NATIONAL ENERGY POLICY INSTITUTE
PRESENTATION TO
TULSA ROTARY CLUB

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October 21, 2009

It is a privilege to address Tulsa Rotarians and guests who are so deeply involved in public service, both personally and as an organization. From developing clean water wells in Nicaragua to inspiring and financing young talented musicians in this community you continue the rich tradition of Rotarian public service. Public service also involves public participation in developing our nation's public policy and there is certainly no lack of enthusiasm among Americans today in this regard.

If you want a spirited discussion all you have to say is "energy. " A couple of weeks ago the National Energy Policy Institute and The University of Tulsa held a conference titled "Power for the 21st Century: Reinventing America's Energy Grid." Now a few years ago I think all you would have needed was a large walk-in closet to hold the attendees. Today it was standing room only at TU's Allen Chapman Activity Center for an all day conference with expert energy office holders, regulators, academics, corporate and civic leaders and activists.

Around any dining room table, work site break area, water cooler or social gathering the new energy buzzwords are energy independence, national energy policy, and renewables.

Now when I was growing up in Tulsa in the 1950's nobody talked about energy independence or energy policy. 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 major oil 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 oil 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 is 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, 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 early next 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.

In addition to charting a course for energy independence, George Kaiser envisioned an important role for NEPI to 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.

I believe that most Americans would agree that our national security is better off with energy independence. I am not sure there would be that same unanimity that a change in energy policy will be good for our economy. We live in what some would call "challenging economic times". 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, "challenging economic times" it is a political euphemism for "the economy has gone down the drain."

In this environment, 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?

As NEPI and RFF are in the last stages of their project with some results coming out early next year and as NEPI is actively engaged in promoting Oklahoma jobs and business creation, I feel confident in saying Oklahoma and Tulsa are at the cutting edge of the most promising opportunities of 21st century energy. It is a future that will provide cleaner energy, reduce energy use, significantly cut costs, provide new jobs, and create new businesses. Too good to be true? Absolutely not – it's already happening. It is a story of three national game-changing events, centered in Oklahoma, involving a mix of natural resources, entrepreneurial talent and risk taking, visionary business development, and a unique partnership of public and private resources.

First let's begin with natural resources and entrepreneurial talent and risk taking. It was only a few years ago that natural gas was considered a dwindling natural resource that was following the same path of oil with dependency on foreign nations to satisfy our long term needs. Minor amounts of shale gas had been produced for many years from natural fractures. It was an oilman named George Mitchell who pioneered a process in a field near Ft. Worth in the 1980's called

hydraulic fracturing that opened up formations never before available. Devon Energy, headquartered in Oklahoma City, had the foresight to buy Mitchell's company in 2002 to get in on the ground floor of a natural gas bonanza. Shale gas has been described by the New York Times as the "magic phrase of the next energy boom".

Producing half the carbon emissions of coal, it is seen as the immediate bridge fuel to a low carbon future. The massive Woodford field located in the heart of Oklahoma, along with the Barnett and Fayetteville fields in Texas and Arkansas, is a core part of the exponential new national shale gas discoveries that have in the last five years nearly tripled our known reserves to more than a hundred years of use with approximately 2,000 tcf.

Not only does Oklahoma have the resource for jobs and business development, but at the core of natural gas exploration and production companies, Oklahoma leads the way with Chesapeake Energy the nation's largest independent natural gas driller and Devon Energy the nation's largest independent producer. Natural gas – domestic, abundant, cleaner – it's the future.

The second game-changer isn't based on new technology but has been around for thousands of years. It is known by the catchy little phrase "ground source geothermal heat pump". Now when you say the words geothermal energy, most folks think "oh yeah I know about Old Faithful - I'll visit that someday." Geological tectonic plate boundaries like Old Faithful, accessing the earth's core heat sources, are an important source of current and potential clean energy. But that's not what we are talking about. A geothermal heat pump uses the ground temperature some thirty to sixty feet below the surface as an energy source. At a constant temperature varying from 72 degrees in southern Texas to 42 degrees in Northern Minnesota it gives every building access to a heat source in the winter and a place to transfer heat from the building in the summer. All it takes is some pipe to circulate water which absorbs the heat and transfers it. With the use of a condenser it not only heats in the winter and cools in the summer but you can throw in your hot water needs almost for free in the process. Does this save energy from the conventional heating, cooling, and hot water systems? Here are the facts. For every one kWh to operate the system it generates 4-6 kWh energy for the building. That means 3-5 kWh are for free. With this

