Energy Efficiency: The Fifth Fuel

By Jim Rogers, Chairman, President and CEO, Duke Energy
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It's great to be back home in Indiana. I'd like to start out, if I may, on a personal note. This state was the place where I experienced many firsts in my personal and in my professional life, and I would like to recall a few of them to give you a sense of where I am, what I believe and *why* I believe what I do today.

I started the first grade in Princeton, Indiana.

Another first is that I was named, 19 years ago last week, as CEO of PSI. I had an opportunity to join a great team of dedicated employees here in this state who had great Midwestern values.

One of the first things I did when I came to Indiana in 1989 was to join together with a group of environmental leaders across the state, and we wrote an environmental charter for our company. It was a collaborative process, and it turned out to be the first environmental charter written by a power company in the United States. Many of the things that I learned in that process – the collaboration, the sharing of ideas, the commitment to the environment – grew out of that experience.

Another first is that we built the first coal gasification plant – a demonstration plant – back in the early '90s. Today, we have the next-generation plant on the drawing board down in Edwardsport. It is going through the approval process, and it will be the largest and the first commercial coal-gas plant in the United States. If completed, it will be the most efficient coal plant in our country.

The other thing that happened here, that was a first for me, was the merger to create Cinergy back in 1994, and it put us on the road to becoming the company that we are today. Today in both North and South America, we are among the largest owners and operators of power generation. We have over 4 million customers in five states. We are the second largest operator of hydro in the United States, the third largest operator of coal plants and the fourth largest operator in the country of nuclear facilities.

On a personal side, I am about to experience a first as a grandfather, when my oldest grandchild graduates from Cathedral High School this year. Alex has been accepted to the school of engineering at Purdue, and I could not be prouder, because we need more engineers in our economy. I am also delighted that he is here today.

As a grandfather of seven, I have taken stock of all these experiences and values, and boiled down my decision-making process to one simple, conclusive test. When I am faced with a really big question – and I am faced with big questions, when you think about building nuclear plants and coal plants, where you invest your money and how you maintain electricity that transforms the lives of millions of people every day – I ask myself these questions:

Years from now, when my grandchildren look back at what I did today, will they know I did the right thing? Will they look back with pride on the decisions that I make? Will the actions I am taking today create a better life and a brighter future for them tomorrow?

I call that the grandchildren's test. Every important decision that we make in this country – whether you are a leader in any size organization, in any city, any government, any private, any non-profit – that should always be the ultimate test for the way forward.

To ensure a sustainable and secure energy future for our grandchildren and our grandchildren's grandchildren, I have two aspirations I would like to share with you – aspirations for our country. First, that we substantially decarbonize our energy supply in this century. The second aspiration is that we become the most efficient economy in the world. I want to thank you all very much for inviting me here, to share with you how I think we can start down that road, and make those aspirations reality.

First, what I would like to do – just for a minute or two – is ask you to sit back, put on your seatbelt and join with me on a voyage to the future. It is now 2020, and we have plenty of affordable energy we can depend on, 24/7.

- We are steadily reducing our dependency upon oil, which is moving toward $100 a barrel. But in 2020, it is moving closer to $30 because of our reduction in our dependency.
- We have a plentiful supply of energy, fueling economic growth in the U.S. and around the world.
- The air we breathe is getting cleaner every year.
- Automakers are offering consumers lots of fuel choices – cellulosic ethanol, hydrogen cells – but what is really winning the battle is plug-in hybrids. Plug-in hybrids, I believe, are going to be the next generation of cars in this country.
- The U.S. has become the world leader in developing new technologies to produce decarbonized electricity and energy-efficiency devices. This is fueling the growth in our economy.
- Dozens of new nuclear plants are in operation, and the country's first nuclear fuel recycling center is open for business in the Southeast. We have solved the spent-fuel problem that has been the impediment to moving forward with nuclear, which is the only option – *the only option* to produce electricity with zero greenhouse-gas emissions.
- Wind, solar and biomass represent a growing share of the generation pie. New battery technologies have been developed, as intermittency has been a problem. When the sun shines, you get solar power. When the wind blows, you get wind power. But with the right storage technology, we can turn renewables into a more reliable source of supply.

- New technologies have been developed growing out of what happened at Edwardsport in carbon capture and sequestration, so we now have the ability to use one of our great resources [coal], use the resource, and capture and store the CO_2.
- By using the fifth fuel – energy efficiency – we have cut growth in demand, the traditional growth that we were projecting in 2007, which is a 40 percent increase in demand by 2030. We have cut it 50 percent, but we still have ample growth because the plug-in hybrids are being used on our system, and you can operate them today at one-fourth the cost of gasoline.
- We did all of this because we transformed our grid.

