV Transit Bus	-5%	90%	75%	68%
Heavy-duty NGV School Bus	58%	90%	76%	77%

The charts below are based on information prepared for the U.S. Department of Energy and California Energy Commission. The estimates compare new natural gas vehicles with new gasoline and diesel powered vehicles. The emission results include criteria pollutants and greenhouse gas emissions.

Emission Reductions of Light-Duty Vehicles (full fuel cycle analysis)	TIAX - CEC Report	GREET Model
Volatile Organic Compounds (VOC)	55%	45%
Carbon Monoxide (CO)	11%	1%
Nitrogen Oxide (NOx)	54%	20%
PM 10	42%	9%
Air toxics*	99 - 100%	NA
Green House Gases (GHG)	30%	15%
Petroleum	100%	99%

Emission Reductions of Heavy-Duty Buses (full fuel cycle analysis)	TIAX - CEC Report
Volatile Organic Compounds (VOC)	46%
Carbon Monoxide (CO)	6%
Nitrogen Oxide (NOx)	8%
PM 10	27%
Air toxics*	99-100%
Green House Gases (GHG)	23%
Petroleum	100%

*For most air toxics

Greenhouse Gas Emissions in Greater Detail

Natural gas contains less carbon than any other fossil fuel and thus produces fewer carbon dioxide (CO2) emissions. While NGVs do emit methane, another principle greenhouse gas, the increase in methane emissions is more than offset by a substantial reduction in CO2 emissions. The California Air Resources Board (CARB) has conducted extensive analysis on this issue. It concludes that burning CNG produces about 68 grams of carbon dioxide equivalent emissions per mega joule (MJ) (this includes all methane emissions), and that burning gasoline and diesel fuel produce approximately 94-95 grams of CO2 equivalent emissions per MJ. These comparisons are well documented by CARB and are based on well-to-wheel analysis.

The conclusion of recent studies, such as those conducted by CARB, is that natural gas can reduce greenhouse gas emissions by 20%-30% compared to diesel and gasoline. In the future, these benefits should increase as natural gas supplies are blended with renewable natural gas. Renewable natural gas, commonly referred to as biomethane, is the gas

captured from the natural decay of organic materials. Many landfills and waste treatment facilities are beginning to capture biomethane and to incorporate it into the natural gas supply network. Renewable natural gas reduces carbon emissions by almost 90% when compared with diesel and gasoline.

CARB LCFS Carbon Intensity Reductions for Natural Gas:

Light-Duty Vehicles	Carbon Intensity of Fuel gCO2e/MJ	EER	Total	Reductions Relative to Gasoline
Gasoline (baseline - CA RFG w/ EtOH mix)	95.86	1	95.9	NA
CNG ICE	68	1	68	29%
Biomethane CNG ICE	11.26	1	11.26	89%
CNG 20% Biomethane ICE	56.602	1	56.6	41%

Heavy-Duty Vehicles	Carbon Intensity of Fuel gCO2e/MJ	EER	Total	Reductions Relative to Gasoline
Diesel Fuel	94.71	1	94.7	NA
CNG ICE	68	0.9	75.6	20%
Biomethane CNG ICE	11.26	0.9	12.38	87%
CNG 20% Biomethane ICE	56.602	0.9	62.9	34%

Additional Benefits

After the Deepwater Horizon oil spill in the gulf of Mexico in 2010, more Americans than ever are concerned about the impact an oil spill could have on our country's environment, health, and economy. There have been enough catastrophic failures in oil's long history to demonstrate that it is not a question of if another spill will occur but when another spill will occur. Natural gas, on the other hand, rises and disperses quickly. In the event of a leak or emergency venting—whether it's at the wellhead or along a distribution line—surrounding ecosystems and water systems are not threatened. Every gasoline gallon equivalent (GGE) of natural gas used as a vehicle fuel is one less gallon of gasoline that would otherwise be brought to market.



(<http://kentuckycleanfuels.org>)

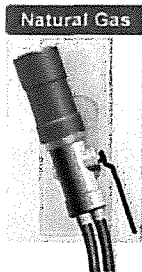
Linking Kentucky's advanced transportation technology industry since 1993.



(<https://twitter.com/kycleanfuels>)

Home (<http://kentuckycleanfuels.org>) ▶ Natural Gas

Natural Gas



The natural gas fuel industry in Kentucky was established in the 1990s. A convergence of market variables such as the availability of higher quality vehicles and equipment, and reliable infrastructure has developed the industry into the fastest growing alternative fuel market in the Commonwealth. CNG vehicles are included on the Commonwealth of Kentucky's state bid list, and the state also offers subsidies for CNG infrastructure.

Natural gas is readily available through the utility infrastructure. This clean-burning alternative fuel can be used in vehicles as either compressed natural gas (CNG) or liquefied natural gas (LNG). Both are clean-burning, domestically produced, relatively low priced, and widely available. Because of the gaseous nature of this fuel, it must be stored onboard a vehicle in either a compressed gaseous (CNG) or liquefied (LNG) state. Natural gas is sold in units of diesel or gasoline gallon equivalents (GGEs) based on the energy content of a gallon of gasoline or diesel fuel.

Basics of Natural Gas



Find information about compressed natural gas (CNG) and liquefied natural gas (LNG), including production and distribution, research and development, and related links.

(http://www.afdc.energy.gov/fuels/natural_gas_basics.html)

Where to purchase Natural Gas in Kentucky



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Blog

Natural Gas Vehicles, Fueling Stations Becoming Increasingly Available to Public



by ANGA, posted on Wednesday, October 23, 2013

Following GM's recent [announcement](#) that it will begin manufacturing a Chevrolet Impala fueled by both gasoline and compressed natural gas (CNG), and Ford's [announcement](#) it will sell a CNG version of its F-150 truck, consumers will soon have more choices if they want to take advantage of clean and affordable natural gas for their transportation needs. (You can see some more alternatives at [AddNaturalGas.org](#).)

The increased emphasis on CNG vehicles follows a [Memorandum of Understanding](#) (MOU) signed by 16 state governors asking manufacturers to develop natural gas vehicles for fleet use and to meet consumer demand.

"Abundant, affordable, clean-burning natural gas presents a tremendous opportunity for America to realize an energy future using domestic resources to fuel our nation's transportation needs," the governors wrote in the MOU. "To that end, we are committed to explore the aggregation of our annual state fleet vehicle procurements to provide an incentive to manufacture affordable, functional natural gas vehicles."

In turn, as more CNG vehicles hit the roads, an increasing number of public CNG stations are opening to cater to consumers. There are currently 605 public CNG stations across the country, according to the U.S. Department of Energy. And since 2009, there has been an 11 percent annual increase in the number of public stations, according to the Drive Natural Gas initiative.

Don Cotton, owner of Cotton Drilling, a family owned business in Sheridan, New York, owns and operates one of those CNG stations. Cotton converted his drilling company's vehicles to CNG four years ago to decrease his fuel costs, according to [Observer Today](#). Since the conversion, the business has reported a 50 percent drop in fueling costs, which allowed Cotton to pay the costs of the conversion within a year, his son told the [Observer Today](#).

When asked why he chose to open a public CNG fueling station, Cotton said, "I've lived here in Sheridan for a while, and I've been in the natural gas business for a while, so I figured offering CNG to the public would be a good idea. People are still finding out about it since it started up last February, but it's been good business so far."

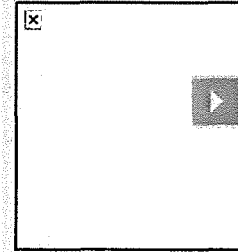
Is there a CNG-filling station near you? We want to know. Tweet at us [here](#) or drop us an email us at info@anga.us

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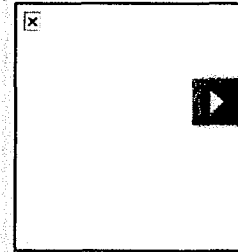
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Reduced Emissions

Using natural gas-powered vehicles can clean the air in communities across the country. From taxi fleets to school buses to private citizens' cars, natural gas provides a low-cost way to reduce emissions from the transportation sector. Heavy-duty trucks fueled by natural gas can reduce smog-causing NOx emissions by 32 percent versus conventionally fueled trucks. And light duty cars can reduce smog-causing NOx emissions by up to 70 percent.



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Clean

Care about the environment? Using CNG means releasing less pollution into the air.



Natural gas vehicles (NGVs) can have a direct, positive impact on America's air quality and environment – today. NGVs in urban environments are a solution for meeting the Environmental Protection Agency (EPA) non-attainment measures and improving local air quality.

Emissions Reduction in Real Numbers

NGVs improve air quality through dramatic reductions in emissions, such as:

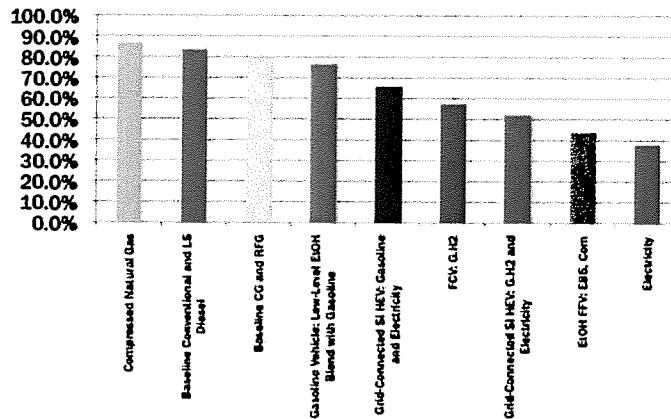
- Reducing carbon dioxide (CO₂) emissions by 20% to 30%
- Reducing carbon monoxide (CO) emissions up to 75%
- Reducing nitrogen oxide (NOx) emissions by approximately 50%
- Reducing up to 95% of particle matter (PM) emissions
- Reducing volatile organic compound (VOCs) emissions by 55%

Source: TIAX Report - *Full Fuel Cycle Assessment: Well-To-Wheels Energy Inputs, Emissions, and Water Impacts*, 08/2007 (Prepared for California Energy Commission).

Source: U.S. Dept. of Energy - Argonne National Laboratory Report: *A Full Fuel-Cycle Analysis of Energy and Emissions Impacts of Transportation Fuels Produced from Natural Gas*, 12/1999.

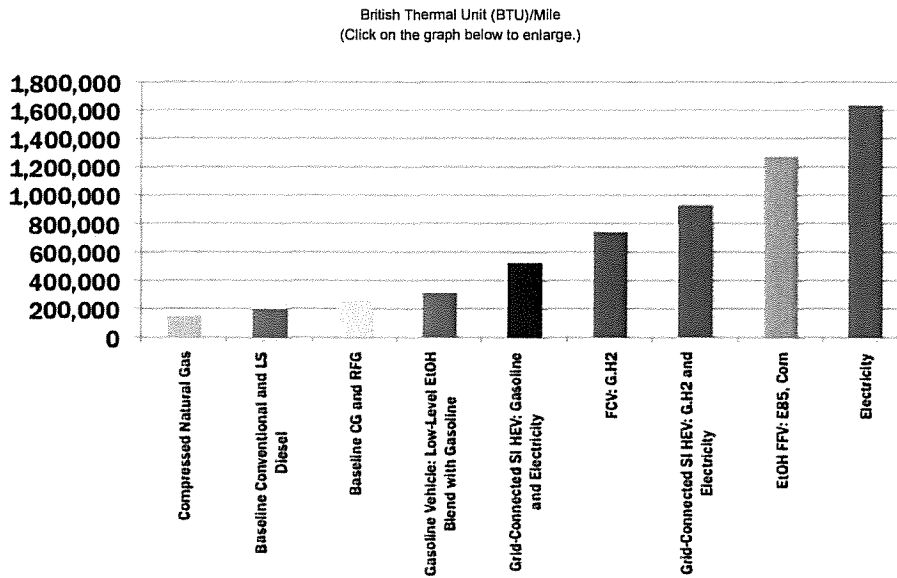
Energy efficiency of various alternative fuels

(Click on the graph below to enlarge.)



Source: The Greenhouse Gases, Regulated Emissions and Energy Use in Transportation (GREET) Model 1.0b

Water intensity of transportation fuels



Source: The Greenhouse Gases, Regulated Emissions and Energy Use in Transportation (GREET) Model 1.8b

In addition, alternative fuel vehicles such as CNGs produce little or no evaporative emissions (i.e. fumes) during fuelling and use. In gasoline vehicles, evaporative and fueling emissions can account for at least 50% of a vehicle's total emissions.

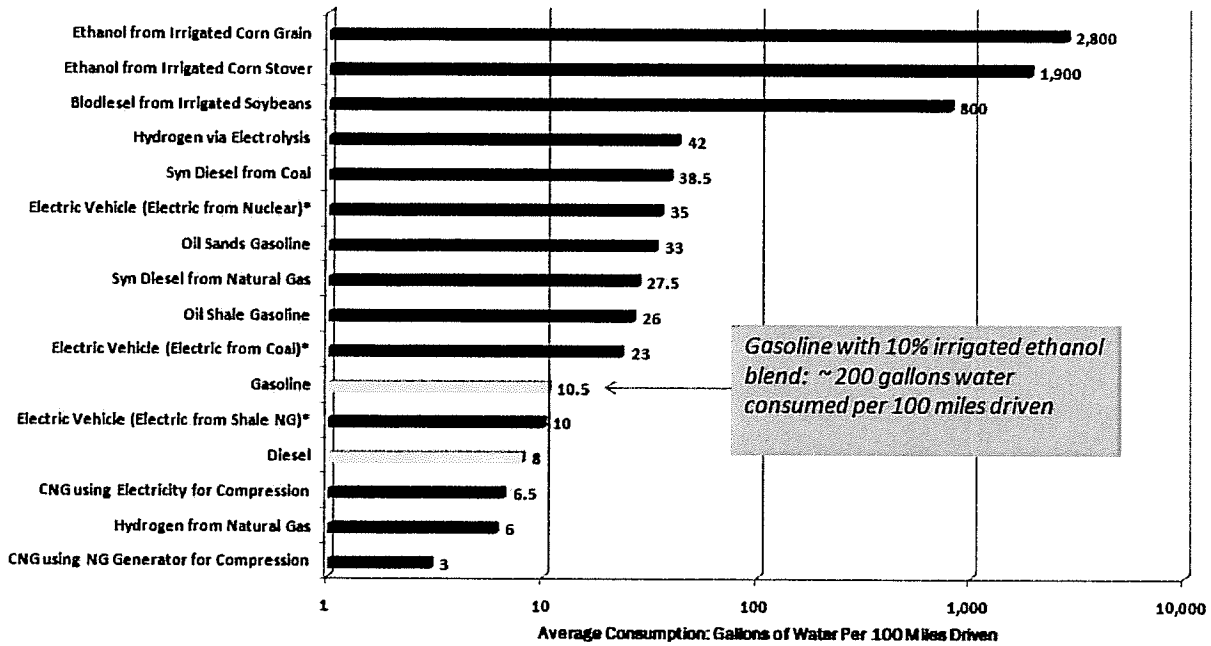
Natural gas produces lower carbon dioxide (CO₂) emissions per vehicle mile traveled. While CNG vehicles do emit methane, another principle greenhouse gas, any increase in methane emissions is more than offset by a substantial reduction in CO₂ emissions compared to other fuels.

A recent study done on behalf of the California Energy Commission concludes that CNG vehicles produce up to 29% less greenhouse gas emissions than comparable gasoline vehicles and up to 22% less than comparable diesel vehicles.

Some vehicle fuels use water in processing their raw elements for usable energy. For example, although ethanol is billed as an environmentally friendly fuel, some forms of processing involve using large amounts of water to refine it into energy. Natural gas uses far less water when it is processed, versus other transportation fuels.

Water intensity of transportation fuels

(Click on the graph below to enlarge.)



The bottom line is that natural gas-powered vehicles are dramatically better for the environment than gasoline-powered vehicles.

Source: NGVC.org: *Environmental Benefits of Natural Gas Vehicles*.



"Vehicles (such as the Honda NGV) with a SULEV, PZEV or AT PZEV emissions rating emit only two pounds of hydrocarbons over 100,000 miles of driving – that's equivalent to spilling a pint of gasoline."

- DriveClean.ca.gov

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**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

46. Please reference the testimony of John B. Brown at page 5, line 7. Provide all analyses, reports or studies upon which Delta relied with its statement that “natural gas vehicles are as safe as or safer than traditional gasoline or diesel vehicles.”

Response:

On page 5 of Mr. Brown’s Direct Testimony, Delta listed several websites providing information about natural gas vehicles. See the exhibits attached to this response for information from those websites regarding safety.

Exhibit I U.S. Department of Energy
Exhibit II Natural Gas Vehicles for America
Exhibit III America’s Natural Gas Alliance, pages 9-10
Exhibit IV CNG Now

Sponsoring Witness:

John B. Brown

U.S. Department of Energy - Energy Efficiency and Renewable Energy
Alternative Fuels Data Center

Natural Gas Fuel Safety

Like any fuel, natural gas is flammable, so the fuel storage and delivery systems for NGVs are governed by the National Fire Protection Association (NFPA). NFPA 52, the Vehicular Gaseous Fuel Systems Code, spells out specific safety requirements for natural gas vehicles and their fueling facilities. In addition NFPA 30A applies to facilities that perform maintenance and repair of natural gas vehicles; NFPA 88A applies to parking garages.

Compressed Natural Gas (CNG)

Natural gas is odorless and invisible in its natural state, but when put into the local distribution network of pipelines, chemicals (odorants) are intentionally added to give it a distinctive, pungent smell, similar to rotten eggs. Owners that notice this kind of lingering odor coming from their vehicle should close the vehicle's manual shutoff valve, if it has one. They should then contact a qualified repair facility and request guidance on how to proceed. Note that a slight odor may be detected when the fueling nozzle is being connected or disconnected during the refueling process. This is normal and should quickly dissipate when fueling has been completed.

Natural gas is lighter than air, so leaking natural gas from vehicles parked outside will generally rise and disperse safely; however, natural gas leaks in an enclosed garage could pose a danger. Owners noticing a rotten egg odor coming from their garage should keep clear of the area and contact their fleet manager and fire-safety officials.

CNG is also stored at very high pressures, presenting different safety issues than gasoline or diesel fuel tanks. When vehicles and fueling stations are operating well and are properly maintained, the high pressure gas is unlikely to present any danger to the driver of the vehicle. Repair facilities need to take precautions to secure CNG cylinders while they are being serviced, and follow standard safety procedures while working.

Liquefied Natural Gas (LNG)

LNG is a cryogenic liquid stored at about -260°F. LNG is too cold to contain odor-causing chemicals, so an LNG leak is hard to detect, which is why LNG vehicles and garages include electronic methane sensors to detect leaks. The cold natural gas vapors are also heavier than air when they initially leak from a vehicle, so they may cling to the ground, causing a potential fire hazard, as well as an asphyxiation hazard in enclosed spaces. For these reasons, gas detectors should be installed near the ground in areas where LNG or LNG vehicles are stored. LNG or LNG vehicle maintenance facilities should be equipped with both floor- and ceiling-level ventilation to exhaust any potential leaks.


LNG is also different than CNG because LNG tanks may occasionally vent off natural gas if stored unused for a long period of time. LNG tanks are typically designed to hold a full tank of LNG for a week or more without venting, but once the tank warms sufficiently that the LNG begins to vaporize, pressure will rise in the tank until the relief valve opens to vent some natural gas. For this reason, LNG vehicles need to be either parked outside or in a facility equipped with proper ventilation to safely remove any vented LNG. They should also be used in applications where the vehicles are used regularly.

Another safety concern related to LNG is due to the very cold temperatures at which it is stored. Cryogenic or freeze burns can be caused by contact with LNG liquid, LNG vapor, or cold surfaces of pipes or tanks containing LNG. While LNG refueling hoses are well-insulated and designed to avoid accidental leaks, anyone working with LNG should be aware of the hazards and, if necessary, wear protective gear. LNG fueling systems and tanks require minimal maintenance, but should be regularly inspected for leaks and to assure proper functioning of the tank's pressure gauge and LNG level indicator. For more information, see:


- NFPA 52, the Vehicular Gaseous Fuel Systems Code
- NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages
- NFPA 88A, Standard for Parking Structures
- NFPA 59A, Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG)

NGVAMERICA


Natural Gas Vehicles for America



Natural Gas fueling stations
for transportation



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About NGVs

For Consumers

Converting your vehicle

Available Vehicles and Engines

Find a fueling location

NGVs and the Environment

About NGVs

With proven reserves of domestic natural gas soaring and our dependence on foreign oil as burdensome as ever, it only makes sense to start using our clean, inexpensive, and abundant natural gas as a vehicle fuel. Natural gas vehicles (NGV) are good for our economy, our environment, and your bottom line. Whether you are an individual or a fleet manager, never before have there been so many natural gas products and services available, spurred by unprecedented industry investment and government incentives. Read on to learn more about the many benefits of NGVs.

Facts about Natural Gas Vehicles

- There are about 135,000 NGVs on U.S. roads today and more than 15.2 million worldwide.
- There are about 1,300 NGV fueling stations in the U.S., and refueling appliances are available for home use.
- In the U.S., about 50 different manufacturers produce 100 models of light, medium, and heavy duty vehicles and engines.
- Natural gas currently costs from \$1.50 to \$2.00 less per gasoline gallon equivalent (GGE).
- In the U.S. alone, NGVs offset the use of about 360 million gallons of gasoline in 2011.
- NGVs meet the strictest emission standards, including California's AT-PZEV standard.
- NGVs are as safe as or safer than traditional gasoline or diesel vehicles.

Benefits of NGVs

Natural gas is a clean alternative fuel that is both less expensive and more environmentally friendly than diesel or gasoline. Whether in the form of compressed natural gas (CNG) or liquefied natural gas (LNG), this domestically produced fuel offers many economic, environmental, and policy benefits.

Savings:

Natural gas vehicles typically cost more than gasoline or diesel vehicles. This is due to the cost of high-pressure and insulated fuel tanks, which are necessary to store CNG or LNG. However, the cost of natural gas fuel is now \$1.50 to \$2.00 less per gallon. The savings in fuel costs can translate into significant savings over the life of a vehicle, depending on fuel efficiency and the number of miles driven. The greatest savings are currently being seen in heavy duty, high mileage fleets. These vehicles consume enough fuel for owners and operators to see a pay back in as little as 18 to 24 months. As the price of fuel tanks comes down, light duty passenger vehicles will become less expensive and also will enjoy a shorter payback period.

Petroleum Displacement:

Making America less dependent on foreign oil is a national priority. President Obama has set the ambitious goal to cut net oil imports by half by the end of the decade. An important part of Obama's strategy is to invest in alternative fuels, including natural gas for vehicles. In the Blueprint for a Clean and Secure Energy Future Fact Sheet, the President outlines his commitment to

partnering with the private sector to adopt natural gas in the Nation's trucking fleet. This includes establishing "a credit for 50 percent of the incremental cost of a dedicated alternative-fuel truck for a five-year period; supporting research to ensure the safe and responsible use of natural gas; and funding to support a select number of deployment communities."

Congress also strongly supports reducing petroleum use and has passed laws that provide incentives to Americans who switch to alternative fuel vehicles. For a list of both federal and state incentives, [click here](#).

While the U.S. imports more than 47 percent of the oil it uses, 98 percent of the natural gas used in the U.S. was produced in North America. Every gallon equivalent of natural gas used in vehicles is one less gallon of petroleum that has to be imported.

Urban Emissions:

Exhaust emissions from NGVs are much lower than those from gasoline and diesel vehicles. For example, the natural gas-powered Honda Civic Natural Gas has been recognized by the U.S. Environmental Protection Agency (EPA) as the cleanest commercially available, internal-combustion vehicle. The California Air Resources Board (CARB) rated the Civic Natural Gas to meet the stringent AT-PZEV standard. In gasoline vehicles, evaporative and fueling emissions account for a significant portion of the emissions associated with operation. NGVs, on the other hand, produce little or no evaporative emissions during fueling and use.

Replacing a typical older in-use vehicle with a new NGV provides the following reductions in exhaust emissions.

- Carbon monoxide (CO) by 70 to 90 percent
- Non-methane organic gas (NMOG) by 50 to 75 percent
- Nitrogen oxides (NOx) by 75 to 95 percent
- Carbon dioxide (CO₂) by 20 to 30 percent

Natural Gas as a Transportation Fuel is Growing

- According to the American Public Transit Association, about one-fifth of all transit buses were run by compressed natural gas (CNG) or liquid natural gas (LNG) in 2012. Currently, transit buses are the largest users of natural gas for vehicles.
- The fastest growing NGV segment is waste collection and transfer vehicles. Almost 50 percent of the trash trucks purchased in 2012 are powered by natural gas.
- More than 35 airports in the U.S. have natural gas vehicles in their own fleets or have policies that encourage use by private fleets operating on premises, making this sector the third largest in vehicular natural gas use.
- The successful Clean Port Initiative in Southern California is spurring adoption of similar policies in other ports on both coasts.

