Energy Myths and Realities

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Thank you for that introduction. Good morning, everyone. I'm honored to join you today.

I'm going to try to do something that seems impossible these days – and that's have an honest conversation about energy policy, global warming and what it means for Utah and America's energy future. My remarks have been motivated in part by former Vice President Gore's recent visit to Utah. My goal is to inform you with easily verifiable facts – not hyperbole and propaganda – and to appeal to your common sense. With apologies to the late-great Paul Harvey, I'm here to give you "the rest of the story." But first a few words about Questar.

Questar Corp. is the largest public shareholder-owned company headquartered in Utah, based on stock-market value. We're one of two Utah-based companies in the S&P 500 (the other being Zions Bancorp). Most of you know us as the parent company of Questar Gas, the utility that sends you your natural gas bill every month. But outside of Utah and to investors we're known as one of America's fastest-growing natural gas producers. We've got terrific people running each of our five major business units – and they've transformed Questar over the past few years. We're the only Utah-based company ever to make the *Business Week* magazine annual ranking of the 50 top-performing companies in the S&P 500 – we were #5 in both 2007 and 2008, and we're #18 in the top 50 in *Business Week's* 2009 ranking, published last week.

At Questar our mission is simple: we find, produce and deliver clean energy that makes modern life possible. We invested $2.6 billion in 2008 in pursuit of that mission. We focus on clean-burning natural gas, and that puts us in the "sweet spot" of America's energy future. Even Mr. Gore agrees that greater use of clean-burning natural gas – produced in America by American companies who hire American workers and pay American taxes – must be part of any global-warming policy.

But you didn't come here for a commercial about Questar - and I didn't come here to give you one. Let's talk about energy.

There may be no greater challenge facing mankind today than figuring out how we're going to meet the energy needs of a planet that may have 9 billion people living on it by the middle of this century. The magnitude of that challenge becomes even more daunting when you consider that of the 6.5 billion people on the planet today, nearly two billion people don't even have electricity -- never flipped a light switch.

Now, when I started my career with Chevron in the mid-1970s the "consensus" was that America and the world were running out of oil. Ironically, the media back then was reporting a "scientific consensus" that the planet was cooling, fossil fuels might be to blame, and we were all going to freeze to death unless we found alternatives to fossil fuels – fast. That task, we were told, was too important to leave to markets, so government needed to intervene with massive taxpayer subsidies for otherwise uneconomic forms of energy. That thinking – encapsulated in Jimmy Carter's declaration of the "moral equivalent of war" - led to the now infamous 1977 National Energy Plan, an experiment with central planning that failed miserably. Fast-forward to today, and: déjà vu. This time the fear is not so much that we're running out of oil, but that we're running out of time – planet earth "has a fever" (as Mr. Gore likes to say), humans are to blame, and we're all doomed unless we stop using fossil fuels -- fast. Once again we're being told that the job is too important to be left to markets.

Well, the "end is near" crowd of the 1970s turned out to be remarkably wrong. My bet is that today's doomsters will be proven wrong as well. Over the past 39 years mankind has consumed about twice the world's known oil reserves in 1970 – and *proven* oil reserves today are about double what they were before we started. The story with natural gas is even better – here and around the world enormous amounts of natural gas have been found. More will be found. And of course, the 30-year cooling trend from 1940-1970 that triggered the *global cooling* scare in the mid-70s abruptly ended in the late 70s, replaced with a 20-year warming trend that *peaked in 1998*.

We should've learned two lessons from the 1970s. First, when it comes to deciding how much energy gets used, what types of energy get used, where, how and by whom energy gets used -- that job is too important *not* to be left to markets. Second, don't expect the media to let facts get in the way of a good apocalypse story, e.g. "World coming to an end – details at 11."

Now, I'd love to stand here and debate the science of global warming. The media of course long ago declared that debate over – global warming's a "planetary emergency", we've got to change the way we live *now*. I've followed this debate closely for nearly 20 years. I read everything I can get my hands on. As an engineer, I'm trained to take the hype with a grain of salt and to instead try to understand the underlying science. My research convinces me that claims of a scientific consensus mislead the public and policy makers - and often reflect another agenda.

