

Natural Gas Vehicle Fleet Focussed Whitepaper



Exclusive End User Case Studies: Ozinga Brothers, Bestway Express, Raven Transport

NGV Fleet Survey Results: Key results from a 100 company NGV Fleet customer survey

Benchmark Your Strategies: Ensure your NGV projects are a success by benchmarking your strategies against industry pioneers

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Natural Gas Vehicle Fleet Whitepaper

If you are considering making the switch to Natural Gas as a fuel in your fleet operations, whether that is LNG, CNG or Dual Fuel it's essential you do your homework. One of the most effective ways to do this is to look to other fleet operators who have already gone through the process and made the switch themselves to see how they have managed this often tricky process to ensure you learn from their mistakes, hiccups and pitfalls.

In that light we interviewed 3 major fleet operators who have converted to LNG, CNG and Dual Fuel to get their expert insight on issues such as:

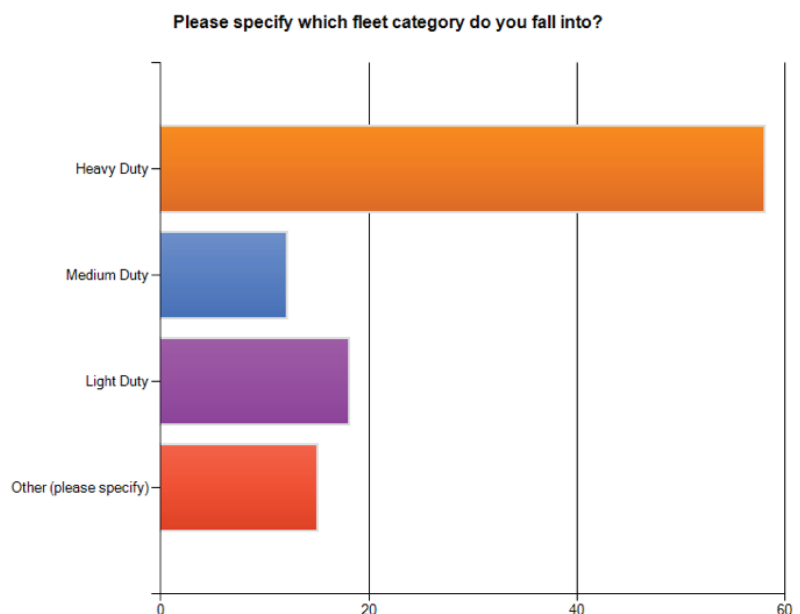
- Why they chose Natural Gas as a transportation fuel
- Why they chose CNG, LNG or Dual Fuel specifically for their needs
- Key challenges faced in adoption
- Advice for other fleets considering a switch to NGV

To provide you with as much insight, experience and data as possible in order to allow you to make informed decisions on what's right for your companies needs.

As part of the process of creating this whitepaper we also conducted a survey with 100 major fleet operators to get their insight (as companies who are yet to make the switch) on some of the key challenges and issues they face when considering a switch to Natural Gas Vehicles

Fleet Survey Results:

Of the 100 fleets we surveyed this is how they broke down in terms of vehicle group:



