

Presentation of Richard Kolodziej to the
NGV Conference –Summit
October 5, 2008

“Gear Up: Capture the Momentum”

As you heard a number of times already, the theme of this year’s Summit is ... “Gear Up: Capture the Momentum.” To do that, you have to have momentum. And ... boy ... do we have momentum! How many companies here are getting more customer calls that they can handle? At NGVAmerica, we’re getting about 150 calls and emails a week, and many of them are serious prospects for converting to natural gas. Like many of you, I’ve been involved in the NGV business a long time -- 22 years, and I’ve never seen anything like it.

What I like to do is highlight six major events or trends that happened the past 12 months that has helped provide this momentum. First and foremost, gasoline reached over \$4 per gallon and diesel reached over \$5 per gallon. These prices had been going up in a herky jerky fashion for years, but it never seemed to reach that tipping point where Americans behavior changed. We now know that \$4 is that tipping point. NGVs have had big external benefits forever ... reduced urban pollution, reduced greenhouse gases and displacement of foreign oil. But those external benefits didn’t seem to compel most people to consider switching to NGVs. Gasoline hit \$4 -- and our phones are ringing off the hook.

Second, we now have more NGV products than we’ve ever had. In transit, you’ve got: Orion; New Flyer; NABI; and, for smaller applications, a wide variety of companies upfitting chasses like Freightliner Custom Chassis, Workhorse and GM and Ford cutaways. In the trash truck market, you’ve got: Peterbilt; Autocar; Crane Carrier; Condor; and, soon, Mack. In school buses, you’ve got two of the top three companies – BlueBird and ThomasBuilt offering NGVs, while Emission Solutions is making a drop-in natural gas engine for the third big school bus manufacturer – International/Navistar. In street sweepers, there’s: Elgin; Schwarze; Tymco; and Allianz. In medium and heavy duty work trucks, we have Sterling and a long list of field integrators. And in the heavy-duty market, we have Kenworth, with field test being conducted by Peterbilt. That’s really an incredible list. And the next 12 months will see that list of medium and heavy-duty vehicles get even longer.

How about light-duty? It’s true that, over the past decade, the industry had focused disproportionately more on the medium- and heavy-duty market than light-duty. But

the marketplace is speaking, and it's saying that the public wants more light-duty NGVs. As you know, right now, the only OEM NGV sold in the U.S. is the Honda Civic GX. And we're also fortunate to have four companies -- Baytech, BAF Technologies, IMPCO Technologies and Fuel Tek -- offering high quality certified conversion systems for a number of GM and Ford engine families. But I believe that, in the next 12 months, we are going to see the light-duty NGV offerings getting a lot more extensive. It looks like we'll have at least two more companies with EPA certifications within the next month, and a number more in the months ahead. As to OEMs, both GM and Ford make NGVs in other parts of the world. GM alone makes 18 or 19 (they're not quite sure) NGV models for the markets in Europe, South America and Asia. Meanwhile, US car buyers are demanding OEM NGVs here. If GM, Ford or Chrysler won't satisfy that demand, I'm sure foreign OEMs will. By model year 2010, I am confident that we will have a number of OEM NGV models in the showrooms.

Number three. There's the little matter of about \$100 million of national advertising and PR. Unless you've been on sabbatical in Uzbekistan, you certainly have seen the ads for the Pickens Plan or you've read about Boone Pickens' meetings with a long list of America's policymakers. Or you've seen the ads featuring Aubrey McClendon, sponsored by Chesapeake Energy. Or you've watched CleanSkies.TV, sponsored by the American Clean Skies Foundation. You come away from all these commercials and programs understanding one primary point ... America needs to displace foreign oil with natural gas in vehicles. Later this morning, we'll be having a panel with principals from all three efforts, so I won't say anymore here. But, as I said, collectively, those three initiatives will spend over \$100 million this year. We've never *ever* had this magnitude of media exposure.

