

# Duke Energy's Role in Building a Low-Carbon Global Economy

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I am delighted to be here today. I really appreciate the opportunity to be here and be invited by you all. The world is getting to be a much smaller place, and global concerns are really critical. Many of you in this room think of us as your local utility. An interesting factoid for you to think about is if you look at our top 50 customers and our top 50 vendors, 90 percent of those companies are global companies. That says a lot about how the world is evolving and how globalization is working. What I would like to do today is talk to you about climate change and our company's position on that, but I wanted to put it in the context of what's going on in China.

I have a 19-year-old grandson named Alex. He graduated from high school just several months ago, and before that I asked him, "Alex, if there's any place in the world your grandfather can take you, where would you like for me to take you?" I was kind of hoping he'd say, "Well, let's go fly fishing or play golf." He said, "Let's go to China." I said, "Okay, let's do that." So we took Alex to China. It was the 12 days leading up to the Olympics, and I thought about that experience. It was purely for the fun of going to China.

I read a lot of books to get up to speed because I'd never been to China before. I've read a lot about what's going on. In those 12 days, I learned a lot, but also it gave me an insight in terms of what we're doing in this country in terms of dealing with energy and environmental issues, and how we're thinking about our economy for the future. So I'd like to start my conversation with you all today because I'm going to try to roll through this in less than 30 minutes so that we have time for questions. I know you all have questions about our company and what we're doing, and I would welcome an opportunity to do that; but I'm going to try, in a "pony express" way, to work my way through this. These are my early impressions as I think about where we are in this country and where China is, going forward.

China has thousands of years of history, but this trip in many ways was like stepping into the future, with many glimpses around every corner at the past. The cities, the growth and the pace of the people I found amazing. If you've been there recently or if you've been catching some of the Summer Olympics coverage, especially the opening ceremonies, you know what I'm talking about. China is a nation that is making big things happen; not only economically but environmentally. Let me give you a side-by-side comparison that sets the stage.

Geographically, they're about the same size as the U.S. They have 1.3 billion people compared to our 300 million. Their economy is growing at a much faster pace than our economy is. They have tens of millions of people migrating every year from rural areas of the country to the urban areas; very similar to what happened in this country, and is still happening, starting in the early 1900s.

They're in the process of providing universal access to electricity to everybody in the country, and that's what we did in the 20<sup>th</sup> century and we got most of that work done by 1950 to 1960. They have many people in that country that represent the 1.6 billion people in the world who have no access to electricity and no access to the modern world. I was struck by the scale, the scope, the speed; and I was told by one of my guides that the national bird of China is the crane. As I looked across the horizon, and I saw the construction cranes, it became clear to me what it meant. She also made the point that the national flower of the United States is the carnation. I said, "Really! I didn't know that." She said, "Yeah—'car nation,'" which I thought was a great point.

What I'd like to do is compare the U.S. and China in terms of how they're going about it. On our trip, we went to Beijing just before the Olympics started. We went to the Great Wall. We saw the Terracotta Soldiers at Xi'an, and then we cruised down the Yangtze River to the Three Gorges Dam which has been under construction since 1994. I have to tell you; it was one of the most remarkable facilities I've ever seen. When it's completed next year, not only will it be the largest dam in the world, but it will be the largest generator of electricity on the planet. Each year, the power churned out by the 26 turbines will be equivalent to that produced by 40 million tons of coal or 18 nuclear power plants. Let me put it in a local context. At 18,000 megawatts, that's the amount of generation that we have in the Carolinas to serve our 2.2 million customers. At working capacity, one-ninth of China's energy will come from this dam. What's even more remarkable is that China relocated 1.2 million people to build it; not just villages and farms, but they moved small cities, monasteries and temples to make that happen. Can you imagine in the U.S. us relocating 1.2 million people to build a dam? It wouldn't happen.

This was just hydropower, but China isn't leaving anything out of the energy equation. They consume 40 percent of the world's coal. They consume two-times more coal than we do. Seventy-five percent of mainland China's power comes from coal. In the U.S., 50 percent of our power comes from coal, and actually for Duke Energy, 70 percent of our power comes from coal. As we went down the Yangtze River, one of the things I found amazing—and my grandson said, "What in the world are you doing?"—I was taking all these pictures of these coal barges. It was kind of interesting for me—not for him. The interesting thing is that I see the price of coal in the United States escalate and recognize that a lot of our coal suppliers today are selling coal to China, which is driving up our prices.