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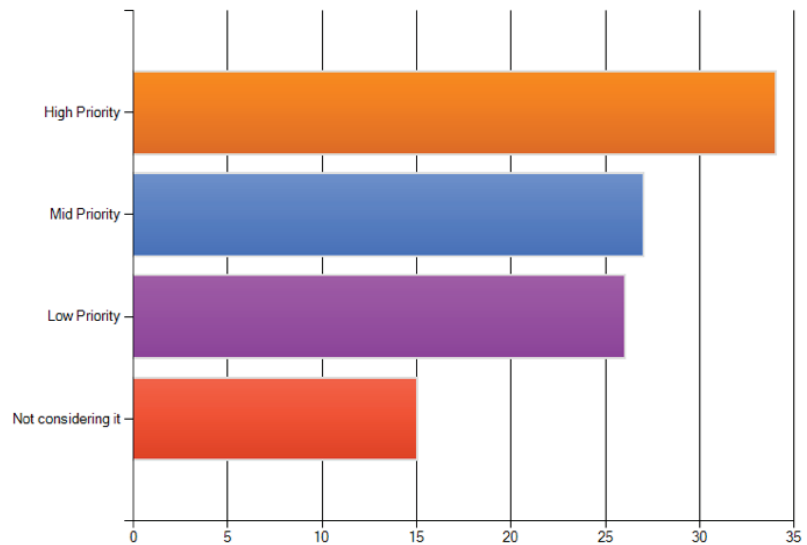
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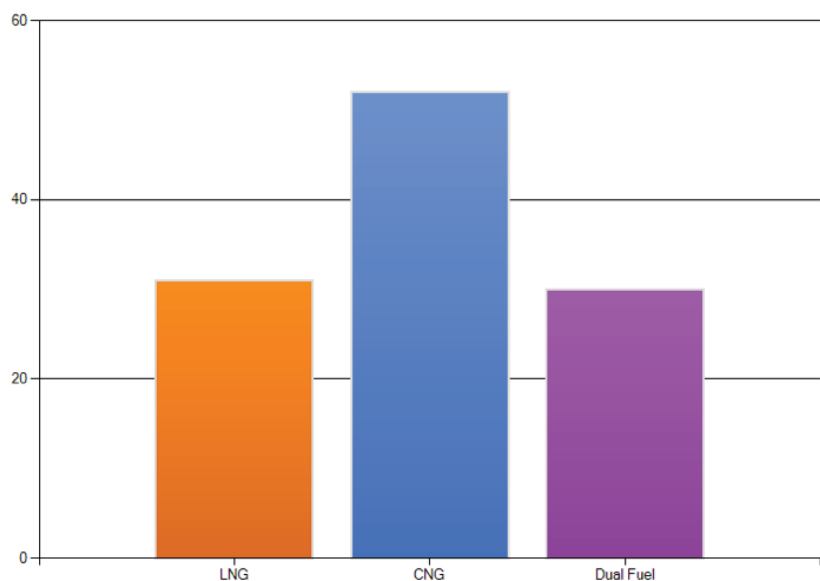
One of the big positives which stuck out immediately from the survey was that it's clear Natural Gas Vehicles are a clear priority for fleets in North America, of the companies we surveyed **85% considered adopting NGVs into their fleet operations a priority in the next 12-18 months.**

How much of a priority is adopting & integrating NGVs into your fleet over the next 12-18 months for you?



Clearly Natural Gas is very much on the radar of North America's fleets, particularly those with a focus on Heavy Duty Vehicles. Following on from this we wanted to establish which fuel type they see is best suited for their needs and requirements (CNG, LNG or Dual Fuel):

Out of the Natural Gas fuel types below which is of most interest to you?



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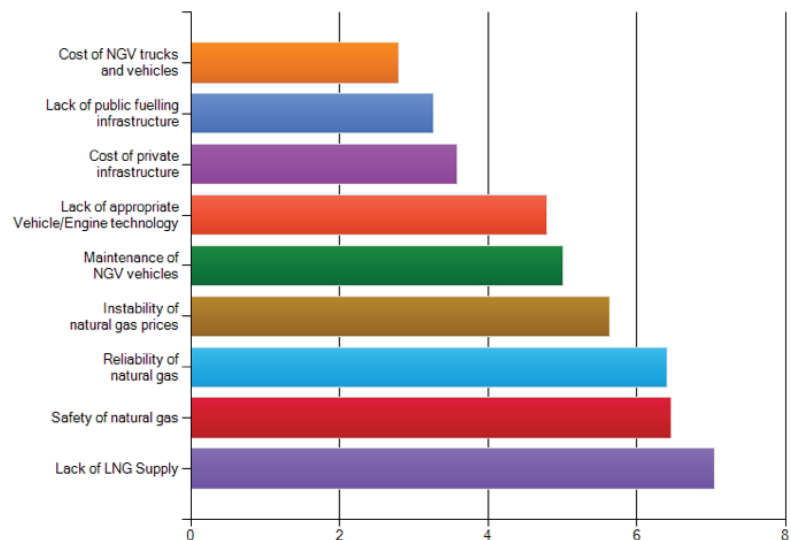
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Interestingly around 50% of the companies surveyed see CNG as the fuel of choice for the company needs. As you can see however from the interviews below, fuel choice is very dependent on the specific needs of each company based on their geographic location, customer requirements, vehicle size, budget and numerous other factors which need to be taken into account when considering a switch.