That's the vision. Will it come true in 2020? Not sure. Will it come true in 2025? Not sure. But it will come true. I see it. I feel it. I hear the smart people across the country. I talk to the technologists. I look at where we are headed and what is possible, and I think we can find ourselves on that road. The important question that we have to ask ourselves is, how do we achieve these goals? How do we turn this vision – these aspirations – into reality? I think about the Manhattan Project and how that saved millions of lives at the end of World War II. I think about the Apollo Project, and how they put a man on the moon.

With the Apollo Project, we were optimistic about the promise of technologies and innovation. We were confident that we could accomplish whatever we set out to do. We had the courage to commit ourselves to achieving it. We were unafraid to step away from the status quo and to challenge the conventional wisdom. We had men who were committed to making a dream a reality, willing to risk their lives to make a vision come true.

Let's beam ourselves back to 2007, and have a candid, straightforward conversation in terms of where we are today, and what we have to get done. I believe if you cannot dream it, you cannot do it.

Today, we face one of humanity's most pressing and difficult challenges, and that is global climate change. I stand here today as an optimist, who believes we can find a solution to these problems, but we *must act now*. This issue is at the center of an evolving national dialogue.

Look on the college campuses. You go to Minnesota, and you look at Carleton College and St. Olaf College. These two colleges are competing with each other to see who can have the most renewable resources, the greenest campus. It is like they were playing a football game or a basketball game, but they're competing to be green.

Look at environmental groups and NGOs around the country. You expect them to do that, but you wouldn't expect the largest corporations in this country to step up and call for national cap-and-trade legislation with respect to CO_2.

Our company was one of the founding members of USCAP. We joined with GE, Alcoa, DuPont, ConocoPhillips – in basically a situation where business leaders are leading on an important issue of public policy.

Think about this [presidential] campaign. Virtually every presidential candidate who is running for office in a leading position is calling for action on climate change. It is not a Republican issue. It is not a Democrat issue. The environment is an American issue. We need to debate it as an American issue, not a partisan issue.

Hollywood has even weighed in. They gave Vice President Al Gore an Oscar for his "Inconvenient Truth." The European community has weighed in. They gave Al Gore a Nobel Peace Prize, along with all the scientists of the IPPC who are the majority of the major scientists around the world, who said, "The earth is warming. It's creating problems. We need to go to work."

Tom Friedman is writing a book – and I think this is a very interesting thesis – that in the future, the new "red, white and blue" is going to be green. His whole thesis is that, as our country moves more and more toward a stronger environmental ethic, that we are going to have to walk the talk – and that there are people around this country who *are* walking the talk.

There is a tough debate going on in Washington right now. The energy that we use in different regions of the country is different. It has different carbon footprints, and bills are being written by Senators from states that do not use coal. They are easily swayed by those who would demonize coal. They are less interested in the transition mechanism, as we move from the world of carbon emissions to a low-carbon world, much like we did in 1990 when we had the Clean Air Act amendments. We must build a bridge so that all of us who *are* dependent on coal can make the transition, and not pay for the bridge twice, but once, and cross over.

The other reality is that 50 percent of the electricity in this country comes from coal. It is concentrated in 25 states in the Midwest and in the Southeast who are heavily dependent on coal. Here in Indiana, 97 percent of our electricity comes from the burning of coal. Huge price burdens could stretch from a 15 percent increase in the price of electricity, to 60 and 75 percent increases, if the more draconian parts of these bills are passed.

I am the guy that wants to get to the other side, to cross over the bridge. But then, I started my career as a consumer advocate, fighting rate increases of utility companies. I feel today like I am a consumer advocate again. Recently when I testified before Senator Boxer, I made the point that if we are going to make this transition, you cannot punish the people that are dependent on coal. When we became dependent on coal, there were no laws with respect to CO_2, and you have to give all Americans a fair transition.

We have a very tough challenge in front of us, to build this bridge to a low-carbon world. We have much work to do. We have to work on the technology side, on carbon capture and sequestration. Coal is the most abundant resource in our country – we have a 250-year supply. It is the cheapest source that we have. As I said, 50 percent of our homes, our businesses, our computers, our televisions – our way of life – are dependent on burning coal. Coal cannot be taken out of the equation.

We are a democracy, and a democracy is built on debate. It is built on bringing up new ideas. It is built on creating a consensus as to the way forward. We will build a consensus on this issue.

Before I drill down specifically on our company, let me step back and give you an international flavor on all of this. I have been blessed to have an opportunity to see this [issue] – not just from the perspective of the third-largest coal consumer, and the third-largest emitter of CO_2 in the country, from an American view. I have been given an opportunity to look at it from an international perspective, and I want to share a few thoughts with you about that because this is not a U.S. problem – this is a worldwide problem. This is a problem for our planet.

