

[Note: Audio quality is poor; background noise occasionally renders speakers inaudible.]

## **Transcript: Can Alternative Energy Sources Replace the Saudi Share?**

**Presented by Anne Korin**

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Anne Korin:

The speakers before me were excellent. Let me just emphasize a few points here. Harkening back to the previous panel, I want to touch on the military solution. Let's not forget, we can conquer any part of the Persian Gulf that we wish, but holding a part of the Gulf and extracting the oil is quite a different matter. If we look at Iraq, we see over 130 attacks on pipelines since the end of hostilities. So thinking that a different end result -- in an extremely reduced ability to export in Iraq, thinking that we'll see anything different in Saudi Arabia or anyplace else is naïve.

Second, looking at oil as a terrorist target, as Mr. Wihbey raised, I just want to cite a quote that really shows that this is the case. If we look after the attack on a French tanker, the Limburg, off the coast of Yemen, let's recall what Al Qaeda said, which is, "By hitting the oil tanker in Yemen, we have hit the provision line and the feeding to the artery of the life of the crusader nation." I don't think they need to elaborate more on their intent here.

Talking about solutions. After 9/11, there's been a lot of talk about, well, we're too dependent on the Middle East, the Middle East is too volatile, let's start looking outside the Middle East. This really recalls what Churchill said, in moving the British Royal Navy from coal to oil, which is that safety and certainty in oil arise in diversity of supply and that alone. Is that something that is really realistic today? There's been a lot of talk about Africa or Russia, the Caspian – what do the reserves tell us?

First of all, when we look at Africa, let's remember not to include North Africa, because Libya and Algeria should rightfully be considered part of the Middle East. Second, the Middle East and North Africa contain almost 70 percent of world oil reserves, and if we look at their reserves-to-production ratio, which tells us how fast countries are producing – oil producing as

compared to their reserves – what we see is that outside of OPEC, the reserves-to-production ratio is much lower than in OPEC, for obvious reasons: OPEC produces according to a quota; non-OPEC produces as much as they can.

So what we see is if we continue at the current pace, we're going to be creating a much worse problem down the line as we deplete non-OPEC reserves much more quickly than OPEC. We'll end up much more dependent on the Middle East down the line.

Second, let's look at Africa as a particular example. Africa has 4.5 percent of world oil reserves – West Africa, that is. Those are proven reserves. If we look at what the U.S. Geological Survey says about potential for discovery, they give a 50 percent probability of discovering another 70 billion barrels of oil in Africa. If we add up the undiscovered and the proven reserves, we come up with six years of consecutive total world consumption, which is just not a lot.

Let's not forget that in Africa we face many of the same problems as the Middle East. Nigeria is half under shari'a law. The most corrupt countries in the world are in this area. If you've been following the news, you know that Total stopped production for a few days in Nigeria. There's ethnic strife. There's continuous disruption of oil supplies there. So not a stable region. I think we see that with other regions that we look at. Let's not end up exporting the problems of the Middle East to other areas of the world.

Next thing, Canada. A lot has been said about Tarzans and some questions were asked about it here. First of all, Canada is a positive addition to our energy portfolio. But let's look at the reality, and the reality is that less than 20 percent of the Tarzans, the heavy oil in Canada, can be produced economically. Production requires a lot of natural gas and we're in the midst of a natural gas crisis right now which is not likely to get better anytime in the future. So let's not bank on Canada too much.

So what can we do? I want to play on your point about Reagan. I think this is exactly right. Let's focus specifically on SDI, the Strategic Defense Initiative. One of the components to winning the Cold War was looking at technology as a game-changer. In this case too,

technology can be a game-changer – certainly in making Canadian oil cheaper to extract, but also in other ways. As long as oil is the currency, there's no doubt that cheap Middle Eastern oil will carry the day. So if we want to become economically more immune to disruptions, we need to change the currency.

We have choice in every aspect of our lives; we do not have choice when it comes to transportation fuel. Why does transportation fuel matter? Because two-thirds of our consumption of oil in this country and the bulk of the growth in oil consumption in China, India, overseas, is coming from the transportation sector. Two-thirds of that is coming from automobiles. So we need to look at how we can replace the fuel in those automobiles from petroleum-based fuels to non-petroleum-based fuels.

I'm not going to talk about any pie in the sky technologies. They're very nice and they may be good for twenty or thirty years, but we don't have that long. So what do we have available right now, or what can be made available in the next few years?

First of all, let's look at the domestic resources that we have and that other major consumers have. We don't have a lot of oil, we don't have a lot of natural gas. We have 3 percent of world reserves in both and we consume a quarter of the world's supply of both. But we have a lot of coal. We have a lot of biomass, agricultural waste. We have nuclear energy, solar, wind, hydro, geothermal. But let's focus on the first three, first of all. What can we do with these? How can we use these to power our vehicles?

The first thing we can produce is electricity. Why should we care about electricity? I'm sure many of you remember the electric cars that so spectacularly failed years ago. Well, technology has advanced a lot since then – battery technology but also other types of vehicle technology, control systems and so forth. What we see is – first of all, you're all familiar with the hybrid cars. Hybrid cars improve your efficiency but they don't get charged from an external source. You're charging the hybrid car when you press on the brakes. The only fuel you supply to a hybrid car is coming from petroleum, from gasoline.

