

PickensPlan

T. Boone Pickens Media Coverage 7.8.10

Total of 5 Placements

- Blog/Online: 5

Coverage Summary:

Pickens blog on the *Huffington Post* discusses the need for Congress to pass a comprehensive energy bill, highlighting the NAT GAS Act and the need to adopt legislation to reduce our dependence on OPEC oil.

Highlighted Placements (Full Articles Below)

- **OPEC Oil Is Still the Energy Issue** – *Huffington Post* – 7/7/10

Blog/Online Placements (Full Articles Below)

- **MIT: Natural Gas Is Key To A Cleaner Automotive Future, But Only Indirectly** – *Auto Blog Green* – 7/8/10
- **Measuring the Wind and the Sun** – *Greentech Media* – 7/8/10
- **Natural Gas; Propane Gets 'Autogas' Makeover As Industry Tries To Go From Home To Highway** – *Greenwire* – 7/7/10
- **Interview: Rick Rule on Oil & Gas vs. Green Energy** – *GoldSeek* – 7/7/10

HIGHLIGHTED COVERAGE

OPEC Oil Is Still the Energy Issue – *Huffington Post* – 7/7/10

By T. Boone Pickens

The Congressional Independence Day recess is here. The amount of time available to pass substantive legislation before both houses adjourn is dwindling.

Between the end of the July 4th Recess and the August Recess, Congress will try to pass the financial reform bill, and the Senate will fulfill its Constitutional duties on Supreme Court nominee Elena Kagan. With all that, the single largest unfinished piece of business for the 111th Congress remains the adoption of a comprehensive energy bill.

I have been around this business for a long time, and I understand that an energy bill is likely to contain a great deal of compromise on key issues. That's the nature of the system -- you have to compromise to get the things you really need and serve what you believe to be the greater good. The debate surrounding the balance between our environmental and energy policies, while important, should not delay us from adopting legislation to reduce our dependence on OPEC oil.

We must focus on the amount of oil we continue to import - day-in and day-out - to fuel our national fleets of cars, light trucks, and heavy-duty vehicles. Nobody disagrees on that one.

We can talk about the need for more solar and wind farms to produce energy. I'm all for those. I've said a thousand times since we started working on the Pickens Plan that "I'm for anything American."

But wind, solar energy and seaweed won't move a car, and batteries today won't move an 18-wheeler. Approximately 70 percent of the oil we import is used for transportation. Heavy trucks use about one-third of that. This includes the eight million 18-wheelers, which move goods from

ports to distribution centers and from distribution centers to factories and stores. It also includes the tens of thousands of refuse and recycling trucks as well as all those school and municipal buses.

The provisions of the bi-partisan NAT GAS Act (H.R. 1835 and S. 1408) are specifically aimed at reducing our imports of OPEC oil.

The NAT GAS Act would provide tax incentives to build a model for using domestic natural gas as a principal transportation fuel instead of imported diesel. It creates a test for building a domestic, heavy-duty truck fleet based on domestic natural gas through replacing trucks burning imported diesel during the normal course of fleet rotation.

With unemployment stubbornly remaining above nine percent, the federal government should be looking for a sure-fire plan to create private sector jobs. The NAT GAS Act would jump-start the natural gas vehicle (NGV) industry in the United States, creating new jobs throughout the supply chain.

When he accepted the Democratic nomination for President, then-Senator Barack Obama pledged to get America off Middle Eastern oil within ten years.

Two of those years have already gone by. But we can, during the next eight years, meet his goal. President Obama can earn a place in history as the first president in more than 40 years to reduce our dependence on foreign oil.

When Congress returns from its Independence Day recess, it must focus on America becoming less dependent on OPEC oil. We need a vote on energy legislation to make America stronger, safer, cleaner, and more prosperous by passing a bill including the provisions outlined in the NAT GAS Act.

Follow T. Boone Pickens on Twitter: www.twitter.com/pickensplan

BLOG/ONLINE COVERAGE

MIT: Natural Gas Is Key To A Cleaner Automotive Future, But Only Indirectly – *Auto Blog Green* – 7/8/10

By Eric Loveday

A recent study conducted by a team of scholars over at the Massachusetts Institute of Technology (MIT) concludes that natural gas will be a vitally important source of fuel for the automotive industry as we move forward, but it won't be pumped into cars as shown above. Instead, the researchers at MIT suggest that natural gas will play a key role in the advancement of electric vehicles (EVs) and will help reduce greenhouse gas emissions.

As the study concludes, over the course of the next several decades, combined-cycle natural gas generation plants will slowly replace inefficient and dirty energy sources such coal power plants. The natural gas power plants can then provide the juice necessary to keep EVs rolling down the road. The MIT researches admit that natural gas power generation is only a temporary fix that will hold us over until more zero-carbon renewable energy sources are widely used.