They're not just using coal; and by the way, let me give you a statistic that is kind of mind-blowing, and I can put it in a local context. They're going to build 800,000 megawatts of new coal generation in the next eight years. Here's the way to think about that. That's 1,000 Cliffside plants, and there's been a little controversy around our Cliffside plant. The fact of the matter is they're going to build a thousand of them in the next eight years, and we're only going to build

one here in North Carolina, and we're going to shut-down a thousand megawatts of old high-emitting coal plants. They're not going to shut anything down because they need all that power going forward.

They are looking at nuclear, natural gas, renewables and energy efficiency, and they're making it happen. One of the things I did was read the *China Daily* every day, which is their local English paper. The other thing that I found amazing is they are the top manufacturer of solar panels today, and next year they will be the largest manufacturer of wind turbines in the world.

The point I want to make with you is they are living the balanced portfolio approach to meeting future energy demand by using everything they have to generate electricity. They're making it happen. Here in the U.S., we're still only talking about it. Some people in this country say, "Let's ban all coal plants." In fact, 60 coal plants have actually been canceled over the last year. Some people say, "Ban nuclear," even though we haven't built a new nuclear plant in over 30 years and even though they have zero emissions of carbon. Some say only renewables should be built in the future, even though when the sun doesn't shine and the wind doesn't blow, you don't get electricity. Some say use natural gas to generate electricity, but at the same time, they say don't drill for it in the U.S. Don't drill offshore. At the same time, they fail to recognize that natural gas has 50 percent of the carbon that coal has.

Another interesting fact is, in the last 10 years, gas has become the "crack cocaine" of the power industry because when we ban a coal plant or we delay a nuclear plant and we need to build power plants, we build gas. The price of natural gas has gone up five times. It's been incredibly volatile, and the fact of the matter is, it is more expensive to remove carbon from gas than it is to remove carbon from coal.

I'm beginning to think in this country we're more in the category of being the "chattering class" rather than the can-do class. As I looked at China, they put economic development first in everything they do. Let me quickly add; they are not totally ignoring the environmental implications of what they do, and the fact that they're going to be the leading manufacturer of solar panels and wind turbines tells you they have it clearly in their sights. By doing that, not only are they rapidly expanding their economy, they're creating the brain power and the technology infrastructure they need to address and solve their environmental problems coming up.

It's my judgment, that at the rate they're ramping up their clean tech efforts, the questions that need to be asked are, "Will they blow by us? If so, when?" A lot of people say, "Well, look at their air." The air wasn't pretty, and I will tell you in the 12 days I was there—this is pre-Olympics—I only saw blue sky one day. The fact of the matter is there's a recent Yale study that

said as a country's GDP per capita goes up, their focus on environmental issues increases, and their ability to make things happen and deal with environmental issues increases. I believe as their GDP per capita goes up, they will focus increasingly on environmental issues. We did it in this country.

If you think back about our history, anybody that came to the United States in 1890 to 1970 and went to Detroit or Pittsburgh or Chicago or Cleveland, or any of the industrial Midwest and looked at what the air looked like and looked at the rivers in those areas during that period of time, it was clear that we put economic development first. And then with the passage of the Clean Air Act in 1970 and forward, we put increasing focus on making sure that it's clean. The fact of the matter is, China is moving fast, they are transforming, and they're implementing new technologies and developing technologies not only to provide electricity but to address the environmental issues.

The Climate Group, which is a group that is closely monitoring China's environmental progress and which just released a major report on their clean revolution, says "China is unleashing a low-carbon dragon." Already, they are planning the world's first eco-city designed from scratch on an island near Shanghai. It will feature electricity generating windmills and solar power water taxis. China's largest state-run power producer is developing a billion dollar coal-fired power plant with carbon capture and storage. They call it "Green Gen." Let me just contrast that a moment with, here in the United States, we recently canceled a similar project we called FutureGen.

We also went to Chongqing, west of the dam, as well as Shanghai and Hong Kong, but I bet if I did a poll in this group and said, "What is the largest city in China?" you probably wouldn't say Chongqing. Beijing is not China's largest city; neither is Shanghai or Hong Kong. Chongqing is, with 31 million people. Beijing is only 15 million. New York City is 8 million with about 20 million in the metropolitan area to give you some sense.

You walk around these huge cities, and you can see the number of skyscrapers that they're building, and they will build in the future. I'm a great reader so I went to a lot of their bookstores. Now, admittedly, I don't read Chinese, but one of the things I found remarkable is the focus they had on business books. They are very commercial. They're very focused. Everyone is into business. Even our guide had his own business on eBay. Most of the people—nearly all the younger generation—speak English.