NGV Global, the international NGV association, estimates there will be more than 50 million NGVs worldwide within the next 10 years, about 9 percent of the world's transportation fleets. The U.S. currently ranks 17th in the world with less than 1 percent of the NGVs in use. However, North America is expected to see some of the fastest growth due to abundant proven reserves and the low cost of domestically produced natural gas.

**U.S. and Canadian Natural Gas
Vehicle Market Analysis:**

Natural Gas Vehicle Industry Overview

Executive Summary

The opinions expressed within the Executive Summaries of Modules 1 and 2 of this market assessment are the work product of America's Natural Gas Alliance (ANGA) and participating American Gas Association (AGA) companies based upon data provided by TIAX LLC.

The Final Reports of Modules 1 through 5 are the work of TIAX LLC as a market assessment sponsored by ANGA with the support of participating AGA companies.

Executive Summary

Driving Into a Cleaner, Safer Future

America needs to increase its energy independence now

America urgently needs a new alternative energy solution. We must reduce our dependency on foreign sources of energy and implement an alternative transportation fuel that is reliable, safe, and affordable. The U.S.'s annual import bill approaches \$350 billion, more than double what the federal government spends on education.¹ The transportation sector uses the bulk of our imported oil. Vehicles consumed 4.7 billion barrels of petroleum in 2010, even more than the 4.2 billion barrels of petroleum the country imported that year.²

Increasing use of domestic natural gas as a clean alternative fuel will help prevent North America from relying on regions of the world whose interests run counter to our own. Given events in the Middle East like the Gulf War and the prolonged conflict in Iraq as well as OPEC's continual control of petroleum supplies, we can practically gauge the health of U.S./Middle East diplomatic relations by the price at the pump.

Our current transportation portfolio carries societal costs

It's not just the price at the pump that should worry us. It's also the hidden costs we don't see when we slide our credit cards across the magnetic reader. Each time a driver refuels, the indirect cost of energy security adds an additional \$0.46 per gallon or an average of \$8.31 per vehicle.³ You can see the costs of this premium in decreased national economic output, loss of national gross product, economic strain and volatility, oil supply shocks, prices spikes, supply disruption, and import costs.

Each time a driver refuels, the indirect cost of energy security adds an additional \$0.46 per gallon or an average of \$8.31 per vehicle.³

In addition, every transportation fuel carries a societal cost based on impacts from criteria pollutant emissions. Another societal cost of our transportation fuel results from GHG emissions. Monetization of these societal costs provides a means to assess the societal benefits of the alternative fuels considered. Across multiple vehicle segments, the societal costs for NGVs are lower than those for conventional transportation fuels. The net savings (of direct and societal costs) exceed \$50,000 for some high fuel use applications and are comparable to saving 15 percent of lifetime costs. The savings for other applications may be less but are still significant.

The more we increase the use of domestic natural gas, the more these societal costs can be reduced.

¹ Brian Riedel, "Federal Spending By the Numbers," June 1, 2010, <http://www.heritage.org/research/reports/2010/06/federal-spending-by-the-numbers-2010>, (October 12, 2011).

² Energy Information Administration. "Annual Energy Review." October 19, 2011.

³ U.S. EPA, NHTSA. "Final Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Regulatory Impact Analysis." EPA-420-R-10-009, p. 8-16. April 2010.

ES1 Energy Security Premium

The effect of imported overseas petroleum:

Energy Security Premium⁴ \$0.46 per gallon transportation fuel
Decreased economic output Loss of national gross product Economic strain and volatility Supply shocks and price spikes Supply disruption Import costs

ES2 Criteria Pollutants + GHG Costs

Our current total transportation portfolio bears societal costs:

Air Pollution Costs^{5-6,7,8} \$9,072 per ton NOx \$270 per ton CO \$7,401 per ton VOC \$283,274 per ton PM2.5	GHG Costs^{9,10} \$23.13 per ton
Impacts from Criteria Pollutants	Impacts from GHG Emissions

Current societal costs are estimated to add up to \$0.99 per day for each 2010 passenger car on the road.^{11,12,13,14,15,16} With an on-highway vehicle population of 255 million in the U.S., the costs related to transportation fuel pollution total upwards of \$252 million dollars a day.¹⁷

Natural gas vehicles (NGVs) have less impact on energy and the environment, and the difference is dramatic. Conventionally-powered passenger cars carry a societal cost estimated at \$5,100 per vehicle over their lifetime, while NGVs cost \$2,000 to \$2,500.

For medium-duty vans, hybrid package delivery vans, hybrid beverage trucks, transit buses, refuse haulers,

and 18-wheeled tractor-trailers using diesel the societal costs are even greater. Over the lifetime of an 18-wheeler, these costs are estimated at \$70,000. In comparison, the costs associated with an 18-wheeler using natural gas are \$21,000 to \$34,000. Regardless of a vehicle's size, the lifetime societal costs of NGVs will be lower than those of conventional vehicles.

Regardless of a vehicle's size, the lifetime societal costs of NGVs will be lower than those of conventional vehicles.

4 U.S. EPA, NHTSA. "Final Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Regulatory Impact Analysis." EPA-420-R-10-009, p. 8-16. April 2010.

5 Costs for NOx and VOCs include both direct emissions of these pollutants and their indirect emissions (as precursors to PM); all costs are given in 2010 U.S. dollars.

6 U.S. EPA, NHTSA. "Final Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Regulatory Impact Analysis." EPA-420-R-10-009, p. 7-118. April 2010.

7 TIAx communication with N. Fann, EPA Office of Air Quality Planning & Standards, August/September 2010.

8 CEC. "Reducing California's Petroleum Dependence, Appendix A: Benefits of Reducing Demand for Gasoline and Diesel (Task 1)." P600-03-005A1, p. 3-27. September 2003.

9 U.S. Government. "Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis, Under Executive Order 12866," p. 39. Interagency Working Group. February 2010.

10 U.S. EPA, NHTSA. "Final Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Regulatory Impact Analysis." EPA-420-R-10-009, p. 7-128. April 2010.

11 Costs for NOx and VOCs include both direct emissions of these pollutants and their indirect emissions (as precursors to PM); all costs are given in 2010 U.S. dollars. Costs for NOx and VOCs include both direct emissions of these pollutants and their indirect emissions (as precursors to PM); all costs are given in 2010 U.S. dollars.

12 U.S. EPA, NHTSA. "Final Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Regulatory Impact Analysis." EPA-420-R-10-009, p. 7-118. April 2010.

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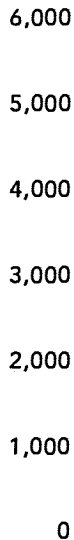
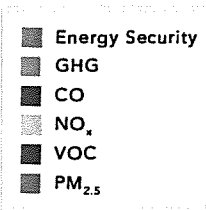
16 U.S. EPA, NHTSA. "Final Rulemaking to Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Regulatory Impact Analysis." EPA-420-R-10-009, p. 7-128. April 2010.

17 Research and Innovative Technology Administration, "Number of U.S. Aircraft, Vehicles, Vessels, and Other Conveyances (2008)," http://www.bts.gov/publications/national_transportation_statistics/html/table_01_11.html (October 6, 2011).

2016

LIGHT-DUTY Passenger Car

Societal Costs ▶ (2010\$/vehicle)



When used in vehicles, natural gas emits 25% less CO₂ than those powered by petroleum or diesel

The advantages and opportunities of alternative fuels

Although driving small vehicles reduces fuel consumption, all vehicles in every class have gotten heavier and more powerful, small and large vehicles alike. However, many Americans want their minivans, SUVs, and trucks. As we continue to use energy in transportation, we need to find alternatives to the way we fuel our cars.

No matter what your political affiliation, we all agree on a basic problem: We must change our energy consumption. Former President George W. Bush explained that affordable energy is the key to our future:

"Keeping America competitive requires affordable energy. And here we have a serious problem: America is addicted to oil, which is often imported from unstable parts of the world. [...] By applying the talent and technology of America, this country can dramatically

*improve our environment, move beyond a petroleum-based economy and make our dependence on Middle Eastern oil a thing of the past."*¹⁸

The Obama Administration shared these sentiments, and President Barack Obama stated:

*"Our dependence on foreign oil threatens our national security, our environment and our economy. We must make the investments in clean energy sources that will put Americans back in control of our energy future, create millions of new jobs, and lay the foundation for long-term economic security."*¹⁹

Fortunately, our overseas dependency on foreign sources of energy from geopolitically unstable regions of the world is a problem we can solve. We already recycle, tote canvas bags to the grocery store, and try to run our appliances in evening hours. Doesn't it logically follow then that the transportation industry offers consumers an amazing opportunity to impact their country, environment, and wallet with one purchasing decision?

¹⁸ President George W. Bush, "State of the Union Address: January 31, 2006," The Washington Post, <http://www.washingtonpost.com/wp-dyn/content/article/2006/01/31/AR2006013101468.html>, (October 3, 2011).

¹⁹ The White House, "Learn: Clean Energy Economy," <http://m.whitehouse.gov/issues/energy-and-environment/new-foundation/learn>, (October 3, 2011).

A better source of energy security and economic stability exists inside our borders

North America has a better energy source inside its borders, and the U.S. could pass Saudi Arabia and overtake Russia as the world's largest energy producer.²⁰ We can accelerate our energy independence by augmenting our petroleum supply with North American natural gas. NGVs and a natural gas fueling infrastructure can be the solution to our energy problems that minimizes damage to the environment. Switching to natural gas will also save North America millions of dollars in security costs related to defending access to international petroleum resources in geopolitically unstable regions of the world.

Natural gas is not a new fuel. We've used it since practically the beginning of time—the Chinese discovered natural gas in 600 BC and, around the first century, the first recorded use of natural gas in the home occurred in Persia (now Iran). In North America, natural gas use dates back as early as 1626.²¹ It heats our homes and businesses, has many industrial applications, and generates electricity. Natural gas already accounts for 23.4% of the U.S. energy supply.²²

Natural gas has served as a transportation fuel for more than six decades. It has mainly been applied to commercial vehicles like school buses and truck fleets that return to a central base at the end of a day. Fleet operators can economically build and maintain

We can accelerate our energy independence by augmenting our petroleum supply with North American natural gas.

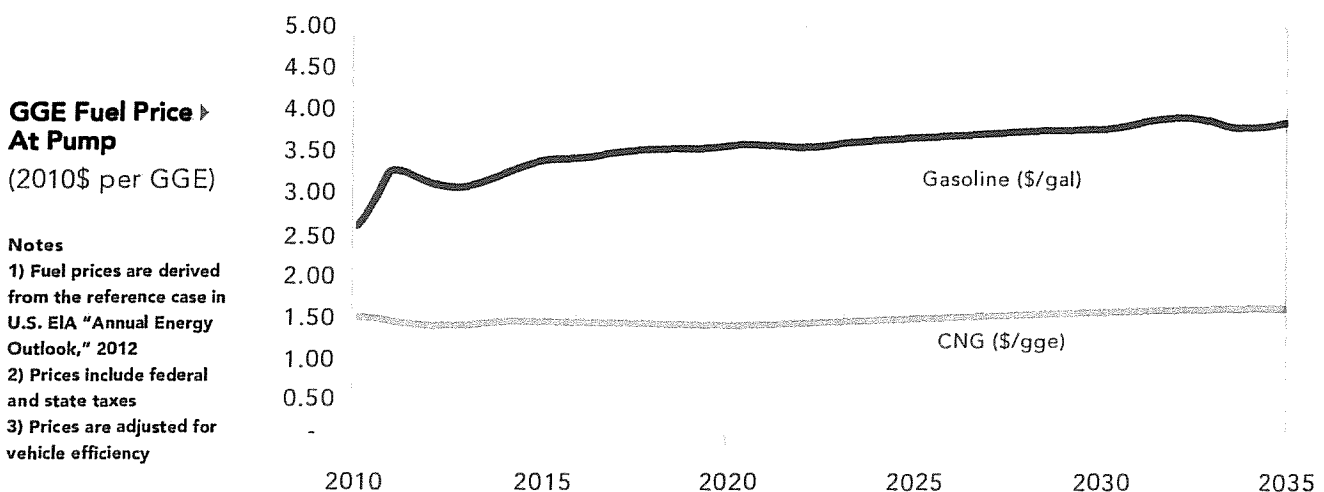
fueling stations at these central stations. It's also no coincidence that school buses have been a successful application, given the positive attribute of lower emissions.

Natural gas is an economical fuel option

Despite the lack of a large natural gas fueling infrastructure for the public, consumption as a transportation fuel has increased steadily since 1997. During this period, the price of petroleum rose while the price of natural gas fell. As the exhibit below shows, this trend is continuing. Over the next 25 years, natural gas is expected to become even cheaper relative to petroleum.

The fuel cost differential between natural gas and gasoline is expected to reach over \$2.00 per gasoline gallon equivalent (GGE) and over \$3.00 per diesel gallon equivalent (DGE) between natural gas and diesel. For the average North American, who fills up his or her tank weekly, refueling with natural gas rather than petroleum would save approximately \$32 per gas station visit. In a year, that's a \$1,664 savings.

ES4



20 "History Zone", Pacific Gas & Electric, http://www.pge.com/microsite/safety_esw/ngsw/ngsw/more/history.html (October 3, 2011).

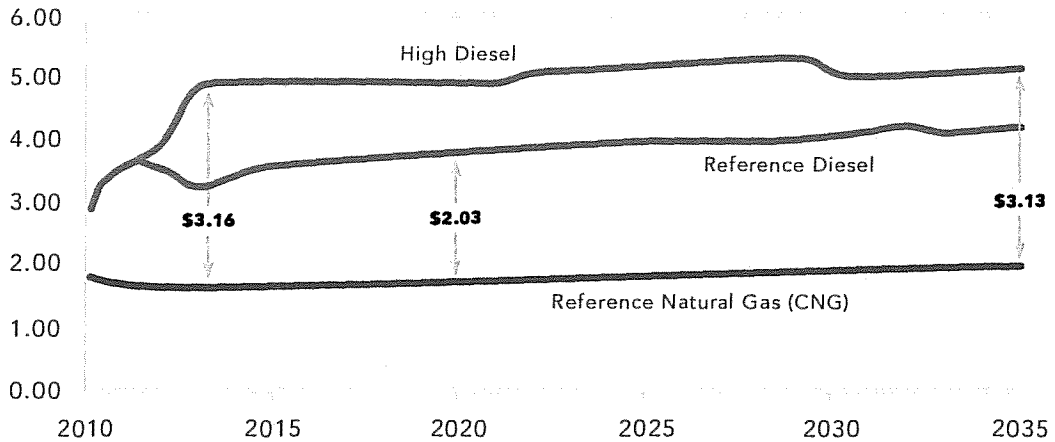
21 U.S. Energy Information Administration, "U.S. Primary Energy Flow by Source and Sector, 2009," www.eia.gov, http://www.eia.gov/totalenergy/data/annual/pecss_diagram.cfm, (October 3, 2011)

22 Energy Information Administration. "Annual Energy Outlook 2011" assessed at <http://www.eia.doe.gov/forecasts/aeo/> on April 28, 2011.

Fuel price differentials at the pump of over \$3 per equivalent gallon are possible in the near future.²³

DGE Fuel Price At Pump
(2010\$ per DGE)

Notes
1) Fuel prices are derived from U.S. EIA "Annual Energy Outlook," 2012
2) Prices include federal and state taxes
3) Prices are adjusted for vehicle efficiency



Conventional fuel retailers, fleet fueling operators, and average drivers are accustomed to fueling vehicles with liquid fuels. Though natural gas is different from conventional fueling, it's simple to use and is widely used in transportation.

There is enough natural gas in the U.S. and Canada to supply the current economy-wide uses of 24.3 trillion cubic feet (TCF) per year and support these markets as they expand.²⁵

While liquid fuels like gasoline or diesel must be transported to stations via over-the-road trucks, compressed natural gas (CNG) is a natural gas fuel that is typically transported via an underground pipeline and then compressed to a higher pressure. While some investment is required to build a natural gas fueling infrastructure, it can use an already existing network of pipelines to reach stations. Additionally, CNG fueling stations can be designed to accommodate any situation—public or fleet fueling.

Current global supplies of natural gas could sustain world demand, at current consumption, for 121 years versus 46 years for petroleum.²⁴

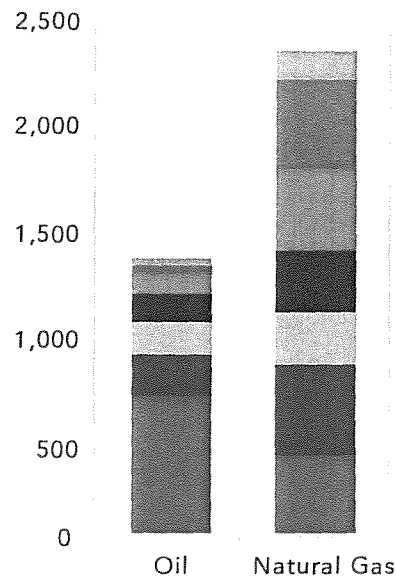
Natural gas is in abundant supply and offers price stability

Now is the time for natural gas. Recent explorations for natural gas have found abundant supplies in North America, making natural gas even more plentiful than petroleum. Current global supplies of natural gas could sustain world demand, at current consumption, for 121 years versus 46 years for petroleum.²⁴

ES6

Equivalent Barrels of Petroleum
(billion barrels)

- Europe
- Asia
- Eurasia
- Africa
- Cttral & S.America
- North America
- Middle East

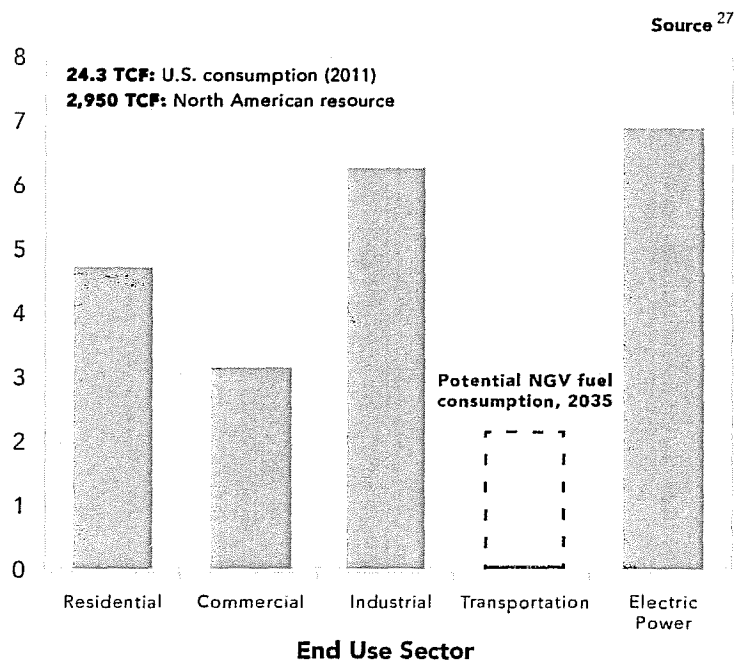


²³ Energy Information Administration, "International Energy Outlook 2010-Natural Gas," DOE/EIA-0484(2009), July 27, 2010; http://www.eia.doe.gov/oiaf/ieo/nat_gas.html
²⁴ Energy Information Administration, "World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States," Release date: April 5, 2011, <http://www.eia.doe.gov/analysis/studies/worldshalegas/>
²⁵ Energy Information Administration, "Natural Gas Consumption by End Use." http://www.eia.gov/dnav/ng/ng_cons_sum_dcu_nus_a.htm. Accessed January 2011.

ES7 Natural Gas Transportation Consumption

	2008	2035
Natural Gas Vehicles in U.S. (Millions)	0.13	16
Consumption (Trillion Cubic Feet-TCF)	0.05	2.2

ES8 Natural Gas Consumption (TCF)



The existing U.S. natural gas vehicle population is approximately 130 thousand (.05% of the on-highway vehicle population), and it consumes 364 million DGE of natural gas annually. If we made a commitment to NGVs, by 2035 we could have 16 million vehicles in the U.S. That amounts to 6% of the 2012 on-highway vehicle population, and it would displace 10% of the 2012 on-highway conventional/transportation fuel consumption.²⁶ At the same time, we could also increase the number of residences, businesses, and industries using natural gas for electricity.

Replacing 6% of the vehicles on the highway with natural gas vehicles would displace 10% of conventional/transportation fuel consumption.

Because North America is subject to changes in foreign energy policy, we constantly wrestle with fluctuating supply and volatile prices for foreign sources of energy from geopolitical unstable regions of the world. However, the abundance of our current and projected natural gas supplies would lead to stable prices for regionally sourced fuel. Price certainty would also allay some of our fears about domestic security. Among other benefits, this would translate into millions of dollars in fuel savings, fewer dollars leaving North America to pay for imports, and a smaller trade imbalance.

Natural gas is a safe, environmentally superior fuel

You might ask, since natural gas is a fuel, doesn't that mean it is harmful to the environment? With natural gas, our clean energy future may be closer than we think. When it's used to generate electricity, natural gas burns cleaner than other fossil fuels and releases fewer pollutants. It is an essential partner to the development of renewables because it provides clean, reliable power when the sun sets in the evening or the wind dies down.

²⁶ See Scenario Analysis report of overall TIAX assessment for details and assumptions

²⁷ See Market Segmentation and Scenario Analysis reports of overall TIAX assessment for NGV population and fuel consumption estimates and projections. Data from Energy Information Administration, "Natural Gas Consumption by End Use," http://www.eia.gov/dnav/ng/ng_cons_sum_dc_u_nus_a.htm, accessed September 11, 2012; Energy Information Administration, "Natural Gas Year-in-Review 2009," July 2010; Massachusetts Institute of Technology, "The Future of Natural Gas," Interim Report, p. 7. 2010.

Natural gas is the answer that green energy proponents are searching for: it's a high octane, low carbon fuel. From a well to wheels analysis natural gas can emit 23% less CO₂ than gasoline passenger cars.²⁸ But that's just the beginning of its clean-energy profile. Using natural gas results in 46% reduction in NO_x emissions compared to pre 2010 diesel vehicles and virtually no sulfur dioxide, mercury, or particulate pollution. In most cases, natural gas can be a substitute for gasoline or diesel without many of the energy and environmental drawbacks.²⁹

But to get an accurate picture of the environmental costs of different fuels, you need to look beyond tailpipe emissions. Using domestically sourced natural gas would mean we wouldn't have to use oil tankers to transport oil thousands of miles from the Middle East to North America.

The U.S. Environmental Protection Agency (EPA) has cited natural gas as a safe transportation fuel for several reasons including reduced flammability relative to petroleum, presence of onboard gas detectors, existence of tank safety valves, and periodic DOT tank inspections. Since it is non-toxic, natural gas poses no threat to land or water. In the event of a release, natural gas disperses rapidly (it is lighter than air) thus reducing ignition risks relative to gasoline.

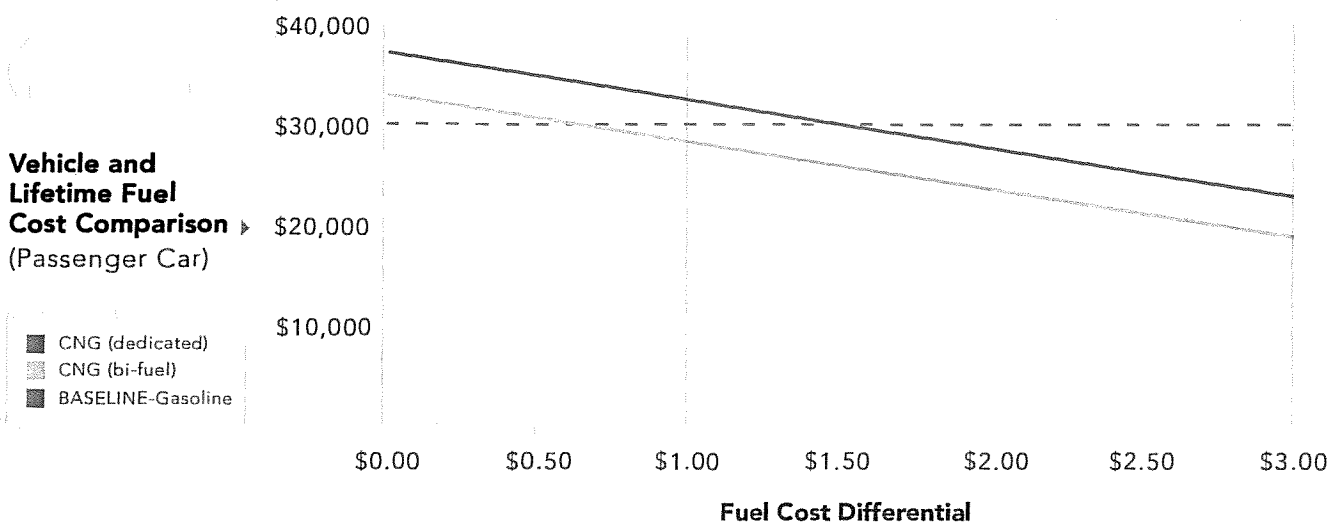
Similarly, liquefied natural gas (LNG) readily evaporates if it is released in the air. If an LNG vehicle or station were damaged in a way that punctured fuel tanks, any spilled fuel would evaporate into the atmosphere much faster than gasoline or diesel, both of which pool on the ground.