There's has been a significant amount of chatter regarding natural gas and its role in reducing greenhouse-gas emissions, but little concrete evidence has surfaced to support a changeover to natural gas. Now, researchers at MIT claim to have confirmed the importance of natural gas as a bridge to a low-carbon future. As MIT director Ernest Moniz remarked:

Much has been said about natural gas as a bridge to a low-carbon future, with little underlying analysis to back up this contention. The analysis in this study provides the confirmation - natural gas truly is a bridge to a low-carbon future.

You can bet that T. Boone Pickens will be overjoyed to discover that the geniuses at MIT conclude that natural gas is the future.

Measuring the Wind and the Sun – Greentech Media – 7/8/10

By Herman K. Trabish

It turns out you do need a weatherman to know which way the wind blows - and where the sun is shining - if you plan to produce or transmit electricity from renewable energy. Two of the world's best providers of "intelligence" on wind and solar energy resources are AWS Truepower and 3TIER. The intelligence falls into two distinct categories -- assessments and forecasts.

"Assessment is about where to put the project so it produces power when you need it based on a 40-year projection," Ken Westrick, 3TIER's CEO said. "Forecasting is really about integrating that power into the grid cost-effectively, reliably and efficiently in the short-term."

Assessments and forecasts serve different consumers of sun and wind. "In the assessment side, it's developers and financiers," Westrick said. "On the forecasting side, it's power marketers, project operators and system operators."

"One thing I want to clarify, Bruce Bailey, the AWS Truepower CEO said. "is to us, most forecasting applications are scheduling next hour, next day, for grid operators primarily. But we also do long-term projections (also referred to as assessments), like 20-year projections of [project] energy output. We'll quantify the levels of probability of reaching different levels of performance for wind and solar systems."

Weather forecasting for and assessment of wind and solar has grown up with the renewable energy industries. Ten years ago, Bailey - a meteorologist - was doing weather forecasting. "It's become much more sophisticated and much more accurate," Bailey said of the ten years since Southern California Edison retained him to do forecasts on their incipient wind resources. "Part of it is experience. Part of it is better feedback from the plants themselves. And third we've installed more wind monitoring equipment within the area of interest so that we just have more real-time information."

Their services have never been in more demand. T. Boone Pickens referred to 3TIER wind maps when he told "60 Minutes" that the Midwest is "the Saudia Arabia of wind" and he took the maps with him when he testified to Congress.

In the last two years, assessments have become a lifeline for wind and solar installations because they can be determinative for funding. "Since this economic slowdown, now that money is being valued a lot more, people really do care about building productive projects," 3TIER's Westrick said. "There has been a fundamental shift and we are getting a lot of acknowledgement that our technologies are objective, accurate and they quantify uncertainty. That's what bankers and financiers need right now as capital has become much harder to get."

Neither company was loose with client names. AWS Truepower mentioned that they had worked for SCE and 3TIER talked about Pickens but no other names were mentioned. Todd Stone, the 3TIER Director of Communications explained why. "The world of developers and even operators is very secretive," Stone said. "The data that we provide for them and the projects that they're working on is just not something we're at liberty to speak about."

"We're the leading provider of wind forecasts in North America to ISOs and utilities and provide assessment services to all of the major wind and solar developers throughout the world," was as specific as AWS Truepower would be. 3TIER would only say it does assessments for "all of the world's largest developers of wind and solar on a global basis" and it does forecasts for "most of the major project operators, a lot of the major utilities and at least a couple of the system operators."

It was irresistible to draw both companies out on the subject of climate change. AWS Truepower's Bailey, a cautious businessman and scientist, insisted he currently has limited market demand for climate information from his primary customer base and then pointed out that long-term climate models are of controversial accuracy due to the challenge in validating them.

Dr. Scott Eichelberger, 3TIER's Director of Advanced Applications, offered a more intriguing insight. He admitted that 3TIER draws on data from the many International Panel on Climate Change (IPCC) climate models and has found it to be accurate. "The IPCC is an authoritative body and the best estimate of what the future will be as far as climate change goes," Eichelberger

said. "They go through and actually combine together climate models from around the globe and there's a whole host of estimations for what the future will be."

"These are projections that go out to 2040 and 2060 and beyond," Westrick added. "There's really no way to validate them right now." But, he said, "We run these models everyday. We know the next day if the model isn't right because our customers let us know."

Both companies expect their assessment and forecasting capabilities to get better. Dr. Eichelberger said computational abilities, numerical modeling and real-time feedback will all improve.

Marie Schnitzer, AWS Truepower's Director of Solar Services, was specific. "The one shift in focus is with the utilities within the solar space - and it reflects where it is in the wind space - is they're looking for a finer resolution. Rather than something that is an annual average or an hourly projection for the longer term and potential impact to the grid, it's looking at it in a 10-second, 5-second or a 1-second impact to the grid."

Natural Gas; Propane Gets 'Autogas' Makeover As Industry Tries To Go From Home To Highway – *Greenwire* – 7/7/10

By Jason Plautz

When most Americans hear propane, they think of starting a grill, not a car. Autogas for America hopes to change that.

The coalition launched last month in an effort to unite the fractured industry around promoting the fuel for transportation. Their pitch: The domestically produced gas burns cleaner than petroleum, is cheaper than other fuels, and the infrastructure is available now.

