

“Challenges to Climate Change Legislation”
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- Introduction:
 - MidAmerican supports reducing greenhouse gas emissions. As Warren Buffett says, we want to err on the side of the planet.
 - Debate has moved from the science of climate change to the politics of climate change. And politics lives on sound bites. It’s now time to look at the economics of climate change.
 - Congress needs to spend more time on climate change issues, which could have a huge impact on our entire economy, than on issues like steroid use in baseball.
 - There’s been a sea change over the last few years in attitudes towards climate change.
 - 1997: Senate passed the Byrd-Hagel Resolution, 95-0, which recommended against ratifying the Kyoto accord unless it included developing countries and would not cause serious harm to the U.S. economy.
 - Today: There are at least 55 votes in the Senate for the Lieberman-Warner legislation, a bill that would place mandatory limits on carbon dioxide emissions and create a carbon-trading market – the core components of the Kyoto Treaty. And it would cause serious harm to the U.S. economy.
 - The public wants action. November 2007 Harris Poll: 81% of those surveyed said the United States should take the lead on climate change. The poll did not ask about cost.

- I believe we can achieve the goal in the Lieberman-Warner bill of 60%-80% reductions in greenhouse gas emissions by 2050 because the time period provided is reasonable and it will allow the United States to develop the technologies necessary to achieve the desired reductions without causing severe economic dislocation to our customers and the economy.

- However, imposing caps on carbon emissions prior to the availability of the technology needed to meet the caps simply turns cap-and-trade into a carbon tax.

- In addition to the cost of the carbon allowance or tax, our preliminary analysis indicates that passage of the Lieberman-Warner bill will result in a significant increase in the cost of natural gas, because burning natural gas in lieu of coal becomes one of the few near-term strategies available for reducing carbon emissions while maintaining the desired levels of service

reliability. Other strategies will include greater spending on energy efficiency programs and renewable energy.

- We must be aware that the cost of reducing carbon emissions will have a disproportionate impact on the poor, elderly, and those on fixed incomes.
- We need a glide slope that allows us time to develop the technologies that allow us to shift from a carbon-based economy. This would also allow time for renewable energy to advance and energy efficiency time to take effect, in order to ramp down use of traditional energy sources.
- Early implementation of a cap-and-trade protocol with unreasonable reduction targets and timetables will cause immediate rate shock:
 - Former Federal Reserve Chairman Alan Greenspan said last week that a cap-and-trade system would harm the U.S. economy.
 - He said that while many politicians assume that technological advances can address global warming, the evidence is mixed and that this is a much more difficult problem than we like to talk about politically.
 - He also said that there has not been enough discussion about what we mean by a cap, and he added that tackling global warming by trying to lower emissions to 1990 levels can only occur with much lower levels of economic activity.
 - Charles River Associates study:
 - Under Lieberman-Warner, U.S. GDP would be reduced by 2.3% in 2015.
 - This would have a huge impact on our economy and would dwarf the impact of the current sub-prime mortgage and credit problem.
 - Carbon offset prices will rise immediately.
 - At \$100 per ton of CO₂, electric generating prices will rise rapidly. This is the likely cost of CO₂ offsets in 2012 under Lieberman-Warner.
 - Let's consider an average utility that generates electricity at 5¢/kilowatt hour (kwh) and is 50% coal based, 20% natural gas, 20% nuclear, and hydro and renewables for the remainder. At \$100 per ton of CO₂ this utility's generation costs would raise to 11.5¢/kwh just based upon the offset costs.
 - And there would be no environmental benefit because there are no current technologies to capture CO₂ from these existing facilities.
 - Moreover, these costs do not consider the extraordinary escalation in natural gas prices that will result from these offset prices. Natural gas prices could easily jump to \$15-\$20/MMbtu, due to power plant consumption that increases from 6 trillion cubic feet (Tcf) per year to 25 Tcf.

- What's the key to reaching 60-80% carbon reductions by 2050? Not cap-and-trade—at least not out of the starting gate. Why not?
 - It does not supply emissions-free power.
 - It does not develop or bring new technologies on-line.
 - It does not reduce prices for renewable energy resources; it merely raises prices for carbon-based emissions.

- The SO₂ trading system created by the 1990 Clean Air Act amendments is rightly viewed as a great success of the cap-and-trade concept:
 - There is one absolutely crucial difference between these two situations: When the cap-and-trade system under those amendments was set up, off-the-shelf technology was available at the time to reduce SO₂ emissions. This allowed a utility to make a rational economic choice: Which is cheaper – buying the new equipment or buying the credits?
 - Moreover, 19 years after the 1990 amendments were enacted, we are still implementing the system.
 - Today, with cap and trade legislation before Congress, a utility can't decide between buying the technology or buying the credits because there is no off-the-shelf technology to buy.
 - We don't have the next generation nuclear plant ready to be built; costs are currently about \$5,000/kw; long-term storage of waste remains an issue; and public acceptance of new plants varies.
 - The technologies to add to a coal fired power plant to sequester CO₂ emissions have still not been proven on a commercial scale and are significantly higher than a supercritical coal plant.
 - We haven't solved the technical and cost challenges of IGCC (integrated gasification combined cycle technology).
 - We're just beginning to understand the challenges of large-scale carbon capture and sequestration:
 - There is no proven technology today to capture the CO₂ produced in power plants.
 - Assuming we capture the CO₂, there are no pipelines to carry it to areas where it could theoretically be sequestered in the ground.
 - There is no legislation or regulation under which such a group of technologies can be deployed.
 - And there is no combined IGCC-carbon capture and sequestration system in place anywhere in the world today.
 - If there's no technology to “trade” for, a cap-and-trade mandate is nothing more than a tax. There is only a cap-and-trade program when there is something to trade.
 - If the technologies are not available and utilities just pay the tax, the CO₂ is still there. This won't reduce greenhouse gas emissions.