We next wanted to understand the major hurdles and challenges fleets face when looking to make the switch to Natural Gas Vehicles: **(Companies surveyed highlighted their main concerns when looking at NGVs, rated on a scale of 1-9 – with 1 being high priority and 9 low priority).**

What are the major issues/concerns you have when approaching the use of Natural Gas in your fleet? (please rank in terms of priority)



Results show (and this is reflected clearly in the interviews below) that upfront costs of Natural Gas trucks and vehicles is the major concern fleets have when considering the switch, with lack of refueling infrastructure at a close 2nd. However as the companies below illustrate there are ways in which fleets are able to mitigate these challenges, such as working closely with your customers, forming partnerships with major suppliers as well as looking at other ways you can offset and recoup the initial investment (such as cost per gallon savings with Natural Gas). As well as the vehicle cost suppliers are making tremendous efforts nationwide to overcome the chicken or egg scenario through extensive investment and development of new public refueling infrastructure (more on this can be found here http://www.ngvevent.com/pdf/NGV-Industry-Overview-Report_v9X.pdf)

So a clear takeaway is that it's essential for you to work closely and clearly communicate with all the major suppliers (OEM's, Infrastructure Providers, Industry Associations etc) when making the switch to help address these hurdles Here are some examples of how Ozinga Brothers, Bestway Express and Raven Transport have done this:

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CNG Case Study

Tim Ozinga, Ozinga Energy

Tim Ozinga is Director of Communications at Ozinga Bros, Inc., a fourth-generation family-owned business based in Mokena, Illinois which provides concrete and transportation solutions. In spring 2013, Ozinga launched Ozinga Energy, which provides compressed natural gas fuelling solutions in Chicago and the Midwest.

Tim is a part owner of Ozinga, and has worked with the company for over eleven years, having previously graduated from Trinity College, Palos Heights in Illinois with a degree in Business and Political Science.

What are the key reasons for your decision to invest in natural gas vehicles for your fleet?

Tim Ozinga: We started out back in 2006. We made a fairly significant truck purchase as we were looking at the regulatory climate moving forward, and starting in 2007 there were more restrictions and regulations coming in for diesel trucks. We were trying to limit the effects of that on our company. Shortly after that, in 2008, the recession started affecting us, and we pretty much put a stop to all equipment purchasing and made do with what we had. We were ok with what we had until around 2011, when we saw a need to purchase new equipment. So we were considering all the different add-ons that the new diesels would have, and on multiple levels, the CNG stood out to us as the better solution. For one thing, it was definitely meeting and surpassing all the regulations that were in effect and that were going to come into effect. The fuel savings were an added boost, and it made a lot of sense too because it parallels who we are as a company – we're a family-owned American company, and so our thought was that being powered by an American fuel just made a lot of sense to us.

What were the major considerations your company made when considering your investment in CNG, and what was your major concern?

Tim Ozinga: When we first got started the biggest concern was definitely whether it would perform on par with the trucks that we currently have. We were able to work with the truck manufacturers themselves to make sure that the fuel capacity on the trucks would allow them to operate the typical day that the diesel trucks did.

When we first got started we were a little hesitant so we started off with just two trucks. Fuelling infrastructure was definitely a concern at first. We did not have enough trucks at first to make us comfortable with putting in our own fuelling infrastructure. So we took it a little bit at a time. After piloting the first two trucks, we realized very quickly that it was something that made a lot of sense and could be of great benefit to us.

Why did you choose CNG over LNG or Dual Fuel options?

Tim Ozinga: We looked at the alternatives – the CNG really made a lot of sense to us because of the type of business that we have. Basically it's a delivery business. We're constantly manufacturing concrete and then delivering it to job sites. All the guys are going out within a tight radius, usually no more than 10-20 miles away from the plant. They're returning to home base every day and are parked overnight, so it just made a lot of sense to go the CNG route.

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We looked at the LNG, but it just seemed a lot more complicated, and there were some other concerns in terms of safety. We didn't look too much into the dual fuel options – there weren't any that seemed proven to us. For us it made sense to be sticking to one type of fuel.

Were there any major surprises or challenges you encountered along the way in incorporating natural gas into your fleet? And if so, how were they overcome?

Tim Ozinga: There have not been too many surprises, at least not on a major scale. There have been a lot of little growing pains, such as getting used to a new fuel source, a little tweaking here and there – but we were able to work with the engine manufacturers and truck manufacturers to get all the bugs out. You also have to educate the operators of the trucks, learning what best practices are. They're very responsive depending on the drive type, in terms of the fuel economy you're getting. There's a lot of training involved and learning how to operate this new equipment, how to fuel the trucks, etc. So that was kind of a learning curve for the operators.

At first there were some concerns, but I feel that it was pretty quickly adopted and everyone really embraced the trucks and enjoys working with them now.