The group, led by chairman Stuart Weidie, hopes that message will help get 500,000 propane, or liquid petroleum gas (LPG), vehicles on the road by 2013. Meeting that goal would offset more than 1.56 billion gallons of gas per year, equivalent to taking 2.8 million conventional gasoline cars off the road, Weidie estimates.

But before they do that, the group has to get everyone to speak the same language, starting with the product they are pitching.

"'Autogas' is the term used in the rest of the world," said Weidie, noting that the diesel industry tried to brand its specialized auto fuel "road diesel" to distinguish itself. "We wanted to differentiate ourselves from propane for home use."

Weidie jokingly calls the group "the poor man's T. Boone Pickens plan without the wind," a reference to the Texas billionaire's scheme to boost wind turbine and natural gas development. Autogas for America hopes to at least approach the same level of attention and lobbying heaped on natural gas to get its fuel into the government policy mix.

The group's website boasts the membership of nearly 30 businesses and industry alliances, as well as 17 clean city and environmental groups. They are working on distributing data and talking points to make sure all of the members are sending the same message to Congress.

"We think of ourselves as a stealth fuel," Weidie said. "In the last two or three years, the reaction has been, 'This is so great, why haven't I heard of it?'"

A common interest

At the official launch of Autogas for America at a National Propane Gas Association meeting, Weidie pitched the group as a unifying force for industry.

"Autogas for America is a platform to pull all of us together as an industry," Weidie said. "We don't want anybody that's interested in the market to get isolated."

According to the NPGA website, there are 8,000 retail propane companies in the United States, many of which tend to be small, family-owned businesses. The propane market is dominated by home heating and other domestic or business uses, such as grilling. Transportation makes up 3 percent of propane demand, according to a 2006 survey by the American Petroleum Institute.

"I don't think there's anyone that opposes propane growing in the engine area. I think there are a number of companies that for their own business purposes stay in their own markets," said Phil Squair, NPGA senior vice president. "We have a large membership with a lot of different interests. ... I don't think you can characterize it as not being supportive just because they choose not to pursue."

Even though autogas offers the industry a stable, year-round funding source, many companies do not see the need to expand beyond the local home heating market. In helping to announce the Autogas for America launch, NPGA President Richard Rollden addressed those concerns head on, calling on the meeting's attendees to help "reshape the brand."

"When propane first started off, it was a fuel to light your house," he said. "Then it became heating. ... We wouldn't be talking about climate change and energy legislation, but it's happening, and we have to talk about it."

Faced with that necessity, the industry has some catching up to do. In the 1980s, there were hundreds of thousands of such vehicles on the road in America. The fuel's stock stayed high for years, with a 1995 Department of Energy study calling propane the "alternative fuel of choice" in the future and predicting that 16 percent of the light-duty vehicle fleet would run on propane.

However, the fuel's popularity stagnated here as it rose abroad. There are now 14 million autogas vehicles in use around the world, but 200,000 of them are in the United States.

In that time, various autogas alliances have come and gone, most notably the Propane Vehicle Council, which was started in 1994 to establish equitable tax policies for propane gas, but soon evolved to incorporate more fuel and vehicle development. The council split in 2004, with its legislative functions being folded into the NPGA and its other responsibilities, including product development, going to the Propane Education Research Council.

Without a strong group lobbying for tax benefits and better infrastructure, Weidie said the cost benefits of propane simply "went away," causing the industry's setbacks.

PERC Vice President Brian Feehan, who was executive director of PVC and headed the coordinating committee during the transition, said the autogas field has grown since the group was disbanded.

"From my perspective, we've seen a dramatic change," Feehan said, noting industry groups like Alliance Autogas and CleanFuel USA. "There are so many opportunities that companies can bring autogas. Even if you didn't want to support that specific market, there are benefits in terms of increased availability of supply."

Feehan praised Autogas for America as a "great mechanism and platform for uniting the industry." PERC, which was established by Congress, is prohibited from influencing elections and legislation, leaving a void at the top of the industry.

Organizers joke about comparing themselves to Pickens, but the industry really could use a figurehead. During the launch, organizers all pointed out their lobbying effort was small and scattered compared with the natural gas effort but hoped they could surpass it with a unified plan.

"From a global perspective, the autogas market has been growing rather robustly. I think our own industry has taken a comprehensive approach, not just from the market and research and development sides," Feehan said.

Weidie is hoping that plan can manifest itself in the fleet industry, where autogas has already made some inroads. Some bus systems or smaller fleets, such as taxis or police troopers, use the fuel, since they can set up a centralized fueling station and capitalize on the cheaper prices. Fleets also tend to buy in large orders of anywhere from 100 to 1,000 vehicles, adding more market power.

Automakers have been reciprocating, rolling out conversion or propane-only vehicles. Ford Motor Co., for example, released propane options for its E-series and is working on engines for the F-super duty line. Rob Stevens, Ford's chief engineer for commercial vehicles, said the company had already sold thousands of the E-series, which had engines specially adapted for both LPG and compressed natural gas, or CNG. Ford found that the fuels were so appealing, some customers had been upfitting their own engines.

