

LESSONS FROM ACROSS THE NATION: STATE
AND LOCAL ACTION TO COMBAT CLIMATE
CHANGE

HEARING
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENT AND CLIMATE
CHANGE
OF THE
COMMITTEE ON ENERGY AND
COMMERCE
HOUSE OF REPRESENTATIVES
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LESSONS FROM ACROSS THE NATION: STATE AND LOCAL ACTION TO COMBAT CLIMATE CHANGE

TUESDAY, APRIL 2, 2019

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENVIRONMENT AND CLIMATE CHANGE,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:02 a.m., in the John D. Dingell Room 2123, Rayburn House Office Building, Hon. Paul Tonko (chairman of the subcommittee) presiding.

Members present: Representatives Tonko, Clarke, Peters, Barragán, Blunt Rochester, Soto, Schakowsky, McNerney, Ruiz, Pallone (ex officio), Shimkus (subcommittee ranking member), Rodgers, McKinley, Johnson, Long, Flores, Mullin, Carter, Duncan, and Walden (ex officio).

Also present: Representative Gianforte.

Staff present: Jeffrey C. Carroll, Staff Director; Adam Fischer, Policy Analyst; Jean Fruci, Energy and Environment Policy Advisor; Tiffany Guarascio, Deputy Staff Director; Caitlin Haberman, Professional Staff Member; Rick Kessler, Senior Advisor and Staff Director, Energy and Environment; Brendan Larkin, Policy Coordinator; Dustin J. Maghamfar, Air and Climate Counsel; Mike Bloomquist, Minority Staff Director; Jerry Couri, Minority Deputy Chief Counsel, Environment; Peter Kielty, Minority General Counsel; Mary Martin, Minority Chief Counsel, Energy and Environment; Brandon Mooney, Minority Deputy Chief Counsel, Energy; Brannon Rains, Minority Staff Assistant; Zach Roday, Minority Director of Communications; and Peter Spencer, Minority Senior Professional Staff Member, Energy and Environment.

Mr. TONKO. The Subcommittee on Environment and Climate Change will now come to order. I recognize myself for 5 minutes for the purpose of an opening statement.

OPENING STATEMENT OF HON. PAUL TONKO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

In February, this subcommittee held a hearing examining President Trump's decision to withdraw the United States from the Paris Agreement. Since that announcement, States, cities, businesses, and universities across the country have stepped up to say they are still in.

They are not only making pledges but are taking concrete actions. While this administration has failed to rise to the challenge

of our climate crisis, others are leading the way and keeping our national emissions reduction targets within reach.

Investing in infrastructure and creating local jobs and transitioning to a clean energy economy are goals that leaders on both sides of the aisle at all levels of government should be able to support.

That is why 23 States have joined the U.S. Climate Alliance. More than 400 local governments have joined the Climate Mayors network, organizations that are helping State and local governments work together and encourage greater action.

Today, we have a chance to learn from some of the elected officials now leading our nation's climate response. This includes a former colleague who served on this committee, Governor Jay Inslee of Washington State.

Thank you, Governor, and welcome back to the Energy and Commerce Committee. During his time here, Governor Inslee was a leader on clean energy and climate issues.

He played a major role in developing the American Clean Energy and Security Act, and in transformative clean energy investments included in the American Recovery and Reinvestment Act.

He also cofounded the House Sustainable Energy and Environment Coalition. I was at that charter effort and I now am proud to say that I cochair today's efforts with SEEC.

Governor Inslee, along with former Governor Jerry Brown and my home State Governor, Andrew Cuomo, founded the U.S. Climate Alliance. The States in the alliance represent more than one-half of the U.S. population and almost three-fifths of the U.S. economy.

I cannot think of a better witness to share the experiences of States transitioning to a cleaner, healthier, more competitive, and more sustainable economy.

Local governments are also doing their part implementing solutions to transition their communities and create good-paying jobs while doing it.

Today we ask what can Congress learn from our State and local experiences and how can our Federal Government be a better partner in these efforts?

This committee has established itself in recent years as a force for bipartisan and environmental legislation including drinking water infrastructure, Brownfields redevelopment, and nuclear waste cleanup, and in every case we started with these same questions.

Our response to climate action should be no different. We are at a crossroads in the climate crisis. We are going to meet this crisis head on. We will need every idea and every proposal we can muster.

I recently released a set of climate principles that should help guide our efforts in Congress to develop legislation. Before coming to Congress, I ran a State energy office and served in State and county government.

I know how much work gets done at these levels. They do not have the luxury of burying their heads in the sand when climate change comes to their communities and threatens their constituents.

It is falling upon them to harden their infrastructure and deal with increasingly frequent and severe wildfires, flooding, droughts, and air quality issues.

These disasters jeopardize property values and undermine local tax bases. In some cases, they threaten future economic development and revitalization, especially waterfront development.

We have seen the damaging effects of climate change extend far beyond natural disasters. It is hurting tourism, recreation, agricultural production, and other industries that many American communities rely upon.

Empowering State, local, Tribal, and territorial governance needs to be at the foundation of our climate response in Congress. State and local leaders are often in the best position to enact innovative policies to promote a cleaner a cleaner economy and deal with climate damage.

We also need to recognize that we live in a big country. Each State and region faces unique challenges. Program flexibility is indeed critical.

Today, as we hear from mayors from across the country, we need to make sure they have the tools and resources necessary to meet their needs. Some solutions will be best suited for Federal action. But a comprehensive approach will take all hands on deck.

Other levels of government will need to adopt policies that work for their unique local conditions. A few of these locally driven programs may include efforts to strengthen community resilience, increase energy efficiency through building codes and energy benchmarking, improve the efficiency and operation of municipal buildings, and promote cleaner transportation options including transit and pedestrian and bicycle infrastructure.

But despite the exciting testimony we will hear this morning, let us not fool ourselves. Subnational action is not a substitute for greater Federal leadership. America's response to the climate crisis needs to be a partnership and, currently, the Federal Government is simply not holding up its end of the bargain.

And with that, I yield back.

[The prepared statement of Mr. Tonko follows:]

PREPARED STATEMENT OF HON. PAUL TONKO

In February, this subcommittee held a hearing examining President Trump's decision to withdraw the United States from the Paris Agreement.

Since that announcement, States, cities, businesses, and universities across the country have stepped up to say they are still in. And they are not only making pledges but are taking concrete actions.

While this administration has failed to rise to the challenge of our climate crisis, others are leading the way and keeping our national emissions reduction targets within reach.

Investing in infrastructure, creating local jobs, and transitioning to a clean energy economy are goals that leaders on both sides of the aisle, at all levels of government, should be able to support.

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This includes a former colleague who served on this committee, Governor Jay Inslee of Washington.

Thank you, Governor, and welcome back to the Energy and Commerce Committee.

During his time here, Governor Inslee was a leader on clean energy and climate issues. He played a major role in developing the American Clean Energy and Security Act and in transformative clean energy investments included in the American Recovery and Reinvestment Act. He also cofounded the House Sustainable Energy and Environment Coalition, which I am proud to cochair today.

Governor Inslee, along with former Governor Jerry Brown and my Governor, Andrew Cuomo, founded the U.S. Climate Alliance. The States in the Alliance represent more than half of the U.S. population and almost three-fifths of the U.S. economy.

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Local governments are also doing their part, implementing solutions to transition their communities and create good paying jobs while doing it.

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And in every case we started with these same questions.

Our response to climate action should be no different.

We are at a crossroads in the climate crisis. If we are going to meet this crisis head on, we will need every idea and proposal we can muster. I recently released a set of climate principles that should help guide our efforts in Congress to develop legislation.

Before coming to Congress, I ran a State energy office and served in State and county government. I know how much work gets done at these levels. They do not have the luxury of burying their heads in the sand when climate change comes to their communities and threatens their constituents.

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Some solutions will be best suited for Federal action, but a comprehensive approach will take all hands on deck. Other levels of governments will need to adopt policies that work for their unique local conditions.

A few of these locally driven programs may include efforts to strengthen community resilience, increase energy efficiency through building codes and energy benchmarking, improve the efficiency and operation of municipal buildings, and promote cleaner transportation options, including transit and pedestrian and bicycle infrastructure.

But despite the exciting testimony we will hear this morning, let's not fool ourselves. Subnational action is not a substitute for greater Federal leadership. America's response to the climate crisis needs to be a partnership, and currently the Federal Government is not holding up its end of the bargain. I yield back.

Mr. TONKO. Before we recognize our ranking Republican for the committee—the Republican leader for the subcommittee—I ask unanimous consent for Representative Gianforte of Montana to participate in today's subcommittee hearing, including the opportunity to ask questions of witnesses and submit a written opening statement into the record.

[Laughter.]

Mr. TONKO. I thought I heard a whimper, but we didn't. Without objection, so ordered.

With that, the Chair now recognizes Mr. Shimkus, our ranking Republican for the Subcommittee on Environment and Climate Change, for 5 minutes for his opening statement.

OPENING STATEMENT OF HON. JOHN SHIMKUS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. SHIMKUS. Thank you, Mr. Chairman, and welcome back, Governor Inslee. There is no question ever since your time on the committee that you have been a vocal, passionate advocate for Federal policies to reduce greenhouse gas emissions.

In fact, as I was thinking about our chance to visit today, you were for climate change before climate change was cool. You are trying to save the planet while I was trying to save jobs and the economy, and we served on some panels debating that years ago, and I also remember—I think you hit my slider for a double in the congressional baseball game but don't tell anybody that.

Some of your policies and ideas may not be supportable by our side of the aisle. The proposals may not even be supportable in portions of your home State.

But you have thought a lot about climate policy. We have worked well together in the past. So I look forward to your testimony this morning.

Mr. Chairman, when we began this subcommittee's climate hearings at the beginning of February, I made a point that just because you agree climate change is a risk to address does not mean that you must accept unquestionably the standard Democrat and climate activist solutions to the problem.

For too long this has been a false choice in the policy debate where, if Members question the cost and effectiveness of solutions, they are portrayed as not being serious about the problem.

I would suggest that if we are serious about the problem we should examine the cost and effectiveness of proposed policies. For nearly 30 years the standard treaties and international requirements have not worked so well.

In 1990, energy-related carbon dioxide emissions were 20.5 gigatons. By 2018, energy-related CO₂ emissions had increased to 33.2 gigatons, or by 62 percent, according to the most recent report from the International Energy Agency.

Between 2017 and 2018 alone, global emissions of carbon dioxide increased by 560 million metric tons, a half a gigaton. China's emissions increased by 230 million metric tons, or a little more than 40 percent of the worldwide increase.

U.S. energy emissions also tracked up, but as IEA notes, despite this increase, emissions in the United States remain around the 1990 levels, which is 14 percent and 800 million tons of CO₂ below their peak in the year 2000.

This is the largest absolute decline among all countries since 2000. The United Nations' own November 2018 Emissions Gap Report states that nations will still have to triple their efforts to meet the Paris Agreement's basic goals.

Yet, given the reaction to even modest targets in Europe and elsewhere and the realities of future fossil energy demand, this is not a realistic prospect.

The point here is the scale of the global energy and industrial growth should put the effectiveness over U.S. actions in perspective.

The focus on the Obama administration's economy wide emissions commitments does not appear to be a realistic solution to global emissions growth, though enforcing the commitments here at home could create realistic hardship on our electricity, transportation, and industrial sectors in communities around the nation.

We will hear today what States and cities associated with the We Are Still In coalition are doing to reduce emissions and take other actions to address climate change.

I look forward to what we can learn, especially about preparing for future climate impacts. But I think we should pay close attention to the testimony of two of the elected officials who we will hear from this morning, Mayor Jerry Morales of Midland, Texas, and Commissioner Daniel Camp, who chairs the Board of County Commissioners in Beaver County, Pennsylvania, over the border from Mr. Johnson and Mr. McKinley's district in the upper Ohio River Valley.

They provide powerful examples of what our oil and gas revolution in the United States has meant to communities in terms of tax base, quality of life, economic potential, and community and environmental health.

These officials can testify as to what a focus on energy access, affordable energy, and embracing technological development can mean for the economic vitality of communities.

Their experience is experience developing nations around the world are striving for and which the U.S. should promote. The community wealth and security, the high-quality jobs, and manufacturing prospects, the economic ability to strengthen infrastructure and protect communities from natural disasters are benefits that we should not abandon in the search of climate solutions.

Instead, these are essential attributes we should embrace as providing the potential for continued innovation that will actually foster the technologies necessary to reduce the global emissions.

And, again, it is great to see you back. Welcome back to 2123 and I look forward to hearing your testimony and answering our questions.

And with that, Mr. Chairman, I yield back my time.

[The prepared statement of Mr. Shimkus follows:]

PREPARED STATEMENT OF HON. JOHN SHIMKUS

Thank you, Mr. Chairman. And welcome Governor Inslee.

There's no question, ever since your time on the committee, that you have been a vocal and passionate advocate for Federal policies to reduce greenhouse gas emissions.

Some of your policy ideas may not be supportable by our side of the aisle. The proposals may not even be supportable in your home State, but you have thought a lot about climate policy, we have worked well together in the past, and so I look forward to your testimony this morning.

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For too long this has been a false choice in the policy debate, where if Members question the cost and effectiveness of solutions, they are portrayed as not being seri-

ous about the problem. I would suggest, if you are serious about the problem, you should examine the costs and effectiveness of proposed policies.

For nearly 30 years, the standard treaties and international requirements have not worked so well. In 1990, energy-related carbon dioxide emissions were 20.5 gigatons. By 2018, energy-related CO₂ emissions had increased to 33.2 gigatons, or by 62 percent, according to the most recent report from the International Energy Agency.

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Instead, these are essential attributes we should embrace as providing the potential for continued innovation that will actually foster the technologies necessary to reduce global emissions.

Mr. TONKO. Thank you. The gentleman yields back.

The Chair now recognizes Mr. Pallone, chairman of the full committee, for 5 minutes for his opening statement.

OPENING STATEMENT OF HON. FRANK PALLONE, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. PALLONE. Thank you, Chairman Tonko.

This morning we are going to be hearing from elected representatives of State and local governments about what they are doing to address climate and their actions are more important than ever, considering the Trump administration denies climate change is happening and continues to push policies that will only make it worse.

And I am particularly pleased to welcome Governor Jay Inslee back to the Committee on Energy and Commerce where he served with many of us while he was in Congress. You look good. You

don't—no less weary from being the Governor. A lot of Governors I meet they, like, kind of deteriorate.

[Laughter.]

Mr. PALLONE. But anyway, Governor Inslee's focus on climate change is not new. In 2002, he championed an Apollo-style effort to support technologies and policies to transition the nation to a low-carbon economy and now, as Governor of Washington, he is showing that addressing the climate crisis is not only good policy—it is good business.

He also cofounded the bipartisan U.S. climate alliance, leading the way for other States to take meaningful steps towards fulfilling our commitments under the Paris Climate Agreement.

Now, the mayors on our second panel reflect the dedication and ingenuity of local leaders facing the climate crisis head on and the success of nonpartisan community-focused solutions.

The impressive work of the leaders here today is heartening. But they can't address the magnitude of the climate crisis alone. They need the support and leadership of a strong Federal partner.

State and local government initiatives to reduce greenhouse gas pollution stand in stark contrast to the recent actions by the Trump administration. This administration is doing all it can to lean in to more greenhouse gas pollution, more global warming, and a more uncertain and dangerous future for our country and the rest of the world.

And scientists warn us that some of these impacts will get worse if we fail to act now, and the evidence is very clear, particularly to the communities on the front line of climate change.

Whether they are represented by Democrats or Republicans, they are well aware that the costs of climate change go far beyond the cost to which we can attach a dollar figure.

Now, you know, my district is one where we were hit the hardest, I think, by Superstorm Sandy and, you know, many of my communities were devastated and haven't even fully recovered.

I have to tell you, I don't—I have a lot of Republican mayors, council people, county legislators, and it doesn't matter whether they are Democrat or Republican. They all want us to address climate change. It is not and should not be a partisan issue.

So today, as we sit here, there is record flooding in the Midwest, claiming lives and destroying homes, communities, and businesses that people spent a lifetime building, and those communities know that the time for debate and inaction should have been over long ago.

State and local governments acting on climate change are positioning themselves as leaders in new low-carbon economy. Seventeen States with a Climate Alliance reported last year that they attracted more than \$110 billion in clean energy and those are, you know, obviously, investments—create jobs—and they realize billions of dollars in public health and environmental benefits.

Our Nation has always been at the forefront in the creation of new industries, new technologies, and new jobs and this committee has always been a leader and we should strive to improve upon that record.

Unfortunately, the Trump administration wants to take us backwards by withdrawing from the Paris Agreement. We simply can't

allow that to happen, which is why Democrats have introduced H.R. 9, the Climate Action Now Act.

This legislation would stop President Trump from pulling out of the Paris Agreement and require him to submit a plan from meeting our obligations under the pact.

We will be marking up that legislation tomorrow here in the full committee. But we can't stop there. I would like to move legislation that will support State and local government efforts to address climate change and give Members on both sides of the aisle an opportunity to help communities save money, create jobs, and cut our greenhouse gas emissions.

So, Governor Inslee, it is not that we want you to just talk about what you are doing. We want you to give us ideas about what we can do to help you at the State and local level.

And taking action on climate will lead to the development of new industries and new jobs and make our communities safer and more resilient.

But, again, as I said before, State and local governments can't do it alone. The Federal Government must be strong as a partner by expanding the use of clean energy and reducing fossil fuel emissions and the scientific communities continues to warn us about the dangers of unchecked greenhouse gas pollution.

We have to heed their warning. We have the technology to address this problem but we need to apply it more broadly and more aggressively, and State and local governments are demonstrating that it can be done and we should join with them and reaffirm that the U.S. is indeed committed to acting on climate.

So thank you again for being here, Jay. Thank you for all your leadership, both when you were here and now as Governor.

I yield back.

[The prepared statement of Mr. Pallone follows:]

PREPARED STATEMENT OF HON. FRANK PALLONE, JR.

This morning we will hear from elected representatives of State and local governments about what they are doing to address climate change. Their actions are more important than ever considering the Trump administration denies climate change is happening and continues to push policies that will only make it worse. I am particularly pleased to welcome Governor Jay Inslee back to the Committee on Energy and Commerce where he served with many of us while he was in Congress.

Governor Inslee's focus on climate change is not new. In 2002, he championed an Apollo-style effort to support technologies and policies to transition the nation to a low-carbon economy. Now, as Governor of Washington, he is showing that addressing the climate crisis is not only good policy, it is good business. He also cofounded the bipartisan U.S. Climate Alliance, leading the way for other States to take meaningful steps toward fulfilling our commitments under the Paris Climate Agreement.

The mayors on our second panel reflect the dedication and ingenuity of local leaders facing the climate crisis head-on, and the success of nonpartisan, community-focused solutions. The impressive work of the leaders here today is heartening, but they can't address the magnitude of the climate crisis alone. They need the support and leadership of a strong Federal partner.

State and local government initiatives to reduce greenhouse gas pollution stand in stark contrast to the recent actions by the Trump administration. This administration is doing all it can to "lean in" to more greenhouse gas pollution, more global warming, and a more uncertain and dangerous future for our country and the rest of the world.

Scientists warn us some of these impacts will get worse if we fail to act now, and the evidence is very clear, particularly to the communities on the front line of climate change. Whether they are represented by Democrats or Republicans, they are

well aware that the costs of climate change go far beyond the ones to which we can attach a dollar figure.

This is true in my district where Superstorm Sandy devastated communities up and down the shore, along with many others in the Northeast. Today, as we sit here, there is record flooding in the Midwest claiming lives and destroying homes, communities, and businesses that people spent a lifetime building. Those communities know that the time for debate and inaction should have been over long ago.

State and local governments acting on climate change are positioning themselves as leaders in a new low-carbon economy. Seventeen States of the Climate Alliance reported last year that they attracted more than \$110 billion in clean energy investments in the past decade. And, they realized billions of dollars in public health and environmental benefits.

Our Nation has always been at the forefront in the creation of new industries, new technologies, and new jobs. We should strive to improve upon that record.

Unfortunately, the Trump administration wants to take us backwards by withdrawing from the Paris Agreement. We simply cannot allow that to happen, which is why Democrats have introduced H.R. 9, the Climate Action Now Act. This legislation would stop President Trump from pulling out of the Paris Agreement and require him to submit a plan for meeting our obligations under that pact. We will be marking up that legislation tomorrow here in the full committee.

But we cannot stop there. I plan to move legislation that will support State and local government efforts to address climate change and give Members on both sides of the aisle an opportunity to help communities save money, create jobs and cut their greenhouse gas emissions.

Taking action on climate will lead to the development of new industries and new jobs. It will also make our communities safer and more resilient. But State and local governments cannot do it on their own. The Federal Government must be a strong partner by expanding the use of clean energy and reducing fossil fuel emissions.

The scientific community has warned us for years about the dangers of unchecked greenhouse gas pollution. We cannot ignore their warning. We have the technology to address this problem, but we need to apply it more broadly and more aggressively. State and local governments are demonstrating that it can be done. We should join with them and reaffirm that the United States is indeed committed to acting on climate.

Thank you, I yield back.

Mr. TONKO. The gentleman yields back.

The Chair now recognizes Mr. Walden, Republican leader of the full committee, for 5 minutes for his opening statement.

OPENING STATEMENT OF HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. WALDEN. Well, good morning, Mr. Chairman, and thanks for having this hearing. As you know, you and I have discussed Republicans are ready and willing to work with you on policies to continue America's leadership role in developing innovative technologies to produce energy with little or no emissions.

Republicans are ready and willing to work with you on conservation, on innovation, on adaptation, and preparation policies that help the environment and do not harm consumers.

In fact, we have a pretty clear record of bipartisan legislation from this committee to do just that. Republicans have worked with Democrats over the past several Congresses to remove regulatory barriers to new technological advances in power generation, from hydroelectric power to small modular nuclear, from carbon capture and storage incentives to power grid reforms because innovation is where the long-term solutions to climate change are.

We want America to lead the world in innovation as we always have, especially on clean energy and environmental cleanup. It is disappointing today that this hearing is really more about the poli-

tics of climate change than rolling up our sleeves and getting to work on domestic solutions.

I can't recall a time in my more than 18 years on the committee where we have cleared the decks for a presidential candidate to come take center stage.

Now, I want to join those in welcoming Governor Inslee back to the Energy and Commerce Committee room. We also served together on the Resources Committee.

And as an advocate for the Green New Deal, I am sure you would agree with me that it is time that this committee actually had a hearing on that legislation.

Both of my senators signed on and were at the news conference when it was announced, and I know one of the biggest proponents, the new Congresswoman from New York, said it was unfair for the Senate to vote on the Green New Deal without first having had a hearing.

So we should take note of her comments and schedule a hearing, Mr. Chairman, in this committee.

Meanwhile, as I noted a few weeks ago, the focus on U.S. commitments in the Paris Agreement distracts from the work we could get done together. Certainly, many States and cities around the United States have made commitments to meet the Paris goals. But these commitments don't necessarily work nationally.

However, I do believe this hearing will be useful to review some of the actions States and cities are taking to adapt and become more resilient to a changing climate.

Now, in the great Pacific Northwest, we have benefitted from clean hydroelectric power. We have wind power, we have geothermal power, and we have solar power, among other sources.

And while our energy emissions are better than most, we have suffered greatly from the lack of management of our Federal forest lands, which are burning up every summer, choking our citizens and polluting our atmosphere.

I know when Governor Inslee was in the House, we went toe to toe, and you opposed most of my efforts to get our forests back in balance and to reduce the threat of wildfires.

Now, even in the United Nations Climate Change Panel, they called for active forest management. So, hopefully, perhaps your views on these matters have changed as you read the IPCC reports from 2007 and beyond.

After this hearing is behind us, Mr. Chairman, I hope we can work together as we have in the past to reduce the barriers to innovation and unleash the best and brightest among our citizens to develop new technologies to help confront the climate challenges in the future and put America in the driver's seat to lead those technologies and sell them abroad.

Mr. Chairman, I would also raise the issue that it is unfortunate the measure that we will markup tomorrow was only introduced on Thursday and it is unfortunate that your subcommittee, this one, does not have an opportunity to markup that measure.

That would be the regular order that you are proud of and I am proud of, and I am sorry we are not going to have that opportunity to have a markup on the underlying legislation. Instead, it is going

to be taken straight to full committee and straight to the floor to meet some arbitrary deadline.

So with that, Mr. Chairman, thanks again for having this hearing. We look forward to working with you where we can, and I yield back the balance of my time.

[The prepared statement of Mr. Walden follows:]

PREPARED STATEMENT OF HON. GREG WALDEN

Thank you, Mr. Chairman.

As you and I have discussed, Republicans are ready and willing to work with you on policies to continue America's leadership role in developing innovative technologies to produce energy with little or no emissions. Republicans are ready and willing to work with you on conservation, innovation, adaptation and preparation policies that help the environment and don't harm consumers.

We have a clear record of bipartisan legislation from this committee to do just that. Republicans have worked with Democrats over the past several congresses to remove regulatory barriers to new technological advances in power generation, from hydroelectric power to small modular nuclear, from carbon capture and storage incentives to power grid reforms. Because innovation is where the long-term solutions to climate change are. We want America to lead the world in innovation, as we always have, especially on clean energy and environmental cleanup.

I realize that today's hearing is more about the politics of climate change than rolling up our sleeves and getting to work on domestic solutions. I can't recall a time in my more than 18 years on this committee where we've cleared the decks for a presidential candidate to come take center stage.

Now, I want join those in welcoming Governor Inslee back to the Energy and Commerce Committee. As an advocate for the Green New Deal, I'm sure he would agree with me that it's time we had a hearing on this legislation.

Both of my Senators have signed on to the Senate version, and I know one of the biggest proponents, the new Congresswoman from New York said it was unfair for the Senate to vote on the Green New Deal without first having had a hearing. We should take note of her comments and schedule such a hearing.

Meanwhile, as I noted a few weeks ago, the focus on U.S. commitments in the Paris Agreement distracts from the work we could get done together. Certainly, many States and cities around the U.S. have made commitments to meet the Paris goals. But these commitments don't necessarily work nationally. However, I do believe this hearing will be useful to review some of the actions States and cities are taking to adapt and become more resilient to a changing climate.

In the Northwest, we've benefited from clean hydropower, wind, geothermal and solar power. And while our energy emissions are better than most, we've suffered greatly from the lack of management of our Federal forest lands, which are burning up every summer, choking our citizens and polluting our atmosphere. I know when Governor Inslee was in the House he opposed most of my efforts to get our forests back in balance and reduce the threat of wildfires. Even the UN's climate change panel calls for active forest management, so hopefully his views have changed on these matters in the intervening years.

After this hearing is behind us, let's work together, as we have in the past, to reduce the barriers to innovation and unleash the best and brightest among our citizens to develop new technologies to help confront the climate challenges of the future.

I think we're up to the task, Mr. Chairman.

Mr. TONKO. Thank you. The gentleman yields back.

The Chair would like to remind Members that, pursuant to committee rules, all Members' written opening statements shall be made a part of the record.

Now I would like to introduce our first witness for today's hearing, the Honorable Jay Inslee, Governor of the State of Washington.

I want to thank you, Governor, for joining us today. We look forward to your testimony. Again, I have to thank you for inspiration you provided not only in the House but across Congress to look at

the climate change issue with great seriousness and approaching it in a scientific and evidence-based way, and thank you for leading us in that effort.

Before we begin, I would like to explain the lighting system in front of our witnesses. There is a series of lights. The light will initially be green at the start of your opening statement. The light will turn yellow when you have 1 minute left.

Please wrap up your testimony at that point. The light will turn red, and your time expires, and I am certain you recall those days but always a refresher course is helpful.

At this time, the Chair—

Mr. INSLEE. We never abided by them.

[Laughter.]

Mr. TONKO. There you go.

So at this time, the Chair will recognize the Honorable Jay Inslee for 5 minutes to provide his opening statement, and again, welcome, Governor.

STATEMENT OF JAY INSLEE, GOVERNOR, STATE OF WASHINGTON

Mr. INSLEE. I thank you, Chair Pallone and Tonko, Representative Shimkus, Walden, our Congresswoman Rodgers. Thanks for having me.

I can assure you, in the last 6 years none of you have deteriorated at all from this front except for the Shimkus fastball. That has lost 5 miles an hour. But that is another matter.

I think I can share just as a top comment here three things that I think there is wide agreement on out in the States, if I can report.

Number one, we recognize that we are the first generation to feel the sting of climate change and we are the last generation that can actually do something about it.

Number two, we recognize this is a moment of great peril but it also a moment of great economic promise with tremendous job creation opportunities that I will talk about in a moment.

And number three, I think we have decided, because the facts are in, there are a heck of a lot more jobs fighting climate change than there is in denying climate change, and that is good news for the United States, and I will talk about that and success in many of our States in a few moments.

So we do hope that we can help the Federal Government take a look at some of the actions that States are taking in the hopes that the Federal Government can join the States in really working to build a clean energy economy. So I hope I can be helpful to you in this regard.

I won't dwell too much on the peril part of this. It should be kind of obvious to us with the floods and the hurricanes and the fires.

But I will tell you that when you visited Paradise, California—when I did, a town of 25,000—and you go for an hour at dark and there is nobody there, and it looks like a postapocalypse movie, you know we have got to do something about climate change. So I hope that you all can get together to figure out some things to do.

I want to point to our State's experience because I think it has been helpful. The first thing I want to say about our State's experi-

ence is we have been dedicated to developing a clean energy economy and in part, because of that, we have the best economy in the United States.

We have the fastest GDP growth, the fastest job growth, and the fastest wage growth in the United States. Business Insider magazine said we are the best place to do business. OxFam said we are the best place to work, and that is in part because of the clean energy policies that we have adopted, and we have had some considerable success.

We have built a wind turbine industry from zero to 3,000 megawatts in the last 12 years. In a clean energy fund that we have developed, we have leveraged about \$200 million of private equity and now are putting people to work.

We are on track of putting \$50,000 electric cars on our road including the Governor's little General Motors Bolt built in Orion, Michigan, with American workers—a spiffy little safe car. Those policies are working in my State. But we are not done.

We now, in my legislature, have several bills to move this clean energy revolution forward—100 percent electrical bill—excuse me, 100 percent clean grid bill, which is advancing in my State, an improvement of our renewable energy portfolio; a provision to make sure that we wean ourself off of coal-fired electricity and several other bills I am happy to talk about in more length.

But I am not the only Governor and the only State that has been moving forward. We have had significant advances across the United States.

In Colorado, Jared Polis just signed an order accelerating widespread electrification of cars and busses. In New Jersey, Delaware, and Virginia they are considering adoption of a regional greenhouse gas initiative that has been modeled somewhat on the RGGI program.

And New Mexico just voted to double renewable energy use in the State by 2025 and have joined Hawaii and California by calling for 100 percent electricity to be carbon free by 2045.

Illinois has just passed the Future Energy Jobs Act, which has expanded solar energy in setting 25 percent renewable energy goals, and because of these actions we are experiencing profound transformation of the economy to a clean energy economy today.

Today, there are 3.2 million Americans working in the clean energy sector today, and it is the fastest growing sector of the economy.

You know, the number-one fastest growing job classification in the United States today is solar panel installer and number two is wind turbine technician, and you can't go anywhere in this country and not see small businesses putting people to work developing clean energy jobs and that is why it is so exciting.

I mean, I just looked at Illinois, for example, because I wanted to honor Representative Shimkus. It has 8,633 wind jobs. It has 4,879 solar jobs. There are 7,357 electric vehicles on the road. This is a 93 percent increase.

We are in the midst of a great transition and I am hopeful that we can help you in some way figure out how to accelerate that transition.

Thanks very much. I look forward to your softball questions and gentle criticisms.
[The prepared statement of Mr. Inslee follows:]

Testimony of Governor Jay Inslee

Governor, State of Washington

Before the House Subcommittee on Environment & Climate Change

U.S. House of Representatives

“Lessons From Across the Nation: State and Local Action to Combat Climate Change”

April 2, 2019

Chairman Pallone, Chairman Tonko, Ranking Member Walden, Ranking Member Shimkus, members of the subcommittee, thank you for inviting me here today.

I am here to tell you unequivocally that there are more jobs in fighting climate change than denying it. It's time for the federal government to stop denying climate change and start embracing the clean energy jobs that come with bold, national climate action. Our country should seize this opportunity and tackle the most pressing and existential threat of our time.

We are the first generation to feel the sting of climate change and the last generation who can do something about it. This is a matter of urgency.

I'm eager to share with you what we're doing at the state level now, and what we as a nation need to do next.

This is an issue I've been working on for decades. Less than ten years ago, I sat where you are now, as a congressman serving on the House Energy and Commerce Committee.

This chamber is where I worked with my colleagues to enact the largest single investment in clean energy in American history, as part of the 2009 Recovery Act, deploying renewable energy, cleaner cars, innovative technologies and good-paying jobs.

Today, I sit before you as a governor who remains bullish about America's ability to build a clean energy economy. We are the most innovative and can-do people in the history of humanity. We are growing clean energy jobs by the bucketful, in communities urban, suburban and rural, and it's imperative that we take action to ensure they keep growing here in America — not in China or Germany.

Climate change presents great peril, but it also presents great promise. When I co-authored a book, *Apollo's Fire*, I wrote about how we as a nation are uniquely positioned to invent, create and build the equitable clean energy economy that is key to defeating climate change. Having seen the incredible innovation happening all across my state and all across the country, I'm more convinced of our ability to transform our economy than ever before.

I'm proud of all we've done to advance the clean energy revolution in my state, along the West Coast, and in other leading states around the country. But the truth remains that without leadership from our federal government, the country won't be able to do enough, fast enough.

World in Crisis

Our forests are burning, our cities are flooding, and we're running out of time.

Last fall, the federal government released the Fourth National Climate Assessment, a comprehensive report completed every four years by our top scientists among 11 federal agencies. This report exhaustively catalogues the havoc that climate change will wreak — and is already wreaking — across the country.

For the first time, this report put a clock on how long we have to act. If current emission rates continue, in 10 years we won't be able to limit global warming to 1.5 degrees Celsius, with nearly unthinkable consequences.

This isn't an abstract number.

2017 saw numerous catastrophic fires, Hurricane Maria, and massive flooding. All told, these events cost the United States more than \$306 billion, making 2017 the most expensive natural disaster year in U.S. history.

2018 brought us Hurricane Michael, one of Florida's worst hurricanes to date, and the Camp Fire in California, the state's deadliest ever.

I've been to Paradise, California, and let me tell you, it is impossible to describe the devastation that community has faced. Walking through that town looks post-apocalyptic, with virtually every structure abandoned or destroyed and more than 25,000 people missing from their homes. How can anyone look at what happened there and ignore the clear and present danger staring us in the face?

In Washington State

We're seeing the devastation wrought by climate change firsthand in my state. And we know that a world surging past 1.5 degrees Celsius is a world where these disasters become the new normal.

In the West, that means hot summers and dry forests, which means fire, air pollution and risk to life and property at scales we've never experienced. In my time as governor, Washington State has experienced its two largest fire seasons ever and the hottest years on record.

Just last month we had the warmest winter day in state history. But that's not unusual anymore, because every year we see a new record set.

Last year, thanks to wildfire smoke, my state had the dubious distinction of suffering from the worst air quality in the world — not China, not India, but Washington State. My own grandchildren couldn't go outside, couldn't play, couldn't go swimming because the air quality was that bad.

A few years ago we experienced a record drought season that resulted in the loss of 250,000 returning sockeye salmon due to lower, warmer streams and \$733 million in lost crops.

And it's not just the people in my state suffering these impacts. The people of your states are seeing the damage from more extreme weather events, crop losses and unhealthy air quality.

Public Opinion is Shifting

More and more Americans are waking up to this disturbing reality, and the federal government is again falling behind public opinion.

The vast majority of Americans now understand that climate change is happening, outnumbering those who don't by more than 5 to 1. And their certainty of this fact has increased by 14 percent in the last few years.

Today, 72 percent of people in this country — more than 7 in 10 Americans — now say the issue of climate change is important to them personally.

Public opinion is shifting fast, the countdown to 1.5 degrees is bearing down on us, and the federal government needs to keep pace.

States are Leading

Despite this administration's failure to keep that pace, states are leading the charge to build strong, low-carbon economies — cutting pollution, lowering consumer costs and creating jobs, all at the same time.

Washington State is an example of how leading on clean energy goes hand in hand with leading a strong economy. Through policies to promote renewable energy, invest in research and development of clean tech, electrification of our transportation sector and more, we're taking bold action on climate while our economy continues to thrive.

We have been named the best state to do business and the best state in the nation for workers. And that's what an all-out fight against climate change is going to look like — an investment in innovation and the fundamentals of our economy, and in workers and the high-quality jobs they need.

This year, we're pursuing one of our most ambitious efforts yet. Our state Senate passed legislation that will spur a transformation in our electricity system over the next decade. The bill phases out coal-fired power by 2025, significantly increases the amount of renewable energy resources like solar and wind that utilities must acquire by 2030, and puts Washington on a pathway to 100 percent clean electricity by 2045.

The bill is part of package of legislation that I've proposed to leap further and faster into the clean energy economy. It includes:

- A phase down of super-polluting hydrofluorocarbons, or HFCs;
- An innovative incentive package for ultra-efficient 21st century buildings;
- An acceleration of the deployment of electric vehicles on our roads and electrification of passenger ferries;
- New investments in efficiency; and
- The use of cleaner transportation fuels.

That's just this year. But we've been at this a while. In Washington, a state with the nation's largest supply of cheap hydropower, we've become a leader in commercial scale wind thanks to policies we adopted in 2006.

In the last decade, utilities and commercial power providers have built 3,000 megawatts of new wind power and invested almost \$6 billion. And the Clean

Energy Fund I established in 2013 has managed \$125 million of investments in clean energy innovation.

Our work at the state level — and an extraordinary amount of industry innovation — has put us on track to meet my goal of 50,000 electric cars on our roads by the end of this year, making Washington one of the nation's top clean car states. Meanwhile, our economy is one of the strongest in the nation, with the highest real GDP growth of any state in 2017.

Washington is just one of the states doing important work to advance clean energy and transportation.

As the Trump administration announced its retreat from the Paris Agreement, I worked with Jerry Brown of California and Andrew Cuomo of New York to establish the U.S. Climate Alliance, a bipartisan coalition of 23 governors committed to reducing greenhouse gas emissions consistent with the goals of the Paris Agreement.

The Climate Alliance now includes over half of the U.S. population and nearly 60 percent of our economy — \$11 trillion annually. That's the equivalent of the third-largest economy in the world, after the United States and China.

Climate Alliance states have reduced emissions faster than the rest of the country, while growing our economies faster than the rest of the country. This shows that fighting climate change and growing strong economies happen hand in hand. And our states are continuing to step up our efforts.

Colorado Governor Jared Polis signed an order that accelerates widespread electrification of cars, buses, trucks and other vehicles.

New Jersey, Delaware, Virginia and other states are building a low-carbon transportation initiative modeled on the Regional Greenhouse Gas Initiative that successfully cut emissions in the power sector.

New Mexico just voted to double renewable energy use in the state by 2025, and became the third state, after Hawaii and California, to commit to generating 100 percent of its electricity from carbon-free resources by 2045.

Illinois passed the Future Energy Jobs Act, expanding solar energy and setting a 25 percent renewable energy goal for the state.

Massachusetts, Maryland and Vermont have all taken decisive action in their states to reduce greenhouse gas emissions and increase deployment of renewable energy.

Federal Action is Essential

Unfortunately, at the federal level, this administration isn't just failing to act — they are lighting the match and setting the fire. Look where they're taking us:

- Rolling back the Clean Power Plan that was poised to transition our grid into the 21st century;
- Attacking fuel economy and clean car standards that have saved lives and lowered consumer costs;
- Gutting modest standards that would have lowered methane leaks in the oil and gas industry; and
- Releasing illegal rules to bring back inefficient equipment and appliances that cost consumers money.

Just a few weeks ago, this White House released a budget that:

- Cuts the Renewable Energy Office by a staggering 86 percent, a more than a \$2 billion reduction;
- Cuts sustainable transportation by 77 percent, a more than \$530 million reduction;
- Cuts solar energy by 72 percent, a \$180 million reduction; and
- Cuts wind energy by 74 percent, a \$68 million reduction.

It's more than just disappointing. It is irresponsible — for the climate, for the economy, and for future generations. We need an administration that believes in the science of both gravity and climate change.

The clean energy economy is growing twice as fast as the rest of our economy, and solar panel installers and wind turbine technicians are two of the fastest growing jobs in the nation.

Don't tell me fighting climate change is an economic loser. Fighting climate change is our economic future, but only if we don't cede leadership to China, Germany and every other country going all-in on this effort.

Don't tell me fighting climate change is just an environmental issue. It is key to our national security, as described by this administration's own military leaders.

It is key to the health and future of our children and grandchildren.

Why the Federal Government Must Get Back in the Game

States cannot solve a problem of this magnitude on our own. It's that simple.

It's long past time for Congress to put our nation back in the game. While states and cities are doing our part, the scale of action needed to beat the clock requires a national mobilization of resources and policies to drive innovation across every sector of our economy.

Fortunately, we aren't starting from scratch. That innovation is already underway. But we need more, and we need it fast. It's up to you to leverage our national resources and unleash our researchers, scientists, machinists, manufacturers, growers and laborers to do what they do best – create, invent and build the way to an equitable new clean energy future.

Thank you again for the opportunity to appear before you today, and I look forward to your questions.

Mr. TONKO. And whatever else might follow. Thank you, Governor, for your opening statement. We now will move to Member questions.

Each Member will have 5 minutes to ask questions of our witness. I will start by recognizing myself for 5 minutes.

Governor, again, welcome. I know many of my colleagues will have questions about how the Federal Government can better support your efforts as well as the specific solutions you are pursuing in Washington.

I want to take stock of where we have been. I think back to 10 years ago, the last time Congress had a meaningful debate on climate pollution and the need for and opportunities from a clean energy transition.

During this time, the cost of cleaner alternatives such as renewable energy have dropped at previously unimaginable rates. Clean energy jobs have been created across our country and a greater public awareness of the climate science threat we face and of the urgency at which we must respond has taken hold.

So, Governor, what are the biggest developments of the climate debate or policy since you left this House?

Mr. INSLEE. Well, I think that the most significant thing that has happened is that our research and some of our policies are actually bearing fruit.

There is a really good news story here. I just had breakfast with a woman leader in the clean energy industry and she was pointing out that the suite of some of the small policies we adopted during the Recovery Act, for instance, during some of our tax policies, which have been supremely successful driving economic development and driving down the cost of these systems.

So the cost of solar energy in the last 10 years has come down 80 percent. The cost of wind turbine energy has come down about 20 percent.

That has been the product to some degree of some of the policies that we have adopted and I think that is really an optimistic thing to say that when we do put our shoulder to the wheel we can drive reductions in cost and, therefore, further deployment.

The other thing I would say is that this has been successful not just as an urban but it is an urban and rural and it is a small and big State effort. I will just give you an example.

In my State, in part because of some of our policies, some of our greatest clean energy job creation are in rural parts of our State in smaller communities.

So the largest, for instance, carbon fiber manufacturer in the Western Hemisphere that goes into electric cars is not in Seattle. It is in Moses Lake, Washington, in central Washington, kind of a smaller town.

One of the largest biofuels manufacturer is not in Seattle. It is Gray's Harbor, Washington, which is a town that has had some stress because of the diminution of the forest industry.

I just went to the ribbon-cutting of the largest solar farm in our State, which is near Lind, Washington, which is a town of 300. So you have these beautiful solar panels surrounded by wheat fields. This is an economic development program that is available to all

Americans throughout our country and I think that's a lesson that is important.

The other thing we have learned is that you can do these things with essentially no or de minimis cost to consumers because as the technology has come on, we have actually got cheaper products.

So if you are driving an electric car today you have 80—probably 80 percent lower fuel costs to run your car and that is why we are happy in my State to have one of the largest percentage of use of electric cars to meet our goals. Those things are working.

Mr. TONKO. So—thank you, Governor—so in that near decade that has passed since we last visited this issue, what important lessons are the most—that speak most clearly to us about learning from our past efforts?

Mr. INSLEE. Well, I think the most important lesson is one that is really rarely noted, which is that the cost of inaction is enormous. I think that is an important lesson here. Somebody asked me about the cost of investment in solar energy. It is a lot cheaper than when your town burns down, like Paradise, California.

It is a lot cheaper than the \$1.6 billion we have lost in agricultural production because of these recent floods. It is a lot cheaper than the U.S. Navy is going to have to invest because of sea level rise at our Norfolk facility.

So one of the lessons is these investments pay off ultimately if we can reduce the level of damages that we are occurring.

Second is that when you—when you make relatively small investments, you can start huge industries. Just give you an example.

