President's Sustainability Convocation Address

Preparing Kentucky – and ourselves - for a carbon-constrained world

Lisa Abbott, April 21, 2015

I. Appreciation

Thank you President Roush, my kind hosts Elizabeth Graves and Preston Miles, and the whole Centre College Community. It has been a pleasure to talk with many of you in classes and conversations today. In the past I have also had the chance to work closely with a number of Centre College student interns at the non-profit where I work. In every setting, you have wowed me with your smarts, curiosity, and sense of empathy.

This community does an extraordinary job fostering what I think of as a "local-to-global-and-back-to-local-again" perspective. You have already made a number of thoughtful choices to become more sustainable. From your partnership with the Mother Ann Lee Hydro Station, to your commitment to recycling, to your Campus Climate Action Plan, Centre College is demonstrating thoughtful leadership and making progress towards reducing your carbon footprint. I'm honored to be with you.

II. Personal perspective on climate change

When my oldest son was in first grade, he and I shared a 5-mile drive each morning on the way to his school and my work. One morning he slid onto his booster seat in the back of the car and asked, "Mom, What is global warming?" I stared at him through the mirror.

"Do you really want to know?"

"Yes."

I took a deep breath and waded in. I explained that most of the energy we use to heat our homes and drive our cars comes from burning fuels like coal, oil and gas. All that burning results in vast amounts of carbon dioxide pollution that, along with other greenhouse gases, is accumulating in our upper atmosphere. I described how that layer of gas acts a bit like a blanket. How it is increasing the average global temperatures on earth. If I remember right, I even described that we'd be better off to think of what's happening as global weirding, rather than global warming, since the results are unpredictable and likely include droughts, floods, severe storms and other extreme weather.

Then we pulled up to the curb beside his school. All 45 pounds of him tumbled out of the car and waved at me from the sidewalk.

That evening over supper, he set down his fork and leveled a strong stare in my direction.

"I've been thinking about what you told me this morning," he said. "I don't like it."

Then he demanded, "How old were you when you learned about global warming?"

"I was a senior in high school. So eighteen, I'd guess."

"Well," he announced, "I was six."

That conversation, needless to say, rocked me. When is the right time for any of us to confront the grave threats posed by global climate disruption? And once informed about the issue, how are we supposed to make sense of what it means for our lives and communities, especially those here in Kentucky?

I don't presume to have answers. But as a parent and a community organizer working for the past two decades on issues related to energy and climate in Kentucky, I hope I have some insights you find useful.

III. The world as it might be

Coming to terms with climate change is more than an academic pursuit. Quite honestly, reckoning with climate change is as much a spiritual challenge as an intellectual one. It takes real effort to fully consider the facts about this issue without becoming hopeless or cynical or slipping into denial.

That's why I believe any conversation about climate needs to start where our hearts are, with conversations about values and vision.

What do we care about? What is our vision for the world we want to live in? What can we imagine and create together?

I have a good friend, a minister in Birmingham, Alabama, who is fond of saying that here in the South, where we don't have a democratic history, we have to have a democratic imagination. He's right. And I don't think he'd mind at all if I added this corollary: Here in Kentucky, where we don't have a sustainable history, so we have to develop a sustainable imagination.

The capacity to imagine that I'm talking about isn't the same as the ability to dream up some fiction or fantasy. In his 2012 Jefferson Lecture, Wendell Berry stated, "We must give up at once any notion that imagination is disconnected from reality or truth or knowledge…Imagination thrives on contact, on tangible connection. For humans to have a responsible relationship to the world, they must imagine their places in it."

My own vision for the world is still a work in progress. I've found that my own capacity to imagine grows deeper through relationships and conversations. My vision is also informed by concrete, tangible examples of good ideas brought to life.

That's why the story of Centre's partnership with the Mother Ann Lee Hydro Station matters so much. It informs our vision for what is possible in Kentucky. So does the Berea Community Solar farm, which is a program in my town that allows residents to lease solar panels and get credit on their electric bills for the energy they generate. My own vision is shaped by time spent in many homes in eastern Kentucky, including one that was so leaky the owner said it was like "trying to heat a cheese grater." My vision is inspired by the opportunities I've had to work shoulder to shoulder with everyday Kentuckians who courageously speak out on important issues – even when their voices quake. Finally, my vision grows out of my abiding love for my children, my commitment to justice and equality, and my sense of connection to this place on earth.

