OKLAHOMA STATE UNIVERSITY 3RD ANNUAL ENERGY CONFERENCE
FROM OIL CAPITAL OF THE WORLD
TO A 21ST CENTURY ENERGY CENTER

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It is a privilege to participate in this prestigious and important Oklahoma State University energy conference hosted by the Spears School of Business. I am honored to share the podium with President Hargis and the distinguished presenters of this program. The two previous conferences have poignantly targeted America's leading energy issues. This year's theme of "Energy Independence in a Challenging Economic Environment" follows that tradition.

Now when I was growing up in Tulsa in the 1950s nobody talked about energy independence. It didn't make sense. Energy was oil and we had plenty of it. Oil had fueled America's victory in two World Wars and the Cold War. It drove America to be the world's leading economy with a standard of living the envy of other nations. America didn't depend on any other nation to provide that oil. There was plenty at home.

Oklahoma was a leading producer and the headquarters to the major companies. That's why Tulsa was proudly called the "Oil Capital of the World". Like many families in Tulsa mine was involved in that prosperous and thriving industry.

As a land man my Dad pored over geology maps always trying to put the right deal together. My Mom was an author. From writing the scripts for a radio show called "The Romance of Oil" to authoring a history of the colorful pioneers of the industry titled the Greatest Gamblers, she worked all her life in the oil patch.

As a kid, roughnecking on drilling rigs in Oklahoma, Kansas, Louisiana Gulf, Colorado, California, and New Mexico helped finance my education and eventually led me to Alaska working on the second hole drilled in the newly discovered giant Prudhoe Bay field on Alaska's North Slope. That opportunity provided for my new family and allowed us to open our own business. It gave me, as it has so many others, the chance to live the American dream.

But things change. As decades passed America could no longer increase its production of oil fast enough to keep pace with the ever-increasing demand. Cheap foreign oil greased the gap. From a time when imports were negligible the percent crept up to today's remarkable 70 percent. We now import 13 million barrels of the 18 million barrels of oil consumed per day.

Some economists would say, so what? We live in a global economy. Let the market place determine the cheapest source of energy. That would benefit both the consumer and the economy.

But others would note that oil provides 90% of our transportation fuel. Such dependence on others for this vital aspect of our economy as well as the potential impact on our ability to militarily defend this country are a grave concern. To many the loss of our energy independence is a danger to our national security.

George Kaiser, an Oklahoma entrepreneur, philanthropist, and benefactor of the George Kaiser Family Foundation, pondered this question. He came to a clear conclusion on the cost and consequences of our dependence on foreign oil and the loss of our energy independence. In his words, "our addiction to foreign oil has hijacked our foreign policy, our economy, and our environment." In the last decade the oil dependence of America, Europe and more recently India and China has created the greatest transfer of wealth in human history to those who are far too often oil rich dictators, hostile to our national security. At the same time the exponential increase in greenhouse gas emissions has set into motion climate change that will radically alter our way of life, change the world we live in, and poses, according to the national security council of the former administration and repeated by President Obama, no less a threat to our national security than the enrichment of our global enemies.

Faced with this set of facts, George Kaiser committed himself to helping change our nation's direction – to recover our energy independence. He believed that with better information our policy makers could and would make better choices for our country. Clearly what is needed is a coherent, rational energy policy that reflects the sum of our best wisdom, not the sum of all lobbies.

To this end, George founded the National Energy Policy Institute (NEPI) to undertake the task of doing a comprehensive study of energy strategies based on a rigorous application of common metrics to determine comparative cost.

Headquartered at the University of Tulsa and funded by the George Kaiser Family Foundation, NEPI has engaged the services of Resources for the Future, a Washington D.C. based research organization specializing in econometric analysis of natural resources and energy public policies, to be the managing partner in this effort. Nationally recognized experts in multiple fields have been selected to analyze and research a first group of strategies for publication later this year.

The goal is to reduce the use of imported oil and emissions of greenhouse gas based upon least cost. To achieve this goal a range of energy strategies will be scored and ranked on two separate metrics, the cost per barrel of imported oil reduced and the cost per ton of greenhouse gas reduced, to determine their relative benefits to a national energy policy. Once implemented the free market economy will make the needed changes, if energy policy gives it the right signals.

The status quo does not address our national security needs because the price at the pump does not reflect the security cost of buying oil from nations hostile to our interests. The fact that the resource is non-renewable is not reflected in the price. The global cost of

climate change is not reflected in the cost of barrels of oil or tons of coal. Under these market conditions energy independence remains an illusion.

However, we can quantify these externalities to determine the total real cost of implementing the strategies that will move us toward energy independence and sustainability. That is exactly what the Kaiser methodology is designed to do.

For instance if a tax credit of $7,500 were given to buy a plug-in electric car – and this is in the recently passed stimulus bill – the first step would be to determine through the use of appropriate economic modeling the number of cars that would be purchased. Second would be the determination of how many miles the cars would drive in a year and how many gallons of gas that would reduce. This would be converted into barrels of oil and would be divided into the total amount of subsidy to determine the dollar cost per barrel of reduction. The same process would be used for determining the cost per ton of greenhouse gas emissions reduced.