Because natural gas has been used in the North American vehicle fleet for many years, consumers are unlikely to face the specter of dramatic new, unforeseen dangers if market penetration increases.

NGVs have a lower total cost of ownership versus conventional vehicles

Natural gas is an economical and versatile fuel option. Even assuming a conservative fuel price differential at the pump of \$1.50 per equivalent gallon, lifetime ownership costs for NGVs are generally lower than those of conventional vehicles. Lower fuel prices offset the higher costs of fuel storage in vehicles, enabling NGV owners to have reasonable payback periods.³⁰ As demand for petroleum increases, prices do the same. However, because of our vast natural gas supplies, increases in natural gas vehicles on the road will have little impact on the price of natural gas.

ES9



²⁸ U.S. Department of Energy, "Energy Efficiency and Renewable Energy: Alternative Fuels and Advanced Vehicles Data Center," http://www.afdc.energy.gov/afdc/vehicles/natural_gas_emissions.html, (November 17, 2011). ANGA, "Why Natural Gas: Clean," <http://anga.us/why-natural-gas/clean>, (October 3, 2011).

²⁹ U.S. Environmental Protection Agency, "Clean Alternative Fuels: Compressed Natural Gas," <http://eerc.ra.utk.edu/etcfc/docs/EPAFactSheet-cng.pdf>, March 2002.

³⁰ Lifetime costs include the cost of fuel over the vehicle's first-owner operating lifetime and reflect the vehicle application's operating characteristics. Hydrogen vehicle and fuels costs are projections only (not yet commercialized). See Comparative Analysis report of overall TIAX assessment for calculation details and assumptions.

NGV adoption is progressing in the commercial and consumer markets

Commercial Adoption

Several corporations and municipalities have already switched their fleets from petroleum to natural gas fuel (CNG in all applications), and they're already seeing savings in transportation costs and a reduction in harmful emissions. Among them:

UPS: By switching a portion of its fleet to compressed natural gas (CNG) vehicles and converting existing trucks, UPS reduced its carbon emissions significantly. It started this process in 2000, and its CNG trucks have traveled over 165 million miles since. A study by the National Renewable Energy Laboratory found UPS' CNG trucks yielded much lower emissions than the cleanest operating diesel trucks.³¹

Kansas City: In 1996, Kansas City, Missouri instituted a fleet-wide alternative fuel program for the city's large rigs and public transportation. The city started with six CNG-powered vehicles and has expanded to approximately 2,700. By switching much of their fleet to CNG, the city displaces nearly a half a million gallons of foreign oil each year. Kansas City has experienced not only 15% savings in fuel costs, but has also significantly lowered emissions. The EPA estimates the use of CNG in Kansas City will yield 90-97% lower carbon monoxide output, 35-60% lower nitrogen oxides emissions, and reductions in carbon dioxide output of 25%.³²

Seattle: Seattle has quickly expanded its natural gas fleets to include both heavy-duty vehicles—garbage trucks—and light-duty taxis. In 2009, Waste Management of Seattle invested \$29 million in 106 new CNG-fueled vehicles to replace diesel-run trucks. An independent environmental review determined Waste Management's equipment upgrade will reduce smog-causing NOx emissions by 97%, diesel particulate matter by 94%, and greenhouse gases by 20%. It's also good news for residents—natural gas vehicles run cleaner and quieter.³³

Seattle opened Washington's first large scale, public access CNG fueling station near the Sea-Tac Airport. The station is convenient for the 74 natural gas and hybrid vehicles in use at the airport as well as the fleet of taxis operated by the Seattle-Tacoma International Taxicab Association. All 166 Ford Crown Victoria cabs operated by the association are CNG-fueled. It's estimated that the cabs will produce 149 fewer tons of carbon monoxide and 24 fewer tons of nitrogen oxides each year than comparable petroleum-powered vehicles.³⁴

With respect to NGVs, though the world is changing, the U.S. is not.

Consumer Adoption

Consumers already drive NGVs today, though the limited vehicle choices and uncertainty about refueling options holds many people back. Honda manufactures and sells limited volumes of the Civic Natural Gas, one of the cleanest vehicles in the world, and more manufacturers are re-entering the North American market, including Ford, GM, and Chrysler. As consumer demand increases, the market will expand, just as it has globally. Worldwide, consumers can choose from more than 40 models, and there are more than 12 million NGVs in operation. In the U.S., that number is just 120,000. With respect to NGVs, though the world is changing, the U.S. is not.

NGVs offer proven benefits and are the new frontier of North American prosperity

Natural gas means domestic jobs. By increasingly using NGVs in transportation, we will foster domestic jobs, create new manufacturing and construction opportunities, and stimulate economy-wide spending through consumer fuel savings.

Expanding North America's fueling infrastructure would add over 3.7 million jobs. Some, though not all, of these jobs would be temporary, but they are just the kinds of opportunities that Americans, specifically unemployed construction workers, need today.

31 ANGA, "Issues and Policies: Case Studies," <http://anga.us/issues-policy/transportation/case-studies->, (October 3, 2011).

32 Ibid.

33 Ibid.

34 Ibid.

ES10 Building the natural gas transportation infrastructure will create jobs

Source ³⁵

	Light-Duty CNG	Medium and Heavy-duty CNG	Heavy-Duty LNG
Total number of new stations built by 2035	12,800	12,100	700
Spending Changes and employment impacts in transportation fuel sectors			
Job impacts (Full Time Employees) per station:	0.81	0.24	19.78
Overall job impacts (FTEs):	10,400	2,900	13,800
Capital and infrastructure expansion			
Job impacts (FTEs) per station built:	112	179	166
Overall job impacts (FTEs):	1,430,000	2,170,000	116,000

During this economic downturn, new shale plays across North America enabled the natural gas community to add jobs. According to IHS Global Insight, an independent research source, natural gas companies directly employed roughly 622,000 Americans in 2008 and indirectly sustained an additional 2.2 million jobs. But the economic benefits of natural gas extend well beyond job creation. In 2008 alone, natural gas contributed \$385 billion to the U.S. economy and generated over \$70 billion in direct income for workers. Its overall impact on the U.S. economy was \$172 billion.³⁶

Natural gas contributed \$385 billion to our nation's economy and generated over \$70 billion in direct income for workers.

In Canada, the natural gas industry has had a greater relative impact on the domestic economy. Every province has people whose jobs are related to natural gas. According to IHS Global Insight, nearly 600,000 Canadians worked in jobs supported by natural gas in 2008, contributing \$106 billion to the nation's GDP. This economic impact exceeds the total GDP of all but four Canadian provinces that year. It accounts

According to IHS Global Insight, nearly 600,000 Canadians worked in jobs supported by natural gas in 2008, contributing \$106 billion to the nation's GDP.

for 3.5% of all Canadian jobs and roughly 6.7% of Canada's overall GDP.³⁷

Natural gas jobs are filling the void left by the manufacturing, management, and technology sectors in Pennsylvania, Louisiana, and Alberta.

Pennsylvania: The Marcellus Shale, which is considered by experts to be the second largest shale gas formation in the world, is responsible for much of the state's natural gas job growth. A recent influx of natural gas activity in the state has quickly expanded the number of well-paying employment opportunities, ranging from manual labor to highly technical work. A 2010 Penn State study concluded that the Marcellus Shale could generate over \$8 billion in economic value this year, \$1 billion in state and local tax revenue and almost 100,000 jobs in 2011, just in Pennsylvania.³⁸

³⁵ Employment impacts based on IMPLAN Input-Output model and Jack Faucett Associate estimates. See Overview report of overall TIAX assessment.

³⁶ ANGA, "Why Natural Gas: U.S. Benefits," <http://anga.us/why-natural-gas/jobs/us-benefits>, (October 3, 2011).

³⁷ ANGA, "Why Natural Gas: Canada Benefits," <http://anga.us/why-natural-gas/jobs/canada-benefits>, (October 3, 2011).

³⁸ ANGA, "Why Natural Gas: State-by-State," <http://anga.us/why-natural-gas/jobs/us-benefits/state-by-state>, (October 3, 2011).

Louisiana: The Haynesville Shale has helped boost the Louisiana economy during tough economic times. According to Dr. Loren Scott & Associates, which looked at about 70% of the exploration in the state, natural gas activities in the shale generated \$10.6 billion in new economic activity and created more than 57,000 new jobs. It also generated \$5.7 billion in new household earnings for Louisiana residents.³⁹

Alberta: Over 16% of Alberta’s employment was attributable to natural gas, with British Columbia (4.8%) the second largest beneficiary of Canada’s natural gas abundance. Saskatchewan was third (4.5%). Natural gas supports 27.7% of Alberta’s GDP, or \$80 billion in total economic impact.⁴⁰

Jump-starting NGV adoption

Even without broad adoption in the commercial transportation market and a minimal presence in the consumer market, natural gas is has made a significant economic impact in North America. Just imagine the opportunity we have to strengthen national security, grow our economy, reduce pollution, and lower greenhouse gas emissions if we make NGVs more widely available and affordable. This challenge will involve all of us but particularly the four major stakeholders in the NGV industry—end users, natural gas supply chain companies, vehicle and engine manufacturers, and government—all working together. There are some challenges to this goal but they are not insurmountable.

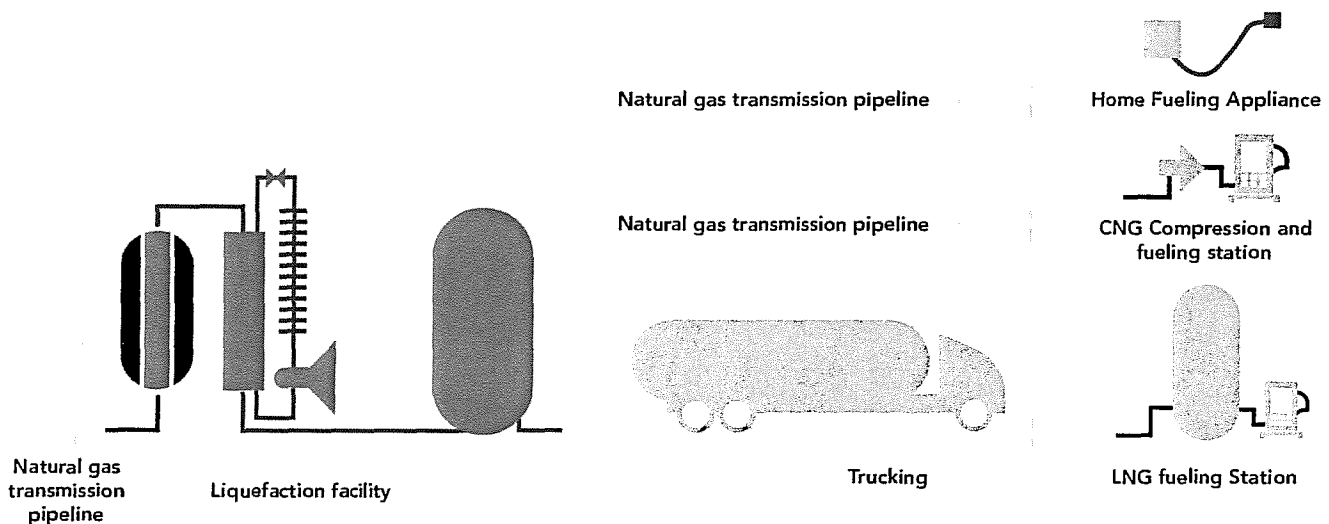
The average driver in the U.S. drives 29 miles per day, based on this statistic, early localized infrastructure can support this emerging consumer market, but it will take a paradigm shift in the consumer mindset.⁴¹

To drive demand, consumers need to be educated on vehicle and fueling options

Consumers and commercial stakeholders are becoming more interested in natural gas. General consumer interest in alternative vehicles is also growing, but consumers are driven by both price and convenience. NGVs will not become a viable transportation option without an efficient and affordable fueling infrastructure, affordable vehicles, and a level playing field among alternative vehicles if government incentives are necessary.

Uncertainty about the fueling infrastructure is the main concern swaying customer purchase decisions and keeping vehicle manufacturers from building more NGVs. It’s a chicken and egg problem: consumers who consider buying an NGV don’t see natural gas fueling stations lining the highway or visible at main intersections, so they assume that refueling will be inconvenient. But without a critical mass of NGVs on the road, the need for a fueling infrastructure does not seem critical.

ES11



39 ANGA, "Why Natural Gas: State-by-State," <http://anga.us/why-natural-gas/jobs/us-benefits/state-by-state>, (October 3, 2011).

40 ANGA, "Why Natural Gas: Canada Benefits," <http://anga.us/why-natural-gas/jobs/canada-benefits>, (October 3, 2011).

41 U.S. Department of Transportation Federal Highway Administration. "2009 National Household Travel Survey." <http://nhts.ornl.gov>. Accessed August 2012.

Building the fueling infrastructure

North America is in the process of establishing an efficient and affordable natural gas fueling infrastructure. Companies like UPS and Seattle Waste Management have been able to transition to natural gas quickly because they have dedicated fleets that return to a base. It's economical for them to develop small or large private fueling facilities for their exclusive use. Accommodating light and medium duty vehicles will require some changes in vehicle fueling systems, like an in-home fueling device—a home-based gas utility or personal fueling device approximately the size of a small chair that sits outside or inside—and accessible public fueling stations.

During this intermediate phase, government will work in partnership with the natural gas industry and fuel providers to begin developing a public natural gas fueling infrastructure that includes corridors connecting stations throughout regions.⁴² This partnership is already underway. Through the American Recovery and Reinvestment Act of 2009, the Department of Energy funded 25 different projects for alternative fuel, infrastructure, and advanced technology vehicles, and 19 of these 25 projects included natural gas. These commitments include support for 140 new fueling stations.

Building the vehicles

When consumers make the decision to buy an NGV, these vehicles need to be readily available on showroom floors. The manufacturing process must begin with engine manufacturers who provide efficient technology for natural gas, develop, and commercialize a wider selection of natural gas engines to meet the increasing demand.

One way to ease into this new era is to design and adopt natural gas passenger cars and light-duty trucks as bi-fuel vehicles—using both natural gas and gasoline. These vehicles do not compromise tailpipe or evaporative emission performance. They are designed to meet daily driving requirements with natural gas and use gasoline for extended driving. Reducing onboard natural gas storage capacity reduces vehicle costs, and ensures a faster payback on initial NGV purchase costs. For the U.S. and Canadian retail consumer market, bi-fuel NGVs coupled with

a small home fueling compressor would provide overnight access to natural gas and allow consumers to avoid daily trips to a natural gas fueling station. For heavy-duty trucks, dedicated natural gas systems make the most economic sense, as long as the fuel systems are properly sized to the particular needs of the fleet, thereby minimizing unnecessary incremental cost and weight.

Vehicle manufacturers must be financially motivated to continue to provide high quality NGVs that meet the same reliability and durability standards as gasoline and diesel products.

The newest NGV offerings have focused on the medium-duty market and targeted at the commercial working sector. In the future, we need to offer a wider selection of vehicles for the consumer market.

Creating a level playing field

The U.S. and Canada both have robust environmental policies to reduce air pollutant and GHG emissions associated with fuel production and vehicle operation. These policies have been marginally effective. Now, we need stronger energy policy or strategy supported by stakeholders to increase the use of natural gas in the transportation sector and reduce North America's dependency on foreign sources of energy from geopolitically unstable regions of the world.

The integration of both environmental and energy policies can reduce petroleum use and emissions. These policies can also highlight the favorable lifetime economics and environmental aspects of NGVs to increase consumers' interest in alternatives to petroleum. The government can also play a role in leveling the playing field relative to other alternative fuels and vehicles, allowing for more market based adoption and avoidance of picking alternative fuel winners and losers. If policy makers decide to continue to offer purchase incentives for alternative fueled vehicles, they should do so on a level playing field.

The players in the natural gas ecosystem—vehicle manufacturers, government, and fuel suppliers—are ready to work together to make natural gas vehicles widely available, affordable, and simple to maintain. The missing piece is consumer demand and a desire to increase energy security. Now it is your turn; it's time to find out about the natural gas vehicle waiting for you. It's time for natural gas.

⁴² See Compressed Natural Gas Infrastructure and Liquefied Natural Gas Infrastructure reports of overall TIAX assessment for additional discussion of natural gas fueling infrastructure development.



What is CNG?

Have you heard that CNG is better for the environment and your wallet? Learn why.



Basics

CNG is a readily available alternative to gasoline that's made by compressing natural gas to less than 1% of its volume at standard atmospheric pressure. Consisting mostly of methane, CNG is odorless, colorless and tasteless. It's drawn from domestically drilled natural gas wells or in conjunction with crude oil production.

Natural gas powers more than 12 million vehicles on the road today. Unfortunately, only about 250,000 of these are being used in the U.S., according to GE. The average growth rate in the U.S. shows a 3.7% increase per year since 2000, as contrasted with a booming global growth rate of 30.6% per year.

Expanding the numbers of CNG fueling stations would allow for the increase of CNG vehicles on U.S. roads. There are 12,000 around the world, yet the U.S. claims about 500 public stations. New technologies and greater demand mean that the number of new stations is climbing rapidly.

However, as gasoline prices continue to rise, American interest in **CNG is rising, and with good reason – CNG costs about 50% less** than gasoline or diesel, emits up to 90% fewer emissions than gasoline and* **there's an abundant supply right here in America. So it's clean, affordable abundant and American.**

**Emissions reductions may vary by pollutant and make/model of vehicle.*

Safety

Although CNG is flammable, it has a narrow flammability range, according to the U.S. Environmental Protection Agency, making it an inherently safe fuel. Strict safety standards make CNG vehicles as safe as gasoline-powered vehicles. In the event of a spill or accidental release, CNG poses no threat to land or water, as it is nontoxic. CNG also disperses rapidly, minimizing ignition risk when compared to gasoline. Natural gas is lighter than air and will not pool as a liquid or vapor. Nevertheless, indoor leaks can form a flammable mixture in the vicinity of an ignition source.

CNG is primarily methane, which is a greenhouse gas that could contribute to global climate change if leaked. Methane is slightly soluble in water and under certain anaerobic conditions does not biodegrade. If excess amounts accumulate, the gas can bubble in water creating a possible risk of fire or explosion.

Reported incidents of CNG bus fires are related to engine failures, not the use of natural gas. Natural gas buses have onboard gas detectors and other safety devices such as tank safety valves that only allow fuel flow when the engine is on. Also, the tanks must be periodically inspected by the U.S. Department of Transportation.

There are, however, some safety concerns with CNG buses compared to diesel fuel buses, such as greater braking distance due to increased fuel storage system weight. This is a relatively small concern, however, because the fuel system is a **small fraction of a bus'** total weight. CNG buses also might accelerate more slowly than their diesel counterparts.

Focus on Operations

It takes a great deal of effort and expertise to locate and extract natural gas. Located miles beneath the surface, high-tech engineering practices are coordinated with environmental guidelines to recover and process the gas in the safest possible manner. This can take months to complete.

The processes employed for natural gas exploration and production can be found on this page. Learn more about [horizontal drilling](#), [hydraulic fracturing](#) and [water usage](#).

History

The history of CNG as a transportation fuel dates back to World War II. Natural gas vehicles (NGVs) are a proven technology that have been enhanced and refined over the years into a convenient and extremely safe method of transportation. Daily use of [natural gas vehicles](#) can be found throughout the United States in a variety of applications.

Demand CNG Now!

It's up to us, America's consumers, to insist that legislators implement policies to accelerate growth in NGV manufacturing, purchase and use. State governments have [asked automakers to produce a wider variety of CNG vehicles](#), but government incentives meant to promote greener vehicles should include all options. When fleet and consumer demand come together and governments support expanded CNG infrastructure, Americans will have the opportunity to use a clean, American fuel.



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**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

47. Please reference the testimony of John B. Brown at page 5, lines 8 - 9. Provide all analyses, reports or studies upon which Delta relied with its statement that “natural gas vehicles require less frequent maintenance than conventional cars and trucks because natural gas burns cleaner than gasoline.”

Response:

Brown Exhibit II page 30, “The Economic Advantages”

On page 5 of Mr. Brown’s Direct Testimony, Delta listed several websites providing information about natural gas vehicles. See the exhibit attached to this response for information from the U.S. Department of Energy regarding maintenance.

Sponsoring Witness:

John B. Brown

U.S. Department of Energy - Energy Efficiency and Renewable Energy
Alternative Fuels Data Center

Natural Gas Vehicle Maintenance and Safety

Natural gas is a clean-burning, safe fuel that can save you money at the pump while benefitting the environment and reducing U.S. dependence on petroleum. Natural gas is primarily methane and is the same gas we use to heat our homes and cook our food, but it is also well suited as a transportation fuel in many applications.

NGVs are nearly identical to conventional gasoline-fueled vehicles, with the exception of the fuel storage and delivery system. They use an internal combustion engine that looks and performs essentially the same as a gasoline-fueled engine. Typical engine modifications for NGVs include hardened exhaust valves and valve seats, but these modifications do not change the visual appearance of the engine, nor do they change the engine's maintenance and service requirements.

CNG Cylinders and Fuel System ▶

Modern vehicles have sophisticated fuel systems designed to store and deliver precise amounts of fuel to the engine to maximize performance and minimize harmful emissions.

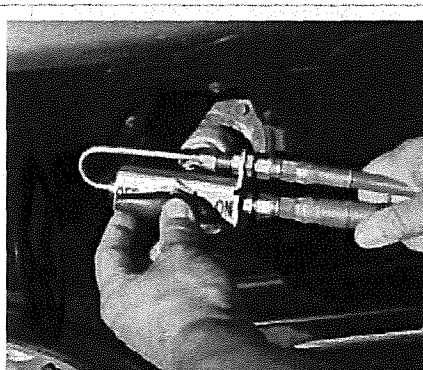
Natural gas vehicles are no different – but the fuel storage and delivery system may look and operate differently than those of conventionally-fueled vehicles. NGV system maintenance differs, too. The most important added maintenance requirement for NGVs is to have the fuel storage cylinders inspected at regular intervals and after accidents or suspected damage and to replace them when they reach the end of their useful life.

Oil-Change Intervals

Clean-burning fuels have a direct impact on extending the useful life of the engine's lubricating oil. In conventionally-fueled vehicles, engine oil degrades as a result of soot and other impurities from the combustion process that get absorbed into the oil. A cleaner-burning fuel like natural gas produces less soot and other combustion by-products, so the oil in natural gas engines should last longer. NGV owners should consult their vehicle's maintenance manual for the proper oil-change interval. For vehicles that have been converted from gasoline to natural gas, it's still best to follow the original maintenance schedule, particularly if the engine is under warranty. Fleet managers may find it economical to send oil samples to a laboratory for testing, to understand the maximum useful lifetime for each oil change.

Ignition Systems

Most natural gas engines use spark plugs to ignite fuel in the cylinders, similar to gasoline. However, natural gas is much more sensitive to spark quality and voltage. So it is critical that all parts of the ignition system (spark plugs, wires, coils, etc.) be properly maintained and protected from excessive heat and other damage. NGV owners should consult their vehicle's maintenance manual for the proper interval for inspecting and changing ignition parts. Note that some manufacturers produce spark plugs, ignition wires, and even engine oils that are specifically designed for use in NGVs that will help to maximize their performance and engine life.



More Information

- ▶ [CNG Cylinder and Fuel System Maintenance](#)
- ▶ [Natural Gas Safety](#)
- ▶ [After a Traffic Accident](#)
- ▶ [Filling a CNG Tank](#)

The AFDC is a resource of the U.S. Department of Energy's Clean Cities program.

[Contacts](#) | [Web Site Policies](#) | [U.S. Department of Energy](#) | [USA.gov](#)
Content Last Updated: 11/04/2013



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

48. Please reference the testimony of John B. Brown at page 5, line 10. Provide any analyses, reports or studies upon which Delta relied with its statement that “natural vehicles have longer engine life.”