"We saw well over a year ago that there was interest that was building. It created this methodology to work with upfitters and our customers to offer up something that would really be a good quality execution," Stevens said. "What we don't want to see is people upfitting when vehicles aren't ready for it and they could have premature wear."

Several other fleet vehicles, including the Lincoln Town Car and General Motors Co.'s 6.0-liter engine line, have picked up the fuel. But passenger cars seem largely out of the question, at least for now.

"We try to measure things in five-year increments. We're working on trying to develop a thick, robust fleet market in the next five years," Feehan said. "A consumer use is not precluded now, but as we start to see the increase of market penetration and seeing significant infrastructure, that becomes more of a reality."

Cleaner and easier

Once the vehicles are out, Wiedie thinks autogas will be an easy sell, especially given its environmental benefits. According to data compiled by PERC that included upstream emissions, LPG has fewer total CO₂-equivalent emissions than gasoline and electric. A direct comparison with conventional gasoline in a 2009 Lincoln Town Car showed a 23 percent reduction in carbon

monoxide, a 42 percent reduction in nitrogen oxide and an 11 percent reduction in carbon dioxide emissions.

Andy Burnham, a fuel and vehicle systems analyst with Argonne National Laboratory who has studied propane gas, said the fuel was "in the same ballpark" as CNG in emissions. PERC analysis found that LPG and CNG were equitable, with CNG registering just 3.3 kilograms less of carbon dioxide equivalent per million British thermal units.

However, Weidie pointed out one key advantage of LPG: More than 90 percent of the world's supply is produced in the United States, with another 7 percent coming from Canada. Another advantage: The infrastructure is easy.

"There's already a pipeline system, and the infrastructure network exists," Weidie said. "We can get it to every locale right now."

What's more, the fueling stations can be set up in a matter of days for just \$15,000 because the fuel can be stored in a liquid state in large tanks. Natural gas, meanwhile, needs a compression system. The rise of liquid propane injection engines, which delivers the fuel straight into the combustion cylinder, makes such storage facilities more viable. Propane can also be stored in large vertical tanks that do not need to be buried or have a large footprint on the area.

That ease of infrastructure has turned many fleets on to propane fuel. Don Francis, the director of Clean Cities Atlanta, said a number of sheriff's offices in the metro region and a U-Haul fleet had adopted propane vehicles in part because they could have cheap, convenient central fueling stations.

But a lack of vehicles has somewhat hampered propane adoption in his area, Francis said.

"Most fleets don't like conversions," he said, referring to conventional engines that have been adapted for propane. "They don't like to mess with warranty issues."

Still, Francis said with more products and more government help, he expected more fleets in the area to use propane. He advises fleets differently based on needs, pitching electric to fleets like the U.S. Postal Service that drive short distances and recommending natural gas for cars running along known routes. Autogas, he said, works well for fleets going long distances or driving around all day, since they can store additional fuel in tanks in the car.

"With all the emphasis now on petroleum reduction strategies primarily focused on reducing foreign imports, [propane] has gotten more attention," Francis said. "It's domestically sourced, it's cheaper. ... Part of my role is to just keep beating the drum and get information out there."

Atlanta will also be using federal grant money to install public-access natural gas fueling stations around the city in the hopes it can accelerate public adoption of propane and CNG. The 16 other clean cities group in Autogas for America are also hoping to boost fleet involvement for anything from taxis to construction vehicles.

Roadblocks

Autogas backers face an uphill battle in pushing their fuel, as several tax credits are set to expire at the end of the year. The group is pushing for a renewal of the Alternative Motor Vehicle Credit, a 50 percent credit on the purchase of an autogas vehicle or conversion of conventional vehicle, and the Alternative Fuel Vehicle Refueling Property Credit, a 50 percent credit for installing a refueling station.

But the most imperative, in Weidie's eyes, is a 50-cent-per-gallon alternative fuel tax that expired at the end of 2009. A renewal passed the House but is still being debated in the Senate.

NPGA's Squair said he thought the prospects were good on getting those three credits through Congress, whether on their own or as part of a larger energy package. He said all three were necessary to getting widespread acceptance of the fuel, calling them the "three legs of the stool."

Weidie would also like to see some changes to the current EPA policy that adds too much cost and bureaucracy to owning a propane vehicle. Currently, certifications need to be renewed every year, and the fees can be costly. For fleets, that can mean the price-per-vehicle is prohibitive.

The autogas industry is also facing competition from other alternative forms of transportation, some with significantly larger lobbies. Organizers noted that they are dwarfed by natural gas, but electric vehicles have recently begun to capture the attention of the transportation sector. Legislation being debated in Congress would put significant funding toward electric car infrastructure and adoption, with large tax credits already in place.

Weidie said there is a place for all types of vehicles, including autogas.

"We don't view ourselves as competition," he said. "The technology is going to improve. But if we want to have an impact right here, right now, [autogas is] right here, right now."

