

This has been the result of a peculiar combination of factors that, in my opinion, amount to a better energy policy than most people give us credit for. The first element is the entrepreneurial spirit of America and the large amount of private property ownership and our huge private market. Another is access to capital. A third and indispensable element is government-sponsored research.

Take our Nation's natural gas boom as an example. In the past it was uneconomical to develop so-called unconventional gas. Government-sponsored research enabled it and demonstrated how it could be done. A temporary Federal tax credit that expired for new shale projects at the end of 1992 encouraged new sources of private capital. Natural gas will be a big part of where we get our clean energy, which leads me to my second principle: clean, not just renewable, energy. Too often we define our energy goals in terms of renewable energy when we should mean clean energy. There are a number of States that have renewable energy mandates defined mainly to include wind and solar power. The Congress is regularly asked to pass a narrowly defined renewable energy mandate for the same purpose.

It is true these energy sources emit no air pollution. These mandates say a certain amount of electricity generated within a State must come from these specific sources. But focusing on this narrow definition for clean energy misses the point, and at a high cost to our electric bills.

Such narrow definitions also discount hydropower and nuclear power, some of our country's cheapest and most available sources of air pollution-free electricity. In the Tennessee Valley Authority region where I live, for example, more than 95 percent of our pollution-free electricity comes from TVA's dams and three nuclear plants, which include six reactors.

Second, mandating renewable energy runs the risk of creating too much reliance on sources that generate power only intermittently. There is certainly a place for these renewable technologies, and solar power especially seems to me to have great promise. But renewable energy consumes great amounts of space, whether it is solar or wind or biomass.

For example, it would take a row of giant wind turbines all the way from Georgia to Maine on the Appalachian Trail to generate the same amount of electricity that we would get from four nuclear power plants. You would still need the nuclear plants because the wind only blows when it wants to.

Fortunately, we have plenty of rooftops on which to put solar panels. When they become cheap enough and aesthetically pleasing enough, they will probably become an increasingly important supplement to our country's huge appetite for electricity, especially because the Sun shines during the peak-use hours.

Battery technology will help make all forms of renewable energy more useful, which brings me to my next principle: research and development, not government mandates. It is hard to think of an important technological advance in our country that has not involved at least some government-sponsored research, especially in the area of energy.

The most recent example is the development of unconventional gas that was enabled by 3D mapping invented at Sandia National Laboratory in New Mexico and the Department of Energy's large-scale demonstration project.

There is an argument that by imposing government mandates, just as by imposing higher prices, government could force some innovation that could move us toward clean energy independence. But I believe the surer path would be to double the federal funding we spend annually on non-defense and non-cleanup energy research and development and trust the marketplace to produce better results.

In 2005 the "Rising Above the Gathering Storm" report, written by a commission led by former Lockheed Martin CEO Norman Augustine, recommended doubling energy research and development. In 2007 Congress responded by passing the America COMPETES Act with overwhelming bipartisan support. Senator COONS and I are working together to reintroduce the America COMPETES Act for a second reauthorization after its original passage.

One small agency that is the result of the America COMPETES Act is what we call ARPA-E. It is already showing signs of the wisdom of this approach. ARPA-E has helped improve battery technology and worked to produce liquid fuel from microbes, among other accomplishments. Seeing how our free enterprise can capitalize on this brings me to my fourth and last principle: free market, not government picking winners and losers.

We are more likely to have abundant supplies of cheap, clean, reliable energy in the United States if we trust the marketplace. The most appropriate role for government is in research. I believe a second role is limited jump-starting of new technologies; for example, unconventional gas, about which I just spoke, involves government research and a limited tax credit.

The full tax credit for electric cars is capped at 200,000 vehicles per manufacturer. To encourage innovation in nuclear energy, the government provided research and licensing support for small modular reactors, but that is limited to 5 years.

Even for nuclear power plants there is a production tax credit, but it is limited to 6,000 megawatts. On the other hand, President Reagan used to say the nearest thing to eternal life we will ever see on this Earth is a government program. That is too often the case with energy subsidies. The most glaring example of that is the more than 20-year-old subsidy for wind power, a

technology that former Energy Secretary Chu said was a technology that had "matured."

