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DCMN NORMAN

THE AMERICAN ENERGY SECURITY ACT
OF 2009, DAY 3
THURSDAY, APRIL 23, 2009
House of Representatives,
Subcommittee on Energy and Environment,
Committee on Energy and Commerce,
Washington, D.C.

The subcommittee met, pursuant to call, at 9:40 a.m., in Room 2123, Rayburn House Office Building, Hon. Edward J. Markey [chairman of the subcommittee] presiding.

Present: Representatives Markey, Doyle, Inslee, Butterfield, Matsui, McNERNEY, Welch, Dingell, Green, Capps, Harman, Gonzalez, Baldwin, Ross, Matheson, Barrow, Waxman [ex officio], Upton, Hall, Stearns, Shimkus, Shadegg, Pitts, Walden, Sullivan, Burgess, Scalise, Sutton, Barton [ex officio].

Staff Present: John Jimison, Senior Counsel; Karen

Lightfoot, Communications Director; Matt Weiner, Special Assistant; Mitch Smiley, Special Assistant; Melissa Bez, Professional Staff; Alex Barron, Professional Staff; William Carty, Minority Professional Staff; Peter Spencer, Minority Professional Staff; and Garrett Golding, Minority Legislative Analyst.

Mr. Markey. This hearing will come to order.

Today we will begin our second full day of hearings on the American Clean Energy and Security Act. Yesterday we heard from three members of the Obama Cabinet, from CEOs of the United States Climate Action Partnership, from Mayor John Fetterman of Braddock, Pennsylvania, and from numerous experts, scientists, and economists, all with a stake in the best way to go about creating a new energy economy.

Today we will hear from three panels. The first panel will provide us with input on how best to allocate emission allowances and ways that can assist and benefit consumers. That panel includes representatives of major trade associations associated with electricity production and natural gas usage, as well as advocates for low-income consumers.

The second panel will advise us on ways in which we can ensure international competitiveness and help encourage international participation in our efforts to fight global warming and maintain a level playing field. It will feature major stakeholders like Dow Chemical and the United Steel Workers.

And our final panel will help us to understand how we can produce low carbon electricity, both from coal with carbon capture and storage, and from renewable energy sources like wind, geothermal, and solar.

Today is about the nuts and bolts of our legislation, how we

help consumers, keep jobs here in America, and begin transforming our energy system. With the information that we glean from today's witnesses, we can better craft solid solutions for our energy and environment future.

I look forward to hearing from our witnesses today. And I turn to recognize our Ranking Member, if he has any introductory comments.

Mr. Upton. I hope you liked the movie last night.

Chairman Markey and I were the co-host of the Disney movie on Earth last night. That is one of the reasons we finished Panel 4 by 6:45, so we could get there to the opening.

But I have no opening statement. Let's just get right to it.

Mr. Markey. Let me turn to the Chairman of the full committee, Mr. Waxman, and ask if he has any. And I do not see Mr. Barton.

So let me then turn and introduce Jeff Sterba. He was elected chairman of the Edison Electric Institute in 2007. Edison Electric Institute is a national association of shareholder-owned electric companies, their international affiliates, and industry associates. He is also the chairman, president, and CEO of PMN Resources, an energy holding company serving New Mexico and Texas.

Mr. Sterba, please begin when you are ready.

STATEMENTS OF JEFFRY E. STERBA, CHAIRMAN AND CEO, PNM RESOURCES INC., ON BEHALF OF THE EDISON ELECTRIC INSTITUTE; GLENN ENGLISH

CEO, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION; MARK
CRISSON, PRESIDENT AND CEO, AMERICAN PUBLIC POWER ASSOCIATION;
JOHN SOMERHALDER, II, CHAIRMAN, CEO, AND PRESIDENT, AGL RESOURCES,
ON BEHALF OF THE AMERICAN GAS ASSOCIATION; RICHARD MORGAN,
COMMISSIONER, DISTRICT OF COLUMBIA PUBLIC SERVICE COMMISSION, ON
BEHALF OF THE AMERICAN GAS ASSOCIATION; RICHARD COWART, DIRECTOR,
REGULATORY ASSISTANCE PROJECT; ROBERT GREENSTEIN, EXECUTIVE
DIRECTOR, CENTER FOR BUDGET AND POLICY PRIORITIES; ROBERT
MICHAELS, PROFESSOR OF ECONOMICS, CALIFORNIA STATE UNIVERSITY; AND
DARRYL BASSETT, EMPOWER CONSUMERS

STATEMENT OF JEFFRY E. STERBA

Mr. Sterba. Thank you very much, Mr. Chairman. I appreciate the introduction. And I would first like to commend you and this committee for holding these hearings. This is a complex topic, and education and understanding of the ramifications of what you may do is an exceptionally important aspect of it, and I very much appreciate the opportunity to appear before the committee.

I am here to represent Edison Electric Institute. And as an organization, we have endorsed principles associated with climate change that will help ensure that we can achieve the kinds of greenhouse gas reductions that are necessary, but to do it in a way in which we protect the impact on consumers. That is a very important aspect of, I think, this program, because electricity is

so pervasive in everything that consumers use, whether you are a business, a residential consumer, or a major industry.

For our industry, moving to a low carbon future is about turning over capital stock. These are expensive, long-lived generation assets that are currently being paid for in customers' rates. The turnover of this capital stock is not going to be simple, it is not going to be cheap, it won't occur overnight. It has to be done in concert with the development of technologies that will allow us to move to low carbon equipment to be used to meet customers' needs, things like carbon capture and storage which you have addressed in your proposed legislation.

Care in this transition is paramount to ensure that the resulting cost increases to customers are reasonable and absorbable by the economy. We strongly believe that an allocation of allowances for the benefit of consumers is a critical part of this care and transition that will enable an affordable path to aggressive greenhouse gas reductions.

I want to spend my limited time talking about why we believe the allocation of emission allowances to the electric sector is the most effective way to minimize adverse impacts on customers, and then to explain a specific proposal that EEI has developed that our entire membership has endorsed as to how this allocation could occur.

The cap-and-trade system that Congress established to reduce sulfur dioxide as part of the Clean Air Act Amendments of 1990 is

truly the most successful example of a cap-and-trade system in the world. To date, emissions have been reduced by more than 50 percent, at a cost far less than what was anticipated at the time it was done and without the existence or the occurrence of any windfall profits. In that case, 97 percent of all allowances were allocated to regulated emissions sources and only 3 percent were put up for auction.

In the proposed cap-and-trade system, by having allowances allocated to consumers or allocated for the benefit of consumers, you avoid the double whammy. By double whammy, I mean customers having to pay for the higher cost of new resources that will have to be added, plus the cost of allowances to cover what you have to remit, to cover the emissions that you have from existing fossil fuel resources.

It is important to note that by allocating these allowances for consumer benefit, the primary goals of a cap-and-trade system are still intact. There is a price that is placed on carbon which we need to understand and see so we can make informed decisions on resources, and the environmental improvements of greenhouse gas reductions occur just if they would if the allowances were auctioned.

Some have argued that money raised by allowance auctions could be provided back to consumers as a means to buffer the cost impact. So what is the difference between that and allocating allowances to the distribution company to flow those benefits back

to consumers?

First, most of the proposals to implement either a low income tax credit or send payments to individuals would not benefit commercial customers, industrial customers, the source of jobs within our economy. But it is not just that. It is also the impact on the balance of the public sector. What happens to hospitals? What happens to schools? They wouldn't receive the value. It would be going to consumers. And so hospitals and bus stations and everything else that provides services to consumers, their rates would go up, and those costs would then be flowed on to consumers.

So the increased cost of electricity would affect the economy through higher prices for goods and services, and higher taxes for local governments to cover their costs. An allocation system that benefits all electricity consumers helps cushion these cost increases through the economy. And I think, also, the efficiency of not taking the money from consumers through high electricity prices in the first place seems, at least to me, a better solution than taking it and then trying to pass it back to consumers through taxation and/or spending policies.

Another argument that is made against allocations is that, look at the European situation, and it led to windfalls. So we shouldn't let that happen, so we shouldn't have allocations. But what led to windfalls is because of the structure of their system in the EU.

First, they overallocated allowances because they did not have a good baseline on what greenhouse gas emissions were. In the United States, we have that good baseline.

Second, they made the allocations totally to all unregulated generators in the electricity sector. And it is a competitive market that they operated over there, where many of the States in the United States are not competitive markets on the retail side. And the result was that they got some benefit of price uplift and they also got an allocation. That led to windfalls.

The approach that we are proposing and that EEI has developed ensures that that will not occur, because we know what the baseline of greenhouse gas emissions are and we know how to structure a system through the allocations being given to the regulated side of the business, to the largest extent, so that they flow to the benefit of customers.

Let me briefly walk through the EEI proposal so that that is out on the table. The initial allocation to the electric public sector should be 40 percent of all allowances, because that is the proportion of our sector's share of the national greenhouse gas carbon dioxide emissions. This 40 percent allocation should remain in place until critical technologies such as carbon capture and storage, which are essential to achieving long-term climate policy objectives, are commercially available. Then our sector share could gradually decline, as consumer costs for cleaner energy would also decline.

Within the electric sector, these allowances would be divided among regulated distribution companies and merchant coal generators. Only merchant coal generators. Merchant coal generators would receive allowances based on about 50 percent of their base year emissions. And this is solely to cover that portion of the cost that isn't recovered through the marketplace.

There is a clear agreement on our part that there should not be windfalls to merchant coal generators, and what we are proposing is very different than what was done in the EU model. The allowances would enable these generation facilities to continue to operate, avoid a rush to gas, which would have consequences to all consumers, while new generation resources are developed. The vast majority of allowances would be allocated to the distribution company based on an even split between emissions and retail sales.

By allocating to the distribution company, we ensure that the value of that allowance flows through to consumers. And that is the main point: How do we do this in a way in which we mitigate the cost impact to consumers?

So, Mr. Chairman, I appreciate the time to visit with you. I look forward to your questions, and particularly those around how do we make sure that consumers are not adversely affected by doing the right thing.

Mr. Markey. Thank you Mr. Sterba. It was a very important proposal to put on the table for the members' consideration.

[The prepared statement of Mr. Sterba follows:]

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Mr. Markey. Next, we welcome our former colleague and a good friend, Glenn English, who is the president of the National Rural Electric Corporation. He represented Oklahoma's Sixth Congressional District for many years in Congress. His organization advocates for consumer-owned cooperatives on energy and operational issues as well as the rural community and economic development. We welcome you back to Congress, Glenn. Whenever you are ready, please begin.

STATEMENT OF GLENN ENGLISH

Mr. English. Thank you very much, Mr. Chairman. I appreciate that. And I do want to stress we are a cooperative; we are owned by consumers, and our focus really is to do two things. First of all, to make sure that our membership have enough power to keep their lights on and to maintain their standard of living; the second is to, of course, make sure that electric power is affordable. So that is where we are coming from. We are not for profit. We are not for profit.

There are no rewards in any way for a particular fuel, so we have no fuel choice from the standpoint of generating that electric power. It all comes down to this question of the cost of power, and how we can deliver that power to our membership in the most affordable manner possible.

Now, Mr. Chairman, I am speaking only from a standpoint of electricity as it applies to the bill, of course. And I would like to also call the attention of the committee to a commitment that was made years ago in 1932, first made in 1932 and then reiterated several times over the next ten years by Franklin Roosevelt when he made the observation that in this country that electric power is no longer a luxury and had become a necessity. A necessity.

And I would suggest, as we move to deal with this particular issue and this challenge, that we keep that in mind. That probably is a little different category perhaps than other issues regarding carbon, food, clothing, housing, and then electricity. I think most people would agree that in order to maintain that standard of living in this country, that is what we have to have.

So, anyway, I would like to just lay out a few markers, Mr. Chairman, as we move forward to deal with this particular challenge. The first thing is, and the dean of the House, I think, made this point some time ago about trying to regulate carbon through the Clean Air Act. I believe he described it as being a glorious mess. And I think that would probably be the case. It wasn't designed to do that. I remember, I was here when we passed it the last time, I believe it was 1990, Mr. Chairman, and I remember I voted for it. I don't remember any discussion about the carbon when we were talking about that. So this is not designed to do that kind of a job.

So in reality, I think we have all got to face the fact that we have got to have a bill; but I would also suggest not just any bill. It has got to be a bill, I think, that addresses the carbon issue and the carbon issue alone. In other words, what I would suggest, it is a bill that needs to be simple, if such things can be done. It needs to be flexible. It certainly needs to be affordable. And it needs to have sustainability. And what I mean by "sustainability," Mr. Chairman, is one that is going to last through the years. This is a long-term project we are embarking on, and certainly the next 10 or 15 years are probably going to be the most challenging as we move down that road.

And we also need one that is effective. So I would suggest a commonsense approach as we begin to put these pieces together to have a workable bill that accomplishes its objective.

The next thing I would suggest is it not be legislation that is designed to raise revenue. It shouldn't be a revenue enhancing endeavor. It should be something that is trying to achieve the objective of reducing carbon emissions in the country, and that alone. So that means auction is not a good idea. We would discourage the committee from going down that road. That means that allowances should be free, particularly as far as applies to the electric utility industry. And we would also suggest that it should be done on the distribution level, so that the full benefit of those allowances should go to consumers. Of course, our not-for-profit status, that is where they go.

I would also suggest, Mr. Chairman, that as we look at the caps, they should be established with an eye toward the question of technology: What can we do, and when can we do it? I think we all appreciate and understand that this bill, this effort, what we are going to try to accomplish here if we are going to keep the lights on and keep electric bills affordable, we need technology; and we are going to have to make some very significant advancements, and we are very hopeful that is going to be the case.

In some cases I guess you could say, Mr. Chairman, we are betting on the come, and we need to do everything we can to make sure that we speed up that technology and get it developed, get it on line, so it can be utilized, so we can get back to a full complement of fuels.

And we would also suggest, again looking at it from the consumers' standpoint, Mr. Chairman, that there should be some kind of safety valve device that makes certain that consumers are assured that we will, in fact, have a limit on any economic damage, that this thing will get out of control, that we are going to try to contain those costs. I know that you have addressed that in the draft. I would suggest it probably needs to be done in a little different manner than what you have in the draft. I appreciate the thought.

And also as we move forward with renewables, Mr. Chairman, we are very committed to renewables. We in fact serve 70 percent of

the land mass of the United States. So most of the renewable energy that is going to be generated in this country is going to be done in rural America and areas served by electric cooperatives. We just established a national renewable cooperative which allows small distribution systems all over the country to invest in renewable projects.

But I would also suggest that there is a wide range of difference in different parts of the country. Some areas can produce renewables far more economically, far easier, and far greater magnitude than you can in other regions. And that is why we think it should be looked at nationally and what can be done nationally.

And, Mr. Chairman, I would also suggest that for that reason there needs to be a small utility exemption, about 4 million megawatts per year. And I think we can make a serious workable start and move down the road to the objective you are trying to achieve.

Thank you, Mr. Chairman.

Mr. Markey. Thank you, Mr. English, very much.

[The prepared statement of Mr. English follows:]

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Mr. Markey. And our next witness is Mr. Mark Crisson. He is the CEO of the American Public Power Association, which is the service organization for more than 2,000 community-owned electric utilities. Prior to his current position Mr. Crisson was at Tacoma Power in Washington State for nearly 30 years. Whenever you are ready, please begin.

STATEMENT OF MARK CRISSON

Mr. Crisson. Thank you, Mr. Chairman. Good morning. I am Mark Crisson, president and CEO of the American Public Power Association. And, as you said, we represent over 2,000 publicly owned, not-for-profit power systems across the United States, 49 States. We serve cities as large as Los Angeles, but most of our members, the vast majority of our members serve communities of 10,000 people or less.

Mr. Chairman, APPA supports congressional action to address climate change. But as my colleagues have stated we are very concerned that achieving environmental goals be properly balanced with affordable costs to the consumers and the economy. Consequently, we have developed a detailed set of principles on implementation of a cap-and-trade program.

We believe it is critically important that the transition to a low carbon future be managed in a way that keeps electricity

affordable and reliable in order to be sustainable and workable in the long term. Thus, our first principle is legislation must include a safety valve or other stringent cost containment mechanism that sets a maximum price on carbon.

While we support the inclusion in your draft bill of an offset regime and the use of banking and borrowing, we do not think these are adequate measures. We urge the committee to include a price ceiling on CO₂ in the next version of your draft. We also have concerns that the provisions governing the establishment and use of offsets are inadequate for cost containment purposes, and would like to work with the committee to improve these provisions.

Regarding the issue of emission allowances, the electric utilities sector should receive an allowance allocation proportionate to its share of total emissions, or about 40 percent, all of which we feel should be allocated to load-serving entities or local distribution companies. This will provide the industry with allowances sufficient to maintain reliability and affording time to adapt during a transition period when low emission technology is under development. Allowances should go to the local distribution companies because they are in the best position to ensure that allowance revenues are used to reduce cost to electric consumers. Allocating allowances, as opposed to fossil fuel generators, would eliminate the prospect of windfall profits that have resulted in some cases in the European Union

cap-and-trade system.

We think the allocation to the LLCs is particularly important in regions that have restructured wholesale power markets that are under Federal jurisdiction and run by regional transmission organizations, such as the Northeast, the Mid-Atlantic, the Greater Midwest and California, because allocating allowances to independent generators in these markets will raise the already high wholesale prices these markets are producing. This is because fossil fuel generators nearly always set the clearing price in the wholesale electricity supply auctions in these markets. Should they receive allowances, these fossil fuel generators will add the value of these allowances to their bids into these markets, thereby adding that cost to other generation bidding into the market, including no- or low-carbon generations such as nuclear plants.

EPP also has serious concerns about auctioning allowances. An auction by its nature disadvantages small entities like most of my member systems. It is important, therefore, that if an auction is conducted, that it be designed to restrict speculation and minimize potential for volatility and allowance prices.

With a stringent cost-control mechanism in place, APPA would support phasing in an auction gradually over time. But without such a control mechanism, we think no auction should occur until new emissions control technology is commercially available to industry.

It is also essential that all net auction proceeds be used only for targeted research and development, energy efficiency, and mitigation of cost impact on consumers. In other words, areas directly related to addressing the climate change issue.

Mr. Chairman, regarding the proposed renewable electricity standard, APPA supports a workable Federal RES of 15 percent by 2020. However, our support contemplates that such a standard would be in place prior to implementation of a Federal greenhouse gas reduction mandate, and would serve to provide a bridge between the present and the time when technology has been developed to significantly capture and store carbon.

We also believe that once a Federal cap-and-trade program is implemented, an RES is neither necessary nor property. By its nature, the RES limits the flexibility of our industry, while a cap-and-trade program is intended to provide the industry more flexibility to tailor a compliance program. Enacting the two simultaneously will increase compliance costs for many utility systems.

Regarding the Energy Efficiency Resource Standard, we do not support such a standard but would urge that the RES permit a significant percentage of the standard be met by using energy efficiency measures.

Finally, Mr. Chairman, APPA has serious concerns about the new source performance standards included in Title I, because several of our members have facilities in various stages of

permitting and construction. These standards would also effectively create a moratorium on coal in a post-2015 world and raise some significant challenges for facilities yet to be permitted between 2009 and 2015, because basically there is no commercially deployable coal generation technology in the U.S. that can achieve the proposed standard of 1,100 pounds for megawatt hours. We would strongly urge the committee to delete this provision.

Thank you, Mr. Chairman. I look forward to answering any questions you have.

Mr. Markey. Thank you, Mr. Crisson, very much.

[The prepared statement of Mr. Crisson follows:]

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Mr. Markey. Let me now recognize the gentleman from Georgia, Mr. Barrow, to introduce our next witness.

Mr. Barrow. I thank the Chair for the courtesy of allowing me to introduce our next witness.

I want to welcome Mr. John Somerhalder here to the committee today. Mr. Somerhalder is the chairman of the board, president and CEO of AGL Resources down in Atlanta. He is a chemical engineer, has been in the natural gas businesses for 30 years. And I think you will find, as he speaks for the American Gas Association today, that the folks in natural gas are already doing a lot of the things we want them to do, already early starters in the area of efficiency and trying to reduce our carbon footprint.

So it is a privilege for me to welcome you. Thank you, Mr. Somerhalder, for being here today.

STATEMENT OF JOHN SOMERHALDER, II

Mr. Somerhalder. Thank you, Congressman. And thank you, Mr. Chairman, and thank you to the committee.

My company has utilities in addition to, in Georgia and Florida, Tennessee, Virginia, Maryland, and New Jersey, and natural gas storage facilities in Texas and Louisiana. I am pleased today to testify on behalf of the American Gas Association, of which I am vice chair and chair of the Climate

Change Task Force.

The AGA's 202 members deliver natural gas to more than 171 million Americans. In terms of helping in the fight to reduce greenhouse gas emissions, natural gas utilities have two great resources: our fuel and our customers. Our fuel is a clean, efficient, abundant, and a domestic energy source, with 98 percent of America's natural gas being produced in the United States or in Canada. It is the dominant source of energy for residential and commercial heat, hot water, and cooking. Yet it produces only about 6 percent of the total U.S. greenhouse gas emissions. Upon combustion, natural gas creates 43 percent less carbon dioxide than coal and 28 percent less than petroleum.

In terms of our customers, they lead the Nation in energy efficiency. Since 1970, the number of residential natural gas customers has increased from 38 million to 65 million, but the energy consumption and carbon emissions have remained flat in that time period. This results from a trend of declining use per customer. This dramatic reduction is attributable to tighter homes, more efficient appliances, and energy efficiency measures, many of which were implemented by natural gas utilities.

Clearly, natural gas is part of the climate change solution. It offers an immediate answer with technology that is available today. The most efficient and effective way to use natural gas is directly in our homes and businesses. More than 90 percent of the energy that leaves the wellhead gets to the customer, rather than

indirectly to produce electricity where two-thirds of the energy can be lost.

In light of the above factors, we maintain that a national, programmatic, focused effort rather than a cap-and-trade effort for these customers is the best way to ensure equity while not subjecting customers to unpredictable allowance cost. We do not want to see our customers competing with electricity generators and large industrials for the allowances necessary to heat their homes and cook their food.

We believe, and history proves, that programmatic measures uniformly applied can accomplish what we want without the undue cost and complexities of the cap-and-trade system. However, if programmatic measures are not acceptable, AGA supports including natural gas residential and commercial sectors -- excluding them from the scope of the cap-and-trade system until 2016, as proposed in the discussion draft bill. AGA believes that most allowances required for residential and commercial gas customers should be allocated rather than auctioned, as allocating allowances is the best way to ensure that price impacts on our customers will be minimized. Local natural gas utilities, as regulated by State public utility commissions, make no profit on natural gas prices when they rise. Similarly, they would not make any profit on allocated allowances. The natural gas utilities will need the ability to pass on the cost of these allowances, and the climate change bill should provide for this rate-making treatment.

We support the proposed carbon footprint labeling in the draft bill. Giving customers this carbon output information will provide them with the essential information that they need to play a role in reducing our carbon output. The discussion draft bill proposes to establish an Energy Efficiency Resource Standard for both electric utilities and natural gas utilities.

While the end result is a laudable one, the lack of clarity in the language addressing EERS causes concerns. First, the legislation could have the unintended consequence of limiting carbon-driven fuel switching, and could even increase the Nation's dependence on foreign oil by preventing conversion to high efficiency gas applications from less efficient fuels.

Second, the imposition of these penalties could be a barrier to economic growth and development by raising the cost of energy to both new and existing customers.

And, third, the focus is on large after-tax penalties rather than incentives, and it is tied to consumer behavior which the utility cannot directly control.

Mr. Chairman and committee members, there are many other issues, including research and development, natural gas vehicles, and renewable gas that we don't have time to address now but are included in my written testimony.

That concludes my remarks, and I will be happy to address your questions.

Mr. Markey. Thank you very much.

[The prepared statement of Mr. Somerhalder II follows:]

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Mr. Markey. Our next witness is Richard Morgan. He is a member of the Energy Resources and Environmental Committee of the National Association of Regulatory Utility Commissioners which represent State public service commissions that regulate utilities. Mr. Morgan also leads the NARUC Task Force on Climate Policy. And he is serving in his second term as commissioner on the District of Columbia Public Service Commission.

Please begin when you are ready, Mr. Morgan.

STATEMENT OF RICHARD MORGAN

Mr. Morgan. Thank you, Mr. Chairman, and members of the subcommittee. My name is Richard Morgan, and I am a member of the District of Columbia Public Service Commission. I am testifying on behalf of the National Association of Regulatory Utility Commissioners. I am honored to have the opportunity to appear before you this morning regarding the American Clean Energy and Security Act.

NARUC is on record as supporting a well-designed, economy-wide Federal program to limit greenhouse gas emissions in order to remove existing uncertainties that are hampering critically needed investment in electricity transmission and generation.

In concept, NARUC supports the goal of auctioning emissions

allowances under a cap-and-trade mechanism, but we believe it is appropriate to provide a transitional allocation of free allowances in order to minimize economic dislocations as we move toward a 100 percent auction. However, as OMB Director Peter Orszag correctly points out, when allowances were given away to European power generators, shareholders, not consumers, got most of the proceeds as windfall profits. It is precisely for this reason that NARUC opposes the allocation of no-cost allowances to electricity generators.

State regulators propose a different approach to ease the transition in the electric sector. Instead of giving away allowances to power generators, which are often unregulated, give them only to regulated local distribution companies which own the wires used to distribute electricity. These LDCs, as we call them, are always subject to rate-setting authority such as State public utility commissions or consumer-owned utilities, where they can ensure that consumers, not utility shareholders, receive the benefits of free allowances. In fact, State regulators already have in place mechanisms for flowing through to consumers the benefits of free emissions allowances from the existing acid rain program.

President Obama has stated that reducing carbon emissions must be done in a way that insulates consumers as much as possible from potentially dramatic rate increases. Giving allowances to LDCs as a proxy for their customers provides an efficient means of

softening the impact on consumers and solves the windfall profits problem at the same time. Under this approach, revenues associated with pricing greenhouse gases would be returned to the very consumers who would be at risk for paying higher energy prices. Regulators could direct a portion of the proceeds toward mitigating the impacts of pricing carbon, such as through expenditures on energy efficiency or low-income energy assistance programs. Meanwhile, generation decisions would still be influenced by the full effect of pricing greenhouse gas emissions.

How the proceeds of a cap-and-trade mechanism are spent is every bit as important as putting a price on carbon in the first place. Assuming an allocation to LDCs, State regulators can direct the proceeds toward investments such as energy efficiency that reinforce the goals of limiting greenhouse gas emissions and thereby lower the overall costs of achieving emissions reductions. And you will hear more about this from our next witness, Mr. Cowart.

Mr. Chairman, you have surely noticed similarities between NARUC's proposal and those of some industry groups. In fact, EEI's testimony refers to NARUC's support for an allocation to LDCs, but that is really where the similarities end. There are some important distinctions that I want to bring to your attention. These industry groups, which have unregulated generators among their members, naturally seek an allocation of free allowances not just for LDCs but for merchant generators as

well. NARUC objects to giving free allowances to electric generators under any circumstances, and I would like to explain why.

First, in many States generators are unregulated, and State commissions have no way to ensure that consumers would receive the benefits of these free allowances. There is no reason to expect an outcome any different from what happened in Europe.

These companies say that they need allowances to cover their so-called net compliance costs, an argument that we find curious since there is no commercial technology available to remove CO2 emissions from an existing generator. These merchant generators are not trade exposed in the sense of competing in overseas markets; they are purely domestic.

Free allowances won't help to keep dirty generators operating even if that were desirable. If carbon prices are too high, the company could simply shut down its generator and keep the value of the allowance stream for its shareholders as sort of a golden parachute.

Under the formula proposed by EEIC, electric sector allowances would go first to merchant generators based on historic emissions; LDCs would then get only what is left. And the generators' share could grow if the utilities decide to spin off more generators into unregulated subsidiaries.

Finally, any electric sector allowances given to generators would not be available to help soften the impact of pricing carbon

on consumers through their LDCs. Those who advocate an allocation to generators have not explained how this would help consumers in any way or why it would not produce a windfall for their shareholders just as it did in Europe.

Mr. Chairman and members of the subcommittee, NARUC believes that through a carefully designed cap-and-trade mechanism and appropriate distribution of emission allowances, carbon restrictions can be implemented without undue economic burden on consumers.

Thank you for your time and consideration this morning. I would be happy to answer any questions.

Mr. Markey. Thank you, Mr. Morgan, very much.