Interview: Rick Rule on Oil & Gas vs. Green Energy – *GoldSeek* – 7/7/10

By Ron Hera

The [Hera Research Newsletter](#) (HRN) is pleased to present the following, information-packed interview with Rick Rule, founder of [Global Resource Investments, Ltd.](#) Mr. Rule discusses conventional oil and gas, oil shale, shale gas, oil sands, heavy crude, peak oil and alternative energy, with particular emphasis on geothermal power.

Rick Rule has dedicated his entire life to all aspects of the natural resource industry. His contacts and knowledge of this market are unmatched. At Global Resource Investments, Rick leads a team featuring professionals trained in resource related disciplines, including geology and engineering, to evaluate investment opportunities.

Rick began his career in the securities business in 1974, and has been principally involved in natural resource security investments ever since. He is a leading American retail broker specializing in mining, energy, water utilities, forest products and agriculture. His research and brokerage capabilities are frequently recommended by distinguished financial newsletter writers such as Bob Bishop, Jim Blanchard, Doug Casey, Adrian Day, Richard Maybury, Paul van Eeden, Mark Skousen, Jack Pugsley, Ron Hera and others.

Hera Research Newsletter (HRN): Thank you for speaking with us today. How do you see the conventional oil and gas market developing in light of alternative energy?

Rick Rule: From an investor's point of view, conventional oil and gas will always be a pretty good business because it's a reasonably high margin business and it's also a very large business but it's a cyclical business, which means that it goes on sale reasonably often.

The most important theme that people need to understand with regard to conventional oil is that most conventional oil that is produced in the world and sold for export is not produced by companies like Shell or Exxon or Total, in other words it's not produced by major oil companies. It's produced by national oil companies, where the shareholders aren't public shareholders but rather sovereign governments, and that's important to understand. It's important for investors because most of the national oil companies have been, for some period of time, diverting substantial amounts of the cashflow from their domestic oil industries into other domestic spending programs that aren't oil related, thereby starving their domestic oil industry of sustaining capital. I think this has gone on for so long that several of these national oil companies have production decline curves that are irreversible for the next decade. The consequence of that is that several countries, particularly Mexico, Venezuela, Peru, Indonesia and perhaps Iran, will cease to be oil exporters within 5 years, even if they start spending now, which they aren't able to do. The impact of that is that as much as 20% of world export crude will come off of export markets and that could lead to a truly precipitous increase in price. The only hope that oil import countries have is that sustaining capital investments have increased in Saudi Arabia, the United Arab Emirates and Kuwait. These three countries, with the help of a resurgent Iraq (if it does resurge), are the importing countries' only hope for moderated oil prices in the next 5 years. It's my belief that production declines as a consequence of a lack of reinvestment will be greater than the production adds and I suspect we will see sharply higher world oil prices in the next 5 years.

HRN: Do you think that increased domestic oil consumption by oil exporting countries is a significant factor?

Rick Rule: One of the things that oil exporting countries like Iran, Indonesia, Mexico and Venezuela do with the cashflow from oil exports is subsidize domestic energy production. At the same time that they increase supply, they constrain demand, which is not a sustainable set of circumstances over time. I think it will correct but it will not correct in time to prevent an oil price shock.

HRN: How does your outlook for conventional oil differ from natural gas?

Rick Rule: Natural gas is not yet a global market, although with increasing traffic in liquefied natural gas (LNG), it is becoming a global market. It is rather a series of regional markets. Some markets are in substantial oversupply, North America being one. North America benefits from very favorable geology and extraordinary infrastructure. The United States has transmission and underground storage infrastructure, as well as LNG receiving infrastructure, that are the envy of the world. The United States has access to ample supplies of gas from Canada's Western sedimentary basin and huge quantities of shale gas that has become newly economic as a consequence of several different types of extraction technology. Additionally, the United States has six LNG receiving facilities and the storage capacity to take cargoes at a moment's notice and store them. Paradoxically, although the United States is an oversupplied natural gas market, it is also a market that takes surplus LNG cargoes that cannot be sold elsewhere. For the next while, at least, the North American natural gas market is in a state of oversupply. This has caused North American dry gas prices to fall and the prices of gas producers to fall.

HRN: How will the BP catastrophe in the Gulf of Mexico affect the US oil and gas market?

Rick Rule: What interests me—the fly in the ointment—about the blowout in the Gulf of Mexico is that the Gulf of Mexico supplies 30% of US domestic oil and gas. Gas wells in the Gulf, in particular, have very high decline curves, meaning that gas wells drilled this year will likely be played out in 2012 or 2014. Without sustained drilling in the Gulf of Mexico, we can expect very rapid declines in overall US gas production, which may or may not lead to increasing domestic prices at a time when most commentators are calling for decreasing domestic prices.

HRN: Do you think shale gas will keep US prices low?

