

Jimmie: Thanks very much, Paul. It's a great pleasure to be with you today for this celebration. Congratulations on reaching 250 million tons. It's a terrific accomplishment. Each of those tons represents a ton of carbon dioxide emissions that didn't get into the atmosphere, and we're very thankful for that.

Today I'm going to try to do three things if we get this PowerPoint presentation up. First I'm going to tell you a little bit about The Nature Conservancy so you have a feeling for why we care about renewable energy and your industry specifically. Secondly, I'm going to speak a little about climate change and the science behind climate change. And finally, I'm going to talk about renewable energy options and talk about the comparative advantages of the waste-to-energy industry as compared to wind and solar and others.

When the Conservancy was first founded, it was just a group of scientists - - biologists and botanists and the colleges -- and they would find neat places that had a high degree of biodiversity and they would raise money to protect those places, and so we started out by creating nature preserves across the country. Today we have 1400 nature preserves that we own and manage around the world, so it's still a substantial part of our business. But in the 1990s, we discovered that those preserves were threatened by development andspecies and open fire machines and that they weren't sufficient in their size and their scope to actually protect the biodiversity that's our mission. And so we reexamined our mission and how we did our work and came up with a new strategy that we call Conservation by Design, and it works at the landscape scale. It works on a much larger scale than we had worked on in the past. The first part of this effort is the division of the country into 80 ecoregions, we call them. They're based on vegetation, on climate, on geology. Each of them are about the size of a state, but they're areas where the habitat is similar, the biodiversity is similar, the critters that live in the area and the way they interact is similar. So it starts with these ecoregions, and we do scientific assessments of each ecoregion. This--look at up there in the upper left-hand corner. You see that big blue blob up in Montana and the Dakotas and a little bit of Nebraska and Wyoming? That's reduced to this area here. That's the same area highlighted. Now, what The Nature Conservancy does is analyze that ecoregion and tries to determine which areas of the ecoregion are high in biodiversity, where the habitat is still in pretty good shape, and where we think we can manage the threats into the long-term future so that if those areas were preserved in approximately their current condition, the biodiversity that's represented over that whole entire region would be preserved in perpetuity. And so we identify these areas we call portfolio sites and we work with the landowners in those areas to preserve these locations in their current status. In each of the ecoregions, these portfolio sites amount to about 30 percent of the landscape. Here in Montana and the Dakotas it's a little bit greater than that, but each of these places are places now where The Nature Conservancy is working. Because the land is owned by many parties, when you work at the landscape scale, you need to learn how to work with partners. It's not about buying the land anymore, it's not about putting it into national parks. It's figuring out how to work with ranchers

and farmers and folks that are cutting timber so they can go on doing that activity and preserve the biodiversity at the same time. So these are what we call portfolio sites. The Nature Conservancy's a very federated organization. We're sort of more powerful at the state level. Each state has a series of projects like this that they work on.

The next slide is the beginning of the climate change piece. This is a depiction of the climate change problem. The blue line is emissions from human activity, carbon dioxide emissions from human activity. It starts at--in 1850 becoming an important factor, but you can see now that it's rising almost exponentially. The carbon emissions globally are 7 billion tons. Measured as carbon dioxide, that would be about 28 billion tons. Carbon, when it goes in the air, stays in the air for a long time. It's out there for thousands of years, and so the concentration of carbon dioxide in the atmosphere is gradually increasing. That's the orange line. Before the Industrial Revolution, it was at about 280 parts per billion. Today it's at about 385 parts per million So as this concentration goes up, it forms a blanket around the earth, and it's that concentration of CO² that's causing temperatures to increase. It's the concentration of CO² in the atmosphere and the increasing concentrations that causes climate change. There are other greenhouse gases in addition to CO², but it's the principal factor.