If we had time to share our visions for Kentucky in a carbon-constrained future, I'm sure we would discover a lot of common ground. For my part, I believe we have the opportunity right now, today, to be part of shaping a just transition to a healthier and more sustainable economy in Kentucky. I believe that we can fix up leaky homes and help people save money on their energy bills. We can grow good new jobs, especially in the mountains of eastern Kentucky and among communities and workers most affected by declining coal employment. I believe we can create worker cooperatives and community-scale energy projects that generate long-term local wealth. We can put racial and gender justice at the center of our efforts to build a more sustainable economy. I believe our industries, farms, and schools can be leaders in efficient stewardship of energy resources. And I believe our democracy and our economy can become more inclusive and more accountable to the genuine needs and aspirations of all our citizens.

IV. The world as it is

Of course generating a vision of the world we wish to create isn't all that's required to chart a meaningful course of action on climate change. Not by a long shot.

We also have to develop a clear-eyed understanding of the world as it is, in all of its complexity, uncertainty, contradictions, beauty, and pain.

Understanding any complex system, including climate change, is a discipline, as Peter Senge and his colleagues at MIT noted in their important book about systems thinking. According to Senge, skillful leaders – and that means all of us – need the discipline to be able to hold a vision for the world as it should be in one hand, and a rigorous understanding of the world as it in the other.

The trick is to hold on to both things without letting either out of our view. The trick is to live in that gap between vision and reality, and learn to make sense of the tension and contradictions we find there.

It is in that gap - that tension-filled, creative space – where I believe we may find the motivation and wisdom needed to respond meaningfully to the threats and opportunities of climate change.

Understanding *the world as it is* when it comes to climate change is no easy task. This is a complex story with so many dimensions, including scientific; economic; ethical and moral; technological; and political. To tell the story briefly and well from all those perspectives, I really need the help of artists and other brilliant minds who have learned to represent multi-dimensional figures in two-dimensional spaces. But tonight, working without a canvass or brush, I'll do my best to create a brief, working sketch.

Our understanding the world as it is starts with the basic science. As by now even our six year olds know, carbon dioxide (CO_2) is greenhouse gas; it absorbs and re-radiates heat. In small amounts, the CO_2 in our atmosphere plays a role in maintaining life-supporting average temperatures here on earth. However, since the dawn of the industrial revolution in the mid 1800's, atmospheric CO_2 concentrations have increased by more than forty percent. The primary cause of that dramatic increase is human activity, including the burning of fossil fuels for electricity, heat and transportation, along with widespread deforestation.

The relationship between rising $C0_2$ concentrations and rising global temperatures is well-established. There is enormous complexity and uncertainty, however, in projecting the specific impacts those changes will have. There is a lot we don't fully understand, including the role of powerful feedback loops. Our models are getting better all the time as more data about current and historic climate conditions is collected and factored in. Unfortunately the news isn't good.

Here is some of what the evidence tells us: Across the globe, 2014 was the hottest year on record. Thirteen of the 15 hottest years have occurred since the year 2000 – in your lifetime. More than 90% of the world's glaciers are in retreat. Our oceans have become 30% more acidic, the result of chemical reactions that occur when atmospheric CO_2 dissolves in water. The atmosphere above our oceans is now 5% wetter than average – contributing to extreme weather patterns, unusually heavy precipitation, and devastating floods. Other measurable consequences of global climate disruption include mass extinction of species, more extensive droughts in some areas, rising sea levels, forest death, the spread of infectious diseases, and global food and water insecurity.

According to international consensus, the rise in average global temperatures must stay below 2 degrees Celsius to avoid the most devastating effects of climate change. To do that, many models indicate we need to keep atmospheric concentrations of CO_2 below 450 parts per million. But as Bill McKibben has written, that presents us with a serious math problem. Staying below that threshold means leaving at least 2/3 of known reserves of coal, oil and gas in the ground. And some respected scientists and models tell us even that may not be enough. At current rates of pollution – and barring significant global actions – our planet will pass that dangerous threshold in about 20 years.