I'll make one comment, and this is sort of a grandfatherly thing to say. In one respect the energy and drive of the people reminded me of my parents and my grandparents and the work ethic they had. I think specifically about my parents and the sacrifices they made after World War II so that

I could have what they didn't have. It was all about the betterment of your family, the betterment of your society; and quite frankly, it didn't take long for Alex, my grandson, to realize that it might make sense for him to study a year or at least work a couple of summers in China because it's clear that their future is going to be inextricably linked with ours. Whether they're a competitor or partner, they're going to play a key role in the world going forward.

[*New York Times* columnist] Tom Friedman said something once—and I'm going to paraphrase him—that I think is really an interesting point. In the 60s when there was a cultural revolution in China, our parents told us to clean our plate because children are starving in China. He says, today we should be telling our children and grandchildren, if they don't make all "A's" in school, someone in China is going to take their job. I think my experience there validates that insight.

I could talk for hours about this, but one of the key takeaways for me that I want to share with you is what I call the can-do spirit that they have. This is the same spirit we have in this country. We had it at the beginning of this country. We had it during the industrial revolution in our country. We had it during the migration from the rural to the urban areas, and I hope we still have it today because we're going to need it. That's the attitude of making things happen.

I can only imagine when Europeans came to this country in the 1900s and went to Chicago and saw how messy it was or went to Pittsburgh which was the leading steel producing part of our country and looked at all the smog and the fog and the air and what they said about us—like "Man, what a mess. They'll never clean this up." In a sense I felt that way going to China, but I know they're going to clean it up because it's pretty clear that's clearly part of their focus.

I believe—and this is just a working hypothesis that I've developed—that we may, in the future, have more in common with China than we do with our European ancestors—primarily driven by a mindset and a can-do attitude and a commercial drive. I think one of our great challenges is to find a way to leverage that. Yes, there are lots of differences in the governments. There are lots of differences in many ways, but at the end of the day, that underlying drive I find remarkable; and that's something that we need to kindle and continue to fuel within our own country.

I believe that their electric power industry will accomplish what we've been thinking and talking about since the beginning of this decade, and that's finding a way to reduce carbon dioxide and other greenhouse gas emissions. Even though today they're the largest emitter in the world, and it's pretty clear they're on the track to significantly increase their emissions of CO<sub>2</sub> in the future, it's my judgment it's time for us to move with them. We need to move toward solutions that bridge the gap from today's technology ideas to tomorrow's commercial solutions. Said in another way, we need to build a bridge from our high-carbon-emitting economy to a low-carbon future.

During this transition, we need to use all of the fuels we have to produce electricity. We need to use coal, natural gas, nuclear, renewables and energy efficiency. There is no silver bullet. We can't afford to take any of them out of the equation. "Job One" for me is to provide affordable, reliable and clean electricity 24 by 7. I take those five ways of generating electricity, and I compare them against the criteria of affordability and reliability and clean, and each of them has pluses and minuses, and there's no perfect one. The reality is each one of those alternatives needs further technological development to be an equal contributor in a low-carbon world. We have much work to do to develop that technology going forward.

We won't get this done in a decade. It's going to take many decades to get started. It took us over a hundred years to get to where we are today. Some people tell me we need an Apollo Project or we need a Manhattan Project. I think those projects were important projects that got done, but the scope of them is small compared to what we have to do. I think the better way to think about what we need is a Marshall Plan for our country; and the same way we rebuilt Japan and we helped rebuild Germany, we need to rebuild our own economy, rebuild our infrastructure and our power infrastructure. That needs to be Job One for our country going forward. As the Chinese proverb says, "A journey of 10,000 miles begins with a single step."

As I listen to the many so-called experts who say we can replace our current generation system with zero-emitting technologies in 10 years, or that we should ban all coal plants, or that we can just stop growing our economy, some have even gone so far as to say we ought to shut down 50 percent of our generation in this country, even though with what the Chinese are doing, it will make no difference with respect to climate. I have to say we need a sense of urgency, but we're not going to do it in 10 years.

We need some direct, honest talk with the American people about what we really have to do. The reality is we're sugar-coating it. The reality is through all the debates leading up to these [political] conventions, there was only one question about climate change and only a scattered few about energy. The only answers we got from the candidates were kind of platitudes and bumper sticker-type answers. What we as the American people should demand from those running for president or running for Congress is to hear specifics. We want to know that they understand what the tradeoffs are between growing our economy, maintaining our standard of living and addressing the environmental issues that are so critical to the long-term success of this country. We have not had that conversation in this country. We need that conversation going forward.