So several years ago, we started this little clean energy development fund. It was \$140 million—relatively small. But it is designed to leverage private equity to be in partnership with private equity and to help small-scale startups start up.

Started a little company called UniEnergy which does vanadium flow battery, at that time, essentially, research, and they brought in some private equity and today that company is making the largest vanadium battery in the world, which is really important to be able to integrate renewable energy into the grid. My neighbor's kid went to work with them a couple years ago and really likes the job.

Now, this is an important issue because, you know, we have a President of the United States that says, you know, your television will blank out if the wind doesn't blow.

Well, you know, that is just not true. We have this new invention called batteries, and now we are integrating batteries into the grid.

I turned on the first ones—some of the first ones at Washington State University. So we know these things work. We know that these small policies can develop big, big industries. We have seen it happen. We just need to accelerate it.

Mr. TONKO. Thank you very much, Governor.

And the Chair now recognizes Representative Shimkus, Republican leader of the subcommittee, for 5 minutes.

Mr. SHIMKUS. Thank you, Mr. Chairman.

Jay, welcome back. Nuclear power—where does it fit into the this carbon-free society?

Mr. INSLEE. Well, I think that we need to continue to do R&D in any potential low-carbon or zero-carbon emission and that includes nuclear power.

I think we need to continue research to figure out whether we can solve some of the things we need to solve for nuclear power which, obviously—and they are well known to you. We need to bring down the cost.

We need to have a more passive safety system. We would need to have something that solved the nuclear waste problem, either by eliminating the waste or finding something in the waste.

And fourth, you would have to win public support. So those things would need to happen, and I support R&D on those. Some of that is going on in my State right now.

Mr. SHIMKUS. Let us follow on the closing of the fuel cycle, and you know—you are probably prepared. You and I, obviously, worked diligently on this years ago and you cosponsored the amendment—you know, the act.

We have nuclear waste, spent fuel—39 States, 121 locations. We have a law. That is the '82 nuclear waste policy act along with the amendments of '87. Has your position changed on finishing the scientific study to see if it's safe to store waste at Yucca Mountain?

Mr. INSLEE. Well, I think that we need—I think what the last few years have shown is that we need to find a more consensus-based approach on waste disposal. I do believe that.

Mr. SHIMKUS. But don't you—don't you believe that if a prior sitting Federal legislator and a President signed it that they have already done that hard work? I mean, the legislative branch already passed it. The President signed it into law.

I think my concern is we are relitigating a law that has already passed and in the past—and I am not trying to pile on. I consider you a friend.

But I just hope we would rethink this because closing that fuel cycle is part of the solution that we would like to—because I do think nuclear power, especially major baseload power, is critical.

Some of the wind production tax credits which you talked about has really hurt the cost-benefit analysis of nuclear power and that is my Exelon, one of them major generators, is starting to close nuclear power plants, which is, in essence, contrary to this goal of a carbon-free generation world that people are trying to push and I think that is something that we will talk about as we move on this committee.

Let me ask another question that deals with—oh, I wanted to tell you my son graduated from Western Washington University and interned in Olympia. So I am not sure what is happening with my family.

Mr. INSLEE. Well, he is going to be a Democrat—I know that—if he went to Western, that is for sure.

[Laughter.]

Mr. SHIMKUS. So the—and I want to thank Cathy for getting him there. So for the sake—this committee will deal with the spent fuel debate. We passed a bipartisan bill out of the—of the floor last Congress 340 to 70, I think—bipartisan—and more Democrats voted for it than against it.

Did—can you, for the sake of this committee, just briefly talk about the problems you have at Hanford as far as the defense toxic floods that we have and those—I don't know how many containers and buried underneath the ground and you can weave the story a lot better than I can.

Mr. INSLEE. Well, one of the problems we have is that the administration at the moment is not, at least in our view, complying with some of the—

Mr. SHIMKUS. No, and I get that, and we can go through administrations. Just weave the story about what the challenges are there. I mean, we could look at Obama. We can look at Bush. We can look at negligence across the spectrum.

But what do we—I mean, there are how many tanks there at Hanford?

Mr. INSLEE. So we have millions of gallons of sludge, as you are well worth—knowledgeable about. We are having technological challenges and we want to get the vitrification plant up and running.

It would help if the administration, rather than looking this as kind of a financial sacrifice zone, will actually help make this happen.

Mr. SHIMKUS. Yes, and explain for my colleagues who may not have been there, what is this sludge? What are we talking about?

Mr. INSLEE. Well, we are talking about leftover waste from the nuclear facility that one the Cold War and we expect any administration, whether it's Republican or Democrat, to help us in the cleanup effort. And if you will allow me to finish—

Mr. SHIMKUS. And are we not close to the Columbia River?

Mr. INSLEE. Would you like to testify, John, and I will just sit here?

[Laughter.]

Mr. SHIMKUS. No, I am just—actually the defense waste and the spent fuel is one package, and it's just part—when we have to deal with this it's not just spent fuel from nuclear power plants. This is a solution to our defense portfolio and that's the only reason why I bring it up. I don't—

Mr. INSLEE. That is correct.

Mr. SHIMKUS. I am not trying to do the gotcha.

Mr. INSLEE. No, I just—I do want to make the point, though, that the administration is not fulfilling its obligation to the people of the State of Washington in a variety of contexts.

We have had some safety concerns for workers, particularly, that we have been concerned about, and we will continue to be diligent to hold this administration's feet to the fire and I hope this committee does the same, whether it's Republican or Democrat, and right now the administration is not doing its job to get this job done, and I think it owes it to the whole country and to the State of Washington.

Mr. SHIMKUS. We should move the waste. That would be helpful.

[Laughter.]

Mr. TONKO. The gentleman yields back.

The Chair now recognizes Mr. Peters for 5 minutes.

Mr. PETERS. Thank you, Mr. Chairman, and thank you, Governor, for being here. I am excited about having you here.

In your testimony, you talk a little bit about the accomplishments of the Federal Government. Recently—you are not complimentary—you mentioned that the administration has rolled back the clean power plan that has poised transition of our grids into the 21st century, attacked fuel economy and clean car standards that have saved lives and lowered consumer costs, gutting modest standards that would have lowered methane leaks in the oil and gas industry.

I don't think that gets enough attention. And increasing illegal rules to bring back inefficient equipment and appliances that cost consumers money. You might have also mentioned that we withdrew from the Paris Agreement and a number of other things that have gone in the wrong direction.

Assuming we could get back to zero and deal with all those things, what would be your priorities for Federal action if we got back in the game in a significant way?

Mr. INSLEE. Well, let me just follow up on what you said. It is important to get back to quote "zero" because at zero we were making progress.

These things you rattle off are extremely important, extremely effective, and they are not small things, and I believe they can be done through executive action of whoever is in the office in the future, and should be.

And I think they flow—the current President's policies on this have flowed from a really dangerous pessimism about our ability to build a clean energy economy. I think there is too much fear about this, and I think if we look at the success we have had, we have seen that these things actually work.

When I heard the President the other day saying that, you know, your television will turn off if the wind doesn't blow, I don't know why someone has not explained to him the existence of batteries.

I don't—you know, batteries run tweets so I don't know why you couldn't understand batteries can run your grid. In fact, we are making huge progress in the ability to do that.

And not just electric batteries. We have pumped storage that is now—there is a pump storage program that can put hundreds of thousands of people to work in central Washington.

So I think we have to have a little more optimism and if we do follow the can do spirit of America we will embrace these executive actions.

But going forward, I would suggest that the things that the States are doing very successfully are things that are a template for success federally. That includes 100 percent electrical grid goal for electrical grid.

It includes a clean fuel standard for our transportation fuels. It includes a very, very significant expansion of our Federal research and development and a whole slew of technologies.

When I was sitting where you were, I noted that we spent more money developing one kind of Jeep than we did in the entire clean energy research budget of the United States, and when you have an existential threat, which is of the equivalent of a world war, in some sense, you got to have an R&D budget that in fact does that.

We have shown that increased building codes to be consistent with the existing building technology can be very effective and we

are, hopefully, going to pass a bill at my legislature this year that will upgrade our building codes so we don't waste energy at all.

Investments in infrastructure are extremely important. We have had \$70 billion of transportation infrastructure in my State that are putting thousands of people to work. Seventy percent of that is in public transportation, which is low-carbon systems.

So building an infrastructure program, which I would hope Congress would do soon, and making sure a significant part of it goes to reduce our carbon footprint in transportation is extremely important.

Assistance to consumers and small businesses for some of the capital needs to get these technologies in our hands is very, very useful.

What we know is that most of these technologies if you do an investment of \$10 you save \$80 on your costs over the lifetime of the program. Don't hold me to those numbers. This is just a hypothetical for the moment.

But the point is once you can get a little capital that allows the initial investment, you save money over the lifetime of your investment. All of these things as a suite of policies in some part are being placed in States around the country. The RGGI program has been very successful.

Mr. PETERS. Well, except I would say the particular thing you raised, which is not being done and probably can't be done by States, is the research part of it. I would say—

Mr. INSLEE. Yes. I think that is where maybe the Federal Government could be most important, having the financial resources that the Federal Government does, and having a unified R&D program nationally I think would be extremely important. When we do—

Mr. PETERS. Do you believe that it is—do you believe it is important for the Federal Government to be involved in making sure that the grid is interoperable State to State? Is that important?

Mr. INSLEE. Yes. It is extremely important, and we also want to have developed policies so that we can move renewable energy to its most productive usage and the Federal Government can be helpful in that interplay with different grid systems and I would love to talk to you about that.

Mr. PETERS. Love to. My time has expired. Thank you.

Mr. INSLEE. Thank you.

Mr. TONKO. The gentleman yields back.

The Chair now recognizes the gentlelady from the State of Washington, Representative Rodgers, for 5 minutes.

Mrs. RODGERS. Thank you.

Governor Inslee, welcome back to the House Energy and Commerce Committee. Out of curiosity, I just wanted to start out by asking you how you traveled here and what the carbon footprint was associated with that travel, and if you had laid out specific steps to offset that impact?

Mr. INSLEE. Yes. I intend to develop a clean energy system for the United States and the State of Washington and that will be the most tremendous offset of anything I have ever done in my entire life, because we will give my grandchildren an opportunity to have a life that is not severely degraded.

And I traveled here the same way that everybody on this committee traveled here, which is on a jet airplane, and we are now developing biofuels, and we have developed in my State, something we should be proud of at Washington State University, and Alaska Airlines—

Mrs. RODGERS. Yes.

Mr. INSLEE [continuing]. That have developed a biofuel that we could fly. We have flown a Boeing airplane across the Atlantic Ocean.

Mrs. RODGERS. Yes. Yes. Thank you. Yes. Thank you.

And I am excited about the biofuels, too, because it helps us address what is going on in our forests.

Governor Inslee, as you know, in Washington State our largest source of clean renewable reliable affordable energy is hydropower—70 percent. The Columbia and Snake River systems provide important energy for us.

They also provide irrigation to water our crops, making agriculture our number-one industry. Flood control, preventing catastrophic floods that we had in years past. Barging a product up and down the river—it is really a superhighway with significantly less carbon impact than trucks or trains.

So I just had some yes or no questions I wanted to ask you. Do you support removal of the dams?

Mr. INSLEE. I support what we are doing in our State, which we have a task force to help respond to the Federal court order to evaluate the potential of that both from the positive and negative consequences, and there are both positive and negative consequences.

And I support a way for Washington citizens to have their voices heard so that they can look at the cost to agriculture, of difficulty moving wheat, for instance. They can look for the costs of transportation.

But they can also look at the potential positives from the salmon recovery standpoint and, as you know, we are on a Federal court order to determine all of these things.

So I support Washington State's citizens being able to have a system which we have developed, as you know, on our task force to be able to address that issue and I will be working with citizens to evaluate all of those things.

Mrs. RODGERS. OK. I have some other questions.

Do you acknowledge that fish rates are maintaining even levels or even increasing as was outlined in your own State of the salmon report?

Mr. INSLEE. I am sorry. Did you say fish rates?

Mrs. RODGERS. Yes. Fish return rates, up and down the river.

Mr. INSLEE. No, I am not confident that over a long term that we have stability on the Columbia system, and the reason I say that is that the system is dependent on things in the salmon life cycle that are not on the system itself.

They depend, for instance, on food chains out in the Pacific Ocean and, unfortunately, we are seeing some degradation of those food chains because of climate change, because of increasing temperatures, both in the mainstream and in the ocean, and in different acidification of the ocean.

Mrs. RODGERS. Yes or no?

Mr. INSLEE. So the answer is no.

[Laughter.]

Mrs. RODGERS. OK. Thanks. I have another one.

Do you agree, if the dams are removed, Washington's agriculture industry will be negatively impacted?

Mr. INSLEE. It would be if we did not find some other alternative for transportation, and that is one of the things that this group is going to be evaluating is to determine whether there are feasible alternatives for transportation, and that is something that I think deserves a great scrutiny where everyone's voice is heard to look at those potential alternatives.

And there may be potential alternatives in rail and trucking and the like, and I think that that is appropriately investigated in a real sense where we can really get down to it.

And here is the reason I say that. I think it is important for people to have a forum to look at this on a scientifically credible way rather than just press releases or bumper stickers.

We need people listening to one another, and I hope that that will happen.

Mrs. RODGERS. OK. I think I will just go to my last question, which is about your recent travel increases and increased security detail—expenses to run for President.

Do you plan to reimburse the taxpayers of Washington State for these expenses that you are incurring on nonofficial business and do you plan to offset the carbon emissions associated with that non-official travel?

Mr. INSLEE. So we plan to follow the law and plan to follow the current law, and that is what we will be doing.

Mrs. RODGERS. Thank you. I yield back.

Mr. TONKO. The gentlelady yields back.

The Chair now recognizes the representative from the State of Delaware, Representative Lisa Blunt Rochester, for 5 minutes.

Ms. BLUNT ROCHESTER. Thank you, Mr. Chairman, and welcome back, Governor.

I am pleased to be joining this important hearing on State and local action on climate change. While the Federal Government has chosen to take a back seat on climate change, my State of Delaware doesn't have that luxury.

My State has the lowest mean elevation of any State in the Nation, and my constituents don't need any convincing that this climate crisis is real.

It has touched every corner of Delaware with chronic flooding threatening homes in our cities, harsher and harsher storms eroding our beautiful beaches and threatening our natural heritage, and changing growing seasons threatening the way of life of our farmers.

Governor, I was pleased to see that my State made it into your prepared testimony for our low-carbon transportation initiative. While our State has made great strides in combating climate change, as the challenges we face continue to grow in scope and severity, we know that the solutions must grow in equal measure.

As Governor of a coastal State, can you talk to us about the unique challenges that climate change poses on coastal commu-

nities and what solutions that you found to be most impactful during your time as Governor?

Mr. INSLEE. Unfortunately, everyone with a coastline has this issue. It is a unifying issue, Republicans and Democrats. If you have got a coastline, you are a potential victim.

And by the way, I want to mention who the first victims of climate change are. It is most frequently marginalized communities. It is the front-line communities, frequently communities of color.

It is people living in poverty who are living next to the freeways, breathing those diesel smoke, living next to polluting industries.

And part of our just transition we have to make during this transition to a cleaner energy source I think has to take that into account. We need a just transition to a clean energy system, not just a transition.

So as far as this, this is a unifying thing and I took—as you know, I coauthored a little book here years ago about this, and I was looking at it the other night, and it had a picture of the first house in America that was maybe lost.

It was in Shishmaref, Alaska—of a house that has fallen into the sea because the tundra was collapsing. That was a window into the future. But it is not too far off.

I was in Miami Beach a few months ago with the mayor where they have had to build up their roads a foot and a half. Now when you go shopping in Miami Beach you walk down to the shops. It is kind of an unusual circumstance.

The U.S. Navy is very concerned at Norfolk about damage and threats of sea level rise to a very important naval base. We had Andrew Fowler—excuse me, Admiral Fallon in Seattle talking about the national security risks of rising sea levels and we have actually even just—I just read an island in Hawaii—a small little uninhabited island has gone under. So it doesn't take rocket science to understand this and it is something that unifies us all.

Ms. BLUNT ROCHESTER. You know, Delaware—we are small, as everyone knows, so we have an average annual budget of somewhere around \$4 billion, and when we talk about these issues you even mentioned those environmental justice communities. These are like major infrastructure investments that will need to be made.

Could you talk about any low-cost high-impact projects that you have seen during your tenure?

Mr. INSLEE. Well, there is a whole slew of them. But I will give you an example. When you talk about a just transition issue, we are closing our last remaining coal-fired plant in Centralia, Washington, and that happened because of a community consensus, and we embedded into that program about \$65 million for what you might call a just transition to help workers with training costs, to help small businesses to develop in their local communities, to help develop different utility systems to help people through that transition.

And that was embedded in the program and it was done through a consensus, and it was important because it recognized that there are transition costs and difficulties when you do go through a transition.

In our bills this year in our State legislature we have provisions in our 100 percent clean electrical grid bill that will assure that utilities cushion any impacts with low-income people through their utility bills in a variety of different measures.

So these things are working. I know they are working in other States. And the interesting thing, too—I would just get one other point—the 23 States that are now part of the U.S. climate alliance, which has been very successful because no one else has followed Donald Trump off the cliff on this—they are the ones with the best economic performance. So these things lead to economic performance. They don't degrade it.

Ms. BLUNT ROCHESTER. Governor, I have three seconds left, and I just want to thank you so much for raising the visibility of this nationally because it is an issue of our time.

Thank you, and I yield back.

Mr. INSLEE. Thank you.

Mr. TONKO. Gentlelady yields back.

The Chair now recognizes the gentleman from the State of West Virginia, Representative McKinley, for 5 minutes.

Mr. MCKINLEY. Thank you, Mr. Chairman, and welcome back, Governor.

I remember when you were here on the committee and we had some exchanges.

Let me just—curious, I read your testimony and on about the third or fourth sentence from the end of it, or paragraph, you made an interesting remark.

You said States cannot solve this problem, a magnitude of this, on their own, and I can't agree with you more. We are going to need that, not only all the States working together, but we got to have a global approach towards this problem, because States in and of itself can't.

And I would submit to you that I think States can cause part of the problem as well. Your own—you had a report put out—it was 122-page greenhouse gas emissions technical report—that said—that you all funded in the State of Washington—that exporting U.S. coal would have the benefit of reducing total global greenhouse gases.

Let us look at that again. Would have the benefit of reducing greenhouse gas emissions by exporting. Now, having said that, your administration—you have been fighting exporting coal.

I find a disconnect there. Your own report says that would help on greenhouse gases. But yet, with all due respect, you put up roadblocks to prevent exporting of coal through Washington.

Can you explain how you think that does not negatively impact the environment by preventing American coal from being burned overseas rather than low-quality Indonesia or Australian or other coal? Can you give me something, briefly, on that?

Mr. INSLEE. I think you are referring to a failure of an applicant for a particular project to obtain the legally required permits by the Washington State Department of Ecology.

Mr. MCKINLEY. If that is the case, did you—can you work with them rather than deny it? Can you work with them so that they can?

Would you support exporting coal in compliance with your report that said that would reduce greenhouse gases around the world? Would you support that?

Mr. INSLEE. Yes. I want to make sure that in answering your question, I am answering it not in respect to that particular applicant. So I am going to give you an answer to your question.

But it does not have anything to do with that previous cite that I just referred to, because that was a decision by the State Department of Ecology.

But, in general, here is my thinking about coal and we have to realize, I think, a fundamental scientific fact, and it is difficult to recognize—

Mr. MCKINLEY. With all due respect—

Mr. INSLEE. You asked me a question—

Mr. MCKINLEY. I heard your testimony when you were here in committee. I know where your position is antioil and I respect that, where you are coming from.

Mr. INSLEE. Not enough to let me answer the question, apparently.

Mr. MCKINLEY. No. I don't need for you to go on a diatribe about coal. My question is, if it's a global effort that we need to do, and America is already reducing its CO₂ emissions, which are important for us to do it, but the rest of the world is not engaging. I want for the record, everyone, to understand that we may very well be able to decarbonize perhaps in America and upset our economy.

But if the rest of the world doesn't do something about its emissions, particularly in China and India, we are still going to have droughts, wildfires, severe weather alerts. We are still going to have coastal increase problems with water increasing—the oceans increasing with it.

My concern is, why aren't we working on a global stand rather than individually trying to put up roadblocks, as you are in the State of Washington?

The Paris Accord did not have the teeth, and you and I both know that—it did not have the teeth. The nations were not complying with the Paris Accord.

Therefore, that is one of the reasons I read the—led the letter to encourage the President to withdraw until we can put some teeth into that Paris Accord that makes people comply with that standard and lower the standard.

But what you have done is actually put impediments in Washington to prevent that from happening.

Mr. INSLEE. Sir, if you will allow me to answer, I will try to answer those three questions.

Number one, we should work with other countries, just like our States are working with one another. Our States are a template for success. We now have 23 States that are committed to moving forward, and all of those States in their own individual way are making progress.

We have ought to have the same degree of cooperative spirit with other nations. But that has not happened because the President of the United States decided to try to withdraw us from the Paris Agreement.

As you know, he can't legally until the next year, and it is hardly helpful when the vast, vast, vast, majority of humanity is recognizing this existential threat to their life on this planet and then have the leader of the free world tear it up and walk away in a petulant juvenile fit.

That is not helpful in developing international cooperation. That is number one. Let me finish, because you asked me three questions.

Number two, coal is just a scientific fact that is very difficult that we have to realize, that if we burn all of the coal that we have we will not have something, anything that looks like the way we live today.

Now, that is just a scientific fact. So to some degree, we have to manage a transition to a cleaner energy economy over the next several decades and I think we all ought to work together to figure out how to do that to manage that transition to help the communities that are part of that transition.

And I may reference to the Centralia plant as a way that we have done that. And three, we ought to be all working together to develop alternatives to coal, which we are doing, and these 23 States are showing success.

So I approach this with optimism and confidence because we are the most can do people in the history of the planet, and I believe we can do—we can get that job done.

Mr. MCKINLEY. Thank you. I guess I have run out of time.

I guess what I would conclude, you said you would not put a roadblock up to exporting coal. Washington filled the application outright—is that what I am hearing you saying?

Mr. INSLEE. I am saying that we follow the law in the State of Washington and the law in the State of Washington as developed through the permitting process that one of these particular plants, according to the Washington State Department of Ecology did not satisfy the laws of the State of Washington. That is what I am saying.

Mr. TONKO. The gentleman yields back.

The Chair now recognizes Mr. Pallone, full committee chair, for 5 minutes to ask questions.

Mr. PALLONE. Thank you, Chairman Tonko, and again, welcome back, Governor Inslee.

At our last subcommittee hearing, we had a productive discussion about subnational actors like city, States, and companies stepping up to the plate after President Trump rashly announced the U.S. would abandon the Paris Agreement.

And you have been very active in that regard not only in your role as Governor but also as cofounder of the U.S. Climate Alliance, which has been very successful over the last few years in expanding bipartisan membership and forging a path to effectively address climate change.

But in your testimony you say, and I quote, "The truth remains that without leadership from our Federal Government the country won't be able to do enough fast enough," unquote.

So I just wanted you to expand on that point. Why is the Federal leadership still needed and are there tools available to the Federal Government that States don't have at their disposal?

Mr. INSLEE. Well, the first reason is that today we have 23 States and, by the way, those include three Governors who have joined this—three Republican Governors who are part of that alliance.

But and that represents the majority of the American people, I believe, and about 60 percent of the U.S. economy, and I believe if it was a separate nation it would be the third largest economy in the world—these 23 States.

So this is what you might call a big deal. But it is not all of the United States and it is important that we all work together and it is important that industries have consistency as much as we can for policies.

We would all like to have the most consistent policies that we can for investment policy decisions. So having consistency would be useful in addition to having the entire United States economy associated with that.

In addition, the Federal Government just has the resources that the States do not have, particularly in the research and development, which is extremely important. We have seen what R&D can do when we defeated fascism federally.

We see what R&D can do when we went to the moon nationally and we ought to be able to achieve the same levels of Federal R&D to really make this happen.

Now, it also is an issue of, for instance, transportation infrastructure. The Federal Government can be very—a driving force in that regard that can really, really help in infrastructure.

The Federal Government can help in the procurement policy so that when we buy products we can help drive a clean green procurement system that can be very useful. Secretary Mabus of the Navy started that and it really helped when he had the Green Fleets program to drive the development of biofuels and the like.

So there are so many multiple tools that the Federal Government has that could assist the States in moving forward. I mean, we are making big progress when you see what is happening.

But we need a Federal partner and I hope people will work together to get that done.

Mr. PALLONE. Well, I appreciate that, and let me get to the last point you made. While not a substitute for Federal leadership, I do believe that renewed congressional action on climate change is a step in the right direction and I am interested in moving legislation to support State and local government efforts to respond and prepare for the effects of climate change.

The mayors on the second panel are going to suggest, among other things, that Congress should reauthorize the Energy Efficiency Community Block Grant.

So what policies or initiatives should Congress consider enacting to support and further expand what your State and other States and local climate—on the front of climate action and, you know, what policies or initiatives should Congress prioritize in that regard to help the States and the towns?

Mr. INSLEE. The first priority would be to remove the shackles that prevent us from moving forward in States, and there are some that prevent us, for instance, in transportation fuels.

Federal policies have prevented us from moving forward with some of our CAFE standards and the like. So the first order of business was take off the weights that we carry of the Federal restrictions, particularly the ones that have come from this administration.

A second, and this is—look, I just think the best thing the Federal Government can do is to adopt federally what our States are doing from a State perspective, and it doesn't really require to mandate or even assist States. It is just to get the Federal Government in the same business with the same templates of success and I believe the States are a template of success.

Look, you know, I am criticized by parties, criticized frequently of saying that your policies will somehow be destructive of economic growth.

I hear the President saying we won't have planes or trains or cars, and that is just not the case when we are driving electric cars. The Governor has a little electric car that works.

We have been accused of doing things that will retard economic progress. But the facts just don't bear that out. Look, my State is the most rapidly growing economy in the country and when you look at the 23 States that are doing things on clean energy, by and large they are the ones that have the greatest rate of economic growth.

So I just suggest the most important thing to do is for the Federal Government to be as confident and optimistic as the States are right now in our capability to build a clean energy economy.

If we infect the U.S. Congress with the confidence we have and Massachusetts, with a Republican Governor, and Maryland with a Republican Governor and Vermont with a Republican Governor, good things are going to happen, and that is why I am here today, and I wish some of my colleagues were here. I understand others were invited, but I am the one who had the most friends here, so I came.

Mr. PALLONE. Well, thank you, Governor. Thank you for what your State is doing and for the U.S. Climate Action. We appreciate it. Thank you.

Mr. INSLEE. Thank you.

Mr. TONKO. The gentleman yields back.

The Chair now recognizes the gentleman from the State of Georgia, Representative Carter, for 5 minutes.

Mr. CARTER. Thank you, Mr. Chairman.

Governor, thank you for being here. This is an extremely important subject and we appreciate your participation.

Climate change is real. Climate has been changing since day one. Protecting our environment is real. We all recognize that.

I noticed in your seven pages of testimony that you mentioned a number of renewable energies such as wind, solar, and hydro, but you didn't mention nuclear.

I am just wondering, it would appear to me that we are going to have to use a number of different resources in order to—in order to get to the common goal that we want to get to but—and certainly carbon capture and nuclear power are going to be a part of that.

I am just wondering why did you omit nuclear power in your testimony?

Mr. INSLEE. I didn't know because I didn't write it. So I will have to ask my staff the answer to that question.

Mr. CARTER. OK. Fair enough.

Mr. INSLEE. But I have been very forthright in saying that we need to have under consideration any low-carbon or zero-carbon technology, and I think we have to be noncumenical about this and I have been in my policies.

I will give you an example. In my State—Representative Rodgers brought up hydroelectric. We now are classifying hydroelectric in our clean energy 100 percent grid, which has been a concern of some folks.

I have been supportive of research and development in the nuclear industry. There are some modular nuclear systems that might be productive if—now, this is a big if—we got to make sure we understand this. We need to make sure that they are cost effective and they are not to date.

As you know, the cost is what has been the biggest problem in the nuclear industry, that they are safer, that they have a waste disposal problem, and they have public acceptance.

So my view is it makes sense to find out if any of those things can be solved. They would have to be solved before nuclear would become a meaningful component of an energy future, going forward.

But I think it makes sense to look to find out if they can be. I have had a couple questions from this side of the panel about nuclear. The one comment I would make is I think it is really important for all of us to be nonselective amongst multiple low- and zero-carbon solutions here.

I think that it important because some of them are going to pan out and some of them aren't, and I am for having a broadest view of all possible measures.

Mr. CARTER. OK. To follow up on that comment, let me ask you this then. Do you think it is the States' role to mandate to power companies how they are going to lower their emissions, or would you agree that it would really be advantageous to allow the power companies to come up with their own plans because what may work in Washington State may not necessarily work in the State of Georgia?

I can tell you that in Georgia, Southern Company has done a good job of decreasing their emissions and has made a lot of progress and yet the State hasn't mandated to them what types of decreases they should make.

Mr. INSLEE. You know, it is—that is an interesting question and I will give you two contradictory answers. One of this is yes, we are always looking for the most cost-effective clean energy source to get the job done from a cost-effectiveness standpoint.

But there is an argument for policies that will help specific industries move forward, and I will tell you why. For instance, in a renewable portfolio standard if you just have a standard for multiple technologies the only one that gets developed is the next most cost-effective one even though you know you have got plans B, C, and D that you are going to have to develop to get the job done.

So I think there are some circumstances where policies that are specific to particular technologies make sense because if you know you are going to have to have four different tools you need to find a way—

Mr. CARTER. OK.

Mr. INSLEE [continuing]. To make sure all those tools are developed.

Mr. CARTER. Right. We may have some minor differences on that. But nevertheless, I do want to get to this before my time runs out and that is, obviously, Washington State is a big forestry State.

Georgia is the number-one forestry State in the nation, by the way, and I noticed, again, you didn't mention and I am just wondering if you might speak to that because biomass is certainly something that is American made, if you will. It is something that we can actually do here.

Mr. INSLEE. Yes. I think that sequestration of carbon in biological systems is something we should explore and we ought to see if there is a way even to create a revenue stream for people in the timber industry and the agriculture industry to sequester carbon in topsoil, and the reason that that makes sense is not only can it help sequestration of carbon in topsoil but it also, when you do those things, you prevent erosion in a lot of the low and no-till technologies. These things make sense.

The same thing to be said in the timber industry. The difficulty we have had is that some of the folks who are interested in these industries have been the most resistant to actually doing things that would allow us to create that kind of program.

So it will be helpful when folks—and we have some leaders in our timber industry who are interested in developing policies to actually allow that to happen. It will help when we have more folks in the ag industries want to develop policies to create a revenue stream possibly for sequestration of carbon in topsoil.

I really look forward to that day and I look forward to the day when this is a more bipartisan effort.

Mr. CARTER. Well, and I recognize my time has expired. Let me say that I think this is going to be tremendous opportunity for us. Working together and as innovative as we are in America, I look forward to this because I think there is just so much innovation out there that can be accomplished and I look forward to working toward it.

Mr. INSLEE. Yes, let me—if the Chair will allow me to just comment on this. I think this is an important point. I want to—I agree with you with this caveat, and I will just tell you about a conversation I had with the second President Bush.

It was the first time I talked to him, and we were talking about the potential of sequestering carbon from coal plants, and he said he was very excited about clean coal technology, of maybe being able to sequester and put coal in the ground.

But what I pointed out to him is that that would involve additional costs, and no one is going to do it unless there is some system to create a reason to do it and an ambition to do it and an incentive to do it.

And so the only reason to actually do it, even if the technology worked, is if you had some limitation on pollution or some other market mechanism to drive incentives.

And it is this same for sequestration in topsoil or in the timber. So we have to have some mechanism to reduce—to create an incentive not to put carbon in the atmosphere in the first place for any of these programs to work, and that is where we need some more bipartisan help in this regard.

Mr. TONKO. The gentleman yields back.

The Chair now recognizes the gentleman from the State of Florida, Representative Soto, for 5 minutes.

Mr. SOTO. Thank you, Mr. Chairman, and Governor Inslee, welcome back. Obviously, you are getting varied welcomes here, but I hope that you are enjoying your time here.

As you may know, eight of the last 10 years have been the hottest years on record and we have had 1.4 percent increase in temperature Fahrenheit wise since the 1880s. We are scheduled, if nothing is done, for that to go even higher.

Three inches in sea rise since 1993, and the idea of global warming, I think, can be misleading in that it is not just that the world is getting warmer but we can see more extreme weather, whether it is hotter summers or colder winters.

In my own home State of Florida, we have to deal with sea barriers and new water treatment plants and sewer systems and we are very vulnerable to that. But Washington also faces kind of a double threat. Isn't that correct?

Like both colder winters and coastal threats from rising seas. I think Mount Rainier even got snowed in for a while this year, if I remember correctly, because the jet stream is no longer maintaining a lot of that Arctic air just in the north.

So what are some of the effects you are seeing as far as increasing cold temperatures and then what your State is doing to combat these coastal threats?

Mr. INSLEE. Well, I think what you point out is something—this originally was called global warming and it has turned out to be global wearing because it is disrupting all kinds of patterns, and it is so strange because you get it on both ends. You get drought.

I have just—may declare a drought emergency—and increasing droughts in one season whereas you have increasing precipitation flooding events in a different season. So we have had fires in the summer.

Last year one day in Seattle was the worst air quality in the world because of the particulates from the fires that were raging and our fires in the Cascade Mountains and in British Columbia were on fire and we had, you know, weeks of smoke.

We had to close some of our swimming pools in the State of Washington because of air quality hazards to our kids.

You have infectious disease problems where insects are moving forward. We are now getting tick infestations, which are spreading diseases, moving forward fairly rapidly.

Our sea level rise is now affecting some of our coastal communities. We are actually having to move some of the infrastructure in that regard.

And here is one that I don't think gets enough discussion here and that is the acidification of the water in my State. So the pH level is dropping rapidly. It is about 30 percent more acidic than it was before we started to burn fossil fuels.

That has prevented us from growing baby oysters because they can't precipitate calcium carbonate out of the water. We now have to grow the baby oysters in tanks where you put, like, soda to increase the pH.

So this is having so many untoward effects. It is not from one direction. It is from many directions and as from Governor, look, this is a firsthand deal with me. You know, when you go into Wenatchee, Washington and you see a couple crying in front of their house that was torched and a man holding his wife and, you know, and is, like, collapsing, climate change is not an abstraction to Governors.

We see it when we go to these emergencies. And so you are correct, there are a lot of reasons to do this work. But I always end on a positive note, which is the angst I feel about these multiple emergencies I am having to declare I have the opposite spectrum when I see my friends' kids going to work in clean energy.

Mr. SOTO. And I wanted to talk a little bit about that. You all have been a tech leader in so many ways in Washington. But \$6 billion in renewable investment, a \$125 million clean energy fund you mentioned—how has renewable energy—the new renewable energy economy changed your GDP and can you talk a little bit about that technology boom that you all have?

Mr. INSLEE. You know, I will try to get you a number. I actually don't have a number on GDP. But all I can tell you is it is significant because every county I go to has some sort of sense because we have been very broad minded in our policies.

The gentleman from Georgia asked the question about sequestration. So biomass by law is carbon neutral in our statute. We have actually declared biomass to be carbon neutral so that we can get an advantage to help the ag industry and the timber industry using biomass.

And right now, we are developing a cross-laminated timber industry that can be of assistance to the timber industry using some of the that waste product coming out of the timber potentially as a fuel source as well.

So the fact that we have been eclectic and nonjudgmental, looking at all spectrum of jobs has been very effective for us and I hope the Federal policy will follow.

Mr. TONKO. The gentleman yields back.

The Chair now recognizes the gentleman from South Carolina, Representative Duncan, for 5 minutes.

Mr. DUNCAN. Thank you, Mr. Chairman. I yield to the gentleman from Illinois as much time as he may need.

Mr. SHIMKUS. I thank my colleague and, Governor, again, welcome and I do relish our friendship and the work we have done together and the battles we have had.

I just wanted to make sure I had time to—because of other aspirations that you have just put some facts on the table. President Bush got more votes in Nevada in 2004 than in 2000 after he approved the site selection.

President Obama got fewer votes in Nevada in 2012 than in 2008 after he helped delay the licensing project. Nine of the 16 counties—I go to Nevada quite a bit—nine of the 16 counties have passed resolutions in support of at least adjudicating the scientific study.

As you know, the Nuclear Regulatory Commission was tasked under law to evaluate the site and after litigation they were finally allowed to release the report, which said if used as designed Yucca Mountain would be safe for a million years.

So where we are at in the process now is just providing the money to allow the State of Nevada to contest that science and that is what has been blocked through the last 2 years of the Obama administration and then we faltered because of politics. You know, last cycle it was Dean Heller, and now it is—we don't know.

The point being is that this appropriation debate is just to debate the science, which, you know, this whole thing and you stand firm on, you know, let us look at the science.

So I would just hope if things go well for you in the future that we would have the same standard of evaluating and using science to determine the safety, so we can at least address this defense issue and the spent fuel issue, and you know it is something I have been working on for—many times.

Let me go to—and actually I just wanted to throw that out there—let me mention some of the issues about—and we are going to have a panel of mayors in the next panel and some are going to be all on board and we have got two that will probably be sceptical of your testimony.

But let me get—I got a letter from Mayor William Wescott of the city of Rock Falls, Illinois. The city owns and operates its own electric utility and it participates in the Illinois Municipal Electric Agency, a collection of nonprofit public power municipalities within the State.

Mayor Wescott outlines the clean energy investments the city has made but he also talks about the critical investments in base-load in the state-of-the-art coal-fired generation facilities, a 1.6 gigawatt Prairie State Energy campus, and this is where he—this is his warning to policy makers.

He warns that if Federal and State policies force premature closure of the coal-fired units his city would still have the purchase energy, but then he would also be burdened to make payments on the closed facility.

So it is like a double whammy for some—for a local municipality and a government agency to say, we are going to address our electricity generation needs by the elected people that they are designed to represent.

Should policies be designed to ensure cities and ratepayers are not burdened with this stranded cost and what would be a solution?

Mr. INSLEE. Well, it is a broad question, but I think the solutions to these matters are, again, doing the kind of thing that we did in Centralia, which is to come up with a consensus-based approach to have a transition period that everyone can live with, and I think that process could be a template for other communities to be successful and we have been successful in that regard.

The policies that we have adopted in Washington State I really don't think there is an argument it has had any meaningful disruption to any communities or any utility or any ratepayer.

We passed a renewable portfolio standard provision maybe a decade-plus ago. We had zero wind turbines or any significant wind turbines. We now have six—

Mr. SHIMKUS. But you have all that hydroelectric that was credited as renewable, correct?

Mr. INSLEE. Well, actually it wasn't. So the hydro at that time was not, quote, credited as a renewable because—

Mr. SHIMKUS. Is it now?

Mr. INSLEE. It's going to be under the new 100 percent system. My point is that during that debate—I was active in it—it was an initiative to the people and there was a lot of concern expressed by utilities and some industrial customers that this is just going to drive rates through the roof and this was technologically not possible.

We now have 3,000 megawatts. They are growing rapidly. We have \$6 billion of investment. The proof has been that we are much more adept at creating substitutes for some of the fossil fuel industry than we have thought, and I will mention one other thing, too, and I think this is important.

When we listen to people about these issues, I think it is really important to listen to some of the new players in clean energy rather than the incumbent utilities that are huge and have representatives here, and those new players are pretty inspiring.

A&D Electrical Supply in Greenville in Illinois, Cooper Eaton in Troy, who are installing solar, Lake Land College in Mattoon, Paradise Energy Solutions in Sullivan—these are small companies to start with. They don't have a lot of representatives here. But I think their voice is worth listening to because—

Mr. SHIMKUS. They have one.

Mr. INSLEE. Huh?

Mr. SHIMKUS. They have one representative here.

Mr. INSLEE. All right.

Mr. SHIMKUS. That is me.

[Laughter.]

Mr. INSLEE. Good. All right. I will agree to that.

Mr. TONKO. The gentleman yields back.

The Chair now recognizes the gentleman from California, Representative McNerney, for 5 minutes.

Mr. MCNERNEY. I thank the Chair.

Welcome back, Governor. I hope you have noticed that there has been a change in the committee since you left and that there is a general consensus that CO₂ emissions are a problem.

Like you, Governor, I am bullish about the economic opportunity that comes with the transition to clean energy. I worked in the wind industry for 20-plus years. I saw the job creation but I also saw American-developed technology and jobs go overseas because of inconsistent Federal policies.

Could you comment on the importance of consistent and predictable Federal policies?

Mr. INSLEE. Yes. I think there are some of importance. One of the things that perhaps would be most useful is allow integration

of our grid system, also responding to our cybersecurity concerns about the grid, which we know you are—we are all attentive to.

But finding ways to make the grid more effective to allow renewable energy to be—to be wield, if you will, and move more efficiently and effectively. That could be of assistance.

A second—the thing I mentioned before, to remove the restrictions on States that are now preventing us from moving forward on transportation fuels improvements, we are ready to—we are in the gate, ready to go, if the Federal Government will just remove those requirements.

Mr. MCNERNEY. Well, what I am talking about is consistency. I mean, American-developed technology went overseas because American subsidies ended and it looked more appealing to Germans and Spanish and so that is where the technology went.

Mr. INSLEE. It is a heartbreak to see some technologies that—in the lab were created in our labs be deployed in China and Germany because they have had policies to make them economically competitive in their grid and transportation systems.

And I just—I just don't like to see our technology developed in our universities that then other people get jobs for and that has happened big time because we have withdrawn support significantly and is happening because this administration has really been an ostrich with its head in the sand and its tail feathers in the air on this issue.

Because they are withdrawing policies today that will help development of clean energy and utilities, because they are withdrawing policies today in transportation, some of those jobs are going overseas.

We want our kids having those jobs and I hope that we resolve this issue.

Mr. MCNERNEY. Thanks. Unfortunately, I am not bullish about our ability to present the growing impacts of climate change. I personally believe we are going to blow past the two-degree increase in global temperatures no matter what we do in this country to reduce emissions.

What should we do to enhance cooperation with countries overseas so that it is not just us reducing emissions?

Mr. INSLEE. Well, the first thing is get it back in the Paris Agreement, which is the first commitment, and I think that is important.

Look, we are the leader of the world. We are an indispensable nation because of the power of our economy and we need them to keep—you know, it is kind of interesting to me.

I hear a lot of people who are critical of saying we shouldn't do something until the last person on Earth does something, and then they turn around and say we shouldn't be in the Paris Agreement.

It is not very inspiring to the rest of the world to encourage them to do things if we tear up an international agreement that we are a part of. If you want folks to do work in the rest of the world, the last thing we should be doing is abandoning an agreement that we have had with the rest of the world.

You can't say you want the rest of the world to act and then turn around and say you are not part of the Paris Agreement. That is not going to inspire representatives in India or China or Germany

who are sitting in the seats that you guys are sitting in to take action.

We want to inspire those people to take action. In some sense, we want to demand those people to take action. So yes, we should become part of the international community. The country that did the Marshall Plan and went to the moon I think ought to take that position.

Mr. MCNERNEY. Governor, clearly, we need to reduce CO₂ emissions but I would like to ask your opinion on climate intervention. Specifically, do you support research on climate intervention including sunlight reflection aerosols?

Mr. INSLEE. Well, I am one that believes that the use of aerosols, the use of solar screens, if it is in the lab it shouldn't go beyond the lab until we have about a hundred years more understanding of how systems work.

I am very, very anxious to think that we could intrude in these basic systems without understanding what we are doing.

The consequences are things we have no idea about and I would suggest that while our house is on fire it is more important to grab buckets right now and put the water out than design something that, you know, would prevent the—a match from being allowed in town.

So I really believe that we got to focus on preventing carbon emissions in the first place. That is the battle we are in right now and I encourage us to stay in it.

Mr. MCNERNEY. So what do you think the biggest single threat from climate change is?

Mr. INSLEE. Well, he is—the man whose name I will not utter here.

Mr. MCNERNEY. No, a physical threat.

Mr. INSLEE. He is a physical threat, actually. But——

[Laughter.]

Mr. MCNERNEY. Do you think it is a disease or ocean acidification or West Antarctic ice sheet? What do you think is the worst—the biggest threat?

Mr. INSLEE. I could not choose the disaster scenarios amongst them because it is difficult for me to know what tragedy has been worst since I have been Governor. The forest fires are the ones where I have, you know, comforted families that have lost people in forest fires. But we have had other measures as well that may be just as bad.

I remember talking to a 14-year-old young woman and lived next to a freeway in Seattle. She told me that she was 11 years old before she knew someone that didn't have asthma. She thought everybody had asthma because they are all breathing that diesel smoke and toxic fumes.

And it was interesting. She went out and did her own sort of research and she found every quarter mile you live closer to a freeway your asthma rates go up significantly.