[The prepared statement of Mr. Morgan follows:]

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Mr. Markey. Our next witness, Mr. Richard Cowart, director of the Regulatory Assistance Project, has served as commissioner and chair of the Vermont Public Service Board for 13 years. He was elected president of the New England Conference of Public Utility Commissioners, and was chair of the NARUC National Committee on Energy Resources and Environment.

Mr. Cowart, please begin when you are ready.

STATEMENT OF RICHARD COWART

Mr. Cowart. Good morning, Chairman Markey, Ranking Member Upton, and members of the committee. I appreciate the opportunity to speak with you this morning about the critical role of end-use energy efficiency in reducing greenhouse gas emissions and containing the cost of climate change legislation.

Let me begin, Mr. Chairman, by congratulating you for the comprehensive approach you are taking to global warming pollution and the progress that Congress is making in addressing this critical issue.

Given the scale of this issue, it is no surprise that climate legislation raises concerns about prices and about impacts on consumers. I have been a State environmental commissioner, public utilities commissioner, and as an advisor to many governments. So, for about 25 years I have been working to protect consumers

while promoting advanced utility services needed for a modern economy.

My testimony boils down fairly simply. I am focusing on the central role that carbon credit allocation can play in protecting consumers and containing the costs of climate legislation.

The good news is that a smart allocation policy linked to a smart investment strategy can greatly reduce the consumer cost of the proposed cap-and-trade program. My overall message is very simple: Congress should design the climate program to reduce emissions through greater energy efficiency, not just through higher carbon prices. For the power sector, the best way to do this is through a consumer allocation for efficiency; that is, by allocating the sectors' allowances to local distribution companies or other State-supervised entities acting as trustees for consumers. The trustees can then auction the allowances to emitters and recycle the revenue for the benefit of consumers.

Moreover, the best way to help consumers and to lower the cost of the entire climate program is to invest a large fraction of those funds in low carbon resources, especially cost-effective end-use efficiency.

My written testimony elaborates on four points, so I am just going to touch on them here.

First, as I just stated, it is essential to think of climate legislation as a combination of programs, including both regulatory and market measures to lower emissions. It is not just

cap-and-trade, it is not just a renewable electricity standard, it is not just better building codes. It is really all of the above.

When California completed its exhaustive examination of this issue recently, the Air Resources Board came out with a scoping plan. At least 75 percent of the carbon reductions in the California plan are going to be accomplished through mechanisms that people call the complementary policies. That 75 percent I would view as the foundation for the cap-and-trade program which is intended to deliver the other 25 percent.

My second point is that energy efficiency is the equivalent of a low-cost carbon scrubber for the power sector. And the good news is that utility-scale energy efficiency is relatively inexpensive at 3 cents a kilowatt hour. It is much less than the cost of supply and delivery, which is usually two to five times more expensive.

Efficiency opportunities exist in large quantities in all regions of the country, whether your system is a coal system, a gas system, a hydro system; any region of the country, energy efficiency resources can be tapped to benefit customers.

My third point is on price impacts and cost containment. Simply put, energy efficiency is the key to cost containment in the climate legislation. Adding a price signal to the cost of electricity is useful in trying to reduce carbon emissions. But trying to meet our goals through price alone will be much more costly than a cap-and-trade program that builds efficiency right

into its architecture. And this realization has two sides, and I want to touch on both of them.

First, it is hard to get to where we want to go through carbon prices alone. People are often surprised to learn how hard it is to reduce power sector carbon through price signals. On the consumers' side, it takes a very high price because of low price elasticity to actually reduce carbon as much as we need. And, on the generator's side, it takes a very high price in order to significantly change the dispatch across our power grids.

This leads to my final point which concerns allocations. As I have said earlier, the best way to control costs in the power sector is not by giving allowances for freer generators, but by allocating them to local distribution companies or other consumers trustees supervised by state regulators. Those trustees can sell the allowances and apply the proceeds to benefit consumers. This will deliver much more low-cost efficiency than a purely price-driven approach to allowed allocation.

Our studies show that for the same dollar cost in rates, efficiency programs will save five to seven times more carbon than would result from carbon taxes or credit markets alone. So, five to seven times greater savings on the environmental side for the same cost to consumers.

I will close by noting that there is a good model in the United States for the practice that I am describing here, and that is the RGGI, the Regional Greenhouse Gas Initiative. If you look

at the experience of RGGI, all ten RGGI States considered this question and concluded that almost all the allowances should be auctioned, and that almost all, or 70 percent, of the revenues associated with the program should be recycled back for the benefit of consumers principally through low-cost energy efficiency.

Thank you very much. I look forward to your questions.

Mr. Markey. Thank you, Mr. Cowart, very much.

[The prepared statement of Mr. Cowart follows:]

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Mr. Markey. Our next witness is Mr. Robert Greenstein, founder and executive director of the Center on Budget and Policy Priorities. He has had a long and distinguished career, but it included winning a MacArthur fellowship. And he was appointed by President Clinton to serve on the Bipartisan Commission on Entitlement and Tax Reform. We welcome you back, sir. Whenever you are ready, please begin.

STATEMENT OF ROBERT GREENSTEIN

Mr. Greenstein. Thank you very much, Mr. Chairman. As you know, the work of our center in this area has focused on developing proposals to protect the budgets of low- and middle-income consumers in a way that is effective in reaching them, efficient, and consistent with energy conservation goals. With these goals in mind, we have designed an energy refund or rebate to offset the increases in households' overall energy expenses that would result from an emissions cap, not just their increases in utilities bills, which will account for less than half the overall hit to consumers' budgets.

We recommend that consumer relief be provided through the tax system and existing benefit delivery systems. Under the proposal we have developed, 95 percent of households in the bottom fifth of the income distribution and over 98 percent of those in the middle

fifth and the fifth in between would be reached automatically, without new bureaucratic structures, no new applications required, and low administrative costs.

Here is how it would work. Most households qualifying for an energy refund would get it through the form of a refundable income tax credit that would be provided in paychecks through adjustments to employer withholding, as is being done with the tax credit that you enacted in the recovery legislation in February.

For seniors, veterans, and people with disabilities, they would get their refund as a direct payment from the Social Security Administration or the Department of Veterans Affairs, again, as being done under the recovery legislation. And, finally, very poor households participating in programs like food stamps would receive monthly energy refunds through the debit card systems that every State human service agency in the country operates to provide other low-income benefits. Those systems have proved to be efficient and highly effective.

Now, some, including other of my fellow panelists here, have proposed instead routing funds for consumer relief through local utility distribution companies. While that may seem reasonable at first blush, our analysis indicates that such an approach would be unwise for several reasons.

First, the utility company approach is aimed at electricity and natural gas bills. It doesn't address the full impact of an emissions cap on consumers' budgets. Over half of the impact

would be in other areas, gasoline, increased prices for a whole array of goods and services that use energy in their manufacture or transportation to market. Consumer relief that only focuses on home or even business electricity and gas bills leaves consumers with a large, uncompensated hole in their budgets.

Secondly, this approach would cause prices for other forms of energy and energy products other than electricity and gas to rise even more, and it would increase the overall cost to the economy of meeting the cap. This is not just our conclusion. This is in the EPA study of your draft bill released this week, and it is in the study of Resources for the Future, the premier environmental think tank.

The issue is that keeping the utility bills low would blunt the price signal an emissions cap is supposed to send and, as a result, you get less reduction in electricity and natural gas use.

Now, if the cap is a given amount of tons of carbon emissions and you get less reduction from electricity and natural gas, you must get greater reduction from all other forms of energy. In order to do that, the price of other forms of energy has to rise more. In the Resources for the Future study, they estimated that this kind of an approach would cause the overall allowance price to be 15 percent higher than it otherwise would be. In the EPA study released earlier this week, and I am quoting, "Returning the allowance value of consumers of electricity via local distribution companies prevents electricity prices from rising, but makes the

cap-and-trade policy more costly overall. This form of redistribution makes cap-and-trade more costly since greater emissions reductions have to be achieved by other sectors of the economy."

A third and final problem here is that while the LDCs are regulated utilities, the quality of State utility regulation is uneven across the country. And the fact that they are regulated is no guarantee that in every area of the country, free distribution of allowances to the LDCs will produce well-targeted and effective consumer relief. This is an issue some consumer organizations have expressed concerns about.

So, to wrap up, a refundable energy tax credit delivered through paychecks coupled with electronic benefits transfers and payments from Social Security and Veterans Affairs would be the most effective way to provide relief to low- and middle-income consumers. Other mechanisms would provide less consumer relief per dollar of cost. And this is why the newly formed Climate Equity Alliance has, as a basic principle, providing the consumer relief directly through the kind of mechanism I have described rather than through utility companies. This is an alliance that includes leading civil rights groups like the NAACP and the National Hispanic Environmental Council, leading religious organizations like the U.S. Conference of Catholic Bishops, SCIU, and the Center for American Progress.

Having said this, we all know that deadlock serves no one.

We all know that agreement needs to be reached to move this legislation. So, in the spirit of compromise, let me swallow hard and suggest a possible middle ground from what you are hearing on this panel.

Mr. Markey. We will give you extra time right now. That is a very important sentence you just said. Thank you.

Mr. Greenstein. While I believe providing consumer relief through the local distribution companies is unwise for all the reasons I have mentioned, it seems that that would need to be a component of something that would move particularly in this committee.

So the suggestion would be, rather than, as some have suggested, combining a very large LDC piece and a small low-income consumer piece to supplement it, to have a somewhat more moderate LDC piece combined with an energy tax credit designed such that the sum of the LDC relief and the tax piece together fully offset the hit to the budgets of the typical middle-income household.

The Social Security, Veterans, and debit card pieces obviously would still be a part of it for those groups. And then, over time, as energy efficiency and other matters kicked in over time the free distribution of allowances to LDCs would phase down, the direct relief, the tax piece would phase up and would stay at the level based on what was happening with energy prices that you needed to provide the consumer relief to make the typical consumer whole.

Mr. Markey. Thank you.

[The prepared statement of Mr. Greenstein follows:]

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Mr. Markey. Our next witness, Dr. Robert Michaels, is a professor of economics at California State University, Fullerton. Mr. Michaels is also an adjunct scholar at the Cato Institute. We welcome you, Dr. Michaels. Whenever you are ready, please begin.

STATEMENT OF ROBERT MICHAELS

Mr. Michaels. Thank you, Chairman Markey. I am honored to be here.

I come from California, where we supposedly set a lot of trends. And the first thing I want to do is summarize a few problems California has that may be quite important for the content of the legislation we are talking about here because your legislation depends, among other things, on a national renewable portfolio standard.

The thing that is clear now is that California's utilities are far out of compliance with their standard. It appears that it is going to be impossible for them to move on to tighter standards. And there are a variety of reasons, including regulatory uncertainty and citing problems with transmission.

Second, the supposed effect of energy efficiency policies in California needs to be reconsidered. It has been highly touted that California's per capita electricity consumption is staying constant instead of rising like the rest of the country. What

this really reflects, we can look at the statistics, it is a departure of industrial customers.

Studies that show for the Air Resources Board that it is going to be a painless transition that creates jobs to California's cap-and-trade system, these have been thoroughly discredited by peer reviewers from places that even include the Pew Foundation.

The smart grid, cost-benefit figures for the smart grid have gone in every which way in the applications for California. They have gone from negative to positive largely on the basis of assumptions that the utility will be able to control people's power in their homes.

Those are important, but there is a more important thing about this bill that I think really matters at the base. This bill is a tax bill. This bill is very anti-consumer. It has one acknowledged policy: It is to raise energy prices to Americans; and, when it does so, it is going to make America less competitive in an ever more competitive world.

For reasons they can best explain, some people are on record as favoring higher prices. As important as those prices are, are the policies that will increase them. Every major provision of this bill is at base a tax, and every one of them is called something else.

The renewable electricity standard is a cleverly disguised tax. None of it is ever going to appear on the Federal books.

Instead, the bill will simply force utilities to purchase renewable energy, leave State regulators with no choice but to fold the costs into households bills. Another tax turns up in the proposed auction of allowances. The official term is "auction," again, the real term is "tax." An easy way to see this: Look at the plans for spending the revenue. Details aren't firm, but it is possible to code to consumer rebates, deficit paydown, health care financing. There are only two possible sources, debt and taxes. And this is a tax.

Like all other taxes, allowance charges compel business owners to divert funds they could otherwise have used to operate their firms and employ people. Those who believe that the respending of revenue from auctions will create jobs have been conspicuously silent about the jobs that are going to be destroyed in the initial allocation process.

The bill's effects start with scarcer energy. They hardly end there. They will be increasing the prices of all other goods and services that use energy in their production. If that is so, we are talking lower standards of living for Americans, not higher, and talking about making American goods less desirable to foreign purchasers, not more.

This bill's thrust is to make energy needlessly scarce, and then somehow we reach a conclusion that this action is good for the economy.

Think of it simply: If workers work with more talented

workers, they are going to be more productive than workers who labor alone. Workers with more advanced equipment to work with, and more of it, are going to be more productive than workers who are without it. Workers with better and more abundant energy are going to be more productive than workers who do not have access to it.

This bill's logic seems to reverse all of that, and tell us that less energy is going to somehow do the exact opposite of all these other things that workers work with. There is no economics in it.

Scarce energy creates jobs by making workers less productive, so that it takes more of them to get something done. This bill does not create prosperity. This bill is going to produce a less competitive, less productive economy that has lower incomes, less opportunity, and less wealth to hand down to future generations. Thank you.

Mr. Markey. Thank you, Mr. Michaels, very much.

[The prepared statement of Mr. Michaels follows:]

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Mr. Markey. And our final witness before questions from the subcommittee members is Mr. Darryl Bassett, spokesman for the Empower Consumers Coalition. Mr. Bassett formerly served as Arkansas State Public Utility Commission. Mr. Bassett, please begin whenever you are ready.

STATEMENT OF DARRYL BASSETT

Mr. Bassett. First, of all, I want to thank you, Mr. Chairman, and members of the subcommittee. Having been familiar, Mr. Chairman, with your body of work while I was a commissioner, I have a great deal of respect for that body of work.

It is a privilege and an honor to be able to come to this committee and testify on what impacts we believe consumers may very well face if Congress does in fact adopt energy or climate policies without adequate cost containments. But I would be remiss if I went any further without recognizing the presence of one of Arkansas' favorite sons, Congressman Mike Ross, and certainly his diligence in representing the people back home. We are awful proud of him back there.

But it is an honor and it is a privilege to offer my perspective on how policies in the current draft might very well impact the poor, the elderly, the consumers on fixed incomes, those institutions of higher education, hospitals, and small

businesses. These are people, members of the committee, whose story generally gets kind of lost in the wash anytime government, whether it be State or Federal, considers sweeping public policy changes. And as a former utility commissioner, I am acutely aware that the first question that consumers generally have when confronted with sweeping policy changes is, one, how much is that policy going to cost? And, two, who is going to have to pay it? And, personally and quite candidly, answering that second question is always easier to do than answering the first.

So, consequently, I want to certainly applaud the EPA for their recent analysis. I think consider it a great first step in answering that first question, which is, how much is the implementation of this proposed draft going to cost the American people.

However, that analysis that I have had a chance to peruse, while certainly well intentioned, doesn't go, in my opinion, far enough given the overlapping mandates in the draft.

The draft, as you know, considers mandates on renewables, energy efficiency, standards for new power plants, Federal gasoline standards. There are provisions there for cap-and-trade and issues involving greenhouse gas. So I think it is fair to say that the consumer is going to be concerned about what the total cost of the proposal is going to be, and will certainly be less than content if we only offer them an analysis that covers cap-and-trade, as the EPA analysis does.

RPTS McKENZIE

DCMN BURRELL

[10:40 a.m.]

Mr. Bassett. [Continuing.] There is little disagreement among consumers that the cap-and-trade program is going to cost them a lot of money. We are looking at studies that go anywhere from an EPA estimate of \$983 billion by 2030 to one done by the American Council for Capital Formation that says it is upwards of \$1 trillion. Consumers are also aware that renewables are going to be costly. What one Texas utility pays for wind recently more than doubled. And Dr. Michaels just gave you some indication about what is going on in California. They are among the Nation's highest utility rates, but they also have one of the highest renewable mandates.

What concerns us quite frankly though is putting the two of them together, the cap and trade as well as the renewable portfolio. I believe that if we are not careful what we could pose is potentially devastating consequences on the most vulnerable in our country because what we were looking at when we look at that potentiality, we empower consumers, we then respectfully ask that the committee before it moves further consider an analysis that takes into consideration all of the proposals and what their simultaneous implementation would be before passing any type of climate change or any type of renewable

legislation.

Our concern, quite frankly and honestly, is not with the draft. As I said initially, I am familiar with your body of work and certainly with your reputation for integrity. That goes without saying. But what we feel, while we feel the draft is well-intentioned, we are concerned about the unintended consequences of well-intentioned legislation. And so we feel that at this critical juncture in our Nation's history we can't afford to make sweeping decisions on far-reaching legislation without a full appreciation of the extent to which our people, your constituents, are going to prosper or are going to suffer.

Now the answer to that second question that I said the consumers are going to ask, who is going to pay, well, it is always the consumer. But the answer really, that doesn't address what they are really trying to ask because at the heart of this thing we know that some of those consumers are going to suffer more than others. We know that history tells us anytime we apply a one-size-fits-all approach nationally, there is going to be a disproportionate burden placed on some members across the country. And ultimately it falls on the consumers who are least able to afford it. That is communities of color, that is the elderly, that is those living in poverty, those living on fixed incomes. They are going to pay an inordinate amount of their monthly income on energy.

So I have to agree with the nonpartisan statement that came

out of the Congressional Budget Office that characterized that particular effect as being regressive. It said, and I quote, price increases resulting from a carbon cap would be regressive; that is, they would place a relatively greater burden on low income households than on higher income ones. We know that in 2008 the average American family that had a disposable income of \$52,500 a year last year spent 12 percent of that income on energy. We also know that those who were making less than \$50,000, which essentially is 51 percent of all U.S. households, spent 24 percent on energy. And those making between \$10,000 and \$30,000 actually spent 26 percent of that income on energy.

We also know that in 2008 African American households as well as Hispanic households with incomes less than \$50,000 spent over a quarter of that income on energy. So it is not surprising that consumers are going to be concerned about how much more they are going to be asked to bear from any type of legislation.

Mr. Markey. If you could summarize please, Mr. Bassett.

Mr. Bassett. Well, in summary we are concerned that the bill should address in totality all of the costs that are going to be incurred. One, we would ask the legislation go through a rigorous cost analysis. Second, we would ask you that you would consider mechanisms that would establish some type of floor or ceiling with regard to carbon allowances so that you can mitigate any type of unintended consequences.

Mr. Chairman, I would like to thank you for the opportunity

to testify, and Empower Consumers certainly looks forward to working with this committee as we go forward.

[The prepared statement of Mr. Bassett follows:]

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Mr. Markey. Thank you, Mr. Bassett, very much. Now we will turn to questions from the subcommittee members. The Chair will recognize himself and let me turn to you, Mr. Cowart, and you, Mr. Greenstein, so I can ask you a little bit of a question so you can both get a chance to expand on the impact on consumers.

Can you talk a little bit about what happens if we put together a good formula dealing with energy efficiency, recycling revenues and the cost of inaction? We saw the price of a barrel of oil spike to \$147 a barrel last year if we don't put together a plan to break our dependence on imported oil.

Mr. Cowart.

Mr. Cowart. I will start. My message is plain here, that cost-effective energy efficiency is the cost containment mechanism you are looking for. And I encourage all the subcommittee members to look really carefully at all the mechanisms in this legislation that would promote end-use energy efficiency. And I suspect that Mr. Greenstein and I are going to agree that that is one of the ways to bring prices down across the board for everybody.

And secondly, that in particular we should support targeted low-income energy assistance that would direct cost-effective energy efficiency, particularly to low-income families, through such things as dramatically expanding the weatherization programs.

So there are a lot of mechanisms here to help consumers both directly and indirectly by lowering carbon prices and lowering

power prices through aggressive energy efficiency actions.

Mr. Markey. Okay. Let me go to you, Mr. Greenstein.

Mr. Greenstein. I think things like energy efficiency and consumer relief go hand in hand. The way that we think of and the way we recommend you think of and I think the way the committee, as I understand it, is thinking of consumer relief is that the consumer relief be related to some share of the permits. The more effective the efficiency and shifts to alternative forms, cleaner forms of energy, via the price signal are, then the less will be the amount that the allowances sell for, and the smaller will be the hit on consumers' budgets. I don't think this bears one way or another on the form of the consumer relief. But under the proposal that I have suggested with tax credits, to payments on Social Security and veterans and the debit card mechanism, the amount of the rebate would be tied each year to the price that the allowances were selling for and thereby to the overall impact on consumers. So the better the results one gets from investments in efficiency and alternative energy, the less the burden both on the overall economy and on consumers. And if X percent of the permits are going for consumer relief, the dollar amount of that relief will be less because the impact on their budgets will be less because the efficiency is working.

Mr. Markey. Thank you, Mr. Greenstein.

Mr. Sterba, in my home State of Massachusetts there are two large coal-burning power plants, the Salem plant and the Brayton

Point plant. Since our State required utilities to spin off these plants as part of its restructuring plan, they are not subject to regulation by the Massachusetts Department of Public Utilities. If we were to give Dominion Power, which owns Salem, and PGE which owns Brayton Point, free allocations, what would prevent them from pocketing that financial windfall rather than passing on the savings to the consumer?

Mr. Sterba. Mr. Chairman, the primary benefit that will go to those consumers is the allocation that would be made to the LDC that serves the consumers in that area. The purpose of a small allocation -- and we are talking about less than 10 percent of the total allocations to the electricity sector that would go to coal generators -- the purpose of that is to help cover the costs that are not recovered by that coal generator through the price of electricity caused by the imposition of a cap and trade. So it helps cover that small component of cost that is not recovered through the market price.

Yes, they will sell it. Yes, that generates revenue to them. What it does do -- and let me use Texas, where I am more familiar, Mr. Chairman, because I operate there -- is it helps ensure that that coal resource stays viable for a period of time because the allowances that are allocated to that generator would decline. But it helps ensure that you don't end up causing that unit to be shut down or mothballed and replaced with gas generation.

Mr. Markey. Let me go to, if I may, Mr. Morgan. Do you

agree with that?

Mr. Morgan. I agree in part that the benefits to consumers come through the allocation to the LDCs. But I don't see how the consumer gets any benefit from giving of free allowances to the generator because those benefits are -- we have no way to make sure that they get passed along. The company, in fact, wouldn't necessarily even keep that plant operating. If it becomes uneconomic because carbon is being priced, the allowance allocation is based on the baseline and they would get this perpetual stream of allowances into the future even if the plant has been retired. So there really isn't any incentive for them to even keep the plant running. And there is every opportunity for them to pass along the value of that future allowance stream to the shareholders and really no way for it to get to --

Mr. Markey. My time has expired. We have to continue this conversation, I think. My time has expired. The Chair recognizes the gentleman from Michigan, Mr. Upton.

Mr. Upton. Thank you, Mr. Chairman. As you know, a number of States actually exceed 90 percent of their power produced from coal. And I have always been a supporter of clean coal technology. And Mr. Sterba, you indicated that you thought that there should be free allowances until technology is in place that will actually reduce those emissions.

I was a cosponsor of the Boucher bill last year. I hope that we can proceed on it this year. But if it works -- and I hope

that it does -- it is still 8 or 10 years probably away before it is actually in place and you can actually see it begin to be implemented with a number of different facilities around the Nation, particularly in the Midwest.

So assuming that that is all accurate, you would want a free allocation until that technology is on the shelf ready to use, is that right?

Mr. Sterba. Yes, sir. In fact, I think that free allocations in order to help mitigate consumer impact should last longer than just 8 to 10 years. I think -- but they would be declining as the cap declines. So to me, you should be thinking about allocations that would last 20 to 30 years. But it is a declining amount, and that is for the consumer protection purposes.

Mr. Upton. Now as we talk about consumers getting money back, in essence a rebate, our State, Michigan, my State, Michigan, we have lost 150,000 jobs in the last number of months. Estimates that were released earlier this week by the University of Michigan show that we are going to lose more than 230,000 before the end of the year. We already provide 79 weeks of unemployment benefits, and you might have seen the news this morning that GM is suspected of closing all of their facilities or virtually all of them for 9 weeks beginning next month, which will impact even more than what was shown by the U of M.

I know that there is a lot of thoughts about rebating

consumers. Of the panel here, how many believe that consumers also should be employers eligible for such rebates that you might impose, as Mr. Greenstein indicated, for those -- Mr. Sterba. Anyone else believe that employers should be able to receive rebates as well as individuals? Just two? Can I have a show of hands? Three. Mr. Morgan, you are a "no" then, is that right? Mr. Greenstein, are you a "no"?

Mr. Greenstein. My sense is the most efficient way to do this is employers will have some increased cost that they will pass through to consumers. And the system I recommend, this is part of the impact on consumers that would be compensated.

Mr. Upton. Okay. Mr. English, you indicated that you are looking for an out, was it 4 million megawatts, is that what it was?

Mr. English. Well, I was suggesting that as far as small utilities are concerned, that is what Small Business Administration identifies as small utility exemption, so, yes, I would suggest that on renewable electricity standard.

Mr. Upton. Okay. What is the average renewables now? I support renewables, wind, solar, a whole number, hydro. What is the average of your membership in terms of what they would now provide for renewables? What percentage?

Mr. English. Well, I think it depends on what you define as renewable. That is part of the difficulty we have. Different States have different definitions. What we would include, which

would include hydro, is about 11 percent. And you are talking about roughly we use -- about 9 percent of the power that electric cooperatives use does come from renewable energy that is hydro.

Mr. Upton. If you include a broader base, include hydro, include a whole number that waste energy, do you support the 25 by 25?

Mr. English. Well, I am a member of the steering committee of the group known by 25 by 25 that has that as an objective. And I think that does come down as to how flexible you are going to be, how inclusive.

Let me add quickly, there is another problem here. And that is, if we are going to produce renewable energy on a large scale and we would advocate that that is what needs to be done if we meet these standards, that the one thing that you are going to have to have as a part of this legislation is siting.

Mr. Upton. That is my last question. I have 28 seconds. I want to come back to it. Mr. Morgan, Mr. Cowart, there is nothing as I read this bill -- as we look at renewables, we have had a problem in California. I support renewables, whether they be off Nantucket or whether they be in Lake Michigan for wind. With that also comes the siting or the connection to the transmission lines. We have seen a pretty vocal struggle in California where the senior center there has announced that the Mojave Desert should not be a place for solar. We have seen off San Diego a major solar park being -- the transmission lines trying to be sited sued

by the Sierra Club. Is there a length of time the local PUCs should make a decision before FERC comes in with a heavier hand?

Mr. English. I think it is going to have to be a very, very short time if in fact we are going to meet these objectives. That is the whole point. If you are going to have a carbon cap on it and we are going to rely heavily on renewable energy, we have to have siting and have it very, very quickly. And I would suggest that that has to be focused primarily on renewable energy, on the building of that high voltage transmission.

Mr. Upton. Mr. Morgan, you agree?

Mr. Morgan. Yes. If I could add, the amount of time available for commissions to review -- first of all, we don't see any evidence that that is a problem right now. There are many other problems associated with siting transmission lines. A lot of the problems, particularly in the West, have been associated with siting lines across Federal land. And we do, in fact, have legislation in place now that provides the Federal backstop where commissions don't act within a certain amount of time.

NARUC would prefer to give a chance for this law to work. We don't see any evidence that it is not working. And we are, in fact, open to discussions about further changes in transmission policy. But we would like to see the current law given a chance to work.

Mr. Markey. Great. The gentleman's time has expired. The Chair recognizes the gentleman from Pennsylvania, Mr. Doyle.

Mr. Doyle. Thank you, Mr. Chairman. Mr. Sterba, Mr. Morgan stated that he is opposed to allowances for merchant generators. I wonder if you would like to explain why you think it is important to allocate credits to merchant generators as called for in the U.S. cap report.

Mr. Sterba. Yes, sir. Thank you. First, I only believe that it is appropriate to allocate to some merchant generators. In the typical markets in the United States natural gas sets the market clearing price. So included in that price will be the cost of allowance for natural gas. Natural gas emits about 50 percent of the carbon that a coal plant emits. So part of that 50 percent is already being reflected in the price. The only thing we are proposing -- and with this comment I will represent both EEI and U.S. cap -- is the coverage of the other 50 percent for unregulated coal generation. If we do not maintain for a period of time that level of unregulated coal generation, which represents about 16 percent, 17 percent of all generation in the United States, we run the risk of a switch and a rush to gas which will increase natural gas prices for all consumers. That is a very hidden cost that is real. And we have seen what happens when natural gas prices move from \$4, \$5, \$6 to \$14, \$15, \$16.