Response:

See Exhibit I attached to this response for a statement from American Clean Skies Foundation regarding engine life.

Sponsoring Witness:

John B. Brown



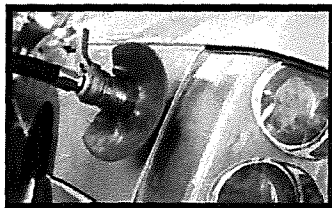
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You are here: Home » Resources » **Natural Gas Vehicles**

Natural Gas Vehicles



NATURAL GAS VEHICLES (NGVs): An Economical and Clean Alternative

Natural gas can also be compressed and used to fuel the internal combustion engines used in cars, trucks and buses.

- Reduce carbon monoxide emissions 90%-97%
- Reduce nitrogen oxide emissions 35%-60%
- Potentially reduce non-methane hydrocarbon emissions 50%-75%
- Emit fewer toxic and carcinogenic pollutants
- Emit little or no particulate matter

FOR MORE INFORMATION

- CNG Now
- EIA Energy Glossary
- International Association of Natural Gas Vehicles
- American Gas Association
- Clean Vehicle Education Foundation

HISTORY OF NGVs

Engines powered by natural gas work much like gasoline-powered engines, relying on an internal combustion process, ignited by a spark plug. Heavy-duty NGVs have engines that are compatible with diesel engines. But unlike gasoline or diesel, the fuel is in gaseous form, not liquid, which avoids many of the risks of gasoline as a motor fuel. Its clean-burning characteristics also increase engine life, according to DOE, because NGV engines require less maintenance for problems such as carbon deposits and ring wear.

NGV ECONOMY AND EMISSIONS

Natural Gas Vehicles (NGVs) have received a lot of attention lately, but they've actually been driven for more than 60 years. Two big advantages NGVs offer over their gasoline-powered counterparts are fuel economy and the reduction of harmful emissions. About two-thirds of the oil consumed by the U.S. is imported, which can make prices volatile. By comparison, almost all the natural gas used in the U.S. is sourced in North America. The Department of Energy's most recent issue of the Clean Cities Alternative Fuel Price Report indicates that compressed natural gas costs about one-third less than gasoline on an energy-equivalent basis. In addition, NGVs reduce U.S. oil imports. The American Gas Association reports that in 2008, NGVs displaced almost 300 million gallons of petroleum use.

Natural gas also burns more cleanly than gasoline. NGV CO2 emissions are approximately 20% less than those of gasoline-powered engines. In fact, according to the Department of Energy, NGVs also:

CURRENT USE OF NGVs

The U.S. currently has about 150,000 NGVs on the road, as compared to 10.5 million natural gas-powered vehicles worldwide. The top five markets for NGVs are Pakistan, Argentina, Brazil, Iran, and India. The strong market performance in those areas is due in large part to low natural gas prices and government subsidies of vehicles, fuel and infrastructure. But U.S. purchase of NGVs is expected to grow significantly over the next decade. Although there is only one production model NGV currently available in the United States, domestic growth in the U.S. is expected to be driven by increased use of NGVs in government and corporate fleets. AT&T, UPS, Washington Area Metropolitan Transit Authority and several West Coast ports are among the many organizations expanding their fleets with NGVs.

NEW INCENTIVES

Perhaps the biggest obstacle to widespread, commercial NGV use in the United States is a relative lack of fueling stations (currently fewer than 800 nationwide). New incentives could close that gap dramatically. Both houses of Congress are considering legislation that would extend and expand existing tax credits, as well as create tax credits and incentives to expand the use of NGVs and build more refueling stations. Refueling-station tax credits would be doubled to as much as \$100,000, under the Senate bill. The legislation also includes a provision to allow businesses to claim 100% of the cost of building a manufacturing facility placed in service before Jan. 1, 2015. The DOE also lists dozens of other state-level incentives and laws designed to promote use of NGVs.

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DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365

FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013

49. Please reference the testimony of John B. Brown at page 5, lines 11 -12. Provide any analyses, reports or studies upon which Delta relied with its statement that natural gas gives superior engine performance over that of gasoline engines.

Response:

Brown Exhibit II, page 32 "We Could Do Better"

Sponsoring Witness:

John B. Brown



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

50. Please reference the testimony of John B. Brown at page 6, lines 18 – 19. Provide all supporting documentation that: “They [Carrollton and Somerset] have determined that offering CNG stations to their citizens is in the public interest.”

Response:

Delta has no such documentation. Delta concluded the actions by the leadership of Carrollton and Somerset demonstrate their belief that offering CNG stations to their citizens is in the public interest.

Sponsoring Witness:

John B. Brown



DELTA NATURAL GAS COMPANY, INC.
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DATED DECEMBER 13, 2013

51. Please reference the testimony of John B. Brown at page 7, lines 4 -5, regarding the following statement: “As discussed above, there are several reasons why Kentuckians should invest in building its CNG infrastructure, as has been done in other states.”
- a. Provide a list of the other states.
 - b. For each state in response to a., identify the following:
 - i. The specific legal authority (as in law, regulation or otherwise) in which the state proceeded,
 - ii. The state agency that has instituted and/or implemented the CNG infrastructure investment (whether public utility commission, department of transportation, or otherwise),
 - iii. The funding mechanism which provides for the investment (whether charge on utility bill (directly by line-item or inclusion in base rates), tax on transportation fuel, tax on CNG vehicles or otherwise),
 - iv. The annual funding obtained or otherwise received,
 - v. The number of the CNG facilities each state operates,
 - vi. The location of the facilities, and
 - vii. The type of customers provided access to the CNG facilities.

Response:

- a. Brown Testimony Exhibit III makes several references to states who are building CNG infrastructure:

pages 28-36

Appendix A – page 7, 10, 11, 13, 15, 16, 18, 25

- b. Delta does not have further detail regarding the CNG activity in other states.

In addition, refer to PSC-1 Item 14 for a discussion of the states Delta visited regarding CNG.

Sponsoring Witness:

John B. Brown



DELTA NATURAL GAS COMPANY, INC.
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DATED DECEMBER 13, 2013

52. Please reference the testimony of John B. Brown at page 7, lines 12 -13. Has Delta retained any consultant to conduct its own, independent study similar to that which it references in the testimony?

Response:

No.

Sponsoring Witness:

John B. Brown



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53. Please reference the testimony of John Brown at page 8, line 3 – 19.
- a. Provide a detailed explanation of what is meant by the statement: “The LDC’s customers benefit from the upside performance of the CNG Station and bear the risk of the downside performance.”
- i. Include in the explanation the timeframe when the customers will benefit from the upside of the performance.
 - ii. What risk do the shareholders bear directly in any downside performance?
 - iii. Why shouldn’t the shareholders fund the request in this application and thus “benefit from the upside performance of the CNG Station and bear the risk of the downside performance?”
 - iv. Confirm the following: The inclusion of the CNG investment in rate base could lead to a lower ROE for Delta’s shareholders if the revenues do not offset costs in Delta’s regulated business.
 - v. Confirm the following: The inclusion of the CNG investment in Delta’s unregulated business could lead to a much lower ROE for Delta’s shareholders if the revenues do not offset costs in Delta’s independent unregulated CNG business because Delta’s captive ratepayers would not be funding the project.
 - vi. Reference the statement that “currently there is no market for CNG as a motor vehicle fuel in Delta’s service territory...” If such is the case, how can Delta expect any revenues to materialize for customers from the CNG facilities?

Response:

- a.
- i. Once the station becomes profitable, every dollar received that is excess of the expenses of the station will be an upside to the customer.
 - ii. The shareholders will bear all of the carrying and operating costs of the station until such time that Delta files a general rate case. The shareholders bear the risk of this and any regulatory lag in the future since Delta has no mechanism to adjust rates to an allowed return outside of a general rate case.
 - iii. The shareholders invest in Delta to receive a fair return for the money they invest. Investing shareholder money on a project that benefits the citizens of Kentucky but that is not earning a return is not compatible with the interest of the shareholders.

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- iv. Delta does not agree. If the revenues of the CNG station do not offset costs during the test year, then the overall revenue requirement would be higher causing rates to be higher in order for Delta's rates to yield its overall approved return on equity. Conversely, if the revenues of the CNG station are higher than costs during the test year, then the overall revenue requirement would be lower causing rates to be lower.

- v. True. In this scenario, Delta's shareholders would be sacrificing return while Delta's customers would be enjoying the benefits (Delta's fuel cost savings and the availability of a CNG Station in Delta's service area). This is an excellent illustration why the rate-base model is appropriate here so that the customers receiving the direct and indirect benefits of having a CNG station on Delta's system are paying for the station.

- vi. This question is the crux of the issue. Kentuckians are not going to seriously consider converting to CNG until they see an operating station convenient to them selling gas at a price per gasoline gallon equivalent that is significantly less expensive than gasoline. Cities, universities and school districts are unable or reluctant to commit to convert their fleets until a station is a reality. Shareholders are not going to invest in this infrastructure in rural Kentucky with no promise of it quickly achieving an acceptable return on investment. Approving this request is a long term investment in our state and its residents, not a short term money making venture.

Sponsoring Witness:

John B. Brown



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54. Please reference the testimony of John B. Brown at page 7 and 8 wherein Delta was asked whether it had “conducted a detailed market analysis relating to its proposed CNG station” and the Company responds with the answer: “No. There are no other utilities offering CNG for sale as motor vehicle fuel in Delta’s service territory and, thus, no fleets using CNGs. There are no competitors with Delta’s proposed CNG station or other sellers of CNG as a motor fuel to the public in Kentucky other than Waste Management and the two cities identified above in my testimony. The primary use of the CNG to be dispensed at the proposed Station in the near term will be for Delta’s service vehicles. We felt, therefore, that a detailed market analysis would not produce meaningful information for Delta’s decision making.”
- a. How many CNG vehicles does Delta have in its rate base for its regulated operations?
 - i. How many are strictly single source CNG fuel vehicles?
 - ii. How many are dual fueled vehicles?
 - b. Based on the number of CNG vehicles (accounting for both single source and dual fueled), how much in costs for each of the next five (5) years does Delta project to save in fuel?
 - c. Following up with question b., how does Delta project to offset any revenues that it would otherwise seek in a rate case?
 - d. In Delta’s opinion, does it believe that a private enterprise engaged in CNG fueling stations would construct, own, and operate – at its own costs - a CNG fueling station without performing a market benefit analysis? If yes, please explain the answer.

Response:

- a. & b. Delta does not currently have any CNG vehicles in its rate base for its regulated operations. However, the response to PSC-1, Item 4 lists the CNG vehicles which will be purchased in the short-term. The response to PSC-1, Item 10 lists the impact purchasing the CNG vehicles would have on annual expenses.

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- c. In a general rate case, the savings in fuel costs derived from the CNG vehicles would be reflected as lower test year operating costs, thus lowering Delta's revenue requirement and decreasing the amount of the requested increase.

- d. A private enterprise would be operating under the commercial model, as discussed on page 8 of Mr. Brown's direct testimony. A private enterprise operating under this model would likely perform a market analysis; however, as stated on page 8 of Mr. Brown's direct testimony, the competitive market aspect of the commercial model is non-existent in Delta's service territory. In addition, Delta has concluded that it should be fueling several of its utility vehicles with CNG. Since there are no public CNG stations in Delta's service territory, Delta's only option is to build its own station.

Sponsoring Witness:

Matthew D. Wesolosky



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55. Mr. Brown has attached Exhibit II to his testimony which is an article entitled "The Case for NGVs" authored by Paul Stenquist.
- a. What are the credentials of Mr. Stenquist?
 - b. See page 33 of the article where the author states that: "Many experts believe that advanced, affordable home-fueling stations equipment is the key to growth."
 - i. At what gas pressure does the residential customer receive service?
 - ii. At what pressure are CNG vehicles generally fueled at CNG stations?
 - iii. And that takes about five minutes, correct?
 - iv. In order for a residential customer to fill his/her CNG vehicle at a residence, how long would it take under an average residential customer's home's service system?
 - v. Confirm that the Residential customer would need to install additional equipment at the residence to refuel a CNG vehicle within a timeframe that the customer expects when fueling a gasoline or diesel engine.
 - vi. What additional equipment would need to be installed?
 - vii. What would be the cost of the equipment?

Response:

- a. Delta does not have that information.
- b. Delta is not proposing to purchase, install or operate any facilities with regard to "home fueling stations", and therefore sub-parts of Item B are not applicable.

Sponsoring Witness:

Jonathan W. Morphew



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56. Please reference the testimony of John B. Brown at page 9. Explain in detail the total costs which Delta anticipates it will require to construct, own and operate the facilities, including, but not limited to such costs as:
- a. initial construction of the facilities(s),
 - b. initial placement of any gas line to facilities,
 - c. initial costs for any appurtenances and buildings,
 - d. other initial costs to begin operation and opening for business for public usage (such as but not limited to master(s), gas dryer, gas compressors, storage vessels, dispensers, and card readers),
 - e. permitting and licensing,
 - f. annual O&M of the facilities,
 - g. annual purchase gas costs,
 - h. annual tariff transportation rate(s),
 - i. annual costs personnel to operate the facilities (including salaries or wages, insurance, etc.), and
 - j. other annual costs.

Response:

- a. - e. Exhibit I of Mr. Wesolosky's direct testimony provides a breakdown of the costs required to construct the proposed CNG station.
- f. Exhibit II Schedule III of the Wesolosky testimony includes the estimated annual O&M for the station.
- g. Purchased gas cost will be variable, based on the amount and price of natural gas which flows through the station.
- h. The tariff transportation rates are listed in Exhibit IV of Mr. Brown's direct testimony.
- i. The station is unmanned and would not require Delta to hire additional personnel.
- j. None.

Sponsoring Witness:

Matthew D. Wesolosky



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57. Please reference the testimony of John B. Brown at page 9, lines 19 – 21. Specifically identify the amount or the calculation for determining how Delta “would record the gas cost” for the purchase of the gas at the CNG station.

Response:

Delta would enter into a natural gas purchase agreement with a third-party supplier for the CNG station. The gas cost recorded would be the invoiced cost of gas from Delta’s supplier based on the actual volumes metered at the station.

Sponsoring Witness:

Matthew D. Wesolosky



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58. Please reference the testimony of John B. Brown at page 10, at lines 12 -15. Refer to the following statement:
- “Delta intends to set market based pricing so that the CNG Station will maximize revenue earned for the benefit of the regulated customers but at the same time be priced competitively with respect to gasoline prices. Unregulated pricing will give Delta the flexibility to do this. The profitability (loss) of the CNG Station will be the revenue earned at the pump less the cost paid for the gas sold, the tariff transportation rate and the other operating and maintenance expenses.”
- a. Please explain what is meant by “market based rates.”
 - b. Given the absence of any a detailed market analysis relating to its proposed CNG station (based on Brown testimony pages 7 -8), at what rate does Delta propose to set its rates in order to earn a profit on the gas sold and the facility in general?

Response:

- a. “Market based rates” refers to a sales price to the end user which can be changed, as necessary, to provide recovery for the cost of service related to the CNG station, while remaining competitive with gasoline prices.
- b. See the response to Item 59.

Sponsoring Witness:

Matthew D. Wesolosky



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59. Please reference the testimony of John B. Brown at page 10, at lines 22 -23. When asked how Delta will determine the sales price to the public at the CNG Station, the company responds with the following:
“The sales price will be unregulated and adjusted to be competitive with other CNG stations as well as gasoline stations.”
- a. Explain what other CNG stations will be used to determine whether the Delta station will be competitive.
 - b. Explain what gasoline stations will be used to determine whether the Delta station will be competitive.
 - c. With regard to the answer to each a. and b. above, explain how the price for the fuel at the Delta station will be determined to be competitive.

Response:

- a. Delta expects to monitor the pricing at other stations in Kentucky as well as other stations along I-75 and I-64.
- b. Gasoline stations in the general vicinity of the proposed CNG Station.
- c. Based on current natural gas prices, Delta proposes to offer CNG for sale to the public at \$2.00 gasoline gallon equivalent plus any applicable taxes. Absent extreme volatility in natural gas prices, Delta would keep this price constant. Delta would monitor the relationship of the \$2 price to the price of gasoline to make sure that it is low enough to continue to incent the public to convert to its use while insuring that it is high enough to enable the station to earn a reasonable return.

Sponsoring Witness:

John B. Brown



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60. Please reference the testimony of John B. Brown at page 11, at lines 1 -11. Explain how the proposal does not violate the affiliate transaction rules at KRS 278.2201.
- a. How is a gasoline gallon equivalent determined?
 - b. How was the "\$5 of other operating costs" determined?
 - c. Was the cost for state tax on gasoline considered in the conclusion? If yes, explain in detail along with the calculation.
 - d. Was the cost for federal tax on gasoline considered in the conclusion? If yes, explain in detail along with the calculation.
 - e. Is there a state tax on CNG for transportation fuels?
 - i. If yes, was it considered in the calculation?
 - ii. If yes, explain in detail along with the calculation.
 - f. Is there a federal tax on CNG as a transportation fuel?
 - i. If yes, was it considered in the calculation?
 - ii. If yes, explain in detail along with the calculation.
 - g. Explain the calculation as to how the Company arrived at both the \$74 profit and the \$80 profit.

Response:

The use of the CNG station to fuel Delta's vehicles is a regulated activity. The sale of CNG for use as a motor vehicle fuel to the end user does not violate the affiliate transaction rules at KRS 278.2201 because Delta intends to sell the CNG at prices that are at or above cost.

- a. Page 5 of the Mr. Wesolosky's direct testimony describes the conversion of cubic feet of natural gas to gasoline gallon equivalents.
- b. The \$5 of other operating cost was for illustrative purposes only to explain the measurement of station profitability versus the contribution towards the revenue requirement.
- c. No.
- d. No.
- e. & f. Yes, there is both a state and federal tax on CNG for transportation fuels. The tax was not considered in arriving at the \$74 and \$80 profit, as this was an example to illustrate why a transportation rate should be charged to the station even though Delta owns the station.

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- g. Page 11 of the Mr. Brown's direct testimony walks through the calculation of both the \$74 and \$80 profit. The example was given for illustrative purposes to explain the measurement of station profitability versus the contribution towards the revenue requirement.

Sponsoring Witness:

Matthew D. Wesolosky



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61. Please reference the testimony of John B. Brown at page 12, lines 14 -17. Does Delta believe it in the interests of judicial economy for the company to request approval for a tariff for a CNG facility when there are no other existing CNG facilities in Delta's current customer territory?

Response:

Yes. It is most efficient and orderly to establish appropriate tariffs prior to CNG facilities being built.

Sponsoring Witness:

John B. Brown



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62. Admit that Delta is a publicly traded, for-profit company.

Response:

Delta is a publicly traded, for-profit Kentucky corporation.

Sponsoring Witness:

John B. Brown



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63. Please reference the testimony of John B. Brown at page 12, lines 18 -23. If the impact on the customers' bills is immaterial and the "revenues are expected to offset or exceed the costs as the business grows," why is it not in the best interest of the Company's shareholders to construct, own and operate the CNG facility in Delta's unregulated operations?

Response:

The fact that the cost of less than \$2.24 per year is not material to a customer's bill has no relevance on the materiality of a \$1.3 million investment for Delta as a whole, which represents 18% of its total capital spending in a year (Response to PSC – 1 Item 1b).

Refer to the response to Item 53 iii, v and vi.

In addition, since a major justification for building the station is so that several of Delta's utility vehicles can be fueled with natural gas, it is most appropriate that the station be built in the utility.

Sponsoring Witness:

John B. Brown



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64. Please reference the testimony of Jonathon W. Morphew, Manager of Engineering for Delta at page 4. Did the Company issue a request for proposal (RFP) for the construction and operation of the CNG facility? If yes, please any copy(ies).

Response:

No.

Sponsoring Witness:

Jonathan W. Morphew



VERIFICATION

RECEIVED

COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF CLARK)

DEC 21 2013
PUBLIC SERVICE
COMMISSION

The undersigned, **John B. Brown**, being duly sworn, deposes and says that he is Chief Financial Officer, Treasurer and Secretary of Delta Natural Gas Company, Inc. and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

John B. Brown

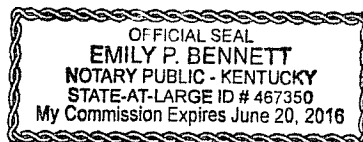
John B. Brown

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of December 2013.

Emily P. Bennett (Seal)
Notary Public

My Commission Expires:

6/20/2016



VERIFICATION

COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF CLARK)

The undersigned, **Glenn R. Jennings**, being duly sworn, deposes and says that he is Chairman of the Board, President and CEO of Delta Natural Gas Company, Inc. and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

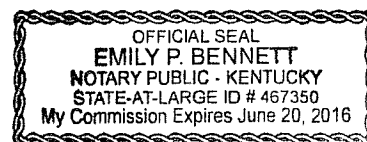
Glenn R. Jennings

Glenn R. Jennings

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of December 2013.

Emily P. Bennett (Seal)

Notary Public



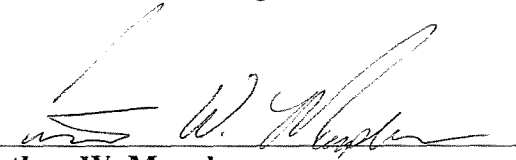
My Commission Expires:

6/20/2016

VERIFICATION

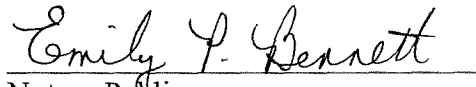
COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF CLARK)

The undersigned, **Jonathan W. Morphey**, being duly sworn, deposes and says that he is Manager of Engineering of Delta Natural Gas Company, Inc. and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.



Jonathan W. Morphey

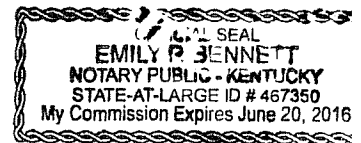
Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of December 2013.

 (Seal)

Notary Public

My Commission Expires:

6/20/2016



**DELTA NATURAL GAS COMPANY, INC.
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**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

65. Please reference the testimony of Mr. Morphew at page 5, lines 5 -6. Explain in detail what is meant by the “appropriate pressure and volume” noted in the testimony.

Response:

Adequate volume and pressure of natural gas will be provided to fill an auto in a reasonable amount of time. A 15 gge tank on an average auto can be filled in approximately 5 minutes.

Sponsoring Witness:

Jonathan W. Morphew

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66. Please reference the testimony of Mr. Morphew at pages 5 – 6. Is the means by which the customer fuels the vehicle with CNG “user friendly?” If yes, explain in detail.
- a. Will there be signage available for the customers?
 - b. Will there be any personnel available to assist customers in the event the customer does not understand how to fuel the vehicle?
 - c. What is the average fueling time for a CNG vehicle?

Response:

Yes.

- a. Yes.
- b. Yes. During normal work hours, Delta personnel will be located on-site in the Delta Natural Gas, Berea Office. Adequate signage will be provided indicating a toll free number for assistance after normal working hours.
- c. Approximately 5 minutes.

Sponsoring Witness:

Jonathan W. Morphew



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67. Are there any safety hazards related to fueling a CNG vehicle that are greater than fueling a gasoline or diesel vehicle? If yes, please explain in detail.

Response:

See the response to Item 25.

Sponsoring Witness:

Jonathan W. Morpew



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68. Is the State Fire Marshal's Office in any way involved with the construction of the CNG facility? If yes, explain in detail.

Response:

Delta has not yet contacted the State Fire Marshal's Office. After Delta receives approval to build the station, the State Fire Marshal's Office will be contacted regarding the construction of the CNG facility and involved, as necessary.

Sponsoring Witness:

Jonathan W. Morphew



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69. Has the State Fire Marshal's Office been contacted regarding the construction of the CNG facility?
- a. If yes, please provide copies of all documents exchanged between the State Fire Marshal's Office and Delta.

Response:

See the response to Item 68.

Sponsoring Witness:

Jonathan W. Morphew

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70. Is the State Fire Marshal's Office in any way involved with the operation of the CNG facility, aside from the permit noted on page 6? If yes, explain in detail.

Response:

See the response to Item 68.

Sponsoring Witness:

Jonathan W. Morphey



**DELTA NATURAL GAS COMPANY, INC.
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71. Has the State Fire Marshal's Office been contacted regarding the operation of the CNG facility?
 - a. If yes, please provide all documents that Delta has supplied to, obtained from or otherwise exchanged with the State Fire Marshal's Office regarding the proposed CNG.

Response:

See the response to Item 68.