This is the Glacier National Park and this is a simulation done by the US Geological Survey on how the habitat in the park is changing as a result of increasing temperature. We started in 1850 and we're gradually moving out to 2100, and you can see the habitat change. It was originally mostly forest and now you see this expanding area of grassland in the park. So as if The Nature Conservancy had picked this spot as a place to protect as a portfolio site and habitat changed that way, the biodiversity that we were expecting to be there in perpetuity would leave. The habitat actually jumps right off the top of the mountain. If you're a critter that depends on the habitat as it moves up the mountain, eventually you're extinct because your habitat is gone. The same thing happens globally. These habitats move north as the temperature increases. The other thing that's going on in this simulation is the glacier disappeared. That glacier in the summertime provides snow melt for the rivers and streams in the area, and so as it dries up, those streams and rivers dry up and the habitat in those streams and rivers changes dramatically, and the biodiversity we were expecting to protect disappears as well. So this is a pretty dramatic illustration of how climate change affects the mission of the Nature Conservancy. Stuff that we've invested in for the last 40, 50 years is moving north and moving up the mountain and changing the success rate that we have as an organization in protecting biodiversity.

Now we're going to talk a little bit about what the country's planning to do about climate change. This first line is CO² emissions in the United States. Starting about now, it's a little bit more than 6 billion tons a year, and rising to more than 12 billion tons by 2050 if we don't make any changes. If we don't adopt climate

change policy or use renewable resources or practice conservation, this is the path that we're on through 2050. This is what we need to do to protect biodiversity and human communities. We need to reduce our emissions by about 80 percent by the year 2050. The 550 part per million concentration is about double the pre-industrial level. Remember, I said it was 280 and now 550 would be about double that level. If you double carbon dioxide in the atmosphere, the temperature goes up by about 5.5 degrees every time you double it. So if we go from 280 to 550, you're going to get a 5.5-degree Fahrenheit temperature increase. If you double it to 1100, you can another 5.5 degrees. And we're on you can see we're on a path to that. The 450 line, we keep the temperature increase to about 3.5 degrees, and generally now in the scientific community, that 3.5-degree increase is considered the limit of what's safe. Beyond that, coral reefs in the oceans bleach and disappear. Beyond that, a substantial portion of the species on earth disappear. Beyond that, the ice sheets melt and we have a high sea level rise that affects human communities all over the globe. That's the Kyoto Protocol, the famous Kyoto Protocol that was negotiated in the 1990s. It would have reduced greenhouse gas emissions by a small amount, but not nearly enough over the long run to accomplish our objective. It expires in 2013. In 2003 and 2005, the Congress debated the bill called McCain-Lieberman, and it would have frozen US carbon dioxide emissions at 2000 levels by 2010. You can see it makes almost no contribution to solving the problem. It was defeated twice, the first time in 2003 by a vote of 57 to 43, and the second time it only got 39 votes. But you'll see it was even weaker than Kyoto. Well, for the past few months, the Congress has been debating that legislation. This is called the Lieberman-Warner Bill, and actually you see it falls between the 450 and 550 line. It actually would do the job over the next 40 years to reduce our CO² emissions. But you see they would have been 12 billion tons under business as usual, and now they have to be somewhat below--about 1.4 billion tons by 2050. And so this is a very tough job for the country and for the Congress to enact. This is a bigger task, I think, than--well, now that we have a financial crisis, I might not say that, but a bigger task than all but two -- World War II and the Civil War. If the government actually organizes our country to accomplish this emissions reduction, it will be a huge, huge achievement. Most people think not much has been going on in the United States about climate change for the last while, that we need to get with it and we need to move forward. Well, a lot has been happening. The debate has really shifted from a very small reduction to a change that would actually make a big difference in the climate.

If we put a cap-and-trade program in place and we have a climate change policy in the United States, what happens? This is a picture of electricity production going out to 2030. The bar on the far left-hand side is a reference case. It's what we would expect if we didn't have a climate change policy. Electric generation would increase by about 250 gigawatts. A gigawatt is 1,000 megawatts. It's the size of a big coal fired power plant or a big nuclear plant. We'd have 250 new electric plants and most of them would be either coal, the light green, or natural gas, so we'd have to do 250 to keep up with increasing energy

demand. If we adopt a climate change policy, we have to add twice as much generation, which seems ironic, that if you're going to reduce emissions, you'd be building so much more coal fired power--or so much more electric capacity, but the reason is that we have to abandon a lot of the existing coal fired power plants and replace them with other energy sources. The first bar is what happens if you just take the basic economic assumptions about what's cheapest. Most of the addition is nuclear power. That big yellow piece in the middle of the second bar there is nuclear power additions. It's 250 gigawatts, 250 new nuclear power plants in the United States. Of course, they're hard to finance now because it's impossible to know how long the permitting process will take, and so nobody can borrow any money to do a nuke plant. And so this third bar over here shows what happens if nuclear power continues to have difficulties, and what it shows is that most of the new power will come from renewable sources from wind and solar, geothermal, dedicated energy crops for electricity generation. And there's also a big piece of natural gas you can see in that bar.