And when I tested that with the epidemiologists at the University of Washington, her research was exactly the same as theirs. The thought that our kids are having trouble breathing might be the biggest one, and this is something that young people understand and it is really close to their hearts.

I was at Dartmouth a couple months ago and talked to a young woman who said that she had been involved in two conversations that week with young women who were asking themselves whether it was right to bring a child into the world that could potentially be so degraded.

Now, the fact that that has reached that level of personal decision making would suggest that we need the Congress to move.

Mr. MCNERNEY. Thank you.

Mr. TONKO. The gentleman yields back.

The Chair recognizes the gentleman from Missouri, Representative Long, for 5 minutes.

Mr. LONG. Thank you, Mr. Chairman. And talking about raising children in that type of environment I was in China a few years ago, and one of the young ladies that works at the American embassy in Beijing there—you with me?

Mr. INSLEE. Yes, I am sorry.

Mr. LONG. What was I asking you?

[Laughter.]

Mr. INSLEE. Well, I thought you were in Beijing and you were talking to a person there.

Mr. LONG. A young lady.

Mr. INSLEE. Yes.

Mr. LONG. Been there 4 years and had two children since she had been working at our American embassy in Beijing. And I asked her—I said, “Why would you have children in this environment?”

I am sure you have traveled to Beijing many times. You cannot see across the street and everyone, I think, has come around to the idea that climate change is real and we do need to do what we can to protect the environment and protect two young kids like hers there in Beijing, not to mention all the people in China that are raising their children with that kind of an environment, where you literally can’t see across the street.

Did you say you drive a electric car?

Mr. INSLEE. Yes, mostly the State Patrol drives. But on occasion, I sneak in a little trip. It is a GM Bolt.

Mr. LONG. But you say ride in a GM Colt?

Mr. INSLEE. Bolt. B as in boy, yes.

Mr. LONG. Bolt. Is that 100 percent electric?

Mr. INSLEE. Yes. Yes.

Mr. LONG. OK. What is your range on that?

Mr. INSLEE. It is 238 miles, and I know that because we just upgraded. My last one was 160, and so now it is 238.

Mr. LONG. All right. Well, I use 300 miles, so my math is going to be off. But if my Governor, Mike Parson, in Jefferson City, Missouri, wanted to come see you in Olympia, it would take—at 300 miles it would take seven—I am assuming you have to charge it overnight, but it would take about 7 days to come see you in Olympia, and if I drove a gasoline engine it would take 1 day and 5 hours.

So, while we have to address this, still we have to keep practical things in mind, in my opinion, and driving a vehicle from Jefferson City, Missouri, to Olympia, Washington, over a period of 7 days, I understand why you flew here today and, as you said, most of us flew here.

You testified that you would support the will of the people with regard to the removal of hydroelectric dams. Is that correct?

Mr. INSLEE. What I said is we are developing that. What we are doing is we are under a Federal court order to review the usage of the Snake River dams and as part of that process we have just started a task force at my request, which is going to have citizens from across the State evaluate the pros and cons of potential removal and breaching of the dams. And that is a process that is just in its infancy, and this is in response to a Federal court order to evaluate that.

We have made some changes in the operations of the dams already to try to increase fish flows so more water is coming down so that the salmon have more survival. As you know, we have some endangered species in that river system, and we are trying to recover our orcas as well that are very much endangered.

Mr. LONG. But you would support the will of the people in regard to that if they want to remove hydroelectric dams, correct?

Mr. INSLEE. I would—

Mr. LONG. I thought that is what your—I thought you were—

Mr. INSLEE. I am sorry?

Mr. LONG. I thought that is what you testified to earlier here.

Mr. INSLEE. Well, we are not—there is no initiative where the will of the people is going to have any up-or-down vote. The will of the people will be expressed through our democratic process legislatively.

Mr. LONG. If they did have an up or down vote on an issue, would you support the will of the people?

Mr. INSLEE. Well, if it is the law of the State of Washington of course I would respect the law of the State of Washington. But there is another entity involved, and that is the Federal courts, and the Federal courts now have ruled that we have an obligation to investigate the potential removal of the dams.

That is a judicial decision, and we are bound by that judicial decision. We are also under a judicial decision to improve our culverts. We have culverts that block fish passage.

Mr. LONG. OK. Let me—I am running short on time. Let me get in another question here about of concern to me in my home State of Missouri, and that is keeping transportation costs low is crucial for both my constituents and industries like trucking and agriculture, which we have a lot of in the State of Missouri, and they are very prevalent in my district.

Washington State has the highest gas prices behind only California and Hawaii. Missouri, on the other hand, is always in the top ten, usually lower than that. On gas prices for premium gas and diesel it is the cheapest in the country. How do the policies that you advocate for keep transportation costs low for rural districts like my own?

Mr. INSLEE. Well, when you drive an electric car your transportation fuel is about 80 percent cheaper than when you are driving a gasoline-powered car. It is a sweet deal.

The price of gasoline when I drive my car is zero because I don't use any gasoline, and that is a pretty sweet deal and it is a sweet ride. And you were—you were—

Mr. LONG. Seven days to get to Olympia is a stretch, too. So I thank the—I yield back.

Mr. INSLEE. We'll welcome you to land at Sea-Tac Airport.

Mr. TONKO. The gentleman yields back.

The Chair now recognizes the Representative of the State of New York—the gentlewoman from the State of New York, Representative Clarke, for 5 minutes.

Ms. CLARKE. Thank you, Mr. Chairman. I thank our ranking member. It is so good to see you back here, Governor, and I am really excited about your passion around this issue.

I want to thank Governor Inslee for testifying before us today. Your leadership on climate change has inspired other States to step up to the plate and it is time for the Congress to do the same.

I happen to cochair with Mrs. Brooks of Indiana the Smart Cities, Smart Communities Caucus where I believe that there is a sweet spot, if you will, on the confluence of renewable sources, technology, as part of a sustainable 21st century energy delivery infrastructure.

Have you given any thought to as we are going through our conversations about infrastructure—we talk about the grid oftentimes.

We have oftentimes heard of smart grids. There is so much that technology avails us of today, whether it is sensors that give us an indication of high CO₂ in certain congested areas, there is a whole host of things and when you are talking about different renewable sources how we can look at sort of the development of ways in which we can maximize on that through our electric grid and through smart technology.

Have you given any thought to that? Have you had any conversations around that?

Mr. INSLEE. You bet, and our—one of the things we are really proud of is the development of systems that can manage the grid much more effectively to integrate renewable energy and use storage capacity together.

So I mentioned the Clean Energy Development Fund that we had. One of the companies that is coming out of this is now developing software to help manage the integration of electric batteries with the grid and that is moving forward very, very rapidly.

Spokane, Washington, has a system of trying to have an integrated system and that is becoming more and more important because we also are developing better battery technology, and this is kind of the Holy Grail, actually, of renewable energy.

Solar is coming down 80 percent. Wind is coming down 20 percent. Now we need to continue the improvement of battery technology and that is happening.

I will tell you just one little story. I had a young fellow come in from Jackson High School a few months ago. He won the National Science prize for the most, you know, scientifically productive high schooler in America or one of the few, and he said, look, I want to do something about climate change.

And so he went out and he said, what is the most important thing I can do in clean energy, and he said, well, it is developing a better membrane for a battery that has better density and more heat management system.

So this guy at age 17 or 18 went and invented a new kind of membrane that now has some real commercial possible potential. That type of innovation is going on like crazy and it is putting people to work in my State.

Ms. CLARKE. And when we talk about sort of creating that infrastructure, it would also address the concern that Mr. Long had about how you travel across a wide swath of area, given the life of a battery in one particular car.

If you have an infrastructure where individuals are able to swap out cars, say, in a particular area where we have cars charging, then you get across a large State fairly rapidly. That is a whole new industry, that if we are creative enough, can be developed while we are decreasing our use of fossil fuels.

So I think it is really just a matter—and I would love to get your thoughts on it, on ways that we are bringing up new industry while phasing out older.

Mr. INSLEE. So Mr. Long was talking about electric cars and I think electric cars are kind of an interesting example and, by the way, in Representative Long's district last year, 2,268 people bought electric cars.

So you got 2,000 people that like them and there has been a 97 percent increase in the electrical car purchase in Representative Long's district last year. So there are people that are getting this across the country.

But here is a story about electric cars. In about 2007—2007, 2008 maybe—I asked General Motors to bring their Volt to Congress to show my colleagues what was coming, and when they brought it we wheeled it off on the backside of the Longworth Building.

They brought it in a U-Haul truck because it didn't even have an engine in it. This was just 10 years ago. And my buddies came down and looked at it and said, Inslee, what are you doing—this is like a little toy here. It doesn't even have an engine in it. It's just a shell. This is ridiculous.

This was only 10 years ago. OK. Now you got the Governor in Washington driving one and thousands of people doing it, and we are increasing—we are on the map to hit 50,000.

So this is moving so fast in this technology. Today, when I bought the first Bolt a year and a half ago, the range was 160. The second version is 238, OK, today. I don't know what it is going to be a year from now, but it is going up.

So we ought to be optimistic about this and——

Ms. CLARKE. Thank you, Mr. Inslee. My time is up, and I yield back to our chairman.

Mr. TONKO. The gentlelady——

Ms. CLARKE. Thank you so much. I look forward to further conversations with you.

Mr. TONKO. The gentlelady yields back.

I will remind all of us that the Governor has a hard stop at noon, I believe. So if we can stay within that framework.

The Chair now recognizes the gentleman from Texas, Representative Flores, for 5 minutes.

Mr. FLORES. Thank you, Mr. Chairman, and I appreciate the Governor being here for his testimony today.

I want to say, Governor, there is one area where I totally agree with you. Well, let's say two areas. One, as like you have heard from most of the panel, we all agree that climate change is real. We all agree that man is having some impact on that.

I also agree with you that we need to look at investment in R&D. R&D is where we develop the seed corn for the economy that is 10 to 20 years down the road.

From a personal perspective, I am the largest residential producer of solar-generated electricity—solar power in Brazos County, Texas. I am pleased with that.

I did this 10 years ago when it was still expensive to do it. And I was just looking at my little app here and it says I produced over 70 percent of my power for the last 70 days—excuse me, 7 days.

I have also converted about 95 percent of my lighting to LED. So I put my money where my mouth is when it comes to trying to reduce my environmental footprint.

I was going through your testimony and in it it says that you want to transform your electricity system over the next decade to phase out coal power—coal-fired power by 2025 and increase the amount of renewable energy resources like solar and wind by 2030 and you want to be 100 percent clean by 2045.

Where will you get the baseload power to do that? Because solar and wind are intermittent, where will you get your baseload power?

Mr. INSLEE. Well, we have considerable different sources and they all—when they can be integrated they can become baseload power and that is the great magic of storage systems that we are developing.

Mr. FLORES. OK. So storage is part of the solution?

Mr. INSLEE. Storage is part of the solution—a big part.

Mr. FLORES. OK. I want to come back to that in a minute.

Also, one of the things—I want to go off on a tangent for a minute, and I heard you say that your bill is part of a package of legislation to leap further and faster into the clean energy economy.

One of the things you said it includes is the use of cleaner transportation fuels. Can you elaborate on that for a minute? I imagine my friend, Mr. Shimkus, and I would be interested in that.

Mr. INSLEE. We have a whole host of alternatives that provide us cleaner transportation systems. We have electric vehicles, which are much cleaner than fossil fuel-burning vehicles. We have biofuels-driven vehicles where biofuels have a lower carbon footprint—many of the biofuels.

Mr. FLORES. OK.

Mr. INSLEE. We also have transportation systems—public transportation systems that are extremely efficient in low-carbon transportation systems and finding a way to use all or some of those are very effective ways in trip reduction—trip reduction is an important low-carbon reduction opportunity as well and we are having a lot of success in that.

Mr. FLORES. In terms of fuels, you were talking about biofuels as well. We will drill into that offline somewhere. I would like to get your ideas on what you think about biofuels.

You also talk about having an acceleration of deployment of electric vehicles on your roads and electrification of passenger ferries and you talk about putting you on track to reach a goal of 50,000 electric cars on the roads by the end of the year. How are you doing versus that goal of 50,000 electric cars?

Mr. INSLEE. We are on track to our ultimate goal and, by the way, I forgot to mention we do intend—we hope to build the first electric ferries what I believe will be the Western Hemisphere. We think that is both from a health and cost effective policy.

Our electrification of our transportation fleet is going well because we have had several things—

Mr. FLORES. I have a shortage of time, so I am going to run.

Mr. Chairman, if you don't mind I would like to request unanimous consent to introduce four exhibits into the record today. The first one is by the Institute for Energy Research. It is entitled "China's New Environmental Problem: Battery Disposal."

The next one is by engineering.com. It says, "Will Your Electric Car Save the World or Wreck It?" The third one is by Amnesty International, where Amnesty challenges industry leaders to clean up their batteries. The fourth is "The Mounting Solar Waste Problem."

[The information appears at the conclusion of the hearing.]

Mr. FLORES. The challenge is is that every time we try to come up with a new solution that it creates an environmental problem and I think we need to be responsible when we do that.

Batteries and silicon have an environmental impact. We need to deal with that. In order to make lithium batteries we also create slave labor problems in certain Third World countries and also huge environmental problems.

This all leads me to where I want to go and that is if we really want to have zero-emissions baseload capable power, we need to look again at next-generation nuclear.

That is the key to having zero emissions that's clean baseload power. Solar panels can't do it without batteries. Wind can't do it without batteries. The only two sources that could do it are hydro and nuclear, and nuclear—excuse me, hydro seems to have its own set of environmental challenges these days.

So I think we need to look at nuclear, Mr. Chairman. I haven't heard much about that in these conversations, and I hope that we do.

I yield back.

Mr. TONKO. The gentleman yields back.

The Chair now recognizes, from California, Representative Ruiz for 5 minutes.

Mr. RUIZ. Thank you, Chairman.

Governor Inslee, it is great to see you here today. It is good to see you back in the committee where you served and thank you for coming to discuss local and State initiatives and policies to address the pressing issue of climate change. I represent California's 36th Congressional District.

A bit biased—I think it is the best district in our nation. It produces the most renewable energy on Federal land in the country. We produced the most renewable energy on Federal land in the entire United States.

Last year, the city of Palm Springs, located in my congressional district, was designated as a SolSmart Gold City by the National League of Cities for its effort to incentivize and use solar energy.

In fact, many of the cities including Palm Desert, Indio, Cathedral City have put solar panels throughout their city halls, parking structures, and other facilities, even school districts. Rancho Mirage and Palm Desert have adopted solar ordinances for all-new constructions, et cetera.

So it is a very renewable energy-friendly location and I am looking forward to see if there are any partnerships, communications structures, or anything that we could work together on.

In addition, the San Geronio Pass—it is famous for its windmills in the movies that you see of cars and motorcycles driving through the 10—is one of the windiest places in my district and California and is home of nearly 2,000 wind turbines. Beautiful.

And as you mentioned in your opening statement, the State of Washington is doing substantive work to promote renewable energy and strengthen our economy.

Could you elaborate more on some of your successful renewable energy strategies you have implemented as Governor, particularly in the solar and wind renewable energy industries?

Mr. INSLEE. Yes. I talked a little bit about this. But we have had a spectacular success with our renewable portfolio standard and I say spectacular because we went from zero—essentially, zero commercial wind energy, you know, 11 or 12 years ago to a \$6 billion industry in our State.

You think—I mean—

Mr. RUIZ. How did you do that?

Mr. INSLEE. So our voters were wise enough to pass something I backed, which was a provision that says you basically needed 15 percent of your utilities to develop from these clean energy sources.

Mr. RUIZ. What did the State do to incentivize this?

Mr. INSLEE. So it was a requirement for utilities and it was resisted to some degree, who people did not think technology could solve this problem.

But we developed from scratch a \$6 billion industry. We also have a nascent solar industry, which a lot of people don't think of, you know, Washington. But two-thirds of our State is kind of semi-arid.

So now we are building solar farms and one of the largest manufacturer of polysilicates that goes into solar cells is in Moses Lake, Washington. I think it is the largest manufacturer in the Western Hemisphere that supplies material that basically goes into solar cells. Some of it might be in Mr. Flores' rooftop right now.

Mr. RUIZ. Have you done anything in regards to the workforce? Because if that is the energy of the future then we need to develop the workforce of the future.

I introduced a bill called the Renewable Energy Jobs Act that will provide pilot programs for training individuals for employment in renewable energy and energy-efficient industries on site in these companies.

But have you done anything—can you talk about any successful program in your State that promotes job growth and workforce training in the renewable energy industries?

Mr. INSLEE. Yes. In fact, we have a program we call Career Connect Washington. We are building a whole new avenue of career success because we think we have made a mistake telling people if you don't get a 4-year degree you are a failure. That is just wrong.

The most rapidly growing two jobs is solar installer and wind turbine technician and those are good-paying jobs right now. We want to make sure they are. So we are building whole new apprenticeship protocols for development in our community colleges with our unions.

I was recently at the IBEW training programs that are so successful. I think it was in Portland where I had a thousand—they have a thousand apprenticeships, many of them in the solar part of that training program.

So we know we can set people up for really successful careers.

Mr. RUIZ. So what can we do in Congress to help States like yours and California and other places to develop this workforce and to foster more of the solar and wind energies?

Mr. INSLEE. Well, you can adopt federally what we have adopted, which will create a demand for these new careers.

We certainly are always looking for financial support for our higher ed facilities that are involved in these training programs and we know that we have helped to try to—to help people finance these programs. We have one of the richest financial support networks for people in college but we could always use a little help.

Mr. RUIZ. Excellent. I yield back my time.

Mr. TONKO. The gentleman yields back.

The Chair recognizes the gentleman from Oklahoma, Mr. Mullin, for 5 minutes.

Mr. MULLIN. Thank you, Mr. Chairman.

Governor, thank you for being here. A couple questions for you, and I am going to try to reserve some time for my good friend from Montana.

You're supporting eliminating all fossil fuels by the end of 2045, correct?

Mr. INSLEE. In the grid that's the goal.

Mr. MULLIN. In the grid?

Mr. INSLEE. Yes.

Mr. MULLIN. So—and you are proposing eliminating electric coal in less than 6 years, correct?

Mr. INSLEE. I am sorry. You said electric—

Mr. MULLIN. Electric-generated coal.

Mr. INSLEE. In our State, we are closing the remaining coal-fired plant—

Mr. MULLIN. And you're replacing those with what?

Mr. INSLEE. A whole host of different systems, including efficiency. It is one of the things we haven't mentioned here today, the first—

Mr. MULLIN. No. What are you replacing it with?

Mr. INSLEE. Efficiency, solar power—

Mr. MULLIN. Like what?

Mr. INSLEE [continuing]. Hydro, public transportation, electric cars, biofuel—the whole mix. And this is an important issue.

Mr. MULLIN. So are you—would you consider you are an all-the-above energy guy where you are looking to bring stability for reliable low cost or reliable cost to homes and businesses? Would you consider yourself an all-of-the-above person?

Mr. INSLEE. I am not sure what you mean by “all-of-the-above.”

Mr. MULLIN. I am talking about all the above. Like, you are not really interested in picking winners and losers but letting the consumer have choice.

Because Washington—the State of Washington is drastically different than, let us say, the State of Oklahoma or the State of Montana, where hydro may work for you, wind and solar may work for you. But there are parts of the country where it won’t work.

So what would you do about the States where it doesn’t work, because it’s about reliability. I mean, if you were to take all the fossil fuels off the market to generate electricity and you only had solar and wind, you would have to have 12 percent of the land mass just to cover that. That is the size of Texas. So are you really proposing that?

Mr. INSLEE. Yes. We are proposing in my State——

Mr. MULLIN. Where are you going to get the 12 percent of the land?

Mr. INSLEE. We are proposing in my State to——

Mr. MULLIN. Where are you going to get the 12 percent of the land? Because you are running for a higher office, so where would you get the 12 percent of the land?

Mr. INSLEE. Well, to start with, I don’t know if you have heard me, but I have said I support research and development in multiple fields to try to develop other——

Mr. MULLIN. So you are all-of-the-above then?

Mr. INSLEE. If that is how you define it.

Mr. MULLIN. Well, I mean, are you—if you really want to eliminate fossil fuels, then that is not all-of-the-above. So either you are or you aren’t.

Mr. INSLEE. Well, look, I just want to be straight with you. Here is what I—here’s what I——

Mr. MULLIN. I am trying to. I am trying to give you an opportunity to be straight, and you haven’t been yet.

Mr. INSLEE. The first order of business is to set a goal, and the goal——

Mr. MULLIN. But your goal is already set. You want to eliminate all fossil fuels by 2045. That is your goal. So where are you going to get the land mass to be able to eliminate all fossil fuels?

Because, if you just depend on batteries for storage—because we know that wind doesn’t always blow and the sun isn’t always shining. So where are you going to store it? We are going to rely on China for the special metals it is going to take to develop the batteries to which you are going to store?

Mr. INSLEE. As far as I can tell, you are in the same league with the President of the United States, who has never heard of batteries. We have a thing called batteries—let me finish.

Mr. MULLIN. No, I have heard of batteries. No. No, sir. No. No.

Mr. INSLEE. Let me finish—let me finish one question, will you?

Mr. MULLIN. No, don’t accuse me of—don’t accuse me of saying that I am in some type of league. Don’t do that to me. I am asking

you a question. If you are really about batteries and you are about the dependence—I am all-of-above-type guy.

I am all about the storage. I have no problem with that. But if you only go to one area where it is going to rely on storage of power when the sun isn't shining and the wind isn't blowing, then where are you going to get the resources? Doesn't that recall—doesn't that require mining?

Mr. INSLEE. We have abundant sources, and what we are finding in our State—and these are the arguments I heard when we had the renewable portfolio standard.

Mr. MULLIN. It is not an argument. It is a question.

Mr. INSLEE. Well, people argued—people argued—people argued that it was impossible to integrate these systems.

Mr. MULLIN. Sir, it's not—it is not an argument. It is a real question.

Mr. INSLEE. I can't have an argument because you won't let me answer my question—

[Laughter.]

Mr. MULLIN. With that, I am going to yield to the gentleman from Montana.

[Laughter.]

Mr. GIANFORTE. I thank the gentleman, and Governor, thank you for being here. You testified today that you are going to ban coal-fired electricity in your State. I appreciate that.

My time is short here. I just want to highlight the fact that, you know, today in your State House you are considering a bill that would eliminate all coal-fired electricity.

Much of this electricity is generated in Montana, and particularly in the town of Colstrip. It is a small town, 2,300 people. Their livelihoods are threatened.

You testified today that your policies have had no detrimental effect on any community and, Mr. Chairman, I would like to enter into the record this report from—if there is no objection—June 2018, "The Economic Impact of Early Retirement of Colstrip Units 3 and 4."

That report by the University of Montana shows that Montana would lose over \$5 billion in revenue. Montana would lose nearly two-thirds—3,300 jobs, and our population would go down by 7,000 people.

And I would just offer that those are devastating impacts of your policy on Montana and our communities. You have also opposed building of a coal plant. I don't think that in your position as Governor you have jurisdiction over Japan. Japan wants to buy our coal. I think it's a constitutional issue.

So I am here just to State that, you know, closer to home, you know, we have real issues with these policies, and I appreciate you being here, Governor, and I hope my colleagues can learn from, honestly, Washington State's mistakes instead of repeating them on a national level.

And with that, I yield back.

Mr. INSLEE. Let me comment on this. I would—I would suggest that you look at the model that we have for the transition of our coal-fired plant in Centralia, Washington. I think you will find it

has been very successful in helping that community through that transition because it was a consensus-based product.

It involved a substantial investment to help the working people who were associated with it and the consumers and the small business people.

Mr. GIANFORTE. Governor, I would invite you to come to Colstrip, Montana with me to meet the people whose livelihoods you are extinguishing. You have my open invitation.

Mr. INSLEE. And I would—I would invite you to come meet the people who are having trouble breathing because of coal-fired electricity pollution. These are the children of the State of Washington and the people whose houses are burning down.

We both have constituents. All of them deserve our respect and attention and I think if we work together we can help them all.

Mr. GIANFORTE. Sir, I would be happy—at this point, I take that as a no, you won't meet with the people of Colstrip. That is unfortunate.

Mr. INSLEE. I am happy to discuss this with you further.

Mr. TONKO. The gentleman yields. The Chair now recognizes our last individual who asks questions here, and that will be Representative Schakowsky from the State of Illinois.

Ms. SCHAKOWSKY. Well, I am so happy to be with former colleague and good friend, Governor Inslee today.

I wondered if you wanted to talk a little bit more. This is the basis, I think, of many of the debates. Are we sacrificing jobs and communities for what I see as an existential threat from global warming and problems. Is there a way for us to balance that?

Mr. INSLEE. Well, I appreciate an opportunity to say that. The way I look at this is, there is a greater risk that we will lose jobs because we are not capturing here and they go to China and Germany.

These jobs are going to be created. We are going to create millions of jobs because we have no choice but to do so. We know that over the next several decades we need to build a new clean energy system in the United States and worldwide, and so there are going to be millions of jobs in these industries.

I want them to be in the United States in Washington State, not just China and Germany, and that is the central issue. We know that humans, I don't think, are consciously going to allow this place to become uninhabitable.

I don't think we should. So this is a question of where the jobs are going to be created, not whether they are going to be created, and the central lesson I would share with you on my trip here is that they are being created when we have smart policies to build them and the people that I know now working in these clean energy sources, some of whom are children of my friends of 60 years, is really exciting for me to see these new careers.

You know, a young family, a widow—she lost her husband—I got to know this family well. Now their kid's working in the solar industry making polysilicate that goes into solar panels.

The folks that used to be in the timber industry now doing biofuels in Gray's Harbor—this is exciting when you get people to have new careers and that is what this effort is about, and I am just here saying we ought to have confidence to be able to do that.

Now, I think it will help when both parties propose solutions to actually do that. I look forward to that happy day when the spirit of Teddy Roosevelt is here on both sides.

Ms. SCHAKOWSKY. Thank you, because I think we are going to have to deal with this issue as we—as we go forward if we want bipartisanship and I appreciate your answer.

My Governor—new Governor—Governor Pritzker has joined the Climate Alliance and I wanted to ask you about it. From your perspective, what has motivated many States to join the Climate Alliance?

Mr. INSLEE. Well, in part, election returns motivated people on occasion because they have seen people who have been elected recently. Seven Governors—new Governors—were elected on our side, and they all recognize the importance of acting on climate change.

Your Governor has joined the alliance and taken some actions on I believe it is a 25 percent move towards clean energy in the grid, I believe, if I am not mistaken.

We are looking at advances in wind and solar in Nevada and New Mexico. We are just looking at people seeing success. I think success is what has inspired people to move forward and that is why we—that is why I have come here in confidence.

Ms. SCHAKOWSKY. So is this a matter—this Climate Alliance a matter of sharing information so that States can move forward without having to reinvent the wheel?

Mr. INSLEE. So we formed the Alliance for several reasons. One, to share information, share policies, share experiencing, share things that don't work so that we can learn from each other's mistakes and that has been very successful.

Second, it was formed to make sure that the rest of the world does not give up on the United States. We want the rest of the world that is moving forward to know that we are still moving forward in our country and we are.

This group represents over 60 percent of the economy of the United States. That has worked. The rest of the world is continuing to move forward in the Paris Agreement. So it has been successful in that regard and I have enjoyed working on a bipartisan basis.

As I said, we have three Governors in this effort and we are working together. I hope that happens here, too.

Ms. SCHAKOWSKY. What is the consequence, do you see—are the practical consequences of the United States pulling out of the Paris Accord?

Mr. INSLEE. Jobs going overseas and I don't want to see that. I want to see these jobs right here and I hope this Congress will help me do that. Look to your leadership.

[Laughter.]

Ms. SCHAKOWSKY. I see you looking at—I see you looking at the clock, Governor, and I don't want to keep you any longer. But I really appreciate your leadership on this issue, which I do see as an existential issue for humanity.

Thank you. I yield back.

Mr. INSLEE. Thank you.

Mr. TONKO. The gentlelady yields back.

That concludes our first panel. We, again, thank you, Governor Inslee—the Honorable Jay Inslee—for joining us to testify on Washington State’s efforts to combat climate.

And at this time, I will ask that staff prepare the witness table so that we may begin our second panel shortly.

Let us take that 5-minute recess to get that done.

[Recess.]

Mr. TONKO. OK. We are going to start with our second panel. We will hear from a group of local leaders from across our country that will share their work in combating climate change in their local communities.

Those leaders include, from my left, the Honorable Steve Benjamin, mayor of the City of Columbia, South Carolina. We are—oh, there we go. Welcome, Mayor.

Next to him is our other mayor, the Honorable Jerry F. Morales, mayor of the City of Midland, Texas. We then have the Honorable Jackie Biskupski, mayor of the City of Salt Lake City, Utah, the Honorable Daniel C. Camp, III, chair of the Beaver County Board of Commissioners, Beaver County, Pennsylvania, and then we have the Honorable James Brainard, mayor of the City of Carmel, Indiana.

We want to thank our witnesses for joining us today. We look forward to your testimony. We will be recognizing each of you for 5 minutes.

I will make the note that we will recognize that Honorable Steve Benjamin needs to—he has got a hard time to leave, a hard 12:45 by which he needs to leave. We are welcoming him here, and he needs to get back to South Carolina for city business.

So we will try to do as much business here as possible. We will begin with perhaps Mayor Benjamin first and, again, we welcome all of our panelists here.

Mayor, the opportunity for you is to be recognized for 5 minutes now.

STATEMENTS OF STEPHEN K. BENJAMIN, MAYOR, CITY OF COLUMBIA, SOUTH CAROLINA; JERRY F. MORALES, MAYOR, CITY OF MIDLAND, TEXAS; JACQUELINE M. BISKUPSKI, MAYOR, SALT LAKE CITY, UTAH; DANIEL C. CAMP III, CHAIRMAN, BEAVER COUNTY BOARD OF COMMISSIONERS, BEAVER COUNTY, PENNSYLVANIA; AND JAMES BRAINARD, MAYOR, CITY OF CARMEL, INDIANA

STATEMENT OF STEPHEN K. BENJAMIN

Mr. BENJAMIN. Thank you, Mr. Chairman.

Chairman Tonko, Ranking Member Shimkus, and members of the subcommittee, my friend, Congressman Duncan, from South Carolina. Thank you for allowing me to get in and get out of there.

We believe, in South Carolina, also in Government by ambush. So if I am not at a city council meeting tonight I don’t know what happens. So I am going to make sure I get back home.

Thank you for this opportunity to testify before the subcommittee. Climate change is perhaps the biggest challenge we face as a nation, as a people, and I am pleased that the subcommittee is holding this hearing.

My name is Steve Benjamin. I serve as mayor of Columbia, South Carolina, the capital of our State—a thriving and diverse city, home to over 134,000 people and the hub of a metropolitan area of over 800,000 citizens.

In addition to State government, Columbia hosts nearly 50,000 students attending the University of South Carolina, Columbia College, two historically black colleges and universities—Benedict College and Allen University—and we also are the proud home to Fort Jackson, the Army’s largest training base in the country which trains approximately 45,000 soldiers per year.

For the past year, I have had the honor of representing my fellow mayors throughout the country as President of the United States Conference of Mayors. At the national level, I also served as chairman of Municipal Bonds for America, cochair of the Sierra Club’s bipartisan Mayors for 100 Percent Clean Energy Initiative, and as a past president of the African-American Mayors Association.

I have been fortunate to serve in these national leadership positions at a moment when mayors and local government officials have attained renewed prominence and have been widely recognized as being in the forefront of public policy innovation, including climate change.

However, we cannot tackle this challenge alone. We need a strong Federal partner and I hope this hearing will be the first step in the development of a climate action program, one that recognizes and bolsters the efforts mayors and cities are taking to address this existential challenge.

As with so much of what mayors and cities do, our leadership in climate change has been pragmatic. Mayors and cities, Republican, Democrats, independents have been pragmatic because we have no choice.

Climate change is already impacting our communities and testing our infrastructure. We have acted because our constituents expect us to tackle challenges and fix problems while also delivering a balanced budget on time each year.

In Columbia, unfortunately, we witnessed firsthand in 2015 over 3 days in October the remnants of Hurricane Joaquin stalled over central South Carolina, inundating Columbia with nearly 30 inches of rain.

Across the Carolinas, 12 trillion gallons of water fell. Hurricane Joaquin’s impact on Columbia was dire, taking the lives of precious South Carolinians.

In addition, the storm nearly wiped out the Columbia Canal, which serves as our main drinking water treatment plant, ruptured dozens of water and sewer mains, closed over 100 streets, flooded one fire station and a primary fire training facility, breach multiple dams and damage nearly 400 homes and 60 businesses.

Since then, we have had other—several other major rain events. Though Joaquin was a 500-year event, heavy rain events are apparently becoming the new normal.

Like cities throughout our country, the city of Columbia has been addressing climate change on several fronts for over decade. In 2009, with assistance from the Energy Efficiency and Conservation Block Grant, we conducted an energy audit and implemented several of the audit’s recommendations, including upgrading lighting

systems, HVAC upgrades on city buildings, and installing solar panels on fire stations.

These projects reduce our greenhouse gas emissions and energy consumption and save Columbia taxpayers approximately \$337,000 per year. In addition, one of my first priorities when I took office was to upgrade and rationalize our regional transportation to increase ridership.

We have also accelerated our efforts to deliver more pedestrian and bicycle infrastructure throughout our city. Combined with the thousands of new units of being deployed in open and downtown Columbia, this has set the stage for us to truly offer meaningful options to the car with the added bonus of creating a vibrant, lively, and beautiful downtown.

Two years ago, Columbia took the next step, setting a target of powering our community with 100 percent clean and renewable energy by 2035.

In addition to our climate change prevention efforts, we have been actively addressing mitigation. We bit the bullet and increased storm water fees to fund a wide array of projects to improve our storm water system using both gray and green infrastructure.

We also issued our first-ever green bond in December, allowing the city to finance upgrades and improvements to our storm water system, earning the first climate bond initiative certification of a stand-alone storm water project in the country.

We have worked hard in Columbia, as cities have throughout the country. But I am here today to tell you that mayors and cities alone cannot tackle this challenge. We need the strong Federal partner.

I have attached my testimony to the 2007 open letter to presidential candidates, signed by 100 mayors from across South Carolina, including my predecessor, calling for Federal leadership on climate change.

That letter is 12 years old, asking for a strong Federal partner. Since then, the need for action has become that much more urgent.

I am also very pleased that Chairman Tonko has issued a blueprint for action, a framework for climate action in the United States Congress, and we are particularly pleased that the framework empowers State and local governments and strengthens community resilience and certainly avoids harm to first movers.

We recognize that it takes bold leadership and bold action to make some moves here first. In January, the Conference of Mayors released its own mayors' call for climate action. That is included as an attachment to my written testimony.

I would respectfully suggest that some of our specific proposals provide Congress a way to flesh out and implement some of Chairman Tonko's framework in a manner that would help mayors and cities meet the climate challenge.

Many of these proposals could be implemented and produce results quickly while Congress debates a larger package, a more comprehensive climate strategy that helps meet the needs of our respective communities all across the country.

These include—as I conclude—reauthorizing and fully funding the Energy Efficiency and Conservation Block Grant Program in

fiscal year 2020 and beyond, establishing and implementing a national greenhouse gas emission reduction standard by 2030, a DOT—an aggressive national renewable portfolio standard and providing sensors for electric utilities including municipal electric utilities to invest in clean and renewable energy, direct the EPA to maintain and approve CAFE standards provide incentives for the energy sector to ramp up and research investments in renewable energy, modernize the nation's electric utility grids, to provide transportation funding to help metropolitan areas and local areas invest in low-carbon mode-neutral transportation options, creating increased funding for the surface transportation block grant, increase funding for transit. Invest and improve inter-city passenger rail.

Mr. TONKO. Mr. Mayor?

Mr. BENJAMIN. Yes, sir.

Mr. TONKO. I need you to wrap up.

Mr. BENJAMIN. Yes, sir. And I will close with this. One major issue, Congress has shown leadership in preserving the tax exemption on municipal bonds that allows us to deliver the infrastructure.

We did, however, make a mistake in the Tax Cut and Jobs Acts by removing the ability to advance refund bonds and save us money as we deliver on that infrastructure—the vast majority of American infrastructure. We need that addressed by Congress.

Thank you for the opportunity to testify. I hope our testimony and the attachments in the much larger proposal can give Congress some ideas to quickly implement and help bolster our local government efforts.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Benjamin follows:]

**Testimony of Stephen K. Benjamin
Mayor
City of Columbia, South Carolina**

**Learning from Across the Nation:
State & Local action to Combat Climate Change**

**House Committee on Energy & Commerce
Subcommittee on Environment & Climate Change**

April 2, 2019

Chairman Tonko, Ranking Member Shimkus, and members of the Subcommittee, thank you for this opportunity to testify.

Climate change is perhaps the biggest challenge we face and I am pleased that the Subcommittee is holding this hearing on state and local climate change action. As I will outline in this testimony, Mayors and cities are leading on climate change efforts, including preparing our communities and our infrastructure for its impacts. However, we cannot tackle this challenge alone. We need a strong federal partner and I hope this hearing will be the first step in the development of a climate action program that recognizes and bolsters the efforts Mayors and cities are taking to address this existential challenge.

My name is Steve Benjamin and I serve as the Mayor of Columbia, South Carolina. Columbia is the capital of South Carolina and a thriving and diverse city that is home to 134,309 people and the hub of a metropolitan area of 817,488 people. In addition to state government, Columbia hosts the nearly 50,000 students attending the University of South Carolina, Columbia College, and two historically black colleges, Allen University and Benedict College. Columbia is also the proud home of Fort Jackson, the Army's largest basic training center, which trains approximately 45,000 soldiers per year.

For the past year, I have had the honor of representing my fellow mayors from throughout the country as the President of the U.S. Conference of Mayors, the official non-partisan organization of cities with populations of 30,000 or more. At the national level, I also serve as the Chairman of Municipal Bonds for America, a coalition dedicated to the preservation of the tax exemption for municipal bonds, Co-Chair of the Sierra Club's Mayors for 100% Clean Energy Initiative, and as Past President of the African American Mayors Association.

I have been fortunate to serve in these national leadership positions at a moment when mayors and local government have attained renewed prominence and have been widely recognized as being in the forefront of public policy innovation. I am especially proud that mayors and local governments have been recognized for our leadership in addressing climate change.

As with so much of what mayors and cities do, our leadership on climate change has been pragmatic. Mayors and cities have been pragmatic because we have no choice. Climate change is already impacting our communities and testing our infrastructure. We have acted because our constituents expect us to tackle challenges and fix problems (while delivering a balanced budget on time each year).

In Columbia, we unfortunately witnessed firsthand how climate change is already impacting cities and testing our infrastructure. Over three days in October 2015, the remnants of Hurricane Joaquin stalled over central South Carolina, inundating Columbia with nearly 30 inches of rain. Hurricane Joaquin's impact on Columbia was dire, taking the lives of many precious South Carolinians.

The storm nearly wiped out the Columbia Canal, which serves our main drinking water treatment plant, ruptured dozens of water and sewer mains, closed over 100 streets, flooded one fire station and our primary fire training facility, breached multiple dams, and damaged nearly 400 homes and 60 businesses. Since then, we have had other several major rain events; though Joaquin was a "500-year" event, heavy rain events are apparently becoming the new normal. In the aftermath of Joaquin, it became clear to us that recovery, resilience, and mitigation against future storms will be costly and will require detailed local knowledge of conditions on the ground and the City's infrastructure.

The 2015 floods were a call to action. However, like cities throughout the nation, the City of Columbia has been addressing climate change on several fronts for over a decade. Hurricane Joaquin led us to redouble our efforts.

In 2009, with assistance from the Energy Efficiency and Conservation Block Grant, we conducted an energy audit and implemented several of the audit's recommendations, including upgrading lighting systems, HVAC upgrades on City buildings, and installing solar panels on fire stations. These projects reduced our greenhouse gas emissions and energy consumption and saved Columbia taxpayers approximately \$337,000 per year.

In addition, one of my first priorities when I took office was to upgrade and rationalize our regional transit system to increase ridership, including successfully asking our voters to approve a penny tax dedicated to transportation, including transit. I have also built on and accelerated the efforts of my predecessor to improve pedestrian and bicycle infrastructure in Columbia, completing several streetscapes and extending and opening several trails. Combined with thousands of new units of housing in Downtown Columbia and other central Columbia neighborhoods, these efforts have set the stage for truly giving Columbia residents a meaningful option to the car, with the added bonus of a vibrant, lively and beautiful Downtown. Two years ago, Columbia took the next step, setting a target of powering our community with 100 percent clean, renewable energy by 2035.

In addition to our climate change prevention efforts, we have been actively addressing mitigation. In the wake of Hurricane Joaquin, it became clear that we had to accelerate our efforts to improve the climate resilience of our stormwater infrastructure. We bit the bullet and increased stormwater fees to fund a wide array of projects to improve our stormwater system using both gray and green infrastructure. We also issued our first-ever green bond that allowed

the City to finance upgrades and improvements to our stormwater system while protecting our environment.

We have worked hard in Columbia, as have cities throughout the nation. But I am here today to tell you that Mayors and cities cannot tackle this challenge alone. We need a strong federal partner. Local governments collect approximately 15 percent of our nation's tax revenue. With that 15 percent, we are expected to deliver an array of core governmental services that many of us take for granted but are the foundation of modern, civilized society: education, streets, sidewalks, alleys, water, sewer, transit, parks, recreation, and much more. We cannot tackle the tasks of slowing climate change and adapting to climate change on our own.

I would point out that our call for federal action on climate change and for a strong federal partnership with state and local governments as we work to address climate change is not a new one. Indeed, I have attached to my testimony a 2007 open letter to presidential candidates signed by over 100 South Carolina mayors, including my predecessor, calling for federal leadership on climate change. That letter was signed by mayors of South Carolina's largest cities, by mayors of small towns, by mayors from the Upstate, mayors from the Midlands, mayors from the Coast, Republican mayors, and Democratic mayors.

Let me share the key paragraphs of that letter:

South Carolina voters will play a central role in determining the next President of the United States. While we recognize that there are many important issues before us, one requires immediate attention: the growing threat of global warming. As South Carolina mayors, it is our duty to add our voice to the growing chorus of scientific, business, and community leaders who say the time to act on global climate change is now.

From the wooded foothills of the Upstate, to the fertile soil of the Midlands, to the pristine marshes of the Coast, South Carolina enjoys one of the richest and most diverse natural habitats in the United States. Indeed, the quality of life we enjoy helps explain why South

Carolina's population is projected to increase 27 percent by 2025. To meet the challenges of this rapid growth, our communities are quickly learning the value of efficiency and conservation as a means to save both taxpayer dollars and the environment. We are investing at the local level in more efficient municipal buildings, promoting "green fleets" in our public transportation, and educating our constituents in the value of conservation to reduce energy costs and harmful environmental impacts.

We were taking action and asking for a strong federal partner 12 years ago. Since then, the need for action has become all the more urgent. I am therefore pleased that Chairman Tonko has issued a blueprint for action, A Framework for Climate Action in the U.S. Congress. I am especially pleased that the framework puts local government front and center, specifically calling for a program that **empowers state and local governments** and **strengthens community resilience**. I am also pleased that the framework specifically recognizes efforts that state and local governments have already taken and calls for **avoiding harm to first movers**. In addition, I share the other priorities outlined in the framework, including creating a strong, fair, and competitive clean economy, protecting low-income households, and delivering a just and equitable transition to a clean economy.

In January, the Conference of Mayors released its own Mayors Call for Climate Action that is included as an attachment. I would respectfully suggest some of our specific proposals provide Congress a way to flesh out and implement Chairman Tonko's framework in a manner that would help Mayors and cities meet the climate challenge. Many of these proposals could be implemented and produce results quickly while Congress debates a larger package or comprehensive climate strategy:

- Reauthorize and fully fund the **Energy Efficiency and Conservation Block Grant** in FY 2020 and beyond;
- Establish and implement **national greenhouse gas emission reductions by 2030**;

- Adopt an ***aggressive national renewable portfolio standard*** and provide incentives for electric utilities, including municipal electric utilities, to ***invest in clean and renewable energy***;
- Direct EPA to maintain and Improve the Corporate Average Fuel Economy (CAFE) standards;
- Provide incentives to the energy sector to ramp up ***research and investments in renewable energy*** to expand electric generation, and research to capture and reduce carbon emissions from clean energy;
- Modernize the nation's ***electric utility grids***;
- Prioritize transportation funding to help metropolitan areas and local areas invest in low-carbon, ***mode-neutral transportation options via increased funding for the Surface Transportation Block Grant***, including building a ***national charging infrastructure***;
- Increase ***funding for transit***;
- Invest in improved ***intercity passenger rail***;
- Provide additional funding for the ***Community Development Block Grant (CDBG)***, with the additional funding ***targeted to investments in climate resilient infrastructure*** in low- and moderate-income neighborhoods;
- Build on last year's reforms of federal disaster assistance programs to increase ***funding for disaster mitigation***;
- Reinstated ***advanced refunding for municipal bonds***; and
- Provide resources to help local governments ***increase the supply of affordable and workforce housing located in proximity to jobs, education, services, and transit***.