Mr. Doyle. How do you feel about that clarification, Mr. Morgan?

Mr. Morgan. Well, first of all, having those allowances available, which are based on the baseline, does not provide an

incentive to keep that plant running. If the plant is not economic because of pricing carbon, the most efficient thing for the company to do is shut the plant down and keep the allowances and you will have the rush to gas anyway. Really what it is, is just -- as I said earlier, it is kind of a golden parachute for these old dirty plants to help cover their obligations to their shareholders. It is not going to keep the plants running. It is not going to help solve that problem.

Mr. Sterba. Mr. Doyle, if I could, and this is a personal statement. As an owner of unregulated coal generation in Texas, if I don't have a plant running, I shouldn't get allowances. I agree with that.

Mr. Doyle. Right. Let me ask you also, Mr. Sterba, the draft text calls for alternative compliance payments to be set at 5 cents per kilowatt hour. How does that affect your membership in the real world? What would the effect of that be?

Mr. Sterba. Well, the effect is to increase cost. I believe that somewhere in the 2.5 cent alternative cost is appropriate. I think 5 cents imposes a heavy burden on consumers. One of the biggest concerns I have got is that we will do the right thing by putting in place carbon legislation. But we do it in a way in which electricity prices increase to a point where we get a consumer backlash. We have seen it happen in California, in the California gaffuffle of 2001. We have seen it happen elsewhere where things happen and consumers respond by saying "no more". We

need to do this smartly, and if we create systems that cause prices to go up too much too fast, we will get that consumer backlash.

Mr. Doyle. Mr. Cowart, many of us on the panel here have concerns that the 25 percent renewable standard is going to be very difficult to meet in certain regions of the country. And one of the ideas, one of the ways to lessen that burden would be to expand the list of qualifying energy sources, to recognize things such as methane recovery and waste to energy and distributed generation.

What are your thoughts on expanding the list of qualifying energy sources to meet a 25 percent standard?

Mr. Cowart. Well, with respect to the list you just gave, I support it. I think that there are good reasons to expand certainly the qualified renewables to include methane conversion, which is, as you know, from a global warming perspective that is a double winner and definitely ought to be encouraged. I think that there is some merit to allowing a piece of a renewable portfolio standard to be met by accelerated achievement in energy efficiency as well. As a general matter we like to keep them separate and there are good reasons for that. But for some regions of the country where they think that it is going to take longer to get the renewables going, it allows some efficiency, early action on efficiency to qualify.

Mr. Doyle. And just a final question because I just have 7

seconds left, just a show of hands. How many on the panel would support 100 percent auction of these credits?

Mr. Morgan. Now or later?

Mr. Doyle. Now. Well, of course later but right now. Just one? Okay. I see my time is up, Mr. Chairman. Thank you.

Mr. Markey. The Chair recognizes the gentleman from Texas, the ranking member of the full committee.

Mr. Barton. Thank you, Mr. Chairman. I am not sure where to start. I guess I will start by complimenting Mr. Sterba. It is good to see you, sir.

Mr. Sterba. Thank you.

Mr. Barton. When I walked in, you kind of changed your look. I thought I was looking at Ming the Magnificent of Flash Gordon, which is a good look, not a bad look.

Mr. Sterba. I appreciate your taste, sir.

Mr. Barton. Let me just start out by clarifying something that our distinguished subcommittee chairman said. One of the reasons we are apparently doing this bill is to become less dependent on imported oil, which I support the goal. How much imported oil is used in the generation of electricity among the member companies of EEI?

Mr. Sterba. Mr. Barton, I don't recall the specific number. It is fairly small.

Mr. Barton. It is close to zero.

Mr. Sterba. It might be in the 1 percent range.

Mr. Barton. Yeah. So we are not going to get a lot out of this bill that -- because the imported oil is going for the transportation industry. It is not going for the power generation industry.

Mr. Sterba. That is correct. And I think that is where plug-in hybrids come in for the future.

Mr. Barton. Well, speaking of plug-in hybrids, hybrids are made in my district down in Arlington, Texas. The additional cost of the hybrid is such that it never pays for itself. At \$4 a gallon gasoline it took somewhere between 10 to 15 years. At \$2 gasoline, you are buying a hybrid just because you want to buy a hybrid. There is no payback to it. And in any scenario, the GM plant in my district that makes the GMC hybrid, the Cadillac hybrid, they have the capacity to make approximately 60 per hour. In the entire country I am told they are selling about 30 a week.

So let's don't kid ourselves. Unless we force America -- and I mean force 'em, this theology that everybody is going to transition to an electric vehicle or a hybrid vehicle, unless it is mandated by Federal law, backed up by the Army, it is not going to happen.

I do want to thank you, Mr. English, for reminding the committee of jurisdiction that when we passed the Clean Air Act amendments in 1990, which I voted for too, we explicitly didn't include CO2. It wasn't serendipitous that we just kind of forgot about it. We debated it and thought about it, and we didn't think

CO2 was a pollutant and needed to be regulated as a criteria pollutant under the Clean Air Act.

The Republican alternative when we put it out for this bill is going to have a provision from Congresswoman Blackburn, a member of the committee, that explicitly states that, which is something that I think the committee members need to keep in mind.

Mr. Michaels, I want to ask you a question since you talk a little bit about cost. Could you explain to the committee and to me how raising the price of any commodity, in this case CO2, can be absorbed without being passed on to anybody in the economy, which is apparently what my friends on the other side think they can do.

Mr. Michaels. The fundamentals of supply and demand say that no matter what kind of increase in price, increase in tax there is, there is going to be -- part of it is going to be borne by consumers, part of it may be borne by producers, by consumers as higher prices, by producers as having lower profits, fewer funds that they can reinvest in their businesses. The exact details of how the numbers break down in the carbon case is a subject of considerable debate, and certainly in California they haven't settled that issue yet.

Mr. Barton. Let's assume that by some miracle Mr. Doyle, my good friend, can come up with an allowance system that doesn't cost anybody anything. Then there is no reason to use less of the commodity that is being capped, is there, if there is no cost to

it?

Mr. Michaels. But the only way that could happen would be if allowances were redundant and it was as good as if they didn't exist at all.

Mr. Barton. My time has almost expired, Mr. Chairman. I do want to compliment you. Yesterday I learned that the oil and gas in Alaska is there as a result of continental plate shift. And I am sure that I may learn something of a similar value as this hearing progresses with the other 20 witnesses that we have here today. So I am going to yield back the balance of my time.

Mr. Markey. I thank the gentleman.

The Chair recognizes the gentleman from Washington State, Mr. Inslee.

Mr. Inslee. I am glad my good friend Mr. Barton mentions Alaska because as we speak the tundra is melting because of carbon dioxide. The polar ice cap is disappearing because of carbon dioxide. The oceans that sustain the salmon fishery of Alaska are becoming much more acidic because of carbon dioxide.

So I just want to ask you a preliminary question to the extent I hope you can answer a yes or no pretty much to this question. I want to just ask each of you very quickly to answer this.

Do you believe that the threats associated with the pollutant carbon dioxide and the threats of changing the climate and the acidity of our oceans are significant enough to the United States

that we should endeavor to cap, to limit the amount of this pollution in the atmosphere, Mr. Sterba?

Mr. Sterba. Yes.

Mr. English. I think we are doing it no matter what.

Mr. Crisson. Yes, Mr. Congressman.

Mr. Somerhalder. Yes, Mr. Congressman.

Mr. Morgan. Yes, NARUC supports taking Federal action to reduce carbon emissions.

Mr. Cowart. Absolutely.

Mr. Greenstein. Yes.

Mr. Michaels. The science is not yet clear enough to make a decision on as drastic a policy as this.

Mr. Bassett. Yes.

Mr. Inslee. The reason I ask that question is that we have two very significantly different approaches. One side of this committee believes that this problem demands action. One side believes that this is not a problem and therefore has not proposed any action to deal with this problem. So I take the majority of your answers to be that these industries suggest we need action. And there has been and there will be much criticism of the proposal we have made to take action on this problem. But we have made a proposal. We have stepped up to the plate to suggest one cause of action. We have come up with ideas on how to solve this problem. And simply sniping at this particular proposal, although in the finest American tradition, is not going to help us solve

this problem. And I look forward to one day where all members of this committee can start being part of the solution rather than being part of the problem and not taking any action.

So I want to ask about the action that we should take. First, the question I want to ask is, could someone help us on the best way to assist the siting of transmission? I do believe in this bill there are some additional measures we should consider that as these renewable sources start to come online with concentrated solar offshore wind we are going to see a significant increase for need for transmission lines. And I think we need some backstop Federal authority to site those.

I will turn to Mr. English for his thoughts.

Mr. English. Well, thank you very much. Let me just say, I would respond that we have a more practical situation in front of us right now. I think the Clean Air Act is going to be used to address this issue. And I think that this committee and the Congress needs to make sure that we have something that is deliberately passed to address the carbon issue.

Second is renewables have got to play a huge role in this thing. And from a practical standpoint we have to move very rapidly if, in fact, this legislation is going to be timely as far as -- and I think that is what you intend.

Mr. Inslee. When you say move rapidly, are you referring to transmission?

Mr. English. Particularly transmission. I think efficiency,

we have got to be very aggressive on it. And quite frankly, I don't think we are anywhere close to what we need to have done on that.

Secondly, as far as transmission is concerned, I understand "not in my backyard" "I don't want any part of it." But quite frankly if, given the amount of reliance that I expect that we are going to have on renewable energy and what I think probably the authors of this bill intend, we have to have that siting, probably we need the siting yesterday, not tomorrow, not 2 years from now, not 5 years. We cannot build the renewable energy that is going to be necessary to move this country forward and to even approach 15 percent or 20 percent, much less 25 percent, unless that siting is done within the next 2 years.

Mr. Inslee. We will be making some suggestions to the committee about how to move that forward in future drafts of the bill. And we hope any and all of you can help us with your insights on how to draft that. Very quickly, as we recycle the money from the auction proceeds, and I do believe there should be 100 percent or high level of auction except for the permits that Mr. Doyle and I have fashioned, a measure to go back to energy-intensive manufacturing industries. But as we recycle that, what is the best way to do it if we want to encourage the use of those recycled dollars back to consumers to use it for efficiency improvements? Is it just increasing the weatherization program or some voucher program?

I will take about a 20-second answer if the Chair will allow it from someone. Mr. Cowart.

Mr. Cowart. We need an entire suite of energy efficiency programs. It includes weatherization, it includes assistance to industries. It includes assistance for retooling factories. It includes commercial energy efficiency as well. The local distribution companies or other trustees appointed by and supervised by State regulators are the best means to ensure that these dollars are returned to customers in the form of enhanced efficiency.

Mr. Inslee. Mr. Greenstein, we are out of time. I want to respect the Chair.

Mr. Markey. Quickly, Mr. Greenstein.

Mr. Greenstein. I was just going to say, in terms of consumers' efficiency investments, you are going to get consumers investing more in home efficiencies themselves if they see the price signal in their utility bills and they are made whole by a direct payment so they still see the -- if you are to officially keep the bill down, there is going to be less incentive for them themselves to take conservation and efficiencies.

Mr. Inslee. Thank you. Thank you, Mr. Chairman.

Mr. Markey. The gentleman's time has expired.

The Chair recognizes the gentleman from Oregon, Mr. Walden.

Mr. Walden. Thank you. The first question I have for each of you, and I want a yes or no answer. Have you read the draft

discussion bill yourself in its entirety? Mr. Bassett.

Mr. Bassett. Yes.

Mr. Walden. Mr. Michaels.

Mr. Michaels. No.

Mr. Walden. Mr. Greenstein.

Mr. Greenstein. In its entirety, no. Parts of it, yes.

Mr. Walden. Mr. Cowart.

Mr. Cowart. Same answer.

Mr. Walden. Mr. Morgan.

Mr. Morgan. Same answer.

Mr. Somerhalder. Same answer.

Mr. Crisson. Not entirely.

Mr. English. Not entirely.

Mr. Sterba. Not entirely.

Mr. Walden. I have not either, but I am just about there.

648 pages and I think I am down to about 603 right now.

The reason I ask that is not to put you on the hot seat except that our job here is to legislate. So every word matters. Despite what my colleagues on the other side may think that we are not supposed to ask questions, I intend to ask questions, and I intend to pursue this pretty aggressively because I think we are about to put into law a policy that will have enormous ramifications for consumers, small businesses, every American and our future. And so I am going to take my time, and I may invoke my rights under the House rules, which cannot be superseded by

this committee, to get 5 minutes for each of you for questions. Because I think it is that important of an issue. So let's start out.

Mr. English, I appreciate your testimony today and your work on behalf of the rural electric co-ops. You have a very good organization and I work closely with my members in my district. Explain to me how the provisions in this bill affect your members, a lot of them very small little cooperatives out across very rural landscapes, when it comes to them participating in an auction. Can you explain to me how they compete with a five-member board or a 10-member board out in Hood River or John Day or somewhere?

Mr. English. We don't think even our largest members can compete in that kind of an environment at an auction. It would be extremely difficult for us to do so. And let me also say, that does need to take into account the regional ramifications of an auction.

Mr. Walden. And yet in the Northwest we have enormous wind energy, a lot of it in my district. I am proud of it. But I also know that one of the great synergistic actions there is being able to use the hydro system as a storage battery. There are provisions in this legislation that both completely discriminate against hydroelectric power as renewable, if it was online prior to 2001, as well as any new hydro is not considered renewable if in some way it affects the pool level behind a storage facility at any time or any location.

Doesn't that pretty much rule out new hydro as a battery for wind?

Mr. English. I think it is a mistake to eliminate any kind of renewable whatsoever. We are looking at biomass, we are looking at all different aspects of generating renewable energy. But again I want to go back to the biggest limitation on renewable energy is transmission and is the question of siting.

Mr. Walden. I am going to bring this up again. This is Bonneville Power's hourly measurements of wind energy in the Northwest. You see the dramatic drop in output of wind. You have to have something to balance it out. We are going to move forward with renewable energy, which is a good thing, but it cannot be done in a vacuum.

So can somebody explain to me how you do not need other power sources that you can bring online rapidly to balance this out. The same would go with solar at night.

Mr. English. I will just say very quickly, you are right.

Mr. Walden. I appreciate that. Let's talk about natural gas. Does anybody believe here that this legislation will not drive up the cost of natural gas?

Mr. Somerhalder. For the reasons that were mentioned earlier, clearly even your example related to intermittent sources of power from renewable, that will require generation that can back it up. Natural gas is the quickest source of new facilities that could come on the quickest to back that up.

Mr. Walden. And so everybody is agreeing, yes, natural gas -- anybody disagree? And I don't mean to move fast. But I am down to a minute. Smart grid. I am going to go back to Mr. English on this. As I read this legislation, everybody that serves a power customer is going to have to have a plan put in place rather rapidly on how to deal with plug-in hybrids and a smart grid technology. Now out in Fossil, Oregon, there is one person for every 9 miles of power line. Can you explain to me if there is a cost associated with that smart grid technology and that plug-in requirement here and how that would be addressed?

Mr. English. Well, first of all, let me just say --

Mr. Walden. I drive hybrids, by the way, despite my ranking member.

Mr. English. First of all, we don't have a clear definition of what smart grid means. Second, we are very proud. Of course electric cooperatives seem to be well in advance of the rest of the industry, according to the Federal Energy Regulatory Commission, in this area. Third is we think the very need for efficiency is going to drive a good deal of new technology. And fourth, you have to have flexibility to address the kind of situation that you have locally.

Mr. Walden. Mr. Chairman, I realize my time for this round has run out. I would encourage you each to read this bill in its entirety word for word because every word in this bill has an enormous impact, and I can't wait until we get into trying to

figure out biomass which if it comes off of Federal land is not renewable and probably not even off private forest land and why municipal solid waste converted into energy is not renewable. There are a lot of questions here, Mr. Chairman, and I hope we get time to ask them.

Mr. Markey. I thank the gentleman.

The Chair recognizes the gentlelady from California, Ms. Matsui.

Ms. Matsui. Thank you, Mr. Chairman. The main electric utility in my district is the Sacramento Municipal Utility District, popularly known as SMUD. It consistently receives high marks of customer satisfaction while investing significantly in energy efficiency and renewable energy development. SMUD supports a transparent cap-and-trade system to get greenhouse gases under control. It has also undertaken a number of positive and voluntary programs that help people control their energy usage and increase the amount of energy they use from renewable sources. SMUD is highly supportive of allocating emission allowances directly to the LDCs, of which SMUD is one. The idea behind this is that LDCs are able to pass potential savings directly onto their rate payers while avoiding windfall profits.

Mr. Sterba, I know that SMUD agrees with you that allocation should be distributed directly to LDCs. I know this is one of the main issues that this committee will have to deal with before marking up the draft legislation before us. So I would like to

delve a little bit more deeply into the details. SMUD tells me that giving allowances directly to LDCs would protect against windfalls to generators and illuminate opportunities for market manipulation.

Why do you think the LDCs are in a better position than anywhere else along the energy supply chain to protect the consumer welfare and guard against windfall profits?

Mr. Sterba. The distribution company is, in our instances, for shareholder-owned utilities, are regulated. The regulator is familiar with how to handle the costs and the benefits of trading in allowances. It is done today relative to SOx and in many instances NOx. So we have proven mechanisms by which those benefits from an allowance are flowed through to customers, and I know that that would continue to exist.

Ms. Matsui. Let's assume for a moment that some of the emission allocations under this bill would be auctioned. In the case of an auction, is it your opinion that LDC should also receive the lion's share of the auction revenue to pass through to the ratepayers?

Mr. Sterba. In the instance that you -- for the allocated share of allowances associated with electric generation, as it is allocated -- I am sorry -- as that auction moves on, I believe the Congress should consider providing the value of those allowances, cash if you will, back to the regulated entity to help mitigate impact if it chooses not to do an allocation. The much simpler

way is to allocate and allow the commission in each State to oversee how those values are provided back to consumers.

Ms. Matsui. Okay. Just a follow-up on that. We need to ensure as much discretionary auction revenues go toward complementary policies to mitigate and adapt to climatic change. How are the LDCs positioned relative to other entities in the supply chain to ensure that the auction revenue is spent on activities that would reduce further global warming, emissions, weatherization and renewables, efficiency, et cetera?

Mr. Sterba. I think there are certainly other things that can be done with proceeds resulting from auctions. For example, in helping to ensure there is a very robust weatherization program. The use of those funds to invest in technology. If what we are about is creating a mechanism or a set of mechanisms to reduce our carbon footprint, why should not all of the value that is associated with imposing these costs on the economy be used for that purpose?

Ms. Matsui. Okay. In your testimony you referenced the oil fund payment the Alaskans receive every year. I was thinking about the Alaska situation earlier this weekend and it seems to me that returning money directly to consumers in this way might sound good politically but would create problems down the line when the emissions cap starts to drive down the amount of revenue generated from the cap-and-trade program.

How can we best ensure that consumers are assisted with

temporary higher energy costs without making them dependent on a rebate payment from the Federal Government?

Mr. Sterba. The absolute simplest way is to provide an allocation to the LDC such that that cost is never incurred by the consumer. Prices at -- I agree with Mr. Cowart that prices don't drive everything. And so having that allocation made to the LDC such that that cost is not passed back on to consumers is the best appropriate strategy.

Ms. Matsui. Okay. So the role that the LDC is playing in ensuring the allocation of revenues, you can really believe the LDCs can really play an effective role in essence in the allocation of revenues?

Mr. Sterba. Yes, I do.

Ms. Matsui. Okay. Looks like my time is almost up. Thank you.

Mr. Markey. Great. The gentlelady's time has expired.

The Chair recognizes the gentleman from Illinois,
Mr. Shimkus.

Mr. Shimkus. Thank you, Mr. Chairman. This is a great start to start really hashing out the numbers as we tried to address yesterday. And I would appeal to the chairman that once they decide on a mark that we have a hearing on the numbers. I also appeal to the chairman that -- I know you want to move this fast -- but enough time is given for everyone to score this out. And let me just ask that to the panel. I did this yesterday.

Do you agree that transparency is better than a lack of transparency in this process? Everybody agree with that? Everybody is shaking their head yes. Would it be better for us to know the numbers that are proposed a week prior to the markup of a bill? Does everyone agree with that, transparent process? Everyone agree? Yes, everybody is shaking their head yes. I am assuming everybody is shaking their head yes. No one is willing to go on record saying no, we would rather have a full and transparent process. At least a week amount of time.

Should we have time in a full transparent process, a time to allow people who are making the economic analysis, the numbers so that a proper economic analysis of the impacts, good or bad, those that will help move to a green economy and those that may -- does everybody agree that that should be part of this process, a full, transparent, regular order process so we can debate this? Anyone disagree with that? So everyone is agreeing, Mr. Chairman.

So I would hope that in this -- and there is great divergent opinions. And we have got a lot of committees and a lot of processes. The marker is really down for these numbers to be laid out in time for us to really have a credible debate.

Now why is this important? It is important because there are going to be job losses. There is a supposition that there will be job gains. There are some people claiming that there will be an equal amount of job losses to job growth. I reject that proposal. I think the Spanish study also rejects it. For every one job

created there were two jobs lost.

And so we will continue to focus on job creation. Why is this important to me? You all have talked about the Clean Air Act, the 90 amendments. We cannot use the 1990 Clean Air Act amendments and say that the cap-and-trade provision on a small amount of emittents with available technology is related to the huge amount of captured emittents, if you want to call carbon dioxide that, and the inability to have any technology to do it at this time.

Peabody Mine Number 10, Kincaid, Illinois, fuel switching, Mr. Chairman. That is what this natural gas debate is. Fuel switching cost 1,200 United Mine Workers jobs in one coal mine. And the commodity was switched. There was a fuel switched. These guys lost their jobs. Done poorly with no transparency, you are going to have fuel switching and I am going to lose more. The number I would like to use was even more.

And they came to our hearings. To the chairman's credit we had the Ohio Mine Association here a couple weeks ago. You know how many mine workers' jobs were lost during the 1990 Clean Air Act amendments in Ohio? 35,000 mine workers' jobs. Now, what does that mean to rural America? For this piece of coal from Willow Creek Mine, underground employment, 411 miners. The prep plant has 51. This is just one mine. 462 jobs. This is in rural, poor southeastern Illinois. The total economic impact for this one mine in poor southeastern Illinois is \$123 million. That

is money that goes to the local schools, to the local roads, to the local county, to hire sheriffs. That is what is endangered if we don't do this right. If we are going to fuel a switch to natural gas, these jobs are lost. Natural gas is high -- especially, Mr. Chairman, if we don't move to more exploration, location and recovery of natural gas emissions.

Appreciate your panel, and the fight continues. I yield back my time.

Mr. Markey. The gentleman's time has expired.

The Chair recognizes the gentleman from California, Mr. McNerney.

Mr. McNerney. Thank you, Mr. Chairman. You know the issue of allowances is really at the heart of cap and trade. It is difficult and it is politically difficult. So I appreciate the diversity of opinions that are expressed here this morning. And I think this panel represents the diversity of the opinions of the American public. So if we can work in the face of this diversity to find something that is passable by this committee and by the House, I think we will have something that will be beneficial and it will work.

Personally I believe -- and in terms of allowances, allocations that we should go as far upstream as possible, but I realize politically for a number of legitimate reasons that that isn't going to happen. And so I appreciate the spirit of compromise shown by Mr. Greenstein in biting your tongue and

saying well, okay, we will work with the LDC. So I hope that the committee can work in that spirit and find legislation that we can live with.

Now I have a couple of questions. Mr. Sterba, I think your presentation was very good. I appreciate that. I lived in New Mexico for many years. So I understand the situation.

We have seen though in the past or recent past the opponents of clean energy crying wolf in the 1990 Clean Air Act amendments and to a lesser degree with the Montreal Protocol, and yet those catastrophic predictions were never borne out, and in fact we saw a good benefit at very little cost. So I would like to ask you what you think made these estimates so wrong and what lessons can we learn from that experience?

Mr. Sterba. I think in the instance of the Clean Air Act amendments for sulfur dioxide, for example, it is that -- and the point that was made by Mr. Shimkus is true. There were technologies that could be used and what happened is that they ended up costing a lot less than people assumed. And it is the power of a market. And that is the value I think of a cap-and-trade system is it capitalizes on that power of the market to drive the costs for compliance down. So where \$3,000 was an expected value for the cost of an allowance, it turned out to be \$300. So I think that is -- and that is one of the things we want to capture.

The difference here is there are some new technologies that

must be developed. Carbon capture and storage to ensure that it is available. And that is what we have to get to.

Mr. McNerney. Well, thank you. One of the things that is sticky in California particularly is that we have invested a lot in efficiency. And how do we get credit for that early efficiency?

Mr. Cowart, could you take a stab at that? How could we give credit in allowances for this?

Mr. Cowart. There are actually two answers to that question. First is the good news. The good news is that as I talk to people in California they think they have an advantage in an environment such as the one we are entering because in California you know how to do energy efficiency and that actually you are not disadvantaged by the fact that you have in place the human capital and the experience to do the job.

But to answer your question directly, it is through the selection of a baseline period for the allocation to LDCs. We are proposing an allocation to LDCs in part based upon consumption levels, and it is important that that selection of consumption level be done in such a way as to reward successful performance over time in the delivery of efficiency so that if you are successful tomorrow, for example, in delivering efficiency to your customers, that next year your allocation doesn't go down just because of that. And the same thing could be said in terms of back-casting to a baseline.

Mr. McNerney. Thank you. I know the Edison Electric Institute is leading the effort in terms of small grid, and I appreciate that because I spent many years in the 1990s developing a smart grid utility meter for residential use. So I think there is potential there. One of the things that I think gives the greatest potential is marrying smart meters with hybrid vehicles.

Could you comment on that, Mr. Sterba?

Mr. Sterba. Well, smart meters are a part of the smart grid and it is an essential component of it that allows communication to occur in two directions instead of only just in one. And we absolutely in order to facilitate plug-in hybrids -- which today have a cost disadvantage, but frankly I personally believe that will change dramatically over time. We have to be able to help ensure that those vehicles cannot just be users of electricity but also storers of electricity for the benefit of the grid. And that means that you have to have a meter or the capacity to measure electricity going both ways and to communicate price signals so that the ability for someone who owns a plug-in hybrid to support the grid can be recognized on an economic basis.

RPTS JURA

DCMN BURRELL

[11:38 a.m.]

Mr. McNerney. My time has expired.

Mr. Markey. Mr. Pitts.

Mr. Pitts. Dr. Michaels, we often hear that California is the leader in climate change policy. You testified that people, using California as an example of effective energy efficiency policy, have an untenable case. Would you elaborate on that?

Mr. Michaels. I just went through several basic points about it. Yes, there are some California energy efficiency programs that have delivered. But as a simple fact, the California Energy Commission has always looked at projected resource needs in the future, and they have almost invariably overestimated what the likely contribution of efficiency is going to be.

Mr. Pitts. If you could look at the policy of California on climate change, what would be the main lesson that we could draw from California utility policies?

Mr. Michaels. It is infinitely more complicated than anyone could imagine, and there is no precedent for it. Everybody who talks about using some model to get numbers, the bad news is you are talking about something unbelievably complex, as much so as the whole economy plus the whole ecosystem. We don't know how to do this. The projections you get, if you look at the Federal

figures, use models from the Energy Information Administration, which itself has shown what incredibly poor predictors of things they are in its own documents.

Mr. Pitts. Some of your fellow panelists advocate different types of allocation schemes to protect consumers. Are there any schemes that will truly insulate consumers and small businesses from the cost impacts of this cap-and-trading scheme?

Mr. Michaels. How could there be? After all, what you are doing is making something that was formerly free; namely, the right to emit carbon, scarce. All you have done is you have increased the cost of doing business for businesses, you have increased the cost of living for consumers ultimately, because some of that is going to be passed on to them.

There is no way to insulate the entire economy or even a major segment of it from as massive a scarcity as we are thinking about creating here.

Mr. Pitts. Now, you have said, Dr. Michaels, every major provision of this bill is at base a tax. Would you elaborate on that? Why is the renewable electricity standard a tax, for instance?

Mr. Michaels. The renewable electricity standard is not a Federal tax that is going to be explicitly paid to this government; but what it is, is a mandate upon States that their utilities catch a certain fraction of their power from renewables over the course of time in the future.