The comprehensive study undertaken by NEPI is anticipated to address some 50 strategies. This would provide decision makers a menu of choices for developing a national energy policy that will determine the total cost required to reduce the necessary use of imported oil and emissions of greenhouse gas.

Will this provide decision makers with the knowledge that can help lead us to energy independence? Possibly, but first we must arrive at a consensus of what defines energy independence and adopt it as a national goal. It is unnecessary and unrealistic to believe that it means that we will no longer have imported oil. It does mean that we have to reduce our use of imported oil to a level that protects us from influence by any cartel that controls a significant part of that oil supply. It also means that we have affordable, alternative, and sustainable sources of energy.

Quantifying the reduction needed in imported oil use and greenhouse gas emissions will be an important national conversation. The critical moment of history we face now is the national decision to embark on this historic course of action.

In addition to charting a course for energy independence, George Kaiser envisioned an important role for NEPI to help be a catalyst for Oklahoma and Tulsa business and job creation in the new energy industries. Partnering with Oklahoma universities, such as the recent agreement signed with Tulsa University, and working with national and state agencies, and the private sector can help lead to economic development.
That takes us back to the theme of this conference. We have discussed the "energy independence" part but that is followed by the phrase "in a challenging economic environment". What does that mean? Well, as a recovering politician I recognize that phrase and may have even used it myself when oil hit $9 a barrel in 1998, putting the Alaskan economy in a tailspin. As a rule of thumb whenever you hear people say, "a challenging economic environment," they mean the economy is in the toilet.

Is a new national direction of energy independence compatible with resurrecting our economy? The follow up question might be: in a bad economy can we afford to use more expensive alternative energy?

Regarding the economic consequences of 21st century energy, I think Pulitzer Prize winning Tom Friedman expressed it best in his best selling book Hot, Flat, and Crowded.

He talked about a trip to China where he was addressing a large group of Chinese auto executives. He told them how young Chinese have told him that Americans got to grow dirty for 150 years, saying "you got to have your industrial revolution based on coal and oil – now it's our turn."

His response to them was "Well on behalf of all Americans, I am here today to tell you that you are right. Please, take your time, grow as dirty as you like for as long as you like. Take your time! Please! Because I think my country needs only five years to invent all the clean power and energy efficiency tools that you, China, will need to avoid choking on pollution, and then we are going to come over and sell them all to you. We will get at least a five-year jump on you in the next great global industry: clean power and energy efficiency."

His point was, and the auto executives got it, that clean power is going to be the global standard and clean power tools are going to be the next great global industry, and the countries that make more of them and sell more of them will have a competitive advantage. Those countries will have the cleanest air and the fastest growing businesses. Not a bad combination. That's the future for a 21st century Energy Center – at the leading edge of the next great global economy.

America needs that future and Oklahoma can be a leader in becoming a 21st century energy center.

In looking for energy independence and new sources of energy in the 21st century, traditional fossil fuels of oil and natural gas and coal will and should play a significant role. Domestic production of our oil and gas will protect our national security. To paraphrase Mark Twain – reports of oil's demise are greatly exaggerated.

That is certainly true for Oklahoma with a rich history in oil and gas and a promising future. Beginning in 1905 with the discovery of the world's largest oil field at that time on farmland owned by a Creek Indian, Ida Glenn, a few miles to the southwest of us here, oil's impact helped this young State find its footing during those early years and throughout its first century.

Many of the largest oil and gas fields in the country are found in Oklahoma's Anadarko, Arkoma, and Ardmore geologic basins and their associated shelves and platforms.

Oklahoma is the fifth-largest oil-producing State in the country, with annual production typically accounting for more than 3 percent of total U.S. production in recent years.

Oklahoma's six refineries have a combined distillation capacity of more than 520 thousand barrels per day.

As for developing and growing the economy from the new clean sources of 21st century energy, Oklahoma has the jump on many of them. Now natural gas isn't new but our appreciation of it is. When Tulsa was called Oil Capital of the World, natural gas was more of a nuisance than a resource. Flaring was the commonplace disposal of this now precious fuel. Today, natural gas is seen as a cleaner and more versatile 21st century resource. Oklahoma is one of the top natural gas producers in the United States and annual production typically accounts for almost one-tenth of total U.S. natural gas production. More than a dozen of the 100 largest natural gas fields in the country are found in Oklahoma, and proven reserves of conventional natural gas have been increasing in recent years.

Perhaps the most exciting development in natural gas in recent memory is the new technology and discovery of shale gas reserves that will supply America an abundance of the clean burning resource.

Leading the wave of this discovery and development were Oklahoma's own Chesapeake Energy and Devon Energy, both headquartered in Oklahoma City. Chesapeake Energy is the number one independent producer in America and the most active driller of new wells in the U.S. Holding the most substantial reserves in new shale gas plays, the future growth and job creation of these Oklahoma companies burns as bright as the flame of the resource they produce.