The final chart analyzes a different bill that has huge subsidies for carbon capture and storage of carbon from power generation, and you see if the government provides a big subsidy for that, the dark green part of that last bar indicates that coal fired power could come back in the mix. The carbon dioxide that would be emitted from these coal fired power plants would be captured and then it would be sequestered in the ground in deep geologic formation. So there are different paths to the energy future as a result of climate change legislation. It might be a lot of nuclear power, it might be a lot of renewable power, or if certain technologies develop, the coal fired capacity and other fossil fuels could play a role.

So I brought you to this point to say that we need to talk about these renewable sources, because if nuclear can't pick up, then we have a lot of new capacity, 500 gigawatts of new-capacity renewable sources. Renewable energy such as solar, wind, geothermal, energy to waste will have to play a substantial role in our future, but it's not a panacea for our climate change problem. There are issues with renewable energy, and these are the four most important. Many of the sources of renewable energy are not cost-competitive with the power that's on the grid today. Secondly, the production is intermittent. The wind doesn't blow all the time, the sun doesn't shine all the time. Wind capacity is about 30 percent of the name plate capacity, so if you have 1,000 megawatts of wind turbines, you're only getting about 300 megawatts of power on a yearly basis. The capacity for solar is even lower, so it's intermittent power that has to be backed up by other investments. A third problem with renewable sources is that they're often located in areas that are--the resource is not where people live like the solar resources in the Mohave Desert in the United States. As you'll see in a minute, much of the wind resource is in the middle of the country where the population is low and there's never been too much transmission built to those facilities. And the final item that I'm going to focus on in a bit, and even to a greater degree, are the land use requirements for the renewable sources. They have a power density problem,

as it's called. They produce much less energy per area of land than the fossil and nuclear sources that we're going to be leaving. It takes a tremendous amount of land to produce an equivalent amount of energy.

So I'm going to pick a little bit on wind. I'm not suggesting that I think wind power is bad, I think wind power is going to have to be a big part of our future, but I'm going to use wind as an example of these problems. This is the sparsely populated problem. The major wind resource in the United States is in the middle of the country. It's a terrific resource. You can generate half the electricity used in the United States with the wind energy that's available in South Dakota alone. So there's a massive resource out there, but since nobody's lived there, there isn't any transmission facility out there to carry that wind energy to the load centers where people need it. And so even if you use the resource and even if it were competitive, you'd have to spend billions and billions and billions of dollars in transmission. There is a fair amount of wind energy off the east coast of the United States, New Jersey just this week approved a new plan to develop wind off the coast, and Delaware's in the game and Rhode Island's in the game. And so I think you'll see over the next 20 years a tremendous explosion of wind energy off the east coast of the United States in response to a climate change policy.

The second aspect of wind energy is the land use impact. Out in the middle of the country where you saw the wind resource is located, the biodiversity that we try to protect is land-nesting birds, and they see these big towers as roosts for raptors. They just don't go there. They don't breed, they don't nest, they don't feed anywhere around one of those big towers because they think that there's a raptor there waiting for the attack. So around one of those towers, literally there's a two-mile circle--a two mile in diameter circle where birds won't nest and breed, and so when you run those across the horizon, you've just fragmented that habitat. I'm going to give you a comparison. If you build a nuclear power plant of 1,000 megawatts, you can put it on about 1,000 acres, and this is the comparison. T. Boone Pickens, as part of his wind to natural gas plan, has proposed to build the largest wind farm in the United States. It's going to be 4,000 megawatts. But because it only has a capacity factor of 30 percent, those 4,000 megawatts are only going to produce the same amount of power as a 1,000-megawatt nuclear power plant, so it's 4,000 megawatts of wind to 1,000 megawatts of nukes. The nuclear power, as I said, can sit on 1,000 acres. The T. Boone Pickens wind farm is going to cover 312 square miles across four counties in Texas. So that's a comparison of the kind of land use impact that you get when you shift from a nuclear or a fossil fuel to a wind energy resource.

