

# **How the U.S. Can Ensure Energy Supply for the Future\***

By  
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Energy security keeps me up at night. I don't know about you, but energy security keeps me up at night because of a fundamental dilemma that we face in this country, which is how we deliver energy security in the future with a backdrop of natural resources in this country that sit undeveloped, untouched and have been so for decades. And as we see the imports of oil and gas rising year by year and the price of oil and gas rising year by year, the concern of energy security for the future is what do we say to our children, our grandchildren, their grandchildren and their grandchildren if we don't do something different than the model that we have been following since World War II? I would submit to you that sometime in the late '90's or early 2000 period (at the last low oil price era), the United States of America passed a tipping point on energy security that redefined our future in ways that we must address beginning now, not later – our national energy security.

We use about 18 million barrels a day of oil, of which nearly 65 percent are imported, while 100 billion barrels of oil and gas sit unexplored and untouched on the Outer Continental Shelf of our country. Also on federal lands – unexplored and untouched by public policy: Public policy prohibiting exploration and production companies from seeking what's there to develop. Public policy, which is pushing us in order to meet the demand requirements of the marketplace to ever more imported oil. I have nothing personally against imported oil, because in large measure Shell is out there producing in other parts of the world, helping to supply the United States – and so my colleagues, my friends, my compatriots are doing a good job for the United States by producing the oil in the other parts of the world.

But, I'm also responsible for Shell in the United States and I look at the opportunities going begging for the development of oil and gas on federal lands and the Outer Continental Shelf. And, in the last two years, we have seen the effect of having passed the tipping point, translated into high crude oil prices, high gas prices and even higher gasoline retail and diesel prices. And where does it end? Are we simply acclimating ourselves to a future of ever-increasing natural resource prices in such a way that a society – which struggles with the social injustices of have's and have-not's – is driving itself further down the road of have's and have not's because of the cost of energy? And think of what energy means to us, ladies and gentlemen, in the sense that energy

(affordable and available) is the bedrock of our economic foundations of industry, of agriculture and of post-industrial industry and information-age era occupations. The bedrock of the economic model that sustains our society and affordable and available energy is also the bedrock of our wonderful lifestyle choices in this country, which enables us to live where we choose, to move about as we choose, to have a lifestyle of comfort, of convenience in ways that we choose, all because we have this legacy, this history of available and affordable energy -- but we've passed the tipping point.

Drive-offs in our service stations are at all time highs. That's an injustice, but who is perpetuating the injustice – those who charge the high prices or those who can't afford the high prices? We see people writing letters to people like me, where I'm hanging in effigy from a tree branch (and a very tall tree at that) because of what is perceived as the economic injustice of charging the prices that are charged. Of course, those of you in the industry know that price setting is very much a local market decision predicated upon cost and a bit of margin. Most of the cost of the price is the crude oil price, which seems to be ever increasing. Imagine the state of the world where 15 military people are caught in boats in the Persian Gulf and, within 48 hours, the oil price has risen \$7 a barrel. That's the tension of the supply-demand relationship that we experience today in the conventional world of oil and gas.

So, what do we do about this? My job here today is not to be the prophet of doom or gloom, but rather to be hopefully an incentive to you in your company, or in your work life, or in your political life to take an interest in energy security – defined as affordable and available energy not just for now and not just for the next generation, but for every generation to come for as far as you and your mind can imagine, which I hope is a very long time. Available and affordable energy is here and now an opportunity for our society to get up and go get it. Simply put. With 100 billion barrels of conventional oil and gas in the Outer Continental Shelf and federal lands, all we need is public policy enablers to grant access in socially and environmentally safe ways to go get it.

But we don't stop there. There are huge reserves of unconventional oil and gas, whether the oil sands of Alberta in Canada or the oil shale of Colorado, Utah, Wyoming, in which a trillion barrels reside in Canada, another trillion barrels reside on the western slope of the Rockies and all we need are public policy enablers to go develop it using the best technology and the best environmental and social safeguards that we can put in place to make production possible. Shell's had a research project on the western slope for quite a number of years (we're still a period of time away from developing those resources, particularly because of the environmental concerns and the CO<sub>2</sub> concerns that have to be taken into account before the oil shale is developed) but with an in-situ technology where we're not mining the surface of the Earth but, rather, drilling holes and putting heaters down into the Earth to heat the immature oil and gas molecules out of the shale and into normal traditional pumps and pipes to refine it and then bring it to market. It's a doable proposition where the prize is huge, but we need the public policy enablers to make that happen or keep moving on.