Number four. NGVAmerica is now 21 years old. Over that entire period, we have been educating Congressmen and Senators and their staffs about the benefits of NGVs. And we've been lobbying them to remove barriers and provide incentives for NGV purchase and use. Over this entire period, we have been seriously outspent and outgunned by the advocates for other alt fuels and technologies. Our goal has been to have NGVs treated fairly and equitably with respect to other alternatives. We haven't always been successful because of the lobbying clout of our alt fuel colleagues, but, using careful maneuvering and coalition building, we have had many successes -- like the existing NGV tax credits.

But the game has now significantly changed. I think it might have a little to do with having spokesmen like Boone Pickens and Aubrey McClendon, backed up by \$100 million of national advertising, PR and lobbying. As a result, natural gas and natural gas vehicles have never had the attention of Congress like we have today. As we

discussed yesterday at the NGVAmerica Board meeting, in the last three months alone, there have been five bills introduced in the Senate and the House to accelerate the growth of the NGV market. This includes: a bill by Senator James Inhofe of Oklahoma, who is the ranking member of the Senate Environment Committee; a bill by Congressman Rahm Emanuel of Illinois, who serves on the powerful Ways and Means Committee and is chairman of the House Democratic Caucus; and a bill by that Illinois Senator – Barack Obama. Hopefully, the chaos of this Congress will be replaced by a more orderly one next year. And we expect that that Congress will take major steps in rectifying the bias that exists in current alt fuel programs and policies.

Number five has to do with gas supply, which has been a very positive story for us this year. One big criticism we hear from policymakers against growing the NGV market is that “we’re running out of natural gas”. In July, the American Clean Skies Foundation released a study by Navigant Consulting that severely undercut the arguments of the supply naysayers. The natural gas resource base is not static – it’s dynamic. It decreases as you produce more, but it increases as technology and energy economics change.

In 1990, the Potential Gas Agency concluded that we had about 1100 trillion cubic feet of natural gas resources. That was about 55 years of supply at current production. Since that time we produced about 300 Tcf of that 1100. But technology and economics had changed. So, in 2007, the Agency did another of its biennial studies that concluded that we had 1500 Tcf of natural gas resources – about 77 years of supply. The Navigant study foresees that next year’s Potential Gas Agency update will show an even greater jump. Navigant forecasts that we may have up to 2250 Tcf of gas – or over 115 years supply. And that almost all the addition is coming from gas from shale. Gas shale is low permeability rock with gas trapped in it. America’s has huge deposits of gas shale that we’ve known about for years. We just didn’t know how to produce it economically. Now we do. Later this morning, we’ll be hearing much more detail about the extent of America’s natural gas resource base from Peggy Williams of Oil and Gas Investor magazine.

Finally there’s number 6 – that’s renewable natural gas or biomethane. A minute ago, I mentioned “We’re running out of gas” as one policy criticism we keep hearing. A second – and related one is – “Natural gas is a fossil fuel.” And even if we have a huge supply base, the criticism goes, eventually we’re going to run out. And, they go on, even though we have a greenhouse gas advantage over gasoline and diesel, you still generate greenhouse gases. Biomethane down the road can be our trump card against both criticisms today. Making biomethane from landfill gas, sewage or animal waste and using that gas in an NGV, gives us over a 100 percent reduction in greenhouse gases. If that methane would have otherwise been vented into the

atmosphere, the greenhouse benefits are many times that amount. And the potential supply is substantial. DOE estimated that, just from America's landfills, sewage and animal waste, we could reasonably produce one and a quarter quadrillion BTUs of biomethane. That's equivalent to 10 billion gallons of gasoline or enough to fuel 20 million average light-duty vehicles. Fortunately, we're now seeing a biomethane-from-waste industry finally develop in the US. Prometheus is producing LNG in Orange County from landfill gas and powering buses with it. Last week, another company -- FirmGreen -- had the grand opening of landfill-to-biomethane plant in Ohio that will fuel municipal cars and trucks. Clean Energy just entered into a partnership to produce biomethane from a Texas landfill and use the gas for vehicles. Microgy is producing biomethane from animal waste from at least two sites, and PG&E is contracting to take that gas.