This again is South Dakota, and I told you that I was going to come back to South Dakota. You saw that ecoregion that touched down in South Dakota. This is the wind energy resource of South Dakota, and if you can see it back there, the little green circles are those portfolio sites I talked to you about. Those are The Nature Conservancy's preserves. And when you look at eastern South Dakota, the bright red areas are the place where the wind resource is the best. When you generate

wind energy, exponentially you get twice; if you increase the average speed of the wind by two, you get four times as much power. It's absolutely necessary, if you want to make a profit, to locate your wind facilities in the best resource, and you can see the conflicts that occur out there in South Dakota, where our preserves are and where the wind energy resource is quite high. So as that resource develops and as they build transmission into the area, The Nature Conservancy is concerned and beginning to map these potential conflicts so that we can deal with the biodiversity impact. It's possible to locate wind facilities and to do mitigation activities that reduce the impact on birds, but these are bird preserves and it's clear to us that this conflict is coming.

So the final point on the energy sprawl, we call this energy sprawl, the notion that when we shift from fossil and nuclear to the renewable resources, we're going to pay a price in loss of habitat, because these renewable resources really gobble up land. If you do conservation, if you put insulation in a building or you increase the vehicle fuel economy of your car, it doesn't take any square miles at all. As I said, nuclear and fossil are something like 1,000 to 2,500 acres for 1,000 megawatts of generation. Even solar energy has a pretty high land use impact. It would take 90 square miles to generate the same amount of energy as a 1,000-megawatt plant. The really big one is biomass, a dedicated energy crop, especially for biofuels. The Prudhoe Bay oilfield in Alaska is eventually going to produce about 13 billion barrels of oil. We've already used 11 billion barrels. It takes up about 200,000 acres in total. If you draw a circle around all the facilities in Prudhoe Bay, it's 200,000 acres. Sitting right next to it is the Arctic National Wildlife Refuge. It's 19.8 million acres. To produce as much biofuel as we're going to produce as much energy fuel as we're going to get from Prudhoe Bay from biofuels, we'd have to grow corn on an area three times bigger than the Arctic National Wildlife Refuge for 30 years. So that's an example of the kind of penalty you pay when you shift away from fossil fuels to these renewable resources.

That's not the case for your industry. The great comparative advantage you have on all of these factors is that renewable energy from your facilities, from waste combustion, is where people are by definition. You're collecting waste, your capacity is where people live. It's not intermittent, it's a baseload capacity. You don't have to back it up with a natural gas facility in order to operate it. And instead of demanding increased land, it actually reduces the amount of land that's necessary to landfills. It is cost-competitive today, so there's tremendous advantage in your form of renewable energy compared to the other sources that we're looking forward to. So we know that renewable energy has to come, we know that climate change makes it necessary. But for The Nature Conservancy it's a mixed blessing, because our mission in life is to protect land, and these sources take up a lot of land. The one exception is yours and nuke geothermal, and so I'm really glad to be here to communicate with Tony to the folks across the country that this is a promising renewable resource that the country can count on because it doesn't have any of these disadvantages that apply to other renewable energy sources.

Our obligation is an 80 percent reduction. In terms of energy services, I think that everybody in the business tries to think that we're going to provide the same level of comfort. It's not a matter of turning down your thermostat. You're going to be able to go the same number of miles. It's not abandoning your mobility. We still want you to get those services. But we want that to happen in a different way, and part of it conservation, energy efficiency. There are, right now, energy efficiency strategies that are available today for buildings and appliances that would pay for themselves. The money you would save in energy costs in your home would more than pay for the capital investment that would reduce US greenhouse gas emissions by 1 billion tons a year. And remember that slide that had the reference case for power generation in the future that showed 250 gigawatts? If we put that stuff in an aggressive way, we wouldn't need a single gigawatt in that whole entire thing. We could avoid 250 gigawatts of new generation capacity by doing the conservation in buildings and appliances that are available today. It's not about being less comfortable or having less light. It's about changing the technology in buildings and appliances so that you can have the same level of service but have a lot less impact on the environment.

Thank you all for having me today.