Renewables are not cost effective now. We don't know when, if ever, they are going to be. Even wind, which is the most common renewable -- and renewable is almost a synonym for wind -- still is not cost effective without a Federal subsidy, production tax credit, and accelerated depreciation. We are talking about people's electric bills rising because regulators have to fold these costs in for regulated utilities. That is as good as a tax.

Mr. Pitts. From your understanding of the issue, Dr. Michaels, would imposing this tax on energy lead to any meaningful global emissions reductions?

Mr. Michaels. I am not an expert on that, but I am aware that as a fraction of global emissions the U.S. is relatively small. And my understanding -- and I am not an expert again -- is that it is going to take a much larger increase than is ever contemplated in this legislation to make a dent in it.

Mr. Pitts. Now, you say the bill will have massive effects on both consumers and small businesses. Does anyone on the panel disagree with that? Mr. Cowart.

Mr. Cowart. Well, I will disagree to this extent. To the degree that we are smart about how we implement it and to the degree that we recycle revenue that advances highly efficient technologies, the impacts on consumers and businesses can be quite moderated.

Mr. Bassett. I think the impact is going to be disproportionate, and that is why I underscored any approach

should be an approach that recognizes regional differences. Obviously, some consumers in certain parts of the country are going to be disproportionately impacted because of their coal dependency. So any formula needs to take that into consideration.

Mr. Pitts. Mr. Greenstein.

Mr. Greenstein. I think it all depends on how the legislation is designed. Well-designed legislation that makes appropriate use of auction proceeds and permit allocations, as I have indicated, can hold low and middle income consumers harmless generally. And with regard to businesses, while I don't think -- I am going to commend the answer I gave earlier to Mr. Upton. While I don't think it makes sense to do allowances generally for businesses, there may be particular businesses or particular sectors that need transition help of some sort. Whether it is through allowances or other mechanisms, I am not sure what the best mechanism is.

Mr. Pitts. Dr. Michaels, what is your response to that?

Mr. Michaels. It is not at all clear to me how, again -- simply reduces to a question of scarcity. All you are doing is making something scarce that was relatively abundant before. And there is no way -- there are ways to make a little bit more or a little bit less be borne by one class of customers or another; but by and large, this is very, very small relative to the totality that is being contemplated here, if I look at the bill.

Mr. Pitts. My time is up. Thank you, Mr. Chairman.

Mr. Markey. The Chair recognizes the gentleman from Texas, Mr. Green.

Mr. Green. Thank you, Mr. Chairman.

Mr. Morgan, currently what percentage of the District of Columbia electricity is produced by what is defined as renewable electricity in this bill?

Mr. Morgan. Well, the District of Columbia currently imports more than 98 percent of its electricity from outside. So it is a little bit hard to answer that question.

We do have some solar generation on some Federal facilities and universities and a growing number of homes.

Mr. Green. But you don't have a percentage?

Mr. Morgan. I don't. I can tell you it is very small.

Mr. Green. I think as a customer, and some Members are customers. On a yearly basis we get ours in a bill showing what percentage, and it is very small. I think less than 1 percent.

Mr. Morgan. We do have a requirement for the load-serving entities to report on the energy mix. Most of that power is imported and includes renewables.

Mr. Green. Again, whether you import it or what, because we import power. In fact, that is the goal of this bill, is to be able to import power from parts of the country that generate it to parts that don't. But, still, the mandate would cover it.

And I noticed the Public Counsel for Columbia's Equal Opportunity Council, Betty Knowle, was concerned about the 20

percent mandate that the District's standard would cost about \$26 million annually. Does D.C. currently have a 20 percent mandate?

Mr. Morgan. Yes. The City Council recently increased the renewables portfolio standard for the District to eventually reach 20 percent in the year 2020. That is correct.

Mr. Green. Let me ask others from groups, the co-ops, the EEI, and in the public sector. What are the percentage, Glenn, or does co-ops actually have -- and I know you have had a discussion on what is considered. I know the bill actually considers qualified hydropower. But what is the percentage of the real co-ops that have and what would be defined as renewable energy in the bill?

Mr. English. As I mentioned, as defined by the bill would be about down to 2 percent, would be roughly.

Mr. Green. Because general hydropower is not, quote, qualified?

Mr. English. That is correct.

Mr. Crisson. In the case of the public utilities, Mr. Congressman. As customers of the power marketing administrations, they use a lot of hydroelectric. But you are not including hydroelectric from either the PMAs or the generation that is owned by our members. It is right around the industry average, which is about 3 percent.

Mr. Sterba. And I think on the investor-owned side, that may be a little higher than the general average because we are

complying with mandates in a number of States. But it is certainly no higher than 4 percent overall.

Mr. Green. And I guess the last one would be the -- well, and that is EEI, I guess, the investor.

Mr. Sterba. Yes.

Mr. Green. That is, I guess, our concern on the electricity and national standard of 25 percent, although 25 by 25 and -- to get there. And I know in the State of Texas we are doing so many things with wind power, and actually our public utility commission committed \$5 billion to transmit that power to get to the Dallas-Fort Worth, the urban markets, Austin, San Antonio, and Houston, Galveston. And the legislature now is expanding solar compared to what they did with wind power. But there is some concern we still may not be able to do 25 percent in 2025 even with the growth that we are doing. Is there a response to that or compared to other States?

Mr. Crisson. Mr. Congressman, I would just add that the 15 percent limit that we support for a Federal RES is really a very aggressive standard. When you look at the fact that right now the total national renewable resource capacity excluding hydro is about 3 percent in 2008, we are talking about a five-fold increase in a little over 10 years with 15 percent. And even with the recent State renewable energy standards Mr. Sterba referred to in the recent years, the year over year increase has been about 5 percent.

To get just to 15 percent, you are talking about nearly a 14 percent year over year increase. And it is a very aggressive standard.

Mr. Sterba. I would echo that, Mr. Green, and add one other thing. That it is not just the percentage, but it is also what qualifies. And that can dramatically change whether or not you can get to that standard.

There is also an electrical stability issue associated with intermittent generation. You have to be careful.

Mr. Green. Mr. Bassett, in the few seconds I have left, some have discussed the EPA's preliminary and economic analysis. Have you had a chance to review it?

Mr. Bassett. Yes, sir.

Mr. Green. It does not assume an RES or a low carbon fuel standard. Do you have any thoughts on the EPA's analysis, economic analysis?

Mr. Bassett. Well, I said earlier I thought it was a great first step. But it doesn't go far enough, because there are overlapping mandates in this particular draft that have to be taken into consideration.

I would think the committee would be remiss if they would move forward without having a complete analysis of all of the variables that are included in the draft, and then, further, understand what the simultaneous implementation of all those provisions would have, that impact on consumers.

So while I applaud it as a good first step, I don't think it goes far enough in dealing with the other provisions in the draft.

Mr. Green. Thank you, Mr. Chairman.

Mr. Markey. The gentleman's time has expired.

The Chair recognizes the gentleman from Oklahoma, Mr. Sullivan.

Mr. Sullivan. Thank you, Mr. Chairman. And my first question is for Mr. Sterba and Mr. English, Mr. Crisson.

What is your position with regards to implementing a domestic cap-and-trade program before there is substantial and verifiable commitment to emissions reductions by China, India, and similar emission heavy developing nations?

Mr. Sterba. EEI's position is that we believe that the U.S. should provide leadership and go forward with some form of climate change legislation. But it must be in the context of international negotiations to help bring along the other countries, because if we are the only ones that do it we don't get there. But neither do -- and this is my personal statement -- do I believe we can just say we won't do anything until the others do it first.

Mr. English. We agree that other countries should be included. And certainly someone the magnitude of China needs to be a party of this. I think there is an issue of who goes first. And as you said, the problem that we face right now is that we are going first, unless the Congress wants to stop that, through the

Clean Air Act. I think the Supreme Court started that ball rolling nearly 2 years ago.

So I suppose we are leading, but I certainly think that Congress needs to do everything they can to get other countries to join with us.

Mr. Crisson. Mr. Congressman, we would support moving ahead with a workable and sustainable cap-and-trade system, some kind of mechanism to address climate change in order to show leadership in the international community. We would be very concerned, however, if there was not some kind of reciprocity shown in the very near future by countries like China and India.

Mr. Sullivan. And the next question is I guess for all of the panelists. What are your concerns or position on leakage, the process by which companies will move business operations to foreign countries to avoid higher costs in the U.S.?

Mr. Michaels. In California that has been a very, very major issue with the implementation of the State program. And even the most optimistic projections that are coming from people who have been analyzing the State program -- I don't place much faith in them, but even the most optimistic ones are that California is going to lose a very substantial fraction of what industrial load is left.

Essentially, what is going to be left in California is only the kind of businesses that can't move because of their closeness to the consumer. Electrically, you are going to be seeing the

same issue, and that is being played out once again not just in California but in the negotiations over the Western Climate Initiative. If California outlaws coal-fired power imports, it just means the plants in other States are going to produce electricity for those residents.

Mr. Bassett. I think my answer to that question is obvious. Any time there is a possibility for loss of jobs, whether it is major corporations or small businesses that will certainly be affected by this draft, they are concerned. And so that is why I think that, going forward, we need to make certain that we are considering all of the variables. And that is why I have underscored my initial concerns earlier.

Mr. Cowart. Leakage is certainly a problem in any cap-and-trade regime, and we need to be careful about how we approach it. It is one of the reasons that we need a national program, frankly, because of the State-to-State competition problems that cause leakage across State borders.

And with respect to international arrangements, I support transitional assistance to industries that are affected by international trade concerns. And I think I echo the comments of those made earlier, that we as a nation need to be engaged quite actively with other countries to make sure that we create over time as level a playing field as we can.

Mr. Morgan. I agree with Mr. Cowart. I think we need to look at the issue of leakage in the context of an international

approach. The fact that the United States is thus far not part of international agreements already is creating a leakage problem in the other direction. What we really need to do is work together with other nations to address this problem.

And I also wanted to highlight the issue of leakage when you are looking at State or regional programs which are already in place in parts of the U.S. And, as Mr. Cowart said, that is a problem that could be solved by developing a national program and having arrangements for dealing with interchange between U.S. and Canada of electricity and that sort of thing.

Mr. Somerhalder. We have already seen in the past the comment about rush to gas. We have seen that impact businesses and industries in our areas when we had gas used so much for power generation.

What this has the potential to do, in addition to increasing demand for natural gas, if we have carbon allowance costs for residential customers and small businesses, that has the potential to impact their businesses and do just what you fear. So, for those reasons, we think it is necessary that we deal with the allowances and allocating those in the appropriate way to mitigate that impact.

Mr. Crisson. We share that concern. And as Mr. Somerhalder pointed out, this is one of the big advantages of 100 percent allocation of allowances, particularly in the transition early years as we move to a low carbon energy system.

Mr. Sterba. I agree that one of the biggest challenges that we can face is not just thinking about what is the impact on electricity but what is the impact on the mix.

If we throw coal out prematurely, out of the mix, we can have a significant impact on natural gas prices that not only affect residential customers but all of the industries that use it as feedstock, and the inability for them to remain competitive in an international market.

Mr. Welch. [Presiding.] The Chair recognizes himself for 5 minutes.

Two of the issues that have been raised constantly, among others, are the impact on jobs but also the impact on cost, the cost to the consumer.

Mr. Cowart, welcome. You and I worked together in Vermont, and I appreciate the work you did there and around the country and the world. I would ask you to further elaborate on the potential of the efficiency as a means of reducing energy costs. I mean, if we are going to be concerned about the consumer, as we must, residential consumer and the business consumer, to elaborate on how efficiency can be their friend.

Mr. Cowart. Thank you, Mr. Chairman.

I think the efficiency opportunity is well demonstrated throughout the country. The reservoir is large and it is largely untapped, and it can be tapped at low cost. We know that in the power sector we could achieve at least 1 percent, probably 2

percent, a year in total demand reduction incrementally through aggressive energy efficiency programs that would be cost effective. They would save customers more money than they cost. And what happens when you do that is really four things.

First of all, every customer who is participating in an efficiency program or is investing in efficiency will see a lower bill. That is the first benefit. The second benefit is that by reducing demand for electricity and natural gas we reduce the clearing prices. And those benefits occur to everybody on the system. So the upward pressure that we are worried about here on clean energy and on energy prices generally can be significantly moderated by energy efficiency at the customer level.

The third benefit is that by reducing demand for consumption, we actually reduce demand for carbon allowances. And this is part of the answer to Dr. Michaels' concern about scarcity. One of the ways to affect any scarce resource is to reduce demand for it, which can be done through energy efficiency, reducing demand for carbon allowances.

And then the last point, for the half of the United States that exists in a competitive wholesale power market arena, is that when you reduce clearing prices and when you reduce carbon prices, you are reducing the cost of power across almost all megawatt hours across the entire grid. So the benefits from being a lot smarter about efficiency can be quite widespread.

Mr. Welch. Thank you.

Mr. Greenstein, given your proposal and your concerns about LDCs but the objective you have to protect consumers, what are your thoughts on allocating allowances of 15 percent, I think is the figure people have used, to LDCs specifically for efficiency to reduce cost to consumers?

Mr. Greenstein. I don't have any specific percentage. I agree with Mr. Cowart and others that efficiency is important. I am not an expert on what is the best way under this bill to achieve the efficiency gains. To the degree that allocating permits to LDCs specifically for efficiency would be the best or one of the best ways to get efficiency gains, if that is the case, then I would think it is a good idea. I certainly think that there ought to be some efficiency investment under this legislation.

Mr. Welch. Mr. Sterba, what about you? Has efficiency got to be a core component of any approach to address this problem?

Mr. Sterba. Absolutely. And I think that is one of the areas where State regulators come into play in helping develop along with utilities, the elimination of disincentives and the provision of incentives such that we maximize energy efficiency capacity.

Mr. Welch. And what would you define as the specific disincentives to utilities to aggressively promote efficiency?

Mr. Sterba. One that exists in many jurisdictions today is the fact that you are incented to sell more of a product. That is

wrong. We need to change that fundamental business model.

Mr. Welch. Which we would do by what?

Mr. Sterba. It could be done by a number of mechanisms. People use the phrase decoupling as one. The problem is, it means a lot of different things to different people. But there are clearly mechanisms that we can change that business model.

Mr. Welch. Thank you. My time has expired.

The Chair recognizes the gentleman from Arizona.

Mr. Shadegg. Thank you, Mr. Chairman. I want to thank the members of the panel. Let me try to go through a series of questions. Mr. Sterba, let me begin with you.

Certain energy sources are subsidized by the Federal Government. What I would like to do is see if you can quantify for me how much, whether it is by kilowatt or by megawatt, the subsidy for natural gas is. Do you know that number?

Mr. Sterba. I do not.

Mr. Shadegg. Would you assume it is zero or near zero? Does anybody on the panel know? How about the subsidy for coal, per megawatt or kilowatt? Mr. English.

Mr. English. When you get in and talk about the issue of subsidy, that gets to be very misleading. If you are talking about using the Tax Code and providing benefits under the Tax Code as being part of that subsidy, then I think every fuel has a subsidy; every fuel receives assistance. But amounts, I don't have amounts.

Mr. Shadegg. I am trying to get the relative amount of the subsidy. We know there is a substantial subsidy for solar. Does anybody know how much it is per megawatt?

Mr. Sterba. Currently, the production tax credit is I believe 2.1 cents for renewables. And then it could also be investment tax credit, which is 30 percent, I believe.

Mr. Shadegg. So can you give me a number per megawatt for solar?

Mr. Sterba. Well, the production tax credit would be 2.1 cents, or \$21 a megawatt hour.

Mr. Shadegg. And then the other one you mentioned?

Mr. Sterba. That would be applicable to any renewable at this time. I would agree with Mr. English, there are certain built subsidies that have occurred at different stages of fuel being developed. Any fuel source that was developed probably had some subsidies at different points in time.

Mr. Shadegg. Do you know what the current subsidy for wind is?

Mr. Sterba. On the production tax credit, it would be the same, the 2.1 cents per kilowatt hour.

Mr. Shadegg. I thought it would be useful to know what those subsidies are relative one fuel to the other, natural gas or coal, relative to solar and wind.

The next question I would like to ask to the entire panel, and I would like to get a yes or no answer from each of you, if I

might. Do you agree that this legislation will increase the cost of energy produced in the United States? Yes or no. Mr. Sterba.

Mr. Sterba. Yes. The degree to which it does is dependent on --

Mr. Shadegg. Yes or no? I am short on time.

Mr. English. Yes.

Mr. Crisson. Yes.

Mr. Somerhalder. Yes.

Mr. Morgan. Qualified yes.

Mr. Cowart. Qualified yes.

Mr. Greenstein. Yes.

Mr. Michaels. Unqualified yes.

Mr. Bassett. Yes.

Mr. Shadegg. If you agree that it will in fact increase the cost of energy in the United States, do you also agree that it will increase the costs of all goods which require energy to produce them, steel, or anything?

Mr. Sterba. Yes.

Mr. English. Yes.

Mr. Crisson. Yes.

Mr. Somerhalder. Yes.

Mr. Morgan. To the extent efficiency substitutes for energy, no.

Mr. Cowart. Yes.

Mr. Greenstein. Yes.

Mr. Bassett. In general, yes.

Mr. Shadegg. Dr. Michaels, did I get my unqualified yes?

Mr. Michaels. Yes, sir.

Mr. Shadegg. Thank you very much. Let me ask another.

Isn't it in fact -- and I think either Mr. Cowart or Mr. Greenstein, you made this point. One of the goals of the legislation is to increase the cost of energy to induce the efficiency that you talked about, Mr. Cowart, and to discourage the use of the consumption of energy? Isn't that correct, Mr. Sterba?

Mr. Sterba. I think the purpose is to provide a price signal for a commodity that is by public policy opinion being made scarce.

Mr. Shadegg. Which you do by increasing cost. Right?

Mr. Sterba. Yes.

Mr. Shadegg. Thank you. Mr. English?

Mr. English. I am not going to interpret motives here, but let me just say I think we have to send on the front end of it that it is basically to reduce the emission of carbons.

Mr. Shadegg. By setting a price signal.

Mr. English. It does set a price. By putting a limitation on the carbon being used in the country, yes, that sends a price signal.

Mr. Crisson. Combination of cap and price.

Mr. Somerhalder. I agree.

Mr. Cowart. I actually don't think that the purpose is to raise the price. The purpose is to reduce emission.

Mr. Shadegg. Did Mr. Morgan not respond?

Mr. Morgan. Well, I do agree that the purpose is to send a price signal. Putting a cap on the quantity is one way of doing that. But price --

Mr. Shadegg. Well, you are not putting a cap on the total quantity. You are putting a cap on the quantity per industry, and then charging for that for anyone -- actually, you might charge for that initial catch and then also charge for exceeding the cap.

Mr. Morgan. Either way. I mean, you are trying to make the product more scarce, as Dr. Michaels pointed out.

Mr. Shadegg. By increasing the price and sending the price signal?

Mr. Morgan. That is correct. That is certainly part of the purpose. Of course, as we pointed out, there are some ways to offset that.

Mr. Shadegg. Sure. We are not talking about offsetting. Does it in fact send a price signal, or isn't that a part of the structure of the bill?

Mr. Cowart.

Mr. Cowart. I think that a price signal is useful, but that the other policies that are inherent in the bill are actually more important.

Mr. Shadegg. Thank you.

Mr. Greenstein. I am really looking for does it -- is one of the goals to send a pricing -- increasing the pricing of the cost of energy so that we consume less and therefore reduce CO2 emissions?

Mr. Greenstein. A key purpose is to send a price signal both so that we consume less, but also that we switch to cleaner sources of energy. But the fact that it sends a price signal should not be interpreted to be a negative for the economy.

Mr. Shadegg. I was just asking the question. Don't read motives into my question. Dr. Michaels?

Mr. Michaels. It is a price signal. The real question with price as well is, what are you getting for it? If in fact we are getting very little in the way of solutions to the whole world's carbon problem, then all we are doing is it is a burnt offering type of sacrifice.

Mr. Shadegg. Mr. Bassett.

Mr. Bassett. I won't ascribe motives to the drafters or to your question. But I will say that the net effect of setting a price signal in this instance will raise prices.

Mr. Shadegg. Thank you very much. Unfortunately, my time has long since expired.

Mr. Markey. I wasn't sure whether Mr. Michaels was in the Old Testament or the New Testament.

The gentleman from Louisiana, Mr. Scalise.

Mr. Scalise. Thank you, Mr. Chairman.

Earlier, I think some people involved in the discussion have implied that this is the only piece of legislation that is out there that addresses an energy policy. I would direct them to an alternative plan that has been on the table for about a year now and is actually still out there on debate, something that we are going to be presenting most of the components of this bill. The American Energy Act that was filed in the last Congress will be filed again and debated as part of an alternative to this cap-and-trade energy tax. But it is a bill that actually involves an all-of-the-above energy policy that will not only support and in fact fund research and development to advance the alternatives, like wind and solar, but also make recognition of our own natural resources here in this country, to explore additional natural resources like oil, like natural gas, sources that we are using today, clean coal technology, and also nuclear power, which is a very reliable, efficient source of energy many other countries are using that this cap-and-trade energy tax does not contemplate at all; and then, also encourage people to make those efficiencies that they are making today that many more will make.

So anybody who suggests that one group of people on this committee is just against everything, they are being very disingenuous because this is a bill that has been out there for about a year now, many of the components of which will be presented as an alternative, a bill that will actually create American jobs here in this country, create those green jobs that

we are talking about, but not invoke policies that will export millions of jobs out of this country which the cap-and-trade energy bill clearly will do. No one has disputed those findings.

And so, with that, I go to the bill that we are debating today, and specifically the allocation policies that this panel is discussing. And I am going to have some questions, but first for those of us who have been going through this bill, one of the big frustrations that we feel is not only a frustration to us as members, I am sure many of you who are trying to do analysis of this bill, but also to the American people who are trying to contemplate whether or not this is good policy or bad, is the main details of this bill, especially what this committee is talking about today on allocation policies.

If you go to page 478 of the bill, which actually is supposed to be talking about the main source of how this whole cap-and-trade scheme would work.

Let's go through. Disbursement of allowances and proceeds from auctions of allowances. Subsection A, allocation of emission allowances. The administrator shall allocate emission allowances established under section 721 in the following amounts.

So, you want to go read those amounts? It says: To be supplied. The section is blank.

You go next to section B, auction of emission allowances. The administrator shall auction emission allowances established under section 721 in the following amounts: To be supplied.

Subsection 3, funds established. There is established in the Treasury of the United States the following funds: The strategic reserve fund, one. Number two: Other funds to be supplied.

We are talking about what many people have described as one of the most important initiatives brought before this Congress in decades, the most important change in energy policy our country has probably seen, and the bulk of the details don't even exist today, aren't even presented to the public.

Now, there is discussion that many of these details are being worked out behind closed doors and some of those deals are being cut as we speak. Unfortunately, none of that is being done here in this committee meeting where the transparency is supposed to be where the people can actually watch and participate in the discussion, where experts can actually give detailed analysis of the components of the bill and the policies that would affect every consumer in America.

So with that, I want to ask Mr. Bassett, because you have testified that -- you talked about the rigorous cost analysis that you would like to see done on it. When it comes to the details of this bill that are completely left unanswered, how do you do a real cost analysis to estimate how much this is going to cost American families, how many jobs will be exported to foreign countries, when so many of the details are left out?

Mr. Bassett. Well, you can't. And that is a concern that I have, as I was reviewing the bill, and I know that consumers

across the country are going to have. So what I would do is encourage this committee before you move is to consider cost estimates on every provision that is in the bill. And then go further, as I have said earlier, then test for the impact that a simultaneous implementation of those are going to be.

I just don't see how you can reach a conclusion as grave as this.

Mr. Scalise. And I know we are running out of time. I am sorry to cut you off. I want to ask anybody on the panel if they would address the question. Should we, and is it responsible, to go forward with a debate on a bill this important when so many of the key components are not even included that we can assess, analyze, and discuss? Does anybody think it is responsible to be going forward with this right now?

Nobody responded. I yield back my time.

Mr. Greenstein. If I could just say, there is every reason to have debate on all the issues that we already know, all the parts of the bill that are filled in, and what a number of us think or are recommending today should be in there for the parts of the bill that aren't filled in. And I presume, at the appropriate time, you will get a fully filled in bill and you all have further debate on it at that time.

Mr. Scalise. Right. And with nine panelists, we probably have nine different ideas that are very divergent on how that should be. Unfortunately, we should be all debating one set --

because ultimately this committee would pass one set plan, not nine different plans. Unfortunately, we can't debate that one set plan because it doesn't exist and it is not before us today.

Mr. Markey. The gentleman's time has expired. And unless the gentleman from New York has questions, then all time for questioning for this panel has been completed. But you have provided a very valuable set of testimonies for the committee. And I can actually see some -- I won't call them deals, but I can actually see some new working arrangements that could be constructed out of your testimony to create a format, create a formula that we might be able to use. And amongst your testimony, I think that it has been perhaps the most productive that we have had so far because this is a very thorny question. But yet I can see a lot of desire to find a working formula that we could use. And we thank you for your testimony.

Mr. Walden. Mr. Chairman, I am not going to trigger the House 5-minute rule. But following on what you said, because somebody here on the panel mentioned the importance of worker transition during this process, I don't remember who it was, but somebody did. And I would refer them to page 568, where the section 424 for worker transition is. I would encourage you to read it fully, because all we can read is: To be supplied.

Mr. Markey. I thank the gentleman very much. And we thank all of you for your testimony. We would like to stay in close working cooperation with you in the next month or so. Thank you.

Now we would ask the witnesses to take their places at the witness table.

Welcome. Welcome to the second panel. And this panel will deal with the issue of ensuring U.S. competitiveness and international participation.

Our first witness is Mr. Jack McMackin. He is a principal in the law firm of Williams and Jensen, and a Director of Owens Illinois, a leading producer of glass containers. He is here today on behalf of the Energy Intensive Manufacturers Working Group on Greenhouse Gas Regulation.

We welcome you, Mr. McMackin. Whenever you are ready, please begin.

STATEMENTS OF JACK McMACKIN, PRINCIPAL, WILLIAMS AND JENSEN, LLC, ON BEHALF OF THE ENERGY INTENSIVE MANUFACTURERS WORKING GROUP ON GREENHOUSE GAS REGULATION; RICH WELLS, VICE PRESIDENT FOR ENERGY, THE DOW CHEMICAL COMPANY; TOM CONWAY, INTERNATIONAL VICE PRESIDENT, UNITED STEEL WORKERS; TREVOR HOUSER, VISITING FELLOW, PETERSON INSTITUTE FOR INTERNATIONAL ECONOMICS; ELLIOT DIRINGER, VICE PRESIDENT, INTERNATIONAL STRATEGIES, PEW CENTER ON GLOBAL CLIMATE CHANGE; LEE LANE, RESIDENT FELLOW, AMERICAN ENTERPRISE INSTITUTE; REVEREND C. DOUGLAS SMITH, EXECUTIVE DIRECTOR, VIRGINIA INTERFAITH CENTER FOR PUBLIC POLICY

STATEMENT OF JACK McMACKIN

Mr. McMackin. Thank you, Mr. Chairman. The Energy Intensive Manufacturers Working Group on Greenhouse Gas Regulation appreciates this opportunity to testify today.

I am Jack McMackin, a Principal in the law firm of Williams and Jensen, and I have served for 15 years as a Director of Owens Illinois. OI is headquartered in Perrysburg, Ohio, and it is the world's leading producer of glass containers.

As this subcommittee is aware, our group was formed early last year for a limited but important purpose: To engage constructively with Members of Congress, the environmental community, labor, and all interested stakeholders to attempt to

solve the economic and environmental problem that is known as carbon leakage, or job leakage. Our focus has been exclusively on the Inslee-Doyle type grant of free allowances or allowance value rebates.

Since I appeared before the subcommittee last month, our working group has expanded. We include representatives of all of the traditionally recognized energy intensive sectors as well as companies from smaller sectors that our work has identified as subject to leakage. Our members include AK Steel, Alcoa, Corning, Cliffs Natural Resources, Dow, Wholesome U.S., New Page Corporation, New Corps, Owens Corning, Owens Illinois, PPG, Rio Tinto, Terra Industries, U.S. Steel, and Weyerhaeuser. Much has changed, and much progress has been made since last month. The upshot is that we are more convinced than ever that the leakage problem can be adequately addressed in climate legislation.

Since our earlier testimony, Congressmen Inslee and Doyle have introduced a new and strengthened version of their anti-leakage bill, and the discussion draft in turn has adopted much of the Inslee-Doyle mechanism. As a result, the discussion draft contains a structure that can work.