What's amazing is that all this is happening while the federal government is slanting the system in favor of using raw biogas for on-site electricity generation. Right now, if you make electricity on-site from biogas, you get a huge tax credit \$5.66 per million BTUs of delivered energy. If you make biomethane from that raw biogas and use it for any other purpose – including for vehicles – you get nothing. As we discussed at our Board meeting yesterday, one of our legislative priorities next year is to fix that. When we're successful, the American waste-to-biomethane industry will really take off.

And down the road is cellulosic biomethane. Sweden, Switzerland, Germany and France are all working on this technology, and European studies show that making biomethane from cellulosic materials is far more economic and far less energy intensive than making and other biofuels. Now ... no cellulosic biofuels is economic today. But if and when cellulosic biofuels become commercially price competitive, it'll be biomethane plants that will be competitive first. If that happens, we'll have an infinite supply of renewable natural gas.

High gasoline and diesel prices, more product offerings, major media exposure, a more supportive Congress, a growing natural gas supply base and the early rise of a biomethane industry. Not bad for 12 months.

I don't want to get too far ahead of myself, but with all this going for us on top of all the economic and other advantages we have – it might appear that we are entering a new age in transportation. It might appear that we are entering ... the "Age of NGVs." Now, if you just looked at the United States with our 120 or 150,000 NGVs, that could seem a little silly. But if you look around the world, it's not silly at all. In 2003, there were just 2.8 million NGVs in the world. Four years later – in June of 2007, there were 7 million. Now, one year after that, we have 9 million. The

worldwide NGV market is growing at an accelerated rate. And that growth is happening on every major continent.

In South America, 15 percent of the vehicles in Argentina are now NGVs—over 1.7 million. In Brazil – a country that is known as the sugarcane ethanol capital of the world, there are over 1.6 million NGVs. Peru recently had the grand opening of the largest natural gas fueling station in the world. And in Venezuela, by law, an increasing percentage of vehicles made in or imported into the country must be capable of operating on natural gas.

In Asia, the leading country is Pakistan – with over 1.6 million NGVs. But China, India, Thailand, Myanmar, Malaysia, South Korea and Indonesia all have robust and growing NGV markets.

In Europe, Italy has been the leading NGV country since the 1930s. But Germany is three-quarters through the process of building a national network of 1,000 natural gas fueling stations. And Spain’s NGV market is rapidly expanding – as is the market in France, Russia, Ukraine and other countries.

Even in the Middle East, which has the majority of the world’s oil, there is a growing and vibrant NGV market led by Iran. Five years ago, there wasn’t much NGV activity in Iran. Today, they have over 825,000 NGVs. They’re now the world’s fourth largest NGV market. By government mandate, at least 60 percent of all vehicles manufactured in that country must be capable of running on natural gas.

Because of all this market opportunity, all the major automakers in the world are now making NGVs somewhere in the world – including Opel; Chevrolet; Ford; Mercedes; Volkswagen; Fiat; Citroen; Renault; Peugeot; Mitsubishi; Toyota; Honda; Nissan; Isuzu; Hyundai; and names you might not know such as Eastern Europe’s Skoda; India’s Tata; and China’s Geely and Lifan. It’s amazing what’s happening.