Yes, planet earth does appear to be warming – but by a not so unusual and certainly not so alarming *one degree* over the past 100 years. Indeed, global average temperatures have

increased by about *one degree per century* since the end of the so-called Little Ice Age 250 years ago. And, yes carbon dioxide (CO2) concentration in the upper atmosphere has increased from about 280 *parts per million* in 1750 to about 380 parts per million today – that's .00038. What .00038 tells you is that CO2 is a trace gas, comprising just four out of every 10,000 molecules in the atmosphere. Over the next five years the concentration of CO2 in the atmosphere will increase from just 4 to just 5 molecules out of every 10,000 molecules in the atmosphere. Five out of 10,000 is a very small ratio – the same ratio as two inches on a football field. I should quickly add that CO2 is a very important trace gas. Plants consume CO2 to grow, as anyone who owns a greenhouse will attest. Without it the earth would be a lifeless, frozen ball.

And yes, most scientists believe that humans are responsible for much of that increase in atmospheric levels of CO2 and at least a portion of that one-degree of warming over the past 100 years. *But that's where the alleged consensus ends.* Contrary to the righteous certitude we get from former Vice Presidents, crusading journalists and a few high-profile, government grant-seeking scientists, no one knows how much warming will occur in the future. No one knows how much of any warming that does occur will be due to man, and how much to nature. No one knows whether the impact of warming will be a net good or bad, or how easily humans and wildlife will adapt to warming. So when you hear someone claim they do know, I suggest Mark Twain's advice: "respect those who seek the truth, be wary of those who claim to have found it".

This whole notion of a "scientific consensus" is antithetical to science. You should reject it as nothing more than propaganda. Consensus is a political concept. Real science is not about forming a "consensus". It's about continually challenging and testing prevailing assumptions about how the real world works. My perspective on media's repeated claims of a scientific consensus were shaped years ago when I read a critique of the computer models that scientists have built to predict the impact of manmade CO2 emissions on global temperatures. Mathematically, if the only variable driving surface temperatures on earth was CO2 concentration in the atmosphere, there would be no debate – manmade CO2 in the atmosphere would raise the earth's average temperature by a harmless one degree over the next 100 years. But the earth's climate is what engineers call a "non-linear, dynamic system". There are hundreds of inputs. Many of the inputs are little more than the opinion of the scientist – in some cases, just a guess. For example, water vapor is a greenhouse gas – far more potent than CO2. But scientists do not agree on how to model water vapor, clouds, precipitation and evaporation. The media believes Mr. Gore, and Mr. Gore believes those scientists who believe that water vapor amplifies human CO2 forcing. But other highly-credentialed scientists believe precipitation acts as the earth's thermostat, keeping temperatures within a stable range. A full discussion of this and the countless other uncertainties would take the rest of today and beyond. The point is that climate models reflect the assumptions that go into them. If the assumptions are wrong, so are the conclusions – garbage in, garbage out. What's more, the models regarded by scientists as the best in the world predict vastly different futures! Dr. John Christy (one of the world's top climate scientists, and a contributing author and reviewer of the UN's IPCC reports), in his testimony to the U.S. Senate in late 2007, described how

government climate scientists ran two of the best climate models in the world to predict the future climate in the southeastern U.S. One model predicted Florida would become jungle-like. The other predicted Florida would become semi-arid grassland. Even more telling, not one of the world's climate models can accurately reproduce the actual climate history of the 20th century. In fact, the earth has actually cooled slightly over the past 10 years – not one of the models predicted that!

Is it really appropriate to ask Americans (and the rest of the world) to forego the lifestyle made possible by today's energy technologies based on the highly dubious outputs of computer models?

But let me concede that the reality for American consumers is that whether you agree that the science is settled or not, *the political science is settled*. With the media cheering them on, Congress and the Obama administration have promised to "do something". CO2 regulation is coming, whether it will work – and whether it will do any good - or not. Indeed, President Obama's hope of shrinking his now massive budget deficits depends on vast new revenues from a tax on carbon energy – so called "cap and trade". Harry Reid promises to get a bill passed by August.