Rick Rule: I expect the supply of shale gas to be extremely volatile and the volatility will be a delta between the leveraged finding cost of gas producers and the forward strip. It would appear that the median North American shale—a combination of the Marcellus, Barnett, Eagle Fort and Woodford shale systems—involves finding costs and capital costs in the \$4 to \$5 per million British Thermal Unit (BTU) range. To the extent that a forward strip market exists, in the futures market, above \$5.50 per million BTU, meaning that producers can hedge by selling forward enough gas production to pay off a well, drilling will be fairly active. Producers can drill these gas wells because they have no exploration risk for a while. If they can produce gas for \$4.00 to \$4.50 per million BTU and sell it for \$5.00 to \$5.50 per million BTU, because of the very high initial production of these wells, they have the ability to drill a well and pay the well off on a guaranteed basis by selling into the forward strip. When high drilling activity puts enough fresh production into the system to drive gas prices down and the forward strip goes below \$4.00 or \$4.50 per million BTU we'll see a relatively rapid stacking of rigs and, because of the very, very high depletion of gas shale wells, 18 to 24 months out we'll see gas supplies tight enough to drive the spot and the strip market higher, and the situation will repeat itself.

HRN: What's the best way for investors to capitalize on cyclicity in the North American gas market?

Rick Rule: The interesting thing about the North American natural gas market is that it is going to be extremely volatile. Speculators are going to have to buy in terms of low gas prices, when rigs are stacked and production is declining, and sell during periods of high gas prices when producer cash flows are soaring. It's going to be counterintuitive but very, very rewarding. Normally, these cycles take place in 10 years or 12 years but we're going to see these cycles taking place in 2 years, which is a situation we've not seen before.

HRN: Can you comment on the global market for gas?

Rick Rule: The global gas market is very different. It's a series of smaller markets, in actuality. In far eastern markets, LNG is increasingly seen as a cheap substitute for oil in many of oil's functions, such as power generation and petrochemical feedstocks (used in the manufacture of chemicals, synthetic rubber and plastics) in particular. We're seeing the development of a vast

LNG infrastructure to move gas from places where it's in abundance, like the Australian shelf and parts of Indonesia, to places that appear to be perpetually hydrocarbon starved, like China, Taiwan, Korea and Japan. Europe, similarly, has fairly high gas prices and has developed what the Europeans believe to be a dangerous reliance on Russian supplies. There are moves afoot to lessen European dependence on Russian gas, like moving Iranian or Azerbaijani gas through Turkey into Europe, and moving North African gas into Europe. Over time, I suspect, a way will be found to provide energy security for Europe where the Russians have a big share of the market but will not dominate the market.

HRN: Do you expect natural gas to be more widely used as a motor fuel in the future?

Rick Rule: What's interesting is that natural gas prices are substantially cheaper than oil prices as a consequence of oil's dominance as a motor fuel. I think we are finally in an era where natural gas will achieve prominence as a motor fuel. I suspect that the country that leads that charge will be the United States, as a consequence of its reliance on export crude and of our unique national highway system. It's always been a chicken or egg problem. If we convert cars before having the ability to distribute LNG we'll have stranded vehicles, but if we convert gas stations before converting cars we have stranded capital. The answer to that in the near term is to convert 2% of the gasoline stations along long haul trucking routes and convert the trucking fleet before converting cars. This would save a tremendous amount of cash because LNG is significantly cheaper as a motor fuel.

HRN: Isn't that part of the Pickens Plan?

Rick Rule: Yes, it is, but the Pickens Plan, somewhat disingenuously, would rely on federal subsidies. I don't think we need any federal subsidies. The savings that would be generated by converting the long haul trucking fleet to LNG would be such that federal subsidies wouldn't be needed. It's also interesting that there are rapidly developing technologies that would allow service stations to compress the gas themselves from utility supply rather than having to distribute LNG in the same fashion that gasoline or diesel are distributed. I also think the US is headed, in the near term, for some type of carbon tax—whether or not it's a good idea is a different question—and I think the carbon tax would make gasoline and diesel even less competitive relative to natural gas. In the next 5 years we'll see substantial strides towards the conversion of the long haul trucking fleet from diesel to LNG. There have been discussions that Wal-Mart or Costco, partially for public relations reasons, might lead the charge by making conversions across the country by converting their own, high-volume operations. Having that critical mass of availability of LNG will encourage the conversion of the nation's automobile fleet.

HRN: I read that there has been a build-out of capacity to refine heavy sour crude oil.

Rick Rule: [Heavy oil](#) is doing well and I think it will continue to do well for a couple of paradoxical reasons. There used to be a very large spread between [heavy sour crude](#) prices and [sweet light crude](#) because heavy oil required upgrading. The spread was so large that upgrading heavy oil was extremely profitable and, as a consequence, enormous capital investments were made over the past 10 years or so both in Canada and in the United States in heavy oil upgrading. What's happened is that our capacity to upgrade heavy sour crude has begun to outstrip supplies, particularly from Mexico and Venezuela. Because of the oversupply of upgrading capacity and the relative undersupply of heavy crude oil, the spreads between heavy crude and light crude have declined to the point where producing heavy crude has become a very profitable activity.