You've talked about a plan to become 100% CNG by 2020. How do you as a company plan to achieve that? What specific steps and investments need to be made?

Tim Ozinga: That's still our goal. We currently have about 110 CNG concrete mixers, and about 35 CNG support vehicles - anything from CNG Honda Civic cars that we use in our sales fleet all the way up to service vans and things of that nature. We have about 500 mixers in total, so we're at around 25% implementation. We started with our higher volume locations, and we're continuing to work on spreading the infrastructure out to some of the outlying areas.

Is there any advice you would offer based on your experience to other trucking companies looking to make the switch to CNG?

Tim Ozinga: I think it's definitely important to weigh all the options up. It is still somewhat of a new technology, so it's important to see what is out there, and to really get yourself educated.

You are unique in the fact that you are a fleet that is now also offering refueling solutions through your new company, Ozinga Energy. Could you tell us more about why you decided to make this move, and what the company does?

Tim Ozinga: Out of this whole process, we learned a lot. We started from the ground up. As we went through the process we never really felt comfortable with the options that were out there, that were available. There were a lot of players in the market whose attitude was 'our way or the highway'. So we thought that with everything that we had learned, those experience gained from implementing CNG trucks into our fleet and also building CNG stations, there was a great opportunity out there to provide services to other companies. We were in a unique position because we have our own fleet that utilizes the gas, and we were able to leverage that knowledge and expertise for other fleets, without being some big company that was purely concerned with gas. We were able to relate to and understand the customer better because we're not just the station builder and natural gas provider – we're also an end user ourselves.

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That's why in early 2013 we launched Ozinga Energy. We had built one CNG station at the time, and we have four in-house stations currently. We're also building a couple more, one of which was just finished, for third parties. So we're also building stations for other trucking companies throughout the Midwest.

Looking to the next 2-3 years, do you see Natural Gas playing an increasingly important role in the North American transport industry? And what major hurdles do you think need to be overcome in order to help accelerate adoption within the market?

Tim Ozinga: I think in the next two or three years we're going to see pretty rapid continued growth. It's already on a pretty fast trajectory in terms of CNG adoption. I think the more players get out into the market, the more quickly it will be adopted.

Automobile and truck manufacturers are starting to come out with more and more options, appealing to a more varied group of users. It's very exciting news to us when we hear, for example, that Ford is coming up with a lower-duty pickup truck, a CNG-ready F150. Those things give you the idea that it's heading in the right direction.

We're also starting to see a lot more affordable options as far as infrastructure goes. It's not the case now that you have to invest one or two million dollars to build a fuelling station. There is technology out there that means you can have one at your home, or for smaller sized fleets. Technology and affordability continues to head in the right direction - and it's always a good help when it's being incentivized with grants and rebates. People are looking for a more affordable and stable energy source, and I think it's going to continue to grow and expand.

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Dual Fuel Case Study

Will McCormick, Bestway Express

Will McCormick is Director of Maintenance and co-owner at Bestway Express, a regional, full truckload provider and family business headquartered in Vincennes, Indiana. The company runs a fleet of 300 power units and 800 dry van trailers. Will has been working with the company for 8 years, having previously obtained a BA in Public Relations.

What are the key reasons for your decision to invest in heavy duty Dual Fuel trucks for your fleet?

Will McCormick: At the time we got involved in natural gas, the only option out there was the 9-liter Westport. I wasn't really impressed with it, and felt like there had to be a better alternative. So we did some calling around to people who were looking at natural gas, but nobody really had any answers.

Then a friend of mine knew a guy down in southern Illinois who had converted some of his trucks. He owns a coal mine, and was using his own trucks to haul coal. So we made a trip down there, looked at it, and decided that that was the route to go. One, you have the same power, for the most part, and two, when you're done with the trucks, you can convert back to diesel, and still have something to sell at the end of the day.

What were the major considerations your company made when considering your investment in Dual Fuel, and what was your major concern?

Will McCormick: I didn't get a lot of good feedback from the Board when I decided to ask for money for natural gas. Personally, that I knew, there were only about four people in the country that were doing dual fuel. When you walk in and ask for \$50,000 to try something when you're not sure if it will work or not, that's kind of tough. So I fought for a couple of grants, and got turned down. But then somebody bailed on their end of a grant, and we ended up receiving \$385,000. So we went from one truck to jumping into 16 trucks immediately.

Why did you choose Dual Fuel over pure CNG or LNG?