Under cap and trade, the government would try to create a market for CO2 by forcing companies that emit CO2 to buy carbon credits from the U.S. government. The government would set a cap for the maximum amount of CO2 emissions. Over time, the government would ratchet the cap lower. In theory, this will force American companies to invest in lower-carbon technologies. The costs of course would be passed on to consumers, and because virtually everything we do and consume in modern life has a carbon footprint, the cost of just about everything will go up. This in theory will force all of us to buy products and services that have a lower-carbon footprint. Any way you slice it, cap and trade is a tax on the way we live our lives – one designed to produce a windfall for government. Obama's budget assumes $650 billion in revenues from cap and trade over the next decade. Some argue that the actual costs to the U.S. economy will be three times this amount.

Mr. Obama's long-term goal with cap and trade is '80 by 50'– an 80% reduction in human CO2 emissions by 2050. Let's do the easy math to see what '80 by 50' means for Utah.

Utah's carbon footprint today is about 66 MM tons per year. Our population is 2.6 MM. Divide those two numbers, and the average Utahan today has a carbon footprint of about 25 tons CO2 per year. An 80% reduction in Utah's carbon footprint by 2050 implies a reduction from 66 MM tons CO2 today to about 13 MM tons per year by 2050. But wait - Utah's population is growing, and if it continues to grow at, say, 2% per year, by 2050 there will be nearly 6 MM people living in our state. So 13 MM tons divided by 6 MM people = 2.2 tons per person per year. Under '80 by 50' by the time a teenager today reaches my age he or she will be forced to live with a carbon footprint of just 2.2 tons per year, compared to 25 tons for the average Utahan today. Q: when was the last time Utah's carbon footprint was as low as 2.2

tons per person? A: probably not since Brigham Young and the Mormon pioneers first entered the Salt Lake Valley.

You reach a similar conclusion when you do the math on '80 by 50' for the entire country. '80 by 50' would require a reduction in America's carbon footprint from about 20 tons per person per year today, to less than 2 tons per person per year in 2050. Q: when was America's carbon footprint as low as 2 tons per person per year? A: probably not since the Pilgrims landed at Plymouth Rock in 1620.

In short, '80 by 50' means that by the time today's teenagers reach my age, they will not be allowed to use anything made with - or made possible by - fossil fuels.

So I want to focus you now on this critical question: "How on God's green earth – pun intended- are our kids going to do what my generation said we would do but didn't – and that's wean themselves from fossil fuels?" That's a conversation that all Americans need to engage in now -- because when it comes to "how" there's clearly *no consensus*. Simply put, with today's energy technologies, we can't get there from here.

The hallmark of our problem is our inability to reconcile our prosperity and our way of life with our environmental ideals. In America we love our cars. We like the freedom to "move about the country" – to drive to work, drive our kids to soccer and fly off for vacation or to visit distant friends and family. We aspire to own the biggest house we can afford. We like to keep our homes and offices warm in the winter and cool in the summer. We like devices that use electricity – computers, flat screen TVs, cell phones, the Internet, and many other conveniences of modern life that come with a power cord. We want food that's low cost, high quality, and free of bugs – which means farmers must use fertilizers and pesticides made from fossil fuels. We like things made of plastic and clothes made with synthetic fibers – and all of these things depend on abundant, affordable, growing supplies of energy.

And guess what? We share this planet with 6.2 billion other people *who all want the same things*.

America's energy use has been growing at over 1% per year, driven by population growth and prosperity. But while our way of life depends on ever-increasing amounts of energy, we're downright schizophrenic when it comes to the things that energy companies must do to deliver the energy that makes modern life possible.

We want energy security – we don't like being dependent on foreign oil. But we also don't like drilling in the U.S. Millions of acres of prospective onshore public lands here in the Rockies plus the entire east and west coast of the U.S. are off-limits to drilling for a variety of reasons, some valid, some not. We hate paying $2 per gallon for gasoline -- but not as much as we hate the refineries that turn unusable crude oil into gasoline. We haven't allowed anyone to build a new refinery in the U.S. in over 30 years. We expect the lights to come on when we flip

the switch, but we don't like coal, the source of 50% of America's electricity – it's dirty and mining scars the earth. We also don't like nuclear power, the source of nearly 20% of our electricity - it's clean, the French like it, but we're afraid of it. Hydropower provides 6% of our electricity. It's clean and renewable. But it too has been blacklisted – dams hurt fish.