I've even been seeing the ads and listening to interviews with T. Boone Pickens. I have to be careful of Pickens because he used to be a client of mine when I practiced law in Washington. He says we can have 20 percent of our electricity come from wind by 2020. He says that we

ought to stop using gas to generate electricity—although 20 percent of our electricity comes from gas today—and that we ought to use that gas for compressed natural gas in cars. With all due respect to Mr. Pickens the reality is that the time for compressed natural gas has come and gone. Yes, there's some compressed natural gas fleets in the world, but the probability for the future or the highest probability have plug-in hybrids. We'll have electric cars, and that's probably the way it's going to go.

The other thing is, it's difficult to build a power plant but somebody ought to try to build a transmission line. It is much more difficult to build a transmission line than it is to build a power plant, and one of the great realities of life is the wind here, for instance, in North Carolina doesn't blow in a way that wind turbines make sense economically unless I put the wind turbines on the ridge line in Western Carolina or on the coast and then build huge transmission lines into the load centers. I don't think the environmentalists would be excited about the prospects of that plan. The reality is that we need to be realistic, we need to be honest with the American people, and we need to talk about the tradeoffs that need to be made. As I said to you, Job One for me is affordable, reliable and clean electricity 24 by 7.

Let me, if I may, frame the daunting challenge that our company faces in making the transition to a low-carbon world. Let me give you three numbers that define our carbon footprint—three, 12, 41. Of all the companies in the United States we're the third largest emitter of CO<sub>2</sub>. Of all the companies in the world, we're the 12<sup>th</sup> largest emitter of CO<sub>2</sub>. If we were one of the 192 countries in the United Nations, we would be ranked 41<sup>st</sup> in our emissions of CO<sub>2</sub>. I share this with you not to brag about it. I share it with you because I believe I need to be focused on that because that's one of the biggest challenges that our company faces; not just for our customers but also for our investors. I believe that we need to regulate CO<sub>2</sub> and I have been an advocate for the regulation of CO<sub>2</sub> for a number of years.

I believe that we need to act now. I believe that we need to implement cap and trade, which is to put a cap on the emissions of CO<sub>2</sub> and let that cap ratchet down over time. I believe we need a price on carbon when we're making decisions on what to build. We need to know what the price of carbon is and bake it in when we make choices between building a coal plant or a nuclear plant or a gas plant or wind or solar. I believe that we need to make major investments in technology, and I'll talk just briefly about that more in a moment. I believe that this is not just a U.S. issue; this is a world issue. It's a great opportunity for our country to reach out and embrace the rest of the world and to step up and work with the rest of the world to solve this problem.

You've noticed I haven't used what politicians like to say when they talk about this—we're going to be a leader on this because I find that a little disingenuous because we have not led on the carbon issue. I'd much rather say to the rest of the world that we want to stand side by side with

those who have led, and if it turns out that we are a leader, that'll be great; but our first assignment is to step up and do what others are doing so that we're in a position to shape our future going forward.

Another way to think about our challenge is that we have four million customers across five states in the industrial Midwest and here in the Carolinas. There are about 11 million people that we serve in those families and businesses. What we have to do is to help them cross the bridge, and let me be clear about what crossing the bridge to a low-carbon world means. It won't be cheap to get on the other side. That's why it's so important and why I am so personally committed to helping shape the legislation because it needs to be designed correctly.

One of the things I am focused on like a laser is I do not want our customers to pay twice to cross this bridge. I believe our customers and the American people in general will accept higher prices only if they perceive they are being applied fairly. In my judgment, there will be no popular support for legislation that penalizes one region of the country, and there are 25 states where more than 50 percent of the electricity comes from coal. That penalizes one part of a country over another or results in dramatic spikes in energy prices, especially today with higher gasoline and natural gas prices.

Let me just take a moment and share with you the history of how we got to where we are before I conclude. Building coal plants in our country was a key part of our energy policy in the 70s and 80s; I remember well. I graduated from law school in the 70s, and I went to Washington to practice law about the time the National Energy Act was passed in 1978. Building these plants was a key part of our national strategy. Remember energy independence? We're going to build coal plants, we're going to build nuclear plants, and no more electric generation from oil; and we're going to wean our self from oil. I remember the speeches well.