In the paragraphs below, I expand on some of these proposals where you can help us make progress. Local governments are making progress around the country but we need your assistance.

Energy Efficiency and Conservation Block Grant (EECBG)

EECBG is probably one of the easiest and quickest ways that Congress can jump start greenhouse gas emission reduction programs. I greatly appreciate Chairman Pallone's and Speaker Pelosi's support for the creation of this program in 2007 and the funding of this program in FY 2009. Funding EECBG in FY 2020 and beyond would provide every congressional district in the nation with the resources to implement local strategies to increase energy efficiency, to further develop renewable energy sources, and to fortify local energy infrastructure, reducing greenhouse gas emissions, saving taxpayer dollars, and protecting our communities.

We often hear the cliché that there is no Republican or Democratic way to fill a pothole. I would posit that the same holds true to improving local government energy efficiency. The Energy Independence & Security Act of 2007, which authorized EECBG, enjoyed broad bipartisan support. It was enacted by a Democratic Congress and signed by a Republican President. I would hope that there continues to be broad bipartisan support for a program that helps cities reduce local government energy costs and save local taxpayers money.

Going back to that 2007 open letter that over 100 Carolina mayors sent to the presidential candidates, my predecessor, Mayor Bob Coble, made a strong argument for funding a program like EECBG:

"Efficiency and renewable energy are our 'first fuel,'" Columbia Mayor Bob Coble said. "Our state is one of the least energy-efficient in the country, and consequently our citizens have some of the highest electricity bills. But by investing in efficiency and our home-grown energy sources, we can embrace a clean, efficient, energy independent future."

As noted above, in the one year that EECBG was funded, Columbia used our grant to conduct an energy audit and implement several of the audit's recommendations, including upgrading lighting systems, HVAC upgrades on City buildings, and installing solar panels on fire stations. These projects reduced our greenhouse gas emissions and energy consumption and saving

Columbia taxpayers approximately \$337,000 per year. Mayors across the nation have implemented similar initiatives. However, with tight city budgets, it sometimes is difficult to implement what needs to be done along with all other local priorities.

One of the great features of EECBG is its flexibility. It allows cities to target funds to a wide array of projects and programs. For example, Schenectady's needs and solutions in this area might be different from those of Columbia. In addition, EECBG allowed cities and counties to serve as the Department of Energy's final, real world test laboratory for the implementation of energy efficiency technologies and programs. I am proud that the Department of Energy's Oak Ridge National Laboratory evaluated EECBG as a significant success. With the Subcommittee's permission, I would like to submit for the record the Executive Summary of that report. I would also like to submit for the record a report prepared by the U.S. Conference of Mayors, Successful City Initiatives with EECBG Funding, that illustrates how effectively cities throughout the nation implemented this program in the one year Congress funded it.

National Renewable Portfolio Standards (RPS)

Many cities, including Columbia, have adopted the 100% renewable energy pledge and want to meet that goal, especially given recent reports from the National Climate Assessment and the IPCC on the earth's rapid rate of warming, a 12-20 year window for action is upon us. The U.S. Conference of Mayors has affirmed this 100% renewable energy pledge. We have also affirmed our support of the Paris Climate Agreement.

But we cannot achieve this on our own, and neither can small and medium size businesses within our communities. We need a utility sector that delivers clean energy to our overall economy and does so in an expedited manner. According to EPA's public review draft, Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2017 (EPA 430-P-19-001):

"In 2017, total gross U.S. greenhouse gas emissions were 6,472.3 MMT, or million metric tons, carbon dioxide (CO₂) Eq. Total U.S. emissions have increased by 1.6 percent from 1990 to 2017, and emissions decreased from 2016 to 2017 by 0.3 percent (21.1 MMT CO₂ Eq.)."

While the trend is moving ever so slightly in the right direction, reduction in GHG emissions is simply not happening quickly enough or with sufficient magnitude to address and mitigate the devastating effects of Climate Change. This is especially important given the fact that a national climate strategy must include the electrification of our national transportation system, especially now that transportation is our leading source of greenhouse gas emissions.

While we have made some progress in our local efforts to shift to renewable energy and to develop renewable energy projects, it is clear we cannot do this alone or in sufficient time. A national approach is needed in the form of a renewable portfolio standard, or its equivalent.

Corporate Average Fuel Economy (CAFE) Standards

According to analysis done by the Environmental Protection Agency (EPA), the transportation sector generates the largest share of greenhouse gas emissions in the U.S., nearly 28.5 percent in 2016. Cities are taking action to reduce vehicle emissions through investments in transportation alternatives such as public transit, bicycle and pedestrian infrastructure, and electric vehicles. These efforts, however, are not enough to meet local emission reduction targets. Therefore, cities rely heavily on vehicle emission standards to help meet our emission reduction goals. The Administration's current proposal to freeze CAFE standards to 2020 levels for car models being released from 2021 to 2025 will not assist us with our efforts. Attached to my testimony is a letter jointly written by the U.S. Conference of Mayors and the National League of Cities outlining our opposition to the Administration's proposal to scale freeze CAFE standards. I encourage Congress to weigh in with the Administration regarding this freeze and ask them to reverse that position.

Surface Transportation Block Grant - Mode-Neutral Transportation Options

Over the past two years (FY 2018 and FY 2019), Congress appropriated an additional \$4 billion for the Federal-Aid Highway Program, with the funds allocated via the Surface Transportation Block Grant. Allocating these additional funds via the Block Grant meant that a portion of these funds were sub-allocated to metropolitan areas, with local elected officials empowered to allocate them to regionally-identified priority mobility projects. In addition to directing a portion of the funds to metropolitan areas, which are home to the overwhelming majority of the nation's population and economy, the Surface Transportation Block Grant provides considerable flexibility, allowing local elected officials to make mobility investment in a mode-neutral manner, including projects that help reduce greenhouse gas emissions. Directing more surface transportation resources to local official and local areas is particularly important to our climate efforts because local officials are more likely to invest in projects that provide alternatives to solo driving and highway expansion. In Columbia, we have leveraged these federal funds with a voter approved penny sales tax dedicated to transportation, including transit.

The additional increment of \$2.79 billion that Congress appropriated for the Surface Transportation Block Grant in FY 2019 meant an additional \$2.9 million that our region allocated to regional mobility priorities. In Chairman Tonko's District, the Albany-Schenectady Metropolitan Area received an additional \$1.9 million for locally identified priorities.

I urge Congress to continue to allocate any highway funds appropriated in addition to base program funds made available by the FAST Act via the Surface Transportation Block Grant. Looking ahead to reauthorization of the FAST Act, I urge Congress to increase funding for the Surface Transportation Block Grant and to increase the metropolitan area share of the program from 55 percent to 75 percent.

Transit

Transportation now accounts for the majority of our nation's greenhouse gas emissions. If we are going to truly tackle greenhouse gas emissions, we must grow the federal transit program. As outlined above, one of my first priorities when I was elected was to leverage federal transit funds to modernize, rationalize, and grow our regional transit system, including successfully asking our voters to approve a penny sales tax dedicated to transportation, including transit. Many other communities have made similar efforts. A more robust federal transit program would bolster these efforts, especially as we strive to replace our fleet, including alternative fuel buses.

Intercity Passenger Rail

We have heard and read a lot about high-speed rail, both a decade ago in the context of the Recovery Act and in recent weeks in the context of the Green New Deal. I fully support efforts to bring high-speed rail to our nation. However, I fear that these conversations take attention from other efforts to improve intercity passenger rail service that are not high-speed rail but nevertheless result in much improved passenger rail service that is competitive with automobile and airplane travel.

For example, while the media has given outsize attention to Governor Newsom's decision to scale back the California High-Speed Rail Project and to Florida and Wisconsin's decisions to return their Recovery Act high-speed rail grants, the Recovery Act funded projects that significantly improved intercity passenger rail on several corridors, most notably Detroit-Chicago and Chicago-Saint Louis, where targeted infrastructure investments combined with increased state support allowed for higher speeds and increased service frequencies.

Given the size of our nation, intercity passenger rail travel will probably never fully replace airplane and automobile travel. However, there are many corridors and city pairs where intercity passenger rail can help reduce greenhouse gas emissions while also improving mobility,

increasing traveler choice, decreasing airport and highway congestion, and spurring economic development.

In South Carolina, I strongly believe that several corridors are ripe for the establishment of intercity passenger rail service, most notably Charleston-Columbia-Greenville and Charleston-Columbia-Charlotte. Relatively modest investments in existing infrastructure along these corridors would result in intercity passenger rail service that is competitive with automobile and airplane travel. This investment would also pay the added dividend of increasing mobility and supporting economic development around intermediate stops in the economically struggling towns along these corridors.

I have led efforts to bring service to these corridors, but a federal commitment in this area would help us achieve this goal.

Community Development Block Grant (CDBG)

Providing an additional increment of funding for CDBG targeted to resilient infrastructure in low- and moderate-income neighborhoods is another fast way that Congress can help cities tackle climate change and improve climate resilience. CDBG is an effective and efficient way for Congress to allocate funds. The program has a well-established administrative and oversight structure at the federal, state, and local levels and provides grantees with the flexibility to target a wide array of local needs. It is no coincidence that Congress most often uses CDBG to allocate disaster assistance funds.

Disaster Mitigation

Congress has spent and will likely continue to spend billions of dollars to help communities recover from natural disaster that many would argue has been exacerbated by climate change. Our nation has faced devastating hurricanes, wildfires, and floods. All evidence indicates that this

pattern will continue; 95% of cities responding to a U.S. Conference of Mayors survey responded that they have experienced a change related to at least one climate impact in the past five years, with most experiencing more. Our ongoing struggles with FEMA for assistance with repairs to the Columbia Canal, which serves our primary drinking water treatment plant, in the wake of Hurricane Joaquin illustrates the disconnect between the need to bolster our infrastructure to mitigate against future disasters and the way that the federal disaster assistance program operates.

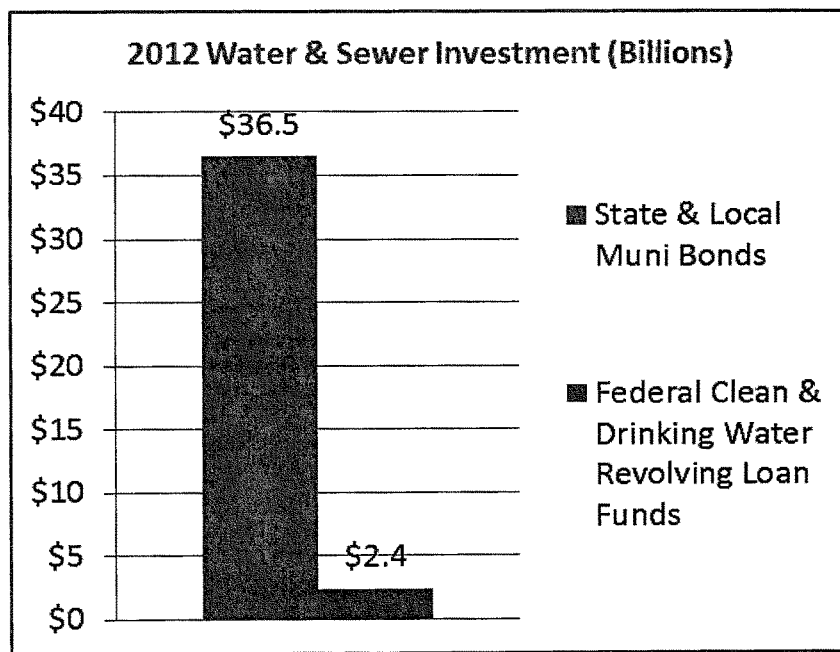
Over three years after the storm and with yet another hurricane season looming, the Columbia Canal is operating with temporary repairs and at diminished capacity with vulnerabilities that did not exist prior to the 2015 Disaster. The City estimates that repairing storm damage to the canal, including bringing it up to current standards and ensuring its resilience, will cost \$169 million. FEMA counters that most of the damage to the Canal is not storm-related, arguing that it is due to regular wear and tear, and further counters that FEMA can only fund repairs for visible damage and estimates repairs for storm damage to the canal at \$11 million. We feel our position is solid and backed up by extensive technical review. Regardless, something is clearly broken when the federal disaster assistance program cannot assist with repairs to the primary drinking water source for 375,000 people, 5 hospitals, 6 universities and colleges, and the Army's primary and largest training base.

I strongly encourage Congress to invest additional funds in disaster mitigation. Spending money on mitigation and resiliency is a necessary investment that would help protect our nation

Advanced Refunding of Municipal Bonds

I was relieved that the Tax Cut & Jobs Act of 2018 maintained the tax exemption for municipal bonds. State and local governments make over 75 percent of our nation's infrastructure investments and the tax exemption helps keep our borrowing costs low. The tax exemption for

municipal bonds allows the federal government to support state and local infrastructure investment in a manner that maximizes community decision making. Perhaps the best way to illustrate the scope of state and local investment in infrastructure compared to federal investment is this chart:



There are similar disparities in other areas of infrastructure investment. While I appreciate the federal funds Columbia receives, in this era of fiscal austerity and dwindling federal grants, it is not hyperbole to state that a repeal of the tax exemption for municipal bonds would have essentially been a federal abandonment of infrastructure.

Nevertheless, I was disappointed – and puzzled – that the Tax Cut & Jobs Act eliminated advanced refunding of tax exempt municipal bonds. Advanced refunding allows state and local governments to take advantage of lower interest rates, saving taxpayer money and stretching our infrastructure dollars. Simply put, Congress may have given itself a \$16 billion “pay for” to accommodate byzantine congressional budget rules, but in doing so you increased state and local government costs for infrastructure, including infrastructure to help us prevent and adapt to climate change.

Thank you for the opportunity to testify. I hope my testimony provides the Subcommittee with a strong understanding of local government efforts to address climate change as well as some ideas that Congress can quickly implement to bolster these local government efforts.

Mr. TONKO. Thank you. Thank you, Mr. Mayor. Good to see you again and thank you for—

Mr. BENJAMIN. Thanks again. Thank you.

Mr. TONKO [continuing]. Appearing before the subcommittee.

Next we will move to Mayor Morales, please. You are recognized for 5 minutes.

STATEMENT OF JERRY F. MORALES

Mr. MORALES. Thank you, Mr. Chairman. Thank you. It is an honor to be here among—thank you very much. Exciting to be able to be here to represent Midland, Texas, west Texas, and the Permian Basin. I am Mayor Jerry Morales.

I have been in office for 6 years and been on City Council since 2008. So it is—you can't understand how honored I am to represent the city of my hometown, Midland, Texas.

Midland, Texas, is also known as the Tall City. Many would think that a city out there in the middle of the desert would not have any tall buildings. Very similar to the city of Houston, Texas, but on a smaller scale—size of 165,000 people.

The city of Midland itself is approximately 90 square miles. Since 2014, Midland has been ranked one of the largest and fastest growing cities in the nation—fastest growing cities in the nation, not the largest, right—during this time.

We are home to 20 major oil and exploration companies. The Permian Basin is a large sedimentary basin in the southern western part of the United States of America.

The Greater Permian Basin comprises several components of basins. Of these, Midland is the largest. The Delaware Basin is the second largest and the Marfa Basin is the smallest.

The Permian Basin covers more than 86,000 square miles and extends across an area approximately 250 miles wide and 300 miles long. The Permian Shelf is one of the top five producing shelves in the world and soon will be in the top two.

To date, the Permian Shelf transports 3 million barrels of crude oil per day and by the summer of 2019 may be transporting 4 million and by 2020, when transportation lines could hit over 6 billion barrels—6 million barrels of oil a day.

The Permian Basin is already a star, but now it will even shine brighter. What the U.S. Geological Survey numbers mean is that the Permian Basin is the largest single reservoir oil and gas in the United States of America and is also one of the largest on local soil.

We are challenged, of course, being a shining star and growing so fast. Today, one of the issues challenging Midland is 15,000 oil workers are lacking in our industry.

In the last—Midland's unemployment rate for the last 6 years has been on an average of 1.9 to 2.55 percent, which makes us one of the lowest unemployment in the nation. Midland also has a housing crisis due to the influx of oil and gas families moving into the area. Our inventory as of today has less than 300 homes, where 2 years ago we had more than 3,000 homes.

The Midland-Odessa area recently came out of a 7-year drought and during that drought Midland reduced its water consumption by 20 percent. We call it the blue gold.

During that drought and even today the oil companies played a responsible part in retracting their need of water for production by going under the Ogallala Reservoir and pulling the brackish water and repurposing it for their own industrial use.

These oil companies are not allowed to use municipalities' water resources and in the last 100 years there have not been any incidents of earthquakes or tremors that have been associated with drilling activity in the Permian Basin.

Air quality has always been—maintained a good bill of health, probably due to our west Texas tornadic winds that we have out there, so it keeps it kind of fresh and clear. Property values have increased. Sales tax receipts are at record highs and businesses have seen 15 to 25 percent growth in the respective businesses.

Two years in a row Midland has been ranked third by SmartAssets as the best city in the nation for living the American Dream. The Permian Basin Board of Realtors reported that the average price for a home was sold for more than \$269,000 and Midland has a median income of \$75,000.

Mr. Sheffield, CEO of Pioneer Resources, stated that the sustainable operation could continue for a minimum of 10 to 15 years.

With this recent announcement, Pioneer and the city of Midland entered into a public-private partnership where Pioneer will spend an excess of \$130 million to rehabilitate the city's secondary and water treatment plant. The city of Midland will then sell this treated water back to Pioneer to be used for operational purposes.

This partnership will save taxpayers money, ensure that Midland has treated water in case of another drought, and reduce truck traffic through transportation lines and for infrastructure uses.

While methane emissions have been raised as concerns by detractors of the industry, a large majority of methane emissions from production of the Permian Basin centers around flaring necessitated by lack of takeaway capacity.

However, there is an estimated 14 billion cubic feet per day of additional natural gas, pipeline capacity that is scheduled to come online in the Permian Basin by the end of 2022, according to the Texans on natural gas.

Once these pipelines are in place, even with the increased production, methane emissions in the field will be greatly reduced. The entire Permian Basin is a region larger than the States like Alabama.

With such a large footprint you can find diversity of people and communities. Some companies have also—are also contracting with cities like Midland and Odessa to use their wastewater in these recycling processes.

Even in the relatively sparse populated Permian Basin, there are concerns about protecting our native species in their habitats. Unprecedented efforts such as the range wide plan for the lesser prairie chicken, which covers five States, including Texas, New Mexico, Oklahoma, Kansas, and Colorado, as well as more localized conservation plans for species like the dunes sagebrush lizard and the Texas hornshell mussel.

Municipalities do not regulate down-hole drilling nor do they control where water comes from from the drilling and fracking process. The State of Texas' agencies regulate these areas.

The city of Midland does not encourage operations to use water from deeper depths, being the Santa Rosa, water instead of freshwater aquifers. In addition, many operations are reclaiming water production, which is produced by—as a byproduct of oil and gas production.

Diamondback Resources has switched to an alternative of deep burial pits recently which meets State guidelines to more environmental alternative of biotechnology treatment, which is a pit remediation process. The pit closure will meet or exceed the requirements of the applicable Railroad Commission rules and Texas Commission of Environmental Quality.

So these are some ideas to show that what we are doing in west Texas and Midland is working with our 20 majors, being responsible of not only the environment, the climate, but of our communities and the people who work there and live there.

We are excited that our shelf is not only productive economically for the city of Midland but for the State of Texas, United States of America, and even the world.

Thank you for the opportunity to be here to speak.

[The prepared statement of Mr. Morales follows:]



OFFICE OF THE MAYOR

The Permian Basin of West Texas & Southeast New Mexico

The Permian Basin of West Texas and Southeast New Mexico, which according to the U.S. Energy Information Administration now accounts for 48% of the crude oil and 18% of the natural gas produced in the United States, is not only playing a vital role in providing the United States with energy independence, but is also playing a key role in reducing air pollution. As many of you know, the United States leads the world in reducing carbon dioxide emissions and that's primarily due to the increased use of clean-burning natural gas. This has been achieved while production from the Permian Basin has quadrupled over the last ten years.

While methane emissions have been raised as a concern by detractors of the industry, the large majority of methane emissions from production in the Permian Basin centers around flaring necessitated by lack of takeaway capacity. However, there is an estimated 14 billion cubic feet per day of additional natural gas (methane et al) pipeline capacity that is scheduled to come online in the Permian Basin by the end of 2022 according to Texans for Natural Gas. This equates to more than five trillion cubic feet of natural gas annually, which, according to data from the Railroad Commission of Texas, is about 93 times larger than current flaring levels. Once these pipelines are in place, even with increased production, methane emissions in the field will greatly be reduced.

The entire Permian Basin region is larger than states like Alabama. With such a large footprint, you find diversity of people and communities. The communities in the producing regions inside the greater Permian Basin, being mainly the Midland and Delaware sub-basins, the Central Basin Platform and the Northwestern Shelf, are also varied in their community needs and concerns. However, the entire region is at the northern edge of the Chihuahuan U.S. House Committee on Energy and Commerce hearing

Desert, and we all have the concern of water as a top priority.

Generally, statewide in Texas the hydraulic fracturing process used to unlock the valuable hydrocarbon resources trapped in tight formations like those being accessed in the Permian Basin, accounts for less than 1% of all ground water used. Agriculture and municipalities, are by far the greatest users of groundwater in Texas. Even with such a low use rate, however, oil and gas companies in the Permian Basin continue to use innovation to use less ground water, instead relying on recycled and reused produced water for their operations. This produced water is highly brackish and unless treated is unsuited for any other use. It has been traditionally thought of as a waste product, but innovation being what it is in the Permian Basin, companies are finding ways to turn this waste product into a valuable part of the hydrocarbon production process.

Some companies are also contracting with cities, like Midland and Odessa, to use their waste water in these recycling processes. Operators in the Permian Basin understand how valuable groundwater is, especially in the desert, and work to find ways to use less of that water, allowing for more of that water to be available for our growing populations. As a city that is seen by some as the capital of the Permian Basin, this isn't the first time we've worked with the oil and gas community. Close to a decade ago when oil and gas operations really began their resurgence in the Permian Basin, the City of Midland worked with operators to better prepare the city to address the growth challenges facing all users of surface property, whether they be residential, commercial, or industrial. This has allowed both the city and the oil and gas industry to coexist and comprehensively plan their growth.

Even in the relatively sparsely populated Permian Basin, there are concerns about protecting our native species and their habitats. Unprecedented efforts, such as the Range Wide Plan for the Lesser Prairie Chicken (which covers five states including, Texas, New Mexico, Oklahoma, Kansas and Colorado), as well as more localized conservation plans for species like the Dunes Sagebrush Lizard and the Texas Hornshell Mussel, have been led by oil and gas operators and other stakeholders in the Permian Basin. These conservation efforts, developed in concert with state organizations who also provide oversight, have helped protect species in the Permian Basin from not only oil and gas operations, but ranching and farming as well as wind farms and solar energy installations.

U.S. House Committee on Energy and Commerce hearing



OFFICE OF THE MAYOR

Midland Development Corporation (MDC)

Demographics

- The population of the Midland MSA was 165,430 according to the 2017 American Community Survey, but since Midland has experienced explosive growth since 2017 the population of Midland in 2019 is likely much higher
- Midland is more ethnically diverse than Texas and the U.S. as a whole; it is a minority-majority city (source: Chmura Economics)
- Midland is a young city, with a median age of 31.8, compared to the median age in the U.S, which is 37.8 (source: Chmura Economics)

Jobs

- Unemployment in Midland was 2.2% in February 2019, which is the lowest unemployment rate in Texas (source: Texas Workforce Commission)
- Midland had the largest county over-the-year percentage increase in employment in September 2018 at 11.9%. (source: Bureau of Labor Statistics, February 2019)
- In 2018, mining, logging and construction employment had the largest growth (18.4 percent) (source: Bureau of Labor Statistics)
- In 2018, Texas' overall employment grew at an annual rate of 2.5% from Q3 2017 to Q3 2018. Over that same time, Permian oil industry jobs increased at a rate of 25%. (source: Bureau of Labor Statistics)

Economy

- In 2017, the GDP of the Midland MSA was \$18,799,734,000 (source: Chmura Economics)
- Taxable spending in Midland increased 34.8% year-over-year from 2017 to 2018 U.S. House Committee on Energy and Commerce hearing

- Motor vehicle sales tax in Midland County increased 33.8% from 2017 to 2018
- Building permit valuations in Midland increased 72.1% from 2017 to 2018 (source: Ingham Economics)
- From 2011 to 2019, the 12 Texas counties in the Permian Basin produced 25% of all state severance taxes. (source: MOTRAN)
- Average annual wages in Midland are 27% higher than the national average (\$71,084/year in Midland; \$55,713/year in U.S.) (source: Bureau of Labor Statistics)
 - o Average annual wages per worker increased 5.1% in 2018



OFFICE OF THE MAYOR

Oil & Gas

1. Use of Combustors:

Within City of Midland the releasing of gas vapor from oil and gas wells directly into the atmosphere is not allowed. Flaring at tank battery facilities is not allowed inside the city limits except for emergency situations. Combustors are allowed and are not considered to be a flare by City of Midland if operated in correct manner. Combustors are internal burning. Regular gas flares have been shown to have only a burn rate of gas as low as 60-69%.

The use of Combustors is a device that destroys fugitive emissions from tank, well casing or vent gas vapors. Combustors are able to handle both high and low gas pressure situations. They have been measured to have efficiency rates of 98% plus for high pressure gas situations and efficiency greater than 99.5% for low pressure gas situations. Combustors meet regulatory emission limits. Combustor meet or exceed the US EPA NSPS 40 CFR Part 60, Subpart 0000 (Quad "O") regulatory emission limits (Information from ACL Combustion available from <http://www.acl-combustion.com/combustors.html>)

Enclosed combustors, often called vapor combustors, are designed to destroy vapors from PRODUCED OIL or WATER TANKS. We have developed systems

U.S. House Committee on Energy and Commerce hearing

specifically engineered for the smokeless combustion of heavy (high BTU), low-pressure streams without the use of utility power.(Information from MRW Technologies from <https://www.mrw-tech.com/Enclosed-Combustors>)

The systems are used when gas sales lines are not able to handle the capacity of gas being produced. Operators are able to keep producing wells to maintain oil production instead while handling the gas in this manner.

2. Water Use:

Municipalities do not regulate downhole drilling nor do they control where water comes from for the drilling/ fracing process. The State of Texas agencies regulates these areas.

The City of Midland does encourage operators to use water from deeper depths being the Santa Rosa water instead of fresh water aquifers. The Santa Rosa water is a very brine water that is not potable for human use but can be used to meet drilling and fracing needs.

In addition, many operators are reclaiming production water which is produced as a by-product of oil and gas production that is separated at the well tank battery facility. This water can be reclaimed and cleaned to be used for fracing at cost and methods that are becoming more economical. Fasken Oil & Ranch currently using these methods at some sites in West Texas. Further information- Tommy Taylor -Office 432-687-1777, Cell 432-556-2228

Operator Pioneer Resources has partnered with the City of Midland in reclaiming grey/black water and cleaned to a standard to be able to use as fracing water. Utilities Dept can provide more in-depth information and maps of pipeline system.

3. Drilling Pit Remediation Process:

Diamondback Resources has switched to an alternative of deep burial pits recently which meets state guidelines to a more environmental alternative of bio technology treatment which is a pit remediation process.

The process using bio-organic catalysts along with indigenous soil which will detoxify and break down hydrocarbon contaminants. This method will cause the drill cuttings to rapidly decompose, biodegrading them to carbon dioxide and water as the end products, and hydrocarbons will be reduced to less than 3%. The cuttings will be covered with a minimum of 36 inches of clean, compactable soil. This method has been determined to be more environmentally friendly than a deep burial method of pit closure.

The pit closure will meet or exceed the requirements of the applicable Railroad Commission rules and Texas Commission of Environmental Quality rules. (Per Diamondback Energy Amending City Permit Whitefish Unit 812MS)

Deep Burial- After drilling and completion operations are finished, the drilling pit (or reserve pit) is required to be dewatered and buried to restore land back to its natural state. This remediation process is often referred to as a pit closure or deep burial. Reserve pits are dewatered, leaving only drilling mud behind. The mud is dried and a hole is excavated adjacent to the reserve pit so it can be buried. These holes are often 18' to 22' deep and allow for 3' to 6' of natural top soil to cover the area.

Mr. TONKO. Thank you, Mayor.

We are supposed to have votes around 1:00 o'clock so I am going to ask that everyone stay strictly to the 5-minute time frame so that we can get questions in.

Next, we will move to the Honorable Jackie Biskupski of the City of Salt Lake City. Welcome.

STATEMENT OF JACQUELINE M. BISKUPSKI

Ms. BISKUPSKI. Thank you, Mr. Chair, and members of the committee. It is an honor to be here before you.

I come as the mayor of Salt Lake City, home to over 200,000 residents, including my two sons, Archie and Jack. I mention them because my plea to you today has everything to do with their future and the future of millions of young people like them in America's cities.

As both a mayor and a mother, I am working to protect the health and well-being of all people as the causes and effects of climate change are felt across the State of Utah. Surrounded by the towering peaks of the Wasatch and Oquirrh Mountains, my city is beautiful on most days.

Thirty years ago, I arrived in Salt Lake City for a ski trip and I never left. Unfortunately, each year since during the hot summer months and the cool winters our air is filled with a dirty haze we know as the dreaded inversion.

On these days, parents along the Wasatch Front send their kids to school wearing face masks to protect them from the harmful pollution trapped in the air.

This pollution, almost half of which is caused by vehicle emissions, impacts our quality of life almost daily and is contributing to the long-term effects of climate change such as wildfires and droughts.

Some of you may know of Salt Lake City as the winter sports paradise. As the host city of the 2002 Winter Olympic and Paralympic Games, and now the USOC's choice to host a future Winter Games, Salt Lake City is, without question, the U.S. capital of winter sports.

This distinction helps drive nearly \$1.3 billion to our State's economy. Our water and winter sports industry are partners in driving thousands of jobs, driving tourism and businesses into the region.

So you can imagine how alarmed we are when reports indicate we have lost five weeks of snowpack just in the last 20 years. Surface water such as snow also makes up the vast majority of our drinking water, and although Salt Lake City population is just over 200,000 people, the city provides water to more than a million people in our valley.

With every degree of warming, we experience, we estimate, nearly a 4 percent decrease in overall water volume emanating from the streams and creeks in the Wasatch Mountains. As one of the fastest growing regions in the nation, we cannot afford to lose more of our snow.

Yes, we have had a good winter this year. But we are still recovering from a 30-year low in 2018 and many years of drought. While I could go on discussing the issues we are facing including the un-

precedented wildfires we had in 2018, all of which is detailed in my written statement, I would like to share with you what we are doing to act on climate change.

In 2016, Salt Lake City became the sixteenth city in the nation to establish a 100 percent clean energy goal. To fulfil this pledge, we have taken action including passing a cost-free energy benchmarking ordinance estimated to remove 29 tons of pollutants from the air annually.

We are building green infrastructure, the first net-zero public safety building in the nation, and just last year completed the first two net-zero fire stations in the country.

To reduce vehicle pollution, in 2018 Salt Lake City made the largest local investment to date in public transit, allowing us to implement the first phase of a multiyear strategy to create high-frequency bus networks across our city.

Through savings and partnerships with Delta Airlines and the Federal Government, Salt Lake City is building at \$3.6 billion international airport which, when completed, will be LEED Gold certified.

Perhaps most significantly, Salt Lake City, Park City, Moab, and Summit County have been working with our utility, Rocky Mountain Power, to establish a framework to allow our communities to have net 100 percent renewable electricity by 2030.

This is an unprecedented collaborative effort between an investor-owned utility and the communities it serves. Just last Friday, Governor Gary Herbert signed into law the Community Renewable Energy Act, which is the legislation we needed to continue building this framework.

I shared the successes with you today to highlight our investment by the Federal Government and how that could help us increase the action of our local communities.

Thank you.

[The prepared statement of Ms. Biskupski follows:]

Mayor Jacqueline M. Biskupski

Testimony before the Committee on Energy and Commerce

Subcommittee on Environment and Climate Change

April 2, 2019

Committee Members:

Thank you for welcoming me here today, and for taking the time to hear from local elected officials on the topic of climate change.

My name is Jackie Biskupski. I'm proud to serve as Mayor for the 200,000 residents of Salt Lake City—a position I've had since 2016. I'm also Chair of the U.S. Conference of Mayors' Alliance for a Sustainable Future—a committee dedicated to forging connections between the public and private sectors to collaboratively tackle our environmental challenges. I'm also co-chair of the Sierra Club's Mayors for 100% Clean Energy coalition, and a member of Climate Mayors and Women 4 Climate.

Salt Lake City is a majestic and special place. Over 25 years ago, I came to Utah for a ski trip and I never left! We are the crossroads of the west and are blessed to have world-class recreation, breathtaking natural splendors, a strong economy, a vibrant culture, and a collaborative spirit.

It is that collaborative and can-do spirit that I would like to highlight today—particularly as it relates to one of the biggest challenges we face as a country: climate change.

Today I am here to discuss what we are already experiencing in Salt Lake City, and how we are working tremendously hard to avoid the worst effects that are projected. But we need your help.

Salt Lake City is landlocked. We do not face rising sea levels or monster hurricanes. But climate change is impacting us just as significantly. Instead of "hurricane season," we have "wildfire season" and "poor air quality season." They both are becoming longer and more hazardous.

Here are some quick highlights of the impacts the Salt Lake City area is currently experiencing as the climate warms—and what those impacts may be if emissions continue to ramp up unabated.

Salt Lake City Climate Change Impacts

Surface water makes up the vast majority of our drinking water in Salt Lake City. It is conveniently stored for us in our mountain snowpack which melts and provides the water critical for our community's residential, industrial, and agricultural uses. But climate change is impacting the amount of water we have, when it runs off, and even its quality. With every degree Fahrenheit increase in temperature, we can expect to see close to a 3.8% average decrease in overall water volume emanating from the Wasatch streams.

These impacts are hitting us today. While thankfully we've had a good snow year in 2019, we are still recovering from a 30-year low¹ in our snowpack and many dry years. To top it off, the water year ending September 30, 2018, was the driest on record² and only one other year was warmer. Those conditions led Salt Lake City to issue a Stage 1 Drought Advisory last year.

Increased instances and periods of climate-driven drought will challenge the water resource redundancies we currently have in our water system.

Climate-driven impacts such as increased warming, drought, and insect outbreaks **have increased wildfires** and impacts to people and ecosystems across the Southwest. Fire models project more wildfire and increased risks to communities across extensive areas. Drier conditions turn our forests into tinder, stressing trees and contributing to outbreaks of bark beetle and other pests. This makes wildfires more likely, as well as more intense when they do occur. We saw an unprecedented fire season in Utah last year that cost over \$100 million³ to fight.

The ski industry, a \$1.3 billion contributor⁴ to Utah's economy, is also threatened and will decline due to a shorter ski season. According to a Protect Our Winters/Natural Resource Defense Council report⁵, without intervention, winter temperatures in the U.S. are projected to warm an additional 4 to 10 degrees Fahrenheit by the end of the century, with subsequent decreases in snow cover area, snowfall, and a shorter snow season. Snow depths could decline in the west by 25 to 100 percent. Park City, Utah, for example, is forecast to lose all of its mountain snow under this scenario by the end of the century⁶.

Water quality is also impacted. With climate change, Salt Lake City may see more instances of water quality issues that are caused by warmer water, higher air temperatures, drought, wildfire—and exacerbated by pollution.

Indeed, summertime algal blooms have become the new norm in Utah. In 2016, an algal bloom⁷ on Utah Lake sickened over 100 people⁸ and disrupted secondary water and agricultural supplies throughout the Salt Lake Valley. Area farmers had to find alternative sources of water⁹. Some had to make difficult decisions regarding their crops. These conditions are forecast to occur each summer with a warming climate, threatening our drinking water quality, the recreational economy on our lakes, and the many farmers who rely on secondary water for their livelihoods. Parasites that cause disease are also more common in warmer waters.

When we do have precipitation, it's coming all at once. **Flooding events** will be more common with stronger, more intense storms, and indeed, this is what we've already been experiencing. Salt Lake City experienced two major rain events in the summer of 2017. There was no other rain that summer. Both

¹ <https://www.sltrib.com/news/2017/12/26/utah-snowpack-lowest-in-30-years-in-many-mountain-locations/>

² <https://www.sltrib.com/news/environment/2018/10/10/utah-just-experienced-its/>

³ <https://www.ksl.com/article/46409087/wildfires-burned-485989-acres-in-utah-this-year--more-than-double-for-2017>

⁴ <https://gardner.utah.edu/wp-content/uploads/TravelandTourismRepFinal2017.pdf>

⁵ https://protectourwinters.org/climate_report/

⁶ https://protectourwinters.org/climate_report/report.pdf

⁷ <https://archive.sltrib.com/article.php?id=4119973&ittype=CMSID>

⁸ <https://www.theguardian.com/us-news/2016/jul/22/toxic-algae-bloom-utah-lake-100-sick-heatwave>

⁹ <http://ag.utah.gov/home/news/614-farmers-and-ranchers-urged-to-use-caution-with-water-taken-from-utah-lake.html>

events were severe, and caused localized flooding in the city. One of those storms was a 200-year storm¹⁰ event, flooding hundreds of basements, and causing significant damage to two schools and a city library, as well as streets.

Damage to infrastructure can cause injuries and fatalities. The need for infrastructure that can handle these increased storms will impact Salt Lake City's budgets and our residents' pocketbooks.

Air quality

The Salt Lake City area has suffered from poor air quality for as long as we have had combustion activities in our valleys during the wintertime inversion season. This has an impact. Nearly 9% of Utah adults¹¹ have asthma, as do 6% of children.

A 2014 analysis¹² by The Salt Lake Tribune and Brigham Young University economist Arden Pope showed a correlation between higher pollution days and increased school absenteeism.

Data also show that during the winter¹³, when we have weather inversions and PM2.5 levels increase, more emergency room visits and hospital admissions occur.

Unfortunately, climate change is predicted to make several types of pollution worse—1) Ozone, for which Salt Lake City is currently in non-attainment, and 2) Summertime PM2.5 pollution from wildfire smoke. Wildfires may also cause an increase in volatile organic compounds (VOCs) and nitrogen oxide (NOx), which are ozone precursors. Both of these types of pollution can cause and exacerbate heart and lung conditions¹⁴.

This is exactly what we saw last summer. Haze blanketed much of the West during the outrageous wildfire season¹⁵ we experienced. In Utah, hospital visits spiked as air pollution hit those with cardiovascular and pulmonary issues the most. Exposure to poor air quality can also cause lifelong damage in even our healthiest residents.

Climate change, wildfires, smoke, and the increasing incidence of poor air quality have very real impacts on the health of our residents and can, in some cases, even lead to premature death¹⁶.

Increasing Temperatures and Public Health

The weather has been getting hotter. Data from 1895¹⁷ onward show an increasing average annual temperature, as well as increasing maximum annual temperatures. Minimum nighttime temperatures records are also being broken. Higher temperatures have an impact on public health, particularly our vulnerable populations. High evening temperatures mean that it's tougher for the body to recover from

¹⁰ <https://www.sltrib.com/news/weather/2017/07/27/torrential-thunderstorms-flood-east-high-school-sics-sprague-branch-wasatch-front-intersections/>

¹¹ <http://health.utah.gov/asthma/data/>

¹² <https://archive.sltrib.com/article.php?id=57489094&itype=cmsid>

¹³ <http://www.health.utah.gov/utahair/respiratory/#Asthma>

¹⁴ <http://www.health.utah.gov/utahair/pollutants/>

¹⁵ <https://deq.utah.gov/communication/news/utahs-air-compare-summer>

¹⁶ https://schd.ws/hosted_files/2017watershedsymposium/80/Climate%20Adaptation%20Plan%20DRAFT%2017-09-01.pdf

¹⁷ <https://www.ncdc.noaa.gov/cag/national/time-series>

heat stress and the very young or very old, those who work outside, don't have air conditioning, or have compromised health are most impacted.

Other impacts on public health include the prevalence and geographic range of some diseases that previously did not affect Utah, according to the Salt Lake County Health Department's Climate Adaptation Plan for Public Health¹⁸.

Local Actions on Climate

What we are currently experiencing in our cities and towns is only the beginning.

Both the National Climate Assessment and the IPCC reports indicate that we must limit global warming by 1.5 degrees by 2030 in order to avoid catastrophic impacts on the world. This means we must transition our economies to a low- or non-carbon foundation as quickly as possible.

Cities, which are on the front line of emergency response in this warming world, are heeding the call.

I was pleased to be appointed to Chair the Alliance for a Sustainable Future which is a joint effort between the U.S. Conference of Mayors and the Center for Climate and Energy Solutions.

Our Alliance conducts surveys on what cities are doing in the area of reducing greenhouse gas emissions to identify where more work needs to be done.

The Alliance's 2018 Climate Survey¹⁹ of 158 cities indicated that:

- 60% of cities have launched or significantly expanded a climate initiative or policy in the last year;
- 65% of cities procure renewable electricity for municipal operations;
- More than 70% of cities have energy efficiency policies for new and existing municipal buildings; and
- More than 50% of responding cities have established energy efficiency policies or incentives for new and existing commercial and residential buildings.

In Salt Lake City, we are working on all fronts to **reduce emissions from our municipal operations and our community** as a whole. I will share some of our highlights today because I believe our example shows what is both possible and practical for many other entities. These can also be found in our Climate Positive 2040 report at www.slccgreen.com/climatepositive

First, we must focus on **energy efficiency** because cutting waste is the most cost-effective strategy for controlling pollution and saving money. In Salt Lake City we developed a Comprehensive Energy Management Executive Order to benchmark our buildings and we've realized significant reductions in energy use through upgrades and tune-ups. It also mandates striving for net zero construction.

¹⁸ https://schd.ws/hosted_files/2017watershedsymposium/80/Climate%20Adaptation%20Plan%20DRAFT%2017-09-01.pdf

¹⁹ <http://www.usmayors.org/wp-content/uploads/2018/09/uscm-2018-alliance-building-report-baldwin-small-7.pdf>

In 2017, Salt Lake City passed an [energy benchmarking and transparency ordinance](#)²⁰ for commercial buildings over 25,000 square feet. The simple act of measuring and reporting energy use costs no money and is projected to eliminate up to 29 tons of air pollutants annually and even more carbon. Energy benchmarking of your building is akin to knowing the miles per gallon on your vehicle. It is a commonsense best practice.

On City infrastructure, we are leading by example—we built the **first Public Safety Building in the nation designed to be net-zero energy**. That means it produces as much energy as it consumes. This makes it a resilient building, not only from a carbon emissions perspective, but during real-time emergencies when that on-site solar will be called upon. This building underscores what we see as a prudent community investment, not a financial outlay. In fact, building above code from an energy efficiency perspective and investing in the renewable energy for this building had less than a 15-year payback period for the City.

Salt Lake City has followed this up with **two first-of-its kind net zero energy fire stations** which opened last year.

Building better buildings is something we all should be doing to strengthen our communities, create more resiliency, and save resources—both financial and environmental.

On the topic of energy, I am particularly excited to talk about Salt Lake City's **unique collaboration with our investor-owned electric utility, Rocky Mountain Power**.

One of the hardest things local communities are facing is in how to navigate the relationship with their energy provider—but it is one of the most important things we can do. This conversation must start with an acknowledgement that in order to reduce carbon emissions, and to make a real change, we all have a role and responsibilities.

In 2016, Salt Lake City issued a joint resolution with the City Council establishing a **100% renewable electricity goal** for the whole community by 2032, followed by a goal of reducing our community carbon footprint 80% by 2040. After the Joint Resolution, Salt Lake City then signed a Cooperation Statement with Rocky Mountain Power in 2016, which details the goals, scope, and timing for this vision with a Clean Energy Implementation Plan providing annual updates. More information can be found at www.slccgreen.com/climatepositive.

Our partnership with Rocky Mountain Power to transition Salt Lake City to net-100% renewable electricity is unprecedented. I'm incredibly proud of the collaboration that we have fostered over the past three years—and the results we have so far achieved.

Just last month, we successfully worked with state legislators, regulators, solar companies, non-profits, other participating communities, and Rocky Mountain Power to pass a landmark piece of legislation—HB 411.

The legislation, which is the first of its kind in the country, establishes a framework for how communities can work with their electricity provider through existing regulatory structures to procure and develop clean energy resources. The resulting clean energy developments will not only yield important climate benefits, but also meaningful economic development for our state.