Sponsoring Witness:

Jonathan W. Morphew



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72. Please reference the testimony of Mr. Morphew at page 6.
- a. Has the Department of Agriculture been contacted about the proposed CNG facility? If not, why not?
 - b. If so, please provide all documents that Delta has supplied to, obtained from or otherwise exchanged with the Department of Agriculture regarding the proposed CNG.

Response:

- a. No. Delta will not contact the Department of Agriculture until after receipt of Public Service Commission approval.
- b. Not applicable

Sponsoring Witness:

Jonathan W. Morphew



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

73. Please reference the testimony of Mr. Morphew at page 7, lines 14 -18, regarding Delta's discussions with potential customers, specifically the City of Berea, Berea College, and the Madison County Schools. Provide copies of all documents that have been exchanged between the stated entities and Delta that relate to these discussions.

Response:

See attached. Most all discussions were verbal. See the response to Item 3.

Sponsoring Witness:

Glenn R. Jennings

Glenn Jennings

From: Randy Stone <rstone@bereaky.gov>
Sent: Thursday, March 07, 2013 3:27 PM
To: Glenn Jennings
Subject: RE: CNG vehicles

Glenn,

The City presently has 101 insured vehicles. The Police has thirty cars operated on a daily basis. With Streets and Utilities we have at least twenty trucks on the road at any given time. I would need to know the cost of conversion for our vehicles and budget the conversion over a five year period. As I have said before I want the City to be a part of this project. Our budget for fuel in the police department for this fiscal year is \$105K, as an example.

Hope things are going well for you.

Randy Stone
City Administrator
City of Berea
rstone@bereaky.gov

From: Glenn Jennings [<mailto:GJENNINGS@deltagas.com>]
Sent: Thursday, March 07, 2013 10:21 AM
To: Randy Stone
Subject: CNG vehicles

dy:

Can you give me some idea of how many vehicle the City of Berea might want to run on natural gas and fuel up at a compressed natural gas station on Glades Road? I am interested in a one year and then a longer term view out to eventually cover all city vehicles.

Glenn

Glenn Jennings

From: Jeff Amburgey <Jeff_Amburgey@berea.edu>
Sent: Thursday, November 01, 2012 11:24 AM
To: Glenn Jennings
Cc: Aurelia Brandenburg
Subject: Natural Gas Fueling Station

Glenn,

In a meeting with Lyle this morning, he mentioned that Delta plans to build a natural gas fueling station on Glades Road. Aurelia Brandenburg, Berea's Purchasing Manager, and I would like to discuss the opportunity this could provide for some of the College's motor pool vehicles. Please let me know when you have time to discuss.

Thanks,

Jeff Amburgey
Vice President for Finance
Berea College
CPO 2214
Suite 220, Lincoln Hall
Chestnut St.
Berea, KY 40404
Voice: 859.985.3088
Cell: 859.582.8000
Fax: 859.985.3904
jeff_amburgey@berea.edu

*meet at Jeff's
11/6/12 8:30 AM*

*Aurelia B
Jeff
Judge W*

*discussed our plans
They are interested
in some CNG vehicles.*

Glenn Jennings

From: Glenn Jennings
Sent: Monday, July 09, 2012 1:01 PM
To: Donald.Newell@ky.gov
Cc: Johnny Caudill
Subject: CNG

Don:

Our meeting today was very productive. Thanks for coming to meet with us at Delta Natural Gas. We appreciate you sharing with us.

We are planning to continue efforts to install a CNG station in Berea. We will continue to think about upgrading our station in the Corbin area but will also wait awhile on the potential development of other stations there. We will continue our efforts for a potential station on the Bluegrass Army Depot at Richmond.

We are very interested in the State of Kentucky developing a network of CNG stations for state vehicles as well as possibility the public to utilize. Any of these that would be in our 23 county area would certainly help develop further use of compressed natural gas as a vehicular fuel.

We have a system of about 2,500 miles of pipe in the 23 counties where we have facilities. We are pleased to consider providing gas service to any potential stations on our system. We wish to encourage the State of Kentucky to continue in their efforts to expand the use of natural gas by installing or helping with CNG stations around the state.

We are pleased to meet any time and have further information-sharing and discussions about how together we can help increase the use of compressed natural gas in vehicles.

Best wishes,

Glenn Jennings
Delta Natural Gas Company



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

74. Please reference the testimony of Mr. Morpew at pages 7 and 8. Regarding each of the vehicles the customer lists, provide the difference in price between the same, make and model of the vehicle that runs on CNG versus that of the single fuel gasoline or diesel vehicle.

Response:

See the response to PSC 1, Item 4.

Sponsoring Witness:

Jonathan W. Morpew



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

75. Please reference the testimony of Mr. Morpew at page 8. Please explain in detail and itemize the “annual operating costs” of \$20,000 for the CNG facility.

Response:

See the response to PSC 1, Item 8.

Sponsoring Witness:

Jonathan W. Morpew



DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365

FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013

76. Please reference the testimony of Mr. Morphew at page 8 with regard to the statement that:
“Site work including, grading, drainage, installation of conduits, preliminary wiring and other general site construction can be performed prior to equipment delivery. Our goal is to energize the station within 180 days of authorization to commence work, depending on weather conditions.”
- a. Provide the following related to all items listed in the statement:
 - i. construction plans,
 - ii. permits,
 - iii. licenses,
 - iv. certifications, and
 - v. other legally required approvals.

Response:

Delta does not have the requested documents at this time. These items will be obtained after receiving authorization from the Public Service Commission to commence with the project.

Sponsoring Witness:

Jonathan W. Morphew



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

77. Please reference the testimony of Mr. Wesolosky, Vice-President-Controller, Delta, at pages 1 -2. Provide a copy of Delta's corporate structure, including all regulated and unregulated companies or enterprises.

Response:

The wholly-owned non-regulated subsidiaries of Delta Natural Gas Company, Inc. are Delta Resources, Inc., Delgasco, Inc. and Enpro, Inc.

Sponsoring Witness:

John B. Brown



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

78. What personal experience does Mr. Wesolosky possess with the financial operations of a CNG facility actual open for, and providing service to, the public?

Response:

Refer to page 1 of Mr. Wesolosky's direct testimony which lists Mr. Wesolosky's experience with respect to Delta's financial operations.

Sponsoring Witness:

Matthew D. Wesolosky



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

79. Please reference the testimony of Mr. Wesolosky at page 3, lines 1 - 5. Provide all details, including related documents, pertaining to the meetings with “vendors of CNG equipment, as well as other utilities that operate CNG stations.” Include at least, but not limited to the following:
- a. the names and addresses of the vendors,
 - b. the expertise or specialty of each vendor,
 - c. the equipment discussed,
 - d. plans, designs, strategies, and finances discussed, and
 - e. any and all costs considered, whether projected or actual.

Response:

- (a.) CNG Source
1350 Brookeville Way
Indianapolis, IN 46239

Tri State Meter & Regulator
2865 Rudder Rd
Memphis, TN 38120

Tri State Energy Services
411 Edgewater Dr.
Cedar Bluff, VA 24609

Air Systems – CNG
4512 Bishop Lane
Louisville, KY 40218

- (b.) The primary practice of CNG Source is the installation of CNG stations. They also specialize in the maintenance and repair of CNG stations when necessary. They offer a complete turn-key package for total station installation.

Tri State Meter & Regulator provide for sales of natural gas related equipment, primarily meters and regulators. They also provide for the installation of CNG fueling stations.

Tri State Energy Services’ primary function provides for supplying equipment pertaining to natural gas wells and compression. They also demonstrate interest in CNG station installations.

**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

Air Systems – CNG is primarily an air compressor supplier. They have also expressed interest in the installation of CNG stations.

- (c.) There were basic components of the CNG station discussed with all vendors. Some of the key components consisted of:

Compression capability and capacity.

Compression redundancy for continual operation during repair or maintenance.

Storage capacity of not less than 300 gge (3 vessels/100 gge each)

Natural gas auto-regen dryer for fuel dehydration

Two dispensers, each equipped with two hoses. A total of three hoses for auto use and one hose for commercial use.

Card reader for self-serve, credit card operation.

- (d.) Upon awarding the contract to the successful vendor, the vendor will provide a complete set of engineering and architectural plans to Delta. A payment schedule will be established prior to awarding the contract.
- (e.) See attached summary and bid sheets of vendors listed in Item (b) of Question 79. The summary sheets were prepared by Mr. Morphew after receipt of the materials from the vendors.

Sponsoring Witness:

Jonathan W. Morphew

**SUMMARY SHEET
CNG SOURCE
1350 BROOKEVILLE WAY INDIANAPOLIS IN. 46239
CONTACT: DOUG LUBS**

<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>RATE PER UNIT</u>	<u>ESTIMATED COST</u>
CAMERON 250HP COMPRESSOR	2	972SCFM	\$191,000.00	\$382,000.00
AUTO-REGEN DRYER	1		\$98,650.00	\$98,650.00
3PACK STORAGE SPHERE	1	11,650SCF	\$93,750.00	\$93,750.00
PRIORITY SEQUENTIAL PANEL	1		\$37,900.00	\$37,900.00
DUAL POST DISPENSER	1	STD	\$38,225.00	\$38,225.00
DUAL POST DISPENSER	1	TRANS NOZ	\$41,880.00	\$41,880.00
CARD READER	1		\$13,500.00	\$13,500.00
ADDITIONAL ISLAND READER	1		\$6,800.00	\$6,800.00
INSTALLATION MATERIALS	1		\$337,500.00	\$337,500.00
INSTALLATION LABOR	1		\$112,500.00	\$112,500.00
CANOPY	1		\$39,600.00	\$39,600.00
COMPRESSOR START UP AND TRAINING	1		\$5,000.00	\$5,000.00
DESIGN DEVELOPMENT	1		\$56,100.00	\$56,100.00
FREIGHT	1		\$9,700.00	\$9,700.00
SIGNAGE	1		\$20,000.00	\$20,000.00

SUB TOTAL \$1,293,105.00

UNIT PRICE DOES NOT INCLUDE APPLICABLE SALES TAX

LES TAX ON EQUIP. \$63,012.30

TOTAL COST **\$1,356,117.30**

CNG Source, Inc.

1350 Brookville Way, Suite F, Indianapolis, IN 46239
Ph: (317) 353-8241 Fax: (317) 522-1505
Website: <http://www.cngsource.com>

Leaders in Compressed Natural Gas Solutions

February 19, 2013

Quote No: 13-40316-A

Delta Natural Gas
3617 Lexington Rd.
Winchester, KY 40391
Attn: Brent Means

Re: CNG Refueling Station – Berea, KY

Dear Brent:

CNG Source is pleased to propose the following CNG station proposal for your consideration:

Given:

- 250 PSIG inlet pressure available
- Assume 480 Volt 3/60 power available

Requirement:

- Minimum of 2 compressors at a minimum of 150 SCFM each
- 3 CNG Storage spheres (11,650 +/- each)
- 1 Auto-Regen Dryer
- Priority/Sequential Panel
- 2 CNG Dispensers (One dispenser equipped to fill 2 passenger vehicles. One dispenser equipped to fill a passenger vehicle and a large truck)
- 1 Card Reader

Equipment Recommendation:

1. COMPRESSOR Configuration:

Cameron Model CFA32-250 Natural Gas Compressors, rated for 972 SCFM (7.4 GGE/Minute) at 4500 PSIG with 250 PSIG inlet pressure, 250 HP (243 BHP), 2 throw, 3 stage, 460 Volt 3/60 with weather enclosures and all standard features. Dimensions = 18' L x 10' W x 9' H.

These compressors are designed, engineered, fabricated, assembled, programmed, and tested all in house at CNG Source. This gives up the quality control and ability to keep cost down. The Cameron is designed for low maintenance with 16,000 hr ring life on average. Below are standard and option features on every CNG Source package.

- Standard Noise and Weather Enclosure
- Inner stage Air Cooler, Louvered Enclosure for Flow
- Oil Cooler with Explosion Proof By-Pass
- 8" Color Touch Operator Screen (accessible on outside of enclosure)
- Alarm History, Tracking, and Data Logging
- Safety Switches: Vibration, Lube Level, Lubricator No Flow



Your One Stop CNG Solution

- One Power Connection to **remote starter box** (Min 15ft from Compressor)
- 460 Volt 3/60 Solid State reduced voltage starter
- Toshiba Electric Motor, Class 1 DIV2
- ASME 120 GAL Recirculation Tank with Float Switch
- Explosion Proof Valves (Inlet, Blow Down)
- PLC Controls
 - **Remote Monitoring (Customer Supplied Internet Connection)**
 - Auto dialer communication
- Explosion Proof Pressure Transducers for Inner Stage, Inlet Pressure, Final Pressure, Oil Pressure
- RTD's for Inner stage Discharge and Oil Temperature
- Crank Case Heater
- Direct Drive Compressor & Motor Coupling
- Easy Access Tank Drains all in one location.
- 1 year Warranty
- Optional 5 -year warranty on Cameron Compressor pump

PRICE \$ 184,500.00 Each

FOB: Indianapolis, IN

*(SEE ATTACHED EMAIL FOR
ADDITIONAL COSTS)
\$6500 PER FOR VERTICAL
DISCHARGE COOLER*

OPTIONAL COMPRESSOR PACKAGES

200HP

Cameron Model CFA32-200 Natural Gas Compressor, rated for 790 SCFM (6.32 GGE/Minute) at 4500 PSIG with 250 PSIG inlet pressure, 200 HP (200 BHP), 2 throw, 3 stage, 460 Volt 3/60 with weather enclosures and all standard features per above. Dimensions = 18'L x 10'W x 9'H.

PRICE \$ 180,800.00 Each

150HP

Cameron Model CFA32-150 Natural Gas Compressor, rated for 578 SCFM (4.62 GGE/Minute) at 4500 PSIG with 250 PSIG inlet pressure, 150 HP (149.4 BHP), 2 throw, 3 stage, 460 Volt 3/60 with weather enclosures and all standard features per above. Dimensions = 18'L x 10'W x 9'H.

PRICE \$ 177,500.00 Each

100HP

Cameron Model CFA32-100 Natural Gas Compressor, rated for 360 SCFM (2.88 GGE/Minute) at 4500 PSIG with 250 PSIG inlet pressure, 100 HP (85.2 BHP), 2 throw, 2 stage, 460 Volt 3/60 with weather enclosures and all standard features per above. Dimensions = 16'L x 8'W x 9'H.

PRICE \$ 161,200.00 Each



Your One Stop CNG Solution

75HP

Cameron Model CFA32-75 Natural Gas Compressor, rated for 290 SCFM (2.32 GGE/Minute) at 4500 PSIG with 250 PSIG inlet pressure, 75 HP (75 BHP), 2 throw, 2 stage, 460 Volt 3/60 with weather enclosures and all standard features per above. Dimensions = 16'L x 8'W x 9'H.

PRICE \$ 159,700.00 Each

50HP

Cameron Model CFA32-50 Natural Gas Compressor, rated for 200 SCFM (1.6 GGE/Minute) at 4500 PSIG with 250 PSIG inlet pressure, 50 HP (51.1 BHP), 2 throw, 2 stage, 460 Volt 3/60 with weather enclosures and all standard features per above. Dimensions = 16'L x 8'W x 9'H.

PRICE \$ 156,500.00 Each

2. DRYER:

Automatic regenerative dryer: PSB Model NG SRD 10-3-300-DDP, Dual tower, automatic-regenerative desiccant dryer. Rated at 1000 SCFM at 250 PSIG inlet. Includes digital dewpoint readout, cold weather kit and all standard features.

PRICE \$ 98,650.00

FOB Erie, PA

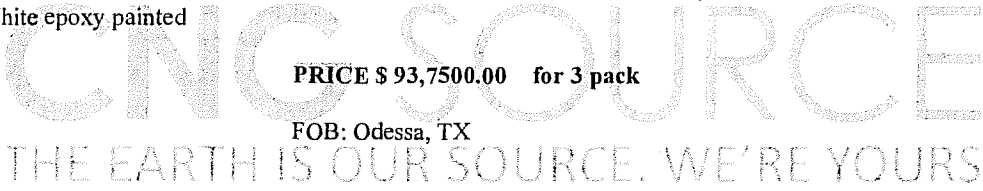
3. STORAGE:

One 3-pak CNG storage spheres, 11,650 cubic feet each at 4500 PSIG. Providing approximately 100 GGE fast fill direct from storage.

- 48" inside diameter each
- 5500 PSIG design pressure
- Standard with ASME relief valve manual drain valve, both inlet/discharge service valves
- White epoxy painted

PRICE \$ 93,750.00 for 3 pack

FOB: Odessa, TX



4. PRIORITY/SEQUENTIAL PANEL

CNG Source valve control panel for sequencing the gas from the storage banks to (2) two dual hose dispensers (total 4 hoses) for fast fill pressure to 3600 PSIG. Also prioritizes the flow of gas from the compressors to the storage with additional valves for direct fill by-passing the storage direct into the vehicle. Controlled by separate PLC.

PRICE \$ 37,900.00



Your One Stop CNG Solution

5. CNG DISPENSER:

CNG Source Model CNG8000DT, Two high hose standalone CNG Dispenser

Standard Scope of Supply:

- (2) Solenoid valves
- (2) Pressure Gauge 6000 PSI
- (2) In-line hose breakaway
- (2) Manual shutoff valve
- (1) Powder coated cold roll carbon steel body
- (2) Mass Flow Meters, Nominal flow rate 1500 SCFM flow rates through the dispenser depends on vehicle capacity to receive gas and nozzle attached to dispenser hose.
- (2) ASME relief Valve
- (2) 12' x 1/2" hose assembly (electrically conductive CNG twin hose)
- (2) Electronic display
- Tubing is 1/2" seamless stainless steel tubing rated at 5000 PSI
- MAWP 5000 PSI
- (2) Coalescing filters installed in dispenser
- (2) NGVI Staubli GMV 09 Nozzles

PRICE \$ 38,225.00

CNG Source Model CNG8000DT, Two high hose standalone CNG Dispenser with all same options as above dispenser except is equipped with one hose with NGVI OPW Transit Nozzle.

PRICE \$ 41,880.00

FOB: Indianapolis, IN

6. CARD READER:

Fuelmaster Model FMU 2550 PLUS card reader – capable to handle VISA/MC and all credit cards or fleet cards with appropriate processing firm. Also accepts proprietary Prokees encoded and managed by customer. (Customer to provide computer on site for credit card authorization/processing)

- Prokee Encoder
- 50 Prokees
- Receipt printer
- Management software

PRICE \$ 13,500.00

Additional Island card reader **PRICE \$ 6,800.00**



Your One Stop CNG Solution

On-Site Start up, commissioning and training PRICE \$ 5000.00

Freight: FOB Factory – Estimated \$ 9,700.00

Terms: 50% down payment with PO
40% net 30 days after shipment of equipment
10% net 30 days after start up (max 90 days from shipment of equipment)

Delivery: 18-20 Weeks ARO

Remote Monitoring graphic software and Service/PM Maintenance contract available at additional cost.

Installation is NOT included but can be provided at an additional cost.

Please NOTE separate DESIGN PROPOSAL. Until specific HP compressors and dryer is determined we will only be able to assume electrical service required. In order to provide specific installation costs we recommend the design proposal.

INSTALLTION BUDGET PRICING BREAKDOWN

All Electrical work including new 1000 Amp Service	\$ 105,000.00
All Mechanical work including inlet gas connection and high pressure lines	\$ 67,500.00
Site preparation / Erosion control	\$ 30,000.00
Concrete work to include 40'x20' equipment pad, 50'x20' concrete under canopy, including canopy footers and Dispenser islands	\$ 49,000.00
Asphalt	\$ 92,600.00

PRICE Estimate

\$344,100.00

20' x 50' Dispenser Canopy with 8 LED fixtures, (4) 10" columns, including freight and erection

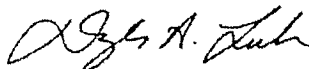
(SEE ATTACHED EMAIL FOR UPDATED INSTALLATION COST) \$450,000

PRICE \$ 39,600.00

Installation terms: Progress payments based on % completion of work

If you have any questions or need any additional information, please contact me.

Regards,
CNG Source, Inc.



SEE ATTACHED EMAIL FOR SIGNAGE COST
\$ 20,000

Doug Lubs



Your One Stop CNG Solution

CNG Source, Inc.
1350 Brookville Way Suite F, Indianapolis, IN 46239
Ph: (317) 353-8241 Fax: (317) 522-1505
Website: <http://www.cngsource.com>

Leaders in Compressed Natural Gas Solutions

February 19, 2013

Quote No: 13-40316-ADP

Delta Natural Gas
3617 Lexington Rd.
Winchester, KY 40391
Brent Means

Re: Design Proposal
CNG Fueling Station – Berea, KY

Dear Brent,

CNG Source is pleased to present this proposal to provide Design Development Services for the subject project. This proposal is based on our understanding that the unmanned CNG fueling station is to be open to the public on a 24 hour basis. The station is to be sited such that two-way traffic will access two fuel islands under an overhead canopy. Furthermore, public restroom facilities are not required for this site.

The scope of our services includes:

- Surveying
 - Boundary
 - Topo
- Phase I Environment Study
- Geotechnical Subsurface Exploration
- Civil/Site Design
 - Site Layout
 - Grading Plan
 - Paving Plan
 - Drainage Plan
 - SWPPP
 - DOT review for Accel/Decel lanes
 - Landscaping plans
 - Details, Piping Profiles & Specs for the above
- Zoning Confirmation
- CNG Equipment Design
 - Equipment Sizing and Calcs
 - Equipment List



- Structural Design
 - Foundation Design for Fuel Island Canopy
 - Steel Design for Fuel Island Canopy
- Mechanical Plans & Specs
 - Sleeving plan for gas lines
 - Gas piping schematics
- Electrical Plans & Specs
 - Site & canopy lighting
 - Single line diagram
 - Grounding plans
 - Power distribution & circuitry
 - Panelboard & light fixture schedules

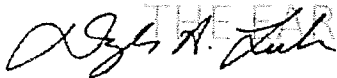
PRICE \$56,100.00

Please note the following clarifications:

1. Zoning changes are not included
2. Permitting by contractors
3. City, county or state review or application fees are by the client.
4. Work not specifically described above shall be billed at the rates listed on the attached "Schedule of Fees"
5. Terms – 50% Deposit, 50% Net 30 days after completion of original scope of work.

If you have any questions or need further clarification, contact me at your convenience.

Regards,
CNG Source, Inc.



CNG SOURCE
THE EARTH IS OUR SOURCE. WE'RE YOURS

Doug Lubs



Your One Stop CNG Solution

Proposal Acceptance

The following signatures indicate acceptance of the foregoing Design Development & Engineering Services Proposal. Please return and executed copy of this page to our office.

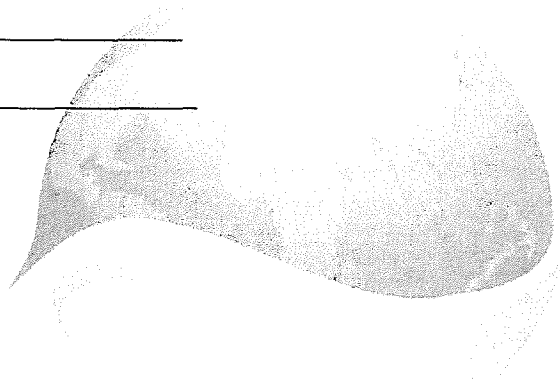
Delta Natural Gas

By: _____

Date: _____

Printed: _____

Title: _____



CNG SOURCE
THE EARTH IS OUR SOURCE. WE'RE YOURS



Your One Stop CNG Solution

Brent Means

From: Doug Lubs <doug.lubs@cngsource.com>
Sent: Thursday, February 28, 2013 1:58 PM
To: Brent Means
Cc: Steve Lewis; Jonathan Morpew
Subject: RE: CNG Station

Brent,
Price adder for vertical discharge cooler out top of enclosure on this package is:
For 3 stage units (250HP, 200HP or 150HP) add \$6,500.00 each
For 2 stage units (100HP, 75HP or 50HP) add \$3,500.00 each

Price adder for all concrete versus asphalt is going to be very dependent on the geotech investigation. In fact the asphalt estimate is just a guess until the investigation is done. About all I can tell you is plan on an additional 20% to 25% additional cost for all concrete.

Signage also is all dependent on how high you want to go in the air (which can be dependent on ordinances) and how fancy. A fairly simple lit sign 5'x10' can cost \$15,000 to \$20,000.

Best would be to engage in a design agreement to get hard installation costs. Hope some of this is helpful.

If you have any questions or need any additional information, please contact me.