HRN: What is your view on oil sands?

Rick Rule: North American speculators who are under-weighted in oil should probably take a position in the larger oil sands companies, just as they would buy car insurance or life insurance. In addition to the supply disruptions that I see from the lack of investment in conventional export crude, geopolitical instability in the Persian Gulf region, particularly where Iran is concerned, could disrupt supply. If the Iranians had cause to shut down the Strait of Hormuz for any period of time, we would see a tremendous escalation in oil prices and we would see the geopolitical benefit of the [Athabasca oil sands](#), which is an enormous, producing bitumen region of Northern Alberta, Canada. I see oil sands as an absolute cornerstone in a North American energy investor's portfolio because of its extraordinary size, the amount of capital that has already been expended and because of its particular importance to US consumers.

HRN: What's the status of technology to recover oil from oil sands?

Rick Rule: [Steam assisted gravity drainage](#) (SAGD) is a technology that's useful where the oil is heavy and doesn't flow very well but where there is porosity and permeability. What we do is drill two horizontal legs into the reservoir. One leg pumps steam into the reservoir while the other leg pumps out the fluid produced as a consequence of the injection of energy and steam.

HRN: With the energy inputs, is it economic or energy positive to produce oil from oil sands?

Rick Rule: In an ideal world, one would build about 2 GW of nuclear capacity at the Athabasca oil sands in Northern Alberta, which is the largest oil sands basin in the world, because the byproduct of a nuclear power plant is steam. The steam from 2 GW of nuclear capacity would be worth about a quarter of a billion dollars annually. In other words, you would sell your waste product for a quarter of a billion dollars and the cash flow from the waste (steam) would amortize most of the construction cost of the power plant and the power that would be generated would back out all of the natural gas fired power used in the province of Alberta, freeing all of that gas for export or other uses (other than generating steam for the oil sands). Unfortunately, that set of circumstances isn't politically appropriate. Right now, what happens in the oil sands business is that, because oil commands a higher premium as a consequence of its easy conversion into a motor fuel compared with natural gas, the process involves an arbitrage between high oil prices and low gas prices. Enormous amounts of energy are consumed to produce energy.

HRN: Is there an environmental impact?

Rick Rule: A challenge facing the oil sands industry is that it alters, negatively, large quantities of water. Water supply and water treatment issues will come to the fore in the oil sands business. I'm not a knee-jerk environmentalist but I am a real environmentalist. The industry has to address the fact that it has improperly treated water for a long period of time and it consumes much more water at lower input prices than it ought to. The industry is going to have to deal with recycling processed water back into process and with cleaning up process water before putting it back into the environment. In oil mining operations, the industry is also going to have to deal with the water that builds up in the pit as oil that hasn't been mined desorbs from the rocks in the pit and is ultimately released into the environment. There are costs associated with oil sands that aren't being factored into the cost of the oil that's being sold and society is going to demand solutions to those problems and that will increase the production cost.

HRN: That's fascinating, can you comment on oil shale as well?

Rick Rule: The technologies that have been brought to bear on gas rich shales, particularly those that have a lot of liquids in them, can probably be brought to bear on some of the oil rich shales, in particular, the thermally mature oil shales. We know that some of these basins are like organic kitchens, cooking their organic content into oil, but they have neither the porosity nor the

permeability to be produced economically. What we've done in the gas rich shales, because they have poor reservoir properties, is that we've effectively manufactured our own reservoirs. We drill into the gas shales horizontally rather than vertically, exposing more of the reservoir to our extractive mechanism, that is, our well. Because the shale is very tight we pump in water or sand or ceramic, in a procedure called fracturing, keeping the reservoir open. In other words we are manufacturing a reservoir in rock that has oil and gas in place but that didn't have a reservoir previously. That technology will probably work in certain applications for oil shales. It may be that a combination of technologies, fracturing and SAGD, can be used in oil shales. The tremendous advance of technology we've enjoyed in the last 30 years and the tens of billions of barrels of oil that are known to exist, suggests that we may see the same type of technological breakthrough in the oil shales that we have in the gas shales. In the oil sands, the billions of dollars invested are beginning to pay off in spades, both in terms of cash flows and in terms of the security of the supply.

HRN: What do you think about the [Peak Oil theory](#)?

Rick Rule: Peak oil is more an economic and political phenomenon than it is a geological phenomenon. I think we're past \$40 peak oil but I don't think we're past \$200 peak oil. There are technologies, as an example, miscible CO₂ flooding to recover oil from allegedly depleted oil fields. There are new basins, albeit remote, frontier basins. There are new technologies that allow dry gas or LNG to be substituted for liquid oil. It's an economic function because these technologies and substitutions require higher energy prices. At \$200 oil, we've got lots of oil.

HRN: Where do you see oil prices in the next few years?