²⁰ <https://www.slc.gov/sustainability/elevate-buildings/>

Salt Lake City's efforts, along with those of our partnering communities Park City, Moab, and Summit County on HB411 is an example of what our Governor Herbert likes to call the "Utah way"—a uniquely collaborative and problem-solving approach to tackling our biggest challenges. I am proud of the extraordinary work that went into this legislation.

It also highlights how things are changing. Solutions are being drawn up, planned, and implemented. Rocky Mountain Power is responding to the needs and desires of local communities on multiple fronts. I am thankful and proud to say they were a key partner and facilitator in working with us on this vision and how to make it a reality. I am looking forward to the continuation of the process and to seeing the results of our collective labors—including delivering on the promise of a "green" Winter Olympic Games, should Salt Lake City be tapped to once again host in the near future.

I will also note that we are working with the utility on a sizeable renewable project, which is currently making its way through the state regulatory process. It will help Salt Lake City secure **renewable energy to meet 50% of our municipal electricity needs by 2020**.

Salt Lake City is also collaborating with our natural gas utility on how to reduce emissions and aid in the transition to a lower-carbon future.

All of this goes to say that while we may be facing a climate crisis, we are also on the forefront of a new era of cooperation and mutual action. Salt Lake City and our partners are living, breathing examples of that.

In addition to energy efficiency and clean energy, a modernized and **cleaner transportation network** is a key strategy in reducing emissions. Again, Salt Lake City is doing all we can to offer cleaner transportation options and more robust infrastructure to support those goals. In our municipal fleet, we now have over 200 clean vehicles, including 20 all-electric and 80 hybrid-electric vehicles. These vehicles cost less to operate and, with all-electric models, put out virtually no local pollution. When factoring in the upstream emissions from fossil fuel powered electricity, they still have an edge over the typical gasoline vehicle according to the Southwest Energy Efficiency Project²¹. This will only increase as our electricity grid becomes cleaner.

Electric vehicles are critical for our climate and local air quality. That is why Salt Lake City, Rocky Mountain Power, and the State of Utah are making significant investments in electric charging infrastructure. This month we are wrapping up installation of even more Level 2 charging stations, bringing the total number of **Salt Lake City-owned public EV charging ports to 56** and complementing an even more robust charging network available throughout the city.

Salt Lake City recently completed its **first Transit Master Plan**²². With broad community support of our efforts to reduce air pollution, last year we took a major step toward implementing that plan. Through an increase in sales-tax, Salt Lake City is now making the largest annual budget contribution to transit in our city ever!

²¹

http://www.swenergy.org/data/sites/1/media/documents/publications/documents/2017_EV_Emissions_Update_Wasatch_Front_Jan-2017.pdf

²² http://www.slcdocs.com/transportation/Plans/SLC_TMP_FULL_FINAL.pdf

What that means is the creation this year of three new rapid bus lines—to connect the major education and workforce zones in the City with the residents who need to get there. We recognize this isn't just a "climate" issue. It's an equity, economic, and quality of life issue.

Salt Lake City is also piloting programs, like ride-sharing services, to help close what is known as the first-mile, last-mile gap—so living a quarter of a mile from a transit stop does not keep residents from using transit instead of their cars. This is a really exciting time for transit in Salt Lake City and we are working to capitalize on every opportunity—whether it is bike-share, electric scooters, or ride-sharing.

When we speak about the social and technological changes needed to reduce carbon emissions—these "transit meets Silicon Valley" opportunities are a part of that. The "disruption" factor innovations like on-demand e-scooters and ride sharing programs have created is necessary.

They have changed the way people think about transportation—and if blended into a city's existing mass-transit network, they can help us reduce carbon output, especially in dense urban areas.

We're also implementing a **Complete Streets** approach to all of our street reconstruction projects to provide an infrastructure that encourages walking, biking, and transit.

These local plans and investments are solving problems and making our community healthier, more resilient, more equitable, and yes, more climate-responsive.

Committee Requests

As you can see, Salt Lake City has numerous programs to mitigate carbon emissions and respond to climate change. But it is imperative that the Federal government lead our nation's efforts to minimize climate impacts. Local governments can only do so much, and without your help the results of our efforts will be limited, and the damage caused by our changing climate will be much more extensive.

Specific requests that would help local governments make more progress include:

- **Pass the bipartisan Energy Innovation and Carbon Dividend Act (H.R. 763).** While all of the following requests are important, this one action will create a level playing field by ensuring that the cost of carbon pollution is accurately accounted for.
 - Climate change has health, environmental and economic costs that are not presently accounted for. Low-carbon alternatives are less expensive than fossil fuel options when the true costs of carbon emissions are included.
 - This fee and dividend program would place a predictable, steadily – rising price on carbon. The fees would be then be allocated back to the American public so that it is revenue neutral.
 - It has been estimated that this policy will reduce America's emissions²³ by 40 percent in the first 12 years, by creating fair economics to incentivize the use of low-carbon fuels.
 - It will incentivize citizens and businesses to use less fossil fuels and stimulate the renewable energy industry.
 - The policy is also estimated to create 2.1 million new jobs through economic growth in local communities.

²³ <https://energyinnovationact.org>

- **Fund Federal Grants that move communities away from polluting fossil fuels to a renewable energy economy.** Salt Lake City was recognized numerous times for our accomplishments from DOE's Solar America Cities grant program and EPA's Climate Communities grant. With renewed funding, cities across the nation could continue to make great strides to reduce their carbon emissions if these grants continue to be funded, or are reinstated:
 - Energy Efficiency and Conservation Block Grant Program (EECBG)
 - EPA Targeted Airshed and other emission reduction grant programs
 - DOE Solar Cities Grants
 - DOE pass-through funding to State governments for energy efficiency programs
- **Take legislative action to reverse the rollback of the CAFE standards for fuel efficiency.** Increased fuel use increases air emissions and carbon emissions, making it more difficult to meet our carbon reduction targets.
- **Continue to aggressively invest in research to ensure the availability of sound climate data and climate models that can be used at the local level.** This includes ensuring the availability of satellite data, accurate weather data, and the development of models to forecast future climate scenarios.
- **Invest in funding for research on renewable energy sources.** To create a carbon-free economy, as we must achieve in the next few decades, intensive research by university and government researchers will be needed to create new technologies and products.
- **Fund Federal Programs that reduce water use such as the WaterSense Program.** Communities such as Salt Lake City are already seeing reduced snowpack, an important source of our drinking water. Water conservation will be imperative and will also reduce energy use due to water pumping.
 - Through public/private partnerships, WaterSense helps to test, label, and market water and energy efficient appliances and irrigation controllers.
 - WaterSense has helped Americans save more than \$46 billion dollars on their water and energy bills over the 13 years of the program's history. Together, we have saved 2.7 trillion gallons of water since 2006 (and 631 billion gallons in 2017). WaterSense-labeled products have saved 367 billion kilowatt-hours of electricity.
 - Additionally, WaterSense supports research and educational efforts that support the work of conservation efforts across the country.
- **Put more money into low- and no-emission vehicles and grants that support multi-modal infrastructure.** Salt Lake City just implemented its first Transit Master Plan that envisions and supports increased bus service and associated capital investments to make the transit experience safer and more comfortable.
 - Increase funding to Federal grants such as the Congestion, Mitigation and Air Quality Improvement Program (CMAQ), Surface Transportation Block Grant (STBG), Low-No funding for zero and low emissions transit buses, and Safe Routes to School.
 - Extend the Alternative Fuels Tax Credit and Electric Vehicle Tax Credit – these are critical for helping us incentivize the purchase of low-emissions vehicles to reduce emissions, clear our air, and reduce reliance on foreign oil.
- **Provide additional infrastructure funding.**
 - Salt Lake City's Complete Streets approach to street reconstruction projects will provide infrastructure that encourages walking, biking, and transit. Help us improve our

infrastructure without adding to congestion and air pollution by working with your colleagues to address emissions in the next Surface Transportation Bill. Include an emphasis on transit improvements, ridesharing and other transportation improvements.

- We received a \$22 million grant from the federal government toward the construction of our new airport. Thank you. We're building this airport to meet the LEED Gold energy efficiency building standard. We're doing our part to build an energy efficient airport, but more incentives could take us even farther. We encourage you to put guardrails on federal grants to incentivize similar best practices and contribute to community resiliency by requiring more sustainable building practices and standards—just as we are doing with our \$3.6 billion airport and other sustainable construction.
- If the federal government is investing in the movement of surface goods, please direct it to communities that would not be adversely impacted by additional transportation emissions, or couple it with funding to mitigate the adverse impacts that are identified through an Environmental Impact Assessment.
- Continued federal funding under the Water Infrastructure and Finance Innovation Act (WIFIA) and the America's Water Infrastructure Act. Salt Lake City has a billion dollars of aging water infrastructure to maintain over the next 5-10 years to protect public health. WIFIA loans help reduce the economic impact to water and sewer rate payers, particularly as we invest in more climate resiliency measures.
- The U.S. Forest Service needs funding to maintain national forests to protect drinking water quality. 90% of SLC's water supply emanates from the Uinta Wasatch National Forest. Funding is needed for forest health and recreation management. Salt Lake City has had to fill some of the gaps, including during the recent government shut-down, with the maintenance of restrooms and other critical functions.

Conclusion

I am here today as both a Mayor and as a mother.

I ran for office 4 years ago to build a "City for Everyone" – to improve equity, to create opportunity, and to ensure that our community members can both survive and thrive today and well into the future.

If we are going to make the shifts needed to keep that promise to our residents, we need to move in unprecedented ways towards deep and enduring carbon reductions, transforming how we power our homes, governments, and businesses.

Efficient and renewable technologies will not only protect our planet, but will create jobs, boost local economies, and allow cities like Salt Lake City to remain competitive.

The opportunity governments have at all levels to build sustainable and resilient communities is stronger than ever. I will continue to work every day for the health of Salt Lake City's residents, our local and state economies, and the well-being of the planet I am leaving to my sons, your children, and our future.

This reinforces what my fellow Mayors have been saying: The world cannot wait—and neither will we.

We need to identify solutions, programs, and incentives that can motivate individuals, businesses, and governments to do what is necessary to address the climate change crisis before us. I hope this Congress will take the action that is necessary.

I urge your continued support and collaboration, and offer my gratitude for our partnership.

Additional Sources

Water supply, quality data, and additional resources:

- Bardsley, Tim; Wood, Andrew; Hobbins, Mike; Kirkham, Tracie; Niermeyer, Jeff; Briefer, Laura; Burian, Steve (2013). Planning for an Uncertain Future: Climate Change Sensitivity Assessment toward Adaptation Planning for Public Water Supply. *Earth Interactions*: Vol. 17. Paper No. 23.
- National Climate Assessment: <https://nca2014.globalchange.gov/>
- Global Change Research Climate Report (2017): <https://science2017.globalchange.gov/>
- Western Water Assessment (NOAA RISA) Information: <http://wwa.colorado.edu/>
- US EPA Creating Resilient Water Utilities: <https://www.epa.gov/crwu>
- USU Climate Center: <https://climate.usu.edu/index.php>
- University of Utah Water Center: <https://water.utah.edu/>
- Tree ring streamflow reconstructions by basin: <https://www.treeflow.info/data>
- Carpe Diem West Information: www.carpediemwest.org
- iUtah Information: <http://iutahepsc.org>
- USCM/C2ES Alliance for a Sustainable Future: <https://www.usmayors.org/alliance-for-a-sustainable-future/>

Mr. TONKO. Thank you very much, and right within 5 minutes. So thank you.

Next, we will hear from the Honorable Daniel Camp III, who is the chair of Beaver County Board of Commissioners, Beaver County, Pennsylvania.

Welcome.

STATEMENT OF DANIEL C. CAMP III

Mr. CAMP. Thank you. Thank you, Chairman Tonko, Ranking Member Shimkus, and members of the subcommittee for inviting me to speak today on behalf of Beaver County, Pennsylvania.

It is an honor to be here in front of you, somewhere where my former Congressman and dear friend, Ron Klink, served when he was a Congressman here.

My name is Daniel Camp and I am the chairman of the Beaver County Board of Commissioners. Of the 67 counties in the great Commonwealth of Pennsylvania, I am currently the youngest county chairman.

I sit on the Natural Gas Task Force for the County Commissioners Association of Pennsylvania. About 25 miles northwest of Pittsburgh, Beaver County, Pennsylvania sits alongside the most northern part of the Ohio River and has approximately 168,000 residents.

Throughout most of the 20th century, Beaver County and its steel mills laid the foundation for the United States and the world. We designed, manufactured, and produced steel used in bridges, skylines, and icons throughout our great nation.

Beaver County rode this wave of economic growth throughout most of the 20th century. But eventually, in the 1980s, our good fortune came tumbling down. American steel turned its back on Beaver County. Mills shut down, unemployment peaked. But we persevered. We came back. We knew we had a foundation for a great restoration.

Today, energy drives our economy. With an investment measured in the billions, we partnered with an engine that would fuel the nation. In Beaver County, we are proud of our past but we are also confident in our energy future.

The current energy boom in Beaver County started with the Marcellus Shale. Approximately 10 years ago, Beaver County started to see the effects of the technological advancements that made developing the Marcellus Shale possible.

In addition to the billions of dollars in bonuses and royalty payments made to Pennsylvanians who leased their lands and property for natural gas extraction in 2012, the Pennsylvanian General Assembly imposed a special tax on the industry called an impact fee, which is paid annually by the unconventional natural gas producers for each well drilled.

In its report in 2018, Beaver County received approximately \$500,000 from the impact fee, which has increased of about \$160,000 from the prior year.

In addition, the county's 54 municipalities received a combined \$618,000, nearly double the amount from the year before. All told, between allocations to the county, municipalities, and impact fee-funded projects, Beaver County has received \$5 million for the pub-

lic infrastructure improvements, emergency preparedness and response, environmental protection, social services, parks and green spaces, and tax reduction.

In 2016, Shell Chemical Appalachia announced it would build a petrochemical complex in Beaver County that would use a low-cost ethane being produced from the Marcellus and Utica formations to produce 3.5 billion pounds of polyethane per year, creating a foundation for the regional manufacturing of pharmaceutical, industrial chemical, and plastic.

Indeed, from lifesaving medication and medical equipment to the cell phones we use every day, plastic source like the Marcellus enhance our quality of life to make our modern world possible.

Shell's decision to build this complex in Beaver County was a major coup for not only Beaver County but our entire region, including West Virginia and Ohio. And at its peak, 6,000 construction jobs will be necessary to build the complex and, once operational, it will support approximately 600 permanent well-paying, family-sustaining jobs.

The site currently supports hundreds of electricians, pipefitters, iron workers, carpenters, laborers, equipment operators, and other craftsmen. Many of these workers travel from out of the area to work—to the work site and have therefore spurred our hotel industry in Beaver County.

We now have 33 hotels in the county when 10 years ago we had four, many of which were built as a direct result of the influx of these workers who now spend their entertainment dollars locally, eat at local establishments, and otherwise have helped to revitalize local businesses.

Infrastructure has also improved in and around the construction site, new roads and repaving of existing roads directly from the cracker plant.

An improved interchange in the Interstate 376 was built to handle the additional traffic in the area, and additionally, a new water intake system was built for the local municipalities because the plant was built where their water intake system was previously located.

Once the plant is operational, we anticipate additional growth in the manufacturing sector as our region becomes attractive for companies seeking to locate in close proximity to the abundant amount of supply of polyethane produced in Beaver County.

In turn, we hope to see the expansion of the professional services and that is supported as well, such as engineering and architecture.

Beaver County has tremendous potential and that potential stems in large part from the economic opportunity Marcellus Shale presents. Without a doubt, our modern world is built on energy and our future hinges on the ability to leverage our domestic energy resources.

To fuel our economy, grow manufacturing, employ America's labor workforce, and continue to propel our country forward as a global leader, I am proud to represent a county that is integral to making this future possible.

As you deliberate your policy changes, I am here to ask you to consider the monumental impact American shale gas development

has had on our country and support this economic driver as vital to our shared future.

In closing, I would like to thank you for this opportunity you have given me to come before you and speak today.

[The prepared statement of Mr. Camp follows:]

BOARD OF COMMISSIONERS



DANIEL C. CAMP, III
COMMISSIONER
810 Third Street
Beaver, PA 15009

(724) 770-4402
(724) 728-0725 Fax
dcamp@beavercountypa.gov

House Committee on Energy and Commerce's
Subcommittee on Environment and Climate Change

*Lessons from Across the Nation: State and Local Action to Combat
Climate Change*

Testimony of Daniel C. Camp III

Thank you Chairman Tonko, Ranking Member Shimkus, and Members of the subcommittee for inviting me to speak on behalf of Beaver County Pennsylvania. It is an honor to be here in front of you today. My name is Daniel Camp, and I am the chairman of the Beaver County Board of Commissioners. Of the 67 counties in the great Commonwealth of Pennsylvania, I am currently the youngest county chairman, and I sit on the Natural Gas Task Force Committee for the County Commissioner Association of Pennsylvania.

About 25 miles northwest of Pittsburgh, Beaver County Pennsylvania sits alongside the most northern part of the Ohio River

and has approximately 168,000 residents. Throughout most of the 20th century Beaver County and its steel mills laid the foundation for the United States and the world. We designed, manufactured, and produced steel used in bridges, sky lines, and icons throughout our great nation.

Beaver County rode a wave of economic growth throughout most of the 20th century. In the 1980's, however, our good fortune came tumbling down. American steel turned its back on Beaver County; mills shut down and unemployment peaked, but, we persevered. We knew we had a foundation for a great restoration, and today energy drives our economy. With an investment measured in the billions, we partnered with an engine that will fuel the nation. In Beaver County we are proud of our past, but we are also confident in our energy future.

The current energy boom in Beaver County started with the Marcellus Shale. Approximately 10 years ago, Beaver County started to see the effects of technological advancements that made developing the Marcellus Shale possible. In addition to the billions of dollars in bonus and royalty payments to Pennsylvanians who leased their property for natural gas extraction, in 2012, the Pennsylvania General

Assembly imposed a special tax on the industry, an “impact fee,” which is paid annually by unconventional natural gas producers for each well drilled. In its 2018 report, Beaver County received approximately \$500,000 from this impact fee, which was an increase of about \$160,000 over the prior year. In addition, the County’s 54 municipalities received a combined \$618,000, nearly double the amount of the year before. All told, between allocations to the county, municipalities and impact fee-funded project grants, Beaver County has received \$5 million for use in public infrastructure improvements, emergency preparedness and response, environmental protection, social services, parks and green spaces and tax reduction.

In 2016, Shell Chemical Appalachia announced it would build a petrochemical complex in Beaver County that would use low-cost ethane being produced in the Marcellus and Utica formations to produce 3.5 billion pounds of polyethylene per year, creating a foundation for regional manufacturing – pharmaceutical, industrial chemical, and plastic. Indeed, from life-saving medication and medical equipment to the cells phones we use every day, plastics sourced in plays like the Marcellus enhance our quality of life and make our modern world possible.

Shell's decision to build this complex in Beaver County was a major coup for not only Beaver County, but the entire region. At its peak, 6,000 construction jobs will be necessary to build the complex, and once operational, it will support approximately 600 permanent jobs. While a definite opening date has not been made public, the anticipation is it will be operational within the next 2-3 years.

The construction of this complex has been a major boon for Beaver County. There are currently 3,700 workers on site, and the impact on our regional skilled labor workforce has been incredible. The site currently supports hundreds of electricians, pipefitters, ironworkers, carpenters, laborers, equipment operators, and other craftsmen. Many of these workers travel from out of the area to work at the site and have therefore spurred the hotel industry in Beaver County. We now have 33 hotels within the County, many of which were built as a direct result of the influx of these workers who now spend their entertainment dollars locally, eat at local establishments, and otherwise have helped to revitalize local businesses.

Infrastructure has also improved in and around the construction site. New roads and repaving of existing roads are directly attributable to the cracker plant. An improved interchange with

Interstate 376 was built to handle the additional traffic in the area.

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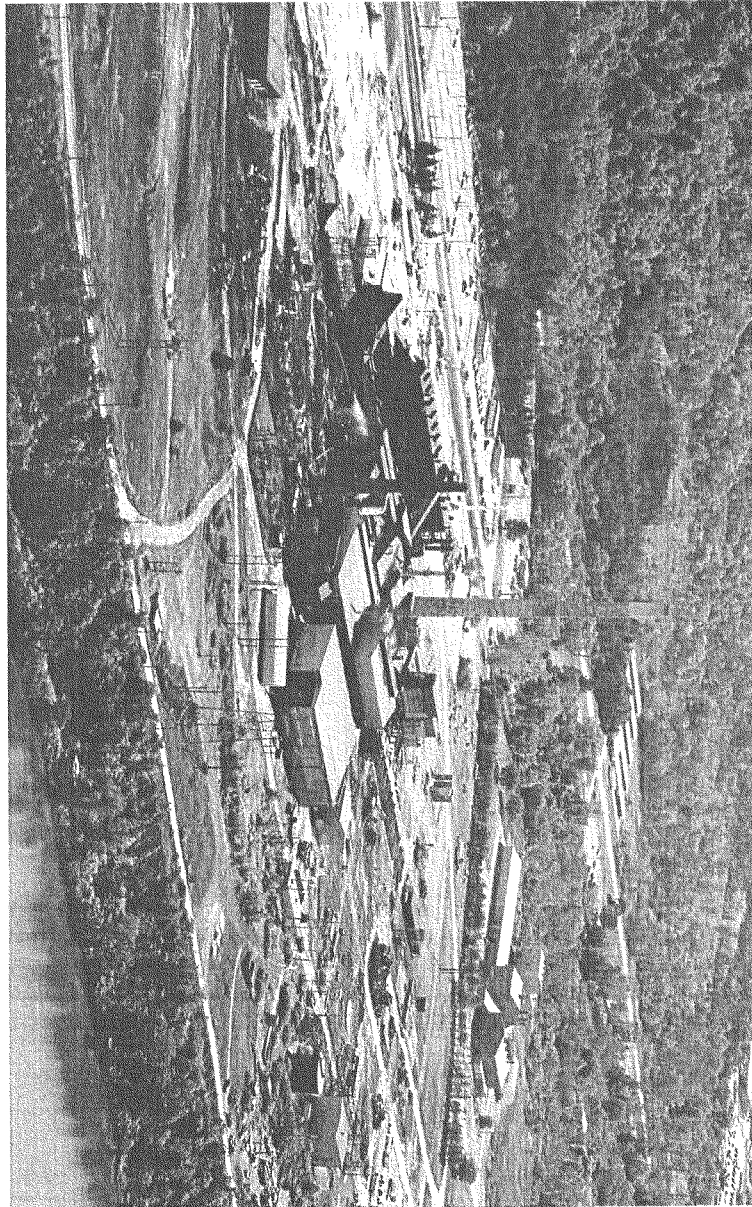
Once the plant is operational, we anticipate additional growth in the manufacturing sector as our region becomes attractive for companies seeking to locate in close proximity to the abundant supply of polyethylene produced here in Beaver County. In turn, we hope to see expansion in the professional services that support it as well (e.g. engineering, architecture, etc.).

Beaver County has tremendous potential, and that potential stems in large part from the economic opportunity the Marcellus Shale presents. Without a doubt, our modern world is built on energy, and our future hinges on our ability to leverage our domestic energy resources to fuel our economy, grow manufacturing, employ America's labor workforce and continue to propel our country forward as a global leader. I am proud to represent a county that is integral to making this future possible. As you deliberate policy changes, I'm here to ask you to consider the monumental impact

American shale gas development has had on our country and support this economic driver as vital to our shared future.

In closing, I want to thank you for the opportunity you have given me to come before you and speak today.

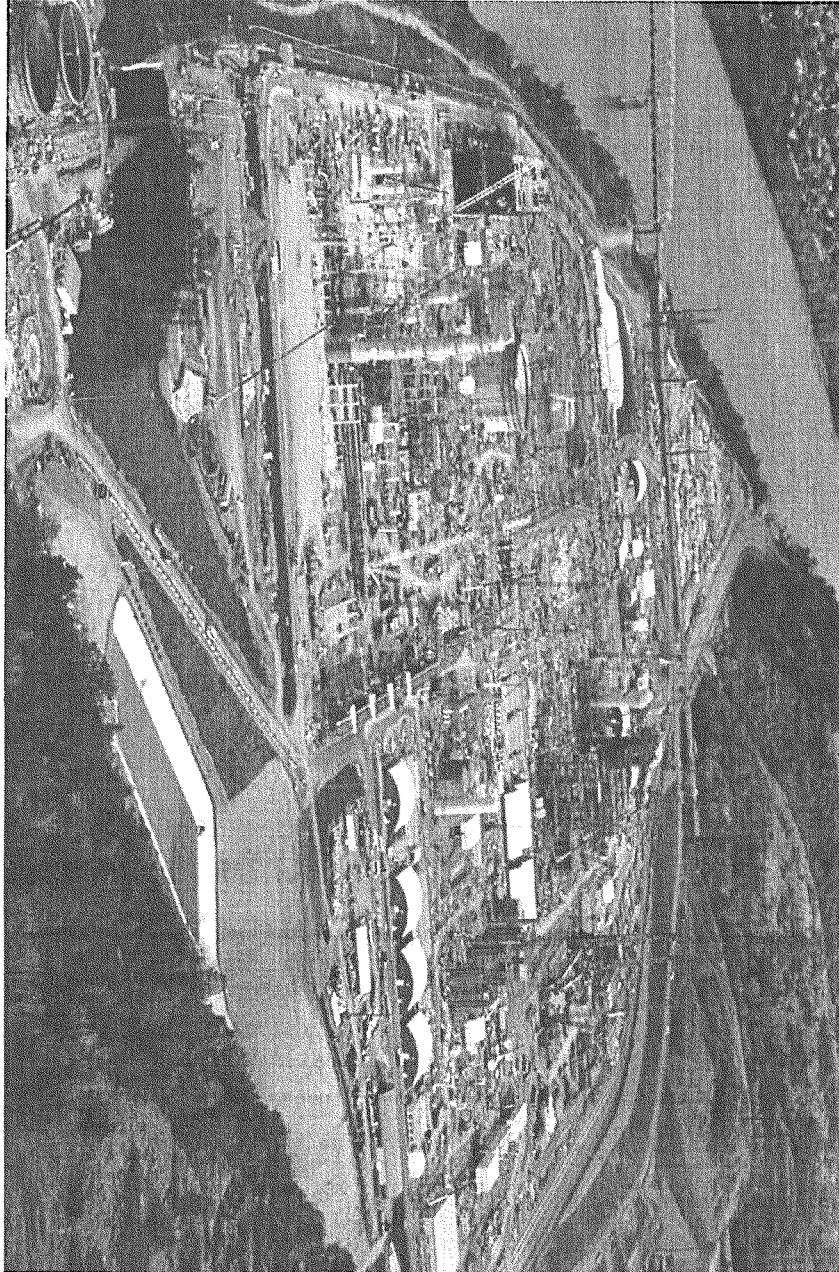
1. Former Horsehead Corp. Zinc Plant



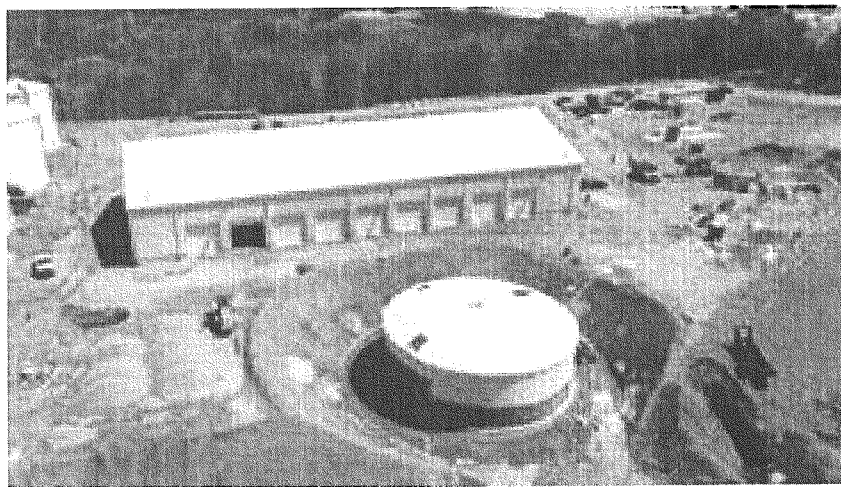
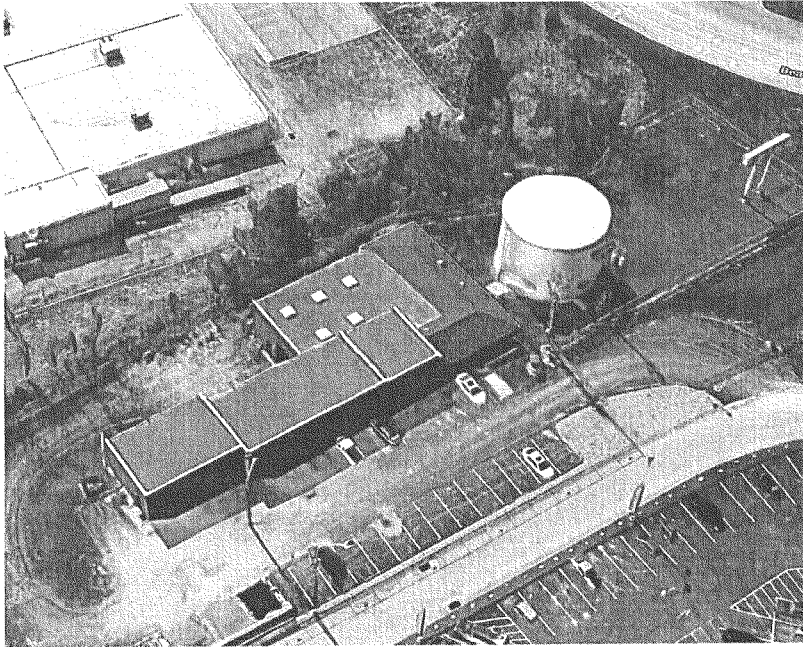
2. Future Site of the Shell Chemical Appalachia



3. Construction Phase of Shell Chemical Appalachia



4. Center Twp. Pa water treatment facility before and after.



Mr. TONKO. Thank you, Honorable Daniel Camp.
 And finally, we will hear from the Honorable James Brainard, who is mayor of the City of Carmel, Indiana.
 Welcome.

STATEMENT OF JAMES BRAINARD

Mr. BRAINARD. Thank you, Mr. Chairman, members of the subcommittee.

Carmel is a city of about 100,000 people on the northern edge of Indianapolis that has gone through tremendous transformation during the last few decades.

Carmel consistently is ranked among the best places to live in the country, having been named best place to live in America by Money Magazine in 2012. That is a good day for a mayor.

Carmel recently was ranked number one best suburb to live in in America by Niche.com, listed as one of the safest cities in America by SafeWise and was named the number-one best place to launch a career by Money Magazine last year.

We are successfully making our community safer and healthier for our residents, businesses, and visitors through initiatives aimed at reducing pollution and harmful emissions.

I have also shared our initiatives and the importance of building a resilient city, more broadly, speaking in India in 2015 as part of a U.S. State Department initiative on climate change and in Germany in 2015 as part of the Chairman of the American Institute discussing climate change mitigation in city management.

I have also shown my support here nationally as one of the original signers on the Conference of Mayors Climate Protection Agreement and, ultimately, over 1,200 mayors from both parties throughout the United States signed into the agreement and pledged local efforts to help achieve greater reduction of harmful emissions.

I have cochaired the Congress of Mayors' Energy Independence and Climate Protection Task Force. I have also learned a great deal, as one of the few Republican members on President Obama's task force on climate preparedness and resilience.

All of these have been experiences that have broadened my perspective and understanding of the issues that we are facing. It is our job to find the best solutions that will yield the best results.

More locally for me, farms just outside of Carmel and throughout the State of Indiana have felt the impact of climate change. Purdue University's climate change research center released a report last year detailing the negative impact today's climate is having on our agriculture, including declining yields, the change in which crops will grow in the State, increased risk of heat stress to livestock, and the decreased quality of soils in general, which could impact food security for all of us.

I am often asked by younger Republicans and students why, as a Republican, am I strongly advocating for conservation and environmental initiatives. I remind them that the root of the word conservative is to conserve and that many environmental initiatives have been initiated and implemented by Republicans.

It was Teddy Roosevelt who preserved 230 million acres of wilderness and established five national parks, created the Forest

Service. It was Richard Nixon, a Republican, who signed into the National Environment Policy Act, the Marine Mammal Protection Act, the Environmental Pesticide Control Act, and the Endangered Species Act which, along with banning DDT, helped rescue the American bald eagle.

It was Indiana's own William Ruckelshaus, a Republican, who was first head of the Environmental Protection Agency. It was Ronald Reagan, of course, a Republican who enacted the Coastal Barrier Resource Act and the Water Resources Development Act.

It was President George H. Bush, a Republican, who signed onto the Global Change Research Act in 1990 which requires every 4 years an assessment of the findings to be made and reported.

I often tell our young Republicans that improving the environment doesn't have to take the form of regulations that hurt businesses or economy.

We need to search for answers that help our environment while presenting opportunities to encourage thousands of new green jobs that save energy or make renewable energy. We should be researching and developing products and technology that the citizens of this country and the rest of the world are demanding.

And that is why I am here today, though, to report on how communities such as Carmel are working to become as resilient as possible while dealing with the impact of poor air quality.

For our cities, this is about the need to address global warming's impact on our storm water, our utility systems, and other city services including our emergency responses in the event of tornadoes, hurricanes, and other disasters. It is about developing better codes.

So some of the things we have done in Carmel we have replaced 122 of our signalized intersections with roundabouts. Not only do we get an 80 percent increase or decrease, rather, in injury accidents, last year our city engineer estimated we saved about 28,000 tons of carbon.

We are using city design principles, building a more walkable city. We do mixed use zoning so that when people do have to make car trips they are shorter trips. And we have installed more than 200 miles of trails and paths.

Since 2005, we required alternative fuel vehicles be purchased by city departments when available. This month, our police department announced that we are switching to a 130-car fleet of renewables.

I have got a little bit more so I am going to switch to the ask here as I see I have only a few seconds left. We all know about revenue sharing and how it was a Nixon program—a Republican program. CDBG grants was a great example, a program from the 1970s that is still around.

We worked hard at the Conference of Mayors with you and with this committee to get the energy efficiency and environmental block grant program authorized. It was funded during the stimulus for the first time. We are asking that you do that again.

It is a big country. All the cities have different needs. It is a great way to partner with the Federal Government but yet with local decisionmaking using that money where it can best be utilized for our citizens.

We ask that you consider that. Thank you.

[The prepared statement of Mr. Brainard follows:]

**Testimony of Mayor James Brainard
City of Carmel, Indiana**

**“Lessons from Across the Nation:
State and Local Action to Combat Climate Change”**

**House Committee on Energy & Commerce
Subcommittee on Environment & Climate change
Tuesday, April 2, 2019**

By Jim Brainard

Mr. Chairman and members of this subcommittee, thank you for this opportunity to testify before you today. I am Jim Brainard, Mayor of Carmel, Indiana.

Carmel is a city of about 100,000 people on the northern edge of Indianapolis that has gone through tremendous transformation during the past few decades.

Carmel consistently is ranked among the best places to live in the county, having been named the Best Place to Live in America by CNN Money magazine in 2012. Carmel recently was ranked #1 Best Suburb to Live in America by Niche.com, was listed as one of the Safest Cities in America by SafeWise and was named #1 Best Place to Launch a Career by Money Magazine last year.

We are successfully making our community safer and healthier for our residents, businesses and visitors through initiatives aimed at reducing pollution and harmful emissions.

I have also shared our initiatives and the importance of building a resilient city more broadly, speaking in India in 2015 as a part of the U.S. State Department Initiative on climate change and in Germany in 2015 as a part of the German American Institute discussing climate change mitigation and city management.

I have also shown my support here nationally as one of the original signers of the Conference of Mayors Climate Protection Agreement. Ultimately, more than 1,200 mayors from both parties throughout the U.S. signed onto the Agreement and pledged local efforts to help achieve greater reduction of harmful emissions. I have co-chaired the Conference of Mayors’ Energy Independence and Climate Protection Task Force. I also learned a great deal as one of few Republican members of President Obama’s Task Force on Climate Preparedness and Resilience. All of these have been experiences that have broadened my perspective and understanding of the issues we are facing. It is our job to find the best solutions that will yield the best successes.

More locally for me, farms just outside Carmel and throughout the state of Indiana have felt the impact of climate change. Purdue University’s Climate Change Research Center released a report last year detailing the negative impact today’s climate is having on agriculture including declining yields, a change in which crops will grow in the state, increased risk of heat stress to

livestock and decreased quality of soils in general. This could greatly impact food security for all of us.

I am often asked by younger Republicans and students why, as a Republican, I am strongly advocating for conservation and environmental initiatives. I remind them that the root of the word conservative is conserve and that many environmental initiatives have been implemented by Republicans.

It was President Teddy Roosevelt, a Republican, who preserved 230 million acres of wilderness and established five national parks. He created the U.S. Forest Service, elevating our nation's fledgling national forest management practices which were also started under Republican presidents in the late 1800s.

It was Richard Nixon, a Republican, who signed into law the National Environmental Policy Act; the Marine Mammal Protection Act; the Environmental Pesticide Control Act; and the Endangered Species Act – which, along with the banning of DDT, helped rescue the American Bald Eagle.

It was Indiana's own William Ruckelshaus, a Republican, who was the first head of the Environmental Protection Agency.

It was Ronald Reagan, a Republican, who enacted the Coastal Barrier Resources Act and the Water Resources Development Act. His approach to conservation efforts resulted in virtually eliminating lead production, reducing carbon monoxide emission by about a quarter and reducing particulate pollution 40 percent.

It was President George H. Bush, a Republican, who signed the Global Change Research Act of 1990, which requires that every four years an assessment of the findings be made and reported. The assessment is based on the most current peer-reviewed science evidence and its impact on our world.

I often tell our young Republicans that improving the environment doesn't have to take the form of regulations that may hurt businesses or our economy. We need to search for answers that help our environment while presenting opportunities to encourage thousands of new green jobs making products that save energy or make renewable energy. We should be researching and developing products and technologies that the citizens of this country and rest of the world are demanding.

Conservation of energy and improving our environment should have little to do with political persuasion. There is no democratic way or republican way to fill a chuck hole and there should not be a democratic way or republican way to be resilient. Liberals and conservatives should be interested in conservation and energy independence. This is not only an issue of cleaning up our air and water. It's a matter of quality of life. I have yet to meet the person who doesn't want clean air, clean water and an overall healthy environment, regardless of their political persuasion.

This is why I am here today, to report on how communities such as Carmel are working to become as resilient as possible while also dealing with the impact of poor air quality that hurts those with asthma and other pulmonary diseases or increasingly violent weather events that can negatively affect an entire community.

For our cities, this is about the need to address global warming's impact on our storm water, utility systems and other city services including our emergency response in the event of tornadoes, hurricanes and other natural disasters. It's about developing better building codes and switching to LED street lighting.

Some of the things we have done in Carmel are:

- Replaced traditional signalized intersections with roundabouts. Carmel now has 122 roundabouts, more than any other U.S. city – Roundabouts reduce injury accidents 80 percent, reduce fuel use and harmful emissions as the start and stop movement of traffic is all but eliminated. It is estimated that replacing stop-light intersections with 122 roundabouts saves drivers in our community about 272 tanker trucks of fuel per year, which translates into a reduction of carbon emissions by approximately 27,816 tons annually.
- We are using city design principles to build a more walkable city, which improves our community's quality of life through the health benefits of more exercise as well as the reduction of harmful emissions.
- We installed more than 200 miles of trails and paths that allow people to safely walk or bicycle to their destinations to further reduce emissions.
- Since 2005, I have required that alternative fuel vehicles are purchased by city departments when available. This month, our police department began switching its entire fleet of patrol cars from gasoline-powered vehicles to hybrids - a move that will save the City of Carmel about \$400,000 once the entire 130-car fleet is replaced.
- Carmel has tested a hydrogen powered pickup truck and this year outfitted it with a snow plow, which worked well this winter. Hydrogen vehicles operate without any harmful emissions. Only a small amount of water drains from the tailpipe.
- Carmel's wastewater plant incorporates the biopasture system, which turns waste into fertilizer.
- The city re-uses the methane gas that is a natural byproduct of the wastewater treatment process to heat the boilers used in the biosolids process as well as heat a maintenance building thereby reducing their energy consumption.
- The city has replaced almost all of its street lights with LEDs and has seen a 48 percent reduction in energy consumption to power those lights.

These are just a few of the four-page list of green initiatives that we have implemented in the city of Carmel. You can see that we are doing our part, but we could achieve greater results more quickly with your help.

Local governments retain a very small share of the taxes we generate. For each tax dollar raised, less than 15 cents is retained locally. We must make that small percentage stretch

among many services, such as public safety, drainage and flood control, parks and recreation, water and wastewater along with storm water management and other services.

We are asking for you to help by investing in local governments. We saw this work successfully first-hand when this Committee and ultimately Congress invested in local governments by providing funds to the Energy Efficiency and Conservation Block Grant Program (EECBG) as part of the stimulus during the Great Recession. I mentioned our switch to LED lights earlier and I want to point out that we used federal funds to help with this initiative, which continues to help us reduce energy consumption and save our taxpayers money through reduced electricity costs.

This program is patterned after the revenue sharing Community Development Block Grants (CDBG) created under the Nixon administration. Similarly, they acknowledged that local governments knew best how to decide where the money should be used most effectively. The United States is a big country and the needs of cities differ vastly from place to place. All cities need to become more energy efficient and resilient to inclement weather. What each city needs to fulfill those goals is very different. That is why the Energy Efficiency and Conservation Block Grant Program (EECBG) works so well. Each city can apply those funds where they do the most good.

I ask on behalf of our community that you fund the EECGB at a high level. The mayors of this country will not let you down. We will use those funds wisely for our communities.

Thank you for the opportunity to testify before you today.

Mr. TONKO. Thank you. Thank you very much.

We have now concluded witness opening statements for our second panel. We will now move to Member questions. I recognize myself for 5 minutes for questions, and I thank all of our mayors and the chair of the County Board of Commissioners for joining us and sharing their perspectives today.

You mostly likely heard me ask our previous guest, Governor Inslee, about what Congress can learn from your experiences as leaders. And I am guessing your community was not as active doing this sort of clean energy or resilience work a decade ago.

Why do you think that things have changed so much?

Mayor—

Mr. MORALES. The Permian Basin in Midland, Texas—Odessa, Texas, our sister city—what we have learned from these oil and gas companies which makes up 90—probably about 90 percent of our industry out there is technology. Technology following these companies, seeing how they are advancing, how they are getting more efficient, has allowed them—

Mr. TONKO. OK.

Mr. MORALES. Yes?

Mr. TONKO. No, I just want you to just give me a quick answer here because we only have—

Mr. MORALES. Sure. Technology.

Mr. TONKO. OK.

Mayor Biskupski?

Ms. BISKUPSKI. Yes. For us, it is truly about clean air. It is very difficult to breathe many days out of the year due to the inversion that we have.

And so it is the number-one issue regardless of party affiliation.

Mr. TONKO. OK. And let us hear from our other mayor. Mayor Brainard, why do you think things have changed so much?

Mr. BRAINARD. I think for us it is about quality of life and being able to attract the best workforce possible from all over the world. Air quality, clean drinking water, clean air quality is important. It is important to us. It is important to our citizens.

Mr. TONKO. In my opening statement, I stressed the need to empower local governments. Federal resources and technical assistance are important but I believe this is—we also need to include an appropriate level of flexibility.

The conditions in Salt Lake City or Carmel or Seattle or even Amsterdam, New York, my hometown, vary dramatically. Does anyone have thoughts on the types of programs that offer the flexibility that local officials or mayors need to address their local conditions?

Mr. BRAINARD. Mr. Chairman, if I may go back to what I said at the end of my comments. The Energy and Environmental Block Grant Program is a wonderful idea. Patterned after CDBG, it works.

We recognize we are a big country. Different cities, as you say, have different needs. But the Federal partnership, Federal money, local decision making within the broad category of environmental improvement works very well.

We get to decide locally where it can best be utilized, how we can match it best for local dollars to have the greatest impact and do the greatest good.

Mr. TONKO. And could you cite an example within your community in Carmel that—

Mr. BRAINARD. Sure. During the—thank you.

Mr. TONKO [continuing]. Most benefit from that?

Mr. BRAINARD. Sure. During the stimulus, Carmel received about \$700,000 in an Environmental Energy Block Grant. We used it to switch out most of our street light to LED lights.

We reduced, as a result of doing that, our energy consumption for those lights by close to 50 percent and getting a return in excess of 10 percent in electricity savings on that investment. It is a lot better than we can do in the bank these days.