Regards,
Doug Lubs
CNG Source, Inc
317.353.8241
www.cngsource.com



From: Brent Means [mailto:bmeans@DeltaGas.com]
Sent: Monday, February 25, 2013 9:28 AM
To: 'Doug Lubs'
Subject: RE: CNG Station

Doug,
It was nice meeting you as well. We had hoped for a little more time to discuss options too. We had some last minute plan changes when the CEO got wind of our trip. We will be meeting with the PSC this week. If all goes well, I feel we will be contacting you for a site visit and discuss more options for our station.

We are still looking at the 250hp compressor. That may change in future talks, but for pricing purposes lets go with that now. A basic lighted sign should be sufficient as well.

Brent Means

From: Brent Means
Sent: Thursday, October 03, 2013 10:27 AM
To: 'Doug Lubs'
Cc: Steve Lewis
Subject: RE: CNG Station

Doug,
It's my understanding that the "turn key" price includes all applicable sales taxes. Am I correct in that?

From: Doug Lubs [mailto:doug.lubs@cngsource.com]
Sent: Friday, September 27, 2013 7:34 AM
To: Brent Means
Cc: Steve Lewis
Subject: CNG Station

Brent,
I believe attached is latest proposal. Equipment pricing is still good. Installation Estimate is just an estimate. We are putting in a station of similar caliber and you might want to bump that up to \$400,000 to \$450,000 but all depends on soil quality etc. and how much you do versus contractor etc.

If you run the 250HP compressor 2000 hours per year producing 74,000 DGE/month at \$0.08/KWh this will cost you about \$31,000 year. Plus other misc. power for lights etc. I would estimate about \$3400/month electrical cost.

If you have any questions or need any additional information, please contact me.

Regards,
Doug Lubs
CNG Source, Inc
317.353.8241
www.cngsource.com



SUMMARY SHEET
TRI STATE METER AND REGULATOR 2865 RUDDER ROAD MEMPHIS TN. 38120
CONTACT: TOM DICKSON

<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>RATE PER UNIT</u>	<u>ESTIMATED COST</u>
ARIEL 100HP COMPRESSOR	2	360SCFM	\$233,632.00	\$467,264.00
AUTO-REGEN DRYER	1		\$155,555.00	\$155,555.00
3PACK STORAGE SPHERE	1	11,650SCF	\$93,581.00	\$93,581.00
PRIORITY SEQUENTIAL PANEL	1		\$21,215.00	\$21,215.00
DUAL POST DISPENSER	1	STD	\$40,948.00	\$40,948.00
DUAL POST DISPENSER	1	TRANS. NOZ	\$51,274.00	\$51,274.00
CARD READER	1		\$21,500.00	\$21,500.00
INSTALLATION MATERIALS	1		\$675,181.50	\$675,181.50
INSTALLATION LABOR	1		\$225,060.50	\$225,060.50
DESIGN DEVELOPMENT	1		\$21,000.00	\$21,000.00
SIGNAGE	1		\$12,500.00	\$12,500.00
SUB TOTAL				\$1,785,079.00
UNIT PRICE DOES NOT INCLUDE APPLICABLE SALES TAX				
SALES TAX ON EQUIP.				\$91,591.11
TOTAL COST				\$1,876,670.11

Date of Proposal: February 18, 2013
Company: Tri-State Meter and Regulator Service, Inc.
Contact: Tom Dickson
Phone: (901) 363-0377
Fax: (901) 365-6809
E-mail: tom@tristatemet.com
Job: Delta Natural Gas CNG Filling Station
Contact: Brent Means, Senior Engineering Tech
Address: Delta Natural Gas Company, Inc.
Phone: (859) 744-6171, Ext. 134
Fax: (859) 744-3623



Thank you for the opportunity to make this alternative proposal for a Delta Natural Gas complete CNG Fuel System solution. The selected equipment can generate-up to 345.6 GGE/hour of CNG at 3,600 psi with an inlet pressure of 240 psi. The storage capacity of the three 48" CNG storage spheres is 30,375 scf @ 4,500 psi and 34,200 scf @ 5,000 psi.

COMPRESSION

Two (2) J-W CNG1100-3P-C1 Compressors \$ 448,889.00
 Motor: TECO or equal 100 HP 1800 RPM 460 VAC motor
 Compressor: Ariel JGP-2 (3-5/8" & 2-3/4" & 1-1/4" x 3.0")

- Includes Enclosure
- Includes Soft Start Motor Starters
- Rated 360 scfm @ 240 psig inlet pressure (per unit)
- See Product Description for Performance Ratings

One (1) J-W Station Controller \$ 18,375.00

- SP1000
- Program & hardware system that facilitates site control between two J-W CNG1100-3P-C1 packages
- Adds Lead/Lag capability to compressors
- Adds Remote monitoring (SCADA) & data logging capabilities
- Includes Ethernet connectivity for remote PLC access

STORAGE

J-W ASME CNG Storage Spheres 3-Pack \$ 93,581.00

- 48IDS (QTY 3)
- 48" ID ASME storage spheres shipped loose
 - Each sphere 81 GGE @ 4,500 psi and 91 GGE @ 5,000 psi
 - 5,500 psi MAWP

Priority Valve Panel \$ 21,215.00

- PR2000
- Mounted in cabinet
- Air Actuated Valve Panel (Customer to supply instrument air)

GAS DRYER

One (1) Xebec DTRA-NGX-Twin-tower Dryer \$ 155,555.00

- Model No. DTRA18NGX-1.5-Autodew (350)
- Twin-tower Natural Gas water vapour adsorber with automatic initiated heat reactivated closed loop natural gas counter-current regeneration system.
- 3-Valve Bypass Adder
- DTRA Pilot Gas Assembly
- DTRA18 Heat Tracing Option

DISPENSER

One (1) TGT T7203-6CNG50W Twin High Hose Stand Alone CNG Dispenser with 3 coalescing filters installed in dispenser with Block & Bleed Valves; and two (2) NGV1 Type 2 Refueling Connector Nozzle (Staubli).....	\$ 40,948.00
One (1) TGT T7203-6CNG50W Twin High Hose Stand Alone CNG Dispenser with 3 coalescing filters installed in dispenser with Block & Bleed Valves; and two (2) NGV1 Type 1 Refueling Nozzle Sherex CT1000	\$ 51,274.00
FuelMaster 2500 Plus with ProKee Access and Credit Card Reader and Printer.....	\$ 21,500.00

DRAWINGS

One (1) set of Engineered Drawings for CNG equipment installation	\$ 21,000.00
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<u>ESTIMATED INSTALLATION</u>	\$ 105,000.00
Distance between storage spheres and dispensers greatly increases installation costs.	

This proposal:

1. Does not include permits.
2. Does not include start-up and training requirements.
3. Installation price may vary some depending on site evaluation and station design.

Total CNG Equipment	\$ 977,337.00
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Notes:

1. Compressor delivery 18 to 22 weeks
2. Trucking and Crane rental not included in price.
3. Cut sheets and product description included in attachment.

UNLESS OTHERWISE AGREED IN WRITING OR MODIFIED, THIS QUOTE IS MADE SUBJECT TO THE FOLLOWING CONDITIONS:

1. State, Local and Federal taxes are **NOT** included in the quote and Tri-State Meter will collect if required.
2. Startups shall be done within 90 days of delivery of equipment, unless prior arrangements are made. After 90 days, a daily labor charge will be incurred for startup.
3. All claims for shortages, damages, or defective parts must be filed with the seller within thirty days after the day of shipment or shall otherwise be waived. Damages shall not exceed purchase price of the materials ordered.
4. Domestic: Freight is Carriage and Insurance Paid (CIP) Destination, per Incoterms 2000. Equipment is property of Tri-State Meter until 100% full payment is made. Freight and Insurance will be prepaid and added. If Tri-State Meter does not arrange Freight and Insurance; the receiving company bares all risk.
5. Quote is valid for 30 days, unless otherwise stated.

6. Payment Terms: 50% with order for purchase;
40% upon delivery of equipment; and
Balance upon completion of installation, startup, and training.

7. Warranty: 1 to 1.5 Year Limited, depending upon product

Prices quoted are made in good faith and any clerical error will be basis for nullifying prices and terms upon notification to purchaser.



February 18, 2013

Mr. Brent Means
3617 Lexington Road
Winchester, KY 40391
Delta Natural Gas Company, Inc.

Re: Delta Natural Gas CNG Filling Station
Berea, KY

Mr. Means:

Linkous Construction Co., Inc is pleased to provide a preliminary proposal for the above referenced project. The preliminary cost for this project is **\$1,772,579**.

Below is a list of qualifications, exclusions and assumptions in our proposal:

- We have included the attached proposal from Tri-State Meter & Regulator
- We have excluded the cost for unsuitable soils
- We have excluded the cost of any environmental testing or subsurface exploration
- We have included concrete paving for the traffic area around the pumps
- We have included limestone gravel inside the enclosed area where the CNG equipment will be located
- We have included chain link fencing as an enclosure for the CNG equipment
- We have included concrete equipment pads for the CNG equipment
- We have excluded all civil design and site layout design fees
- We have excluded architectural, structural, electrical and mechanical design fees
- An allowance of **\$12,500** will need to be added if a pylon sign is to be provided at the entrance of the filling station.
- Linkous Construction reserves the right to revise this cost once final plans have been completed and a full scope of work has been agreed upon by Delta Natural Gas, Linkous and Tri-State

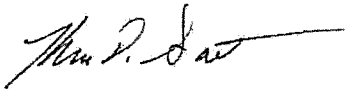
Brent Means
February 18, 2013
Page 2 of 2

Linkous and Tri-State would appreciate the opportunity to sit down with you and discuss this proposal further at your convenience.

If we can be of further assistance please call.

Sincerely,

Linkous Construction Company, Inc.

A handwritten signature in black ink, appearing to read "Kevin D. Scott", with a long horizontal flourish extending to the right.

Kevin D. Scott
Sr. Project Manager

Tri-State Meter

Date of Proposal: February 18, 2013
Company: Tri-State Meter and Regulator Service, Inc.
Contact: Tom Dickson
Phone: (901) 363-0377
Fax: (901) 365-6809
E-mail: tom@tristatemeteter.com
Job: Delta Natural Gas CNG Filling Station
Contact: Brent Means, Senior Engineering Tech
Address: Delta Natural Gas Company, Inc.
Phone: (859) 744-6171, Ext. 134
Fax: (859) 744-3623



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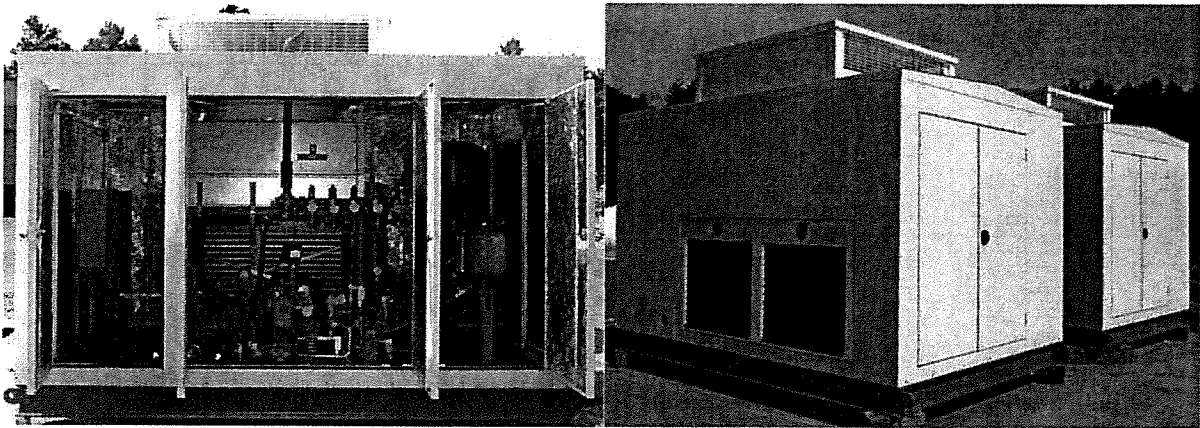
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EA-100-3

TECO 405T Frame or equal
 Ariel JGP-2 3-5/8" & 2-3/4" & 1-1/4" x 3.0" Stroke

Package Application

The compressor package is designed for optimum performance at the following operating conditions:

Case	Suction Pressure (psig)	Discharge Pressure (psig)	Suction Temperature (°F)	Capacity (SCFM)	Required Horsepower
1	175	4,500	80	312	91
2	200	4,500	80	365	100
3	225	4,500	80	375	100

Process gas specific gravity = 0.61 per customer supplied gas analysis; Elevation = 2000'; Ambient Air = 100°F. Package operating conditions are *not* limited to those described above. Variations in package flow capacity due to site conditions, including elevation, gas temperatures, gas composition, fuel composition, etc., should be expected, consult the J-W Power Company Applications Department with actual conditions for site ratings. J-W Power Company guarantees Ariel 7.6.5.1 performance runs predicted flow at 90%. *Optional VVCP required

Motor

Manufacturer TECO or equal
 Model EP1004
 Frame 405T
 Rating 100 HP @ 1,800 RPM
 Poles 4
 Voltage 460 VAC 3 PH 60 HZ
 Insulation F
 Service Factor 1.15

Compressor

Manufacturer / Model Ariel/JGP-2
 Type Reciprocating

Maximum HP	170		
Maximum/Minimum RPM	1,800 / 900		
Maximum Rod Load Tension	6,000 lbs		
Maximum Rod Load Compression	7,000 lbs		
Maximum Total Rod Load	12,000 lbs		
Number of Throws	2		
Stroke	3"		
Rod	1-1/8"		
<i>Cylinders</i>			
Stage	1	2	3
Number of Cylinders	1	1	1
Bore & Class	3.625" / 3-5/8JG	2.75"/3-SG-CE	1.25" / 1-3/4SG-FS-HE
Action	DBL	CE	HE
MAWP	1270 psi	3,000 psi	6,100 psi
VVCP	Yes	No	No
Spacers	1	0	0

**VVCP on 1st stage and Spacers can be quoted upon request*

Coupling¹

Model	AMR-375
Coupling Guard	Aluminum (non-sparking)

Cooler¹

Manufacturer / Model	TBD
Mounting	On Skid
Drive	3 HP TEFC electric motor
ASME Code Stamp	No
National Board Registered	No
Header Material	TBD
Tube Material	TBD
Louvers	No
Ambient Air Design	100°F
Elevation Design	2,000'

Gas Section Design

Section	IC-1	IC-2	AC
Temperature Out	130°F	130°F	120°F
MAWP (psi)	1,270	2,550	5,000

**Based on 0.61 Specific Gravity Gas*

Controls

Controller Manufacturer	Murphy
Annunciator	Murphy Centurion
Power Source	Site Power
Mounted	On Skid

Panel Inputs

	Action	Instrument Location	Display Location
Emergency Shutdown Loop	S	Panel	Panel
High/Low Suct. Press. (First stage)	A/S	Panel	Panel
High/Low Disch. Press. (each stage)	A/S	Panel	Panel
Low Compressor Oil Pressure	A/S	Local	Panel
High Compressor Oil Temperature	A/S	Local	Panel
High Disch. Gas Temp. (each cyl.)	A/S/C	Local	Panel
Low Compressor Frame Oil Level	S	Local	Local/Panel
High Compressor Vibration	A/S	Local	Local/Panel
Compressor Lubricator No-Flow	A/S	Local	Local/Panel
Captive Receiver Pressure	A/S/C	Panel	Panel
High Captive Receiver Level	S	Local	Panel
Main Motor Running	A/S	MCC	Panel
Cooler Motor Running	A/S	MCC	Panel
Prelube Pump Running	A/S	MCC	Panel
High Cooler Vibration	S	Local	Local/Panel
Soft Start Fault	S	MCC	Panel
Instrument Air Pressure	A/S	Panel	Panel
Storage Pressure	A/S/C	Storage Skid	Panel
Final Discharge Temperature	A/S/C	Local	Panel

A = Alarm / S = Shutdown / C = Control Point

Panel Outputs

	Device Location
Main Motor Run	MCC
Cooler Motor Run	MCC
Prelube Pump Run	MCC
Suction Valve Compressor	Skid
Filter Drain Valve Compressor	Skid
Unit Fault	Panel
Unit Alarm	Panel

Motor Starters¹

Drive Motor	Starter 100 HP Softstart or equal
Prelube Motor Starter	2 HP across the line
Cooler Motor Starter	3 HP across the line

Above listed starters are provided in a NEMA 4 enclosure for the customer to mount in a non-hazardous area.

Process Piping'

- Process piping adheres to ASME B31.3 Random Normal Fluid Service and piping is hydrostatically tested 1.5 times MAWP.
- Piping will be A106-B Carbon Steel pipe and/or 316 seamless tubing.
- Pressure vessels are ASME Section VIII coded and National Board Registered, and are hydrostatically tested 1.3 times MAWP

Vessels'

Stage	Blowdown Tank	1st Suct	2nd Suct	Final	Final
MAWP	1270 psi	1270 psi	5000 psi	5000psi	5000 psi
Type	Vertical Tank	CLSC FLTR	CLSC FLTR	CLSC FLTR	CLSC FLTR
Qty	1	1	1	2	2

Process Relief Valves'

Location	Suction	IC-1 Inlet	IC-2 Inlet	AC Inlet
Type	Mercer	Mercer	Mercer	Mercer
Set Pressure (psig)	1270 psi	1270 psi	2550 psi	5000 psi

Skid'

Number of Main Runners	2
Compressor skid	Structural steel skid
Concrete	None
Lifting Lug	Each Corner
Shipping Dimensions:	
	Main Unit
Length	12'
Width	7' - 4"
Height	7' - 4"
Weight	20,000 lbs.

Schedule of Openings'

Process Gas Suction	3" 600# Flange
Process Gas Discharge	½" TBG

Paint & Storage

Waterborne navy gray paint with a minimum thickness of 3 mils
Preserved with Nox-Rust to preserve for up to a one-year period

Testing

Panel function test with J-W Power Company Checklist
Process and utility system leak test
No-Load Run Test

Miscellaneous

1. Motor starter panel is shipped loose for customer to mount in non-hazardous area.
2. 3rd party Torsional Analysis NOT included.
3. 3rd party pulsation study to meet API 618 Design Approach II, 4th edition NOT included.

4. No Start-up cost included in this quotation.
5. Tubing fittings will be Tylok plated steel fittings.
6. Package to include weather/sound enclosure.

Documentation

One hard copy and one electronic CD copy of Unit Manual included, sections include technical data with Product Identification Control sheets, driver, driver accessories, coupling, compressor, cooler with U-1A sheets, pressure vessels with U-1A sheets, control panel, instruments, accessory, reference drawings Plan & Elevation Drawing, Process Flow Drawing, Oil/Water Drawing, Control Panel Drawing included in Unit Manual.

Quality Control Shop Traveler available upon request.

Compressor Data:

Elevation, ft: 750.00
 Frame: JGP/2
 Max RL Tot, lbf: 12000
 Rated RPM: 1800
 Calc RPM: 1785.0

Barmtr, psia: 14.297
 Stroke, in: 3.00
 Max RL Tens, lbf: 6000
 Rated BHP: 170.0
 BHP: 100

Ambient, °F: 100.00
 Rod Dia, in: 1.125
 Max RL Comp, lbf: 7000
 Rated PS FPM: 892.5
 Calc PS FPM: 892.5

Driver Data:

Type: Electric
 Mfg: WEG
 Model: 900.0 BHP: 100
 Avail: 100 (0)

Services

Gas Model

Service 1

VMG

Stage Data:

	1 (SG)	2	3
Target Flow, SCFM	250.000	250.000	250.000
Flow Calc, SCFM	360.035	360.045	360.036
BHP per Stage	33.2	28.8	27.1
Specific Gravity	0.6100	0.6100	0.6100
Ratio of Sp Ht (N)	1.2798	1.2804	1.2739
Comp Suct (Zs)	0.9572	0.9209	0.8481
Comp Disch (Zd)	0.9531	0.9434	0.9977
Pres Suct Line, psig	240.00	N/A	N/A
Pres Suct Flg, psig	240.00	677.07	1778.53
Pres Disch Flg, psig	687.07	1795.83	4545.14
Pres Disch Line, psig	N/A	N/A	4500.00
Pres Ratio F/F	2.758	2.618	2.543
Temp Suct, °F	80.00	130.00	130.00
Temp Clr Disch, °F	130.00	130.00	120.00

Cylinder Data:

	Throw 2	Throw 1	Throw 1
Cyl Model	3-5/8JG	3SG-CE	1-3/4SG-FSHE
Cyl Bore, in	3.625	2.750	1.250
Cyl RDP (API), psig	1154.5	2727.3	5545.5
Cyl MAWP, psig	1270.0	3000.0	6100.0
Cyl Action	CE(HEVR)	CE	HE
Cyl Disp, CFM	28.9	15.3	3.8
Pres Suct Intl, psig	221.72	666.44	1762.46
Temp Suct Intl, °F	89	134	133
Pres Disch Intl, psig	735.57	1828.66	4593.36
Temp Disch Intl, °F	247	278	268
HE Suct Gas Vel, FPM	N/A	N/A	3050
HE Disch Gas Vel, FPM	N/A	N/A	3318
HE Spcra Used/Max	N/A	N/A	0/2
HE Vol Pkt Avail, %	N/A	N/A	No Pkt

Vol Pkt Used, %	N/A	N/A	No Pkt
HE Min Clr, %	N/A	N/A	24.00
HE Total Clr, %	N/A	N/A	24.00
CE Suct Gas Vel, FPM	8828	4165	N/A
CE Disch Gas Vel, FPM	8171	4256	N/A
CE Spcrrs Used/Max	0/1	0/2	N/A
CE Min Clr, %	17.11	38.93	N/A
CE Total Clr, %	17.11	38.93	N/A
Suct Vol Eff HE/CE, %	N/A/72.9	N/A/52.6	75.4/N/A
Disch Event HE/CE, ms	N/A/7.0	N/A/6.1	6.4/N/A
Suct Pseudo-Q HE/CE	N/A/8.2	N/A/1.8	1.4/N/A
Gas Rod Ld Comp, %	6.4 C	79.0 C	79.0 C
Gas Rod Ld Tens, %	73.5 T	61.5 T	61.5 T
Gas Rod Ld Total, %	40.5	76.8	76.8
Xhd Pin Deg/%Rvrsl lbf	89/53.4	171/34.4	171/34.4
Flow Calc, SCFM	360.035	360.045	360.036
Cyl BHP	33.2	28.8	27.1

ARIEL LIMITED WARRANTY SUMMARY

Limited Warranty

Ariel warrants that the Products manufactured by it and delivered hereunder will be free of defects in material and workmanship for a period of twelve (12) months from the date the goods are placed in use or eighteen (18) months from date of shipment, whichever event shall first occur.

In addition, Ariel warrants for a period of thirty-six (36) months after delivery, the following parts to be free from defects in material or workmanship under normal use when properly maintained: (1) Crankshaft, (2) Crankcase Casting, (3) Connecting Rods, (4) Crossheads, (5) Crosshead Guide Castings.

ARIEL MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED, EXCEPT HEREINAFTER EXPRESSLY PROVIDED.

IN NO EVENT SHALL ARIEL BE RESPONSIBLE FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE OR OTHER NON-COMPENSATORY DAMAGES. ARIEL'S SOLE LIABILITY WITH RESPECT TO THE PRODUCTS SHALL BE TO, AT ARIEL'S ELECTION, REPAIR THE PRODUCT OR RETURN THE PURCHASE PRICE THEREOF.

Extended Warranty

Effective for all units shipped from Ariel after January 1, 2003, Ariel provides an extended warranty for units that continuously use and maintain 100% Ariel original equipment replacement parts. The extended warranty will be applied as follows:

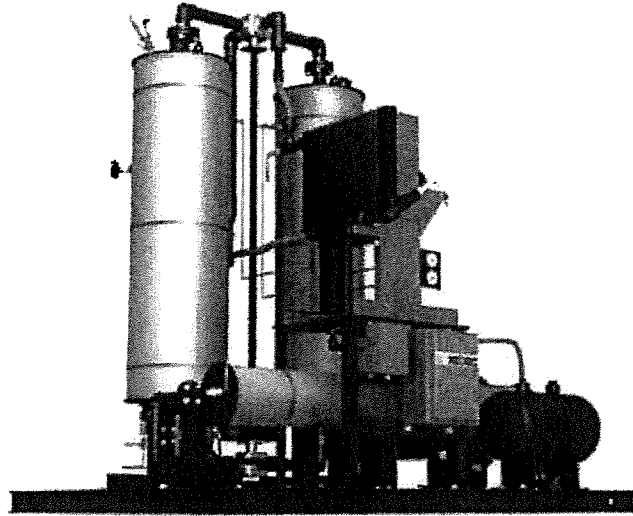
Ariel warrants for a period of seventy two (72) months after delivery, the following parts to be free from defects in material or workmanship under normal use when properly maintained: (1) Crankshaft, (2) Crankcase Casting, (3) Connecting Rods, (4) Crossheads, (5) Crosshead Guide Castings.