What do I say to all this positive news for the NGV industry in the US and worldwide? I say ... it’s about time. With all of benefits that NGVs offer, it was frustrating for me – and I’m sure for you – to see NGVs eclipsed by other snazzier alt fuels and technologies – with the media and with policymakers. But now the tables appear to be turning. While NGVs are in the ascendency and have the wind at our back, most of the other alternative fuels and technologies – fuels and technologies that each were seen at one time as the silver-bullet answer to our dependence on foreign oil -- are all facing some unexpected headwinds. (By the way, this is the standard pattern for “miraculous solutions.” When they are over the horizon, all you hear are the promises. Once they actually hit the market, the warts start showing, and

the inevitable backlash begins. It's not that they're bad ideas. They just can't live up to the hype. And that's what we're seeing.)

Now ... please understand. I'm about to highlight some of the problems facing other alt fuels. This doesn't mean that we shouldn't be using these fuels. We must use these fuels ... in the parts of the country and in the applications where they make sense. We don't have choices. We have to use them all. But we have to be realistic and honest, and understand that none of these are panaceas.

Take corn ethanol. Just a couple of years ago, you would have thought that corn ethanol was almost the perfect fuel. The media and policymakers couldn't say or do more for it. After all, the advocates said, it's renewable, so it displaces fossil fuels. It's cleaner, so it reduces urban pollution and greenhouse gases. And it based on American crops, so it benefits America's farmers. What could be wrong with that? Well, as it turns out, all this was an over-promise. It's really not that renewable. The greenhouse benefits aren't that great. The urban pollution benefits are small or non-existent. The shift of corn from food to fuel has been a factor in food prices skyrocketing around the world. There are also water use problems, groundwater problems and soil erosion problems. And it's frequently more expensive than gasoline on a Btu basis. It's not that corn ethanol is a bad fuel. It's not. As I said, corn ethanol must be part of the alternative fuel mix if we are going to put a big dent in our dependence on foreign oil. In fact, it's our position that, where you have to use gasoline, you should use some ethanol blend. It's just that corn ethanol is not a panacea.

How about the other major farm fuel – biodiesel – primarily produced today in America from soy beans? Biodiesel advocates have made the same claims as the corn ethanol folks – namely that: biodiesel is renewable; it reduces urban air pollution and greenhouse gases; it's economical; and it can make a big impact on our use of imported oil. Again, all this is proving to be a substantial over-promise. And the rising cost of soy beans is making biodiesel uneconomic – even with the \$1 per gallon tax credit. Again, it's not that biodiesel is a bad fuel. It's not. We should be using biodiesel blends whenever you have to use diesel fuel. It's just that biodiesel too is not a panacea.

How about cellulosic biofuels? Many people are pinning their hopes on this. Taking cellulosic waste (like corn stalk waste) or cellulosic crops (like switchgrass) PROMISES to be a big improvement over corn ethanol. It PROMISES to require much less water and fertilizer. And it PROMISES to have a much better energy balance. But today, these are only over-the-horizon promises. Because, while the federal government has funded some demonstration plants, there are no commercial

cellulosic plants operating today. The reason -- cost. Despite federal incentives, cellulosic biofuels just aren't economic. Major technical breakthroughs are required. Could all these breakthroughs happen tomorrow? Possibly. Might they never happen? Possibly. But, you can be sure that, if and when cellulosic biofuels becomes commercially available, they won't be panaceas either.

Electric vehicles get a lot of positive attention. As you know, there are three flavors here --electric-only vehicles, hybrid electrics and plug-hybrids. Electric-only vehicles always had great promise. But there still isn't a single electric-only vehicle available that can approach the driving range, interior room and performance of a typical gasoline-powered family sedan, at anywhere near the price that an average consumer would pay. The culprit has always been -- and continues to be -- the batteries. For electric vehicles to be a major player, you need light, safe and cheap batteries that can be charged quickly. A lot of progress has been made. But not nearly enough. As a result, as far as I know, not a single pure electric vehicle with four seats and the ability to reach highway speeds is being mass-produced anywhere in the world. Until they come up with an adequate battery, electric-only vehicles will remain a very niche market.