We don't want pollution of any kind, in any amount, but we also don't want to be asked: "how much are we willing to pay for environmental perfection?" When it comes to global warming, *Time* magazine tells us to "be worried, be very worried" – and we say we are -- but we don't act that way.

Let me suggest that our conversation about how to cut CO2 emissions begin with a few "inconvenient" realities.

Reality 1: America's and the world's demand for energy will grow by 30-50% over the next two decades – and will likely double, if not triple, by 2050. Simply put, America and the rest of the world will need all the energy that markets can deliver.

Reality 2: There are no near-term alternatives to oil, natural gas, and coal. Like it or not, the world runs on fossil fuels, and it will for decades to come. The U.S. government's own forecast shows that fossil fuels will supply about 85% of global energy demand in 2030 – roughly the same as today. Yes, someday we'll find alternatives. But that day is still a long way off. It's not about will. It's not about who's in the White House. It's about thermodynamics and economics.

Now, since the 1970s we've been told that wind and solar power are 'alternatives' to fossil fuels. A more honest description would be 'supplements'. Taken together, wind and solar power today account for just one-sixth of 1% of America's annual primary energy consumption. Let me repeat that statistic – one-sixth of 1% -- .0016.

I'm holding a PowerPoint pie chart. The pie denotes total U.S. *primary* energy use today. PowerPoint won't even make a wedge for wind and solar – the contribution of wind and solar is just a line on the pie. Over the past 30 years the U.S government has poured by some estimates $20 billion in taxpayer subsidies into wind and solar – and all we've got to show for it is a thin line!

Undaunted, President Obama proposes to *double* wind and solar power generation in this country by the end of his first term. That's wonderful – but I would point out that wind and solar power output doubled in just the last three years of the Bush administration. Granted, W. started from a lower baseline, so doubling again over the next four years will be a taller order. But if President Obama's goal is achieved, wind and solar will grow from one-sixth of 1% to a combined one-third of 1% of total energy use – a slightly thicker line on this PowerPoint slide - and that assumes energy use remains stagnant, which of course it will not.

The problems with wind and solar power become apparent when you look at their footprint. To generate electricity comparable to a 1,000 MW gas-fired power plant you'd have to install roughly 1,500 very tall windmills occupying more than 30,000 acres of land. [Promoters of wind mislead the public (and the media) when they tout "installed capacity" rather than actual energy production. Even the most productive windfarms operate at a load factor of less than 35% - many less than 15%].

Then there's solar. I'm holding up a *Denver Post* article that tells the story of an 8.2 MW solar photovoltaic plant built on 82 acres in SW Colorado, which *The Post* proudly hails "America's most productive solar electricity plant". But adjusted for periods when the sun doesn't shine, you'd need roughly 250 of these plants, on roughly 20,000 acres to replace a single 1,000 MW gas-fired power plant *that can be built on less than 40 acres*.

Because the wind doesn't always blow and the sun doesn't always shine, until there's big breakthrough in high-density electricity storage – a problem that's confounded scientists for more than a century – wind and solar cannot be relied upon to provide base-load power.

And it's not just thermodynamics. It's economics. Over the past 150 years America has invested trillions of dollars in our existing energy systems – power plants, the grid, steam and gas turbines, railroads, pipelines, refineries, service stations, boilers, airplanes, ships, cars, trucks, etc. Changing that infrastructure to a system based on renewable energy will take decades and massive new investment. One of the biggest barriers is our hopelessly fragmented electric-power grid. Interior Secretary Ken Salazar recently said we could replace all of America's coal plants with windfarms in windy places like North Dakota and offshore Massachusetts. Notwithstanding the bogus math, Secretary Salazar overlooked one fairly important detail – even if we get the public to accept hundreds of thousands of windmills of the U.S. east coast we can't move the power to where we use it. Nobody wants a 500,000 volt power line in their neighborhood. "Smart grid" doesn't exist – it's a concept.