That said, the draft also leaves critical decisions unmade and critical issues unfinished. The success of the anti-leakage provision hangs in the balance. Before turning to what we view as the two most important remaining issues, let me briefly mention one of the draft's key advances.

The discussion draft, like the new Inslee-Doyle bill, has adopted a principled data driven mechanism for determining which sectors or subsectors should be eligible for anti-leakage allowances. Industries meeting specific energy intensity and trade intensity levels would be presumptively eligible, and others may make individual showings. This was a mechanism we advocated. We believe it is a major advance, and that it brings a reasonable level of certainty as well as fairness to the process.

Now, for the two key remaining issues. The first is funding of the provision with an adequate number of allowances. The discussion draft of course is silent on this issue. My written testimony updates in some detail our submissions to the committee on this critical issue.

In short, we believe the provision requires in the range of 850 to 900 million allowances. That represents about 16 percent of the allowances in the discussion draft's highest year, its fifth.

The second issue is the phasedown or termination of the anti-leakage allowance program. The solution to the problem cannot be phased out or terminated before the underlying problem of regulation-caused production cost disparity is solved; and, the underlying problem will be solved only when other countries producing energy-intensive materials adopt climate change legislation that imposes on their industries costs comparable to what the ACES bill would impose on ours. We believe that the

Inslee-Doyle bill is very close to creating a workable mechanism to govern phasedown and termination of the provision, but that the ACES bill has yet to do so.

Chairman Markey, I would like to mention one final other matter, an issue upon which you in particular have shown persistent leadership, and that is recycling. Use by energy intensive industries of recycled materials in lieu of raw materials produces enormous savings in energy and even greater reductions in carbon emissions, greater because not only combustion emissions, but also process emissions are greatly reduced.

Those of us in the packaging industry, for instance, can make a bottle or a can out of recycled bottles or cans with a fraction of the carbon emissions; yet, we cannot get enough recycled materials. We urge you to include muscular effective provisions in the bill to enhance the opportunities for all energy intensive industries to obtain and make use of recycled materials.

In summary, Mr. Chairman, we commend you and all who have worked so hard to make possible the remarkable progress on the anti-leakage provisions, and we very much look forward to cooperating with you in any way that we can.

[The prepared statement of Mr. McMackin follows:]

***** INSERT 3-1 *****

Mr. Markey. Thank you, Mr. McMackin, very much.

Our second witness is back again. We welcome you, sir, Rich Wells. He serves as Vice President of Energy for Dow Chemical Company. He has also had lead position in management at Dow Chemical's global advocacy activities in the areas of climate change and energy policy. He was appointed to the Michigan Climate Change Action Council in 2008.

We welcome you, sir. Whenever you are ready, please begin.

STATEMENT OF RICH WELLS

Mr. Wells. Thank you, Mr. Chairman. I appreciate the opportunity to provide our views on the competitiveness provisions of the American Clean Energy and Security Act. I am Vice President of Energy for Dow Chemical, a leading specialty chemical and advanced materials company with over 50,000 employees, half of which are located in the U.S.

Today, I would like to address Dow's position on climate change. As a member of U.S. Climate Action Partnership, or US-CAP, Dow supports enactment of environmentally effective, economy sustainable, and fair climate change legislation.

As a representative from an energy intensive and trade exposed sector, I would like to give you a glimpse into what the chemical industry is doing to save Americans energy and reduce

their greenhouse gas emissions.

Since 1990, the U.S. chemical industry has achieved energy efficiency gains of 28 percent. At Dow, that number is 38 percent. In Dow's case, we have saved over 1,600 trillion BTUs of energy since 1994, the electrical equivalent to power every home in California for one year. And our track record on greenhouse gas emissions reductions is equally impressive. At Dow, we have reduced our greenhouse gas emissions by over 20 percent. This has resulted in preventing more than 86 million metric tons of CO₂ from entering the atmosphere. The U.S. chemical industry as a whole can report similar numbers, numbers that would have exceeded Kyoto Protocol targets.

The chemical industry also contributes a number of energy saving products and materials to American society. This includes building and appliance insulation, as well as material that enables solar and wind power and other efficiency applications such as lighting.

Simply put, the American chemical industry uses energy to save energy. In fact, a soon to be released McKenzie study shows that the products of chemistry reduce an average of three tons of greenhouse gas emissions for every one ton produced in our manufacturing process. As you can see, from an energy and greenhouse gas reduction viewpoint, this is an excellent story. However, from an economic standpoint the situation is much different.

Over the past 10 years, the U.S. chemical industry, a \$660 billion enterprise, has lost over 120,000 jobs, or approximately 15 percent of our total workforce. For the most part, this loss of jobs can be attributed to high and volatile energy prices. As an example, Dow's energy and feedstock costs have gone from \$8 billion in 2002 to over \$27 billion in 2008.

In order for a cap-and-trade system to be economically sustainable, it must be designed such that American energy intensive and trade exposed manufacturers remain globally competitive. We see the approach included in the discussion draft as a positive step towards protecting U.S. manufacturers. This approach defines these sectors based on objective criteria, and includes a provision to reduce or eliminate the allowances when the potential for carbon leakage has been reduced or eliminated. However, I would caution that it is critical the number of allowances be adequate to compensate those sectors that meet the eligibility criteria. If Congress does not set aside enough allowances to address the carbon leakage issue, then it will fail to protect American jobs in the manufacturing sector.

We also believe it is critical that the allowances not be reduced or eliminated until the competitive disadvantage is reduced or eliminated. Targeted assistance to energy intensive industries should be terminated only when the carbon leakage problem is solved through an international agreement.

In addition to the provisions that pertain to energy

intensive and trade exposed sectors, other provisions of the bill also would impact the competitiveness of U.S. manufacturers. For example, the bill would provide compensatory allowances to companies that use fossil energy as a feedstock material rather than as a fuel source.

Unfortunately, this provision is unworkable in its current form, and we recommend that it be modified to ensure that nonemissive uses of fossil energy are properly compensated.

Dow also recommends changes to the bill to avoid excessive fuel switching from coal to natural gas in the power sector. These changes would include establishing a trigger price for the release of additional allowances and offsets from the Strategic Reserve to avoid the so-called dash to gas.

In conclusion, Congress should pass energy and climate change legislation that maintains the competitiveness of U.S. manufacturers as we transition to a low carbon economy.

I thank you for the opportunity to speak today. I look forward to your questions.

[The prepared statement of Mr. Wells follows:]

***** INSERT 3-2 *****

Mr. Markey. Thank you, Mr. Wells, very much.

Now let us welcome Tom Conway, the International Vice President of the United Steel Workers. He has been in the steel business since 1978. Since working with the United Steel Workers, he has been involved in most of the major collective bargaining efforts within the United States steel industry.

We welcome you, sir.

STATEMENT OF TOM CONWAY

Mr. Conway. Thank you. Good afternoon. On behalf of the members of the Steel Workers, I would like to thank Chairmen Waxman and Markey and the committee for holding the hearing, and in particular recognize your leadership and the hard work you do in crafting difficult climate policy that will ensure the competitiveness of U.S. workers and their industries.

My name is Tom Conway. I am the Vice President of Steel Workers Union. The USW has long been a leader in the labor movement on environment issues, and we support the advancement of a climate policy. Our members work in nearly every sector of every economy. We produce a wide range of products, including paper, glass, cement, chemicals, aluminum, rubber, and of course steel. All these products are produced in facilities that are as efficient as any in the world, and we are ready to lead the way in

the development and production in the next generation of clean energy products that will help revitalize the American economy and reassert our Nation's leadership on the cutting edge of new technology. But we can only answer that call if our jobs are not squandered to the law of unintended but not necessarily unforeseen consequences.

A well-designed climate policy can fuel America's recovery and ensure that the economy comes back stronger and cleaner than before. But a poorly designed policy can have the opposite effect and cost thousands and millions of American jobs. In commodity-based industries such as ours, even small differences in production costs can have a huge effect.

In crafting legislation, Congress must address the critical need to mitigate the competitive disadvantage that will be placed on these industries as well as the carbon leakage that will occur as a result. Only by fully addressing the leakage issue can Congress meet their environmental and investment goals, and ensure that the jobs that exist today in energy intensive industries are not lost nor the manufacturing of these products offshore. Failure to fully address these issues not only endangers our recovery from the current recession, but will likely result in making the problem of climate change worse instead of better.

For the purpose of time, I am going to get straight to our suggested improvements in the competitiveness provision, but ask that members refer to my full testimony which I have submitted to

the record.

One of the most delicate balancing acts in designing an economywide climate change policy is properly constructing transition assistance to specific industries that develop clean energy process and products. We are keenly aware of all the concerns, such as quantity, time length of assistance, and windfall profits associated with this assistance. And, from that perspective, the Inslee-Doyle approach of tying allocations or rebates to output is the best and most effective allocation system that has been proposed to date, as eligibility is targeted very narrowly to those industries which demonstrate a high energy intensity profile and a potential for significant competitive disadvantage.

However, while an allocation system such as output-based rebate systems seeks to mitigate the cost differential between domestic and international products by reducing the effective cost of compliance for producers, it is not designed to completely eliminate that differential. In the discussion draft, manufacturers and covered sectors or subsectors would be rebated 85 percent of the sector average carbon cost of producing each covered good. This rebate level would not only penalize the worst performers in the sector, but would impose an unrebated cost and a competitive disadvantage on a majority of companies in these sectors. As long as that differential exists at any level, a commensurate amount of leakage will be unavoidable. Therefore,

the rebates must be coupled with a border adjustment to equalize carbon costs if the carbon leakage issue is to be fully addressed and America's environmental economic goals achieved.

Once such a broader adjustment is enacted the rebate level can and will act as an incentive to producers to reduce emissions. Until then, however, it will not eliminate the threat of leakage. In the interim, we must ensure that these cost pressures do not effectively destroy critical sectors of the economy until the full extent of the competitiveness program can be implemented.

On the rebate levels, rebates to companies in covered sectors and subsectors should be increased to 100 percent of each firm's direct or indirect compliance cost from the date of enactment of the domestic program until the date of the enactment of an effective border adjustment. Once the border adjustment is in place, we would recommend that the rebates be paid at 100 percent of the sector's average per unit of output. This will ensure the producers who are better than average for their sectors will not be penalized despite their high performance, and will provide below average producers an incentive to reduce emissions to avoid paying an unrebated cost of compliance. As these below average companies improve their performance, this will drive the sector average emissions down, prompting companies to continue to reduce emissions.

A border adjustment should be enacted as quickly as possible. Although we are aware of the arguments that suggest some period of

time is necessary before it can be done to allow for negotiation of an international treaty and to meet U.N. international obligations, as such, we are prepared to accept whatever length of time is necessary for there to be done right as long as we eliminate leakage concerns during the interim through a full rebating of compliance costs.

On the issue of presidential discretion, we have strong concerns with the discretion given to the President under the International Reserve Allowance Program in the discussion draft. Under that provision, in 2017 the President is directed to make a determination whether the rebates have been effective at preventing leakage, and no requirement that he make any subsequent determination. If the President does determine that leakage is occurring, then that leakage and the job loss that goes with it will be allowed to continue for an additional 2 to 3 years while regulations are written before a border adjustment is enacted to prevent it. If he decides no leakage exists, on that day in 2017 there is no recourse should leakage develop later, either when the rebates begin to phase out, or foreign competitors simply wait until after that day to flood our markets with dirty products.

Finally, the decision to implement a border mechanism should not be left to the discretion of the President or anyone else. The legislation should require that the border adjustment begin on a certain date, and direct the President to issue regulations in sufficient time that it may begin on time.

Addressing the potentially catastrophic issues posed by climate change is a challenge of our generation, and meeting that challenge will require the mobilization of everyone in the world behind a common purpose. It is time for America to reclaim its position of leadership in the world economy, and the United Steel Workers are ready to do everything in our power to assist that process.

Again, I am grateful to Chairmen Waxman and Markey for holding this hearing, for the leadership provided by them, particularly Mr. Inslee and Mr. Doyle. We look forward to working with you and the committee now and in the future.

[The prepared statement of Mr. Conway follows:]

***** INSERT 3-3 *****

Mr. Markey. Thank you, Mr. Conway, very much.

RPTS MCKENZIE

DCMN SECKMAN

[12:40 p.m.]

Mr. Markey. Thank you, Mr. Conway, very much.

Our next witness, Trevor Houser, is visiting fellow at the Peterson Institute for International Economics. Mr. Houser's work focuses on analyzing energy markets and climate change.

We welcome you, Dr. Houser.

STATEMENT OF TREVOR HOUSER

Mr. Houser. Thank you very much. And thank you for holding this important hearing.

My name is Trevor Houser. I am a visiting fellow with the Peterson Institute for International Economics. In conjunction with the World Resources Institute, we published a book last year called, "Leveling the Carbon Playing Field," and have been active in trying to ensure that U.S. climate policy doesn't undermine U.S. competitiveness. And it is my honor to be here speaking on that topic before you today.

I would just like to point out before I start that my comments are those of my own and not of the Peterson Institute.

Climate policy will impact the competitiveness of the U.S. economy in several ways, and our ability to maximize the upside and minimize the downside breaks down to roughly four factors. The first, our ability to create a level playing field for carbon-intensive industries, the topic of this hearing today, but it is not limited to that of course. It is our ability to capture opportunities in low-carbon technology, reduce dependence on imported foreign oil and catalyze improvements in productivity more broadly.

I am going to focus my comments on the first, that is the topic of this hearing, but it is important to keep in mind that

the impact of climate policy on trade-exposed carbon-intensive industries is just one component of broader U.S. economic competitiveness.

The bill before you today reduces U.S. emissions along the lines necessary at a global level to avoid the catastrophic impacts of climate change. And I commend you for that effort. It also puts the U.S. in a leadership position for international negotiations.

But as the outcome of those negotiations remains unclear, it is appropriate that we think about ways to prevent aggressive action here at home from undermining the competitiveness of our industry and risk that it would force industry to relocate, thus undermining the effectiveness of climate policy here at home.

In our work looking at trade-exposed carbon-intensive industries that are vulnerable to leakage, we find that it is a limited group of industries accounting for about half a percent of U.S. employment and 1.5 percent of U.S. GDP. Now I don't say those numbers to say that leakage isn't a challenge. It is to say that it is a manageable challenge and one that we can deal with affordably through allowance revenue within the context of a broader bill.

Using the criteria laid out in the Inslee-Doyle provision, we assessed how many industries that at a six digit NAICS level would qualify, and it is a fairly affordable undertaking. About 11 percent of allowance value in the year 2014 would be required

to hold the industries that qualify by the explicit criteria in the Inslee-Doyle provision harmless.

Of those industries, a fair amount are agriculture and mining industries. And one of my comments to the committee would be to assess whether that was explicit intent to include agricultural industries and mining industries in the criteria, as our view is that they face different economics than manufacturing; that if you are mining or you are agriculture, the factor endowment, where you can actually grow the crops or mine the copper, is generally a more important consideration than carbon costs. So it is one issue I would ask the committee to consider.

We believe that this provision would be sufficient to address emissions leakage. If it is sufficient, then trade measures are not required. If it is not sufficient and trade measures are required, what is important is that to the extent that a price is put on imported goods, that that is discounted by the amount of support that we provide for our domestic industries. It is critical that we don't double pay our industries through domestic support and adjustments at the border. That is important because it is a violation of our trade commitments, but also because it would set a bad precedent for other countries to do the same, to outwardly subsidize their industries under climate policy.

The more important question I think is what this transitions to. Domestic supports are transitional measures, and I think everybody on this panel would agree that the goal ultimately is to

get to an international agreement that can effectively address emissions leakage. I think what is important in thinking about this legislation is how it can inform that process and how it can be specific about what types of international agreement would be necessary to phase out output-based rebating here in the U.S. I think that in the draft so far, there has been some vagueness there, and I think that that bears clarification.

Let me turn to make a couple comments about the international environment. We have moved a long way from where we were in 1997, and the outlook for a global agreement I would say is good. But that doesn't necessarily mean the same commitments by all different countries, right. Europe is going to reduce emissions more aggressively likely than here in the U.S., and countries in the developing world are going to reduce emissions less aggressively than we are.

Now, from an environmental standpoint, that is okay as long as we all get to the same 2050 end-point, but that means different carbon prices for a transitional period, which has impacts for trade-exposed carbon-intensive industries. Over the long term, we can deal with that through a harmonized carbon tax globally or through linking cap-and-trade systems. But as we get that infrastructure set up, we would like to see coming out of international negotiations some specific commitments on key industries among other major producers to level the playing field. If we can get that type of agreement between major producers, then

that will more effectively address the issue of emissions leakage, and we will make sure that we are reducing emissions of steel produced in China, not just in China for export to the U.S.

I think that the bill before you today makes an important start in specifying costs at an industry level that would be necessary to reduce output-based rebating. I would ask that in going forward you provide guidance to the negotiators on what you would like to see.

[The prepared statement of Mr. Houser follows:]

***** INSERT 4-1 *****

Mr. Markey. Thank you, Mr. Houser, very much.

Our next witness is Mr. Elliot Diringer. He is vice president of international strategies from the Pew Center on Global Climate Change. He has a long, very impressive history in this area.

We welcome you, sir. Whenever you are ready, please begin.

STATEMENT OF ELLIOT DIRINGER

Mr. Diringer. Thank you, Mr. Chairman, members of the committee, for the opportunity to appear before you today.

An essential complement to a strong domestic climate program is an effective international agreement ensuring that other major economies contribute to their fair share to what must be a global effort. U.S. domestic legislation must therefore be designed to maximize prospects for such an agreement. The Pew Center believes that, on the whole, the Waxman-Markey discussion draft provides a strong basis for effective international engagement.

I would like to highlight the draft's many strengths and suggest ways it could be further refined to help achieve a fair and effective global agreement. To facilitate strong U.S. participation in the global effort, domestic legislation must do several things.

First, the legislation must set a solid foundation for a

verifiable international commitment by the United States. By establishing ambitious mandatory targets through 2050, the discussion draft would indeed provide the basis in domestic law for a corresponding U.S. commitment under international law. The United States will have greater leverage in international negotiations, however, if it has the flexibility to take additional actions that can encourage stronger commitments by others.

One way this can be done is by facilitating emission reductions outside the United States above and beyond those required for domestic compliance. The discussion draft would establish one such mechanism by using a portion of emission allowances to reduce deforestation in developing countries. We encourage the committee to consider allowing the use of allowance value to facilitate other types of mitigation action in developing countries as well.

Second, a domestic climate action must create positive incentives for emission reduction commitments by the major emerging economies, both through public finance and through market-based mechanisms. With respect to public financing, the Pew Center recommends a phased strategy providing some immediate assistance to developing countries and greater support once countries commit to effective climate policies.

The International Clean Technology Fund proposed in the discussion draft would constitute an important element of such a

strategy. We believe the draft could be further strengthened in several ways.

It should authorize immediate appropriations for two purposes: first, to support capacity building activities in developing countries; and second, to fulfill the United States' pledge to fund the World Bank's new Clean Technology Fund.

For the longer term, the legislation should designate a portion of allowance value for sustained support for technology deployment. As proposed in the discussion draft, this support should be conditioned on a recipient country's ratification of an international climate agreement. With respect to market-based approaches, the Pew Center strongly supports the use of international emissions offsets both as an incentive for developing country action and as a mechanism to contain costs in the U.S. cap-and-trade system.

We believe the offset provisions of the discussion draft would provide a strong incentive for developing countries to assume reasonable climate commitments. Importantly, the draft would recognize credits issued by an international body under a new climate agreement. This would enable the United States to influence the redesign and reform of the existing clean development mechanism or the design of a new international crediting mechanism.

Third, domestic climate legislation must dedicate resources to help poor vulnerable countries adapt to the impacts of climate

change. The draft would establish a stronger framework for delivering direct bilateral assistance, and importantly, it would reserve 40 to 60 percent of the support available for U.S. contributions to an international adaptation fund.

To help secure a strong climate agreement, the legislation must establish a clear predictable and sustained source of funding for these efforts. The Pew Center strongly supports designating an appropriate portion of allowance value for these purposes.

Fourth, domestic climate legislation must facilitate the linkage of the United States' emissions trading system in a global greenhouse gas market. We believe the discussion draft would lay the necessary foundation for linkage to other market-based systems. By recognizing allowances from programs establishing sectoral targets, it would provide another important incentive for stronger efforts by countries not yet prepared to take on economy-wide targets.

Finally, domestic climate legislation must include transitional measures to address potential competitiveness risks to energy-intensive trade-exposed industries. The discussion draft takes a very sound approach to managing these risks. The use of output-based rebates as proposed would address the transitional competitiveness concerns likely to arise under a cap-and-trade system while maintaining the environmental integrity of the program and providing an ongoing incentive to producers to improve their performance.

Critically, the draft contemplates the use of unilateral trade measures only as a last resort and only if the President determines that the rebate program has not been effective. This preserves trade measures as an option but defers their use to allow a reasonable period to assess the efficacy of the rebate program and to achieve effective international agreements.

In conclusion, Mr. Chairman, the Pew Center believes that with modest improvements the Waxman-Markey discussion draft would effectively position the United States to lead efforts toward an equitable and effective international agreement. I look forward to your questions.

[The prepared statement of Mr. Diringer follows:]

***** INSERT 4-2 *****

Mr. Markey. Thank you, Mr. Diringer, very much.

We have been notified that there are seven roll calls on the floor of the House. We have 3.5 minutes for the members to go over to make these votes. So what we will do is we will take a 1 hour recess until 1:45 so that the Members can make these votes and our witnesses, if they would like, can grab a bite to eat. But we will recommence at that point in time. And we apologize to all concerned. We have no control over the floor schedule.

So we will take a 1 hour recess.

[Recess.]

Mr. Markey. Thank you all so much for being here.

This is a little bit like the 1950s when your mother was still home so you went home for lunch as a break in school and you came back all energized, ready for those final two classes before you went out into the schoolyard.

So we thank you all for being here.

And our next witness is Lee Lane, who is a resident fellow at the American Enterprise Institute and is codirector for AEI's Project on Climate Engineering. Mr. Lane was previously a consultant to Charles River Associates International where he produced analysis of climate and energy issues.

Welcome, Mr. Lane, whenever you are ready, please begin.

STATEMENT OF LEE LANE

Mr. Lane. Thank you very much, Chairman Markey.

It is a pleasure to be here this afternoon to discuss with you a piece of legislation that is obviously quite ambitious and important. I refer, of course, to the American Clean Energy and Security Act.

The draft bill is an ambitious effort to grapple with what I believe is a very serious challenge posed by rising levels of greenhouse gases in the atmosphere. With climate change, though, there are no easy solutions, and many purported solutions are actually likely to amount to costly errors.

If enacted, this legislation would work far-reaching changes on the American economy, yet the bill's approach appears to be based on assumptions that clash with what I think are four basic realities of current climate policy, and my statement focuses on these, and let me just summarize them briefly if I may.

First, the costs of the proposed emissions cutbacks would very probably exceed their benefits. Rapid emission cuts, like those called for in the bill's cap-and-trade provisions, will lead to needlessly high costs. Furthermore, the draft bill's regulatory mandates are likely to raise costs without adding benefits. You heard some allusions to the problem of a duplicative system this morning in some of the testimony from the

first panel. I suspect that this is potentially a serious problem.

Secondly, deep unilateral U.S. emissions cuts will not improve the prospects for reaching an effective global accord and may actually harm them. I suspect this is a place where there are some disagreements on the panel, but I think it is an issue worth discussing. Greenhouse gas control as an issue is 85 percent about striking a global bargain. It is only about 15 percent a matter of domestic energy and emissions control policy.

Enacting this bill in its current form would amount to giving away America's biggest stack of bargaining chips, its willingness to incur costs in domestic greenhouse gas controls. And it would amount to giving it away for free and before the serious bargaining has really even begun. The U.S. has not used this kind of strategy in its bargains on trade negotiations or arms controls or other important negotiations and I think for very good reasons.

Third, with the legislation or without it, the conditions that would be required to reach an effective global greenhouse gas control accord are, in fact, absent. For many key nations, the costs of a greenhouse gas control agreement exceeds its perceived benefits. Globally, the benefits are both very unevenly distributed and highly uncertain. These same factors have defeated previous attempts to reach agreement. My greatest fear is that this bill could become a step toward another agreement that is like the Kyoto protocol, both costly and ineffectual.

Fourth, the U.S. can and should take action on climate change. My answer to Mr. Inslee's question earlier today is that, yes, I take climate change quite seriously. But realism about climate change demands a serious but patient approach to greenhouse gas curbs. A combination of gradual emissions cuts, basic science research and adaptation can, I think, protect U.S. national interests without incurring excessive costs and without causing undue conflict with other global powers like China, India, Japan, and Russia.

Some features of the draft bill reflect what I believe are valuable insights. For example, I believe that it is right to stress adaptation and the need to advance technology. These are crucial aspects of climate policy. In these areas, my statement offers a few suggestions about how its efforts, the bill's efforts, in these directions might be made more cost effective. I hope those suggestions are useful and that, as the bill evolves, it does so in ways that will increase its benefits and decrease its costs.

Thank you very much.

[The prepared statement of Mr. Lane follows:]

***** INSERT 4-3 *****

Mr. Markey. Thank you, Mr. Lane, very much.

Our next witness is the Reverend Douglas Smith. He is the executive director of the Virginia Interfaith Center for Public Policy. He was formally on the staff of the World Council of Churches in Geneva.

Welcome, sir.

STATEMENT OF REVEREND C. DOUGLAS SMITH

Reverend Smith. Good afternoon Mr. Chairman.

Thank you so much, members of the committee.

I am Doug Smith, the executive director of the Virginia Interfaith Center for Public Policy, an organization that seeks to address hunger, poverty, and the care for God's creation through the development and adoption of sound policy. While the faith community is so diverse that no one can really claim to represent it completely, I would like to share with you the perspective of many of us, including the National Council of Churches and a number of our ecumenical and interfaith organizations.

First and foremost, we applaud the inclusion of strong international adaptation assistance measures in the draft of the American Clean Energy and Security Act. We see this as a necessary component of any U.S. legislation, particularly as we work to ensure strong and robust responses to a post-Kyoto

agreement.

I would like to speak to the importance of this section as understood by the faith community. We must ensure that generations know that we acted in good faith to protect all people from the impact of global climate change. Because of the interconnectedness of God's creation, we share not only the need to provide adaptation funding for developing countries but also the responsibility as people of good conscience and, for many of us, of common faith.

Our best scientists and global security analysts tell us that climate change will impact hunger poverty and war very nearly. By the middle of this century, 1 billion people will likely face significant water shortages. And with 75 percent of persons in developing countries subsisting on agriculture, they can be assured of a famine-filled future. And sadly, we could be assured of an unstable geopolitical future if we do not act with boldness, act with compassion, and act with immediacy.

In the faith-based NGO community, we are already witnessing how climate change is complicating our capacity to serve others internationally. The Evangelical Lutheran Church in America and the Virginia Interfaith Center recently sent one of my staff to Nicaragua. Mr. Rinn tells the story of Santa Marta, an ancient east coast indigenous Miskito community whose language has never needed a word for hurricane, and yet, in 2007, Felix, a category five hurricane, practically wiped Santa Marta off of the map.

As weather patterns shift as a result of global climate change, people like the citizens of Santa Marta are struggling to adapt to emerging realities for which they are unprepared. This is why it is so important that we provide adaptation funding to developing countries. It is because the international consequences of global climate change are already today impacting millions of people.

And that leads the faith community to be united in our call to provide for international adaptation assistance to protect the most vulnerable communities around the world.

We urge the committee to support the language included in the American Clean Energy and Security Act, but we do ask for the following legislative priorities to find their way into any final bill:

Number one, the funds should be appropriately targeted in terms of recipient countries. They should go to the most vulnerable developing countries, and no more than 10 percent should go annually to any one country.

Two, local communities must be engaged in a participatory process with adequate monitoring, evaluation, and transparency.

Number three, the funds provided should be in addition to current funding levels of official development assistance.

Number four, the funds should be appropriately targeting adaptation around climate impacts, around drought, natural disasters, disease and migration.

And number five, legislation should also enhance developing country efforts to reduce greenhouse gas emissions by reducing deforestation, encouraging reforestation, and by transitioning to cleaner energy technologies.

We in the U.S. have a moral responsibility to those in need during this global crisis. I would say that loving our neighbors includes equipping them to protect themselves from climate change, and I would like to ask you today to commit to providing substantial financial support annually of no less than \$7 billion per year. That is the minimum that we should be able to do for those in desperate need.

I thank you for this opportunity to testify on these important matters and for your time this afternoon.