ratio of energy a typical homeowner will save 55% of utility bills per month. That is real savings. Put another way the national average cost of energy in America is about 11 cents a kWh. This same amount of energy produced by a geothermal heat pump is 5 cents a kWh. The EPA, not considered an easy shill for a commercial product, has stated "Geothermal heat pump systems are the most energy efficient, environmentally clean and cost effective space conditioning system." So why doesn't everybody use this system? Cost and not knowing about the system. The biggest barrier is that at a $15k cost for installation it runs about $10k more than a conventional system. Now you will make it back by lower utility bills in about 6.5 years. And then it's all gravy in your pocket. And the federal government in the latest stimulus package gives everyone who installs a geothermal heat pump a 30% tax credit. That means you can pay off the extra installation cost in about 3.5 years from utility bill savings.

And how is Oklahoma involved in this? ClimateMaster, the nation's largest geothermal heat pump manufacturer, producing 40% of all American heat pumps, is located in Oklahoma City. With a ½ million sq. ft. manufacturing plant employing some 800 workers, Oklahoma is at the cutting edge of the next great boom in energy conservation. The manufacturing of these items and the installation of the well field is a great new green job boom. If you want to see any working models just visit your state capitol. It has six hundred geothermal pumps. Can you imagine in the summertime the energy load that saves getting all of the hot air out of that building? Give Dan Ellis a call at ClimateMaster and he will be glad to give you a detailed description of the potential of this American industry.

The third game-changer in America's 21st century energy future is happening right here in Tulsa. It is called the Brady Village Green Sustainability Project and it is the nation's first pilot project for a district geothermal heat system. If it is successful it will greatly expand the national horizon of clean energy and conservation.

As part of the City of Tulsa's Comprehensive Development Plan, beginning with an organization of neighborhood stakeholders, the Brady Village community is an historic industrial area of Tulsa bounded on the south by the BNSF railroad, on the north by I-244, on the west by Denver Ave, and on the east by Detroit Ave. The project envisions a

future mix of commercial, residential, recreational, and cultural development in a new environment of livable, landscaped accessible public amenities with a bold new sustainable clean energy infrastructure. It is a true public-private partnership with public funds from federal state and local sources matched by private funds from the George Kaiser Family Foundation. It is being managed by the Tulsa Industrial Authority, headed by Jeff Stava of the Tulsa Community Foundation in collaboration with the City of Tulsa, Tulsa Beautification Foundation, the Brady Village Owners Association, and the George Kaiser Family Foundation.

The district geothermal heat concept is pretty simple. Well fields are the critical link to the earth's energy. This project will utilize the streets and the parkland for this closed loop pipe installation as they are being redeveloped for the project. The geothermal water lines will then be accessed by each user connecting to the street. The concept and access is the same as water, sewer, gas or electric. Energy savings for the participants in the first phase of this project are estimated at $167,000 a year. As icing on this cake there will be solar panels installed above an historic loading dock to provide the majority of the electric needs for circulating the water through the system. This project is on the move with the award of $2.5 million grant from the State of Oklahoma from the Federal stimulus package, with private matching funds.

The $12 million second phase of the project, which would extend the well field and geothermal distribution loop up and down Brady Street, has requested a DOE grant of $5 million, and will receive word on that within the next couple of months. The George Kaiser Family Foundation will lead the effort to provide the necessary matching funds. Oklahoma businesses that were instrumental in developing this proposal include Wallace Engineering, K & M Shillingford, McElroy Manufacturing and Phillips+Bacon Engineering.

The 21st century energy for America and the world will mean great change. Most people agree that change is good. Although that reminds me of the bumper sticker that reads "Change is good – you go first". Well, Oklahoma and Tulsa have accepted that challenge. They are going first - they are in the frontline. From oil capital of the World to a 21st century energy center the future is very bright.