The story of the world as we know it also has important moral and ethical dimensions. The harmful effects of climate change are not evenly distributed. Countries and people who have made minimal contributions to the problem will be among those most affected by rising seas, extreme weather, and food and water shortages. The risks are greatest for those who are poor, elderly, or young, as well as for others who are on the margins of power in their societies. Climate change is expected to worsen global poverty and inequality and may amplify many drivers of violent conflict around the world.

The story of the world as we know it is also has vexing political dimensions, some of which are frequently and loudly on display in Kentucky. Winning elections is by its nature a transactional process, one that requires politicians to keep things simple, seek incremental changes, promise benefits without costs, and protect the short-term interests of their donors and voters. Climate change, on the other hand, is a complex and long-term challenge that will require transformational changes to our energy, transportation, food and financial systems. It's also an issue that asks those of us living today to make major new investments aimed at reducing harm that will be felt most acutely by a generation that is yet to be born – by your children. It's no wonder that the transactional political leaders we have often seem so ill equipped to provide the transformational leadership we need.

The current politics of climate change are also a function of gross imbalances in economic and political power here at home and around the world. As a community organizer, I've learned that power is more than just the ability to make things happen or stop things from happening. *Power is also the ability to shape what other people think is possible.* In this case we see massive, global fossil fuel companies using their financial and political power to great effect. Their political investments produce results in the form of industry benefits and subsidies, blocked regulations and policies, limited consumer choices, and distorted public understanding. Of course as students and voters and concerned citizens we can also exercise power to shape the debate and influence outcomes in our democracy; we just have a much steeper hill to climb.

IV. What we know about Kentucky's energy landscape and current trends

Our understanding of climate change and the world as we know it also has profound Kentucky-specific dimensions.

Kentucky's electricity infrastructure is almost entirely based on burning coal. We get 93% of our electricity from a fleet of about 20 coal burning power plants whose average age is 43. (By contrast, the national share of electricity derived from coal been dropping for years and now stands at just 39%.)

There is a saying from an ancient Greek poet named Archilochus (Ar-kill-a-kus) that "the fox knows many things, but the hedgehog knows one big thing." There are many electric utilities operating in communities across Kentucky. They range in size from large investor owned

companies like LG&E, KU and American Electric Power, to a patchwork of rural electric cooperatives, to a host of municipally owned utilities that are individually owned and operated by several dozen small towns and cities. Like the hedgehog, they have all known one big thing.

For decades, that one thing was coal. And their singular pursuit of it meant, for a while, that Kentucky enjoyed some the cheapest electricity rates in the nation. The true costs of coal-fired power were always much higher than we acknowledged. The harm done to our health and environment was immense. But for a time it seemed like a bargain.

Today, the economics of coal are changing rapidly. The era of low and stable electricity rates provided by our system of coal-burning plants is coming to a close. The average cost of electricity in Kentucky has risen by 82% since 2000. The spike has been even steeper for residential customers, as our utilities have pursued an escalating series of rate increases.

All of Kentucky's energy eggs are in one basket, and now the price of those eggs is rising fast. The biggest factors driving rate increases are the increasing cost of coal itself, which is a finite resource on a global market; the high cost of new power plant construction; and the high cost of installing pollution control equipment needed to reduce a number of deadly air toxins. In other words, the rate increases we've experienced so far have not even begun to factor in the costs of our carbon pollution.

Our predicament in Kentucky may be even greater than we think. For while our electricity rates have historically been very low, the electricity bills Kentuckians pay are actually quite high relative to customers in other states.

How can that be? The answer is that we use a lot of electricity. Many Kentuckians live in older homes that are poorly built or poorly insulated. We often rely on old, inefficient appliances and heating systems. Until recently, our businesses and institutions didn't prioritize investments aimed at lowering their energy use. As a result, the average household in Kentucky uses 30 percent more electricity than the US average and we rank 6th among all states in per capita energy use.