In addition, Ariel warrants for a period of twenty four (24) months after delivery, the following parts to be free from defects in material or workmanship under normal use in lubricated and non-lubricated cylinders when properly maintained: (1) Cylinder Bodies, (2) Pistons, (3) Piston Rods.

Ariel warrants that all remaining components manufactured or delivered by Ariel will be free of defects in material and workmanship for a period of twelve (12) months from the date the goods are placed in use by the Distributor or eighteen (18) months from date of shipment, whichever event shall first occur. Labor coverage remains at one year. If at any time parts not manufactured or delivered by Ariel (non-OEM replacement parts) are placed into service on the compressor, the extended warranty will be null and void and the standard limited warranty will apply.

OEM parts and additional information regarding Ariel's limited warranty can be obtained from an authorized Ariel distributor.

April 14, 2009



Type DTRA-NGX, twin-tower dryer with automatic initiated skid mounted regeneration package.

Xebec DTRA-NGX

XEBEC MODEL NO.	CAPACITY @ 250 PSIG	CONN. SIZE	APPROX. RUN TIME BEFORE DRYING	APPROX. DRYING TIME	APPROX. PRESSURE DROP
DTRA18NGX-1.5- AUTODEW(350)	720 SCFM	1.5"	196 HRS	48 HRS WITH AUTODEW DEMAND	5.4 PSI

NOTE: Approximate drying time is based on 7#H₂O/MMSCF inlet moisture content.

Scope of Supply – DTRA-NGX

- Twin-tower Natural Gas water vapour adsorber with automatic initiated heat reactivated closed loop natural gas counter-current regeneration system.
- ASME Code Section VIII U or UM stamped desiccant chambers, -20 to +500°F vessel design temperature, includes 0.032" corrosion allowance.
- Thermal relief valve, sized in accordance to API 520, ASME "UV" National Board Certified, set at the dryer design pressure with lockable isolation valve & weather resistant keyed lock.
- Each desiccant chamber is insulated (tangent to tangent) with 2" fiberglass insulation with embossed aluminium jacket for exterior service.
- High capacity rugged molecular sieve desiccant to minimise co-adsorption of the mercaptans.
- Mounted and pre-piped coalescing pre-filter and particulate after filter with manual drain valves.
- Process piping to be built in accordance with ASME B31.1. Bypass piping and associated valves to be supplied by others.

- Split stream regeneration heating and cooling cycles with natural gas blower mounted in an ASME pressure vessel. Electric motor per NFPA 70 regulations.
- Insulated electric heater housing utilising low watt density incoloy sheath heating elements with a heater sheath high temperature and heater outlet high temperature alarm & shutdown protection.
- Air to gas fin tube regeneration aftercooler with electric motor & non-sparking fan. High aftercooler outlet temperature alarm and shutdown. Cooler inlet & outlet temperature indication on digital display.
- High efficiency regeneration coalescing type separator complete with liquid accumulation tank.
- One (1) 2½" dial, liquid filled pressure gauge mounted on each drying chamber.
- Electrical, Class I, Div. II, Group D. electrics. Waterproof NEMA 4-7 enclosures are provided, as applicable.
- Welded structural steel skid with four (4) lifting eyes.
- Locally mounted pre-filter and after filter differential pressure gauges.
- High temperature rated silicon acrylic enamel finish. Primer & paint is applied to all exterior non-insulated carbon steel surfaces.
- Hygrometer dewpoint sensor located at dryer outlet.
- Text display showing dryer, regeneration and dewpoint status
- Pilot air/gas, for operation of automated regeneration valve, to be supplied by others (please advise if gas is to be used).
- Supplied standard (1) one Xebec Instruction, Operating and Maintenance Manual complete with drawings on CD in PDF format.

Terms and Conditions of Sale:

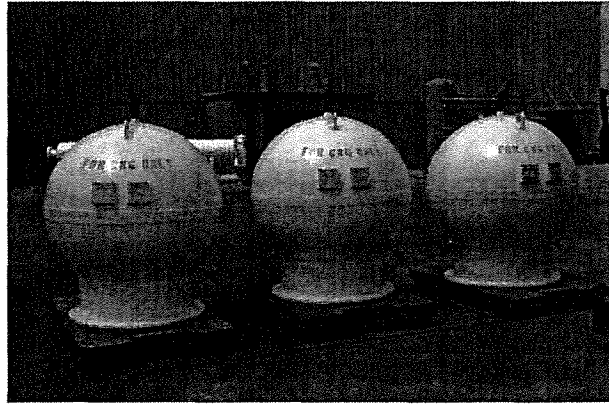
Delivery:	Pending production availability, to be confirmed at time of order.
Warranty:	12 months from Start-up or 18 months from delivery, whichever occurs first. Please note that in order for the warranty to be applicable, start-up must be performed by a Xebec certified service technician.
Installation:	Physical installation and connection to be done by Linkous Construction and Tri-State Meter.
Quote Validity:	60 days

J-W Power ASME Storage Vessels

Spheres

Relief Valves	Mercer 5500 psig
Block & Bleed Valve	Included
Drains	½" Manual

Spheres ship loose mounted on crates for transportation
 Skirts include pre-drilled bolt holes for customer to anchor to foundation



48" I.D. Sphere, 5500 MAWP

Hemi Heads: 48" I.D. (3.00") Minimum SA-516-70N

Inlet: 1-6000# Couplet, SA-105

Relief Valve: 1-6000# Couplet, SA-105

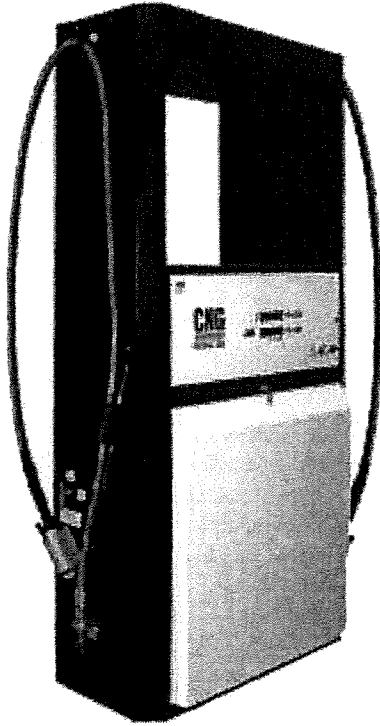
Skirt: 36" O.D. 0.50" Thk SA-36

Outlet: 1-6000# Couplet, SA-105

Drain: 1-6000# Couplet, SA-105

Base Ring: 43" O.D. 32" I.D. x 0.75" Thk SA-36

- ASME Section VIII Division II National Board Registered
- All material carbon steel
- Corrosion Allowance: 0.0"
- 5500 MAWP @ 125° F
- Minimum Design Metal Temp.: -20° F
- Hydrotest: 1.3 x MAWP for ¼ hour
- X-Ray: RT-1
- Material Test Reports: Furnished for Heads
- Lift Lugs: Included SA-105
- PWHT: Per ASME
- Paint: PPG 1 Coat System White Epoxy
- Stencil: FOR CNG ONLY
- Sandblast: Commercial Blast



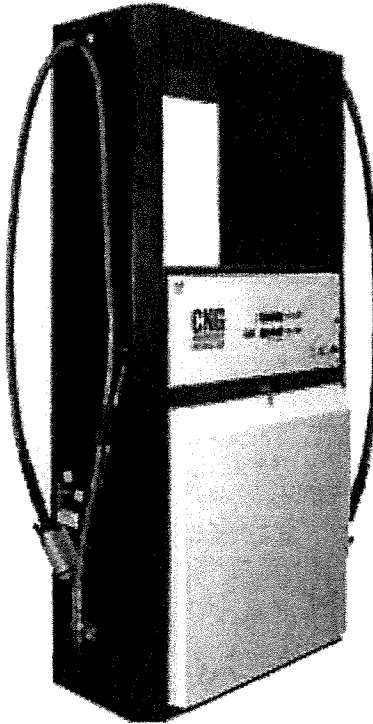
TGT-T7203-6CNG50W Twin High Hose Stand Alone CNG Dispenser. This is a Tulsa Gas Technologies' (TGT) dispenser with all electronics manufactured in the USA. The dispenser has an Alpha Numeric display that can show you the status of the fill or display. All changes to the setup can be done through a keypad or an RS232 port via a laptop. The Sale and Volume are $\frac{3}{4}$ inch high visible backlit displays. This dispenser is a three-line dispenser that independently meters the gas and gives you a display on both sides of the dispenser. The Micro Motion® CNG50 sensor is used in this dispenser to achieve the flow rate of 1500cfm in the standard configuration. The dispenser has 2, 4-20mA outputs that can send flow or gas temperature to a remote controller. The dispenser has a dry contact and a 120VAC hook switch for an "in use" signal and will send pulses to a card reader or a console. The Micro Motion® meters and transmitters are located within the dispenser body and are factory set up and calibrated before shipment. TGT assembles an AGA 1-93 approved Parker Parflex CNG fill hose on all its dispensers. The breakaway is the in-line type with a unique vent breakaway attached to the fill hose breakaway. All TGT CNG dispensers have an ASME pressure relief valve inside the dispenser cabinet with a vent stack up through the dispenser body. As a secondary over pressure device we have installed an over pressure switch that will stop the flow of gas in the event of an over pressure of a vehicle. The cabinet is constructed of 11-gauge cold roll steel with a

powder-coated finish (stainless steel material is optional). The dispenser doors, faces, and base are made from stainless steel then powder coated. The high hose body style gives you the look of a contemporary gasoline dispenser. The standard color is black/white, but any custom colors can be applied to the dispenser body. This dispenser will temperature compensate the fill pressure of the gas and perform electronic sequencing of the gas from the storage to the dispenser using TGT's proven algorithm. All of the sequencing valves are mounted internal in the dispenser. This dispenser will communicate with a card reader via pulse. The model number will change with options selected.

Each Include:

- 2 Three-Bank Solenoid Sequencing Valves
- 2 Pressure Gauges
- 2 In-Line Hose Breakaways
- 2 Manual Shutoff Valves (mounted on dispenser body)
- 1 Powder Coated Cold Roll Carbon Steel Body (Stainless Steel Optional)
- 2 Micro Motion CNG50 Mass Flow Meters (rated at 5000 PSI (345 bar), 72.75 lbs./min)
- 2 ASME Relief Valves
- 1 Concrete Island Box Pit Form
- 2 12 (3.6m)' x 3/8" 4500 (mil) Hose Assembly (electrically conductive CNG twin hose)
- 1 Backlit TGT Electronic Dual Hose Head
- 2 NGV1 Type 2 Refueling Connector Nozzle (Staubli)
- 3 Coalescing Filters Installed in Dispenser w/Block & Bleed Valves
- 1 Pressure Regulator used when dual pressure and elevated storage

Tubing is 3/8" .049 316 Seamless Stainless Steel



TGT-T7203-8CNG50 Twin High Hose Stand Alone CNG Dispenser. This is a Tulsa Gas Technologies' (TGT) dispenser with all electronics manufactured in the USA. The dispenser has an Alpha Numeric display that can show you the status of the fill or display. All changes to the setup can be done through a keypad or an RS232 port via a laptop. The Sale and Volume are $\frac{3}{4}$ inch high visible backlit displays. This dispenser is a three-line dispenser that independently meters the gas and gives you a display on both sides of the dispenser. The Micro Motion® CNG50 sensor is used in this dispenser to achieve the flow rate of 1500cfm in the standard configuration. The dispenser has 2, 4-20mA outputs that can send flow or gas temperature to a remote controller. The dispenser has a dry contact and a 120VAC hook switch for an "in use" signal and will send pulses to a card reader or a console. The Micro Motion® meters and transmitters are located within the dispenser body and are factory set up and calibrated before shipment. TGT assembles an AGA 1-93 approved Parker Parflex CNG fill hose on all its dispensers. The breakaway is the in-line type with a unique vent breakaway attached to the fill hose breakaway. All TGT CNG dispensers have an ASME pressure relief valve inside the dispenser cabinet with a vent stack up through the dispenser body. As a secondary over pressure device we have installed an over pressure switch that will stop the flow of gas in the event of an over pressure of a vehicle. The cabinet is constructed of 11-gauge cold roll steel

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- 2 ASME Relief Valves
- 1 Concrete Island Box Pit Form
- 4 12 (3.6m) ' x 3/8" 4500 (mil) Hose Assembly (electrically conductive CNG twin hose)
- 2 Backlit TGT Electronic Dual Hose Head
- 1 Two Drop Sequencing Solenoid Valve Panel Remote from Dispenser
- 1 NGV1 Type 2 Refueling Connector Nozzle (Staubli)
- 1 NGV 1 Type 1 Refueling Nozzle Sherex CT1000
- 3 Coalescing Parker Finite J2SD Filters installed in Dispenser w/Block and Bleed Valves
- 1 Pressure Regulator when using dual pressure and elevated storage

Tubing is 1/2" .049 316 Seamless Stainless Steel

FuelMaster 2500 Plus

Electronic Read/Write keys and cards are great for fleet operations or gas club members. PROKEE ®s are high strength, plastic composite keys containing nonvolatile, read/write memory chips, which can be encoded with confidential information to control access to dispensers and streamline product transaction data.

FuelMaster®'s patented **radio frequency tag system** takes driver data entry out of the information collection equation. The odometer or chronometer data, along with other information is automatically collected by the island fuel management unit without driver effort. An AIM (automotive information module) unit is installed on the equipment and collects and stores information and sends it to the fuel management unit by RF during fueling operations. This system works concurrently with the use of PROKEE ®s or smart cards so that the (AIM) units may be added to equipment currently using electronic read/write access devices.

The *FuelMaster*® 2500 Plus' capabilities to support **self-serve retail applications** have also been increased. As well as being on an ever increasing number of credit card networks, prepaid smart cards and PROKEE ®s can be issued to customers. The system operator may also enter up to 300 credit card numbers of repeat customers with a specified discount for each. The Plus system also returns more credit card information and settle-up data to the PC software for easier tracking of fuel purchases. The ability to price fuel at multiple remote sites has been enhanced to ensure you're in control of your fuel.

A real-time, on-site **journal printer** can provide hard copy backups of all transactions. A **receipt printer** is also available.

FuelMaster® is a leader in the **alternative fuels** arena...from CNG to E85! *FuelMaster*® can control and measure any liquid or gaseous fuel. Leaders in the alternative fuels field chose *FuelMaster*® because of its reliability and ease of maintenance.

Based on **odometer/hour readings**, the system calculates vehicle efficiency and fuel consumption and alerts the driver and supervisor to maintenance requirements.

The addition of a **tank monitor interface kit** permits automatic reconciliation of tank levels with *FuelMaster*®'s declining balance. *FuelMaster*® interfaces with most popular tank monitors.

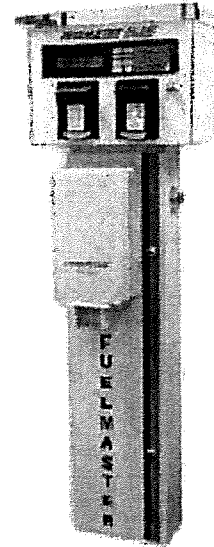
The *FuelMaster*® system may be expanded to control an almost limitless number of fueling sites. Each site consists of a master unit with up to eight satellites.

FuelMaster® is warranted for one year from date of installation or fifteen months from date of shipment.

Modular design and construction ensure reliability and ease of maintenance of your *FuelMaster*® Fuel Management System. Site operators can quickly and easily change-out modular components, if necessary, with the assistance of *FuelMaster*® technicians.

The central controller (a PC operating on **Windows 98 or higher**) generates comprehensive transaction reports and invoices.

Transaction data can be easily exported to most **fleet maintenance programs**.



SUMMARY SHEET
TRI STATE ENERGY SERVICES 411 EDGEWATER DR. CEDAR BLUFF VA. 24609
CONTACT: JOSH BOYD

<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>RATE PER UNIT</u>	<u>ESTIMATED COST</u>
50HP COMPRESSOR	2	159SCFM	\$213,269.00	\$426,538.00
MANUAL DRYER	1		\$18,230.00	\$18,230.00
3PACK STORAGE SPHERE	1	11,650SCF	\$110,489.00	\$110,489.00
DUAL POST DISPENSER	1	STD	\$41,102.00	\$41,102.00
DUAL POST DISPENSER	1	TRANS. NOZ	\$51,000.00	\$51,000.00
CARD READER	1		\$16,849.00	\$16,849.00
INSTALLATION MATERIALS	1		\$112,500.00	\$112,500.00
INSTALLATION LABOR	1		\$37,500.00	\$37,500.00
FREIGHT	1		\$3,400.00	\$3,400.00
SIGNAGE	1		\$1,000.00	\$1,000.00
COMMISSIONING (DISPENSER)	1		\$2,000.00	\$2,000.00

* VENDOR DID NOT SHOW EXCAVATION, ASPHALT, CONCRETE AND ASSOCIATED INSTALLATION COSTS.

** VENDOR QUOTED A MANUAL DRYER INSTEAD OF THE REQUESTED AUTO-REGEN DRYER

SUB TOTAL **\$820,608.00**

UNIT PRICE DOES NOT INCLUDE APPLICABLE SALES TAX
SALES TAX ON EQUIP. **\$46,602.48**

TOTAL COST **\$867,210.48**

Tri-State Energy Services

411 Edgewater Dr. Cedar Bluff, VA 24609

DATE: 02-19-13

TO: Delta Gas

ATTN: Johnathan Morpew, Brent Means, Steve Lewis

QUOTE: DEL121312.001 Valid 30 Days

System Overview

Two (2) each model URAC-150NG/C1, D2, Gr. D, four-stage, lubricated, Air cooled, gas booster compressors are provided in a Duplex configuration . Each compressor would receive city line natural gas at its inlet of 250 PSIG. Resultant discharge gas flow would be 159 SCFM per compressor at pressures as high as 5000 psig. Each compressor would operate with a start/stop, pressure switch control. Each compressor is mounted to a structural base frame with its own electric motor and drive. Both compressors are then mounted to separate fork-lift able, structural steel base frames. Both compressor inlets are piped to dedicated , ASME, 200 PSIG W.P. test receiver inlet (surge tank). Discharge pressure from the inlet surge tank is Regulated at constant pressure to the inlet of the compressors. Each compressor discharge passes through an air cooled after cooler.

All electrical components and design comply with

NEMA 7, Class 1, Division 2, Group D for outdoor service, unless noted below. Additional system details are as follows:

Part A: Compressor-each

Gas: Natural gas; city line
Inlet: 250 PSIG 70°F average

Outlet: 4500psig Max (Design 6000psig)

RPM: estimated

Flow @ rated suction: 250PSIG= more than 159 SCFM

Package HP 48.1 Each compressor

Stages: 4

Crankcase Lubrication: Oil pump with spin-on type filter cartridge

Cooling: air cooled

Drive: each compressor

Motor: 1800 RPM, TEFC, NEMA design B, Ins. Class F, 50H.P., 1.15 S.F.

Power transfer: V-belt (non-sparking) with OSHA type guard

Belt tension: Sliding motor base

NOTE: This unit will produce approx 400 scfm each compressor with the 250 psig inlet pressure and 150 HP Motors.

Additional NG Compression System Features Include:

- Structural steel base frame, fork-liftable
- PLC (programmable logic control)
- Digital message board with fault history and real time readings for all sensors
- Common fault indicator light for programmed shutdown conditions
- Full voltage motor starter and electrical control system mounted and wired
- Control voltage circuit with step-down transformer
- Motor overloads
- Power-on light
- Emergency kill (mushroom) switch
- On-off switch for start/stop control (two-way switch)
- Face gauge panel, including 1st stage thru final discharge pressure and oil pressure.
- Face gauge for final system pressure prior to the pressure maintaining valve
- Discharge pressure sensor with infinite setting control and multiple set points
- Low and high inlet pressure sensor
- Low oil pressure sensor
- High outlet temperature sensor (1st & final stages)

- Contacts provided for remote monitoring of system controls
- Moisture separation, all stages
- Auto condensate drainage, all stages
- Forced lubrication system with oil pump and filter
- Crankcase breather piped to inlet or vent (subject to inlet conditions)
- Automatic compressor unloading system with vented to vapor recovery tank
- Non-return valve at discharge
- Minimum pressure valve at discharge
- Finish paint in blue or light gray enamel
- ASME, inlet gas surge tank with pressure gauge and gas tight relief valve
- Integrated vapor recovery system with ASME storage vessel regulated to system inlet
- Detailed general arrangement, electrical and flow diagrams for customer review and approval prior to system construction
- Detailed operations, maintenance and parts manuals provided in electronic or hard copy format
- (Standard English, alternate languages available at option)

Controls:

Electrical classification, NEMA 7, Class 1 Division 2, Group C and D mounted and wired.

- Note: Compressor starter and control circuit are housed in the same enclosure.
- 120 volt AC control transformer
- Power On Light, Amber
- Common Fault Light
- time hours, number of starts per hour, operating pressures and temperatures
- Compressor selector switch, Off - On
- Compressor Auto Alternation selector switch, Off – On
- Mushroom kill button, Emergency stop tied to the ESD system
- Discharge pressure transmitter with final pressure set points of 3000psig and 3600psig
- Inlet pressure transmitter with High/Low fault (Alarm) set points
- Pressure transmitters for each compression stages.
- Oil pressure transmitter with High/Low fault (Alarm) set points
- Temperature thermocouples with High fault (Alarm) set point for 4th stage
- Final discharge thermocouple with High fault (Alarm) set point

Additional System Features: (All Class 1 Division 2 Group C & D)

- Siemens PLC control with custom programming features.
- System operating parameters viewable and alterable via a web based protocol
- Inlet isolation valves both manual and automatic
- Pressure gauges on all stages, including compressor inlet.
- Gas tight relief valves piped back to common vent stack.

- Crankcase breather piped back to suction
- Forced lubrication system with oil pump and filter
- Automatic unloader/condensate drainage system piped to a vapor recovery unit.
- Non return valves on compressor discharge.
- Oil pressure gauge.
- Separators after each compression stage.
- System inlet and discharge connections isolated with ball valves.
- Flexible pipe/Hose connections as needed.
- Compressor Inlet regulator.

Your Net Price \$385,228.00 net

Terms / standard 30% , 40% , 30%

OPTIONS:

Soft Starter \$4,545.00 each

HM1 \$ 4,500.00

Crank Case Heaters. \$1,705.00 x2

Enclosure \$8182 x2

Super silent enclosure add \$3973.00 each.

Additional CNG Equipment Needed

(3) Pack of Storage Spheres 100 GGE each	\$110,489.00
TGT T7203-6CNG50W Twin Hose Dispenser This item requires \$2000 on sit assistance and \$1500 FRT	\$41,102.00
TGTT7203-6CNG50W Twin Hose Dispenser Half/Half (For one Car and one Large Truck	\$51,000.00
SVNG-03 Inlet Dryer	\$18,230.00 (frt Estimate \$1500.00)
Fuel Master Card Reader	\$16,849.00(frt Estimate \$400.00)

Our Service would be local and a known for the customer.

Our system is modular and designed to easily expand as future growth is realized & is not proprietary.

Prices do not include any applicable sales and or use taxes, and are valid for thirty days.

Terms 30% with order 40% after approvals 30% net 30 days

Delivery:TBD

We thank you for the opportunity of quoting and look forward to your valued business.

Sincerely,

Tri-State Energy Services, Inc.