Mr. TONKO. And Mayor Biskupski?

Ms. BISKUPSKI. Yes. Similar experience for us in utilizing Federal dollars.

I will add, though, that in the long term it would be very helpful if there was a bipartisan legislative act that was passed.

So if you—in long-term view, energy innovation and carbon dividend act and you passed that, that is a long-term solution that would be very helpful and would create about 2.1 million new jobs and reduce our emissions by 40 percent in this country.

Short term, though, I think the Energy Efficiency and Conservation Grant has been very helpful and should be renewed—the EPA-targeted air shed grant, Department of Energy Solar Cities Grant, or the—and/or the congestion mitigation and air quality improvement program, all of which have helped our cities across this country.

Mr. TONKO. In terms of the energy and efficiency improvements, what would you cite in terms of gains that you made with some of those programs that you just mentioned?

Ms. BISKUPSKI. Yes. So on energy efficiency, we are shoring up opportunities with our buildings and our property owners.

So what we are doing now is bench marking and that provides real transparency for property owners to see how they are measuring up in contributing to our air quality problem and that tool, in and of itself, has been very helpful in showing to our property owners what is happening with their buildings and what they can do and how they can partner with our public utilities opportunities and the grants that they provide and then also pull down some matching dollars.

Mr. TONKO. Thank you.

The Chair now recognizes Mr. Shimkus, our Republican leader for the subcommittee, for 5 minutes.

Mr. SHIMKUS. Thank you, Mr. Chairman.

Again, we appreciate you all being here, and everybody wants their children or grandchildren to live in a community in which they have opportunities to grow. So I was touched by Archie and Jack, and that focus.

I want to ask Mayor Morales and Commissioner Camp, would Archie and Jack—are they better off now in your community because of oil and gas development from the aspect of health, inter-

action to education, and future job opportunities, and can you give me some examples of that?

Mr. MORALES. Yes, most definitely, and thank you. It is—as I just alluded to, technology has really brought the oil company and been able to allow these companies to drill more effectively in less time and more advanced manner in the sense of between the city ordinances and the State ordinances, the Railroad Commission, you are seeing less and less and less rigs go up.

So a good example, sitting with the Apache Corporation, a large producer in Texas—

Mr. SHIMKUS. What about going to the infrastructure, education? What has helped for the tax revenue, based upon the local community and how that has improved just the everyday livelihood?

Mr. MORALES. So then I will just, because of the shale and because of the technology and the drilling, it has then brought these families that we are seeing a mass increase into our community which means then those companies have to participate in helping us with road infrastructure.

They are putting in their dollars in the healthcare system in the healthcare system, into the environmental impacts.

Building codes now are up into 2018 codes. So I would say that today, because of the oil companies and the impact that they are having in our community, it is public-private partnership and one that they know that their children are on the roads, one that they know the community cannot handle alone.

And so their dollars are being participated on the infrastructure and utility work, in our school, our healthcare system and knowing that that kind of partnership is what is going to make—

Mr. SHIMKUS. And let me follow up.

In rural America, there is a lot of—always a lot of concern about the first generation or second generation. They are leaving because there are no jobs available.

Is that true for Midland?

Mr. MORALES. Yes, most definitely. For the longest time, we lost all of our younger generation. We were really a retirement community. Today the average age is 31 in Midland.

The Millennials are moving in. We just saw our youngest voting bloc of 33-year-old females and that is due to—because of the quality of life.

The quality of place is improving. Amenities are better. Education is starting to improve, secondary schools. So schools—or these—again, these oil companies are realizing that they are the ones that are making the impact so they need to make that investment.

Mr. SHIMKUS. And let me go to Commissioner Camp. Same type of questions.

Mr. CAMP. As I stated in my testimony earlier, in the 1980s when the steel industry left Beaver County and left western Pennsylvania because of the emissions and the changes were one of the key driving factors to that, a lot of the—a lot of the college-educated individuals left western Pennsylvania to go work elsewhere, we are starting to see them come back now. We are working with different programs throughout the county, western PA.

As the mayor said before, the public-private partnership that we have with the companies that are coming here, investing in Beaver County, not only in our infrastructure, not only in our municipalities and governments, they are also investing into our schools, our local colleges, our community college of Beaver County.

They invested more than a million dollars to build a process technology center to educate the individuals who the Governor said earlier don't necessarily have to go to a 4-year school to have a good family-sustaining job, and these companies are investing in Beaver County in western PA.

Mr. SHIMKUS. Yes, and I was—I was just—I am glad you added photos to your testimony because here is a closed zinc plant or—zinc plant on the river turned to a cleared off land now to this new, I guess, multiple thousands of people—labor working to build this factory.

And then also on the back you had the water plant, from the old water plant that—the only thing you could afford versus now what you can afford to provide for your constituents.

Mr. CAMP. To talk about those two real briefly, the zinc plant, it was an Act II environmental program and it has vastly improved to the existing site. It was spent—they spent \$80 million on bringing that up to code to where it needed to be.

The water treatment facility was a \$69 million project by this private-public partnership. We have to be able to provide water for a 100 years now for that one community.

So, as I said before, these companies are investing their money and their fortune into these municipalities and communities because they plan on being here for a long time and provide those jobs.

Mr. SHIMKUS. So it is safe to say that energy development and the livelihood of people who you represent are greatly benefited by that?

Mr. CAMP. Absolutely. They are, and as the Governor said earlier, those who suffer the most from air quality and any other emissions are the ones who are living in poverty under the bridges and by the roads.

If we don't have these jobs in Beaver County or western PA or eastern Ohio or northern West Virginia, that poverty level is going to peak up as it did in the 1980s.

Mr. SHIMKUS. Mr. Morales, you would agree?

Mr. MORALES. I would wholeheartedly agree, and I would also say in the State of Texas, because the Permian shale, 35 percent of the severance tax that we submit is staying in the roads, infrastructures of all of Texas, not just the Permian Basin.

So our shale, the production out there, is impacting schools and infrastructure.

Mr. SHIMKUS. Thank you. I yield back my time. Thank you, Mr. Chairman.

Mr. TONKO. The gentleman yields back and we now recognize the gentlelady from the State of California. Representative, you have 5 minutes.

Ms. BARRAGÁN. Thank you.

First, I want to start by thanking the panelists for being here today. I have been running back and forth, so I apologize if I ask some questions that have been asked already.

I want to start with you, Mayor Brainard. I understand that you are a Republican mayor. Is that correct?

Mr. BRAINARD. That is correct.

Ms. BARRAGÁN. I understand that you have been working hard in your city to work on climate change. Is that correct?

Mr. BRAINARD. Yes.

Ms. BARRAGÁN. A couple of years ago, you gave a quote to an article in Think Progress and I am going to ask you about it because my frustration is that sometimes when you talk to—I talk to my colleagues on the other side of the aisle about climate change and working on this issue, there appears to just be the conversation of what we are having by some of our other guests and why is it important that we drill and why it is important that we do fracking and so on and so forth.

I get the—I get the arguments that are made over there and I am really glad that this committee hearing is focused on why we need to address climate change and what you are doing on a local level.

You had told Think Progress back then—I just want to make sure it is accurate—you said, and I quote, “Republicans have been intimidated to some degree by the Tea Party and the conservative talk show hosts on addressing climate change,” and you went on to talk about how you do what is right for your constituents, and when you do that, that is the best thing to do.

Do you stand by that comment? Only because I am curious. I would love to just hear it. Do you stand by that comment?

Mr. BRAINARD. I do. I think that a lot of these radio shows, you know, they have a particular political persuasion. Some are liberal, some are conservative. But those commentators are sometimes out to make money and get listenership and not always focused on finding solutions, and I am frustrated with that, as I think a lot of us are.

I think that, you know, mayors don’t have the leisure of having sort of partisan politics that maybe those in State capitals or maybe those here in Washington do.

We see our constituents in the grocery stores and the barber shops and on the street every day. They don’t care about partisan politics very much. They care about making sure that services that they are paying local taxes for are done.

They care about the quality of life in their communities. They care about the future of their children. They care about the schools and the library systems and they care about safe drinking water and clean air and what the world is going to be like for their descendants.

I think being a mayor is probably one of the least partisan offices you can hold in the United States. We are kind of a joke at the Congress of Mayors. There is no Republican or Democrat way to—excuse me, Democratic way—to plow snow or fill potholes. There really isn’t.

Ms. BARRAGÁN. Thank you for that. I have served on the local city council and served as a mayor and understand where you are coming from.

I just want to applaud you in your efforts to think beyond the partisanship and think about what is right not just for your—for your constituents but for America and for the future of this planet.

You know, I have a mayor that is not in my district but somebody who I work very closely with. He is the mayor of Lancaster in California. His name is Rex Parris, Republican. And people tell me, you know, like, what are you doing—he is a conservative. He is a Republican.

I said, you know what, he cares about climate change. He is acting on climate change. And I think that—I applaud because we need to make sure to come together. This should not be a partisan issue at all. This really is about the future of our children, their health, and the impacts.

You know, some of the things they are doing down in Lancaster I just want to highlight because when I was on the city council we actually went down to Lancaster to see what they were doing there to figure out how can we do this in our own community.

And they have achieved their net-zero energy status in 2016, which they define as producing more energy from sun or wind than they use.

They have all electric buses in Lancaster. They make sure that every new home built is solar powered and affordable at that. It is the first city to require actually solar panels on every home.

Now, I realize that different parts of the country are a little different and maybe you can't get the same type of result that you would get in sunny California.

But what I wanted just to highlight was that one is it is great to see you here and great to see your testimony here. And maybe in my final seconds, can you maybe highlight or give us an idea of what are things—a couple of things maybe you have done that you think Congress should consider in making—doing the same on our level so we can help address the climate change issue.

Mr. BRAINARD. Would you like examples of what we have done in Carmel? I want to make sure I understand the question.

Ms. BARRAGÁN. Something you have done in your city that maybe we should look at as something we should implement on a national level to help fight climate change.

Mr. BRAINARD. Well, I think there are great opportunities through the highway trust fund, which funds local highway projects, to toughen up on how we design our cities.

We have designed our cities in the United States so that the average person, including all the people that don't drive in big cities along the East Coast and Chicago—we have designed our cities so the average driver is spending 2 hours a day in their car.

We can do better than that, and since so much of the money for building that highway system comes from the highway trust fund, having a little stronger requirements that encourage better city design could make a big difference to those auto emissions that cause such problems, for instance, to Salt Lake City.

We have done that in Carmel. We have designed our center core with our roundabouts, other traffic innovations, so the average commute in our city is 4 to 5 minutes, not 2 hours, today.

Mr. TONKO. Representative Barragán yields back.

And we now go to the gentleman from the State of West Virginia, Representative McKinley, for 5 minutes.

Mr. MCKINLEY. Thank you, Mr. Chairman. Looks like I am battling cleanup here on this. So let us go—just a quick note to Mayor Brainard.

Fifty years ago, I graduated from Purdue. So I want to give a shout out to your Ryan Cline that got us an opportunity. That kid just shot the lights out that night and—

Mr. BRAINARD. He did, didn't he? I am a Butler graduate, but we still like Purdue.

Mr. MCKINLEY. You still have a chance for education.

Mr. BRAINARD. That is right.

Mr. MCKINLEY. So the other—I want to go to Camp, because there is a concern I have had, and many of us are watching many of our political figures hiding behind climate change as an excuse to push an ideology.

And so, Commissioner Camp, let me just point out some examples on it. Under the Commerce Clause—under the Commerce Clause, there are numerous challenges now around the country about this because you just heard—maybe heard Governor Inslee trying to prevent coal from being exported across the State to be exported.

We have a Governor in Maryland using—preventing gas pipelines being constructed across Maryland, 3½ miles long, 12 feet wide, and is trying to prevent that from happening.

We see in New York fighting the Commerce Clause by preventing the pipeline construction up there to distribute gas. My concern comes back to you, because I am from Wheeling, just down the road, just I am at the other end of that river. Just follow—come on around.

If we can't ship our ethane—if Governors and political figures are using various rules and regs to prevent the transportation, how are we going to get ethane to you at the cracker plant? How are we going to get coal transported up? How are we going to get gas up into New England when they have shortages?

Do you sense—are you getting any sense that sometimes we are allowing our ideology to get ahead of us instead of science and the law, to be able to allow our products to be shipped to market?

Do you think they are hiding behind that?

Mr. CAMP. I do. I think a lot of times, you know, you have to let science play out and you have to figure out how we are going to move the products from point A to point B.

So we are seeing that. Fortunately, you know, for the Shell petrol chemical plant they are running 97-mile natural gas line directly to the plant. We haven't run into that.

But, you know, Mr. Johnson—in Congressman Johnson's district, he has a proposed petrochemical plant in Belmont County, Ohio. They might be running into that situation in the years to come.

So I do believe so. Yes, sir.

Mr. MCKINLEY. I am just concerned about people who are hiding behind something. I ran out of time. I went two minutes over with Inslee.

So but I wanted to challenge him on one statement because he made—just to show how science is being twisted here a little bit, wherein he made a public comment that—what was his quote? “We are tired of breathing smoke from Mississippi.”

Now, I am just an engineer from Perdue. I have never heard of the wind currents going from Mississippi up to the State of Washington.

Is there something I am missing here, or is this just one more thing that people are trying to use an ideology?

Mr. CAMP. I believe so. Yes, sir. I think, as Ranking Member Shimkus said earlier, you know, we had studies in the past administration and go through—if we would have spent our time and energy focusing on how to help these other nations with their emissions, you know, if you truly believe in global warming and climate change, it is a national—it is a world thing, not just a national thing.

And if we focused our time, energy, finances, resources on helping the entire world and not just the United States, we would be moving, you know, to the future a little faster.

Mr. MCKINLEY. Can’t agree with you more. I hope there is going to be more emphasis on the global involvement and how we get that done.

So I thank all of you for the panel and I yield back my time.

Mr. TONKO. The gentleman yields back.

I request unanimous consent to enter the following items into the record. They include a report by the University of Montana entitled “The Economic Impact of the Early Retirement of Colstrip Units 3 and 4,” a letter from the mayor of Rock Falls, a Washington Post article from March 28th of 2019 entitled “In small towns across the nation, the death of a coal plant leaves an unmistakable void,” a report by Energy Innovation titled “The Coal Cost Crossover: Economic Viability of Existing Coal Compared to New Local Wind and Solar Resources,” the United States Climate Alliance’s 2018 annual report, a New York Times article from March 29th of 2019 entitled “They Grew Up Around Fossil Fuels. Now Their Jobs Are in Renewables,” an article from KPAX titled “Montana Senate Advances Bill to Aid Northwestern Purchase of Colstrip 4 Share,” two articles from the Institute for Energy Research entitled “China’s New Environmental Problem: Battery Disposal” and the other “The Mounting Solar Panel Waste Problem,” an article from Amnesty International entitled “Amnesty challenges industry leaders to clean up their batteries,” and, finally, an article from Engineering.com entitled “Will Your Electric Car Save the World or Wreck It?”

Request for unanimous consent? Without objection, so ordered.

[The information appears at the conclusion of the hearing.]¹

Mr. TONKO. I would like to thank all of our witnesses for their participation in today’s hearing.

¹The University of Montana, Energy Innovation, and United States Climate Alliance reports have been retained in committee files and also are available at <https://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=109745>.

I remind Members that, pursuant to committee rules, they have 10 business days by which to submit additional questions for the record to be answered by the witnesses who have appeared.

I ask each witness to respond, please, and do so promptly to any such questions that you may receive.

And at this time, the subcommittee is adjourned.

[Whereupon, at 1:11 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

PREPARED STATEMENT OF HON. DEBBIE DINGELL

Thank you Chairman Tonko and Republican Leader Shimkus for holding this important hearing today to discuss the urgent threat from climate change we all face and to learn from State and local governments firsthand who are acting, arm-and-arm together, to address this existential threat.

At our last hearing on climate change, we learned that the abdication of American leadership at the Federal level is having a significant cost in mitigating carbon pollution and meeting the goals of the Paris Agreement. In absence of this leadership, cities, States, businesses, and universities all across this country have stepped up and pledged to lead.

From the 23 States who have joined the United States Climate Alliance to the more than 400 mayors who have joined the Climate Mayors network, we are seeing a growing bipartisan collection of Governors, mayors, city councils, and local decisionmakers—who are on the frontlines—working together.

The U.S. Climate Alliance now represents more than half the United States population and almost three-fifths of the domestic economy.

Today's hearing will allow Congress and the American people the opportunity to listen and learn from the State and local officials who are choosing to lead. Climate change is a threat to every generation, now and to come. I look forward to learning what is working at the State and local levels and any recommendations our witnesses may have for the committee.

Thank you, and I yield back.

City of Rock Falls

603 W. 10th Street
Rock Falls, IL 61071-2854

Mayor
William B. Wescott
815-380-5333

City Administrator
Robbin D. Blackert
815-564-1366



City Clerk
Eric M. Arduini
815-622-1104

City Treasurer
Kay M. Abner
815-622-1100

April 2, 2019

Honorable John Shimkus
2217 Rayburn House Office Building
Washington, DC 20515

Re: "Lessons From Across the Nation: State and Local Action to Combat Climate Change"
Written Testimony Submitted by Mayor of Rock Falls, Illinois, William B. Wescott
House Committee on Energy & Commerce
Subcommittee on Environment & Climate Change (116th Congress)

Dear Subcommittee Members:

The City of Rock Falls has owned and operated its municipal electric utility since 1895. For over 110 years we have provided our community low cost and reliable electric service. As a not-for-profit utility, we focus on keeping our rates low and are continually reinvesting in our system and community. As a municipality that owns and operates its own electric distribution system, Rock Falls is in a unique position to foster and invest in a clean energy future. We have individually as a municipality, and together as part of our wholesale power joint action agency, made strides towards a cleaner future while also focusing on providing reliable, low cost power to our citizen customers. In many ways, Rock Falls has been on the forefront of the climate issue, well before many traditional utilities.

The City of Rock Falls is a nationally recognized municipal electric utility. For fifteen years, we have been designated a Reliable Public Power Provider (RP3) award by the American Public Power Association. We are one of only three municipalities in Illinois to receive this award. RP3 recognizes utilities that excel in four areas: reliability, safety, workforce development and system improvement. Criteria within each of the four RP3 areas are based upon sound business practices and recognized industry best practices. The RP3 Program shines a light on our utility for the excellent service it provides to our customers. As part of our industry best practices, the City of Rock Falls places a focus on clean energy. First, Rock Falls is one of the few places in Illinois that has a hydroelectric facility. Our facility is located on the banks of the Rock River and uses the pool created by the Sinnissippi Dam. This two megawatt

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 April 2, 2019
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hydroelectric plant provides our City with a reliable and clean power source. In 2013, we re-committed to this clean power source by conducting a 20-year rebuild, making the facility even more productive and efficient to assist the City in our total 24 megawatt peak demand. This hydro plant provides 12.5% of the city's needs, saves our customer owners roughly \$40,000 per month in energy costs while also reducing our annual CO₂ emissions by more than 5,770 tons.

In 2010, our City began to assess how to deploy solar power as part of our system. We installed a small solar array on a city facility, reducing the internal electric consumption by 5% annually while reducing its carbon footprint by more than nine tons. This pilot project has been a success not only in reducing city energy costs, but we also offer the system as an educational tool for our grade school and high school students, teaching about the electric, renewable and solar industry.

Beyond these sources, we receive all of our wholesale energy through a municipal aggregation agency called the Illinois Municipal Electric Agency (IMEA). Rock Falls became a founding member of IMEA in 1984 in order to gain joint purchasing power by aggregating our city's electric load requirements with other non-profit, public power municipalities within Illinois. IMEA provides long-term strategic joint planning and utility operations, along with professional management of combined generation and transmission assets. However, all Agency decisions are still local because they are made by the Board of Directors, on which each municipally owned utility is represented by a locally appointed director.

As part of the IMEA, Rock Falls was selected to be a host city for a new utility scale one-megawatt solar array. This project is an excellent example of a strong public-private partnership to further the development of renewable energy. Rock Falls will host the solar array with no direct cost incurred by our city for the purchase of the panels. IMEA is commissioning the facility to be built by a developer. The capital expense of the project will be 100% funded by this developer. In turn, the developer will sell the power to the IMEA under a power purchase agreement. We are proud to host such a project in our hometown, particularly as it allows us to utilize an otherwise non-buildable property in our industrial park. Truly, this is a win for everyone.

While Rock Falls, in conjunction with IMEA, continues to diversify its resources and increase the percentage of renewable resources in our power portfolio, we are also responsible for reliable power. Honestly, that is job #1. Technology must improve before we can fully transition from our existing resource mix of baseload and intermittent renewable resources. In Illinois, we still need some amount of baseload generation to keep the lights on and our citizens homes warm.

As you know, the energy industry is in a time of transition, both in how it generates electricity and how regulated and deregulated markets operate. For many years, investments in the generation of electricity in Illinois were either in coal-powered or nuclear-powered facilities. Rather than depend solely on a volatile power market, our municipal systems elected to secure reliable and stable cost

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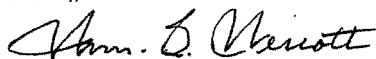
electricity, by making investments in new, highly efficient baseload generation. Our largest investment, the Prairie State Energy Campus provides more than 650 jobs in downstate Illinois, with an economic impact to the region of \$785 million each year. Municipal utilities borrowed capital over the long-term to procure this generation resource and remain obligated to pay back the capital we borrowed.

As Congress considers and takes action on the threat that climate change poses, we ask for consideration for communities, such as Rock Falls, who have been investing in renewables while also making investments in baseload power, utilizing the cleanest and best environmental control technologies available. We are concerned that a transition to cleaner energy resources risks stranding investments in our current portfolio. Rock Falls is responsible for the pro-rata share of our electric load for approximately \$922.5M in outstanding debt. Importantly, that responsibility remains even if a federal or state regulation or law forces the closure of our state-of-the-art coal fired generation facilities before the owners (who are all non-profit public electric utilities like Rock Falls) can recoup our investments. Should federal or state policies force premature closure of our existing resources, we'd still have to procure the energy we had been counting on our coal-fired generators to deliver. This would be like building a home with a 30-year loan and then being evicted sometime in the first 10 to 15 years. We still must pay the mortgage on the home we've lost while also paying for a new place to live.

If we are unable to recoup our investments, this will create severe economic harm to our citizens and to those who have invested in the bonds that provided the capital for the construction of our new facilities. These cleaner, efficient supercritical plants are exactly the type of facility we need to ensure affordable and reliable electricity while we bridge the gap to technology that will allow us to achieve a fully renewable future.

Thank you for the opportunity to present this written testimony on behalf of Rock Falls and all of our citizens.

Sincerely,



William B. Wescott,

 The Washington Post

In small towns across the nation, the death of a coal plant leaves an unmistakable void. The Washington Post

Health & Science

In small towns across the nation, the death of a coal plant leaves an unmistakable void

By Brady Dennis and
Steven Mufson
March 28

ADAMS COUNTY, Ohio — The barges floating down the Ohio River no longer deliver coal to the two power plants that have stood here for decades, twin sentinels looming over this rural county east of Cincinnati.

The boilers have sat idle since May, when both the J.M. Stuart and Killen power plants closed on the same day. They once provided about 700 jobs but now are among the latest casualties of a declining industry that has seen nearly half of the nation's coal-fired plants close over the past decade.

The vanishing of coal plants from the American landscape began years ago, but it has persisted under President Trump, who came into office promising to revitalize the coal industry. He has rolled back environmental regulations meant to curb pollution and greenhouse gas emissions, installed a former coal lobbyist as head of the Environmental Protection Agency and tweeted in favor of keeping certain units operating. And yet, utilities have continued to shut down plants.

The main reason? Coal can't compete against cheaper, cleaner alternatives, such as natural gas and solar and wind energy.

More coal plant capacity disappeared during Trump's first two years in office than during President Barack Obama's entire first term, and the closures are set to continue in 2019 and beyond.

The slow retreat of coal plants has brought what many scientists, environmental advocates and policymakers say is much-needed change. Burning coal causes air pollution that can damage the health of nearby residents. It releases large amounts of carbon dioxide, which fuels climate change. And the leftover waste lingers in landfills and storage pits that can threaten water supplies.

But in places like Adams County, with a population of about 28,000 and already one of the poorest corners of Ohio, the death of a coal plant can leave an unmistakable void. When the Stuart and Killen stations closed last year, with them went the area's highest-paying jobs, its largest employers, its biggest taxpayers and, in many ways, its lifeblood.

"It's devastating, really, to be honest," said Adams County Sheriff Kimmy Rogers, who said he has fewer deputies than when he started in 2010 and, during some shifts, has only two to cover 583 square miles. "The only thing we had going for us, really, were the power plants."

Stuart and Killen were among the 19 coal-fired plants to shut down across the country during 2018 — one of the largest waves of U.S. coal plant retirements in a single year. Stuart, which once had a staggering capacity of 2,318 megawatts, remains the largest U.S. coal plant to close its doors.

But long before that happened, local officials and union workers in Adams County scrambled to salvage them. Ty Pell, president of the county commissioners, traveled to the state capital, as well as to Washington, to seek help from Ohio's elected officials and from Vice President Pence.

"We did all we could," recalled Pell, whose father worked at the Stuart plant. "We knew we were behind the eight ball."

Employees went on television, imploring Trump to intervene. Union officials urged the owners to seek new buyers. Ultimately, the company that owned the generating stations, AES, did not budge in its decision, saying it closed the coal-fired plants "in response to declining market conditions."

"That money is never coming back," Pell said of the millions of dollars in salaries and tax revenue that has vanished like wisps of steam from the coal stacks. The county commission has slashed the budget two years in a row in anticipation of lean times ahead.

In the months since last year's closures, workers fled for jobs in Wyoming, Florida, Washington, Idaho, Wisconsin, Colorado, Oregon and elsewhere. The local school system has seen enrollment plunge and has cut positions to make up for budget shortfalls.

"Talented people are moving," Michael Pell, Ty's brother and the head of a local bank, said of the exodus. "It's hard to really get your arms around how much of an impact that is."

Of the plant workers who stayed in Adams County, some have used federal assistance to enroll in community college to train for other trades, such as welding or electrical work. Others have competed with their former co-workers for a handful of industrial jobs in the area, some of which offer lower pay and require longer commutes.

Some workers, like 58-year-old Linda Kirschner, felt too old to begin a new career but are too young to tap into their retirement savings.

"It's been the worst year," said Kirschner, who worked at the Killen Station for 37 years. "That plant had been my whole life."

She made about \$75,000 a year at the plant, she said, and sometimes much more with overtime. Now, she gets by on her \$25,000-a-year pension and does part-time work at an Edward Jones investment firm for \$12.50 an hour.

"A lot of the younger people kept holding on to hope, but I knew in my heart it was going to close," Kirschner said. "I think it was already set in stone."

As a candidate, Trump vowed to revive the coal industry — a stance that helped garner him 76 percent of the vote in Adams County in 2016. His administration has worked to lessen regulations on both coal mining operations and coal-fired power plants, and it even proposed that federal regulators effectively subsidize coal plants. (The regulators have declined.)

But for all of the president's efforts, the numbers are not in his favor.

In 2018, U.S. consumption of coal hit a four-decade low, falling to a 28 percent share of the nation's electricity generation, according to the U.S. Energy Information Administration. The EIA expects an 8 percent drop in U.S. coal consumption this year, even as global coal demand has continued to rise in places such as India.

Last year's coal plant retirements were the second-largest ever in terms of capacity. Companies have announced that they intend to close at least 10 more by the end of this year and many more by 2030.

In many ways, the shift represents a simple case of market forces.

Natural gas for years has offered a cleaner, cheaper alternative to coal. Renewable energy from wind and solar is more affordable than ever. The Obama administration put in place environmental policies aimed at curbing pollution and combating climate change that made coal burning more costly.

The changing structure of electricity markets also has hastened the collapse of coal power. Increasing competition in regional electricity grids has left many old coal plants unable to go head to head against solar, wind and natural gas — all of which have extremely low operating costs.

One of the people deciding the fate of U.S. coal plants is Nick Akins, chief executive of Ohio-based American Electric Power, one of the nation's largest utilities and one that traditionally has relied heavily on coal.

"It's natural gas, renewables and a bet that technology will continue to develop greater efficiencies on the grid," Akins said of coal's declining share.

AEP, which owned a portion of the Stuart plant, has shaved coal usage from about 70 percent of its power generation in 2005 to 47 percent today. And it plans to idle two units at a Conesville, Ohio, plant in May and another unit there in 2020.

In weighing whether to shut down an old plant, Akins said, the company must decide whether to make major investments to scale back toxic emissions of nitrogen oxides or sulfur dioxide, which can cause heart and lung disease.

"There is no point in spending on a plant that will be retired," Akins said.

He said AEP also has been responding to pressure from climate-conscious companies such as Google and Amazon. (Amazon CEO Jeffrey P. Bezos owns The Washington Post.)

“We have a lot of data facilities in our territory, and their expectation is that they be served by 100 percent renewable energy,” Akins said. Shareholders and fund managers worried about climate-change risks are urging changes, too, he said.

AEP must also meet the state-level renewable portfolio standards that lawmakers in 29 states have enacted in recent years. Ohio’s standard requires that 12.5 percent of the electricity sold by the state’s utilities be generated by renewable energy by 2027. To hit that target, AEP recently purchased all or part of seven existing wind farms and battery installations for \$1.06 billion.

The Sierra Club, through its Beyond Coal campaign, backed financially by former New York mayor Michael R. Bloomberg, has been pressing to close all U.S. coal plants through negotiation and litigation. It says that investing more money in propping up coal generation prolongs air and water pollution and causes premature deaths, especially near the plants. The Sierra Club said that forcing ratepayers to pay for coal plant investments amounts to bailouts — a key point used to close the Stuart and Killen plants.

AES, through its Dayton Power & Light subsidiary, agreed when it shut down the southern Ohio plants to spend \$2 million on workforce development and job training in the area. Initially, according to the Sierra Club, the plants’ owners also agreed to develop at least 300 megawatts of solar and wind projects in Ohio, but that plan did not materialize.

Pat Wood III, former chairman of the Federal Energy Regulatory Commission and former chairman of the power company Dynegy, said that as electricity markets have become more competitive, it’s even harder to cover the investment costs of coal.

“The hardest thing about this was looking these guys in the eye,” Wood said, recalling meetings with workers when their plants still hung in the balance. “As chairman of the board, I had to be honest and say that the future didn’t look great.”

The immediate future for Adams County doesn’t look so bright, either.

County leaders trimmed the budget by 15 percent in 2017 and another 5 percent in 2018. Ty Pell worries about the shrinking tax base, and no one has much appetite for asking local residents to make up the shortfall.

“It’s hard to tell somebody, ‘Sorry you lost your job, but we’re going to raise your property taxes,’” he said.

Matt Carey, the county’s EMS chief, has kept most response times to roughly five or six minutes, despite a \$350,000 drop in his budget that forced him to cut supply costs and limit overtime. But he worries. “We’re already on a skeleton budget. What else is there to cut?” he said.

The nearby Manchester Local School District used to get three-quarters of its funding from local taxes. It now relies on the state for the bulk of its funding. Its budget has shrunk, and a district that used to spend about \$12,000 a year on each student now spends about \$8,000.

“Obviously, you can only cut so many staff,” said schools superintendent Brian Rau, who said enrollment has dropped more than 10 percent. “There’s a few more cuts I could make, but it sure wouldn’t be pleasant.”

Today, as skeleton crews of about a dozen people remain at each of the shuttered coal plants, the value of the properties, which include miles of riverfront land, has tumbled.

“We’re talking about several hundred million dollars” in taxable value, said David Gifford, the county auditor.

For the most part, even those here who wish the Trump administration had done more to keep the two plants open don’t fault the president for their closing. At least no more than they blame state officials, or Obama-era regulations, or the utility company that closed them, or environmental groups, or the unforgiving economics of the marketplace.

Trey Gallenstein, a controls mechanic at the Stuart plant for nearly a decade, searched for nine months before he recently found a job at a hydroelectric plant 30 miles away. It’s twice the drive each day in his black GMC truck for 20 percent less pay.

“But better than I was expecting,” said Gallenstein, who has a 2-year-old daughter. “I’ve worked more in the last three days than in the last nine months. It’ll feel good when I get that first paycheck.”

For others, seeking the next paycheck has meant leaving Adams County behind.

Cindy Stike, general manager at Moyer Winery and Restaurant, said her two children moved to Wyoming and Washington for jobs at other power plants.

“It’s what they had to do for their families,” Stike said. “That’s what happens when a big plant shuts down in a small town.”

Brady Dennis

Brady Dennis is a national reporter for The Washington Post, focusing on the environment and public health issues. He previously spent years covering the nation’s economy. Dennis was a finalist for the 2009 Pulitzer Prize for a series of explanatory stories about the global financial crisis. Follow [@bradydennis](#)

Steven Mufson

Steven Mufson covers the business of climate change. Since joining The Washington Post in 1989, he has covered economic policy, China, diplomacy, energy and the White House. Earlier he worked for The Wall Street Journal in New York, London and Johannesburg. Follow [@mufson](#)

<https://www.nytimes.com/interactive/2019/03/26/climate/wind-solar-energy-workers.html>

The New York Times

They Grew Up Around Fossil Fuels. Now, Their Jobs Are in Renewables.

By JOHN SCHWARTZ | Photographs by BRANDON THIBODEAUX | MARCH 26, 2019



CLAWSON, UTAH — Chris Riley comes from a coal town and a coal family, but he founded a company that could hasten coal's decline. Lee Van Horn, whose father worked underground in the mines, spends some days more than 300 feet in the air atop a wind turbine. They, and the other people in this story, represent a shift, not just in power generation but in generations of workers as well.

They come from places where fossil fuels like coal provided lifelong employment for their parents, grandparents and neighbors. They found a different path, but not necessarily out of a deep environmental commitment. In America today there is more employment in wind and solar power than in mining and burning coal. And a job's a job.

His Great-Grandfather, Grandfather and
Father Mined Coal. He Wants to Replace It.



“It’s not ideology. It’s just math.”

— Chris Riley, entrepreneur | Utah

Chris Riley grew up in the tiny mining town of Clawson in Utah’s coal country, population 163, “and half of them named Riley,” he said. He grew up poor, raised by a single mother with help from food stamps and the local church.



The Hunter Plant in Castle Dale, Utah, near Clawson.

Mr. Riley's great-grandfather came to the United States from England to work in the region's mines. Mr. Riley's grandfather, Robert Riley, now 94, also spent his working years in the mines, as did his father, Mike.

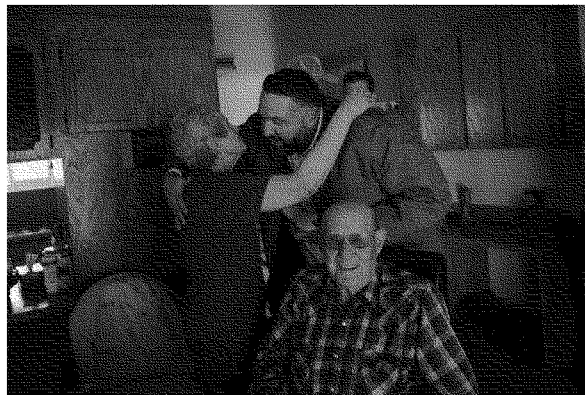


Mining memorabilia in the Riley home.

On the day I met Mr. Riley, he was driving to Clawson from Salt Lake City for a visit. Mr. Riley is the first member of his family to graduate from college, and he did not seek employment in the local mines. "My family pushed me pretty hard to find a way to get out of town," he said.

After serving in the Navy, where he commanded the patrol ship *Sirocco*, and graduating from Harvard Business School, Mr. Riley and friends founded Guzman Energy. They want to disrupt the energy business by helping communities in the West find alternatives to the relatively expensive power provided by rural electric cooperatives and their coal-burning plants — such as cheaper, renewable energy sources.

His sales pitch, he said, is not about enlisting these towns to fight climate change. "It's not ideology," he said. "It's just math."

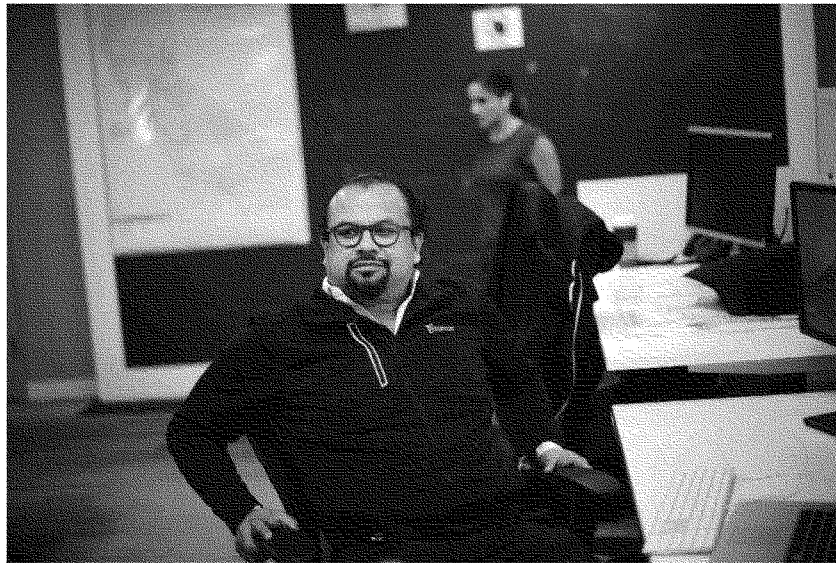


Mr. Riley with his aunt Carey Bloomer and grandfather Robert Riley.

As we sat around his grandparents' dinner table, he laid out for his family the implications of his business plan for the first time. He explained that helping his customers would inevitably hurt towns like Clawson. "It's not like you put a wind farm in and it turns a coal plant off," he told them, but "you're making coal plants not needed as much."

They listened intently. Like many Westerners, they say that environmental concerns are overblown and that they don't trust government initiatives like President Barack Obama's Clean Power Plan, designed to curb emissions from coal plants. This, however, was different, said Mr. Riley's uncle Wade, who has moved from Utah to West Virginia and back again because of mine closures. "You're not coming in and saying we want to shut that down because we want to put this in" as part of government meddling, he said. "Eventually it's going to happen, because that's the way nature is."

In Venezuela, His Father Worked in Oil. He Worked on the Paris Climate Deal.



"Pursuing my family background in oil was not the way to go."

— Luis Davila, solar executive | California

Luis Davila grew up in Punto Fijo, Venezuela, and Curaçao, the son and nephew of oil executives. And he grew up around oil refineries. "We were deep in the oil economy," he recalled. "Dad's role was to go around refineries and upgrade them, both in South America and the Caribbean."



Mr. Davila's father, in blue shirt, at an oil refinery in Barrancabermeja, Colombia. via Luis Davila

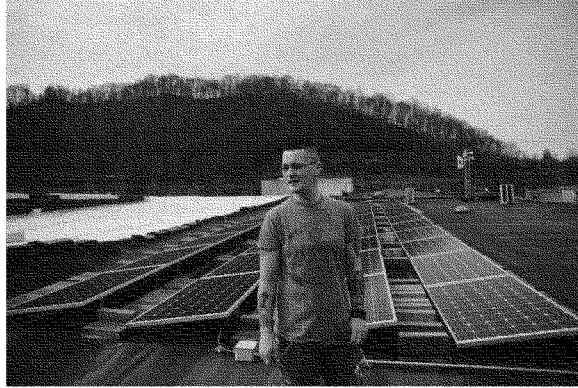
Assuming that oil would be his career, he took an internship after his freshman year of college working in a Curaçao refinery, but was unhappy with the conditions for workers. "I breathed in all the gases and learned what it was like for them," he said.

Back at Seton Hall University, he learned about climate change. "It changed my life," he said. "Pursuing my family background in oil was not the way to go." He sought work in foundations that focused on climate action, making his way to the United Nations climate change agency, where he worked to build support internationally for the Paris climate agreement.

After nine years with the agency, he decided it was time to "work to implement the agreement" through concrete measures. And so he came to Sunrun, a major solar company, where he is the company's director of campaigns and advocacy.

He works in San Francisco, where the company is about to move into the old Standard Oil Building.

Her Grandfather Worked in Coal. Her Grandmother Begged Her Not To.



“She told me not to break myself down like my grandfather did.”

— Jess Varney, construction worker | West Virginia

Jess Varney grew up in Mingo County, W. Va., deep in Appalachian coal country, with many family members who worked for mining companies. She came to Coalfield Development, a local job training organization, to learn other trades. She is working on construction crews with the group today, largely on projects that retrofit buildings for energy efficiency and solar power.

She had thought she might work in the mines herself someday, but “my grandmother begged me not to do that,” she said. Her grandmother had raised Ms. Varney, and had seen too much death and disease in her family to want her granddaughter to follow that path. “She told me not to break myself down like my grandfather did.”



Jess Varney and her great-grandfather. via Jess Varney

She said she was not motivated by environmental concerns, but by a desire to provide for her family — her partner, her child and stepchild — in a region where the economy doesn't offer many opportunities.

He Was a Marine in Iraq. His Father Suggested Wind Farms.



“I don’t like heights, but I trust my dad a lot.”

— Jake Thompson, wind farm manager | Texas

From the top of wind turbine No. 48 near Stanton, Tex., 300 feet above the ground, you can see lines of wind towers curving into the distance. But closer to the ground, the infrastructure of oil and gas stands out: bobbing pump jacks and drilling rigs. This is the heart of the Permian Basin, the second most productive oil field in the United States.



A wind boom coexists here with the oil boom; Texas now produces more wind power than any other state. Jake Thompson is the manager of this wind farm, owned by Invenergy. A former Marine, he served six years, with deployments that took him to Iraq, Afghanistan and Kuwait. He expected that after he got out, he would work, as his father had, in the oil fields.

But his father, who had been laid off and rehired in several of the industry's cycles, had a different suggestion for his son: wind. Their hometown, Snyder, he told Jake, was "almost completely surrounded by turbines."



"I kind of laughed at him at first," Mr. Thompson said. "I don't like heights." But he found that many of the skills he'd mastered working on helicopters in the Persian Gulf were similar to those in turbines.

He applied, and got hired. The first time his fellow employees had him climb the ladder to the top of a tower, he said, "I was still in pretty good shape" from the military, so "the climb didn't bother me," as it does many first timers.

And then there was that view. "I looked out at the top," he said, "and decided that was going to be my career."

He says he's still afraid of heights.

He Wants to Hold On to Traditions.
So He's Studying Renewable Tech.



“When was the last time someone baked crude oil into bread?”

— Levi Kudrna, student | North Dakota

Levi Kudrna was barely into his teens when the North Dakota oil boom started. He grew up in a farming family and loved that life. What oil did to his state, his community, the local way of life, troubled him. He recognizes that the money has been helpful; his school got a library addition from tax proceeds. But he's also seen highways packed with semi trucks hauling frac sand and heavy equipment and leaving choking dust in their wake. He's seen the night sky marred by the glare of flaring gas.

Now, Mr. Kudrna is taking classes in an energy industry training program at Bismarck State College. He said he hoped to find a local job in renewables that would provide a steady income to let him continue farming and ranching as a second job.

“Many local neighbor people lost their focus on farming and ranching, which once was the driving force behind our state wealth, and began working oil field jobs paying so much better than farming ever could,” Mr. Kudrna said. “Many of these people lost part of that neighborly connection they once held.”

Her Grandfather Embodied Mining.
She's a Vice President at a Solar Company.



“We look at it as a common thing. We’re all in the energy business.”

— Miranda Barnard, solar marketing | Utah

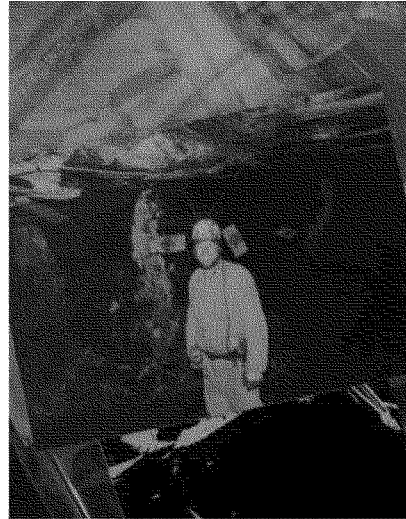
Miranda Barnard comes from the small coal mining town of Price, the seat of Carbon County, Utah, less than an hour away from Chris Riley’s hometown. Like the Rileys, her family boasts four generations of coal miners. “It’s just kind of the family business,” she said.

Her grandfather, Juan Antonio Valdez, was even in a magazine advertisement about coal mining in the 1970s. Her father was a mine foreman.