Kentucky's changing energy landscape has specific and serious implications for our manufacturing sector, which employs more than 200,000 workers. According to the state's Energy and Environment Cabinet, 50% of the electricity consumed in Kentucky is used by just 1% of all customers. Many of those energy-intensive companies first located or grew in Kentucky because of our low energy costs. As the costs and financial risks begin to rise, they may begin to look elsewhere. Last year, for example, two large aluminum smelters in Western Kentucky threatened to move out of state unless they were allowed to purchase cheaper power – generated primarily from wind and natural gas – from an out-of-state utility.

Put those trends together, and Kentucky is in a pickle. Our houses, schools, businesses and industries are generally speaking inefficient and consume a lot of electricity; our energy infrastructure is outdated and dominated by a single source, coal, which is increasingly

expensive and risky relative to other energy sources; and diversifying and upgrading our energy infrastructure will require significant new capital investment.

That is the condition we find ourselves in, even ***before*** Kentucky has taken the first steps to deal with climate change.

And now, piled on top of all these challenges, the moment has arrived when we must also begin to account for the costs of our carbon pollution.

Last year the Environmental Protection Agency proposed the first-ever federal rule to reduce carbon pollution from existing power plants under the Clean Air Act. Under the EPA's proposed Clean Power Plan each state will be required to reach a specific target for reducing greenhouse gas emissions from power plants by 2030. Once the EPA's rule is finalized this summer, states will have up to two years to submit a plan showing how they will meet incremental and final goals.

The EPA took into account the different energy context and infrastructure in each state and gave each state a unique goal for reducing emissions. The draft rule also did something very unusual in the history of federal environmental regulations. It gave states flexibility in how they meet the required standard. State plans can use any combination of four strategies to meet their emissions reduction target. These building blocks include deploying more energy efficiency, expanding renewable energy, switching to less polluting fuels, and/or making existing coal plants more efficient.

Under the draft plan, Kentucky's utilities are required to reduce their carbon emissions by 18% by 2030. That is the third lowest pollution reduction target given to any state. There are some indications that we may already be more than half way to the goal, given recent retirements of some of Kentucky's oldest and most polluting power plants.

Nevertheless, most of Kentucky's elected leaders, with the encouraging exception of Governor Beshear, are loudly and actively opposing the EPA's action.

Last year, for example, the Kentucky legislature unanimously passed a law prohibiting state officials from developing *any* plan to comply with the EPA rule that incorporates energy efficiency, renewable energy or fuel switching. It's mind blowing, really. The EPA gave states flexibility, but the Kentucky legislature took the three most cost effective options off the table. It appears that their intention is to force a legal show down. Under the state law it will be hard, if not impossible, for Kentucky to submit a state plan that meets the EPA's requirements – no matter who becomes our next Governor. In that event, the EPA will have to impose a climate plan on Kentucky. And that action will, in all likelihood, be followed by more political outcry and blockbuster lawsuits.

Meanwhile most high profile politicians and candidates from both parties in Kentucky are taking (or promising) additional aggressive actions to undermine the EPA and its

implementation of the Clean Power Plan. Our attorney general, Jack Conway, filed a lawsuit with 13 other states seeking to block the EPA from finalizing the rule. Senator Mitch McConnell has sent letters to all 50 state Governors, urging them to defy the EPA by refusing to comply. The list of other Kentucky politicians who have lined up against taking climate action is long and deep.

V. What options and choices do we have in Kentucky?

Despite all the political grand-standing, Kentuckians do have good and viable options available to us as we seek to embrace a clean energy economy. There are no simple or single solutions. But we don't suffer from a shortage of good ideas, cost effective strategies, and well-tested policies. We can choose from an array of solutions that are already working in other states, and from some that are already being implemented at a small scale in Kentucky. As it happens, many of the steps we can take to reduce our carbon emissions can also generate other co-benefits, including new jobs, energy savings, locally owned wealth, and improved health.

For all those reasons, the organization I work with, known as Kentuckians For The Commonwealth, is embarking on a major new undertaking. It is a project that will certainly benefit from your ideas and participation. Over the coming year, KFTC will host a broad public conversation about important opportunities and options Kentucky <u>does</u> have to address climate change while improving the quality of life in our state. Drawing from input we receive in public hearings, classroom discussions and other listening sessions, we intend to write a Commonwealth Climate Action Plan that complies with the EPA rule, improves our quality of life, and contributes to a just economic transition for affected workers and communities.