We passed a law in 1978 that said it was against the law to use natural gas to generate electricity; so we only had two things that we could build that would provide power 24 by 7 and that's coal plants and nuclear plants. Then we had Three Mile Island, and we haven't started another nuclear plant since then. Then the only thing we had left to build that provided power 24 by 7 were coal plants, and we built coal plants. It was the Arab Oil Embargo that really pushed us down that road. Then we repealed the Fuel Use Acts so gas could be available, but even with gas available, because of the high prices in the 80s, coal was still the cheap alternative and every state we did business in said, "We're focused on affordability and reliability, and that's our number one priority." These decisions occurred many decades ago.

The history lesson is important because in my judgment—and I'm going to say this in the strongest possible way I can—it is simply unfair and wrong for policymakers to introduce a

carbon cap-and-trade solution under the guise of punishing the polluter. What they are proposing to do—and it's primarily east coast, west coast people that are making these proposals—is not recognize that we were carrying out national and state policy by building these plants; and that our customers today—the steel industry, the auto industry, the plastics industry—are competitive worldwide because prices for electricity are competitive worldwide.

A brief moment about the Boxer-Lieberman-Warner Bill debated by the U.S. Senate in June. I have no strong emotions about it. Let me say that in my judgment, consumers would have been subjected to punishingly large electricity price increases, especially in the 25 states that rely on coal. They made the bill too complex with a huge and costly new bureaucracy. Then they licked their chops over the possibility of \$7 trillion that was going to come from the bill which was basically charging us and putting a fee on us and taking it disproportionately from these 25 states.

But then they talked about middle class tax reductions. They talked about deficit reductions. They had a whole book of proposed earmarks. They forgot what the mission was. They forgot the mission is to develop technology to allow us to move to a low-carbon world. All of a sudden it became a money grab, and it was all about a new way to raise revenue and for them to sit around the capital and divide it up. In my judgment, they took a Christmas tree approach and put just too many ornaments on the tree, and the tree properly fell over, and they forgot what the mission was all about.

We stand here today as a new Congress and a new president will be in a position to shape climate legislation, and my hope is we get climate legislation over the next several years. But it's critical that they remember these lessons. We need to get back to basics and remember the mission—developing technology and moving to a low-carbon world. We need a sense of urgency, not a sense of panic. I hear that so often in the voices of people who talk about this issue. We need a sense of hope not a sense of fear, and the fear-mongering on this issue has been quite remarkable. We need the politics of possibilities not the politics of limitation and punishment if we're going to successfully move forward.

At Duke we're doing many things. We're building two coal plants. We're going to build one of the largest coal gasification plants in the world in Indiana. We've proposed a nuclear plant. We've invested in wind with over 5,000 megawatts of new wind development. We proposed a program here to invest in solar panels. We proposed a program that's been somewhat controversial, our energy efficiency program, save-a-watt; but we're trying to change the regulatory paradigm so that we in the 21<sup>st</sup> century can make money and deliver to the U.S. consumers what we delivered in the 20<sup>th</sup> century, which was universal access to energy and electricity. In the 21<sup>st</sup> century, we

want to deliver universal access to energy efficiency. We wanted to be as back of mind tomorrow as your throwing the switch is back of mind to you today.

Mike mentioned that I have been a CEO for a long time, almost right at 20 years now. I mention that again not to say that I'm old, and that I've got great survival instincts. The average tenure of a CEO in America is about four to five years. I mention that to say that during that time I've been judged every day. Every day when my customers throw the switch, they judge me. They judge the reliability of our system. I'm judged every month when you open your bill and you go, "Good price," or you go, "Oh, my God!" You judge the affordability of my product. I'm judged every quarter and every year by the investors. Are they getting a good return? Is the dividend growing?

But I think the toughest judgment for me is going to come in the future. I'm going to be judged by Alex and my other grandchildren on how I handled the "three, 12, 41 challenge." I have seven grandchildren and I'm happy to report that another one is on the way. At the end of the day, that is how I want to be judged. I call it the grandchildren's test. All those other tests are important, and I'm passing all those other tests, but the test that I really want to pass is the test of three, 12 and 41.

I have confidence that we can do it. I'm an optimist about technology. I'm a passionate pragmatist. I'm a realist, and I came out of China motivated to move forward even harder and faster. I look to them as a way to join with them and partner with them because they might have a better ability to scale-up some of the technologies that we have here in this country because they're building so much so fast.

As I conclude, I would say we as a country have a great challenge. We can meet the challenge. We need the American people to talk about it. We need our leaders to understand these issues deep in their DNA. We shouldn't let them off the hook on bumper-sticker answers. You've got a challenge; we've got a challenge, but I think the American people have the capability to meet the challenge and to cross the bridge to a low-carbon world.

Thank you all very much.