This was supposed to help jump-start wind. But we have already lost \$16 billion in Federal revenue from 2009 through the end of 2012 alone. Congress just added a 1-year extension of the wind production tax credit, costing \$12 billion. Remember, the Department of Energy spends just \$5 billion on energy research.

We are spending \$12 billion in a 1-year extension of the wind tax credit. The wind industry's idea of a phaseout would cost tens of billions more. People talk about Big Oil, but the big, unnecessary subsidy is big wind, and a much better place to spend our money would be energy research.

I have been fascinated with the progress we have made on the seven grand challenges I suggested 5 years ago. Perhaps by focusing on these four grand principles, the ones I have suggested in this speech, we can capitalize on the last 5 years of progress and move toward cheap, clean, reliable energy.

Oak Ridge's evolution since the Manhattan Project days provides a good model. About 70 years ago the astonishing collection of physicists that produced the two atomic bombs also enabled nuclear power, nuclear medicine, and other technological advances.

What can we expect 5 years from now? To get a glimpse of the future we might look at what fits within the guiding principles I have suggested today. For example, small modular reactors and virtual reactors that scientists are developing will revolutionize the safety and effectiveness of our nuclear technology.

Game-changing manufacturing is also on the horizon with 3D printing. ARPA-E, a small agency of the Department of Energy that came from America COMPETES, and other groups are increasing the reliability of our electricity supply.

This United States of America is a remarkable place. With the potential I have described and the principles I have suggested, a competitive energy future is well within our grasp.

I yield the floor, and I suggest the absence of a quorum.

The ACTING PRESIDENT pro tempore. The clerk will call the roll.

The legislative clerk proceeded to call the roll.

Mr. MORAN. I ask unanimous consent that the order for the quorum call be rescinded.

The ACTING PRESIDENT pro tempore. Without objection, it is so ordered.

Mr. MORAN. I thank the Chair for the recognition.

#### THE FARM BILL

Mr. MORAN. I just returned from my home State of Kansas to return to the work we are about to do in the Senate. This week away from Washington, DC,

gave me the opportunity to travel all corners of our State. I went from southeast Kansas in Galena to northwest Kansas in Goodland, and almost every night while I was home weather was the topic of conversation.

Certainly, as Kansans who have experienced tornadoes in our own State over the last week and, certainly, over the life of our State, we extend our deepest sympathies and concerns to the people of Oklahoma. It is weather that I wanted to talk about on the Senate floor today in preparation for an amendment I will offer, which is being offered to the farm bill, and continued discussion of that farm bill throughout this week.

As I listened to Kansas farmers, the most prevalent request when it comes to farm policy, to a request for what ought to be in a farm bill is the request by Kansans that the Crop Insurance Program remain solid and viable. We live in a State in which weather is not always a friend to agriculture. Yet agriculture is our most significant creator of economic activity and generator of jobs and economic growth in our State.

We have the pleasure, in fact we are very proud, to feed, clothe, and provide energy to much of the world. At the moment the challenges are great because of the significant effect the drought has had on Kansas and much of the Midwest. That drought has been ongoing for more than 2 years, and it has had a significant impact on agricultural production. It is that point I want to make as we debate the farm bill, the importance of the Crop Insurance Program in response to those difficult times.

Despite the drought, our Nation remains the land of plenty, and Americans continue to enjoy the safest and most abundant food supply in the world. The reason we have so much is because of many factors: Prayers, the work ethic of American farmers and ranchers, the courage to persevere in spite of enormous challenges, and, among those things, finally, is the ability to manage risk.

Farming and ranching is a high-risk occupation. Producers can't manage the one thing that matters most to them, Mother Nature. Mother Nature is the one variable that can't be controlled. Mother Nature brings drought, rain, wind, and hail, the things a producer must face head on each year and each year to follow.

With the inability to control the weather, we must control what we can—the great risks associated with agriculture. This is required for the United States to remain that land of plenty.

The risk management tool of choice is crop insurance. Crop insurance gives producers a safety net so when there is a drought, a flood, a hailstorm, or windstorm, they can pick up the pieces and try again. This is what sets us apart from the rest of the world. We have the ability to manage our risks so

when Mother Nature gives us something bad, our Nation's farmers and ranchers can live to start again.

Crop insurance is a public-private partnership. The government helps the producers cover some of the costs of the policy, and the producer covers the rest. Consumers help the producer, and the producer helps the consumer.