[The statement of Reverend Smith follows:]

***** INSERT 4-4 *****

Mr. Markey. Thank you, Reverend, very much.

The Chair now turns to recognize the gentleman from Washington State, Mr. Inslee.

Mr. Inslee. Thank you.

Mr. McMackin, Michael and I have been working on an effort to provide some security against job leakage for some time. We introduced our bill in October. It has just been the last week or two we have heard about concerns from the oil refineries, which surprises me, frankly, that this is now arising. Have the oil refinery folks attempted to join your coalition or asked to be involved in your efforts?

Mr. McMackin. No, Mr. Inslee.

In some ways I guess I am not surprised in that it has always been seen as a unique case. The witness from ConocoPhillips yesterday I think said it right. There were two studies. Those two studies may be outdated, but they indicated that the oil industry might be able to pass along these costs, unlike the other energy-intensive industries in our coalition. I do think it is a special case, and it ought to be treated specially, different than the provision for the energy-intensive trade-exposed industries.

Mr. Inslee. I think there is good cause to believe they are in a different situation. That doesn't mean we shouldn't think about that, particularly small refiners. But I do think there is a different case.

I want to ask Dr. Houser about this. You have written a book about this. And I think that there is a concern about treating them the same where they are different. Do you think that petroleum refineries are different from other energy-intensive manufacturing industries from a job-leakage perspective?

Mr. Houser. Sure. Thank you very much.

First, I would say, in our analysis of the criteria as you have laid it out in the Inslee-Doyle provision, refineries do not qualify under either the energy-intensity or the carbon-intensity metric. So, in our assessment, energy cost as a share of shipment value for refineries is about 2.5 percent, and the cutoff line is 5 percent. At 2.5 percent, there are a lot of other industries that no one would think of as being energy-intensive that are at that same line.

The refineries have suggested that we look at still gas, which is not included in the purchase value, in the surveys that are outlined in the Inslee-Doyle provision. We did that, and even including a fairly high-priced assumption for still gas does not put refineries over the threshold to qualify.

As Mr. McMackin said, the empirical studies that have been done in Europe ex-post looking at the impact of phase two of the EU emissions trading scheme on refineries found no evidence of leakage there. I guess the additional point that I would make is that the output-based nature of the rebating program that you have developed with Representative Doyle is to try to ensure that these

goods that we need for a low-carbon future, like steel and glass, can still be manufactured here in the U.S.

The goal of climate policy is to move away from fossil fuels. And so we don't want an output-tied allowance for fossil fuels. It goes against the goal of the program.

Mr. Inslee. So the bottom line, even though we are all justifiably concerned about job leakage in any sector of our economy, you think there is a significant reason to distinguish the oil refineries from the energy-intensive manufacturers. Is that your statement?

Mr. Houser. I think that is right. There may be legitimate competitiveness concerns that refineries face. I think that if they can demonstrate that, it should be dealt with under a separate provision, not the output-based rebate.

Mr. Inslee. Right. And I would suggest that if those special provisions have specific proposals, we hope they will come forward. Actually, there is an ad hoc coalition for small business refiners that have made a proposal. We are happy to look at these proposals, but I think it is going to be a unique case, and it would require a specific criteria in that regard. So we will be looking forward to any suggestions in this regard.

I want to appreciate Reverend Smith's comments. Reverend, just from a non-ecumenical standpoint, is there any faith that you are aware of, Buddhist, Hindu, Baptist, Catholic, for the full spectrum of human faith, is there any faith that you think

non-action dealing with climate change would be really consistent with the sort of stewardship views of those faiths?

Reverend Smith. Sir, I would say that I am unaware of any faith community who would not want action taken to protect the one earth that we have. And I am aware of only concern within the faith community about climate change.

Mr. Inslee. So this is one that, by taking action, fair to say, we might unite all the Creator's children on this one. Is that about a fair statement?

Reverend Smith. It is a fair statement.

Mr. Inslee. We hope to do that. That will be another good reason to pass this bill. Thanks a lot.

Mr. Butterfield. [Presiding.] Thank you very much, sir.

At this time, the Chair recognizes the gentleman from Michigan, Mr. Upton.

Mr. Upton. Thank you, Mr. Chairman.

And I apologize for not being here for the testimony of all the witnesses. I do have a couple of questions, and hopefully the time won't expire before I am done.

Mr. Conway, I have two nuclear plants in my district, and we are hoping to add some reactors, thus adding jobs, in the future. And it is my understanding that the steelworkers are very supportive of additional nuclear across the country.

And as you know, our energy needs are going to grow by about 30 to 40 percent by the year 2030. Nuclear has no greenhouse gas

emissions, thousands of jobs. When my two plants were built, 85 percent of the components came from within the United States. Today they are looking at a new plant in Congressman Dingell's district at the Fermi plant on the other side of the State from where I live. If they are successful in getting that reactor approved by the NRC, it is likely that 85 percent of the components are going to come from someplace else other than the United States.

They are currently repairing a steel turbine at one of my facilities, 500 and some jobs while they are repairing it. It was made in Germany. Would the steelworkers support -- this bill, as you may know has nothing on nuclear in it. Would the steelworkers support adding a title to try and streamline the process to bring back nuclear in maybe a little faster way than not, knowing that it will add lots of jobs?

Mr. Conway. As you know, we have workers in that industry and work hard on behalf, on their behalf as well as everyone else. And we don't believe that a comprehensive energy policy going forward excludes nuclear. And like everyone else, I guess we struggle with storage and issues like that. But we are not naive about that. So we would support anything that does that.

More importantly, your discussion about the supply chain that centers around that facility and the manufacturing facilities that are around and located to it, we think that has been lacking in a lot of the discussion in creating a renewable sector in this

country and that the country hasn't built out the manufacturing supply chain. So we would welcome it, and we would be glad to work with you on that.

Mr. Upton. As much as I would like to see the issue of the disposal of high-level nuclear waste addressed in this bill, I confess that we probably -- that is not a doable thing.

Mr. Conway. I understand.

Mr. Upton. But we can in fact streamline the process and I think switch the light from red to green. And your support would be helpful. And I think that it would be strongly bipartisan as we embark on that issue.

I don't know if you saw last week's Washington Post, but there was a headline: "India Rejects Calls for Emissions Cuts. Officials Say Growth Will Be Compromised."

It goes on to say, no way that they are not going to participate.

I know that it is in the interest of a number of members, I believe Mr. Inslee and Mr. Doyle have an amendment that is going to be part of this that calls for a border adjustment so that we would, in essence, be able to have a tax on imported goods, steel is an example, from countries that don't have a cap-and-trade program. If, however, the WTO rules that that is not compliant, would the steelworkers support an off-ramp or in essence the jettison of that provision?

Mr. Conway. Look, we believe it is compliant with the WTO

provisions. And I guess we would cross that bridge when we get to it. But we think that border adjustability doesn't come into play if you are going to make your product the right way. And so, the way we view it, it is sort of like severance pay. You ask a company for severance pay. If they are going to fight about it, they intend to lay off some people. If people are going to fight about border adjustability, you have to sort of worry about what their intents are going to be and the way they intend to make it.

Right now they face steel expansion in China, 400, 500 million tons over the last decade. And if you think about it, it is the newest steel production that has gone on in the planet, but still China emits 2.5, 3 times the U.S. steel industry. So it is easy to deduce that the best of statements may not match up with intentions.

And one way to make sure that people are honest in a time of growth in nations like China and India is that there is a border adjustability. And if you make it the right way and you make it clean, you don't have to worry about it. But if you don't, you would pay for it as if you had, and we --

Mr. Upton. But if they rule it out, and Susan Schwab sent a letter last year to our committee saying that she didn't think it would be WTO compliant, so let's say the jury is out today; you have got evidence on both sides, but ultimately if they say thumbs down --

Mr. Conway. Look, we are not particularly thrilled with

everything the WTO says anyway.

Mr. Upton. I know.

Mr. Conway. I would not look to posit a position on that until we hear from them.

Mr. Upton. I know my time has expired.

Thank you, Mr. Chairman.

Mr. Butterfield. Thank you.

The Chair recognizes the gentleman from Oregon.

Mr. Walden. Thank you, Mr. Chairman. I appreciate it.

Mr. Butterfield. We have run out of Ds. Can you believe it?

Mr. Walden. That is fine with me if you run out of Ds. Maybe we could do that more often, maybe when we vote. I am just kidding.

Mr. Upton. Is it possible now to call up the bill? We can dispense with the bill quick. We can all catch our planes going home today and not worry about --

Mr. Walden. I am staying for tomorrow. I am reclaiming my time.

Mr. Lane, would border tariffs and other trade measures motivate China to go along and impose stiff emission cuts?

Mr. Lane. Sir, I don't believe that they will, nor do I think that the prospect of updating subsidy provisions will have that effect. I think there is every reason for thinking that China and India will continue to resist imposing on their economies the cost of significant restrictions on greenhouse

gases. And frankly, I don't believe that there is anything that the United States and its government is able to do at reasonable cost to us, to ourselves, that will change their attitudes on that point.

Mr. Walden. And do you think they are big enough and capable enough that they would just pay the tariffs anyway and probably just move on?

Mr. Lane. They probably wouldn't even have to. My own assessment would be that they would simply increase their exports to countries like Japan.

Mr. Walden. Oh, and work around --

Mr. Lane. And change the geographic pattern of trade flows rather than actually reducing their exports at all.

Mr. Walden. So your point is that these countries who don't participate in a cap-and-trade scheme could get very creative and work around the tariffs anyway.

Mr. Lane. Yes, very easily.

Mr. Walden. Putting our workers at a disadvantage.

Mr. Lane. I believe so.

Mr. Walden. Costing us manufacturing jobs.

Mr. Lane. And eliminating most of the point of greenhouse gas controls, because if they --

Mr. Walden. Is it true that China is building two coal-fired plants basically a week?

Mr. Lane. I have heard numerous figures. I don't know

whether it is one, two, or more, but they are clearly rapidly increasing their coal-fired electric capacity.

Mr. Walden. I am going to ask this panel like I have I think every other panel that has been here.

Have you all read the bill? Simple yes or no.

Mr. Lane.

Reverend Smith.

Reverend Smith. No not in it is entirety.

Mr. Walden. Mr. Diringer.

Mr. Diringer. Not in its entirety.

Mr. Walden. Dr. Houser.

Mr. Houser. I read it.

Mr. Walden. You are a good man.

Mr. Conway.

Mr. Conway. Not in its entirety.

Mr. Walden. Mr. Wells.

Mr. Wells. Not in its entirety.

Mr. McMackin. All of the cap-and-trade title.

Mr. Walden. I am talking about the whole bill.

Mr. McMackin. No, sir.

Mr. Walden. I guess I would ask you a question on page 527 of the bill, they have inserted a private right of action so that any individual can sue anybody for enforcement, even for fairly de minimis emissions of carbon.

And I am going to flip to that real quick because I want to

know whether you support that provision of the bill because they define a harm that would include any effect of air pollution, including climate change currently occurring or at risk of occurring, and the incremental exacerbation of any such effect or risk that is associated with a small incremental emission air pollutant, and then it goes on from there. And the person would only have to say they might be affected in the future. Do you support that private right of action in this legislation?

Mr. Diringer. Mr. McMackin.

Mr. McMackin. Yes, Congressman, our group is focused solely on the anti-leakage provisions. But I probably wouldn't be going too far out on a limb to say we would have considerable problems with a private right of action that is that robust.

Mr. Walden. Mr. Wells.

Mr. Wells. As you have described it, no, I would not.

Mr. Conway. No, I would need to read it more and understand it.

Mr. Walden. Dr. Houser. Mr. Diringer.

Mr. Houser. I would need to --

Mr. Diringer. I understand this is similar to standard provision and in many environmental statutes have played an important role in the enforcement of those statutes over the years.

Mr. Walden. So you would support it?

Mr. Diringer. I would have to look at the language.

Mr. Walden. Reverend Smith.

Reverend Smith. I am not familiar with the language.

Mr. Walden. Mr. Lane.

Mr. Lane. Let me withhold final judgment while saying I am extremely skeptical about anything that has so much potential for generating litigation.

Mr. Walden. All right. I appreciate that.

I want to go on to one of my favorite topics which is hydropower. I represent a district that has lots of dams along the Columbia River and gets most of its power, a good percentage of it at least, from the hydro system.

Mr. Conway, I know steelworkers used to have aluminum plants in my district, or there were aluminum plants that had many of your members who relied very much on that hydropower for the production of aluminum. Those plants now are closed and gone. Does anybody on this panel think hydropower should not be considered as a renewable energy source, Mr. Lane?

Mr. Lane. No.

Mr. Walden. Reverend Smith.

Mr. Diringer. No.

Mr. Walden. Dr. Houser.

Mr. Conway.

Mr. Conway. No.

Mr. Walden. Mr. Wells.

Mr. Wells. No.

Mr. Walden. Mr. McMackin.

Mr. McMackin. No.

Mr. Walden. So you all believe hydro should be considered as renewable. Okay. Good.

Now, Mr. Wells, Dow Chemical, I want to ask you this question, if I vote and we enact a cap-and-trade system which necessarily raises energy costs, everybody else has testified that it will, will your company guarantee me you won't chase cheaper energy for your manufacturing offshore?

Mr. Wells. If the competitive provisions I have testified to are included in the cap-and-trade, and energy prices for trade-exposed and energy-intensive manufacturers stay competitive, no, we will not. We will go where the energy is competitive. And as the provision --

Mr. Walden. So you will go where the energy is competitive. And China and India would not be involved. Are you saying China and India have to be involved in this same scheme?

Mr. Wells. For this bill to make sense for a trade-exposed and energy-intensive manufacturing, you would have to have those provisions that allows us to stay competitive from an energy perspective with them.

Mr. Butterfield. The gentleman's time has expired.

At this time, the Chair recognizes the Chairman emeritus of the full committee, Mr. Dingell.

Mr. Dingell. Mr. Chairman, I thank you for your courtesy.

I want to continue on the questions my colleague just finished. Going across, starting at your right and my left, if you please, gentlemen. Yes or no, are you content with the provisions of the bill that deal with countries such as India or China which do not have a cap of their own? Yes or no, please.

Mr. Lane. No.

Reverend Smith. I believe the United States needs to be a leader.

Mr. Dingell. I am sorry.

Reverend Smith. I believe the United States needs to be a leader in this realm.

Mr. Dingell. So you think it is good that they should not have a cap, and we should?

Reverend Smith. No, Mr. Chairman. That is not at all what I say. I think the United States should be a leader.

Mr. Dingell. Just yes or no. I don't want a lot of toe dancing. Are you content with the provisions that deal with the United States but don't deal with India and China?

Reverend Smith. I am. Yes, sir.

Mr. Dingell. You are.

And you, sir.

Mr. Diringer. Yes.

Mr. Dingell. And you.

Mr. Houser. I think they come pretty close.

Mr. Dingell. And you, sir.

Mr. Conway. No, not entirely.

Mr. Dingell. Why?

Mr. Conway. We think there is a transition period where our industries who have to come up to speed ought to be rebated the full cost of compliance for a period of time and then go to an average sector. And so we think eventually it is there, but there is an initial time period where we need it phase in and protect the jobs that we have.

Mr. Wells. We are supportive of, again, the transition that it protects those industries that would be in competition with those places that do not have a cap.

Mr. Dingell. And after the competition?

Mr. Wells. Excuse me.

Mr. Dingell. And after that time?

Mr. Wells. If the transition -- those protections would have to stay in place until places like China, India would have a similar situation.

Mr. Dingell. Do you know that, or do you just hope?

Mr. Wells. Through working with people like Mr. McMackin, we are comfortable with that, yes.

Mr. Dingell. And you, sir.

Our next panel member, please, are you satisfied with the provisions that deal with countries such as India and China which may or may not have a cap of their own, yes or no?

Mr. McMackin. Yes, Mr. Chairman.

Our group has been focused exclusively on perfecting the anti-leakage provisions to the extent possible. We believe those have to be a bridge to an agreement that leads to a situation where we have equalized costs with foreign producers.

Mr. Dingell. Thank you.

Now going across, same direction again, yes or no, is there any more that you would like to see in terms of protections for American industry included in the legislation, yes or no, if you please?

Mr. Lane. My answer would be yes. Principally in the form of controls on the overall costs of the bill.

Mr. Dingell. And you, sir.

Reverend Smith. I would say, sir, that I am not familiar with those provisions within the bill because I am here specifically to speak about international adaptation.

Mr. Dingell. Thank you.

And you.

Mr. Diringer. I would like to reserve judgment as I focus particularly on the bill's relation to international negotiations, and there may be other aspects of the bill with respect to your question that I would want to look at.

Mr. Dingell. Next panelist.

Mr. Houser. I feel like the phaseout portion of the bill could use a little bit more clarification.

Mr. Dingell. And again, sir.

Mr. Conway. We think it needs a border-adjustability provision at its onset and remains in place during the life of the understandings.

Mr. Dingell. Thank you.

Next panelist.

Mr. Wells. We would like to see the feed stock exemption for the chemical industry perfected a bit more.

Mr. Dingell. And you, sir.

Mr. McMackin. And, Mr. Chairman, we think the leakage provision needs strengthened and some of the other provisions, as Dow has testified, like the non-emissive provisions, need better definition.

Mr. Dingell. Thank you.

Gentlemen, I happen to think that Mr. Doyle and Mr. Inslee have done a good job of directing their attention to protecting trade-exposed industries in this legislation.

Do you feel that the draft bill does an adequate job of protecting those industries, starting again if you please, sir, on your far right?

Mr. Lane. I would say that it probably does a better job of protecting those industries than it does of leveling the playing field for the U.S. economy as a whole.

Mr. Dingell. Next panelist, please.

Reverend Smith. I would say, sir, that that is not my specialty within the bill.

Mr. Dingell. Thank you.

Next panelist.

Mr. Diringer. We are very comfortable with the general framework laid out in the bill.

Mr. Dingell. Next panelist.

Mr. Houser. Yes.

Mr. Conway. Not quite. We think it is close. It needs some more refinement, as we have discussed earlier, on the border adjustability in the 100 percent rebate on compliance.

Mr. Dingell. And our next panelist.

Mr. Wells. As long as the protection stays in place until such time as there is an international level playing field, yes, we are comfortable.

Mr. McMackin. It is an excellent structure, Mr. Chairman. A lot will depend on whether it is adequately funded with allowances. We think that would require between 850 and 900 million allowances a year.

Mr. Dingell. Mr. Chairman, you have been very courteous. Thank you.

Mr. Butterfield. Thank you, Mr. Chairman.

At this time, the Chair is going to recognize a member of the full committee. She is not a member of the subcommittee, but certainly she is welcome and recognized at this time for 5 minutes, the gentlelady from Tennessee.

The members of the subcommittee will, obviously, have

priority.

At this time, the Chair recognizes the gentleman from Louisiana.

Mr. Scalise. Thank you, Mr. Chairman.

We have heard some testimony from a few of you about operations you have in other countries. I think, Mr. Wells, you talked about maybe 50 percent of Dow Chemical's workforce is out of the country. What are some of the factors in deciding whether or not you are going to build a plant or expand a plant in the United States versus going to another country?

Mr. Wells. Certainly the implications of the cost to the region, and for us, a large part of that is energy, as I have testified today and testified in front of this group before, and then certainly the closeness of the market; where is the market developing? When you apply those two things together, when you look at what has happened to our industry, the U.S. chemical industry over the last say 8 years, and you look at what energy prices have done, natural gas from 2002 to 2008 has gone up by nearly 500 percent. Chemical industry has gone from being very positive, from a trade perspective, one of the highest in the country, to now we have a trade deficit.

Mr. Scalise. So what are some of the top countries that you go to when Dow goes to another country opposed to here?

Mr. Wells. From an energy perspective, certainly the Middle East, where we can get our feed stocks, which are byproducts of

the energy process, natural gas, byproducts of oil, so the Middle East is where we can get low cost, and of course, we are moving into the expanding markets, places like China, India.

Mr. Scalise. Do any of those countries that you have just mentioned, do any of those have any kind of cap policy on greenhouse gases, specifically carbon?

Mr. Wells. Not the ones that I mentioned, no.

Mr. Scalise. And so, you know, some of us look at the bill, and of course, there are a lot of details that are left out. But one of the things, if we go back to President Obama's actual budget that was passed by the House just a few weeks ago, his budget envisions raising about \$640 billion from a cap-and-trade energy tax. So, clearly, whether or not the details are in the bill, and of course many of the details are not, on how this whole trading mechanism would work and who would get these free allowances, ultimately the President's own budget says that they have got to come up with some kind of mechanism that raises \$646 billion in new taxes, in essence.

And so if a bill is going to come out of this committee, I hope a bill like the one presented does not, as I talked about earlier, the American Energy Act is a true alternative bill that we have proposed for comprehensive national energy policy that will fund the alternative sources of energy, create those new jobs, while also not running off the existing jobs we have and encouraging things like clean coal, encouraging more nuclear

power, which emits no carbon.

So there is another alternative out there, but the bill that we are discussing today clearly has a big cost, \$646 billion. How would a company like Dow react if these new conditions come on, and you are not given the allowances you think you might be getting, and then you have got to make a business decision, as you have in the past, to keep those jobs in the United States or to move them to one of the countries that doesn't emit or that doesn't control emissions? Ultimately have y'all started making any of those decisions, or are you waiting for this bill to come out to see what you are going to do?

Mr. Wells. If the bill -- a bill that comes out is not looked at such things as carbon leakage, doesn't handle such things as carbon leakage, the feed stock exemption is extremely important to the U.S. chemical industry, and then avoiding the dash to gas, as we have talked about many times; if a bill does not have those things, and it is safe to say what you have seen happen because of the rising energy prices over the last decade would continue to happen, we would be exasperated by the climate change bill.

Mr. Scalise. Mr. Conway, in relation to the steelworkers, I am familiar with a steel plant that is proposed to be built. Right now it is proposed to be built in the United States, in fact in south Louisiana, but they are looking at two sites, they are looking at the United States, the south Louisiana facility, or

Brazil, and they have made it clear now -- a few months ago they pulled back on any decisions until they see what happens with cap-and-trade energy tax bill. And they said basically if this bill passes, they are going to build that plant, but they are going to build it in Brazil.

And we are talking about a \$2 billion investment, 700 good jobs, steelworkers, that would be created and that will be created, and the question is, will they be created in the United States, which has environmental controls already in place that are much better than Brazil, or will it be built in Brazil where they will not have the same controls and, in fact, if somebody is concerned about carbon emissions, more carbon will be emitted if that plant is built in Brazil, yet passage of this bill will dictate whether those 700 jobs and the \$2 billion investment go to Brazil; do you, when you are looking at that, especially as your workforce issues are going to become more concerned by legislation like this that would run some of these companies off, what are your thoughts on how that would affect employees in your industry?

Mr. Conway. Congressman, we think there is much of that going on anyway, and if, in fact, the purpose of the bill is to try and reduce carbon on a global basis, we understand that this leads to a global sectoral agreement where people across the world agree on what emissions ought to be in a sector.

Mr. Scalise. Of course, countries like Brazil and, as we have heard earlier, China and India will not comply.

Mr. Conway. A company in Germany, a German company, who is moving into Alabama, who intends to put up half a steel plant because it intends to run the other half of the plant in Brazil where it can emit a lot of carbon, and it will import slabs there; that doesn't solve the carbon problem. And if what we are here to do is try and solve the problem of carbon emissions, then we need that global sectoral agreement. And our position is, simply, until we reach it, we ought to treat the steel made in Brazil as if it were made the right way and the clean way, and that is what the --

Mr. Scalise. Of course, we know it has not, and those remedies are not in this bill, unfortunately.

So I appreciate the gentleman's time. I yield my time.

Mr. Butterfield. At this time, the Chair will recognize himself for 5 minutes.

Let me just take a moment to join my colleagues who have been discussing this today and say that I agree that it is critical that we must protect our industry and manufacturing base in this legislation. Without question, we must do that.

And so I want to go on the record publicly thanking my colleagues Jay Inslee and Mike Doyle for their hard work in developing a plan. And to make sure that these jobs stay right here in America.

In my district down in the eastern part of North Carolina, there are a number of different energy-intensive trade-exposed

industries, such as Nucor Steel, which is in a small town named Winton, North Carolina. That industry employs nearly 500 people, good-paying jobs, produces \$2.8 million tons of steel plate from recycled scrap each year. These are the kinds of jobs that we can ill afford to lose in a district where 21 of 23 counties have more than double-digit unemployment.

And so I want to thank these two gentlemen for their work as well as the other members of the committee. I also want to thank all of you for your testimony today. Specifically, I want to address this to Mr. McMackin.

Do I understand from your testimony, sir, both your testimony today and back in March, that you think that allocating 15 percent of allowances should be sufficient to support the eligible trade-exposed industries?

Mr. McMackin. Yes, Congressman, with this footnote: That 15 percent, which was the same number that was in the original Inslee-Doyle bill, same number which by the way was in the Senate in the Brown-Stabenow amendment, was based upon the number of allocations in the Lieberman-Warner bill, about \$5.7 billion. The annual allocations in this bill are a little lower, so, actually, I think the math comes out to about 16 percent.

Mr. Butterfield. I understand that you believe that the problem at hand can adequately be solved with using free allocation to eligible trade-exposed industries and that, as you write in your testimony, the draft has adopted a structure that

can really work. Is this correct?

Mr. McMackin. That is right, Congressman.

Mr. Butterfield. Let me now speak briefly to Pastor Smith.

Thank you for your testimony and for your work in general.

Thank you so very much.

Can you, Pastor, briefly paint a picture for us about how money to a country like Zimbabwe provides security for that country as well as our country?

Reverend Smith. Sir, many of us are aware of the situation in Zimbabwe currently where we have millions of people now that face famine. We have civil unrest in places. It is really a dangerous cocktail when you mix famine and poverty with a government which is nondemocratic. When we add the issue of climate change in that, it really becomes quite difficult because what was previously the breadbasket of Africa then creates an unstable situation continent-wide in this kind of a situation, because what ends up happening is the investments that we have made in the past in development essentially gets wiped out.

And so when we create opportunities for international adaptation through funding through this Congress, what we do is we ensure an investment today helps us keep countries like Zimbabwe able to continue to feed their people, able to participate in a global economic system, able to resist nefarious groups that may try to go in and co-op a very difficult situation in the country. And ultimately, it also helps to secure the investments that we

have made through the NGO community and USAID in the past years in order to lift that country out of the desperate situation it finds itself in.

Mr. Butterfield. Thank you.

Finally Mr. Wells, do you concur with the 15 percent assessment by your colleague to the left, you think that would be sufficient?

Mr. Wells. Yes, as a member of his organization, yes.

Mr. Butterfield. So 15 percent, you want to go on record saying --

Mr. Wells. With the caveat that he has already talked about, yes.

Mr. Butterfield. Thank you.

The Chair yields back the balance of his time.

Now we will go to the gentlelady from Tennessee, a member from the full committee, Mrs. Blackburn.

Mrs. Blackburn. Thank you, Mr. Chairman, and I will try not to take all 5 minutes.

I do appreciate being recognized, and I appreciate that you all would be here.

I tell you it is fascinating listening to your responses. I think I would like to hear from you on some questions after you all have had an opportunity to read the bill and weigh back in with us at that point.

Dr. Houser, I wanted just to ask you, my district, I have

got, I am in Tennessee, have a lot of rural area, ag offsets that EPA would be able to structure under this bill. They would have had pretty broad discretion on structuring those ag offsets, and when we talk about competitiveness and global competitiveness, I am curious what your opinion is on how EPA should go about handling the agricultural offsets that they will be able to put in place, and also if you think that the imposition of cap-and-trade will diminish the competitiveness of the American agricultural community.

Mr. Houser. I think it is an important point to bring up, to think about how this bill impacts competitiveness more broadly. And agriculture is obviously an important sector there.

Offsets, domestic agricultural offsets, are important for several reasons, primarily because they will help reduce the cost of the bill. The EPA assessment of the Waxman-Markey bill that came out earlier this week shows that international offsets and domestic offsets will have a lot of the same cost benefits, reduce the cost for compliance for the climate bill by half. So domestic agricultural offsets will play an important role there.

To the extent that agricultural entities are not capped themselves, so they don't face direct domestic compliance costs, but are recipients of offset investments, then that agricultural industry will have a competitive advantage vis-a-vis its counterparts in other countries, because it has no direct compliance cost but is receiving some offset --

Mrs. Blackburn. But do you see this driving up the cost of our domestic food supply, of our domestic yarn and clothing supply?