Rick Rule: I think oil prices will move up dramatically in the next 5 years. The transition from a hydrocarbon economy to some other type of economy will require massive investment in new technologies and I don't think we will adapt quickly enough to avoid an escalation of oil and gas prices. Hydrocarbons, oil and gas, are extremely efficient energy sources. They are extremely dense and there is an incredible installed capacity to utilize them in various forms. They seem ideally suited for use as motor fuels. Whatever replaces them will be long in coming and involve enormous expense. I suspect that the next 10 or 15 years will involve a transition away from the widespread use of oil and gas in applications other than motor fuel. As a consequence, increasing per capita consumption of hydrocarbons around the world with an increasing number of capita, and without a viable alternative in the near term means that higher oil and gas prices are inevitable.

HRN: How do you see alternative energy playing out versus oil and gas?

Rick Rule: I differentiate economic alternative energy and uneconomic alternative energy. The alternative energy investments that intrigue me are geothermal and hydroelectric which are, by and large, industries that could exist and thrive without subsidy but, because they are green energy, receive subsidies at any rate. Juxtapose those with wind and solar, which do not, given their current stage of technology and status of deployment, generate an economic return without subsidy. I am not, for the most part, an investor in wind or solar, although I have made a couple of small wind investments as a consequence of extraordinary feed-in tariffs. Solar has, in my opinion, an insurmountable problem, which is night. It's highly interruptible power. It's not baseload and it's devilishly difficult for utilities to incorporate into their demand curves. Wind is similarly difficult. People don't like to live in windy areas and the energy has to be transported to where people want to consume it, and the wind doesn't necessarily blow when people want to consume the power that's being generated by it. Geothermal power is baseload. It's very highly deliverable, about 95% efficient, and it is in certain areas of the world, such as the Western United States, highly economic. Hydro, although it relies on precipitation and drop, has been utilized for 100 or 150 years and is highly competitive even though it doesn't have the same baseload characteristics of geothermal.

HRN: Would you say that geothermal power is the most promising area for investors?

Rick Rule: What all forms of alternative energy have, and what no other forms of energy have, is social and political acceptance. Most elements of society are solidly in favor of increasing utilization of non carbon generating power. I was involved, as an investor, in the drilling of a new geothermal well in the Geysers of Northern California, which is, by the way, the largest installed geothermal facility in the world. What struck me about it was that we were drilling this well using typical oil and gas equipment. It was a fairly large drilling rig and a fairly noisy, messy operation and it occurred to me that if we had been drilling an oil well on the Napa-Sonoma county line there would have been popular outrage and political opposition—pickets, protests and that kind of thing—but, because we were drilling a geothermal well, we received orders of commendation from both the Napa and Sonoma county councils. What's important about that is that it's power that is (a) needed, and (b) can be built due to a level of political and social support that other forms of energy do not enjoy.

HRN: I understand that there are US Department of Energy grants and other government programs designed to encourage alternative energy.

Rick Rule: The current US administration has done two extraordinary things. They have offered grants to the geothermal industry of up to 30% of project expenses. We calculated that the government would give companies as much as 27% of the capital budget with no equity interest. At the same time, they will guarantee up to 80% of allowable project expenditures. Now that's interesting because if you add up 27% and 80% it produces a rather exquisite fraction. What is more interesting is that, in the Western United States, the government has instituted feed-in tariffs that require utilities to pay premium prices for alternative energy versus other sources of energy. As a result, unleveraged internal rates of return on select geothermal projects can exceed 20%. The industry's cost of capital, as a function of subsidies, could be around the 5% level. The idea of a 15% financial margin in an operation that is effectively offering a utility risk is extremely attractive. I don't know how long the federal subsidies will last. They're slated to last about 3 ½ years and I wonder, given budget constraints, if the popularity of geothermal projects will allow them to continue with this level of subsidy in the face of competing needs for money, but it certainly makes for a very, very attractive investment opportunity.

HRN: I've noticed that the market does not seem to be rewarding geothermal junior companies.

Rick Rule: It's my belief that, 2 or 3 years from now, alternative energy investments will enjoy the same kind of spike in popularity that we saw in uranium speculation 5 years ago. I think there's going to be a true mania surrounding alternative energy investments and I think a lot of money will be lost because newbies to alternative energy investments won't understand the characteristics of the various industries. There's quite a disconnect between the market and geothermal energy, because most of the speculators in geothermal have come to it from the mining side rather than the power side. These people are exploration and excitement oriented rather than process oriented. I was speaking at a conference in Vancouver a few weeks ago about geothermal power and the fact that news wasn't reported in grams per tonne confused people. They were trying to apply mineral exploration parameters to a very different business.

HRN: When do you think the value of these growing companies will be recognized?

Rick Rule: What I learned in the uranium business in 1998, 1999 and 2000, when I was pounding the podium at conferences explaining why these stocks would do very well, was that thinking people would understand the story but had no relevance to them because it hadn't been demonstrated by one stock that had worked. What happened was that a story that was understandable, relevant and true became validated by a single company. The first time that a geothermal company gets taken over by a major utility with a nice premium, the geothermal story will suddenly be validated and important. I think that will happen, maybe, as early as this calendar year.

HRN: Thank you for being so generous with your time.

Rick Rule: It was my pleasure.