**In Sunnyside, Utah,
they've always had too much water.**

<p>"The authors' intent is to help the general public understand the importance of the TPI and the role of the TPI in the future."</p> <p>Robert H. Turner, Director, Department of Transportation, U.S. Department of Transportation</p> <p>"The authors' intent is to help the general public understand the importance of the TPI and the role of the TPI in the future."</p> <p>John R. Turner, Director, Department of Transportation, U.S. Department of Transportation</p> <p>"The authors' intent is to help the general public understand the importance of the TPI and the role of the TPI in the future."</p> <p>John R. Turner, Director, Department of Transportation, U.S. Department of Transportation</p>	<p>"The authors' intent is to help the general public understand the importance of the TPI and the role of the TPI in the future."</p> <p>John R. Turner, Director, Department of Transportation, U.S. Department of Transportation</p> <p>"The authors' intent is to help the general public understand the importance of the TPI and the role of the TPI in the future."</p> <p>John R. Turner, Director, Department of Transportation, U.S. Department of Transportation</p> <p>"The authors' intent is to help the general public understand the importance of the TPI and the role of the TPI in the future."</p> <p>John R. Turner, Director, Department of Transportation, U.S. Department of Transportation</p>	<p>"The authors' intent is to help the general public understand the importance of the TPI and the role of the TPI in the future."</p> <p>John R. Turner, Director, Department of Transportation, U.S. Department of Transportation</p> <p>"The authors' intent is to help the general public understand the importance of the TPI and the role of the TPI in the future."</p> <p>John R. Turner, Director, Department of Transportation, U.S. Department of Transportation</p> <p>"The authors' intent is to help the general public understand the importance of the TPI and the role of the TPI in the future."</p> <p>John R. Turner, Director, Department of Transportation, U.S. Department of Transportation</p>
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Left image via Miranda Barnard

Today she works as vice president of marketing at Vivint Solar, a company in Lehi, Utah, near Salt Lake City. In her office, she's proudly hung the old ad with her grandfather; her family's ties to the industry are important to her, she said. "I am probably one of the few people who work in solar who went to sleep at night knowing all the hard work that went into being able to turn the lights on and off," she said.

Her choice of career has not caused tension with her family members. "We look at it as a common thing," she said. "We're all in the energy business."

He Was Raised in a Coal Town. He
Manages a Wind Farm Overlooking a Mine.



“I just feel we are really making a difference here.”

— Lee Van Horn, wind farm manager | Pennsylvania

Lee Van Horn grew up in northeast Pennsylvania and lives in a village, or “patch,” called Park Place. It’s anthracite country, and his father worked in the mines there for a time. Across the street from Lee’s elementary school stood the St. Nicholas Breaker, a huge coal processing plant. It was painted white, but was coated black with coal dust. Just about everything was back then, Mr. Van Horn said.

It is a region steeped in industry history. In Shenandoah, just down the hill from the wind farm he manages, there a memorial to miners and road names like Coal Street.

He worked for 24 years with Western Electric and then at other companies, switching to wind power in 2006; he is now manager of Locust Ridge 1 and 2, owned by Avangrid Renewables. He recalled watching a wind farm go up near his home and thinking, “Here we are in the coal region and they’re building wind farms, of all places.”

Like many wind farms, Locust Ridge sits on high ground. In this case, it’s two mountains in one. Nature created the rock mass that the turbines stand on, but resting against it is a mountain just as high, formed of tailings from the area’s mines, chunks of hard anthracite and softer, flaky lower-grade stuff. Looking out over the valley below, with the turbine blades whooshing overhead, the cuts in the mountain from the old mines stand out, as do the tall smokestacks of the remaining coal-burning plants.



"I just feel we are really making a difference here," Mr. Van Horn said. "Driving to work you can see the land scarred, but you can see the wind turbines on the side of the mountain. It's a sight to behold."

4/2/2019

Montana Senate advances bill to aid NorthWestern purchase of Colstrip 4 share - KPAX.com



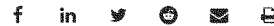
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Montana Senate advances bill to aid NorthWestern purchase of Colstrip 4 share

MTN News 9:58 am March 28, 2019



Montana Senate advances bill to aid NorthWestern purchase of Colstrip 4 share



4/2/2019

Montana Senate advances bill to aid NorthWestern purchase of Colstrip 4 share - KPAX.com

HELENA — The bill touted by supporters as a savior for the Colstrip 4 power plant — and a benefit for NorthWestern Energy electric customers — won endorsement Wednesday by the Montana Senate, on a mostly party-line vote with Republicans in favor.



Senate Bill 331, sponsored by Sen. Tom Richmond (R-Billings) would guarantee that NorthWestern can charge ratepayers \$75 million over 10 years for the costs of operating a newly acquired, 150-megawatt chunk of the coal-fired plant — if the company is able to buy that share from an unidentified co-owner for \$1.

- **Bill to encourage NW Energy to buy more Colstrip power gets new life**
- **Value, future of Colstrip a flashpoint in NorthWestern's \$35 million electric rate-hike request**

"I think we have to look at where this bill takes us," Richmond said on the Senate floor. "It takes us to more reliable power. That certainly is a benefit for the consumers of that power."

But opponents questioned why NorthWestern needs to shield these Colstrip 4 costs from any regulatory review if the purchase is such a good deal for its 360,000 electric customers in Montana.

"The problem is that we don't really know anything because this project has had no oversight," said Sen. Mary McNally (D-Billings). "But what we do know is that the company has chosen to insulate itself from those risks, from regulatory oversight, on the purchase — and now we're into 10 years and \$75 million of investment. It goes straight to the ratepayers."

The Senate voted 32-18 for SB331, with all 30 Republicans and two Democrats — Jon Sesso of Butte and Gene Vuckovich of Anaconda — in favor. After a final vote later this week, the bill heads to the House.

NorthWestern, the main proponent of the bill, has said it's negotiating to buy up to a 150-megawatt share of the Colstrip 4 plant in southeast Montana, from a co-owner that want to abandon coal-fired power.

Colstrip 4 is jointly owned by NorthWestern and four other utilities from Washington and Oregon.

The utility already owns 220 megawatts of Colstrip 4 and if it buys another 150 megawatts, it would own half of the plant. Most of the other Colstrip owners have said they want to get out of coal-fired power.

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4/2/2019

Montana Senate advances bill to aid NorthWestern purchase of Colstrip 4 share - KPAX.com

In its original form, SB331 said if NorthWestern acquired up to an additional 150 megawatts of Colstrip 4, the company could charge ratepayers up to \$40 million worth of operation and capital costs over five years, without review by the regulators.



On Wednesday, the Senate amended the bill to increase the ceiling to \$75 million over 10 years. The bill also says any cleanup costs related to the 150-megawatt share also shall be charged to ratepayers.

Backers of the bill argued Wednesday that NorthWestern consumers are getting a great deal because the utility is acquiring a reliable power source for next to nothing.

They also said if NorthWestern owns half the plant, with power dedicated to its Montana customer base, Colstrip 4 will be assured of operating well into the future — despite political and economic pressures against coal.

"If they don't get this other 150 megawatts, I can guarantee you, (Colstrip 4) has got about a five-, six-year life," said Sen. Duane Ankney (R-Colstrip) and one of the bill's biggest boosters.

"There is absolutely no advantage to shutting this plant down. It's going to provide us with low-cost, reliable energy that can back up the renewables, and keep us going forward."

Supporters also said opponents of the bill have an anti-coal agenda, and that rather than protecting consumers, they really just want to shut down Colstrip.

"Coal's important to our state," Richmond said. "Pushing it out the door for some philosophical reason does us no particular good as taxpayers. It certainly doesn't do the ratepayers any good."

Opposing senators, however, strongly objected to being labeled anti-coal, and said there's been no proof offered that the power from Colstrip 4 would be any less expensive than power available from other sources.

"What the bill does is remove regulatory oversight for the new acquisition," McNally said. "It protects the utility shareholders and it puts any potential risk on the ratepayers."

"(NorthWestern) does not need this bill to buy any share of Colstrip. They can just do it. They have chosen not to. And I think they probably have their reasons and I think they're probably pretty good ones."

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-Mike Dennison reporting for MTN News

China's New Environmental Problem: Battery Disposal

IER [instituteforenergyresearch.org/uncategorized/chinas-new-environmental-problem-battery-disposal/](https://www.instituteforenergyresearch.org/uncategorized/chinas-new-environmental-problem-battery-disposal/)

October 13, 2017

In 2016, China became the world's largest electric vehicle market accounting for over 40 percent of the electric vehicles sold worldwide. China passed the United States which had the highest electric vehicle sales in 2015. In 2016, China had over 1 million electric vehicles, which was an 87 percent increase over the previous year. They added 336,000 new electric car registrations; this included battery only and hybrid models. Electric vehicles range in price from \$6,000 to \$200,000 (for the most expensive Tesla model).[i] Like several European countries, China is planning to ban the sale of gasoline and diesel vehicles in favor of electric vehicles at an unannounced date.

China's success in promoting electric vehicles is due to lucrative subsidies—thousands of dollars worth of subsidies—provided to buyers of these vehicles. For example, in Shanghai, a license plate costs about \$15,000 if one is lucky enough to win the right to it in the lottery. However, if you choose to buy a plug-in hybrid, Shanghai will provide the license plate without cost.

China has decided to switch from subsidizing buyers to enforcing a quota system on manufacturers. Under the proposed quotas, most local and foreign automakers must earn points equivalent to 10 percent of vehicles they produce in China and import into the country in 2019 and 12 percent in 2020. By 2025, 20 percent of new car sales must be New Energy Vehicles.[ii] The plan applies to carmakers that produce or import 30,000 cars or more annually.[iii] Automakers that fail to meet the target will have to purchase credits from competitors that have a surplus.[iv]

The government has also subsidized charging stations for electric vehicles. As of December 2016, China had 300,000 charging stations. The country has ordered state-owned Chinese power companies to speed up installation of charging stations.

Electric cars make sense in China because of its dense and crowded cities that often mean shorter driving distances. China has an extensive high-speed rail system that reduces the need for long-distance road trips. In 2016, China had the largest electric car stock in the world with about a third of the global total. China is also the global leader in the electrification of other transport modes with over 200 million electric two-wheelers, 3 to 4 million low-speed electric vehicles and over 300 thousand electric buses.[v]

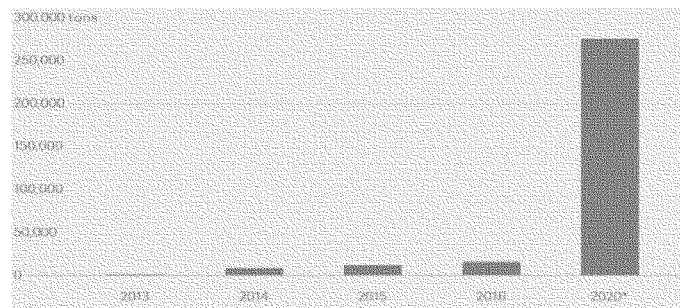
Battery Recycling and Disposal

But despite all the pros for electric vehicles in China, the country has a big problem with battery disposal. Electric car batteries are toxic if not disposed of properly and China does not have an official policy regarding their disposal. The problem will begin to escalate next

year, and by 2020 China is expected to have almost 250,000 metric tons (276,000 tons) of batteries that need disposal—nearly 20 times those in 2016.[vi] (See graph below.)

The average lifespan of a lithium-iron phosphate battery, which is the primary type used in China's electric vehicles, is around five years. Most batteries installed on electric vehicles during the 2012 to 2014 period will be retired around 2018.

Unusable electric vehicle batteries in China



* Forecast

Source: <https://qz.com/1088195/chinas-booming-electric-vehicle-market-is-about-to-run-into-a-mountain-of-battery-waste/>

Batteries can be recycled, but recycling them is not easy due to the sophisticated chemical procedures involved. If not handled properly, the heavy metal contained in the battery can lead to contamination of the soil and water.

In China, car manufacturers are responsible for recycling their batteries, but many of them expect battery suppliers to handle the recycling. China's battery recycling industry is relatively small and scattered, and recycling operating costs are high. Even in the European Union, only 5 percent of lithium-ion batteries, another common type of battery power used in electric vehicles, are recycled.

Conclusion

China is now the largest market for electric vehicles and it is growing due to lucrative subsidies and a future quota system. Its dense and crowded cities are conducive to the use of electric vehicles. However, China will soon be confronted with another environmental problem in the disposal and recycling of batteries.

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[iii] Wall Street Journal, China Sends a Jolt Through Auto Industry With Plans for Electric Future, September 28, 2017, <https://www.wsj.com/articles/china-sets-new-deadline-for-electric-car-production-1506608295?mg=prod/accounts-wsj&mg=prod/accounts-wsj>

[iv] Independent, China to ban petrol and diesel cars, state media reports, September 10, 2017, <http://www.independent.co.uk/news/world/asia/china-petrol-diesel-car-ban-gasoline-production-sales-electric-cabinet-official-state-media-a7938726.html>

[v] International Energy Agency, Global EV Outlook 2017, <https://www.iea.org/publications/freepublications/publication/GlobalEVOutlook2017.pdf>

[vi] Quartz, China's booming electric vehicle market is about to run into a mountain of battery waste, September 28, 2017, <https://qz.com/1088195/chinas-booming-electric-vehicle-market-is-about-to-run-into-a-mountain-of-battery-waste/>

The Mounting Solar Panel Waste Problem

IER [instituteforenergyresearch.org/renewable/solar/the-mounting-solar-panel-waste-problem](https://www.instituteforenergyresearch.org/renewable/solar/the-mounting-solar-panel-waste-problem)

September 12, 2018

Solar photovoltaic panels, whose operating life is 20 to 30 years, lose productivity over time. The International Renewable Energy Agency estimated that there were about 250,000 metric tons of solar panel waste in the world at the end of 2016 and that the figure could reach 78 *million* metric tons by 2050. Solar panels contain lead, cadmium, and other toxic chemicals that cannot be removed without breaking apart the entire panel. While disposal of solar panels has taken place in regular landfills, it is not recommended because the modules can break and toxic materials can leach into the soil, causing problems with drinking water. Solar panels can be recycled but the cost of recycling is generally more than the economic value of the material recovered. Used panels are also sold to developing world countries that want to purchase them inexpensively despite their reduced ability to produce energy. Regardless, solar panel waste disposal is a problem that needs to be addressed.

Washington State is the only U.S. state that requires the manufacturer to develop a recycle plan, but the state requirement does not address the cost of recycling. Adding a fee to the cost of solar panels would help ensure that the disposal issue is addressed in the event that the manufacturer goes bankrupt. Since 2016, at least seven solar panel manufacturers (Sungevity, Beamreach, Verengo Solar, SunEdison, Yingli Green Energy, Solar World, and Suniva) have gone bankrupt.

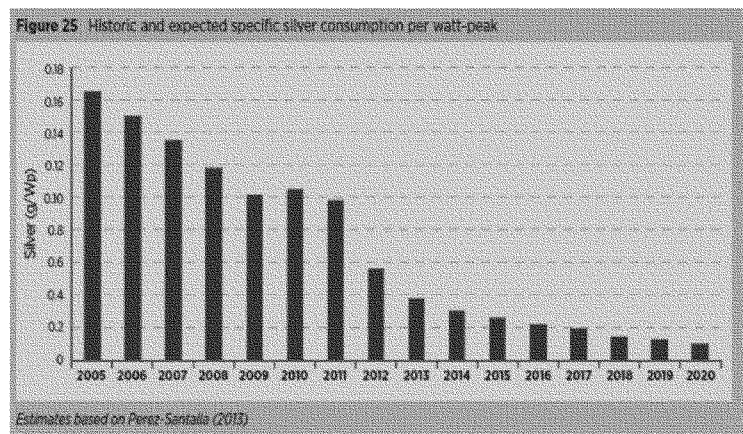
California's Approach

Because California's solar panels end up in landfills at the end of their useful life, the state is in the process of implementing regulations to change that. California's Department of Toxic Substances Control (DTSC) held a meeting with solar and waste industry representatives to discuss the disposal issue. The representatives and DTSC acknowledged that it would be difficult to determine whether a used solar panel should be classified as hazardous waste. The DTSC suggested building a database where solar panels and their toxicity could be tracked by their model numbers, but it is not clear whether DTSC will implement such a data base.

Natural events such as hail storms, tornadoes, hurricanes, earthquakes, etc. can cause damage to the panels. For example, in 2015, a tornado broke 200,000 solar modules at southern California's solar farm Desert Sunlight. More recently, the second largest solar farm in Puerto Rico, generating 40 percent of the island's electricity, was severely damaged during Hurricane Maria. With 100,000 pounds of cadmium contained in 1.8 million solar panels calculated for a proposed 6,350 acre proposed solar farm in Virginia, any breakage is a cause for concern. Further, even rainwater has been found to flush out cadmium within an intact solar panel.

Course of Action

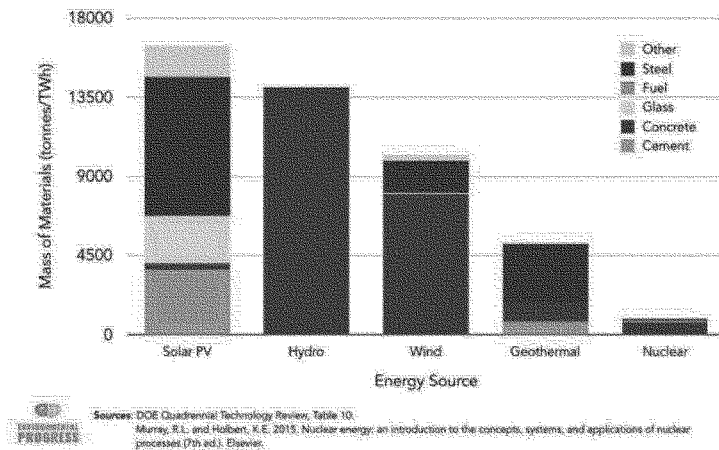
The biggest problem with solar panel waste may be its large quantity. Because sunlight is dilute and diffuse, large collectors are required to capture and convert the sun's rays into electricity. Those large surface areas require an order of magnitude more materials (glass, heavy metals, and rare earth elements) than other energy sources. Approximately 90 percent of most PV modules are made up of glass. However, this glass often cannot be recycled due to impurities such as plastics, lead, cadmium and antimony in the glass.



Source: Forbes

Manufacturers are lowering the cost of manufacturing solar panels by reducing the silver content in their modules. Although silver makes up a very small fraction of the mass of a solar panel, it makes up about 47 percent of its value, which lowers the incentive for a recycler to recycle a panel. Silver is worth significantly more than other recoverable components such as aluminum, copper, silicon and glass. Manufacturers are able to reduce the silver content by using inkjet and screen printing technologies to replace it with a combination of copper, nickel and aluminum and by smarter manufacturing techniques that are more precise about the minimum amount of silver that is required. The decrease in silver makes recycling a larger challenge from a value perspective since there is less silver to recover from the modules.

Materials throughput by type of energy source



Source: Forbes

A fee imposed on solar panel purchases to make sure that the cost of safely removing, recycling or storing solar panel waste is internalized into the price of solar panels and not externalized onto future taxpayers would aid the disposal issue. A fee imposed on solar panels could go into a federal disposal and decommissioning fund, which would be dispensed to state and local governments to pay for the removal and recycling or long-term storage of solar panel waste. The fund would insure that solar panels are safely decommissioned, recycled, or stored over the long-term, even if solar manufacturers go bankrupt. This is similar to the funds established for nuclear waste disposal and the abandoned mines program affecting coal mining reclamation in the United States. Nations importing used solar panels might also impose a fee to cover the cost of recycling or long-term management.

Because there is a large quantity of material to track, coordinated responses at the international, national, state, and local levels are needed. The local level is where action to dispose of electronic and toxic waste takes place, often under state mandates. Because industry prefers to comply with a single national standard, it would be preferable to multiple state standards. Further there may need to be an international regulation as the secondary market for used solar panels grows.

Conclusion

The growth in solar panel waste worldwide is large and needs to be addressed as it is expected to get larger. Currently, much of the waste is disposed at landfills where the toxic chemicals can leach into the soil. More needs to be done to regulate the disposal of used solar panels on the national and international level. Just mandating a recycle plan may be insufficient as recycling costs are generally more than the economic value of the materials they recover, and companies may not be around long enough to fulfill their obligations under such a scheme. A fee added to the cost of the solar panels would help to insure that they are properly disposed.

An earlier article on this topic can be found [here](#).



NEWS

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Amnesty challenges industry leaders to clean up their batteries

21 March 2019, 00:01 UTC

Amnesty International is today publicly challenging leaders within the electric vehicle industry to make the world's first completely ethical battery within five years. At the [Nordic Electric Vehicle \(EV\) Summit in Oslo](#), the organization is highlighting how lithium-ion batteries, which power electric cars and electronics, are linked to human rights abuses including child labour in the Democratic Republic of Congo (DRC), and environmental risks which could undermine their green potential.

“Without radical changes, the batteries which power green vehicles will continue to be tainted by human rights abuses ”

Kumi Naidoo, Amnesty International's Secretary General

“Finding effective solutions to the climate crisis is an absolute imperative, and electric cars have an important role to play in this. But without radical changes, the batteries which power green vehicles will continue to be tainted by human rights abuses,” said Kumi Naidoo, Amnesty International's Secretary General.

"The massive global corporations that dominate the electric vehicle industry have the resources and expertise to create energy solutions that are truly clean and fair, and we are challenging them to come back to Oslo next year with proof of real progress. With demand for batteries soaring, now is the time for a drastic overhaul of our energy sources that prioritizes protection of human rights and the environment."

Human rights violations linked to mineral extraction

Electric vehicles are key to shifting the motor industry away from fossil fuels, but they are currently not as ethical as some retailers would like us to believe. Years of unregulated industry practices have led to detrimental human rights and environmental impacts, which governments and industry are not doing enough to tackle.

Amnesty International has documented serious human rights violations linked to the extraction of the minerals used in lithium-ion batteries, particularly in the DRC. A 2016 investigation found children and adults in southern DRC working in hand-dug cobalt mines facing serious health risks, neither protected by the government nor respected by companies that profit from their labour. Amnesty's research has linked these mines to the supply chains of many of the world's leading electronics brands and electric vehicle companies.

Despite projections that the demand for cobalt will reach 200,000 tons per year by 2020, no country legally requires companies to publicly report on their cobalt supply chains. With more than half of the world's cobalt originating in southern DRC, the chance that the batteries powering electric vehicles are tainted with child labour and other abuses is unacceptably high.

"We need to change course now, or those least responsible for climate change – indigenous communities and children – will pay the price for the shift away from fossil fuels. The energy solutions of the future must not be based on the injustices of the past. "

Kumi Naidoo

There has been some progress since 2016. In response to Amnesty's research several leading companies, including Apple, BMW, Daimler, Renault, and the battery manufacturer Samsung SDI, have published data about their supply chains, and the organization is today calling on others to do the same.

Amnesty International has also begun documenting violations of the human rights of Indigenous peoples living near lithium mines in Argentina. Indigenous communities are not being properly consulted about mining projects on their lands and are given insufficient information about the potential impacts of mining on their water sources. Without human rights protections, the harm to Indigenous communities could increase as lithium demand soars.

Other emerging threats

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The environmental impact of producing batteries is also a concern. Most of the current manufacturing of lithium-ion batteries is concentrated in China, South Korea and Japan, where electricity generation remains dependent on coal and other polluting sources of power.

This means that, while electric vehicles are essential for shifting away from fossil fuels and reducing greenhouse gas emissions, more needs to be done to reduce the carbon footprint within the manufacturing phase. Meanwhile, rising demand for minerals like cobalt, manganese and lithium has led to a surge in interest in deep-sea mining, which studies predict will have serious and irreversible impacts on biodiversity.

Amnesty International is also calling on companies to ensure that batteries are disposed of responsibly. There is already significant evidence showing that battery waste from electronics, which contains various hazardous materials, has been irresponsibly disposed of, contaminating soil, water and air.

"Every stage of the battery lifecycle, from mineral extraction to disposal, carries human rights and environmental risks," said Kumi Naidoo.

"We need to change course now, or those least responsible for climate change – indigenous communities and children – will pay the price for the shift away from fossil fuels. The energy solutions of the future must not be based on the injustices of the past."

An alternative vision

Using the Nordic EV Summit as a platform, Amnesty International today outlined its vision for an ethical battery which does not harm human rights or the environment at any stage of its lifecycle. The organization is calling for action by government, industry, innovators, investors and consumers to create an ethical and sustainable battery, which can be used for electric vehicles and in the electronic industry, within five years.

"With a climate crisis looming, consumers have the right to demand that products marketed as the ethical choice really stand up to scrutiny "

Kumi Naidoo

Amnesty International's work will focus on all three phases of the battery lifecycle:

Extraction: Mapping supply chains of key minerals, calling for human rights impacts to be identified, prevented and addressed, and calling for a prohibition on commercial deep-sea mining;

Manufacturing: Calling for carbon footprints to be properly disclosed, minimised, and offset; and for rights to and at work, including health, equality and non-discrimination, to be legally protected and enforced;

Re-use and recovery: Calling for products to be designed and regulated so that their potential for re-use is optimised and waste is penalized; and illegal or dangerous exportation and dumping of batteries is prevented.

The challenge to companies

Amnesty International today emphasized that electric vehicle and electronics companies have a responsibility to ensure their products do not contribute to or perpetuate human rights abuses. The organization is calling on industry leaders to commit to a radical overhaul of their approach to energy solutions.

“Companies who overlook human rights concerns as they clean up their energy sources are presenting their customers with a false choice; people or planet. This approach is gravely flawed ”

Kumi Naidoo

As a first step, companies should publicly disclose information about how human rights abuses and environmental risks are being prevented, identified and addressed throughout the lithium-ion battery's lifecycle.

“With a climate crisis looming, consumers have the right to demand that products marketed as the ethical choice really stand up to scrutiny,” said Kumi Naidoo.

“Companies who overlook human rights concerns as they clean up their energy sources are presenting their customers with a false choice; people or planet. This approach is gravely flawed and will not deliver the sustainable changes we need to save humanity from climate devastation. We are asking industry leaders to think hard about what kind of future they want to build.”

Background

Amnesty is collaborating with Greenpeace USA to identify and map human rights and environmental impacts throughout the battery lifecycle, including critical points of intervention need to produce an ethical battery.

Efforts are underway in Norway to create on corporate actors to conduct human rights due diligence.

🔗 Industry giants fail to tackle child labour allegations in cobalt battery supply chains

🔗 The Dark Side of Electric Cars: Exploitative Labor Practices

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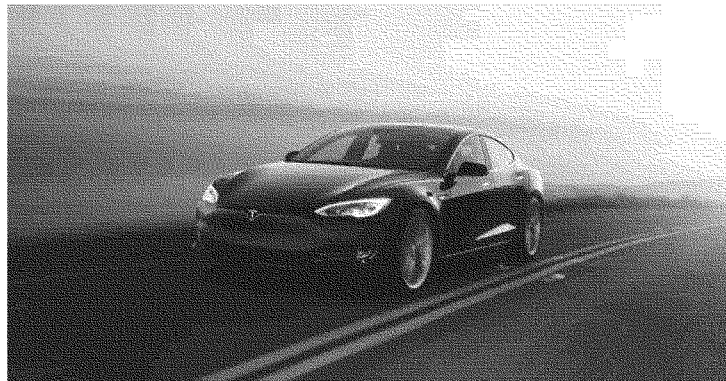
Nadia Krieger (<http://www.engineering.com/Author/ID/490310/NadiaKrieger>) posted on August 17, 2018

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(https://www.engineering.com/ElectronicsDesign/ElectronicsDesignArticles/ArticleID/17435/Will-Your-Electric-Car-Save-the-World-or-Wreck-It.aspx#disqus_thread)

Extracting the materials for lithium batteries is often overlooked when counting up the environmental...

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Patting yourself on the back for buying a Prius? It might surprise you to find that electric vehicles, dependent on batteries, may have significant negative environmental impact. You may have cut back on greenhouse gas emissions at the pump only to step into other environmental pitfalls.

Here's something that electric car companies do not want you to know: the materials that make up your car battery are born deep in mines, may be extracted by child labor and in some of the most polluting ways possible. Even if the mining industry were ecologically sustainable, lithium-ion (Li-ion) batteries have been known to explode and/or catch fire. Avoiding such incidents, the batteries are extremely difficult to recycle, often resulting in the disposal of a spent, but still toxic and flammable battery in your local landfill.

The Lithium Battery

Why use lithium to power cars? Casting aside environmental considerations for a moment and looking at the basics of battery power versus fossil fuel, you'll note one big advantage to battery-powered electric vehicles (BEVs) when it comes to energy efficiency. Where energy efficiency for internal combustion engines is between 20 and 60 percent, an electric motor can be 60-80 percent efficient (<https://www.aps.org/publications/apsnews/201208/backpage.cfm>). The drawback, on the other hand, lies in energy density. The energy by mass of gasoline is 2 orders of magnitude greater, 2,000Wh/kg, compared to a modern Li-ion battery with only 200Wh/kg.

Keeping that in mind, the challenges behind building the battery in a BEV cannot be understated. Getting a ton of metal, plastic and rubber to move for any significant amount between refuels or recharges requires exceptionally high energy-density. In all of engineering, there has only ever been one battery material that can cut it: Li-ion. Known for its singularly high-power output per kg compared to other electric batteries, Li-ion batteries keep our smartphones and laptops powered long enough to serve their purposes as portable devices.

Though the magic Li-ion powers both the iPhone and the Tesla, it is like comparing a matchstick to a bonfire. The iPhone 6 weighs in at six ounces whereas a Tesla Model S contains a whopping 12 kg of pure lithium alone (<https://www.wired.co.uk/article/lithium-batteries-environment-impact>). In Li-ion batteries, it's the lithium ions that move from anode to cathode to release energy from the battery—and back again during the recharging period. This constant discharge/charge cycle process slowly chips away at the capacity of the battery over time. And where a smartphone may have a three-year battery life with 500 charge/discharge cycles (https://batteryuniversity.com/index.php/learn/article/bu_808b_what_causes_li_ion_to_die), this kind of lifespan is not acceptable for a \$75,000 vehicle. To make the battery last as long as possible, you need the three best ingredients for your cathodes and anodes: cobalt, nickel and graphite.

And therein lies the problem. Getting any of these materials out of the ground is neither friendly to the environment nor the miners. EVs and their appetites for batteries are on the verge of causing major upheaval in the world's metal markets. 10 years after the first Tesla, many of us are only just beginning to assess the impact.

Meeting Demand

Lithium consumption has been growing exponentially since the early 2000s and is, according to some sources, expected to quadruple again by 2025. (<https://www.sturtevantinc.com/blog/lithium-carbonate/the-lithium-triangle/>) In 2016, Tesla CEO Elon Musk tried to quiet concerns about the lithium shortage by likening lithium to the “salt on the

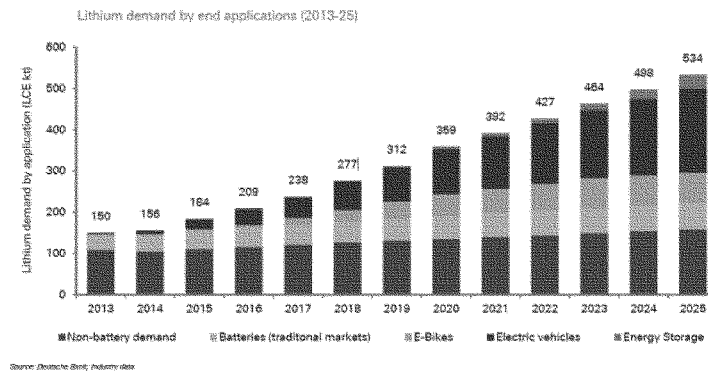
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salad" of the Li-ion battery. "Our cells should be called nickel-graphite, because primarily the cathode is nickel and the anode side is graphite with silicon oxide," (<https://www.linkedin.com/pulse/elon-musk-our-lithium-ion-batteries-should-called-a-paul-gill/>) he explained.

Musk's words don't tell the whole story. Lithium is sold not as a pure element but as lithium carbonate. A 70kWh Tesla engine uses 63kg of lithium carbonate, the price of which doubled in 2017

(<https://www.statista.com/statistics/606350/battery-grade-lithium-carbonate-price/>), compared to the year before to \$13.90 per kg. The rather heavily-salted BEVs of the 21st century are shaping up to be a global driving force of lithium demand by exponential proportion. According to industry data from Deutsche Bank, BEVs have caused an estimated 150 percent increase in lithium consumption since 2013. Meanwhile, traditional battery and non-battery demands hold steady.



Meeting the oncoming demand will not be easy. Currently, our main source of the stuff lies in the "lithium triangle" in the Andes mountains, between Argentina, Chile and Bolivia. China and Australia hold key reserves as well (<https://theconversation.com/politically-charged-do-you-know-where-your-batteries-come-from-80886>). But with China pushing for its own fleet of BEVs (in 2016, 30 percent of the world's Li-ion batteries (<https://blog.energybrainpool.com/en/is-there-enough-lithium-to-feed-the-need-for-batteries/>) were used in Chinese electric buses alone), and Australia looking into supplementing its grid with megabatteries (<https://www.bbc.com/news/world-australia-42190358>), it's not likely that we'll be seeing much of these reserves make it to US production lines. Instead, it's far more likely that we're looking at South America becoming the Middle East of the BEV era.

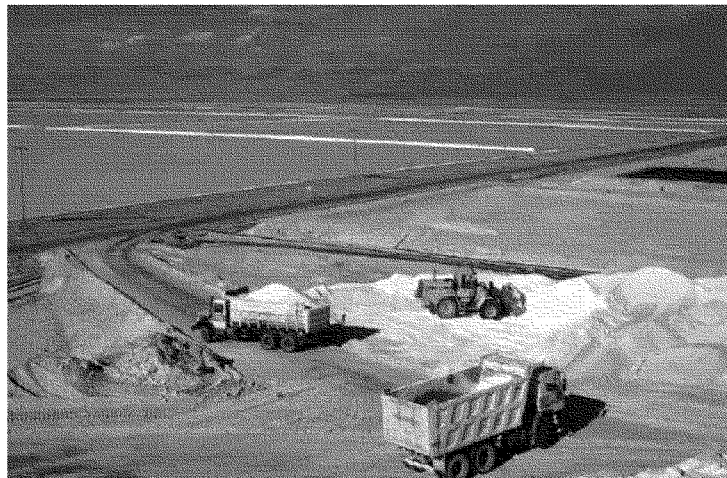
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Chile, which accounts for a full third of the world's lithium reserves, has already been called by some the "Saudi Arabia of lithium." Bolivia, Chile's impoverished neighbor, holds even more. Looking at projected demand, it's likely that we will be heading smack into a political, territorial rearrangement of power not seen since OPEC (Organization of the Petroleum Exporting Countries) got together, with small countries becoming powerful, and using their resources for leverage over larger countries. With the widespread adoption of electric cars, such relationships could easily be established with battery materials, as occurred with oil before.

Impact of Extraction

Lithium production in South America doesn't have so much to do with the element's availability in the soil, but with water. The Andes mountains are very dry, but the lithium extraction process requires water in no small amount to bring the element up to the surface in a salty brine—500,000 gallons of water per ton of lithium, according to (<https://www.wired.co.uk/article/lithium-batteries-environment-impact>). In some regions in Chile, 65 percent of water is used up in lithium production, diverting it from local food production. The brine then requires 12 to 18 months to evaporate. Any water returned to the farmers could be tainted with chemicals.



Another core concern lies in the vast wealth that lithium will represent for these smaller, poorer countries when demand starts to escalate. The lengthy evaporation period for the lithium brine can be sped up by heating the water, a process achieved by burning fossil fuels -- defeating the entire purpose of reducing greenhouse emissions in the first place. But when the price is up and the bottleneck forms, the desire for faster, cheaper production may outweigh our ability to maintain environmental standards.

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Then there's cobalt. In addition to the environmental concerns related to lithium production, cobalt mining is unequivocally destructive on multiple levels. Currently, half of the world's cobalt is produced in the Republic of Congo. Concerning cobalt mining in the Congo region, journalists have revealed human and environmental abuses ranging from child and slave labor (https://www.washingtonpost.com/news/in-sight/wp/2018/02/28/the-cost-of-cobalt/?noredirect=on&utm_term=.4ee29388271d), to toxic waste leakage (<https://www.wired.co.uk/article/lithium-batteries-environment-impact>) and radioactivity in cobalt mines. "In 2014, according to UNICEF, about 40,000 children were working in mines across southern DRC, many of them extracting cobalt," (<https://www.theguardian.com/environment/2017/jul/29/electric-cars-battery-manufacturing-cobalt-mining>) reported.

Although Tesla is doing everything in its power to lessen the amount of cobalt used in its batteries; reducing cobalt in the cathode directly corresponds to reducing the safety and lifecycle of the battery (<https://www.theverge.com/2018/6/21/17488626/elon-musk-cobalt-electric-vehicle-battery-science>). Experts say that the lower limit on cobalt has pretty much already been achieved, and to go further would compromise the safety of the car.

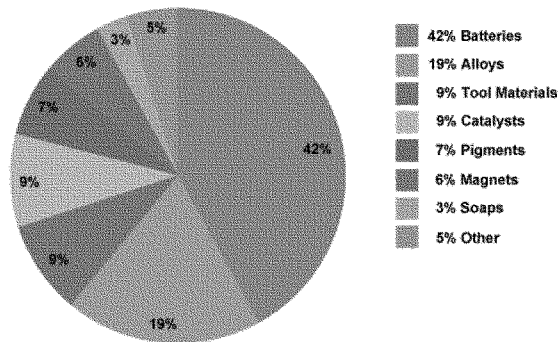
Like the mining industry as a whole, graphite and nickel mining is associated with human rights abuses and can lead to pollution in the air and water. Residents near Chinese graphite mines have remarked (<https://www.washingtonpost.com/graphics/business/batteries/graphite-mining-pollution-in-china/>) on the sparkly nature of air particles, with the dust ultimately contaminating food and water supplies. In areas surrounding nickel mines, there have been increased rates (<https://www.theguardian.com/sustainable-business/2017/aug/24/nickel-mining-hidden-environmental-cost-electric-cars-batteries>) of deformities and respiratory problems linked to pollution from nickel mining and smelting.

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In previous interviews addressing materials supply (<https://www.theguardian.com/sustainable-business/2017/aug/24/nickel-mining-hidden-environmental-cost-electric-cars-batteries>), Tesla has stated that “[suppliers are] three or four layers removed from Tesla. It is obviously quite difficult to have perfect knowledge about everything that happens this far down in the supply chain, but we’ve worked extremely hard to gather as much information as possible and to ensure that our standards are being met.”

But if a major company can’t be relied upon to ethically source its batteries, who can?



Recycling

An immediate concern for some manufacturers may be supply chain bottlenecks, it is worth taking a glimpse at the far future. In truth, no one really knows if there is enough lithium for humanity's projected needs or where lithium can come from. This is an ironic twist for those who thought that the electric car was the solution to our non-renewable fuel crisis, instead of another sustainability trap.

Whereas lithium batteries are said to be 95 per cent recyclable (<http://www.mining.com/close-loop-lithium-ion-battery-recycling/>), the practice of recycling them is more easily said than done. Throughout their lifespan, lithium batteries undergo irreversible damage, meaning that they can't simply be repurposed. Instead, they need to be entirely taken apart, the lithium extracted, and then re-manufactured. But even this is an oversimplification.

Battery manufacturers incorporate several additives into the electrolyte liquid in the Li-ion battery. The purpose of these additives is to improve the battery in many ways, such as by speeding up the manufacturing process, or making the battery more durable in hot and cold weather

(https://batteryuniversity.com/index.php/learn/article/bu_808b_what_causes_li_ion_to_die). But when manufacturers keep the battery cocktail a secret, repurposing the precious minerals contained within becomes difficult and, therefore, expensive.

Moreover, the electrolyte mixture is the component of the battery that has been known to explode when handled incorrectly, for instance, if it is subjected to high temperatures (<https://techxplore.com/news/2018-07-safe-solid-state-lithium-batteries-herald.html>). This means that any attempt at creating a recycling process will need to find a way to ensure that the batteries are dismantled in a safe manner.

With these difficulties in mind, it's not surprising that recycling rates for lithium battery is really low; only 2 per cent of lithium batteries in Australia are recycled (<https://www.theguardian.com/environment/2018/jul/17/only-2-of-lithium-ion-batteries-in-australia-are-recycled-report-says>), with the rest left to rot in landfills. But the problem does not necessarily come from members of the public carelessly tossing their cracked iPhones into the trash.

It might be argued that sustainable recycling infrastructure should come from the car companies—a process that is still not cost effective compared to market lithium costs, and therefore provides little incentive. "Recycled lithium is as much as five times the cost of lithium produced from the least costly brine based process," Waste-Management-World (<https://waste-management-world.com/a/1-the-lithium-battery-recycling-challenge>) stated. Even with our best efforts, recycled lithium is not pure enough to produce batteries, and the material ends up being used for non-battery purposes.

Adding up the Cost

Under the average U.S. electricity grid mix, we found that producing a midsize, midrange (84 miles per charge) BEV typically adds a little over one ton of emissions to the total manufacturing emissions, resulting in 15 percent greater emissions than in manufacturing a similar gasoline vehicle. However, replacing gasoline use with electricity reduces overall emissions by 51 percent over the life of the car."

That's from a 2015 report (<https://www.ucsusa.org/sites/default/files/attach/2015/11/Cleaner-Cars-from-Cradle-to-Grave-full-report.pdf#page=13>) from the U.S.-based Union of Concerned Scientists on battery-powered electric vehicles. The result is stunning: manufacturing a BEV adds an entire ton of greenhouse gases to the atmosphere more than a gasoline vehicle. But perhaps more shocking is that the total carbon footprint of a BEV is not zero, it's half of what it is for the total lifespan of a gasoline vehicle.

Now, consider the cost of water loss to South American farmers, child labor in the Congo, impending geopolitical tensions, lack of recycling, and our current inability to expand the lifespan of a BEV past 10 years. Factor in also the infrastructure changes that it will require to install charging stations to every gas station in America.

That isn't to say that the benefits of BEVs don't outweigh the emissions and international conflict related to vehicles powered by fossil fuels, but it should inspire reflection into our global supply chain and technological developments. It's clear that Li-ion batteries are not a panacea to the world's energy problems in the midst of climate catastrophe.

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The problems raised by Li-ion battery production might spur new technologies that resolve these issues. Or the solution to these issues may not be technological at all.

The Honorable Jay Inslee
Governor of the State of Washington
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**Subcommittee on Environment and Climate Change
Hearing on
“Lessons from Across the Nation: State and Local Action to Combat Climate Change”
April 2, 2019**

**Governor Jay Inslee
The State of Washington**

The Honorable Cathy McMorris Rodgers (R-WA)

1. Do you support removal of the Snake River Dams? How do you justify this decision despite movement in the Washington state legislature to transition to 100% clean, renewable energy by 2045?

RESPONSE: As I testified last month, what I support is what we’re doing in Washington state, which is to have a neutral process to evaluate all the risks and benefits of the potential of taking this action, and to provide an opportunity for all Washingtonians’ voices to be heard. There are both positive and negative consequences and I support a comprehensive review process that allows all perspectives to be considered as we work to comply with the federal court order.

2. Hydropower is one of the cleanest and most renewable energy sources currently available. Yet, you do not list it, or nuclear power, as part of your solution to climate change. Why do you argue that hydro and nuclear power should not be included as part of a clean energy solution? Do you acknowledge that these sources of power are clean and carbon neutral? How do you plan on accommodating Washington state ratepayers who will see an increase in their energy bills if hydropower is eliminated as a power supply?

RESPONSE: I have been clear that the urgency and scale of defeating the climate crisis means we’ll need a wide variety of clean energy sources to decarbonize our economy. That includes hydropower, and in my written testimony, I was proud to share with the committee that Washington “has the nation’s largest supply of cheap hydropower.” Over many years I have been clear that hydropower has been an important carbon-free resource for us. As I also testified, I support research and development (R&D) into nuclear to determine whether the technology can be deployed in a way that is safe and cost-effective, and can earn public support. More to the point, the 100 percent clean electricity bill I just signed into law, ensuring Washington ratepayers will enjoy carbon-free energy, acknowledges both hydropower and nuclear as eligible resources.

The Honorable Jay Inslee
Governor of the State of Washington
Page 2

3. How do you answer those who argue that removal of the Snake River dams will negatively impact the agricultural sector in Eastern Washington? Do you agree that removal of the dams, which play a vital role in the transportation of agricultural products from Eastern Washington to port, will require the use of more emissions heavy trucks to carry those agricultural products across our state? How do you answer the farmers, ranchers, and manufacturers of Eastern Washington who fear that their livelihoods and culture will be irreversibly harmed if the Snake River dams are removed?

RESPONSE: As I testified last month, the impact of this potential action would depend on whether we identify feasible alternatives for the transportation of agricultural products, and that is one of the things that will be evaluated. There may be potential alternatives, and assessing those alternatives is properly handled in the context of a neutral, scientifically credible, fact-based process. And again, I support an open and transparent process where all Washingtonians have the opportunity to share their perspectives and be heard.