Mr. Houser. Fossil fuels in the economy will -- the price of fossil fuels will certainly increase. The increase in the EPA economic assessment was fairly modest, but it will certainly increase. So then the question is, how quickly can we improve efficiency so that an increase in energy prices doesn't translate into an overall increase in energy costs?

Dow Chemical has spoken to how, over the past 18 years, they have reduced the energy intensity of a unit of production 38 percent. That type of improvement in agriculture and manufacturing is possible and is spurred on by a carbon price. So we can have higher energy prices and not higher energy costs. It just all comes down to efficiency.

Mrs. Blackburn. How long do you think it takes us to get to the efficiency that would allow them to be competitive.

Mr. Houser. I think that the rate of improvement that companies like Dow and the U.S. steel industry has demonstrated over the past decade, they have improved efficiency faster than the current bill would reduce emissions, so just on a business-as-usual trend, they are outpacing what the increase in energy price would be. So I am optimistic that other sectors of the economy have that ability as well.

Mrs. Blackburn. Okay. Thank you.

I will yield back.

Mr. Markey. [Presiding.] Great. I thank the gentlelady.

Let me give each one of you 30 seconds, tell us what you want us to know as we are putting together this legislation over the next several weeks. You have got 30 seconds each, give us your closing point that you want us to remember.

We will begin with you, Mr. Lane.

Mr. Lane. Thank you, Mr. Chairman.

I guess the single point that I would emphasize is that, as long as the cost of the bill is so high because of the speed of the emissions reductions, it is bound to have a negative impact on the U.S. economy.

Mr. Markey. Thank you, Mr. Lane.

Thirty seconds a piece.

Reverend Smith.

Reverend Smith. Mr. Chairman, I think the one thing that I would want to leave the committee with is the need to have very realistic numbers within the bill specifically on international adaptation funding and knowing that any funding we put today towards adaptation is investment in the future. And I believe and many of our coalition believe that \$7 billion is the very minimum where we need to start.

Mr. Markey. Okay. Thank you.

Mr. Diringer.

Mr. Diringer. The prospects for an agreement in Copenhagen

will be greatly enhanced if Congress can provide some certainty as to the U.S. ability to help fund technology deployment and adaptation efforts internationally.

Mr. Markey. Thank you.

Dr. Houser.

Mr. Houser. That the competitiveness issues that we are talking about here today are manageable and can be dealt with affordably in the context of an economy-wide cap.

Mr. Markey. Thank you.

Mr. Conway.

Mr. Conway. That we would be naive to believe that the rest of the world that produces products will voluntarily reduce their carbon on their own without a border-adjustability mechanism.

Mr. Markey. Thank you.

Mr. Wells.

Mr. Wells. We have the ability here to do a real win-win. We can work on solving this problem at the same time maintaining the competitiveness of U.S. manufacturers.

Mr. Markey. Mr. McMackin.

Mr. McMackin. On the leakage problem for energy-intensive trade-exposed industries, the bill has an excellent structure by adopting the Inslee-Doyle structure. The key will be adequate funding of that provision through allowances. We think that would be about 850 to 900 million allowances a year.

Mr. Markey. Thank you, Mr. McMackin.

Thank you to all of you. I subscribe to Mr. Conway's philosophy here that we must act in ways that deal with human nature, even as it is reflected in other nations' behavior, and we must ensure that as we act in a way that is responsible, that we don't expose ourselves to other actions which will be irresponsible. And we must ensure that we construct this legislation in a way that guarantees that American workers are not affected adversely because we have not dealt with the reality of the fact that nations and human beings think the same and the proper protections must be built in to ensure that there are no innocent victims that we are creating.

So thank you so much. We will now, with thanks from the committee, request that you remain available over the next several weeks so we can continue to consult with you.

And we will then move on to the final panel. Thank you.

RPTS JURA

DCMN MAGMER

[3:19 p.m.]

Mr. Markey. Welcome, ladies and gentlemen, to our third panel today. This is a very, very important set of issues we are about to discuss.

We will begin with our first witness, Dr. Howard Gruenspecht. He is Administrator of the U.S. Department of Energy's Energy Information Administration. He has worked extensively on electricity policy issues and economy-wide energy modeling for 25 years. He is a friend of this committee, a source of information on an ongoing basis.

We welcome you back, Doctor. If you could move that microphone in, we would appreciate it. And whenever you are ready, please begin.

STATEMENTS OF HOWARD GRUENSPECHT, ACTING ADMINISTRATOR, UNITED STATES ENERGY INFORMATION AGENCY; DAN W. REICHER, DIRECTOR, CLIMATE CHANGE AND ENERGY INITIATIVES, GOOGLE; DIAN M. GRUENEICH, COMMISSIONER, CALIFORNIA PUBLIC UTILITIES COMMISSION; JAMES L. ROBO, PRESIDENT AND CHIEF OPERATING OFFICER, FPL GROUP; GREGORY P. KUNKEL, VICE PRESIDENT OF ENVIRONMENTAL AFFAIRS, TENASKA, INC.; DAVID G. HAWKINS, DIRECTOR OF CLIMATE PROGRAMS, NATURAL RESOURCES DEFENSE COUNCIL; EUGENE M. TRISKO, ON BEHALF OF THE UNITED MINE WORKERS OF AMERICA; JONATHAN BRIGGS, REGIONAL DIRECTOR OF THE AMERICAS, HYDROGEN ENERGY INTERNATIONAL L.L.C.; JAMES KERR, PARTNER, MCGUIRE WOODS LLP, FORMER COMMISSIONER, NORTH CAROLINA PUBLIC UTILITIES COMMISSION; JAY APT, EXECUTIVE DIRECTOR, CARNEGIE MELLON ELECTRICITY INDUSTRY CENTER, ASSOCIATE PROFESSOR, CARNEGIE MELLON UNIVERSITY

STATEMENT OF HOWARD GRUENSPECHT

Mr. Gruenspecht. Thank you, Mr. Chairman and members of the committee. I appreciate the opportunity to appear before you today to discuss the Energy Information Administration's analysis of the renewable electricity standard, or RES, program in Title I.

Mr. Markey. Could I just interrupt you for one second? It is like being in Yankee Stadium, and all of a sudden in walks Lou Gehrig or in walks Mickey Mantle. And in walks Bobby Garcia, the

former great Congressman from the State of New York. So it is so great to see you.

Mr. Gruenspecht. I grew up in New York, also.

Mr. Markey. So it is like being in Cooperstown when one of the all-time greats walks in.

We will start all over again.

Mr. Gruenspecht. Well, Mr. Chairman, thank you again.

I appreciate the opportunity to appear before you today to discuss the Energy Information Administration's analysis of the renewable electricity standard, or RES, program in Title I of the American Clean Energy and Security Act's discussion draft.

EIA is the independent statistical and analytical agency within the Department of Energy that produces objective, timely, and relevant data projections and analyses to assist policymakers, help markets function efficiently, and inform the public. We do not promote, formulate, or take positions on policy issues; and our views should not be construed as representing those of the Department of Energy or the administration.

Since I appeared before the committee 2 months ago, EIA has updated its Annual Energy Outlook reference case to reflect enactment of the American Recovery and Reinvestment Act, or ARRA, which provides significant new Federal funding, loan guarantees, and tax credits to stimulate investments in renewable energy. The potential impact of the ARRA provisions on the projected use of renewable generation is large enough that an analysis of the RES

that did not include ARRA in the reference case could provide misleading results, and we do include it in this analysis here that I will discuss.

The RES proposal sets a target of 25 percent of coverage sales of electricity in 2025 and beyond be provided by eligible renewable energy. However, because of exemptions provided to small sellers and to sales of electricity from certain generation sources and the possibility that credits for qualified State energy efficiency programs could be used to meet a portion of the RES requirement, the amount of eligible renewables as a share of total electricity sales required to comply with the RES would be lower than the nominal target.

EIA modeled two RES policy cases for this analysis. One case assumes that the maximum level of efficiency credits, up to one-fifth of the RES target in any given year, are claimed, while the other case that assumes that States cannot qualify for or elect not to use efficiency credits.

Turning now to some of the main results from our analysis.

Power sellers will turn to a mix of renewable fuels to comply with the RES. In absolute terms, the key fuels are projected to be biomass and wind, but other renewable fuels, including solar and geothermal, are also projected to grow significantly in percentage terms.

The higher renewable generation stimulated by the RES leads to lower coal and natural gas generation. The increased use of

renewables stimulated by the RES also leads to lower electricity sector carbon dioxide emissions. Electricity sector carbon dioxide emissions in 2030 are between 7 percent and 12 percent below the referenced case level in the two RES cases.

Given the amount of eligible renewable generation projected in the referenced case, the RES is not expected to affect national average electricity prices until 2020. As the required RES share increases to its maximum value in 2025, the value of the RES credits increases and the impacts on national average electricity prices become evident.

The projected peak effect on national average electricity prices is between 2.7 percent and 2.9 percent in our two RES cases. Because of regional difference in electricity and market structure, State RES requirements, and the different availability of resources in different areas, price impacts may vary by region, as shown in my written testimony.

The quantitative results I have just discussed reflect the modeling analysis of the RES provisions on a standalone basis. We recognize that the RES could have significant interactions with other programs in the chairman's discussion draft. For example, in previous analyses, EIA has generally found that a cap-and-trade program for greenhouse gases leads to significant growth in the use of renewable energy for electricity generation, which becomes more attractive when the cost of using fossil fuels goes up.

To the extent that the proposed cap-and-trade program induces

more renewable resources than required by a concurrent RES proposal, one might expect RES compliance costs to be reflected in the value of carbon dioxide allowances. Therefore, adding our standalone estimates of the cost of an RES to a standalone estimate of a cap-and-trade program cost would overstate the project combined costs of implementing the two programs concurrently.

In contrast, an energy efficiency resource standard which can reduce or eliminate projected growth and electricity load and, therefore, the need for additional generation capacity makes it more likely that a given RES target will require that generation from new eligible renewable capacity replace generation from existing capacity rather than from other types of new capacity. The cost penalty associated with backing out existing capacity whose capital cost has already sunk is typically much larger than the cost penalty associated with backing out alternative types of new capacity.

Mr. Chairman and members of the committee, this concludes my testimony. I would be happy to answer any questions you might have.

Mr. Markey. Thank you, Mr. Gruenspecht, very much.

[The prepared statement of Mr. Gruenspecht follows:]

***** INSERT 5-1 *****

Mr. Markey. Our next witness is Dan Reicher. He is Director of Climate Change and Energy Initiatives at Google. He was previously cofounder of the New Energy Capital Corporation and served as Assistant Attorney General for Environmental Protection for Massachusetts. So we thank you for being here.

STATEMENT OF DAN W. REICHER

Mr. Reicher. First, I want to applaud the subcommittee's work on this path-breaking and comprehensive bill.

I will make three points in my opening statement related to the renewable energy standard, energy project finance, and energy information.

First, Mr. Chairman, the renewable energy standard in the bill is technically and economically achievable. Our Nation has more than adequate renewable energy resources to meet the RES. With continued technological advances and policy support, they become more cost effective every day; and by implementing the RES in conjunction with the energy efficiency resource standard, we can dramatically cut the need to add additional generation.

In my testimony, I highlight what may be the sleeping giant of renewable energy. Enhanced geothermal systems, or EGS, uses a common technique in the oil industry to fracture hot rock deep below the Earth's surface. Water is injected into the rock, where

it is heated to produce steam and then piped to the surface to generate electricity. A 2007 MIT study found that just 2 percent of the heat below the Continental U.S. between 3 and 10 kilometers is equivalent to over 2,500 times total U.S. annual energy use.

At Google, we have mapped the EGS resource State by State; and I would like to submit the 50-State map for the record, Mr. Chairman.

[The information follows:]

***** COMMITTEE INSERT *****

Mr. Reicher. Our calculations show that just 2 percent of the EGS generation potential in South Carolina is almost two-thirds of current generating capacity. In Texas, it is double. In Arkansas, it is triple. In Maine, it is quadruple. In Oregon, it is nine times; in Idaho, 32 times its existing capacity. And, Mr. Chairman, only half jokingly, if the Big Dig in Boston had been vertical instead of horizontal, we might be powering a good chunk of Massachusetts using EGS.

The beauty of EGS is that it provides baseload generation 24 hours a day. The U.S. once led in EGS technology, but leadership is now in Australia, where commercial projects are under construction, and Europe, where demonstration projects at the megawatt scale are already operating. We have a chance to catch up, thanks to \$400 million for geothermal in the stimulus legislation.

In addition to adopting an RES, the House should look at providing a credit multiplier for baseload technologies like EGS. The House should also authorize and appropriate significant Federal support for EGS for R&D beyond the stimulus. I would also suggest, Mr. Chairman, an oversight hearing on this potentially transformational technology.

Turning to my second point, the legislation we are considering does not directly address a critical issue in advancing our clean energy economy, increasing access to capital

for the deployment of literally trillions of dollars worth of clean energy products that will be essential to meeting our climate and energy goals, including an RES and EERS. Last week, Senators Bingaman and Murkowski jointly released the discussion draft of a bill that would create the 21st Century Energy Technology Deployment Administration, or CEDA. I know Congressman Inslee has also been advancing this concept, and Congressman Van Hollen introduced a separate proposal.

The mission of CEDA would be to encourage wide-scale deployment of clean energy technologies, particularly those that are perceived as too risky by commercial lenders but with high potential to address our environmental, economic, and security challenges.

Moving a technology from small pilot project to full commercial-scale plan is often the point at which many promising energy technologies die. We call it the "Valley of Death". I urge the committee to consider incorporating the CEDA approach into the legislation we are considering today in order to address this critical problem.

My third and final point involves improving access to energy information. With a national RES and EERS, Congress should also ensure that electricity consumers, large and small, have a more accurate picture of their electricity usage as well as the source and mix of their power. Congress should work to ensure that utilities provide consumer access to energy information through

smart meters and other dividers and as near real-time as possible.

President Obama has talked about how the smart grid funding in the stimulus bill could support the installation of as many as 40 million smart meters. However, draft guidance issued by the DOE on the smart grid program may discourage large-scale smart meter deployments. Congress should push DOE to support large investments in smart meter deployments and ensure consumer access to data.

Finally, I would like to urge the subcommittee to work with the new administration to determine how the Energy Information Administration could play a much more vital role in providing consumers and businesses with critical energy information.

For example, with a national RES and EERS, the Federal Government will need to collect data at an unprecedented level in order to ensure compliance. Congress should ensure that EIA has timely access to critical data to gauge progress on key clean energy programs. This will require an extension of EIA's role and an increase in its funding.

Thank you very much.

Mr. Markey. Thank you, Mr. Reicher, very much.

[The prepared statement of Mr. Reicher follows:]

***** INSERT 5-2 *****

Mr. Markey. Our next witness, Dian Grueneich, has been Commissioner of the California Public Utilities Commission since 2005. She is a nationally recognized expert on energy and environmental issues. And, to be honest with you, the reason I have asked her to come here today is because she is the only witness I have ever heard who knows how to make energy efficiency sound exciting. So since I have heard her do it before, I thought I would give her another chance.

So welcome back.

STATEMENT OF DIAN M. GRUENEICH

Ms. Grueneich. Thank you so much. I would love to be talking on energy efficiency. I have slipped it in a little bit, but I am actually here today on transmission, renewables and --

Mr. Markey. Transmission needs even more work to sound exciting.

Ms. Grueneich. I will start with my first promo.

We are building transmission in California. We are building it to make renewables. If California, with all of our environmental rules and all of our environmental activists, can do it, everywhere in the country can do it.

This is the Tehachapi Wind Project. It is under development; and, when finished, it is going to bring 4,500 megawatts of wind

into the transmission grid. So there we go, if that is exciting.

But, getting back, let me, first of all, thank you for having me today. I am speaking on my own behalf, but I also bring greetings from Mike Peevey, who is President of our Commission. He has reviewed my testimony and wanted to make sure that I passed on that he personally feels very strongly about these remarks as well and agrees with them.

Let's start with renewable energy. As Dan Reichert just said, there really is no question that the United States is blessed with renewables. This is not a question that we don't have the resources. It is not a question that we don't have the technical capability. It is a question of political will to make it happen. That is the very good news.

As of January of this year, 33 States have RPSs or renewable goals, 33 States. At the State level, what we are waiting for is the national renewable standard. It will make a dramatic difference in our ability if we can have as a Nation all the States, all the utilities moving ahead.

In California, we have a 20 percent renewable standard, but our Governor has now signed an executive order to have our State get to 33 percent renewables by 2020, and our legislature is now considering the bills to codify it. If California can set our goals at 33 percent, again, the rest of the country really can get to the levels that we are talking about in this bill.

There is some really smart flexible items in the bill on

renewables. One of the items that Dan talked about was the part that you can meet your renewable provisions through energy efficiency. In a pure world, you probably wouldn't do that. You would probably just say go with renewables. But this is a bill, in my mind, that is really trying to make this workable. Every State can do energy efficiency. We need to make sure that that provision is sensible, that it is not just a loophole but it lets the States that may be farther removed from renewables really come in and go after the renewables section.

Another part that I think is very creative that we frankly hadn't thought of in California, but I have now talked with our legislators and suggested they think about it, is the provision that says that you can have a credit of three times the renewables if you do local distributed generation. That is a really smart thing to put in the bill, because what it does is that when you are building renewables out to the areas like the Tehachapis, believe me, it takes years to plan and permit and finance and build those transmission lines. But when you can instead look to do renewables right in your neighborhood, I mean, you can put solar photovoltaics on the rooftops of Costcos and Wal-Marts. You can have people in the neighborhood start to say we will even make it in the our own homes on our roofs. And when you give it a three times credit, in my mind, we can have some States who have never even had renewables before start to become the leaders. And I hate to say put California and Texas to shame, but that is what

we may start happening by some of these very creative provisions in the bill.

Let me turn to transmission planning quickly. The interesting thing about the bill is the most important provisions on transmission planning are not in the transmission planning section. These are the provisions that make it a sensible way to do transmission planning. They are the energy efficiency provision. They are the renewable electric portfolio standard. They are the enhancement of the smart grid. They are the focus on distributed generation. All of those are the factors that let you reduce the need for transmission. Because we don't build transmission just to have transmission lines. We build transmission because it carries electricity.

By having in this bill the fundamental building blocks that make you look at an entire system that will minimize how much transmission you need, you have got it right. This is in many ways the best way that I have seen looking at electricity in 30 years because you have put in place those building blocks that say when you are doing transmission planning you are actually doing it in the context of a very sensible approach.

The other thing that I will say about transmission is that it directs FERC to take into account all of these demand side aspects when they have an expanded role in transmission planning. That is absolutely critical. If Congress is going to give FERC or any other agency at the Federal level a larger role in transmission,

and particularly in transmission planning, it is essential to have in there the provisions that they must look at the demand side. In fact, I think that the bill should go further and direct FERC in all of its decisions with regard to transmission, including approving transmission investment, that it does not discriminate against the demand side or against distributed generation.

Let me just end with the smart grid, that I think that again it has got it right. The one part that I would add would be to have some provisions that provide increased technical assistance to the States. Smart grid is going to happen, because there are thousands of decisions that government and the private sector are going to make. What you heard from Dan about an increasing the information available, that is critical. But we are all going to need much better technical assistance, and that would help.

The very last thing that I will say is to thank you very much for letting me testify today.

Mr. Markey. Thank you very, very much.

[The prepared statement of Ms. Grueneich follows:]

***** INSERT 5-3 *****

Mr. Markey. Our next witness is James Robo. He is the President and Chief Operating Officer of Florida Power and Light, or FPL, Group. Mr. Robo previously served as Vice President at that company.

We thank you so much for testifying today.

STATEMENT OF JAMES L. ROBO

Mr. Robo. Thank you, Chairman Markey, Ranking Member Upton, and members of the committee. I am the President and Chief Operating Officer of FPL Group, North America's largest producer of renewable energy; and it is my pleasure to be here today to talk about the importance of enacting a renewable electricity standard this year.

FPL Group is the Nation's number one producer of electricity from the wind and from the sun. Our wind fleet can power approximately one and a half million homes and makes up a quarter of the entire U.S. wind energy market. Our solar power plants in California's Mohave Desert are the largest in the world.

In Florida, we are building 110 megawatts of solar power, enough to vault the State into second place in the Nation in solar production in the span of only 18 months. And just this week, FPL announced Energy Smart Miami, one of the country's largest implementations of smart grid technology to improve energy

efficiency and reduce carbon emissions.

We are proud that FPL Group has one of the lowest CO₂ emissions rates of any electric power company in the Nation. In fact, if every utility were as clean as FPL Group, CO₂ emissions from the power sector would be reduced by nearly 50 percent. Total U.S. carbon emissions would be reduced by 20 percent, which is the equivalent of removing 209 million cars from the road, roughly 80 percent of the Nation's vehicles.

Renewable energy holds tremendous potential for the United States. Each year, enough solar energy strikes a 90 by 90 mile patch of the Mohave Desert to meet the annual electricity needs of the entire country, and enough wind power sweeps across the Dakotas to meet more than half our electricity needs. We have barely begun to tap this nearly unlimited resource.

To do so, it is vital that Congress enact a renewable electricity standard this year; and here is why. First, an RES will help create a clean energy economy. Many countries are betting that the world of the future will thirst for low-carbon energy in the way it thirsts for oil today. We can't afford to remain on the sidelines while the renewables industry and jobs that go along with it are created elsewhere. We are already falling behind even Europe in this regard. In fact, nearly every one of FPL Group's largest renewable energy competitors is from outside the United States.

Second, an RES will give the renewable energy industry

certainty and will give utility decisionmakers a sense of urgency. In the electricity power sector, we make capital decisions with a 30-year time horizon. We can't spend billions of dollars to build a clean energy economy without confidence that demand for low-carbon power will remain strong.

A Federal RES with timelines extending to 2039 will send the clearest possible signal to investors that demand for renewables will continue, and the targets that utilities must meet along the way will provide the urgency needed for prompt action. The best incentive to ensure timely and proactive utility decisionmaking around renewables is a reasonable yet firm target.

Third, a Federal RES will drive down the cost of renewables. Make no mistake, in many markets today renewables such as wind are competitively priced, despite the fact that they are disadvantaged versus fossil fuels due to the lack of a price on carbon. The cost of wind power has fallen by roughly 25 percent over the past decade even as the average electric bill in the U.S. has risen by nearly 50 percent. By stimulating demand, an RES will continue to drive down the cost of renewables over time.

Fourth, a Federal RES will ensure that only the most cost-efficient renewables get built. The current patchwork of more than 30 different State regimes is cumbersome, costly, and creates incentives for bad decisions. For example, many States require utilities to buy only in-State renewable energy even if it costs more than renewable energy purchased from elsewhere. That

is like forcing grocery stores in Maine to buy oranges grown only in Maine. It makes no economic sense.

And, finally, an RES is essential to address the threat of climate change. That is threat isn't just environmental; it is economic. Those who say the cost of addressing climate change is too high assume that doing nothing is free. On the contrary, unchecked climate change could cost the United States tens of billions of dollars over the next two decades.

But no matter what your beliefs are about climate change, investing in renewable energy makes sense for America. It will replace finite fossil fuels with the infinite energy of the wind and the sun. It will result in cleaner air; it will conserve precious water; it will strengthen our energy security in a volatile world; and, finally, it will keep us competitive in the race to build a clean energy economy.

Mr. Chairman, thank you for the opportunity to testify this afternoon.

Mr. Markey. Thank you, sir, very much.

[The prepared statement of Mr. Robo follows:]

***** INSERT 5-4 *****

Mr. Markey. Our next witness is Gregory Kunkel. He is the Vice President of Environmental Affairs at Tenaska. Mr. Kunkel directs environmental compliance, permitting, and water resources issues at that company.

We welcome you, sir.

STATEMENT OF GREGORY P. KUNKEL

Mr. Kunkel. Thank you, Chairman Markey, Ranking Member Upton -- and happy birthday, by the way -- and members of the subcommittee, for this opportunity to discuss Tenaska's two commercial-scale electric generation projects using carbon capture and storage technologies, Trailblazer in Texas and Taylorville in Illinois.

My name is Dr. Greg Kunkel; and I am Vice President of Environmental Affairs of Omaha-based Tenaska, one of the largest independent power producers in the United States. Tenaska currently employs nearly 700 people and has developed approximately 9,000 megawatts of natural gas-fired electric generating capacity across the United States.

Our affiliates market natural gas, electric power, and biofuels and also are involved in private equity funds and acquisition management focused on energy space, including renewable energy, infrastructure development, natural gas

pipelines and storage, and electric transmission.

The Natural Resource Defense Council benchmarks Tenaska's power plants as having the lowest carbon footprint of any of our peers, less than half the national average emission rate of greenhouse gases. However, as clean as our fleet is, like a number of our peers in the independent power sector, our older long-term contract did not explicitly anticipate the cost of carbon control. To ensure that these clean, efficient facilities can keep operating, we urge the committee to provide a mechanism to hold these contracted facilities harmless for the duration of their contracts.

Now, with regard to carbon capture and storage, Tenaska's current initiatives, Trailblazer and Taylorville, may give the subcommittee some sense of the CCS projects that we believe can be built with today's proven technologies.

When Tenaska embarked on developing these utility scale CCS projects, natural gas prices were high and volatile, and there was a glut of gas generation. This encouraged us to consider coal for baseload power facilities. However, we recognized that new Federal, regional, and State greenhouse gas emission controls were very likely during these plants' 50-year life. Of course, just last week, EPA issued its endangerment finding and is considering comprehensive rulemaking to regulate carbon emissions; and now Congress is taking up the issue in earnest.

Tenaska's objective has been to find ways to develop the

baseload resources required for the electricity market, but we weren't willing to invest in solid fuel projects without addressing the climate change issue. So the question before us was how to reduce greenhouse gas emissions in the design of projects today. To that end, we needed to assure ourselves that carbon capture technologies for ready for a utility scale project, a secure home was available for capture carbon dioxide, and the economics and long-term financing arrangements for such projects could work.

On February 19, 2008, Tenaska announced the Trailblazer Energy Center, a 760 megawatt gross and 600 megawatt net output supercritical pulverized coal electric generation facility with the capability to capture 85 to 90 percent of its carbon dioxide. The site is near pipelines to the world's largest market for carbon dioxide, Permian Basin Enhanced Oil Recovery. Two railroads serve the site, and the electrical interconnection also nearby.

The comment period on Trailblazer's draft air permit closed on April 17, and the Texas Commission on Environmental Quality will be working toward a final permit over the next months. We have received competitive proposals for the facility's design and construction and are working on detailed engineering studies to support the financial closing and a construction start in 2010. Commercial operation could be as early as 2015.

Through our work with leading EPC contractors and equipment

manufacturers, Tenaska is increasingly confident that we can finance the project and negotiate suitable terms for the plant's construction. Local and State governments have provided tax incentives for building the plant and are encouraging oil producers to use the facility's CO₂. We still need some form of Federal incentive participation to make the project work, but that seems increasingly likely.

Trailblazer's significance is that it will demonstrate post-combustion capture technology for existing power plants that today contribute 2 billion tons to the U.S. emission inventory and 10 billion tons to the worldwide emission inventory. By locating near a viable CO₂ market, Trailblazer can pioneer this technology at a reduced cost.

The Taylorville Energy Center is a Hybrid Integrated Gasification Combined-Cycle electric generation facility being developed by Christian County Generation with Tenaska as the managing partner. The project will manufacture pipeline-quality substitute natural gas, or methane, from Illinois bituminous coal. SNG will fuel the power block.

The amount of SNG produced will significantly exceed our requirements, annually freeing up 10 billion cubic feet of SNG for eventual sale offsite. The facility will employ 1,500 construction workers and create hundreds of permanent jobs in the coal and power sectors.

Taylorville will capture 50 to 60 percent of the carbon

dioxide that would have otherwise been emitted, remove moisture and sulfur compounds, and compress the carbon dioxide stream for pipeline transport either to nearby geologic sequestration wells or for use in EOR operations elsewhere. The power island will have criteria pollutant emissions equal to those of a combined-cycle natural gas generation facility. No electric generation facility utilizing coal-derived fuel operating anywhere approaches the proposed emission performance of Taylorville. Yet the project relies exclusively on proven technologies for coal gasification, gas processing, and power generation.

The one important thing for all these types of projects -- and we think that they are real projects that can come off in the near future and begin construction as early as next year -- is providing some sort of regulatory framework and certainty for these projects. We have provided specific comments on aspects of the ACES draft in our testimony, and we look to those provisions. But there is a whole variety of ways that the bill could support these types of projects.

Mr. Markey. And how much CO2 can you take out of the coal?