Joshua Boyd

VP of Products and Design

1-276-698-6005(o)

jboydeci@yahoo.com

www.uapc.com

Owner		DELTA
Gas Service	15Psig	Gas service within 5' of pad with Regulator
Electric Service	460V/3ph	Elec. Service 15' from pad with disconnect
Telephone Service		By Others/ Or wireless
Building Permit		None required ?
Cut Sheets		
General		
Electrical Permit	TSE	Permitting estimate \$2350.00
Mechanical/Plumbing Permit	TSE	Inc. in above
Submittals	TSE	Provided by UAPC
Concrete	TSE	10K estimate per Pad.
Rebar	TSE	
Tubing	uapc	approx 500' /\$18,823.00
Valve/Fittings	uapc	parts and labor \$2750.00
Trench and patch	TSE	Estimate \$14,150.00
Civil		
Demo	Delta	
Pads	Delta	included above
Compressers	uapc	
Dryer	uapc	
Storage Vessel	uapc	
Gas Meter	Delta	
Switchgear/Electrical	TSE	not sure of the power location \$35,000.00
Dispenser Islands	Delta	
Fence	Delta	
Bollards	Delta	Estimate \$800.00
Curb & Gutter		
Light Pole Base	TSE	\$1,800.00
Stone		
Dispensers		
Dispenser Posts		
Pavement patch		Inc.
Plumbing		
Delivery SS tubing	UAPC	inc
PVC Purge lines	UAPC	inc
UG to dispensers	TSE	provide labor
UG PVC	TSE	provide labor
UG SS Tubing	TSE	provide labor
Ubove grade piping		
PVC	TSE	provide labor
Steel	TSE	provide labor
SS	TSE	provide labor
Signage	TSE	\$1,000.00
Electrical	Inc/Contractor	
UG conduit		
Grounding		
Set Equipment	TSE	Crane \$1500.00
Wire between equipment	Inc	
PE Stamp If needed		\$10,000.00

Total \$135,000.00-\$150,000.00 K estimate

SUMMARY SHEET
AIR SYSTEMS - CNG 4512 BISHOP LANE LOUISVILLE KY. 40218
CONTACT: CURT BOONE

<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>RATE PER UNIT</u>	<u>ESTIMATED COST</u>
CNG EQUIP. PACKAGE	1		\$1,017,000.00	\$1,017,000.00
INSTALLATION MATERIALS	1		\$197,500.00	\$197,500.00
INSTALLATION LABOR	1		\$57,500.00	\$57,500.00

* VENDOR FAILED TO PROVIDE AN ITEMIZED ESTIMATE ON THE EQUIPMENT INVOLVED WITH THE INSTALLATION OF THE CNG STATION.

SUB TOTAL **\$1,272,000.00**

UNIT PRICE DOES NOT INCLUDE APPLICABLE SALES TAX
LESS TAX ON EQUIP. **\$72,870.00**

TOTAL COST **\$1,344,870.00**

Brent Means

From: Curt Boone <cboone@iglou.com>
Sent: Thursday, October 10, 2013 10:53 AM
To: Brent Means
Cc: Curt Boone
Subject: REVISED Turnkey Budget for Delta Gas - Berea KY Re: CNG Estimate

Importance: High

GOOD Morning, Brent!

Here's an update for **ANGI Proposal Q003625** for Delta Gas Berea KY dated 2/19/2013.

- CNG Equipment Package w/ additional high pressure storage - \$1,017,000
- Turnkey Installation including canopy, lighting, cardkey, CCTV system...assumes all utilities are with in 10 feet of equipment - \$230,000
- Start-up, Training & Freight included
- **Total \$1,247,000**

Should you have any questions, please call 502-727-9007. Looking forward to working with Delta Gas!

Respectfully, *Curt*

On 2/19/13 8:21 AM, "Brent Means" <bmeans@DeltaGas.com> wrote:

Mr Boone,

I may have spoke out of turn yesterday. If its possible to get a faster estimate it would greatly be appreciated. Mr. Jennings will be meeting with PSC this week and is in need of some numbers. I will be out of the office today so if you have any further question please direct them to Steve Lewis. Also if you could copy him on the estimate so he will be able to pass along

Steve Lewis 859-744-6171 ext16
slewis@deltagas.com

Thanks
Brent

From: Brent Means
Sent: Monday, February 11, 2013 4:28 PM
To: 'cboone@iglou.com'
Cc: Steve Lewis; Jonathan Morpew
Subject: CNG Estimate

Dear Mr. Boone

I am writing in reference to the proposed CNG filling station Delta is looking to install in Berea, Ky. Below is a list of equipment we require. We would like two separate itemized estimates.

The first estimate being a "turn key" design. This being your company supplying all associated equipment, installation, commissioning, on-site start up and training. I have attached a drawing of the proposed site we have designed. The proposed site is relatively flat and will require very little excavation work. All needed utilities, including gas supply of 250 psig, are located on site.

Please work up a second itemized estimate consisting only of the cost for equipment, plans and commissioning. Delta would provide for the remainder of the installation.

If you have any questions, feel free to contact me.

Equipment

Min. of 2 compressors at a min. of 150cfm each.

3 CNG storage spheres (11,650cf +/- each)

1 Auto-Regen Dryer

Priority Sequential Panel

2 CNG Dispensers (One dispenser equipped to fill 2 passenger vehicles. One dispenser equipped to fill a passenger vehicle and a large truck)

Card Reader

Thanks
Brent

Brent Means

Senior Engineering Tech

Delta Natural Gas Company, Inc.

Phone: (859) 744-6171, Ext. 134

Fax: (859) 744-3623

Brent Means

From: Curt Boone <cboone@iglou.com>
Sent: Friday, October 11, 2013 7:31 AM
To: Brent Means
Subject: QUESTION? Re: REVISED Turnkey Budget for Delta Gas - Berea KY Re: CNG Estimate
Importance: High

GOOD Morning, Brent!

QUESTION? Do you want to meet your original CNG spec provided in February??? See below.

If so, the system capability & pricing will dramatically shift!

To answer the concrete question....Add \$25,000 for canopy foundation & pad.

Should you have any questions, please call 502-727-9007.

Respectfully, *Curt*

On 10/10/13 2:26 PM, "Brent Means" <bmeans@DeltaGas.com> wrote:

Curt,
Great talking with you earlier. I believe in our conversation you said there were some additional cost that wasn't on the proposal, concrete etc. I think we discussed DNG doing some of the contract work. Would it be possible to get a turnkey number with DNG not doing any of the work? The other proposals we have received have all been based on that premise.

Thanks
Brent

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Cc: Curt Boone
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Steve Lewis 859-744-6171 ext16

slewis@deltagas.com

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Steve Lewis; Jonathan Morphey

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Priority Sequential Panel

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1 Card Reader

Thanks

Brent

Brent Means

Senior Engineering Tech

Delta Natural Gas Company, Inc.

Phone: (859) 744-6171, Ext. 134

Fax: (859) 744-3623



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

80. Reference the testimony of Mr. Wesolosky at page 3, lines 1 - 5. If the “estimated cost [\$1.3 million] is based on vendor pricing to construct a CNG station which could fill up four vehicles simultaneously” does not materialize, then is the cost estimate still accurate?

Response:

Delta has only performed an estimate on constructing a CNG station which could fill up four vehicles simultaneously.

Sponsoring Witness:

Matthew D. Wesolosky



DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365

FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013

81. Reference the testimony of Mr. Wesolosky at page 3, lines 7 – 9 where the following statement appears:

“Similar to its other capital expenditures, Delta would finance the project through either internally generated cash, short-term borrowings under Delta’s bank line of credit or a combination thereof.”

- a. What dollar amount does Delta expect to use from its “internally generated cash flow?”
- b. What would Delta seek as the ROE on its “internally generated cash?”
- c. What does Delta anticipate the short-term borrowings amount to be, both in principle and cost rate?

Response:

- a. Delta currently intends to finance the project using internally generated cash flow.
- b. Delta seeks to earn a ROE of 10.4%, as approved in its last general rate case, on its regulated investments.
- c. Delta does not currently expect to use its bank line of credit to fund the project.

Sponsoring Witness:

Matthew D. Wesolosky



**DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365**

**FIRST DATA REQUEST FROM ATTORNEY GENERAL
DATED DECEMBER 13, 2013**

82. Reference the testimony of Mr. Wesolosky at page 3, lines 10 -14. Provide a breakdown by way of an itemized spreadsheet of the estimated annual \$20,000 to operate the station.

Response:

See the response to PSC 1, Item 8.

Sponsoring Witness:

Jonathan W. Morpew



DELTA NATURAL GAS COMPANY, INC.
CASE NO. 2013-00365

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83. Reference the testimony of Mr. Wesolosky at page 4, lines 11 – 19, regarding the statement that Delta will be replacing eleven fleet vehicles in the near-term with the potential for an additional twenty-two vehicles.
- a. Do the trucks which will be replaced operate on CNG?
 - b. If no, name the fuel source; i. e., gasoline or diesel.
 - c. If the answer to a. is no, what will be the difference in price between the new CNG vehicle versus the same vehicle which operates on gasoline or diesel?
 - d. If there is a higher price for the CNG vehicle, has Delta accounted for this increase in costs in its calculation regarding the financial “break-even” point for the CNG facility? (See testimony Wesolosky testimony at page 5.)
 - e. In response to d. above, show where in Mr. Wesolosky’s exhibits the costs are included. State whether Delta can confirm whether any CNG vehicle equipped with a heavy duty engine has been in service for its expected operating life.

Response:

- a. The trucks which will be replaced do not currently operate on CNG.
- b. The trucks currently run on either gasoline or diesel.
- c. Refer to the response to PSC-1, Item 4.
- d. The break-even analysis referred to in the Wesolosky testimony does not include the incremental cost for a CNG vehicle. Refer to the response to PSC-1, Item 10.
- e. Not applicable.

Sponsoring Witness:

Matthew D. Wesolosky



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84. Reference the testimony of Mr. Wesolosky at pages 3 and 4.
- a. Explain the basis for using a “thirty-three year book depreciable life for the station.”
 - b. Provide for each of the past five years the CCF billed to Delta’s retail and firm on-system transportation tariffs.

Response:

- a. The book depreciation life was based on the approximate life for compression equipment.
- b. See attached.

Sponsoring Witness:

Matthew D. Wesolosky

Delta Natural Gas Company, Inc.
Case No. 2013-00365
#84B

Month	CCF Billed Retail	CCF Billed Firm On-System Transportation
Fiscal Year Ended 6-30-13	30,556,680	15,627,130 *
Fiscal Year Ended 6-30-12	24,600,890	13,400,570
Fiscal Year Ended 6-30-11	31,627,070	13,269,440
Fiscal Year Ended 6-30-10	31,996,140	12,317,160
Fiscal Year Ended 6-30-09	31,775,300	11,144,280

*Wesolosky Exhibit I, Schedule I reported 21,035,290 CCF as billed firm on-system transportation. The amount reported included volumes billed under Delta's interruptible transportation tariff. The above CCF billed for 2013 is exclusive of volumes billed under the interruptible tariff.



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85. Reference the testimony of Mr. Wesolosky at page 5, line 2. What is the basis for the witness' assertion that the average fuel cost of \$3.29 per price of gallon for gasoline will continue over the term of the CNG station?

- a. Provide any and all resources upon which the witness relied.

Response:

The \$3.29 was the current price of gasoline when the testimony was drafted.

Sponsoring Witness:

Matthew D. Wesolosky



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86. Reference the testimony of Mr. Wesolosky at page 5, line 6. What is the basis for the witness' assertion that the average fuel cost of \$0.39 per CCF will continue over the term of the CNG station?

Response:

The testimony utilized \$.38 per CCF, which was the approximate price of natural gas delivered to Berea. However, as the price of natural gas changes, the market based rates can be adjusted to earn a similar gross margin.

Sponsoring Witness:

Matthew D. Wesolosky



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87. Reference the testimony of Mr. Wesolosky at page 5, line 7 where he claims that Delta's fuel cost for each CNG vehicle is expected to be \$722 per vehicle annually. In the fuel cost estimate for CNG does Delta include the following in its calculation:
- a. The state or federal road tax Delta would have to pay for CNG?
 - b. The cost of electricity required to compress each gasoline gallon equivalent (GGE) of CNG?
 - c. The cost of transportation and distribution to deliver the natural gas to the CNG station?
 - d. The additional maintenance cost the station will incur per GGE compressed at the station?

Response:

- a. No.
- b & d. The comparison in the Wesolosky testimony illustrates the savings in fuel costs and how those savings would contribute towards the operating costs of the station which are inclusive of the electricity to run the station and the estimated operation and maintenance cost for the station.
- c. The cost of gas used in the example is a delivered price inclusive of distribution and transportation charges.

Sponsoring Witness:

Matthew D. Wesolosky



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88. Reference the testimony of Mr. Wesolosky at page 5, lines 11 -19, regarding the break even sales calculation. Mr. Wesolosky he states that he believes, at a gas cost being at \$0.38 per CCF, the cost Delta will incur to refuel its vehicles will be \$0.30 cents per GGE and thus a \$2.00 gasoline price at the pump will yield \$1.70 per GGE payback towards Delta's revenue requirement for the station. When calculating the estimated 1.70 per GGE payback towards Delta's revenue requirement, does Delta include in its cost per GGE the following:
- a. The state or federal road tax Delta would have to pay for CNG?
 - b. The cost of electricity required to compress each gasoline gallon equivalent (GGE) of natural gas?
 - c. The cost of transportation and distribution to deliver the natural gas to the CNG station?
 - d. The additional maintenance cost the station will incur per GGE compressed at the station?

Response:

- a. No, as discussed in the response to Item 59 c the initial sales price would be \$2, plus applicable taxes. Therefore, the state and federal taxes do not impact this portion of the break-even analysis, as the sales price would be adjusted accordingly.
- b. The \$1.70 payback does not include the cost of electricity as the cost of electricity is included in the determination of the revenue requirement.
- c. Yes.
- d. The \$1.70 payback does not include additional maintenance cost, as the additional maintenance cost is included in the determination of the revenue requirement.

Sponsoring Witness:

Matthew D. Wesolosky



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89. Reference the testimony of Mr. Wesolosky at page 6, lines 7 -13.
- a. How much in incentives has Delta requested from the Kentucky Economic Development Finance Authority?
 - b. When will Delta know whether it will be eligible for the incentives?

Response:

Delta was notified on December 12, 2013 that it had been approved to receive \$250,000 in future tax credits from the Kentucky Economic Development Finance Authority, assuming the project is approved by the Commission and constructed.

Sponsoring Witness:

John B. Brown



**DELTA NATURAL GAS COMPANY, INC.
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90. Provide for each of the past five years the following regarding the vehicles, broken down by total number, which Delta has purchase or leased broken down as follows:
- a. make,
 - b. model,
 - c. year,
 - d. engine size,
 - e. type of engine (gasoline, diesel, CNG, dual fuel),
 - f. miles per gallon achieved by the vehicle, and
 - g. whether purchased or leased.

Response:

See attached for the vehicles in the service area of the station which could be replaced with dual fuel vehicles.

Sponsoring Witness:

Matthew D. Wesolosky

Delta Natural Gas
 AG-90
 Case No. 2013-00365

Initial CNGs

	(a) Make	(b) Model	(c) Year	(d) Engine	(e) Fuel Type	(f) MPG	(g) Purchase/Lease
1	Ford	F-150 4x4	2010	4.6L V8	Gasoline	15.0	Purchase
2	Ford	F-150 4x2	2009	4.6L V8	Gasoline	14.0	Purchase
3	Chevrolet	Silverado 2500 4x4	2005	DURAMAX 6600 Diesel	Diesel	14.0	Purchase
4	Ford	F-150 4x2	2009	4.6L V8	Gasoline	14.4	Purchase
5	Chevrolet	Silverado 2500 4x4	2011	6.0L V8	Gasoline	11.4	Purchase
6	Chevrolet	Silverado 1500 4x4	2007	Vortec 4800 V8	Gasoline	15.3	Purchase
7	Chevrolet	Silverado 1500 4x4	2011	4.8L Vortec	Gasoline	15.1	Purchase
8	Ford	F-150 4x4	2010	4.6L V8	Gasoline	15.0	Purchase
9	Chevrolet	Suburban LT 4x4	2013	5.3L Vortec V8	Gasoline	15.8	Purchase
10	Ford	Explorer XLS 4x4	2011	3.5L V6	Gasoline	21.0	Purchase
11	Ford	F-350 Super Duty	2013	6.2L 2 Valve V8 - CNG Ready	Diesel	9.4	Purchase

Potential CNGs

1	Ford	Explorer XLS 4x4	2011	3.5L V6	Gasoline	19.7	Purchase
2	Ford	Escape 4x4	2009	3.0L EFI V6	Gasoline	22.4	Purchase
3	Chevrolet	Equinox LS	2012	2.4L DOHC	Gasoline	22.4	Purchase
4	Chevrolet	Suburban	2011	Vortec 6000 V8	Gasoline	14.8	Purchase
5	Chevrolet	Suburban	2010	Vortec 6000 V8	Gasoline	15.1	Purchase
6	Chevrolet	Tahoe 1LT	2012	5.3L Vortec V8	Gasoline	16.0	Purchase
7	Ford	F-350 4x4	2011	6.8L V10	Gasoline	9.9	Purchase
8	Ford	F-150 4x4	2014	5.0L V8	Gasoline	13.6	Purchase
9	Chevrolet	Tahoe 1LT	2013	5.3L Vortec V8	Gasoline	15.6	Purchase
10	Ford	Explorer XLS 4x4	2012	3.5L V6	Gasoline	19.8	Purchase
11	Ford	Explorer XLS 4x4	2012	3.5L V6	Gasoline	20.7	Purchase
12	Chevrolet	Equinox LS	2010	2.4L	Gasoline	24.1	Purchase
13	Chevrolet	Silverado 1500 WT	2013	4.8L V8	Gasoline	14.0	Purchase
14	Ford	F-250 Super Duty 4x4	2014	6.2L V8	Gasoline	10.1	Purchase
15	Ford	F-250 Super Duty 4x4	2014	6.2L V8	Gasoline	8.0	Purchase
16	Ford	F-250 Super Duty 4x4	2014	6.2L V8	Gasoline	8.5	Purchase
17	Ford	F-550 Super Duty 4x4	2011	6.7L Powerstroke	Gasoline	10.1	Purchase
18	Ford	F-550 Super Duty	2012	6.7L OHV Powerstroke	Gasoline	10.3	Purchase
19	Ford	F-450 Super Duty	2006	6.0L V8 Diesel	Diesel	9.6	Purchase
20	Ford	F-550 Super Duty 4x2	2006	6.0L V8 Powerstroke	Gasoline	9.5	Purchase
21	Ford	F-550 Super Duty	2007	6.0L V8 Powerstroke	Gasoline	8.8	Purchase
22	Ford	F-550 Super Duty	2012	6.7L OHV Powerstroke	Gasoline	9.2	Purchase



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91. Provide for each of the next five years the following regarding the vehicles, broken down by total number, which Delta anticipates purchasing or leasing broken down as follows:
- a. make,
 - b. model,
 - c. year,
 - d. engine size,
 - e. type of engine (gasoline, diesel, CNG, dual fuel),
 - f. miles per gallon achieved by the vehicle,
 - g. whether it will be purchased or leased,
 - h. the difference in price in the lease or purchase of a new diesel vehicle versus a CNG vehicle,
 - i. the difference in price in the lease or purchase of a new diesel vehicle versus a dual fueled CNG vehicle,
 - j. the difference in price in the lease or purchase of a new gasoline vehicle versus a CNG vehicle, and
 - k. the difference in price in the lease or purchase of a new gasoline vehicle versus a dual fueled CNG vehicle.

Response:

See the response to Item 90 for the vehicles which could be replaced with dual fuel CNG vehicles in the future. The specific vehicle which will be purchased to replace the vehicles listed in the response to Item 90 will not be determined until the current vehicle requires replacement. Refer to PSC-1, Item 4.

Sponsoring Witness:

Matthew D. Wesolosky



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92. Please reference the application in general, or if not included therein, provide the following:
- a. Whether Delta maintains, repairs, or other otherwise works on the vehicles in its fleet.
 - b. If the answer to above question is yes, please provide details (such as engine repair, general maintenance, vehicle washing, etc.)
 - c. If the answer to a. above is yes, state whether Delta has personnel qualified to repair CNG vehicles.
 - i. State how many personnel are qualified to conduct such repairs.
 - ii. State the certifications, qualifications, etc. necessary to do so.
 - d. If the answer to question a. is no as it relates to engine repair, please explain why not?
 - i. State the name and address of the service personnel who are responsible for any repairs of the engine.
 - e. If the answer to question is no as it relates to engine maintenance, please explain why not.
 - i. State the name and address of the service personnel who are responsible for any maintenance of the engine.

Response:

- a. No.
- b. Not applicable.
- c. Not applicable.
- d. Delta will utilize Ford and Chevrolet CNG equipped service centers.
- e. See the response to Item 92 d.

Sponsoring Witness:

Jonathan W. Morpew



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93. If the company is allowed to recover all of its costs in rate base, confirm that Delta's **captive ratepayers** will have no choice but to pay the company's entire costs associated with constructing, operating and maintaining the CNG station.

Response:

See the response to Item 53 a ii. In addition, taxpayers in Kentucky are contributing to the construction, operations and maintenance of the CNG station through the tax incentives discussed in the response to Item 89.

Sponsoring Witness:

John B. Brown



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94. Confirm that the request, if authorized, will place no risk on Delta's shareholders. If confirmation is not given, explain the answer by stating how the shareholders will bear no risk.

Response:

See the response to Item 53 a. ii.

Sponsoring Witness:

John B. Brown



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95. Confirm that if any private, for-profit company were to decide to construct, operate and maintain a CNG station, the company would have to do so with capital investment from a non-captive investment entity or person(s).

Response:

No. Energy policy has been set in this country to encourage the construction of CNG stations regardless of who is building them. This requires taxpayers to fund the development of CNG infrastructure, much like has been done in Kentucky with respect to this project in the approval of \$250,000 of future tax credits.

A private, for-profit company would only build a station in a profitable location.

Sponsoring Witness:

John B. Brown



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96. Confirm that if any private, for-profit company builds a CNG facility, then that private, for-profit company bears the risk of the profitability of the station.

Response:

Any entity building a CNG facility bears risk until revenues are sufficient for the entity to recoup its investment. Some companies can build a station in a favorable location that permits them to expect acceptable profitability without public subsidies. Other companies (like Delta) need public subsidies to attract corporate investment to build stations in rural service territory for the public good.

The determination of who should bear the risk of profitability is a function of who stands to reap the benefits, not the legal structure of the owner.

Sponsoring Witness:

John B. Brown



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97. Confirm that Delta has been authorized pursuant to its last rate case to earn a return on equity of 10.7%.

Response:

No. Delta's authorized return on equity is 10.4%. Delta earned 8.6% on its regulated operations for its fiscal year ended June 30, 2013.

Sponsoring Witness:

John B. Brown



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98. Has Delta done a study on the effect of building a CNG station with ratepayer dollars will have on the willingness of private developers to invest money in CNG stations in the area surrounding where the CNG station will be constructed?
- a. If yes, please provide the study.

Response:

No. Delta would not be proposing a build a CNG station had private developers been willing to invest money in CNG stations in the area surrounding where the CNG station will be constructed. A major justification for building the station is so that several of Delta's utility vehicles can be fueled with natural gas. Since there are no public CNG stations in Delta's service territory, Delta's only option is to build its own station.

Sponsoring Witness:

John B. Brown



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99. Did Delta discuss with any CNG developers or others in the CNG industry about the impact of utility owned CNG would have on the CNG market before filing its application?
- a. If yes, with which developers did Delta talk?

Response:

Delta met with PSC staff in informal conferences. Representatives of the Kentucky Oil and Gas Association, including Cumberland Valley Resources personnel, attended and expressed interest in CNG development. Delta met with Cumberland Valley Resources employees to discuss our potential plans for a station and their interest in CNG facilities. Delta attended meetings of the Kentucky Clean Fuels Coalition and also met with Kentucky Clean Fuels Coalition Executive Director Melissa Howell to discuss CNG development. Delta talked with Love's Truck Stop personnel about their interest in CNG possibilities at their existing truck stops on I-75 at exit 29 and exit 95. Delta met and discussed future CNG possibilities on the Army Depot in Richmond with Bluegrass Army Depot personnel there. Delta also met and discussed their interest in CNG station development with Vinland Energy and the Falls Group auto dealership in Corbin (both under common ownership). The Falls Group now has a CNG station under development, but not yet operational, in Corbin, Kentucky at their auto dealership there.

Delta is interested in a CNG station in Berea so Delta can obtain the benefits of using CNG in its company owned vehicles. Delta does not mind at all if others build and operate a station. The problem is that for many years this has been considered and nothing has been done. No one has stepped up to do a CNG station in Berea. Delta certainly does not wish to interfere with others putting in CNG stations. The issue is that Delta must have stations to utilize before CNG will be used as a vehicle fuel in company vehicles. The station can then be utilized for the general public to fuel with CNG as well. It seems to us that nothing will be done there unless Delta does it.

Sponsoring Witness:

Glenn R. Jennings



**DELTA NATURAL GAS COMPANY, INC.
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100. Reference the application and testimony in general. Other than making the sales price competitive, does Delta currently have a methodology by which it intends to calculate the CNG price that the public will pay?
 - a. If so please explain in detail on how Delta intends to calculate its price to the public.

Response:

See the response to Item 59c.

Sponsoring Witness:

John B. Brown