What about geothermal power? The *Salt Lake Tribune* recently celebrated the planned startup of a 14 MW geothermal plant near Beaver, Utah. That's wonderful, but the *Tribune* failed to put 14 MW into perspective. Utah alone has over 7,000 MW of installed capacity, primarily coal. America has about 1,000,000 MW of installed capacity. Because U.S. electricity demand is growing at over 1% per year – we need to build over 10,000 MW of new capacity every year to keep pace with growth. Around the world, demand for coal is booming – over 200,000 MW of new coal plants are under construction, 30,000 MW in China alone. In fact, there are 30 coal plants nearing or under construction in the U.S. today that when complete will burn about 70 million tons of coal per year.

Mr. Gore, the inconvenient truth is that our energy choices are ruthlessly ruled by the immutable laws of thermodynamics. In engineer-speak, turning diffused sources of energy such as photons in sunlight or the kinetic energy in wind requires *massive* investment to concentrate that energy into a form that's usable on any meaningful scale. To be clear, we need

all the wind and solar power *the markets can deliver at prices we can afford*. But please, let's get real -- wind and solar are not "alternatives" to fossil fuels.

<u>Reality 3</u>: You can argue about global warming, but there's no argument about the consequences of cap and trade regulation – it's going to drive the cost of energy painfully higher. That's the whole point of cap and trade – to drive the cost of energy higher so that otherwise uneconomic, politically-favored "alternatives" can compete. Some estimates put the total cost of cap and trade to U.S. consumers at $2 trillion over the next decade and $6 trillion between now and 2050. That doesn't include the net loss of jobs in the energy industry and in manufacturing industries that use significant amounts of energy and that must compete in global markets.

Given this staggering cost, I hope you'll ask: will cap and trade work? If Europe's experience with cap and trade is an indication, the answer is "no", not until we have real alternatives to fossil fuels. The EU implemented a cap and trade scheme in an effort to meet their Kyoto commitments to cut CO2 emissions to 5% below 1990 levels by 2012. But since 2000 Europe's CO2 emissions per unit of GDP have grown faster than the U.S.! The U.S. of course did not implement Kyoto - nor did over 150 other countries. There's a reason why most of the world rejected Kyoto, and why all but one of the European countries that did sign it are failing to meet their carbon-cutting promises: with today's energy technologies there's no way to sever the link between CO2 emissions and modern life. Europe's cap and trade scheme was designed to fail – and it's working as designed.

Let me do the math to explain why Kyoto would have failed in the U.S. and why Obama's cap and trade scheme will also fail. Americans were responsible for just over 5 billion metric tons of CO2 emissions in 1990. By 2005 that amount had risen to about 5.8 billion tons. Let's suppose that the U.S. had joined the Europeans. Under Kyoto America would have agreed to cut manmade CO2 emissions to 7% below that 1990 level – to about 4.6 billion tons, a 1.2 billion ton per year cut.

Question: What would it have taken for the U.S. to cut CO2 emissions by 1.2 billion tons per year by 2012? Answer: a lot more sacrifice than riding a Schwinn to work or changing light bulbs.

We could've banned gasoline. In 2005 gasoline use in America caused about 1.1 B tons of CO2 emissions. That would almost get us the required 1.2 billion ton cut. Or, we could shut down 60% of the coal-fired power plants in this country – coal plants generated about 2 B tons of CO2 in 2005. Of course, before we did that we'd have to get over 60 million Americans and a large number of American businesses to volunteer to go without electricity.

This simple math is not friendly to those who *demand* that government mandate sharp cuts in manmade CO2 emissions -- now.

<u>Reality 4</u>: Even if America does cut CO2 emissions, the same computer models that predict manmade warming over the next century also predict that Kyoto-type CO2 cuts will have *no discernible effect* on global average temperatures for decades, if at all. When was the last time you read that in the paper? The proponents of cap and trade will tell you it's "just a first step." If your kids were here, I hope they'd ask: "what's the second step?"

That begs another question: "how much are Americans willing to pay for 'a first step' that has no discernible effect on global warming?"

The answer here in Utah is: not much, according to a public opinion poll conducted by Dan Jones and Associates published in the *Deseret News.* 63% of those surveyed said they worry about global warming. But when asked how much they'd be willing to see their electricity bills go up to help cut CO2 emissions, only half were willing to pay more for electricity. Only 18% were willing to see their power bill go up by 10% or more. Only 3% were willing to see their power bill go up by 20%.