The Honorable John Shimkus (R-IL)

1. The expected emissions growth from developing countries alone would offset a complete decarbonization of the U.S. economy by mid-century. This suggests that help the U.S. can provide to these nations will do more for addressing global emissions than anything we do domestically.
 - a. What role do you see for the United States to meet energy needs of these developing nations?

RESPONSE: The U.S. is the world's second largest emitter of carbon pollution, and the largest historical emitter, which means we have a moral responsibility to be among the first to decarbonize our economy and reach net-zero emissions by mid-century. We can and must do this in tandem with helping other nations do the same — it is a false choice to suggest we cannot decarbonize our economy while leading the world in building a clean energy economy. Climate change is a global problem that requires action by all.

To start, it's imperative that we keep the U.S. in the Paris Agreement and reassert American leadership on the global stage. We cannot hope to inspire global action without showing the world our commitment to defeating climate change and demonstrating the economic growth that comes with clean energy innovation and jobs. Additionally, we should work closely with other countries, including developing nations, to help them develop and implement plans to significantly reduce their greenhouse gas emissions. Such support will build goodwill, open up markets for the green economy, and most importantly, help reduce greenhouse gas and conventional pollution. The U.S. should make good on its commitment to the Green Climate Fund,

The Honorable Jay Inslee
 Governor of the State of Washington
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and work bilaterally and multilaterally to help other countries transition to clean energy economies.

2. What would be necessary to ensure developing nations purchase our technology?

RESPONSE: First, ensure the market conditions that have made the U.S. the source of clean energy innovation that is has been. That means re-committing to funding R&D at the scale that only the federal government can achieve, and it means continuing the policies that have driven down the costs of wind, solar, batteries and other components of the clean energy system, so that U.S. companies building clean energy technology can compete globally. We can lead the world in clean energy innovation over the coming decades, if we provide ambitious goals and the policies to support those goals. There is enormous appetite for such technology, and through re-engagement in the Paris Agreement and other avenues for climate and clean energy discussions, the U.S. can work to ensure that other countries remain committed to these goals and are building clean energy economies of their own.

- a. What role do you see for nuclear power technology in these emerging markets?

RESPONSE: Every country will have its own set of plans for decarbonization. A number of developing countries are embarking on development of new nuclear resources, including India. Others are focusing on other resources.

- b. China and Russia, among others are trying to sell reactors in other nations. Do you see U.S. promotion of its nuclear technology as important to gaining a strategic foothold in these markets?

RESPONSE: Exports of U.S. energy technology is important to both our economy and our national security. As I testified, I support federal investments in nuclear R&D, which I believe is an important step to promoting that technology abroad.

3. What can the U.S. do to supplant China-built coal power technologies with its own, cleaner fossil, nuclear, and renewable technologies?

RESPONSE: If we invest in building a clean energy economy at home, and re-engage with the global community in building a clean energy economy around the world, we will have broad markets for our products. America's diplomatic leverage will be crucial over time to ensure countries remain committed to low-carbon development.

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4. There are Intellectual Property and other challenges to our relationships with China and other nations. What would you suggest can be done to address treatment of IP to ensure U.S. exports of technology are not undermined?

RESPONSE: There are certainly issues with China's heavily subsidized market and its failure to protect intellectual property. However, the White House's unilateral, "go it alone" approach to confronting these challenges has serious shortcomings. Instead, I believe the U.S. should be working together with allies and partners in the global trading community who have similar concerns to increase our collective leverage on China, and hold them accountable for unfair practices.

5. We entered into the hearing record a letter from Mayor William Wescott of the City of Rock Falls, Illinois. The city owns and operates its own electrical utility, and participates in the Illinois Municipal Electric Agency, a collection of non-profit public power municipalities within the state. Mayor Westcott outlines the clean energy investments his city has made but he also talks about the critical investments in baseload power in state-of-the-art coal fired generation facilities. (the 1.6 GW Prairie State Energy Campus). He warns that if federal or state policies that force premature closure of the coal-fired units, his city would still have to purchase energy but would also be burdened to make payments on the closed facilities.

- a. Should policies be designed to ensure cities and ratepayers are not burdened with the stranded costs? What is your solution?

RESPONSE: Regulators need to balance legitimate ratepayer and lender concerns that arise as the market moves toward clean energy sources. As market demand for clean energy grows, the costs of continuing to operate fossil fuel facilities — in terms of achieving air quality standards and relative to alternative energy sources, efficiency and demand-side solutions — will become prohibitive. In Washington state we foresaw this future and how it would affect our largest and last remaining coal generated facility in rural Centralia Washington. Working together with community leaders, labor and the company, we negotiated a fair schedule for early shutdown. The agreement included a timeline that allowed workers to transition and a multi-million dollar investment by the company in training and re-development to help the community and workers adjust. That's what just transition looks like. It's solvable and, in the best cases, a classic win-win.

The Honorable Stephen Benjamin, Mayor
City of Columbia, South Carolina
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**Subcommittee on Environment and Climate Change
Hearing on
“Lessons from Across the Nation: State and Local Action to Combat Climate Change”
April 2, 2019**

**Mayor Stephen Benjamin
The City of Columbia, South Carolina**

The Honorable John Shimkus (R-IL)

1. In 2007, the U.S. Conference of Mayors announced a “Mayors Climate Protection Agreement” wherein more than 800 mayors committed to “strive to meet or beat the Kyoto Protocol targets in their own communities.” The cities of Columbia and Carmel both signed that agreement.
 - a. Were your cities able to meet their Kyoto pledges? How did you track them?

RESPONSE:

The Kyoto Agreement specifically urged “the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012” and it also urged “US Congress to pass bipartisan greenhouse gas reduction legislation.”

When American cities – more than 1,060 throughout our nation, representing nearly 100 million people – committed to reduce their emissions to conform to the Kyoto Protocol targets of bringing greenhouse gas emission 7 percent below 1990 level, these pledges were aspirational and they were based on the premise that we would have strong federal and state partners. Despite federal and state inaction, this local leadership was nevertheless important and timely, as my City and others successfully took concrete actions to reduce carbon emissions where we could.

Mayors did so recognizing that local efforts would only carry our cities partway toward these goals, since Kyoto was about nations, directing national level resources and authorities and powers to reduce emissions. A nation not only has more tools but benefits from an array and diversity of communities, sources and geography of emissions.

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City of Columbia, South Carolina
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Columbia's population grew by 35 percent between 1990 and 2017 compared to US population growth of was 26 percent for that same period. An emission reduction to 1990 levels, given available technologies then and less than engaged partners at the state and federal levels, made achieving the Kyoto targets an impossibility. We nevertheless embarked on a course to do what we could to lower our carbon footprint (and save taxpayer dollars) today and in future years.

Most mayors, including myself, understood that it was unlikely our individual cities would achieve these goals absent federal action. We were well aware of our limited revenue-raising options and limited regulatory powers and authorities to achieve these fairly ambitious goals. After all, these targets applied to nations, not individual cities, and it was assumed that individual nations approving the treaty would bring their own revenue, commerce and other constitutionally-granted powers to bear. Yet, we moved forward as mayors of cities and acted – each in own way – to find those opportunities that reduce city energy use, make city operations more efficient, and advance more renewable energy use in our cities.

Repeating some points from my written testimony, in Columbia, we have taken a number of actions and implemented several policies to reduce the greenhouse gas emissions and to track those reductions. Most notably, in 2009, with assistance from the Energy Efficiency and Conservation Block Grant, we conducted an energy audit and implemented several of the audit's recommendations, including upgrading lighting systems, HVAC upgrades on City buildings, and installing solar panels on fire stations. These projects reduced our greenhouse gas emissions and energy consumption and saved Columbia taxpayers approximately \$337,000 per year.

In addition, one of my first priorities when I took office was to upgrade and rationalize our regional transit system to increase ridership, including successfully asking our voters to approve a penny tax dedicated to transportation, including transit. I have also built on and accelerated the efforts of my predecessor to improve pedestrian and bicycle infrastructure in Columbia, completing several streetscapes and extending and opening several trails. Combined with thousands of new units of housing in Downtown Columbia and other central Columbia neighborhoods, these efforts have set the stage for truly giving Columbia residents a meaningful option to the car, with the added bonus of a vibrant, lively and beautiful Downtown.

In addition to our climate change prevention efforts, we have been actively addressing mitigation. In the wake of Hurricane Joaquin, it became clear that we had to accelerate our efforts to improve the climate resilience of our stormwater

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infrastructure. We bit the bullet and increased stormwater fees to fund a wide array of projects to improve our stormwater system using both gray and green infrastructure. We also issued our first-ever green bond that allowed the City to finance upgrades and improvements to our stormwater system while protecting our environment.

- b. If you did not meet your pledges, why did your efforts fall short with respect to Kyoto? What is different with your current pledges?

RESPONSE:

As explained above, we, along with most cities, did not meet these targets. Columbia's population grew by 35 percent between 1990 and 2017 compared to US population growth of was 26 percent for that same period. An emission reduction to 1990 levels, given available technologies then and less than engaged partners at the state and federal levels, made achieving the Kyoto targets an impossibility.

As President of the US Conference of Mayors, I can report that many of my fellow mayors share my frustration with the lack of federal action on reducing greenhouse gas emissions. This frustration is not new. My written testimony to the Committee included a 2007 letter – really a plea – to presidential candidates signed by over 100 South Carolina calling for federal leadership on climate change.

The letter was bipartisan and it was signed by mayors from across South Carolina. We were taking action and asking for federal leadership 12 years ago. The letter was a powerful one, worthy of repeated reference, so I will provide an excerpt that was included in my written testimony:

South Carolina voters will play a central role in determining the next President of the United States. While we recognize that there are many important issues before us, one requires immediate attention: the growing threat of global warming. As South Carolina mayors, it is our duty to add our voice to the growing chorus of scientific, business, and community leaders who say the time to act on global climate change is now.

From the wooded foothills of the Upstate, to the fertile soil of the Midlands, to the pristine marshes of the Coast, South Carolina enjoys one of the richest and most diverse natural habitats in the United States. Indeed, the quality of life we enjoy helps explain why South Carolina's population is projected to increase 27 percent by 2025. To meet the challenges of this rapid growth, our communities are quickly learning the value of efficiency

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and conservation as a means to save both taxpayer dollars and the environment. We are investing at the local level in more efficient municipal buildings, promoting “green fleets” in our public transportation, and educating our constituents in the value of conservation to reduce energy costs and harmful environmental impacts.

Those words and subsequent ones have fallen on deaf ears. The absence of any federally-recognized or sanctioned emissions tracking systems has frustrated our efforts to track emissions and measure our own performance in our cities and relative to others. For some time, we had hoped that the federal government would act to establish standards for measurement – locally, regionally, statewide and nationally – and such an undertaking would still be helpful to those of us working to reduce carbon emissions.

We have also been frustrated with the lack of federal policies to reduce greenhouse gas emissions and to bolster local government efforts to reduce those emissions. Local governments throughout the country have raised revenue to invest in modernized, climate-friendly infrastructure. We welcomed federal funding for the Energy Efficiency and Conservation Block Grant in FY 2009. As noted above, Columbia put its grants to good use, reducing greenhouse gas emissions and the City’s energy bill. However, Congress did not heed our calls to continue this program, which an Oak Ridge National Laboratory study found an overwhelming success.

In addition, other federal policies and programs have fallen short, leaving local governments to fill the void despite our limited tax and regulatory power. Since FY 2010, federal funding for programs that could have helped cities reduce greenhouse gas emissions ranging from Weatherization to CDBG to transit fell victim to budget cuts at worst to status quo funding and policies at best.

That said, two years ago, Columbia took the next step, setting a target of powering our community with 100 percent clean, renewable energy by 2035. In addition, we continue to pursue and implement a wide array of policies to reduce our greenhouse gas emissions, ranging from improved energy efficiency in City buildings and LED streetlights to improving bicycle and pedestrian infrastructure, improving our transit system, and encouraging mixed-use development in the core of Columbia.

On that final item, the Committee’s questions are timely in light of a report from the University of California that maps household carbon footprint by Zip Code¹.

¹ <https://coolclimate.org/maps>

The Honorable Stephen Benjamin, Mayor
 City of Columbia, South Carolina
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That map shows that household carbon footprints are significantly smaller in urban cores than they are in surrounding regions. In the Columbia Metropolitan Area, household carbon footprints are smallest in City of Columbia Zip Codes and in Zip Codes in the close in suburbs just across the Congaree River in Lexington County. It is in those Zip Codes that we have made the most investments in infrastructure and where Columbia has seen significant growth.

However, we need a strong federal partner. That is why my written testimony outlined a wide array of federal policies and programs that would bolster local government efforts to reduce greenhouse gas emissions. I am pleased that the Committee held a hearing yesterday on the LIFT Act (HR 2741), which would address several of the priorities outlined in my testimony, most notably reauthorization of the Energy Efficiency and Conservation Block Grant. My colleague, Piscataway, New Jersey Mayor Brian Wahler, delivered testimony on behalf of the US Conference of Mayors in support of that bill and I hope it moves forward.

In addition to programs outlined in the LIFT Act, which are under the jurisdiction of the Energy and Commerce Committee, my testimony outlined support for many other programs outside the Committee's jurisdiction that I hope Congress will act on, most notably:

- Prioritize transportation funding to help metropolitan areas and local areas invest in low-carbon, *mode-neutral transportation options via increased funding for the Surface Transportation Block Grant*, including building a *national charging infrastructure*;
- Increase *funding for transit*;
- Invest in improved *intercity passenger rail*;
- Provide additional funding for the *Community Development Block Grant (CDBG)*, with the additional funding *targeted to investments in climate resilient infrastructure* in low- and moderate-income neighborhoods;
- Build on last year's reforms of federal disaster assistance programs to increase *funding for disaster mitigation*;
- Reinstate *advanced refunding for municipal bonds*; and
- Provide resources to help local governments *increase the supply of affordable and workforce housing located in proximity to jobs, education, services, and transit*.

On one of those bullets, improved intercity passenger rail, I would note that Columbia, a City of 133,114 people in a metropolitan area of 837,092, is served by two intercity passenger trains per day, one northbound and the other

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southbound. Both serve Columbia in the middle of the night. There is no passenger rail service between Columbia and most neighboring cities, including Charlotte, Charleston, Greenville, Myrtle Beach, Augusta, and Atlanta. None. This situation would boggle the mind of the average citizen of a similar city in most other modern, industrialized nations. Columbia is working hard to reduce our greenhouse gas emissions, but we need better efforts in this area and others from our state and local partners.

2. As you know, the Obama Administration's Paris commitment was to impose economy-wide GHG reductions. This means major reductions from not only the power sector—which are happening—but also transportation—cars, trucks, airports, and more, as well as manufacturing, industry, and commercial and residential sources.

- a. What are you planning to achieve reductions in these areas?

RESPONSE:

As outlined above and in my written testimony, two years ago Columbia took the next step, setting a target of powering our community with 100 percent clean, renewable energy by 2035. In addition, we continue to pursue and implement a wide array of policies to reduce our greenhouse gas emissions, ranging from improved energy efficiency in City buildings and LED streetlights to improving bicycle and pedestrian infrastructure, improving our transit system, and encouraging mixed-use development in the core of Columbia.

As a City served by an investor-owned utility, our ability to move to 100 percent clean, renewable energy outside of City buildings, facilities, and operations is limited. Our electric utility, the choices of individual ratepayers, and state policy will drive decisions about our electric utility's power generation portfolio. However, I would note that several of my fellow mayors in public power cities that own and operate their own electric utility, have met the goal of powering their community with 100 percent renewable energy or are well on their way to doing so. When mayors have the power to act, we do so because that is what our communities expect of us.

- b. And in the absence of specific plans, how do you actually expect to meet your commitments?

RESPONSE:

We will continue to pursue and implement a wide array of policies to reduce our

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greenhouse gas emissions, ranging from improved energy efficiency in City buildings and LED streetlights to improving bicycle and pedestrian infrastructure, improving our transit system, and encouraging mixed-use development in the core of Columbia.

3. We entered into the hearing record a letter from Mayor William Wescott of the City of Rock Falls, Illinois. The city owns and operates its own electrical utility, and participates in the Illinois Municipal Electric Agency, a collection of non-profit public power municipalities within the state. Mayor Westcott outlines the clean energy investments his city has made but he also talks about the critical investments in baseload power in state-of-the art coal fired generation facilities. (the 1.6 GW Prairie State Energy Campus). He warns that if federal or state policies that force premature closure of the coal-fired units, his city would still have to purchase energy but would also be burdened to make payments on the closed facilities.
 - a. Should policies be designed to ensure cities and ratepayers are not burdened with the stranded costs? What is your solution?

RESPONSE:

Yes. A transition to clean, renewable energy in a manner that does not adversely harm ratepayers must address stranded costs. Fortunately, the United States is a wealthy country with a strong federal system of government. I am therefore confident that between Congress, FERC, state public utility commission, state legislatures, and other government entities we have the capacity and the ability to develop and implement policies and programs to address stranded costs as we transition away from electricity generated by fossil fuels, particularly coal. Indeed, several states have already enacted such policies and others are considering them.

The reality is that regardless of federal or state policy, the future of coal-fired power plants is limited. Over the past generation, through Republican and Democratic presidential administrations, in “red” states and in “blue” states, coal-fired plants have been increasingly phased out and few new ones have come online. At this point, it is well documented that this transition away from coal has been driven by basic economics rather than any federal or state regulatory policies. Simply put, the drastic decrease in the price of natural gas and, to a much lesser degree, the increasing competitiveness of renewable energy have led to the decline of coal-fired power plants. Indeed, the transition away from coal-fired power plants has happened even in states where state policies *favor* coal generation of electricity.

Looking ahead, the price of renewable energy, most notably wind and solar, has

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dropped precipitously over the past generation and is poised to drop even more in the coming years, at the same time that improved technology, such as larger offshore wind turbines and better battery storage, increase their reliability. These reduced costs, combined with the clean air and health benefits of renewable energy, will put even more pressure on coal. It is important that going forward that we all make wiser and more forward looking investments so that we do not add to burden of stranded costs.

4. It is well known that the “Keep It in the Ground” movement and its political allies have successfully blocked the ability to transport American energy from the Marcellus shale to markets where it is in demand. New York’s blocking of pipelines is probably the most prominent example, and it has indirectly led to cities such as Boston being cut off from clean, affordable U.S. natural gas. In fact, the Northeast has been forced to burn old, dirty oil plants for electricity during cold snaps, and they have even been importing Russian Gas into Boston harbor on occasion.
 - a. Do you support expanding energy infrastructure to allow natural gas from Pennsylvania to be delivered to nearby markets in the mid-Atlantic, Northeast, and Southeast?

RESPONSE:

As Mayor of a City located hundreds of miles from Pennsylvania, New York, and New England, I do not know enough about these pipeline projects and their costs and benefits to provide an answer to this question. In general, on issues such as this one, I would defer to the people and the elected officials from the impacted states and localities, who are best positioned to make an informed decision about this project.

I also generally oppose any effort by the federal and state governments to preempt local government authority to protect our communities from adverse environmental and health consequences of energy projects. Federal and state preemption of local authority to benefit a specific industry, be it natural gas, telecommunications, or payday lenders, has perverted our system of federalism and all too often robbed communities of the ability to ensure their health, safety, and prosperity.

I would note that New York and Pennsylvania have made very different decisions about extracting natural gas from the Marcellus Shale. Those decisions reflect different state and local priorities. I will leave it to future generations of western Pennsylvanians and western New Yorkers to pass judgement on the merits of their respective state government’s decisions on that matter.

The Honorable Jerry F. Morales
Mayor of the City of Midland, Texas
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**Subcommittee on Environment and Climate Change
Hearing on
“Lessons from Across the Nation: State and Local Action to Combat Climate Change”
April 2, 2019**

**Mayor Jerry F. Morales
The City of Midland, Texas**

The Honorable John Shimkus (R-IL)

1. We would like to have a better handle about what cities and communities need to better plan and prepare for extreme weather events and other natural disasters.

- a. Your region of Texas experienced a significant drought in recent years, which doubtless had huge impacts across your community.

RESPONSE: In 2010 we received a new drought of record. We did a big push for drought resistant landscaping to include drought resistant vegetation to conserve water. We also established an ordinance that stated residents could only water on certain days. A rate escalator was put in place at a higher tier to discourage wasteful water usage and encourage conservation.

- b. Can you speak to how Midland adapted to the drought and how it has prepared to withstand future droughts?

RESPONSE: Since the 2010 drought was the worse we've seen, Midland used several tools to ensure we had constant future water supply:

1. We secured additional water sources and developed 2 water ranches for immediate and medium range needs; T-Bar and Clear Water.
 2. We instituted our drought contingency plan which tiered water rates to encourage water conservation.
 3. We formed a partnership with neighboring cities (Abilene & San Angelo) called the West Texas Water Partnership to search for long range water supplies.

- c. Did the oil and gas industry upon which your economy relies adapt? How so?

RESPONSE: Yes, the oil and gas industry has gone to less water intensive uses and they've partnered with us to do a public/private partnership by providing \$130,000,000 to upgrade our Wastewater Treatment Plant. Operators are using Santa Rosa water which is non-potable. This water will not pull as much from the aquifer. The companies are also recycling and reusing their production water.

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Mayor of the City of Midland, Texas
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- d. What other improvements have you seen in the industry that make life better, safer, and healthier for your constituents?

RESPONSE: Twenty energy companies located throughout West Texas and Southeast New Mexico formed an alliance known as the Permian Strategic Partnership (PSP). These companies have come together with one goal in mind for the first time in history. This goal is to support our community by partnering with local leaders to make roads safer, improve schools, upgrade healthcare, increase affordable housing, and train the next generation of workers.

Also:

- A Downtown Conservancy Park is being built right now to include greenspace, a splash pad/water feature, a performance stage, a pavilion, a dog park and a natural-style playground.
- The City entered into a public private partnership with Concho Resources to add above ground parking that is essential to our new Convention Center and a growing downtown.
- XTO Energy donated \$500,000.00 for the installation of a new splash pad at Dennis the Menace Park.
- The City has had numerous dedications of right of ways at no cost to the City in the last 5 years.

BOARD OF COMMISSIONERS

Subcommittee on Environment and Climate Change

Hearing on

"Lessons from Across the Nation: State and Local Action to Combat Climate Change"
April 2, 2019

Chairman Daniel C. Camp III
Beaver County Board of Commissioners
Beaver County, Pennsylvania

The Honorable John Shimkus (R-IL)

1. Most people are aware of the enormous impact of the shale revolution and Marcellus gas to the electricity sector and consumer's pocketbooks, but there is less appreciation for the "downstream" impacts in terms of both jobs and consumer goods. According to the American Chemistry Council, investment in over 300 petrochemical projects totaling \$181 billion have been announced since 2010. These facilities (such as the Shell cracker) not only mean high-paying jobs for American workers that might otherwise go to overseas competitors, they mean more affordable, American-made consumer goods in a wide range of areas.
 - a. Please elaborate on what they mean to your community, not just in terms of jobs but also with respect to tax revenue and government services.

RESPONSE:

The Shell Petrochemical Plant located in Potter Twp. Pennsylvania has had a large impact on our communities across Beaver County. Shell has invested in many of our school districts. They have invested into our high education at the Community College of Beaver County to build the Shell Process Technology Center which was more than a \$1 million dollar contribution. As stated in my testimony before you they have also updated our infrastructure around their site. Shell Pennsylvania will be paying the assessed value of the buildings of the former Horsehead Site until the year of 2042. We are hopeful to see many ancillary and downstream jobs relocate to Beaver County which would increase our tax base.

- b. It is well known that the "Keep It in the Ground" movement and its political allies have successfully blocked the ability to transport American energy from the Marcellus shale to markets where it is in demand. From your perspective, what would restrictions on energy out of the Marcellus and other plays mean for your country?

RESPONSE:

Currently Beaver County has not had any issues with the "Keep It in the Ground" movement. If an issue would come to Beaver County it would limit the growth in Beaver County pertaining to the Marcellus Shale industry.



DANIEL C. CAMP, III
COMMISSIONER
810 Third Street
Beaver, PA 15009

(724) 770-4402
(724) 728-0725 Fax
dcamp@beavercountypa.gov

The Honorable James Brainard, Mayor
City of Carmel, Indiana
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**Subcommittee on Environment and Climate Change
Hearing on
“Lessons from Across the Nation: State and Local Action to Combat Climate Change”
April 2, 2019**

**Mayor James Brainard
The City of Carmel, Indiana**

The Honorable John Shimkus (R-IL)

1. *In 2007, the U.S. Conference of Mayors announced a “Mayors Climate Protection Agreement” wherein more than 800 mayors committed to “strive to meet or beat the Kyoto Protocol targets in their own communities.” The cities of Columbia and Carmel both signed that agreement.*

a. Were your city's able to meet their Kyoto pledges? How did you track them?

RESPONSE: By joining the Mayors' Climate Protection Agreement, mayors pledged to cut greenhouse gas emissions to 7% below the 1990 benchmark by 2012, in accordance with the targets established by the Kyoto Protocol. Mayors did so recognizing that local efforts would only carry their cities partway toward these goals, since Kyoto was about nations – directing their resources and considerable constitutional authorities and powers – to reduce emissions. As such, a nation not only has more tools but can benefit from the array of communities, sources and geography of emissions. In my City of Carmel, our population was 71,000 in 2007 when we signed onto the agreement. In 1990, our population was only 26,756 residents. Today, we are approaching 92,500 residents. Given available technologies and less than engaged partners at the state and federal levels, our population growth made achieving the Kyoto targets an impossibility. Certain that we would not achieve the overall goal, we nonetheless embarked on a course to do what we could to lower our carbon footprint in various sectors within our jurisdiction, today and in future years.

We understand that the largest source of greenhouse gas emissions from human activities in the United States is either the transportation or building sector, depending on the city. For our part, we developed policies to influence how and where new buildings were built, promoting multi-family and denser development nearby our new city center, and we worked to reduce emissions from the transportation sector, among other actions. In making infrastructure improvements, we invested in more efficient congestion management to yield emission reductions in our transportation sector.

The Honorable James Brainard, Mayor
 City of Carmel, Indiana
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One example is our work on roundabouts. In the late 1990s, the City of Carmel began installing its first traffic roundabouts to eliminate vehicular idling, reduce carbon emissions, and promote better air quality. Following the Kyoto pledge in 2007, I further prioritized these types of infrastructure investments in our local transportation system. To date, Carmel has now constructed 122 roundabouts, more than any other U.S. city. These improvements result in less gas being burned into the atmosphere and a better fuel economy for drivers. Gas savings average 24,000 gallons per year per roundabout, based on 10 study sites with traffic counts ranging from 14,000 to 47,000 AADT, according to our Engineering Department.

According to estimates from the U.S. Environmental Protection Agency (EPA) [gas equivalencies calculator](#), the sum of the greenhouse gas emissions is equivalent to 213 metric tons of Carbon Dioxide Equivalent per roundabout. These gas savings per roundabout are equal to 233,172 pounds of coal burned; 1.2 railcars' worth of coal burned; 2.8 tanker trucks' worth of gasoline; 494 barrels of oil consumed; 25.5 homes' energy use for one year; or 37.2 homes' electricity use for one year. Greenhouse gas emissions are avoided by 74.4 tons of waste recycled instead of landfilled; 10.6 garbage trucks of waste recycled instead of landfilled; or 9,306 trash bags of waste recycled instead of landfilled. These savings are equal to greenhouse gas emissions from 45.3 passenger vehicles driven for one year or 521,487 miles driven by an average passenger vehicle. The carbon sequestered at each roundabout annually is equal to 3,527 tree seedlings grown for 10 years; 251 acres of U.S. forests in one year; or 1.7 acres of U.S. forests preserved from conversion to cropland in one year.

Citywide, the construction of our 122 roundabouts will result in 2.928 million gallons of gas savings per year, based on the traffic data available from those 10 study sites. The sum of these total greenhouse gas emissions reductions is approximately 26,021 metric tons of Carbon Dioxide Equivalent. The EPA equivalency results are 5,525 passenger vehicles driven for one year or 63,621,359 miles driven by an average passenger vehicle. It is equivalent to any of the following figures: 28,446,981 pounds of coal burned; 142 railcars' worth of coal burned; 60,244 barrels of oil consumed; 2,556,104 gallons of diesel consumed; 344 tanker trucks' worth of gasoline; 3,116 homes' energy use for one year; 4,538 homes' electricity use for one year; or 1.06 million propane cylinders used for home barbecues. It is equivalent to greenhouse gas emissions avoided by: 9,076 tons of waste recycled instead of landfilled; 1,297 garbage trucks of waste recycled instead of landfilled; 1.135 million trash bags of waste recycled instead of landfilled; 5.5 wind turbines running for a year; or 988,382 incandescent lamps switched to LEDs. It is equivalent to the amount of carbon that would be requested by any of the following: 430,265 tree seedlings grown for 10 years; 30,625 acres of U.S. forests in one year; or 211 acres of U.S. forests preserved from conversion to cropland in one year.

In the City of Carmel, we are building a downtown where people can live, work, and play without having to drive anywhere. We are using city design principles to build a more walkable city, which improves our community's quality of life through the health benefits of more exercise

The Honorable James Brainard, Mayor
 City of Carmel, Indiana
 Page 3

as well as the reduction of harmful emissions. We installed more than 200 miles of trails and paths that allow people to safely walk or bicycle to their destinations to further reduce emissions.

We understand that electricity production generates the second largest share of greenhouse gas emissions, so the City of Carmel has replaced almost all of its street lights with LEDs. This resulted in a 48 percent reduction in energy consumption to power those streetlights. In 2009, we used more than \$633,000 in federal assistance the City received from the Energy Efficiency and Conservation Block Grant (EECBG) administered by the U.S. Department of Energy to replace about 800 street lights with LED lights. This investment saves the city approximately 22 percent on electricity annually. The estimated savings will be \$70,000 a year in electricity costs and roughly 1.4 million pounds of carbon dioxide every year.

Commercial and residential buildings are another major source of greenhouse gas emissions. We strongly encourage developers to build environmentally sensitive buildings, such as LEED (Leadership in Energy and Environmental Design) guidelines or similar programs.

Our current and future plans for continued progress in emissions reductions are outlined in the second question below.

b. If you did not meet your pledges, why did your efforts fall short with respect to Kyoto? What is different with your current pledges?

RESPONSE: Our rapid population growth – 212 percent during the compliance period versus 26 percent nationally – made achieving these goals impossible, as our city's population grew eight times faster than national population growth. It can be said that federal and state inaction on supportive policies to help us certainly hurt my city more than others which have been growing closer or below the national average for the period.

In 2017, the Carmel City Council passed a resolution in support of climate resilience and recovery, becoming the first municipality in the State of Indiana to do so. The City of Carmel will strive to reduce its carbon emissions from 2016 levels in a manner that is prudent, properly funded, well documented, and approved by the Carmel Common Council. In order to establish a plan to achieve the objectives of that resolution, the City is working to create a climate action plan. This plan includes obtaining a baseline measurement of citywide emissions across all sectors within our jurisdiction, establishing proper measures to ensure the plan is being implemented, and incorporating energy efficiency and renewable energy standards where possible.

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2. *As you know, the Obama Administration's Paris commitment was to impose economy-wide GHG reductions. This means major reductions from not only the power sector—which are happening—but also transportation—cars, trucks, airports, and more, as well as manufacturing, industry, and commercial and residential sources.*

a. *What are you planning to achieve reductions in these areas?*

RESPONSE: In accordance with the resolution passed in 2017, the City of Carmel will create a climate action plan to obtain baseline measurements of citywide emissions and appoint a commission of business, faith, youth and community leaders to consult with elected officials and monitor our collective progress toward the goals. We will seek to use of alternate sources of energy such as active solar, geothermal, and wind whenever feasible. By increasing the efficiency of our buildings, vehicles, and electricity, Carmel will reduce emissions and pollution, conserve energy, reduce waste, save money, and promote jobs in the clean energy sector.

In the City of Carmel, we are building a downtown where people can live, work, and play without having to drive anywhere. We are using city design principles to build a more walkable city, which improves our community's quality of life through the health benefits of more exercise as well as the reduction of harmful emissions. We installed more than 200 miles of trails and paths that allow people to safely walk or bicycle to their destinations to further reduce emissions. We are working to develop a bicycle network to better enable our residents to take non-vehicular trips by encouraging small-scale employment nodes and requiring large-scale employment nodes to install covered and secure bicycle parking, and shower and changing facilities for cycling commuters. Concurrently, we work to ensure that adequate bicycling facilities exist to allow safe and efficient bicycle commuting.

We understand that electricity production generates the second largest share of greenhouse gas emissions, so the City of Carmel has replaced almost all of its street lights with LEDs. This resulted in a 48 percent reduction in energy consumption to power those streetlights. In 2009, we used more than \$633,000 in federal assistance the City received from the Energy Efficiency and Conservation Block Grant (EECBG) administered by the U.S. Department of Energy to replace about 800 street lights with LED lights. This investment saves the city approximately 22 percent on electricity annually. The estimated savings will be \$70,000 a year in electricity costs and roughly 1.4 million pounds of carbon dioxide every year.

Commercial and residential buildings are another major source of greenhouse gas emissions. We strongly encourage developers to build environmentally sensitive buildings, such as LEED (Leadership in Energy and Environmental Design) guidelines or similar programs. These "green" buildings conserve energy resources, provide more healthful inside environments, last longer, utilize products made from recycled material, and use products that can be safely disposed of or

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recycled when the building is eventually dismantled. Green buildings also strive to use local material to reduce the transportation impact. For instance, importing marble from overseas has an enormous environmental impact compared to delivering Indiana limestone from southern counties.

We encourage the use of durable materials and construction methods that prolong the life of commercial and residential buildings. A paradigm shift is necessary to change the current 30-year life expectancy of commercial buildings and some production homes to a more substantial life expectancy. Carmel has already had some success in encouraging 100-year buildings. For instance, that standard is currently being applied to several buildings in the City Center and the Old Town Arts and Design District. The Monon Community Center was built with energy efficiency in mind. For example, 50 percent of the building is glass so natural sunlight reduces the need for as much electricity for lights and heat.

The City strives to encourage the use of water-saving devices, and we request that our citizens reduce water consumption by proper “smart” lawn sprinkling and exploring alternative landscapes which require less water. We encourage rainwater recycling to reduce potable water consumption. Our wastewater plant incorporates the bio-pasture system, which turns waste into fertilizer. The city re-uses methane gas that is a natural byproduct of the wastewater treatment process to heat the boilers used in the biosolids process as well as heat a maintenance building thereby reducing their energy consumption. Storm Water Management requires a pollution prevention plan for projects during and after construction.

As our climate warms and heat wave intensity and frequency increases, we must anticipate projected changes to residential and commercial energy demands and reduce our local needs through policies and investments that will reduce the urban heat island effect. We are working to establish precedent for environmental protection or re-vegetation when developing municipal facilities like parks, fire stations, and maintenance facilities. The City seeks to reduce unnecessary removal of trees on lots, encourage preservation of mature trees, and require replacement of trees that have to be removed for development. The preservation of our urban forest helps to reduce the heat island effect. We also encourage the use surfaces that retard the absorption of heat.

As discussed above in the previous question, infrastructure improvements that result in more efficient congestion management can yield significant emissions reductions in our transportation sector locally and nationally. Carmel is installing traffic roundabouts to eliminate vehicular idling, reduce carbon emissions, and promote better air quality. Carmel has constructed 122 roundabouts, more than any other U.S. city. These infrastructure improvements result in less gas being burned into the atmosphere and a better fuel economy for drivers. Gas savings average 24,000 gallons per year per roundabout, based on 10 study sites with traffic counts ranging from 14,000 to 47,000 AADT.

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According to estimates from the U.S. Environmental Protection Agency (EPA) [gas equivalencies calculator](#), the sum of the greenhouse gas emissions is equivalent to 213 metric tons of Carbon Dioxide Equivalent per roundabout. These gas savings per roundabout are equal to 233,172 pounds of coal burned; 1.2 railcars' worth of coal burned; 2.8 tanker trucks' worth of gasoline; 494 barrels of oil consumed; 25.5 homes' energy use for one year; or 37.2 homes' electricity use for one year. Greenhouse gas emissions are avoided by 74.4 tons of waste recycled instead of landfilled; 10.6 garbage trucks of waste recycled instead of landfilled; or 9,306 trash bags of waste recycled instead of landfilled. These savings are equal to greenhouse gas emissions from 45.3 passenger vehicles driven for one year or 521,487 miles driven by an average passenger vehicle. The carbon sequestered at each roundabout annually is equal to 3,527 tree seedlings grown for 10 years; 251 acres of U.S. forests in one year; or 1.7 acres of U.S. forests preserved from conversion to cropland in one year.

Citywide, the construction of our 122 roundabouts would result in 2.928 million gallons of gas savings per year based on data from those 10 study sites. The sum of these total greenhouse gas emissions reductions is approximately 26,021 metric tons of Carbon Dioxide Equivalent. The EPA equivalency results are 5,525 passenger vehicles driven for one year or 63,621,359 miles driven by an average passenger vehicle. It is equivalent to any of the following figures: 28,446,981 pounds of coal burned; 142 railcars' worth of coal burned; 60,244 barrels of oil consumed; 2,556,104 gallons of diesel consumed; 344 tanker trucks' worth of gasoline; 3,116 homes' energy use for one year; 4,538 homes' electricity use for one year; or 1.06 million propane cylinders used for home barbecues. It is equivalent to greenhouse gas emissions avoided by: 9,076 tons of waste recycled instead of landfilled; 1,297 garbage trucks of waste recycled instead of landfilled; 1.135 million trash bags of waste recycled instead of landfilled; 5.5 wind turbines running for a year; or 988,382 incandescent lamps switched to LEDs. It is equivalent to the amount of carbon that would be requested by any of the following: 430,265 tree seedlings grown for 10 years; 30,625 acres of U.S. forests in one year; or 211 acres of U.S. forests preserved from conversion to cropland in one year.

In 2005, I signed an Executive Order that requires that alternative fuel vehicles are purchased by city departments when available. This month, our police department began switching its entire fleet of patrol cars from gasoline-powered vehicles to hybrids. This move will save the City of Carmel about \$400,000 once the entire 130-car fleet is replaced. With the introduction of hybrid vehicles, the City now has a viable and visible means for improving the environment through energy conservation.

Carmel is working with local entrepreneurs to install hydrogen engines on some city trucks. This public-private partnership promotes local entrepreneurship, research and development activities, and emissions reductions from vehicles. Our Public Works Department tested a hydrogen

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powered pickup truck outfitted with a snow plow last winter following severe weather. The hydrogen vehicles operate without any harmful emissions.

These local activities supporting carbon emissions reductions are necessary to help mitigate climate-related risks to Hoosiers that can adversely impact our human health, infrastructure, and agriculture. We must enhance our resiliency as the region experiences increased heat wave intensity and frequency, more extreme droughts, increased heavy rain events and flooding, decreasing agricultural yield, and degraded air and water quality. In 2008, 82 of Indiana's 92 counties were declared Presidential disaster areas due to winter weather, severe storms, and flooding. The State of Indiana incurred over \$1.9 billion in damage to public infrastructure, housing, and agriculture. Averting the worst impacts of climate change will require reducing carbon emissions by at least 80% by 2050 through our collective actions locally and nationally. Our forthcoming local individualized climate plan will allow Carmel to continue to show leadership in improving the quality of life for its citizens.

Greenhouse gas emissions are avoided by:		
	Per Roundabout	Per 122 Roundabouts Citywide
	233,172 pounds of coal burned	28,446,981 pounds of coal burned;
	1.2 railcars' worth of coal burned;	142 railcars' worth of coal burned;
	2.8 tanker trucks' worth of gasoline	344 tanker trucks' worth of gasoline;
	494 barrels of oil consumed	60,244 barrels of oil consumed;
		2,556,104 gallons of diesel consumed;
	25.5 homes' energy use for one year	3,116 homes' energy use for one year;
	37.2 homes' electricity use for one year	4,538 homes' electricity use for one year;
		1.06 million propane cylinders used for home barbecues.
	74.4 tons of waste recycled instead of landfilled	9,076 tons of waste recycled instead of landfilled;
	10.6 garbage trucks of waste recycled instead of landfilled	1,297 garbage trucks of waste recycled instead of landfilled;
	9,306 trash bags of waste recycled instead of landfilled.	1.135 million trash bags of waste recycled instead of landfilled;

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		5.5 wind turbines running for a year; or
		988,382 incandescent lamps switched to LEDs.
These savings are equal to greenhouse gas emissions from:		
	45.3 passenger vehicles driven for one year	5,525 passenger vehicles driven for one year
	521,487 miles driven by an average passenger vehicle.	63,621,359 miles driven by an average passenger vehicle
The carbon sequestered annually is equal to:		
	3,527 tree seedlings grown for 10 years	430,265 tree seedlings grown for 10 years;
	251 acres of U.S. forests in one year	30,625 acres of U.S. forests in one year
	1.7 acres of U.S. forests preserved from conversion to cropland in one year.	211 acres of U.S. forests preserved from conversion to cropland in one year.

b. And in the absence of specific plans, how do you actually expect to meet your commitments?

RESPONSE: Our specific local plans are outlined in my response to the question above.

3. *We entered into the hearing record a letter from Mayor William Wescott of the City of Rock Falls, Illinois. The city owns and operates its own electrical utility, and participates in the Illinois Municipal Electric Agency, a collection of non-profit public power municipalities within the state. Mayor Westcott outlines the clean energy investments his city has made but he also talks about the critical investments in baseload power in state-of-the art coal fired generation facilities. (the 1.6 GW Prairie State Energy Campus). He warns that if federal or state policies that force premature closure of the coal-fired units, his city would still have to purchase energy but would also be burdened to make payments on the closed facilities.*

a. Should policies be designed to ensure cities and ratepayers are not burdened with the stranded costs? What is your solution?

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RESPONSE: The federal government must lead in supporting our transition to clean, renewable energy, while ensuring that local governments and their citizens that are overly reliant on coal and fossil fuels are not unfairly burdened by the costs of stranded assets as the process gradually moves forward across the country. Legislators and regulators should promote policies that anticipate changing customer demands and declining costs of renewable energy and storage facilities.

Indiana is one of several states with anticipated coal-plant closures in the years ahead. Nearly 75 percent of electricity in the state comes from coal powered sources. According to a [report](#) entitled “Climate Change and Indiana’s Energy Sector: A Report from the Indiana Climate Change Impacts Assessment” published by Purdue University, only 5 percent of our energy is generated by renewable sources statewide. The college reports that the “energy mix makes the Hoosier State the eighth-largest emitter of climate-changing gases, at 183 million metric tons of carbon dioxide (CO2) emitted per year.” We must all accept the fact that the future of coal-fired generation assets is limited.

The U.S. Conference of Mayors recently adopted a policy of transition to 100% renewable energy and the use of clean fuels including natural gas are encouraged during the transition. The most critical question is where should the next investment dollar go – to coal fired power plants or to renewable fuel generating capacity?

One approach to making these decisions is to perform a net present value of a coal versus a renewable energy facility. The evaluation should include accounting for carbon emissions as an externality in the coal fired facility. Additionally, the steadily decreasing cost per Btu of renewable energy should be included in the evaluation.

A recent Indiana Public Services denial of permits for new natural gas units that would replace coal units slated for decommissioning was based on the assumption that consumer trends for renewable energy would likely make the proposed natural gas units a stranded asset.

Congress should make major federal investments in support of a gradual transition to clean energy, reducing our dependence on fossil fuels nationwide; concurrently, lawmakers should explore policies that support communities like Rock Falls that rely on coal and fossil fuels, minimize potential risk to cities and ratepayers, possibly offer financial assistance to reduce burdens, and establish national guidelines for future energy infrastructure investments.

4. *It is well known that the “Keep It in the Ground” movement and its political allies have successfully blocked the ability to transport American energy from the Marcellus shale to markets where it is in demand. New York’s blocking of pipelines is probably the most prominent example, and it has indirectly led to cities such as Boston being cut off from clean, affordable U.S. natural gas. In fact, the Northeast has been forced to burn old,*

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dirty oil plants for electricity during cold snaps, and they have even been importing Russian Gas into Boston harbor on occasion.

- a. Do you support expanding energy infrastructure to allow natural gas from Pennsylvania to be delivered to nearby markets in the mid-Atlantic, Northeast, and Southeast?*

RESPONSE: As leaders of our nation's cities, mayors oppose efforts by the federal or state government that would preempt local government and limit our ability to protect our communities from potential harm from fracking or any other proposed energy infrastructure projects. All U.S. communities should have the right to decide whether or not an energy infrastructure project is a safe and viable option, if the project is located within its boundaries or affecting the quality of life and environmental protection of the residents within its boundaries.