Anyone looking for Kentucky-specific climate strategies could start by pulling off the shelf the set of recommendations contained in Kentucky's own 2011 Climate Action Plan. It's not a perfect document. I quibble with some of the recommendations. But among dozens of cost-effective strategies in that report are the following sound ideas:

- Improve energy efficiency building codes, along with training and enforcement;
- Expand utility sponsored efficiency programs;
- Provide financing programs, incentives, and revolving loan funds for energy efficiency, renewable energy and combined heat and power systems;
- Remove policy barriers to renewable energy and combined heat and power;
- Adopt utility policies and rates structures that encourage energy efficiency and renewable energy;
- Adopt policies for government to "Lead by Example" in developing highly efficient public buildings;
- Create comprehensive plans and infrastructure for bicycle and pedestrian transportation;
- Develop strategies to move freight more efficiently;
- Promote the use of clean vehicles;
- Promote the consumption of locally produced goods and services;

- Expand on farm energy production and energy efficiency;
- Increase productivity of abandoned lands, including reforesting abandoned mine lands;
- Adopt advanced reuse and recycling programs and expand organic waste management.
- The list goes on and on.

Would these strategies alone transform Kentucky's energy and economic system? No. Not hardly. Could they together begin to bend the arc in a positive direction? I believe so. Frankly, given the shape we are in, they provide plenty of good ways to get started.

You may have noticed that many of the proposed strategies focus on energy efficiency, Kentucky's cheapest and most abundant source of energy. It is far cheaper to make our homes and businesses more efficient than it is to build out new energy generation. Insulating our homes, installing energy efficient lighting and appliances, and upgrading our heating and cooling systems are all steps that can pay for themselves, and sometimes quite quickly.

The organization I work with partnered recently with several other non-profits in eastern Kentucky to weatherize one home in Harlan County last winter as a demonstration project. The home was selected by the local utility because the elderly woman who lived there often struggled to pay her sky-high electricity bills, which exceeded $600 during the coldest months.

Together our groups made a $10,000 investment in upgrading her house, including insulation, caulk around windows and doors, a new water heater and repaired duct-work. In the first month after the retrofit was complete, Kentucky experienced an extreme cold snap. The average home energy use in that town went up by 42% compared to the year before, while her energy use dropped by 56%. One year later she has saved more than $1,000 on her electric bills.

That's a powerful example. But we also know that many people and small businesses don't have the funds to invest in efficiency, even if they want to. But once again, Kentucky has options. There are excellent policies and programs – including a few underway here in Kentucky – to make energy efficiency accessible and affordable to people of all incomes and businesses of all sizes. Our state government, cities and schools could establish revolving loan funds for efficiency and allow on-bill financing. Kentucky could join dozens of other states that require utilities to offer energy efficiency programs and incentives to their customers. And we could require our biggest industrial users to take part in energy efficiency programs, rather than allowing them to opt out as we currently do.

In the end, whether or not we put those types of solutions into action is a political choice, not a technological or even financial one. For now Kentucky remains one of several states standing largely on the sidelines of an energy efficient economy. But we can imagine better options. We can work for them. And we can bring them to life.

On the renewable energy front, our options in Kentucky are getting better and better as the costs plummet and technologies improve. The price of wind and solar power is now on par or

cheaper than grid electricity in some US states and many areas of the world. As the global head of power, energy and infrastructure for a major investment bank recently told the Financial Times, "We used to say some day solar and wind power would be competitive with conventional generation. Well, now it is some day."

Because of Kentucky's historically low electricity rates, the day when many forms of renewable energy generation can outcompete conventional energy here is still 5-10 years away by most estimates. But the trends are clear. When our family installed solar panels in 2010, we paid about $6 an installed watt, or $27,000 for our system. Less than five years later, the same sized system, which provides as much electricity as our family of four uses in a year, could be purchased for about half that price.