Here's the sobering reality: many Europeans today pay at least 20% more for electricity as a consequence of their (failed) efforts to sever the link between modern life and CO2 emissions.

Cap and trade will do more than just raise your energy costs. It's a proven job killer. Manufacturing industries - cars, chemicals, aluminum, steel, paper, etc. - are energy intensive. To compete in global market these industries over time gravitate to where energy costs are lower. Californians, for example, "enjoy" some of the highest energy costs in the country. California today is hemorrhaging manufacturing jobs. Google has moved its massive, electricity-guzzling server farms from California to Oregon, where power costs are lower.

So when you hear promoters of wind, solar and other uneconomic forms of energy tout all the "green jobs" that will be created by cap and trade, I hope you'll ask: "how many jobs will be lost in other industries? President Obama likes to point to Spain as a role model for the "greening" of America. A recent, well-documented study of Spain's experiment with renewable energy mandates concludes that for every so-called "green" job Spain lost 2.2 jobs in other areas.

So, if Americans aren't willing to pay a lot more for their energy, how do we reduce CO2 emissions? Well, here are a few things we can all agree on. First, we can improve energy efficiency. Second, we can stop wasting energy. Third, we can conserve energy. Fourth, we can rethink our irrational fear of nuclear power. And fifth, we can embrace one of the IPCC recommendations that even Mr. Gore agrees with - substitute low-carbon natural gas for higher-carbon coal and oil.

Indeed, when you do the math, the inescapable conclusion is that greater use of natural gas will be a consequence of any cap and trade scheme. You cut CO2 emissions by up to 50% when you use natural gas instead of coal to generate electricity. You cut CO2 emissions by up to 30%

when you use natural gas instead of gasoline in your car or truck - and here in Utah you save a lot of money. You can fill up your natural gas car at a cost of about 80 cents per gallon equivalent. You also cut CO2 emissions by 30-50% when you heat your home with natural gas instead of fuel oil or electricity.

Greater use of natural gas will also help reduce oil imports. Unlike oil, 98% of America's natural gas supply comes from North America. What's more, thanks to advances in technology and the ingenuity of people in the natural gas industry, America and the world are "swimming" in natural gas, thereby ensuring abundant supplies at an affordable cost. Indeed, the wholesale price of natural gas in the U.S. today is less than $24 per barrel equivalent – a true bargain given its clean-burning attributes.

Sixth, we need to focus on new technology and not just assume it. Everyone talks about "clean coal". Well, there's no such thing as "clean" coal – not on a scale and cost that renders it a viable near-term option for cutting CO2 emissions from new or existing coal-fired power plants.

Carbon capture and sequestration will be hugely expensive and it'll take decades to implement *on any meaningful scale*. The high costs will be passed through in electricity rates to consumers. It's not just the fact that "capture" technology is unproven - innovative Americans will someday figure out how to cost-effectively capture CO2 from power plants. But then what are we going to do with the huge volumes of CO2? We'll have to build a massive pipeline grid to transport CO2, which some estimate may ultimately be as extensive as our existing natural gas pipeline grid. We'll have to drill thousands of wells and build compressor stations to inject CO2 into the ground. The facilities required to do this will consume huge amounts of energy – which ironically will come from fossil fuels! And where are the underground locations suitable for storing all this CO2? Questar is one of the largest owner-operators of underground natural gas storage in the country. Gas storage is in high demand - we're always looking for places to build cost-effective storage. But I can tell you that there aren't many places left that are economic to develop. That's surely the case with CO2 sequestration as well.

Given America and the world's (growing) dependence on coal for electric generation, we need to fund R&D aimed at capturing and storing CO2 from fossil fuel plants. But let's get real – with today's technologies, "clean coal" is an oxymoron.

Seventh (for those that are still counting!), it's time to have an honest discussion about alternatives to cap and trade. What about adapting to global warming? In truth, while many scientists believe man's use of fossil fuels is at least partly responsible for global warming, many also believe the amount of warming will be modest and the planet will easily adapt. Very few climatologists and meteorologists endorse Mr. Gore's doomsday scenario. Just about everyone agrees that a modest amount of warming won't harm the planet. In fact, highly-respected scientists – Harvard astrophysicist Willie Soon, to name just one - believe that added

CO2 in the atmosphere may actually benefit mankind because more CO2 means robust plant growth. When was the last time you read that in the paper?