Will McCormick: When we got into it, our friend in Southern Illinois was supplying me with methane. His company is Compressed Energy Systems, and he was delivering fuel to me every day, so that was how I got into CNG versus LNG - because that's all that was offered to me.

You recently undertook a successful trial with Dual Fuel. What were the key things you learned from the trial?

Will McCormick: We've learned a lot. When we started we bought new 3,000lb tanks, because the price was right, but we've learned that they quit manufacturing parts for 3,000lb tanks, so now we're converting everything over to 3,600lb tanks. We were as green as you could be. We learned how to build racks, we learned how to build a station. We've done everything hands-on, right from the get-go.

Were there any major surprises or challenges you encountered along the way? And if so how were they overcome?

Will McCormick: You just reach out to a lot of people. It's been interesting. A lot of the things I do, you don't get a lot of help, but in the natural gas world it seems like more people are willing to help.

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You plan to now roll out further Dual Fuel vehicles as a result of your trial. What are your plans for this over the next 1-2 years?

Will McCormick: We're hoping to grow our fleet. Right now we're a fleet of about 23, and we're hoping to grow that to a fleet of about 40. In the meantime we're working on a station, as well as having a conversion shop, and also on providing support for CNG in our region.

Is there any advice you would offer based on your experience to other trucking companies looking to make the switch to Dual Fuel, LNG or CNG?

Will McCormick: I would say get well educated. Don't give up your savings to your customer base – that seems to be the big concern. But don't be afraid to try.

Looking to the next 2-3 years, do you see Natural Gas playing an increasingly important role in the North American trucking industry, and what major hurdles do you think need to be overcome in order to help accelerate adoption within the market?

Will McCormick: We've been working with natural gas for about four years now. The first two years, nobody was looking at it, but in the last two years it's gone crazy. We've got the 12-liter being released this year, and at the same time there are a couple of dual fuel concepts coming out, and I think they're all on the right track. I think the popularity is going to be there, the infrastructure is building.

The early bird gets the worm, and if we didn't believe in it, we wouldn't be doing it.

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LNG Case Study

Steve Silverman, Raven Transport

Steve Silverman is Chief Operating Officer of Raven Transport, a truckload carrier based in Jacksonville, Florida, and which mainly serves the Southeast, Mid-Atlantic, Midwest and Northeast USA. Steve has been with the company since 1985, when he helped start the business. He holds an undergraduate degree from Bradley University, and following this he earned an MBA from the University of Michigan.

What are the key reasons for your decision to invest in heavy duty LNG trucks for your fleet?

Steve Silverman: The main reason is that we're trying to reduce the cost of fuel for our customers in the best way possible. I heard T. Boone Pickens, the chairman of Clean Energy, speak about it around two years ago. I got enamored with the idea, about what we could do to reduce dependence on Middle Eastern oil, and started looking to get more and more involved. We went to a number of different meetings, but at the time they did not have a truck available for us. The trucks were either too heavy or too light - the engines were either 9-liter or a 15-liter, which were either too big or too small, so we waited until the 12-liter came out.

We made a decision to do this with a customer that was willing to participate in the significant cost of the engine as compared to the diesel. Without a customer willing to make that commitment, it's not cost effective to do anything today.

What were the major considerations your company made when considering your investment in LNG, and what was your major concern?

Steve Silverman: The issue it comes down to is that the \$60,000 cost, the upcharge, for the 12-liter engine versus the 12-liter diesel engine is significant. If the customer isn't willing to participate in that cost before the fuel differential, then it doesn't work.

The other problem that we faced, when we initially talked to manufacturers, or the guys that were financing the equipment, is that they weren't giving any value to that \$60,000 cost. That \$60,000 lost opportunity was a real problem until we sat down with our second largest customer, MillerCoors, and they wanted to be involved in being as green as possible. They were also thinking about running their plants on natural gas, so this was a great add to it. When they stepped up to the plate, to agree to natural gas, and then gave us a five-year contract, it made it worthwhile to go and spend the differential.

Why did you choose LNG as a fuel over CNG or a Dual Fuel fleet option?

Steve Silverman: The product that we haul is based in a 275 mile radius. And it's a product that grosses out instead of cubing out, and the format is hauling up to 55,000 pounds of payload. So in order to do the 55,000 pounds of payload, number one, we would have to put in more racks for the fuel, on our trucks, and number two, with LNG we can fast-fill without losing any capacity, whereas with CNG if we fast-fill we lose about 30%.