To be clear, producers pay a significant part of the premium out of their own pocket. In 2012 they paid \$4.1 billion to buy insurance to manage their risks. When farmers take out a crop insurance policy, they get a bill, not a check.

Crop insurance has virtually replaced the need for ad hoc disaster measures for crops. During my time in the House of Representatives and now in the Senate, going back to 1989, 42 such pieces of legislation have cost the taxpayer more than \$70 billion. During my time in the House, and now the Senate, many times we have asked for ad hoc disaster assistance, a bill to pass the legislature to provide assistance at the moment. Crop insurance is the tool by which we can avoid those requests. When you manage risks with crop insurance, you save the taxpayers money and give the producers a better program.

Today, as we have scheduled votes, I have an amendment on the Senate floor dealing with a crop called alfalfa. Alfalfa is the Nation's fourth most valuable crop, and it plays a significant role in our daily lives.

Alfalfa is a building block for milk and meat. The hay that is grown in the fields of California, Idaho, South Dakota, Colorado, Oregon, Washington, Texas, Wisconsin, Kansas, and the rest of the 50 States is a driver of the cost of products on grocery store shelves. The Nation's fourth most valuable crop is vitally important.

The reality is producers are faced with risks, and there is no good way to manage them when it comes to this crop, alfalfa. The current Crop Insurance Program, Forage Production APH, is severely inadequate, as demonstrated by the fact that less than 10 percent of the acres are enrolled in the program—compared to corn, soybeans, and wheat, which are all more than 80 percent.

Producers are going back to the bank to borrow operating money and being told not to plant alfalfa because there is no good way to manage the risk. This is very troubling because of the impact that alfalfa has on the economy and our Nation's food supply.

The crop is important, and we need to figure out a way to manage its risks. Producers are being told to grow crops that have a safety net, crops that have some kind of guarantee when weather is bad. My amendment, No. 987, requires the Federal Crop Insurance Corporation to conduct research and development regarding the policy to insure alfalfa and a report describing the results of that study. There are no additional costs to the taxpayer with my amendment.

We need to take a good hard look at alfalfa and recognize its value to the Nation. We need to study and develop something that will work, save taxpayer money, and make certain the land of plenty remains the land of plenty. Alfalfa is a building block of milk and meat. With a risk management tool for alfalfa production, producers will enjoy lower input cost and consumers will enjoy less expensive products on the grocery store shelves.

I know you understand the value of agriculture in Kansas, and I appreciate the opportunity to be on the Senate floor today to describe the value of crop insurance and particularly to highlight the amendment we will vote on later today.

I yield the floor.

The ACTING PRESIDENT pro tempore. The Senator from Alaska.

#### ALASKA FLOODING

Mr. BEGICH. Mr. President, I rise today to describe the devastating spring breakup flooding affecting my home State of Alaska. As we just heard about Kansas, weather patterns are affecting long-term droughts in farmlands, while in Alaska it is warm weather that is actually going in the opposite direction.

Over the last several weeks our country has witnessed devastating tornadoes in Oklahoma. Our hearts go out to the families of Moore, Oklahoma City, and many others that have been affected, as they rebuild their lives.

Disasters such as these remind us of the importance of family and community, and it should make us again examine the work being done by FEMA and other agencies to help communities prepare for natural disasters. While it didn't make national news, Alaska's families along the Yukon River are putting their lives back together after record flooding last week.

Thick river ice, high temperatures, and fast melting combined to flood the community of Galena during what we call "breakup" in Alaska. For those who have never witnessed it, breakup on Alaska's biggest and mightiest river is a spectacle almost beyond description. As the ice begins to move, buckle, and crack, you can sometimes hear it from miles away. The trouble is, in the wrong conditions, the moving ice can get caught where the rivers make their natural bends. It piles up into mountains of jumbled ice, creating a natural dam that floods everything behind it, or when it suddenly breaks loose, torrents of raging water and ice rush downstream. This year breakup has, unfortunately, caused some extreme conditions in interior Alaska.

Last week, quickly rising waters from a 30-mile ice jam along the Yukon River had the village of Galena underwater for 3 days. This is an example of what you can see. The woods, the trees are there, but all along there is water burying the buildings.