This may be the first major challenge that the people of this world have to come together and address together. Many countries have already gone to work on this, because they signed the Kyoto Protocol. Many have not. I was given an opportunity because I chaired our industry association of all the utilities in the country – and during my tenure we were able to change our position to support mandatory carbon regulation. As an industry, we emit about 40 percent of the CO_2 in the country. Because we were a founding member of USCAP – along with the companies that I mentioned before, calling for national legislation – I was honored to have been asked to join with the U.N. Foundation and the Club of Madrid. They put 25 people together – 15 former presidents and prime ministers of countries, and 10 CEOs from around the world. They gave us the assignment to draft what the basic principles ought to be when the Kyoto Treaty ends in 2012. What principles do we need to bring the countries of our world together so we have a concerted effort?

I gained a lot of new insights trying to think through that and look at it from that perspective. It is clearly a global issue that requires commitment from all the countries. In the U.N. there are 192

countries. Let me give you a great factoid that was striking to me. When I looked at our CO_2 emissions as one company and compared it to the 192 countries, we would have ranked 41st out of 192 countries in our emissions of CO_2 – one company.

What is complicated about this is that there are different countries with different economies, in different stages of development, with different capabilities and different abilities to move forward and help. I can talk about China and India and what is going on there, and some could argue that we could eliminate all our CO_2 – while they are adding one coal plant a week with no controls – and it will not make any difference, regardless of the sacrifices we make to do that. That is not a good answer, because we need everybody involved.

Let me give you one other statistic that is mind-numbing to me, that helps put [the issue] in perspective. There are 1.6 billion people in the world that do not have access to electricity. Think about that. Five times the number of people in our country do not have the ability to turn the lights on and read at night, do not have the ability to turn the heat on, do not have air conditioning, do not have a computer in their home or a television set – do not have access to the modern world. You think about the have and have-nots, and the future of their grandchildren, and you can see how immense this challenge is, how complex it is. They need to have access to [electricity], but we need to reduce it in a way that limits the planet's growth in CO_2 and global warming. This is a huge issue – not just for our country but for our world, and it's going to take time to work through it.

We're focused today on how to mitigate [climate change], and I think there will be mitigation. We need to do that, the scientists say, at 450 to 550 parts per million. I do not think we will get there. I think the reality is, we are going to have to adapt, but the countries that are most affected by adaptation are really the third-world countries – like Sri Lanka and Bangladesh – where they have major flooding issues. Quite frankly, global warming has uneven impacts on countries. There are some in Canada that say global warming could be a good thing for us!

So this is a very complex, very difficult issue. It is going to be a long journey, and while the compromises and consensus building in the U.S. will be great, it will be even greater around the world.

Let me step back and ask you all to think about making sure the lights are on, because job one for me is reliability. A lot of people see a contradiction between, on the one hand, being the third-largest consumer of coal and emitter of CO_2, and on the other, calling for [addressing] climate change. I think I have a *special* responsibility to lead on the issue, and there is no contradiction, but still I have to make sure that when you throw the switch, the lights are on.

There are only five ways to generate electricity – coal, gas, nuclear, renewables and what I call the fifth fuel, energy efficiency. The important point is that, when I look at those five choices and try to make that decision, I have four criteria that I look at. Is the technology available? Is it reliable? Is it affordable? Is it clean?

I could take 10 or 20 minutes and walk through those five choices, measured against those four criteria, but let me tell you the bottom line. No one of them matches up perfectly to every one of the criteria. One might be affordable, but not clean. Coal is an example of that, until we get better technology. Wind might be good, but it's not reliable. Nuclear is a great answer, but it is very expensive to build.

Each one of them has pluses and minuses, and we have to strike a balance and keep all of them in the energy equation, to give us the greatest opportunity to provide electricity with a zero-carbon footprint in the future. In our company alone:

- We are building coal gasification, a $2 billion project in Indiana.
- We are building a pulverized coal plant, for $2 billion in North Carolina.
- We are going to file in December for a nuclear plant, which will cost over $6 billion, in South Carolina.
- We are spending $1.6 billion on gas plants.
- We are spending over $1.5 billion on energy efficiency and renewables.

We are pulling these pieces together and making it happen.

I am proud to be back in Indiana because I am also proud of the work that Governor Daniels is doing. I hope you have had a chance to read his "Homegrown Energy Plan." It is a very excellent plan. It maps out a great future for our state. An important part of that is to develop the technology, and we hope to do our part by developing the Edwardsport plant. At the end of the day, that plant will be a critical piece in the puzzle that allows us to use coal and to keep the lights on, and do it in an environmentally responsible way.