- Low-carbon technologies:
 - We priced out a nuclear power plant but decided not to pursue it because we saw generation costs of at least \$5,000/kw or 12-16¢/kwh, with availability (conservatively) by 2018.
 - IGCC (integrated gasification combined cycle technology) is at least 12-15¢/kwh – and this does not take into account the thousands of miles of pipelines that will need to be built for carbon capture and sequestration.
 - Natural gas combined cycle plants are 12-14¢/kwh – and rising with the cost of natural gas.
 - All of these figures are in the context of a 125% increase in global construction prices since 2003. For example, our recently commissioned 790-megawatt supercritical coal plant cost \$1.3 billion. The estimates we received to build another plant adjacent to that one were at \$2.3 billion.

- There are two fundamental flaws in Lieberman-Warner bill:
 - First, implementing a cap-and-trade program – an enforcement mechanism – without available low-carbon technology is just a tax.
 - Second, it provides no glide slope for technology development.

- How then do we reach 60-80% reduction of CO₂ emissions by 2050?
 - We must implement a slow-stop-reverse carbon emissions program which includes the following:
 - Phase I: 2009-2017 “Slow”
 - Provide more incentives for renewable energy.
 - Develop and enforce increasing energy efficiency standards on new and existing home, commercial and industrial construction.
 - Fund an “Apollo” research and development programs to deploy carbon capture and sequestration technologies within 10 years, funded by industry and government and administered outside of the normal government programs.
 - Prioritize transmission implementation to more efficiently use existing generation and to make renewables more accessible.
 - Phase II: 2017-2025 “Stop”
 - Begin a cap-and-trade system to incentivize the utilization of carbon capture technology and low carbon emitting new technologies.
 - Develop and implement regulatory processes that smooth the transition from “old” technologies to “new” technologies in order to protect consumers and to maintain credit quality of the utilities.
 - Phase III: 2025-2050 “Reverse”
 - Complete the transition away from carbon emitting energy sources.

- Let me focus on the critical issue of research and development, paralleling the Apollo technology program:
 - In the same way that the Apollo program put a man on the moon in eight years, an Apollo program on climate change can deliver new technologies in ten years – if it is fully funded through a public-private funding match.
 - The United States is the only nation capable of undertaking such an effort.
 - It's also the only way to get developing countries like China and India to make meaningful emissions reduction. They'll buy the technology, but they're not going to stop their economic progress to develop them.
 - So there's a huge potential economic benefit for the United States if we can sell these technologies abroad – and like the Apollo moon program, a climate technology effort will yield unforeseen spin-off technologies.
 - This effort can also revitalize technology development in the United States relative to China and India.
 - How to fund it? One mil/kwh charge on utility customers will raise \$2 billion per year. Government would need to match this with \$2 billion per year.
 - Optimally, the annual cost of this R&D program should be approximately 2% above the Consumer Price Index.
 - The monies collected and appropriated for this effort must be fenced off from other uses and should be administered by an agency with experience in these matters, such as the National Science Foundation.
 - This program requires real political leadership; President Kennedy asked Congress to move forward on a multi-year packaged program, knowing full well he would not be in office to see its conclusion.

- How do we intend to deal with the climate change challenge at MidAmerican Energy Holdings Company?
 - We, like other utilities, must reduce our corporate CO₂ intensity and overall emissions. In fact, we have reduced our CO₂ intensity by 7% since 2000.
 - We are taking the lead in the development of renewable energy. Our current generating capacity contains about 17% renewable energy comprised of wind, geothermal energy and hydro. We expect this percentage to increase to 20% by 2009.
 - Our electric and gas distribution utilities have been offering energy efficiency and demand-side programs for many years and are constantly looking for opportunities to increase these programs in a cost-effective manner.
 - We have actively investigated and invested in opportunities for new nuclear and carbon sequestered coal generation. Unfortunately, these

options have not proven to be cost effective for our customers at this time.

- What should you – the regulators – and us – the ones you regulate – do about these climate change proposals?
 - We are the ones who are going to have to implement the unfunded mandates that Congress or the state legislatures hand us.
 - We should together study the impact of these proposals to determine what is reasonable and what should be changed and then communicate those views to our legislators, and we must be proactive in these efforts.

- We must do so thoughtfully and in a way in which we limit the harmful effects on our customers, because the costs of getting this wrong are not acceptable.

- Let's utilize the elements so wonderfully laid out by President Kennedy in May 1961.
 - Vision
 - Commitment
 - Upfront funding
 - Technological rewards