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What fuel savings do you hope to make with LNG versus Diesel?

Steve Silverman: I don't think we're going to have any fuel savings. I would say our mileage per gallon would be about 15% less. Running natural gas versus diesel, we're talking, conservatively, about a difference of anywhere between \$1.20 and \$1.35 today, in cost per gallon. And we'll make it up in the cost per gallon.

On an internal level within the company, were there any major changes which needed to be made to accommodate your new LNG fleet?

Steve Silverman: Our fleet is in Ohio, and we don't have a facility there. So what we did is bring in Clean Energy, Agility, Cummings Westport, Rush, Peterbilt, and had two different one-day meetings, with films, and showed the drivers how to fuel them, making sure they knew what they had to do was bleed everything, and train the drivers, give them the gloves and the mask needed for fuelling. I think that it's going to be significantly different running natural gas in Ohio than if we ran it in Florida, because you can work on trucks outside in Florida whereas you can't, at least six months of the year, in Ohio.

Is there any advice you would offer based on your experience to other trucking companies looking to make the switch to LNG or CNG?

Steve Silverman: Be very careful. I think that this is the quintessential chicken-and-egg situation. There aren't enough trucks, because Cummings Westport are charging too much upfront, so firstly, they're not selling enough trucks. I've discussed this with them before and said, you need to get the trucks down to a \$20,000 dollar differential, take it over a period of time, and instead of selling 2,500 trucks sell 10 or 15 thousand trucks, and make it up in volume.

I think it's imperative to understand that you need a number of fuel facilities available. We asked if the stations ever went down - and the second day the station went down for three hours, and we couldn't deliver because we lost the delivery window. So that's another issue that is paramount. You have to have a backup.

And I think you have to have dealerships with mechanics that are qualified to work on these. Dealerships are very reticent today to go out and spend \$250,000 to put in a bay for CNG or LNG because of the venting issue. If it was in Florida, you could work outside. But most other places you can't work outside, and since we're running a 365 days a year business, it's an issue. I think this is something that, in five years, is going to be completely different than it is today. But when you're the leader and not the follower, you have so many more challenges. We're going through a maze - and it is a maze.

Looking to the next 2-3 years, do you see Natural Gas playing an increasingly important role in the North American trucking industry? And what major hurdles do you think need to be overcome in order to help accelerate adoption within the market?

Steve Silverman: I think it will, but it's dependent on more trucks being sold at a better price. And whether they want to listen or not, that's a key ingredient. I can

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buy ten diesel trucks and spend a million dollars, or for the same ten trucks spend \$1.6m dollars. It's not common sense.

The problem is that the natural gas guys are telling everybody you can save 25-30 cents a mile by the differential and the fuel surcharges, but they don't talk about the actual cost of the equipment. It's a significant cost differential to buy it, and everybody tells me it's going to be three or four cents more per mile to maintain it. I can't tell you if that's true or not because I've only had them for a month. But it is a significant consequence to this business.

I am considerably optimistic, but after a month I have a lot of questions. A lot of the issues we've had you can blame on the weather or whatever, but there's a lot of issues out there that we have to solve straight away.

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As well as case studies like the above another effective way of educating yourself on Natural Gas Vehicles is to attend the 3rd Natural Gas Vehicle USA Conference & Exhibition (June 11-13, Houston).

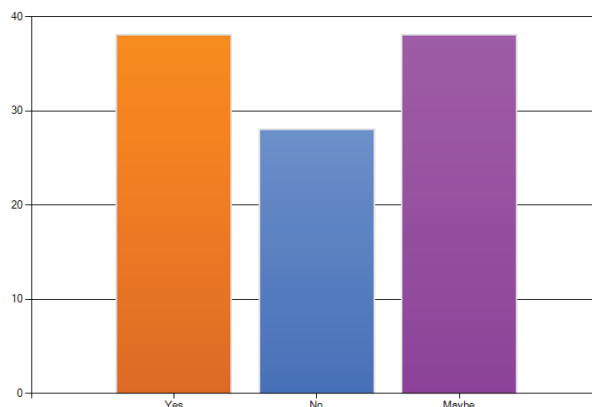
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Of the 100 companies surveyed 70% would consider attending a conference to learn more about incorporating NGV into their fleet, and where better than the leading Natural Gas Vehicle focussed event in North America.

Do you plan on attending an event / seminar / workshop in the next 12 months in order to learn more about NGVs?



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