One of the great new energy resources of Oklahoma lies in its emerging wind power potential and we've been singing it about it for years.

With the words "Where the wind comes sweeping down the plains," who knew that Rodgers and Hammerstein were talking about wind energy when they wrote that famous line in the song Oklahoma! Truth be known, at the time they wrote the song neither had even been to Oklahoma. However, their characterization was very accurate and still is today.
Oklahoma has now found a way to harness the wind as it sweeps down the plains and turn it into usable, clean energy in the form of electricity.

Anyone driving down Interstate 40 in western Oklahoma to Elk City will witness an amazing sight of an entire farm of 260 feet tall wind turbines with blades stretching over 125 feet across. The behemoths at OG&E's Centennial Wind Farm in Woodward already produce 170MW, or enough power to supply over 40,000 homes. They expect to almost double that output to 300MW in 2009.

The American Wind Energy Association (AWEA) estimates that Oklahoma ranks 8th among the states in installed wind energy capacity. A national study shows that Oklahoma could provide nine percent of the U.S. needs for electricity. This means cheaper, cleaner energy for Oklahomans and a billion dollar industry for businesses and jobs.

On a smaller scale, across the nation people are utilizing small wind turbines to power their homes and businesses. Oklahoma based Bergey Wind Power is one of the leading manufacturers of small turbines in the country. With 500 domestic and international dealers, Bergey is bringing power to all corners of the globe directly from Norman, Oklahoma.

Let me give another proven example of how Oklahoma can lead the nation to 21st Century energy, providing good jobs, business opportunities, and significantly lowering cost to residential and commercial user alike. I believe it will become one of the great success stories of our time. It is a real game changer. This subject is no stranger to Oklahoma State University as it has been a leading research center and advocate of it for many years. I am speaking of course about geothermal energy. Dr. James Bose from OSU is a recognized international expert on the subject.

Many audiences would think that geothermal is generating electricity from deep underground extremely hot sources. While that method exists, it is not the geothermal energy we are talking about. The geothermal energy for this discussion is using the ambient earth temperature 20 to 40 feet below the surface to exchange heat and provide for the heating and cooling systems and hot water for residential and commercial buildings.

The temperature of the earth near the surface is really pretty close to the temperature we would like to live at. Texas is around 70 degrees. Oklahoma is around 65 degrees and even in the northernmost areas of the country the temperature is in the upper forties and low fifties. The principle of this geothermal heat pump system is that the earth is like a huge battery. We can plug into it through core holes of a closed circulating water system that transfers the heat up from the earth to the building in the winter and takes heat down from the building to the earth in the summer. With a compressor system it can perform this job as well as provide hot water as a side benefit.
The energy necessary from the grid system to make this work is used at a ratio of 1 kwh from the grid produces 4-6 kwh energy for the building. That means if you pay for one KWH you get 3 to 5 for free. What a deal! The average residence uses 70% of its energy for this thermal load and the average commercial building uses 40% of its energy for the thermal load. The bottom line is that using a geothermal heat pump system in your home will cut your energy consumption in half, and by 20% for commercial buildings. This is a staggering savings for American energy. Buildings comprise 39% of all of America's energy consumption and 71% of electric consumption. Commercial and residential buildings contribute 43% of carbon emissions. As you can see the potential savings of energy and carbon emissions is a significant part of our national goal. And it puts hard cash right in the hands of the consumer.

The return on investment for installing geothermal heat pumps in a new residential unit is between 20 and 50%. Does anybody know any other place to get that kind of return? The installation cost of a residential geothermal heat pump system is approximately $15,000 dollars. Conventional heating and air-conditioning is about $8,000. So the additional cost of geothermal is about $7,000. Under the new stimulus bill you will receive a 30% or

$4,500 tax credit. You will save about a $1,000 dollars per year on utility bills. After three years it's all gravy.

The great part of the story is not only does Oklahoma have the research and academic leadership in this technology at OSU, it has the largest geothermal manufacturing plant in America – Climate Master located in Oklahoma City. It employs about 800 people in 500,000 square feet of plant manufacturing 40% of this nation's geothermal units. There is no question the opportunities are unlimited. It is established technology and the barriers to breaking through to not only new housing but retrofitting existing housing are really insignificant.

After reviewing 56 bids, the Oklahoma Department of Commerce has awarded a $2.5 million dollar grant to the Tulsa Industrial Authority to develop, in partnership with the George Kaiser Family Foundation, a geothermal service district for the buildings and residences surrounding the Brady District park. The George Kaiser Family Foundation is contributing matching money and land for the project.

NEPI will conduct an analysis of distributive geothermal in its energy policy project. There is no question that it will be an important part of America's and the world's energy future.

The entrepreneurial initiatives of companies like Chesapeake Energy, Bergey Wind Power, and Climate-Master, working in a market system of rational national and state energy policies, with the outstanding research, business, and job training skills of the University system, and the focused philanthropic resources of organizations like the George Kaiser Family Foundation all make for leading the way from Oil Capital of the World to a 21st Century Energy Center. Energy Independence and a prosperous economy – they go hand in hand.