What's the next step? Plug-in hybrid vehicles. These are vehicles that Daimler-Chrysler is starting to produce. These are vehicles that have a fuel tank and you can plug them in. What does this mean? They don't face the range limitation that electric cars faced. You can't offer the American consumer, or any other consumer, a product that's less good than what they already have.

But effectively, a plug-in hybrid vehicle – let's say a plug-in hybrid Hummer – with 20 miles of battery range – this is a vehicle that you'd plug in at night in your garage in a standard outlet, same way you come home and plug in your laptop or cell phone, at work in your parking garage – these are times when electric utilities have excess capacity – that plug-in hybrid Hummer is going to consume less gasoline than a compact sedan, standard. That's a big deal.

Next, let's look at what other liquid fuels we have. Electricity is one transportation fuel; what are the other ones? I want you to keep in mind, just as in a computer you have USB plugs so you can plug and play and alternate things, if we want a robust energy system, we can't go from one thing to another thing. We need to have many possibilities of fueling our vehicles. So think of these as plug and play.

I talked about plug-in hybrids; let's talk about flexible fuel vehicles. These are internal combustion engine vehicles. They are vehicles just like a car. Some of you may be driving them and not realizing it even. These are cars that can run on any combination of gasoline and alcohol fuel.

There are other types of flexible fuels, but these are the ones we're concerned with right now. It costs an auto manufacturer less than \$100 a car to make a vehicle a flexible fuel vehicle. If you drive a Mercedes C-320 or a Dodge Caravan, you're driving a flexible fuel vehicle. There are 3 million of them on the road today.

What are alcohol fuels? I'm sure all of you are familiar with ethanol. Ethanol is an alcohol you make by fermenting corn, sugar cane, sugar beet. There's a lot of money and work being done on trying to produce ethanol from the rest of the crop, the waste so to speak, but that's still in the

R&D stage.

There's another alcohol fuel called methanol. Ethanol is grain alcohol – you make it by fermenting crops; methanol is wood alcohol – you make it by a process called gasifying. You can gasify any carbon-carrying substance, be that oil, natural gas, biomass waste, or most interestingly, coal.

Why most interestingly? Because the U.S. is the Saudi Arabia of coal. Montana, in fact, you can think of as the Kuwait of coal. China has a lot of coal. India has a lot of coal. The major oil-consuming countries that don't have enough oil to supply their own needs have a great deal of coal. There's a plant in Kingsport, Tennessee – if you're interested in details, you can find them on their web site or the Department of Energy web site – it's a commercial-scale plant, been around for over a decade, produces the alcohol fuel methanol from coal cleanly and under 50 cents a gallon. Very effective fuel. It's the fuel that Indy 500 racecars use because it's less flammable than gasoline.

When we look at energy independence – first of all, we're always going to need the oil, there's no question. This has oil in it. Everything you touch has oil or uses oil in some way or another. But let's focus on trying to reduce our oil use in the transportation sector, because there's so many other sectors that will always need oil. If we get that bulk out of the way, then oil is going to become just another commodity, the way pepper was once a strategic commodity and no longer is. Oil can become just another commodity.

Keep in mind three – it's like a stool with three legs and if you take out a leg, they're all going to collapse. One is diversification. I talked about Africa before, the Caspian – I'm not saying it's bad to go to Africa. I'm saying, let's keep in mind that these are stopgap solutions. It buys us time and let's use that time wisely. Let's use that time wisely to increase efficiency, efficiencies of form, and let's use that time wisely to create a transformation in the market.

So this is not going to be quick. Any diffusion of technology in a market is not quick, even if you look at cell phones or the Internet or things that do not have as much infrastructure required

for the transformation as the transportation fuel and vehicle industry. It's going to take 15-20 years in the best case. But if we don't start now, then it's going to take 15-20 years from any point we start.

I want to talk about one last thing. What can we do if something really bad happens tomorrow? That's the Strategic Petroleum Reserve. The Strategic Petroleum Reserve has, I believe, 660 million barrels of oil today. Its capacity is 700 million barrels. We need to increase that reserve, no matter what the political cry to whichever direction is. Europe, China – they all need to have a similar reserve, I would say 1 billion barrels of oil each. This was mentioned already today.

If we had enough of that reserve, we'd do two things. One, it's like a blood bank, so if something bad happens, it helps us keep our head above water for a while until hopefully the blown terminal can be fixed, the refinery can be rebuilt or whatever. But the other thing it can do, if we had more oil than we need for such a contingency, is it can replace the Saudi spare capacity.

If we have enough oil in the Strategic Petroleum Reserve – and no question, this is going to be really unpleasant to the market in the short term to create such a big reserve around the world; there's going to be a lot of screaming. There's going to be a lot of pain in the market because of it.

But if we create such a reserve, then what we do is we are no longer beholden to the Saudis and their price games, lowering the supply and raising the supply to extract more money out of our economy. We simply respond with releasing oil from that reserve when they're playing games in the market. But we can't do that now, because we don't have enough of a reserve to tide us over in case of a catastrophe. We can only do that if we have enough oil in there to act as a secondary liquidity reserve.

Thank you very much.