Kentucky's renewable energy resources are also far better than is often claimed, especially when we consider the potential to develop small-to-mid-sized distributed generation. A major university study of southern states, including Kentucky, concluded that we could generate at least 25% from renewables (up from our current 3%) over the next 20 years. It also found that ratepayers would pay less, on average, under that scenario than under the do-nothing scenario. Another Kentucky specific study projected that we could generate 34 percent of our electricity from distributed renewable energy by 2025, just 10 years from now.

While the economics of renewables are coming into line, many political and policy barriers still need to be addressed. In most states with booming solar industries, companies are allowed to install the panels with no or low up-front costs and then get paid back by the customer over time. Those leasing arrangements are not allowed under the current rules in our state. Kentucky law also limits the size of grid-tied renewable energy systems to just 30 kW, a fine size for most homes, but too small to be useful for hospitals, schools, churches, laundry-mats, big box-stores, or many businesses. Our state tax incentives for renewables and energy efficiency are small and set to expire at the end of this year. And lastly, Kentucky is among the last handful of states that do not require our utilities to get an increasing share of their electricity from renewables.

A bill to ramp up Kentucky's energy efficiency and renewable energy production has been stalled in the state legislature for several years. An independent analysis showed it could generate 28,000 net new jobs over the next ten years, while lowering average utility bills by 8-10% compared to the do-nothing scenario.

For now Kentucky remains one of several states standing on the sidelines of the renewable energy economy. But we can imagine better options. We can work for them. And we can bring them to life.

VI. What's the role for students, citizens, Centre College?

In next 5 to 20 years most of the students in this hall will answer some of life's biggest questions: Who do you want to be? Where do you want to live? What do you want to do?

Whom will love? Many will launch careers and start families. And all of you will stumble and triumph, hopefully in that order.

You will also live in a time of rapid and disruptive change. Ready or not, we stand on the leading edge of a massive economic and ecological transition. How will you make sense of this moment, and how will you respond?

Centre College's own Climate Action Plan acknowledges that the school's greatest opportunity to influence the global climate question is through the lives of students. It proclaims, "Our primary responsibility will remain to educate and inspire students to become future national leaders who will advocate for change, will invent the scientific and technological opportunities, and formulate the political will to lead this major societal transformation."

I can only add, "Amen." The transformational leadership needed to respond to the challenges of climate change with vision and hope must come from all of us, and especially from you. We must become the leaders we have been waiting for.

As I thought about this conversation with you, I urgently wanted to be able to offer more assurances, to say that things will all work out. Of course, I can make no such promises.

We live in the gap, in the uncomfortable space between the world as it might be – the one we can imagine – and the world as it is.

So instead I will close my remarks tonight with a brief meditation that I originally wrote for my own children. It describes some of what I believe is possible and what I hope we can do together in the face of global climate change.

I can offer my children no promises that the actions we take will be enough. They may not be. But can always choose to act from a place of love and determination. We can reject fear, paralysis and cynicism.

We can encourage each other to be resilient, interdependent, problem-solvers.

We can teach each other essential skills, including how to make compost and music.

If we listen well to the people around us – and especially to other young people – we can learn a great deal, like how to imagine and innovate, how to defy convention, and how to stand up to the powers that be.

In our schools, families and workplaces, we can consume less and grow more.

We can insulate our homes, talk with our neighbors, join organizations, start businesses, teach, preach, risk arrest, run for office.

As individuals, or within our companies or institutions, we can invest in cleaner, safer technologies, materials and sources of energy.

We can join and support powerful social movements capable of demanding – and perhaps someday of winning – meaningful action on a local, national and global scale. Together we can push back against the forces of denial, cynicism and greed.

We can invest our hope and our resources in a just economic transition for affected communities and workers. We can divest funds from the fossil fuel companies that put our future at risk.

In every aspect of our lives, we can organize community. We can build trust across lines of difference, stand up for equality and justice, and reject discrimination.

We can conduct our lives with the understanding that we are all in this together.

Finally, we can choose joy. Having considered all the facts. We can still choose joy.

Thank you for the opportunity to share these thoughts with you. I'd be happy to take your comments or questions.