You've no doubt heard the argument that even if global warming turns out not to be as bad as some are saying, we should still cut CO2 emissions – as an "insurance" policy – the so-called precautionary principle. While appealing in its simplicity, the precautionary principle is deeply flawed.

For one, none of us live our lives according to the precautionary principle. Take cars, for example. Around the world about 1.2 million people die each year in car accidents – about 3,200 deaths a day. At that pace, 120 million people will die this century in a car wreck somewhere in the world. We could save 120 million lives by imposing a 5 mile-per-hour speed limit worldwide. Show of hands: how many of you would be willing to live with a 5 MPH speed limit to save 120 million lives? If you own a bicycle you might, but most won't. You implicitly accept the costs – 120 million lives – for the benefits of driving. So before we start down this expensive and likely futile cap and trade path, don't you think we should insist on an honest analysis of alternative responses to global warming?

Some in the media dwell on the theoretical worst-case harm from global warming, but ignore the fact that the proposed cure will also do great harm. We have a finite amount of wealth in the world with which to "do good". We have a long list of problems – hunger, poverty, malaria, rampant HIV in Africa, nuclear proliferation, just to name a few. Shouldn't we ask: how can we do the most good with our limited resources? The opportunity cost of diverting a large part of current wealth to solve a potential problem 50-100 years from now means we do "less good" dealing with these other problems.

What's more, economists will tell you that the consequence of cap and trade - slower economic growth, compounded over several decades - means that we leave future generations with less wealth to deal with the consequences of global warming, whatever they may be.

In truth, human beings have proven to be remarkably adaptive. Humans live north of the Arctic Circle where temperatures are below zero most of the year. Roughly one-third of mankind today lives in tropical climates where temperatures frequently exceed 100 degrees – and biodiversity thrives! And it's an irrefutable fact that far more people die each year from cold-related causes than from heat.

In fact, you can take every one of the potential problems caused by global warming and identify lower-cost ways to deal with that problem than government-coerced energy rationing. For example, if melting arctic ice causes the sea level to rise, a wealthier world will adapt over time by moving away from the beach or building homes on taller foundations or building retaining walls to protect beachfront property. (Incidentally, the sea level rise depicted in Gore's movie *An Inconvenient Truth* isn't based on science – in truth much of the claimed "science" in the former Vice President's movie is really just science fiction). Then there's the

poor-old polar bear. Contrary to the heart-wrenching image on the cover of *Time* of an apparently doomed polar bear stranded on a floating chunk of ice, polar bears have been documented to swim for miles. Polar bear populations are growing. Polar bears have survived sometimes dramatic climate change over thousands of years, most recently the so-called "medieval warm period" from 1000-1300 A.D. in which the arctic glaciers melted, Greenland was truly a "green" place where agriculture, bears (and people) thrived. In fact, more polar bears die each year from gunshot wounds than from drowning. Instead of capping energy use, perhaps the first thing we should do to protect polar bears is to stop shooting them!

Let me close by returning to the lessons learned from the 1970s energy crisis. We've learned that energy choices favored by politicians but not confirmed by markets are destined to fail. In fact, we've relearned that same lesson over the past few years with federal ethanol mandates. If history has taught us anything it's that we should resist the temptation to let politicians substitute their judgment for that of the markets. Instead, we should let markets determine how much energy gets used, what types of energy get used, where, how and by whom energy gets used. In truth, no form of energy is perfect, thus only markets can weigh the advantages and disadvantages of different sources of energy. Government's role is to set *reasonable* standards for environmental performance, and then make sure markets work.

The cap and trade train is about to leave the station. Global warming is by definition is a global problem, thus the carbon footprint of a person living n China matters as much as your carbon footprint. The stakes are clearly high – thus it's high time for business people and others who care about our future to stand up and insist that we get the facts – not hype and propaganda – about global warming and America's options for addressing it.

So, once again with apologies to Paul Harvey, there you have it - "the rest of the story"! Thank you for your attention, and if we have time I'll be glad to take rebuttal!