We love natural gas, especially in Oklahoma. You love natural gas. The nation loves natural gas. It's the cleanest fossil fuel we can imagine. But, if you do the demand-supply curves looking out over the next 10 years, ladies and gentlemen, there will not be enough supply to meet the demand and we know what the consequence of that is – higher prices for natural gas. People who have depended upon natural gas for investments, for decisions around power plants, for the homes that they heat and air condition. People will be surprised when the supply of natural gas is not equal to the demand. And we've seen aberrations; for example, in the summer of 2005, where gas moved from a typical \$4 or \$5 to \$15 - not a good consequence, not a good outcome after the hurricane summer of 2005.

But there's an alternative – there's liquefied natural gas. Liquefied natural gas coming from stranded gas around the world, which can be liquefied, shipped and regasified on the coasts of the country. But, we need public policy enablers to build regasification terminals. I recently had a meeting with an Attorney General on a state on the East Coast who said to me, "Please withdraw all your efforts to put a regasification terminal in our region. It is the wrong project at the wrong time with the wrong technology in the wrong place. Please withdraw." I said, "But, Attorney General, we think we should go through the whole political process of letting other states and letting the federal government decide if this region, which has the highest cost of electricity in the country, doesn't deserve some additional energy input in order to impact the price of electricity going forward." His response was, "Move it to Massachusetts, move it to Maine. Don't put it here." Public policy enablers to put regasification terminals where they're needed are an important way of ensuring energy security in the gas world.

Or public policy enablers to move us into an era of clean coal. The technology around coal has moved on. We all know that burning pulverized coal to create steam to drive turbines is a rather dirty method of using coal. We've been doing it for 100 years or more and we know there are issues associated with it, even though we've gotten better at controlling emissions. But, if we move to the gasification of coal instead of the burning of coal, we have a whole different opportunity, through technology, to gasify the coal and to capture the CO<sub>2</sub> and other emissions and then to manage those emissions, perhaps into sequestration, or perhaps into other productive uses – a process called Integrated Gasification Combined Cycle or IGCC – in which we have a whole new way of using the incredible vast quantities of coal in this country in a clean fashion; and this country has more coal than the whole rest of the world put together, which does say something about energy security going forward.

So, with conventional oil and gas and unconventional oil and gas, with liquefied natural gas and with clean coal, are we there yet in terms of delivering energy security where we can all sleep at night? Not yet. There's a lot more that we can do. There's the whole world of biofuels, which we're just getting started on. Shell's been in biofuels for 30 years; it's not new. Our concentrated efforts these days have really moved on to second and third-generation ethanol, ethanol from plant waste, ethanol from biomass, contrasted with corn or sugar cane, which, as we know, impacts the food prices. And when you read headline stories where the new President of Mexico in one of his first actions has to

freeze the price of tortillas because of the unavailability of corn because of storing corn for ethanol manufacturing, you know something is going wrong. And that debate, or that issue, of food price versus fuel price versus availability of ethanol from corn or sugar cane is something that we must address. We are – cellulosic ethanol from plant waste or from biomass is, we believe, a welcome alternative and that's where we put our investment money. We believe let's get to a 10 percent market penetration of ethanol and see where we go from there. Ten percent is a lot, ladies and gentlemen. Ten percent is about 15 to 16 billion gallons a year, where today the production in the United States is about five and a half billion gallons a year in a market that uses 160 billion gallons of motor fuel. So, just getting to 10 percent is a major accomplishment in terms of the infrastructure requirements to move us to just 10 percent. Those who you hear advocating, "Oh no, let's go to 85 percent" -- at this stage, I don't know how and I don't think anyone else knows how. And if anyone says they do, I would send them to Tim Russert so he can ask them some "how to" questions.

Biofuels do, however, represent a way of taking pressure off the unavailability of additional refining capacity. The nation does need more refining capacity. Shell, with our partner Saudi Refining in a company called Motiva, is working on plans to more than double the size of the Port Arthur Refinery from 300,000 barrels a day to 625,000 barrels a day. The decision hasn't been made yet to go forward, but there is a need for more refining capacity and we see the need for more biofuel coming into the fuel chain. The two combined at 10 percent levels work together well in existing vehicles, in existing tanks, in existing storage facilities. And so we see a need to go forward with that and making that successful before we start aspiring to more.

Biofuels do represent more additional energy security. So does wind. Oklahoma represents a good base for wind; many parts of America represent a good base for wind. Some have suggested a wind terminal in the nation's capital as well! Shell is active in seven states building wind farms as we speak, from West Virginia all the way to Hawaii and we believe that wind (although it's a variable energy source) is a good energy source and one that we should continue to expand.