I have a list of things I could tick off here, of what we are doing with renewables. We are purchasing wind from the first wind farm here in the state. We are working with Purdue on how to use cellulosic grasses to blend with coal.

But in the few minutes I have left, I want to focus on energy efficiency, because while the politicians debate in Washington, and while we negotiate around the world to bring countries together, this is the thing that we can do today.

I have come to this belief because I was asked by the DOE and the EPA to co-chair the National Action Plan, to look at what is going on around the country in terms of energy efficiency – what the states are doing, what companies are doing. And the bottom line is, not enough.

- The studies show that there has been chronic underinvestment in energy efficiency in our country for many decades. With 40 percent growth in demand, I believe we can cut that demand with energy efficiency initiatives.
- The second thing is, it is more economic, and we have a proposal that I believe at the end of the day is cheaper than building new coal plants. While we can't control supply and demand, we can help people manage their energy use better.
- Thirdly, every time we reduce demand, we are reducing our carbon footprint, and that's a good thing.
- Fourthly, I believe energy efficiency passes that important grandchildren's test.

Let me quickly tell you what we are doing [at Duke Energy]. We have an idea that we call save-a-watt. Basically, what it means is that, for every megawatt we reduce, we create a save-a-watt. Different than in the past, we are going to make the investment, take the risk, produce the save-a-watt and get compensated only if we make it happen.

In the '90s, we had a very aggressive demand-side management program here, but much of the money was spent to educate people to use energy wisely. The fact of the matter is, only 15 to 20 percent of the people participate. Because their bills are low, it is "back of mind." We have to come up with a proposal that changes the business model fundamentally, and the regulatory model.

The National Academy of Engineers said that the greatest engineering achievement in the 20th century was the electrification of America. My belief is that in the 21st century, we have the capability to provide universal access to energy efficiency – to rich, to poor, to small companies, to big companies – and we are uniquely positioned to do it. We have relationships with our customers. They trust us. We have lower-cost capital than most of our customers. We have longer pay-back periods.

What I am talking about is putting devices in refrigerators and devices in air conditioning – and maintaining your comfort and convenience, while at the same time managing your energy use to minimize the need to build new power plants. Tom Friedman, who I mentioned a moment ago, wrote a column in The New York Times about save-a-watt. He called it "the mother of all energy paradigm shifts." I do not know if it qualifies for that yet, but I believe it has great potential for us as an energy company, as a utility company – to let our mission be not just to build power plants but to create save-a-watts, and to reduce our environmental footprint.

Think back to President Carter sitting at the fireplace in the '70s with his sweater on, and asking people to sacrifice. Our country has a tendency to swing on energy and environmental issues between complacency on the one end and panic on the other end. What we need in this country is a national policy that has a clear, clear view of the vision, and is steady.

We are making progress, and I believe energy efficiency will allow us to make that progress. Part of what we have to do is change our grid going forward. We started as an industry that was a high-tech industry, and I believe in the 21st century, as we transform our grid from analog to digital, we will become a technology company again, in every sense of the word.

Let me close with a concept I call "cathedral thinking."
Ten years ago, on September 19th, the day before my 50th birthday, my oldest daughter went into labor. We knew it was going to be a girl. I called her – she lived in Texas – and I said, "Chris, it would be worth a lot to that girl if you could wait until tomorrow morning." I flew to Texas, went to the hospital, got there about 9 or 10 o'clock at night, and she had already had the baby.

I said, "Congratulations, but I thought we had a deal." She said, "But on London time, she *was* born on your birthday." I said, trying to be in the spirit of the moment, that when she turns 10 and I turn 60, I will take her to London; we will celebrate on the same day.

Fast-forward 10 years. Several weeks ago, on her 10th and my 60th, we went to London. It turns out she had already been to London. As a grandfather, who wanted to make it special, I needed to do something new, so I surprised her and put her on the Chunnel and took her to Paris. We had an opportunity to go see Notre Dame.

I was reminded of the kind of cathedral thinking that we really need as a country, particularly on energy and environmental issues. I listened to them tell the story of Notre Dame and how it took a hundred years to build it -- three generations.

The architect had a vision of what it would look like, but he would never live to see it finished. The stonemasons and the people that worked on the foundation never lived to see the stained-glass windows. Those who worked on the stained-glass windows and the walls never saw the steeples. And yet, they committed their lives, they committed their energy, they committed their passion. They had faith, they had a vision and they created something that is a lasting memory.

Our challenge is to have that same cathedral thinking. If we have that kind of thinking, these aspirations of being the most energy-efficient economy in the world and aspirations of decarbonizing our energy supply will be reality. Thank you all very much.