Gasoline-hybrid electric vehicles have much more promise -- but, unfortunately, much less benefit. While EVs don't use any petroleum, gasoline or diesel, hybrids are just more efficient gasoline or diesel vehicles. More efficiency is good. And more gasoline hybrids should be produced and sold. But hybridization alone is not going to solve America petroleum dependency problem. A major step forward would be 100 percent alt-fuel hybrids, and we're seeing signs of that very recently. Last month, at the Hanover, Germany auto show, Mercedes Benz announced that they are working on a natural gas hybrid sedan. And two weeks ago, Toyota announced that they would be unveiling a natural gas hybrid Camry concept car at the Los Angeles auto show. Again ... these would be huge steps toward energy independence. But these too are right now just promises.

The third electric vehicle option has really been getting an awful lot of press lately. Plug-in hybrids are a combination of EVs and hybrids. The concept really is a great one. You build a plug-in hybrid vehicle with the ability to operate on electricity alone and a lot more battery capacity (let's say 40 miles range). Most trips by most American's are far shorter than that. You always charge up the battery at home at night, and do most of your driving as in electric-only mode. If you do drive farther than the battery range, the gasoline engine kicks in and (directly or indirectly) powers the vehicle. I personally believe that among all the options I've just covered, plug-in hybrids have the most promise. GM has announced that their plug-in hybrid Volt will make it to the market by the fall of 2010. Other automakers say they will be there,

too. My guess they will be a great leap forward. But, if history is any guide, when they get to the market, consumers will find that they have unanticipated limitations. And they won't be a panacea either. Also, keep in mind, that plug-in hybrids make little sense for most heavy-duty applications – which account for about 20 percent of all fuel use.

Finally, there's hydrogen. Let me just say this about the hydrogen options. HCNG vehicles – where you blend some hydrogen with natural gas – are a great way to help transition to hydrogen as a transportation fuel. But, in my opinion hydrogen-only internal combustion engine vehicles make no economic sense, and I can't believe they ever will be commercially available. Hydrogen fuel cells may, at some time, be a commercial option. Honda and other OEMs have small demonstration fleets. They hold great promise, but there are many technology, logistical and, especially, economic barriers that must be overcome before they are commercial, and even more before they can capture a significant part of the market. As with all technologies that aren't commercially here yet, they should be supported. But it would be foolish to ASSUME that they will be successful in the market, and then base future transportation policy on that assumption.

How about NGVs? We have warts, too. Fuel storage capacity – especially on smaller vehicles – is a limitation. Our vehicles will always cost more than petroleum vehicles because our fuel storage systems cost more than gasoline and diesel storage. Right now, we have only about 1,200 refueling stations versus the 190,000 gasoline stations, so we can't be all things to all people. NGVs really need to be available in more models. And, while we really do have a vast natural gas resource base, we can't displace all gasoline and petroleum used in the country. The fact is that we are not a panacea either.

But, I believe all our other attributes – especially our economic and oil displacement benefits – give NGVs a huge advantage today. Everything is aligned for us. We really do have momentum.

But customers are not just going to fall into our laps. The theme of this year's Summit says it all. We have to “gear up” to capture the momentum that we have today. As an industry, we have to be more effective at generating sales leads and then closing the deal with potential customers. To do that, we need more “feet on the street.” We need to forge strong partnerships with local gas companies with environmental and energy security advocates with the sales managers and dealers of our OEMs – light-, medium- and heavy-duty. There's an old saying in Washington. “It's not what you do by yourself that matters. It's what you do with your friends.” That saying refers to lobbying. But, for the NGV industry, it also applies to marketing and sales.

This afternoon, NGVAmerica's Stephe Yborra will be addressing this whole subject in more detail.

Ladies and gentlemen, we have an extraordinary opportunity before us. And I firmly believe that, if we do "gear up" and we do "capture the momentum", someday soon, people will be able to point to the list of all the NGV countries and say that the largest NGV market in the world is the United States of America.

Thank you