And solar energy. When the National Petroleum Council announces its study this summer, pay attention to what it has to say about the role of solar in the future energy supply of the world. It is perhaps the greatest untapped resource of all, in terms of future energy security. However, moving from sunlight to electricity is still a process in development. Shell's been at it for 10 years. Last year, we decided that silicone-based photovoltaic cell manufacturing was really not where we want to go because of the cost of silicone, because of the lack of efficiency and the weight of silicone; we've moved on to a new generation of technology called thin-film photovoltaic technology. Those of you who are chemists will recognize that it's copper indium diselenide; those of you who aren't chemists, trust me, it is thin-film technology. And, we believe it is more efficient; it's less costly and we're setting up manufacturing for that thin-film product as we speak.

In addition we believe that hydrogen offers a great new opportunity to pursue. The cynics out there say, "And it always will represent a great opportunity." But we do believe and

we should know some more by October. That's when the Hydrogen Technology Advisory Committee of the Department of Energy reports to the Secretary of Energy on a study that's been conducted over this past year on the commercial and technical feasibility of hydrogen fuel cell technology for either stationary power sources or for mobility power sources. And we think that there will be an affirmative outcome of the study. Not to impact mobility in the next two or three years, not for sure. But, over the next two or three decades we will see (this is our view) hydrogen fuel cell vehicles alongside internal combustion engine vehicles, alongside diesel engine vehicles, as well. So we do see the opportunity for great security around motor transport looking ahead. And we believe that the variety of conventional, unconventional and biofuel and hydrogen and other sources still being developed will fuel our cars of the future.

So, do we have it now with conventional oil and gas, unconventional oil and gas, liquefied natural gas, clean coal, wind, solar, hydrogen, biofuels? Do we have energy security in this country? Not yet. There's more. There's more that we can do and more that we must do.

Three final points:

We must, as a matter of principle, and as a matter of social responsibility, we must come to grips with the management of greenhouse gases going forward. For Shell as a company, for the last 10 years essentially the debate's been over. We've been looking for solutions. We've been advocating governmental frameworks in which markets can operate, frameworks led by government because they have the responsibility for public policy. We advocate it at a global level; we advocate it at a national level. Let's have a framework in which greenhouse gases can be managed in such a way that we can cap emissions at a level, we can set up a cap and trade system to work that cap of emissions down in the future with an economic incentive to do so. Let's do it around the world; let's not leave anybody out. Let's give up on the idea of voluntary initiatives, which may sound good on paper but which do not create a level playing field and create have's and have not's in terms of people who do spend the money, who cost their shareholders the return of investing in voluntary initiatives compared to those less responsible people who chose not to charge their shareholders for voluntary initiatives. Let's make it mandatory is our view. Point one.

Point two – let's educate ourselves. Let's spend time educating ourselves, our young people, our children who will take us forward in the next generation or the next. Let's educate our young people to understand what energy means, what energy is, where it comes from, how it's managed, who manages it, what is the social and economic and environmental responsibility around energy use and energy application and energy consequences. Rather than just talk about it, Shell decided to do something about it. You can go to a website called, "[Energize Your Future](#)" and find a whole teaching curriculum that's been put together for middle and high school students and teachers that is worth a whole year's education around energy – where it comes from, how it happens. It's not selling Shell; it's selling energy security so that people can understand what's at stake.

And finally, let's recognize that the demand side of energy also needs to be addressed at the same time that the supply side of energy is being addressed. And it's not about jiggling thermostats, it's not about lightening up on the accelerator pedal (although those are both possible). It's really about building a culture of conservation in hearts and minds, so that the notion of energy efficiency becomes a part of the national priorities where government can have a role, where business can have a role, where markets can have a role to drive energy efficiency in all of the consumption areas of energy – in homes, in automobiles, in vehicles other than automobiles, in buildings, in hotels, in factories, in office buildings. By driving energy efficiency to new levels and ever-improving levels, we actually do more for energy security than we realize because the molecule not needed – or the molecule not expended into its energy form – is a molecule that is preserved for generations of tomorrow. And by preserving those molecules for next generations through our own efficiency of energy and our own more informed and more precise consumption of energy, we do deliver energy security for generations to come.

Ladies and gentlemen, thank you very much.

### **Introductory Remarks**

I'd like to thank you, Sara (Dean Sara Freedman), for inviting me here today to the Spears School of Business, the Tulsa Business Forum for giving me this platform and opportunity to follow in the footsteps of the wonderful and eloquent Tim Russert, who was your previous speaker. I had to smile because I had the pleasure of being on the receiving end of Tim Russert last June on a "Meet the Press" show as we were talking about energy prices. I hope you were a good audience to him and gave him a good grilling on the questions that you presented to him. Turnabout is fair play. And thanks also to the Tulsa Metro Chamber. As this year's chair of the Greater Houston Partnership, which is Houston's version of Chamber of Commerce, I know how important it is for Chambers to be intimately involved in everything that goes on in a community. And, thank you for your leadership.