Mr. Kunkel. The Trailblazer project in Texas would take 90 percent.

Mr. Markey. Thank you. I appreciate it.

[The prepared statement of Mr. Kunkel follows:]

***** INSERT 5-5 *****

Mr. Markey. Mr. Hawkins, Mr. David Hawkins, the Director of Climate Programs at the Natural Resources Defense Council, one of the most frequent visitors to this committee in its history. He has been working on air pollution issues for over 30 years.

We welcome you back. Whenever you are comfortable, please begin.

STATEMENT OF DAVID G. HAWKINS

Mr. Hawkins. Thank you very much. Thank you for inviting me to testify today. I am going to focus today on a pathway for coal.

NRDC, as an environmental organization, is a strong supporter of efficiency and renewable energy resources, but we also believe that it is important to have a pathway for advanced coal. It is important in order to get the policy support for the protection of the climate programs that we need, and it is important to actually make those climate protection programs happen more easily in the real world. We think we can get deep cuts in carbon dioxide emissions faster and at lower costs if coal with carbon capture is on the table as part of the toolbox, and that is why we very strongly support it.

NRDC is a member of the U.S. Climate Action Partnership, and we put forward in that document what we believed was an integrated

package of policy support for carbon capture and disposal. There were four things that we recommended.

The first was a requirement for the government to get its act together in terms of developing the necessary permitting rules.

The second was a program to do early government financial support so that we could get five gigawatts of coal capacity with carbon capture deployed by 2015. It sounds like Tenaska could be part of that five gigawatts.

The third element would be a transitional program where the early movers in the carbon capture world would get a financial incentive. This is very important to overcome the competitive barriers to these kinds of technologies, even in the early years of a cap-and-trade program.

And the fourth thing we recommended was a set of mandatory emissions standards for new coal plants so that we would have clarity and an assurance that we didn't have to rely just on market forces but we would have that good old-fashioned regulation that says: Here's a performance standard. You need to meet it. And, by the way, there will be financial incentives to help you do even better.

The ACES discussion draft does a great job of embracing these concepts and articulating them. And while there are a few places where some added detail would be helpful, we think that it is a very great job, and we are very supportive of it.

In our view, carbon capture and disposal is a real option.

It can be made into a reality out in the world if it has adequate policy support. That policy support has been lacking, but it can be provided through the kind of provisions that are in the ACES draft and, for that reason, we support it.

Mr. Chairman, we have heard lots of concerns over the last couple of days about whether the technology is available or whether it is available at a reasonable cost; and there have been lots of concerns and legitimately expressed concerns about the fact that this may cost too much, that we simply can't afford to do what is being proposed in this legislation.

Well, 73 years ago, the predecessor of this committee heard from then chairman Sam Rayburn about the need to have a major energy advance. It was called Rural Electrification Act of 1936, and some of the same arguments that we have heard mounted today about the need to protect the climate and whether we could afford to do it were put forward then. It was said that the technology did not exist to bring electricity to rural Americans. It was said that, if it did exist, it would be simply too expensive and ruin us.

Well, 73 years ago, this committee acted, and it passed out by one vote the Rural Electrification Act of 1936, and the result was an economy that the world still cannot beat. This is the world's greatest economy, and it is brought to that level in large part by electrification. It was that kind of technological advance and willingness to say, you know, we think these

challenges can be met.

Today, the challenge is even greater and the stakes are higher and the rewards are greater. But it is going to come down to the same thing: The men and women of this committee voting to do what we need to do to create the future that we need to create. Thank you.

Mr. Markey. Thank you, Mr. Hawkins. And it comes in full circle, doesn't it? 73 years ago, we were voting to bring electricity to rural America; now we are going to be voting on bringing electricity from rural America, the sun and the wind and biomass, to urban America. And we might only win by one vote, but that will be the perfect circle then when it is completed.

[The prepared statement of Mr. Hawkins follows:]

***** INSERT 5-6 *****

Mr. Markey. Our next witness is Eugene Trisko on behalf of the United Mine Workers of America. Mr. Trisko has represented the United Mine Workers for more than 20 years. He is a member of the Environmental Protection Agency's Clean Air Act Advisory Committee and has appeared before the U.S. Court of Appeals for the District of Columbia concerning the Clean Air Act.

Welcome, sir.

STATEMENT OF EUGENE M. TRISKO

Mr. Trisko. Thank you, Mr. Chairman, Ranking Member Upton. I am pleased to be here today to testify on behalf of the United Mine Workers.

The UMWA has sought technological solutions to the environmental challenges facing coal for decades. The UMWA recognizes that climate change legislation poses potentially the greatest threat to its membership and to the continued use of coal. In July, 2007, the Mine Workers and other industrial unions endorsed the bipartisan Bingaman-Specter climate change bill. Achieving the proper balance among technology incentives and the timing and stringency of emission reductions will be essential for obtaining bipartisan support for climate legislation.

One half of our electricity today is generated by coal. Twenty-three States rely on coal for more than half of their

electric supplies. To reduce coal in our energy mix means using another fuel to replace it for baseload generation, most likely a combination of natural gas and nuclear.

There is a great deal in this proposed legislation that UMWA supports. We strongly endorse section 114, incorporating the Carbon Capture and Storage Early Deployment Act reintroduced this year by Representative Boucher and a bipartisan group of cosponsors. The programs called for by this section will provide critical nonbudget support for the early demonstration of CCS technologies on the commercial scale.

CCS technology is the principal means for assuring that coal can continue to supply a significant share of our electric generating needs. These technologies also can provide a major source of new, well-paying low-carbon jobs.

Our statement summarizes a recent study showing that deployment of 65 to 100 gigawatts of new advanced coal capacity with CCS could create five to seven million job years of employment during construction and more than one quarter million permanent jobs.

UMWA supports the objectives of the CCS incentives provided in section 115. The Mine Workers recommend that the committee develop an allowed-based mechanism for funding qualifying CCS facilities. Such incentives will be critical to attracting capital investment in new and retrofit applications.

The timing and availability of section 115 support should

provide planning certainty. We regard the period from 2020 to 2040 as critical for avoiding a large-scale loss of coal markets. As to scale, we recommend a range of 65 to 100 gigawatts of new and retrofit capacity based on U.S. EPA's analysis of previous climate bills.

The Mine Workers recommend the bill avoids specifying CO2 performance standards limited to coal-based generating units. NSPS are unnecessary for these sources since all cap sources will be required to comply with the bill's declining cap.

To avoid the risk of WTO challenges, we suggest that the bill's international border adjustment provisions be modified consistent with IBEW and AEP suggested changes submitted to the committee on April 17.

UMWA favors the largest possible use of allowance allocations to the electric distribution and independent generation sectors and to vulnerable manufacturing industries. We support the recommended approach to allocations outlined in the recent letter to Chairman Waxman by the IBW and the utility workers.

UMWA is mainly concerned about the 20 percent reduction target for the year 2020. This target is well above the 6 percent target proposed by the Dingell-Boucher December, 2008, discussion draft and President Obama's proposed 14 percent target.

Commercial use of CCS by 2020 is likely to be limited to a handful of early mover plants. Recent modeling of similar emission control proposals shows that one-third to one-half of

coal-based generating capacity could be retired between 2015 and 2030. EPA's preliminary modeling of the bill shows this occurring by 2040, even with aggressive CCS assumptions. Such impacts must be avoided if the Nation is to retain domestic coal as a principal energy supply. The UMWA thus urges moderation in the choice of the 2020 target, recognizing that the majority of the emission reductions required by the bill occur later in the program when technological advances should facilitate the continued use of coal.

Thank you, Mr. Chairman, members of the committee.

Mr. Inslee. [Presiding.] Thank you very much.

[The prepared statement of Mr. Trisko follows:]

***** INSERT 5-7 *****

Mr. Inslee. The next witness is Jonathan Briggs, who is Regional Director of the Americas for Hydrogen Energy. Mr. Briggs is responsible for managing Hydrogen Energy's project in California and developing other Hydrogen Energy business opportunities in North America.

Thank you, Mr. Briggs.

STATEMENT OF JONATHAN BRIGGS

Mr. Briggs. Mr. Chairman, members of the committee, thank you for inviting me to testify before you today.

HEI, or Hydrogen Energy International, offers commercial-scale deployments of low-carbon hydrogen fueled power plants with carbon capture and storage. It offers the ability to bring together the complementary skills of its two parent companies, BP and Rio Tinto.

Hydrogen Energy, HEI, is currently developing two projects, one in Abu Dhabi, the other in California. The project in California is located in Kern County and will distribute 250 megawatts of much-needed, baseload low-carbon power.

The project's primary feedstock is petroleum coke, a refinery byproduct, along with coal as needed, and will capture and store 90 percent of its CO2 emissions in the Elk Hills oil field for sequestration and Enhanced Oil Recovery. The project has been

designed and developed to provide numerous environmental and economic benefits for the State.

It will conserve freshwater resource by using brackish groundwater with zero liquid discharge. It will create 1,500 construction jobs and 100 permanent jobs in an economically depressed region of the State, and the project will also significantly boost State and local tax revenue from EOR.

Just 2 months ago, the PUC voted 5-0 to direct \$30 million of support to our project. This is unprecedented and a demonstration of political leadership that first mover projects such as ours need.

And while I have the opportunity, I would like to thank CPUC, including Commissioner Grueneich, for recognizing the need for in-State, low-carbon baseload power. We filed for the planning permits and the site license and will be up and running by 2015, contingent on the development of an appropriate policy support framework.

In order to meet the aggressive emission reduction goals that are outlined in the draft ACES bill, CCS must be widely deployed and quickly to drive down the costs of future plants. Just as pre-combustion capture technology is proven, so is the storage of CO₂.

In the U.S., there are more than 3,500 miles of CO₂ pipelines to support Enhanced Oil Recovery, an activity which has been conducted safely and without incident for the last 30 years. We

believe that storing CO₂ in existing oil and gas fields in connection with the EOR will significantly advance the near-term deployment of CCS by bringing down the costs of early moving projects such as ours.

Like other forms of clean energy, CCS is more expensive than conventional energy. The majority of the extra capital costs lies with the power plant rather than the sequestration activity. The cost of CCS today is more than \$100 per ton of CO₂. That may seem like a lot, but remember this technology is still in the early development stages; and despite other technologies having enjoyed years of learning, low-carbon hydrogen power with CCS is competitive with nuclear and renewable energies. So cost, while important, is not a reason to forego or stall the rollout of this technology.

The draft ACES bill is a welcome first step to identifying CCS as a needed technology to mitigate GHG emissions. HEI appreciates the support shown for CCS in the Waxman-Markey draft, particularly fixed incentive payments which are critical to project sanction; feedstock neutrality; and recognition of geologic sequestration combined with enhanced hydrocarbon recovery.

In addition, we hope that any climate change bill would also recognize the need for early movers, provide clear and definitive performance qualification terms, and tie fiscal support to the levels of CO₂ capture such as the 90 percent that I referred to

earlier.

Before I close, I would like to leave the committee with one other recommendation regarding the regulatory certainty needed to allow CCS to move forward. We need one regulator, one set of regulations, and acknowledgement that EOR and sequestration can act simultaneously.

I would like to thank the committee for inviting me to testify before you today and remind you that CCS is ready today. We just need fixed near- and medium-term incentives to get these projects off the ground.

Thank you.

Mr. Inslee. Thank you, Mr. Briggs.

You have 10 seconds left. I am just dying to know, is your sequestration through pumping into oil fuels? Is that the sequestration system you are using?

Mr. Briggs. It will be.

Mr. Inslee. Thank you.

[The prepared statement of Mr. Briggs follows:]

***** INSERT 5-8 *****

Mr. Inslee. Our next witness is Mr. James Kerr, who is a partner with McGuire Woods LLP. He has previously served as Commissioner on the North Carolina Utilities Commission and is President of the National Association of Regulatory Utility Commissioners for 2007-2008. Today, he is appearing on behalf of the Electric Reliability Coordinating Council.

Thanks, Mr. Kerr.

STATEMENT OF JAMES KERR

Mr. Kerr. Thank you, Mr. Chairman.

My perspective today is that of a former utility regulator, where I examined regulatory policy to be sure that it was both cost-effective and equitable among and between customer classes and across regions.

My testimony focuses on the RES and the CCS portions of the bill that is before the subcommittee. Let me first focus in these remarks on what I believe to be certain inequities concerns and cost-effectiveness concerns with the RES. I am concerned that the bill, as drafted, will be both ineffective and inequitable for ratepayers in the Southeast and Midwest where cost-effective and renewable resources are limited.

The first concern is that the RES conflicts with a market-based cap-and-trade program. Renewables are simply one

option to decarbonize power fleets and reduce carbon. They may or may not be the most cost-effective option for doing that, however; and the price signals set by the cap is supposed to decide this. Since the RES performance-based standard must be complied with regardless of the cost, that undermines the cap's basic least-cost approach. In effect, the RES effects that renewables and not the other alternatives to be the most cost-effective solution of carbon reduction under the cap all the way up to the full amount of the RES.

Most troubling would be is that there appear to be no economic studies supporting the fact that a 25 percent RES by 2025 will produce the most cost-effective carbon reduction or cost-effective carbon reduction program in the cap program itself. Hence, I refer to RES.

Second, the RES gives ratepayers three compliance options, each of which is uneconomic to them and provides little benefit.

My second concern is that ratepayers in resource-poor States will be assessed significant costs to comply with the RES for which they will receive no benefit. Instead, the monies will flow to the benefit of the ratepayers in resource-rich States and either subsidize those ratepayers' RES compliance costs or those ratepayers' fleet decarbonization efforts and associated carbon cap costs.

To illustrate this, I thought I would use the example where I am a utility owner or a regulator or, for that matter, simply a

citizen in a resource-poor State where renewables tend to cost more than in resource-rich States. I would have three choices available to me under this legislative proposal.

First, I can build above market. By that, I mean higher cost renewable power than the prevailing REC price, renewable facilities in my State. That will ensure that green jobs and investment capital provided by ratepayers remained in State and that will provide some benefits towards carbon compliance in State. But the cost for compliance with the RES will be higher than if other alternatives are adopted.

However, since I also get a carbon benefit if I build my own renewables facility, I need to subtract that cost saving from my renewables costs, and those economics will likely make me build some and perhaps many above-market renewable facilities.

That result makes sense to me and my ratepayers, because it is the lowest-cost solution to the dual-compliance obligations of the carbon cap and the RES, but it makes no sense as national policy. The result will be nationally more above-market renewable facilities in the Southeast and Midwest and fewer economic renewable facilities in resource-rich States. And, of course, since renewables will be part of the compliance with the carbon cap and the overall cost of renewables is higher than it need to be because above-market facilities are built, the cost of compliance with that cap nationally will be higher than they would be without the RES.

My second choice is to purchase RECs, to fund construction of renewable facilities in another State with better renewable resources. If I do that, my ratepayers' compliance costs with the RES will be lower, but I will have to go back to them for more money to fund investments in carbon reductions for my system since I have received no carbon benefit from the renewable power facility funded by my ratepayers REC dollars.

In addition, I will have funded the creation of green jobs in the resource-rich State but not my own, and I will have funded fleet decarbonization efforts in the resource-rich State through construction of a renewable facility but not my own. As a consequence, I have subsidized the carbon compliance cost of the ratepayers in the resource-rich State who will not see rate increases to fund the carbon reductions my renewable power facility has made for them.

My third choice is to make an alternative compliance payment. This option would allow my ratepayers to comply with the RES at a lower cost, but, again, they see no carbon reduction benefits for the payment, and I will have to go back to them for additional monies to fund my own carbon reduction efforts.

In addition, the monies I spend making alternative compliance payments are returned to the resource-rich States that complied with the RES and presumably refunded to those ratepayers. Thus, my alternative compliance payments subsidize RES compliance cost of citizens in resource-rich States, but my ratepayers see no

benefits.

As a former public servant and citizen, I do not like any of these choices. None make any economic sense to my ratepayers and they do nothing to address climate change since the cap already requires carbon reductions independent of the RES.

Frankly, I am baffled as to why I would have to make a choice between three such poor options. No one has told me that renewables up to the full amount of the RES are the most cost-effective way to reduce carbon, and no one has told me that the U.S. renewables industry cannot sustain itself based on the price signal that cap will send the existing plethora of the 33 State RES requirements and other financial incentives available to renewables. It seems to me that the primary effect of the RES requirement is to pick winners and losers and that the ratepayers in resource-rich States will be the clear winners, while ratepayers in resource-poor States will be the clear losers.

I want to be clear. I am not against renewables in any way. They are an important part of the toolkit to address climate change, and they will be employed at scale under any carbon cap up to the point that they are the most cost-effective alternative. What I am against is the imposition of a very large Federal renewables mandate that effectively advantages ratepayers in resource-rich States and disadvantages ratepayers in resource-poor States for no compelling reason.

While I do not see the need for any mandatory Federal RES, my

testimony does have suggestions that will limit but not eliminate these inequities.

Finally, with respect to CCS, the ERCC supports the efforts in the bill to generate research, development, and deployment of CCS. We also, however, provide a couple of comments that might help shape that piece of the legislation.

Thank you. I am happy to answer any questions.

Mr. Inslee. Thank you, Mr. Kerr.

[The prepared statement of Mr. Kerr follows:]

***** INSERT 5-9 *****

Mr. Inslee. Our next witness is Dr. Jay Apt, who is Executive Director of the Carnegie-Mellon Electricity Industry Center and an associate professor at Carnegie-Mellon University. We hope Dr. Apt feels very much at home today, because he has been in space flying four times and logging more than 35 days in that environment and over 10 hours in space walks.

We hope this is as easy an experience, Dr. Apt. Thank you for being here.

STATEMENT OF JAY APT

Mr. Apt. Thank you, Mr. Chairman. I like to tell people that I am probably the only person in the room who owes their life to solar cells.

I appreciate not only the invitation but your stamina.

As you said, Carnegie-Mellon, I am a faculty member in both the engineering school and the business college. I have studied the electric power industry for many years at our Carnegie-Mellon Electricity Industry Center. But burning any appreciable fraction of the estimated fossil fuel resources on this planet without carbon dioxide control is going to send CO2 levels to places that humans have never experienced and cause really dangerous climate change. There is no question that the singular focus, our goal, ought to be controlling CO2.

Renewable energy sources are going to be an important part of whatever we do in this country, but I caution that a singular emphasis on renewable energy is not the best way to meet that overriding goal of controlling CO₂.

We spend about 3 percent of GDP annually on electricity. Removing 80 percent of the CO₂ from electric power with the most cost-effective technologies will take about two-thirds of a percent of GDP. That turns out to be just about what we spend on the Clean Air Act. That is affordable. But if we try to specify which technologies, like renewables, are the only ones that need apply and don't allow the least expensive technologies to compete, costs can grow to unaffordable levels. It is important to develop competing low-carbon technologies to keep costs low, rather than trying to select technologies based on attributes that have little to do with controlling CO₂.

A national RES is a costly way to reduce CO₂ emissions, because renewable and low greenhouse gas are not synonyms. There are several other practical and often less expensive ways, and you heard about some of them just now, to reduce CO₂ from electric power generation.

As you know, renewable energy is concentrated only in certain States. The Southeast doesn't have either good wind or good solar. It does have biomass, but that is going to be needed for production of liquid fuels. Legislation should give each region the greatest flexibility to reduce CO₂ at the least cost,

including renewables, efficiency, conservation, fossil fuels with CCS, and nuclear.

Mandating technologies can be much more expensive than mandating performance. Renewable performance standards unnecessarily increase costs in an attempt to eliminate the use of uranium, coal, natural gas, and large hydropower.

What is needed instead is a carbon performance standard that lowers the limits in a predictable fashion on the emission of CO₂ for every kilowatt hour produced. To affordably lower CO₂, we are going to need everything that works. No power source is free of problems.

Our research has examined what was then the largest solar ray in the country in the desert in Arizona. It had a duty cycle, what we call the capacity factor, of 19 percent averaged over 2 years. All the wind farms in Texas last year added together had a capacity factor of 29 percent. That means that 70 percent of the time you have got to use something else. And our research shows that natural gas turbines used to provide fill-in powers as the wind rises and falls or clouds cover the sun produce more CO₂ and much more nox, nitrogen oxide, than they do when running steadily. That lessens the beneficial effects of wind or solar.

One solution is to store large amounts of electricity when these sources are generating. The discussion draft doesn't appear to me to contain significant incentives for large-scale storage, and I think it ought to.

If our industries are to be able to afford electricity, it is essential that demonstration coal plants with carbon capture be built to improve the technology and show that we can sequester CO₂ without leakage in a range of geology. The section 114 incentives seem to me to be at the low end of what is required to demonstrate the commercial viability of sequestration. It is also essential that we build half a dozen nuclear plants using new technology to assess their costs and performance, or we are going to be importing that technology from abroad.

I hope that you will keep two principles in mind.

First, focus on reducing carbon dioxide, rather than singling out renewables as the answer. There are significant savings, from letting all the technologies compete in satisfying the goals of lowering greenhouse gas emissions and increasing energy security, while ensuring that energy prices aren't so high that they derail our economy.

Second, ensure that efficiency gains generating electricity as well as in using it can count in any low-carbon legislative mandate such as section 231 of the discussion draft.

Thank you very much for the opportunity to testify.

Along with my written testimony, I provided the subcommittee with one of our published papers. I think the research outlined in the paper might be of interest and value and would ask that that be included as part of the hearing record.

Mr. Inslee. Hearing no objection, Dr. Apt, thank you very

much.

[The prepared statement of Mr. Apt follows:]

***** INSERT 5-10 *****

[The information follows:]

***** COMMITTEE INSERT *****

Mr. Inslee. We will start questioning with Tammy Baldwin.

Ms. Baldwin. Thank you, Mr. Chairman; and thank you all for your patience and your testimony here this afternoon.

We just returned to session from a recess, and over the course of my recess I had a chance to do a great tour of some of the most innovative Wisconsin-based companies that are doing all sorts of exciting things in the energy area in anticipation of the work we are doing on the climate change bill.

One of the places I visited is a company called Orion based in Nashua, Wisconsin; and they are managing a solar light type technology that can illuminate factory floors electricity free by concentrating daylight. Just last month, the company was even touted by President Obama for having innovators and creating jobs that will foster our economic recovery and create clean technology to power our long-term prosperity.

Now, like the solar light pipe, there exists a number of distributed renewable energy resources such as solar water heaters, solar air heating and cooling, geothermal heat pumps that deliver measurable and verifiable renewable energy at the load source. These technologies help businesses and homeowners lower their utility bills; and because they produce clean energy at the load source, they certainly lessen the burden on our Nation's transmission infrastructure.

As I understand it and have looked into it, some States have

included these technologies in their renewable portfolio standards, and others have not, because these technologies do not actually generate electricity even though we can sort of monitor virtually with meters the electricity consumption displaced by these technologies.

So I want to ask, I think, Mr. Reicher and Commissioner Grueneich, do you think these types of technologies should be considered as a part of our renewable energy technologies and can they provide benefits under a national renewable portfolio or electricity standard?

Ms. Grueneich. Yes, and yes.

Let me also say I want to congratulate your State. We are not talking about energy efficiency, but in a recent report you are ranked number five in the country. I am very happy to hear about some of the technologies that are being developed. I think that this is an example where we see innovation at the State level, and I think that it definitely is an example of the types of new technologies coming on line that can and should be included when we are looking at the renewable standard.

Mr. Reicher. And I would add that, as you know, there is already a three X multiplier for on-site generation. It would be interesting to take a look at what of these technologies might be included and, if not, how that might be adjusted. That is number one. Number two, of course, the energy efficiency resource standard would capture some of the value of this as well by

cutting electricity demand.

So I think the interplay between the two of those should at least help these technologies. What we may want to do is look a little bit further and see if there is ways to move them forward even better.

Ms. Baldwin. And that was precisely my second question. Should this technology be a part of the energy efficiency resource standard? You sort of jumped to that answer already.

On the distributed generation multiplier, another one of my stops on my tour last week was to an anaerobic digester on a dairy farm. Now, I think Wisconsin is the leader in the country in deployment of anaerobic digester systems, but all of them are smaller than two megawatts. The one that I visited is generating enough electricity for about 600 homes in the area.

The proposed definition in our draft discussion bill right now would exclude small biomass generation systems from receiving the distributed generation credit multiplier because they rely on combustion, and the proposal appears to make distributed solar and wind more valuable than distributed biomass. And I guess I would want to ask your opinion also on what guidance you would give our committee as we get into the details of the bill on this issue of should it count or not. Commissioner?

Ms. Grueneich. I will say that we are facing in California, as we have had now a couple of years under our belt -- I guess 3 or 4 now -- on our renewable standard that as the technology is

improving, and we have got a project that Pacific Gas and Electric Company is doing also with one of our dairy farms, where we are seeing that we do have to look at modifying our definition of what qualifies. And I think that it will be important for the committee to really take a look throughout the country at what are the different projects that have emerged, take a good look at the definitions.

And I totally concur with Dan. Let's make sure that things don't fall between the cracks of what is considered a renewable or what is considered an energy efficiency, and it doesn't qualify for either one. So I think that is real good homework. We want to capture the most innovative projects.

Ms. Baldwin. Mr. Chairman, I was going to ask a question to our carbon capture and sequestration experts. I see my time has expired.

Mr. Inslee. The Chair is extending an additional minute to all committee members who are so dedicated to be here.

RPTS McKENZIE

DCMN MAYER

Ms. Baldwin. [Continuing.] Along with my other stops on my energy tour I got a chance to visit a coal plant owned by WEE Energy in Wisconsin that is doing a demonstration project on carbon capture -- not the sequestration part, but they are right now succeeding in capturing 90 percent of the CO2 emitted, but only doing this demonstration project on 1 percent of the flue gas. So it is a small demonstration project. A larger scale project, sort of tenfold the size, will be under way soon in West Virginia.

I would love our CCS experts to address a couple of quick questions. One is the job creation potential. The second is, if we do not have a cap in the end, would you expect whole scale commercial deployment of this technology without it? I have concerns that we wouldn't.

And then, finally, this is a huge issue, but Wisconsin is not particularly geologically -- well, we don't have the geological formations necessary for storage in state which brings up transportation issues. And I wonder whether the funds collected by the CCS provisions of the bill will apply to researchers' transportation for CO2 and the costs associated with that. But -- I know that is broad, but I would love to hear our CCS experts address those three areas.

Mr. Kunkel. We have been following the WEE Energy project there too, and they are tackling one of the most interesting parts of this that could have big promise for reducing the costs of it, which is the energy efficiency penalty using ammonia technology. And we think that is very promising, and we are following that technology and considering that very closely. That sort of goes to one of your questions.

Your second question was jobs.

Ms. Baldwin. Actually, that was the first question. The second was the relationship between the cap and the deployment of this technology.

Mr. Kunkel. Yeah. Certainly large-scale deployment won't happen without there being some kind of a market value, if society doesn't value the reduction of emissions in some way. And -- that has to happen, and what we are working at is getting the cost of that down to where it happens at a reasonable price; and we believe that that can happen as well.

Jobs, our projects in both Texas and Illinois will -- the one thing, they take a long time to build; it is like a 4-year construction cycle, 1,500 jobs at the peak and even as many as 2,000 in some cases. So, for a retrofit, that project would be much less, but it is still a very substantial project employing a significant number of people.

Mr. Inslee. [Presiding.] Thank you. We are now moving on to Mr. Upton.

Mr. Upton. Thank you, Mr. Chairman.

Dr. Apt, I want to come back to your testimony. You talked about a carbon performance. If you look at that for the base as an RPS, you probably could include nuclear as part of that, right, because it has -- that has no greenhouse gas emissions?

Mr. Apt. Certainly.

One of the statistics I like to tell people is, in my home State of Pennsylvania, we are nearly last in renewables, but we are first in low carbon because of the percentage of nuclear that we have.

Mr. Upton. You said that the solar array in Arizona was only 19 percent, which means that it is out?

Mr. Apt. Sure. It can't be more than 50 percent because it is night half the time.

Mr. Upton. I know they don't have daylight savings time. That is probably another hour.

Mr. Apt. The thing that surprised us was that it wasn't higher than it is. That is because of the intermittency caused by the clouds. We have looked at the solar rays in other locations. The DOE has a solar roof here, and that is 11 percent as it turns out.

Mr. Upton. Thank you.

Mr. Robo, you mentioned that you are managing the largest solar bank in the world; is that right?

Mr. Robo. That is right.

Mr. Upton. In the Mojave Desert. How big is it? What is the size?

Mr. Robo. Three hundred megawatts.

Mr. Upton. What is the footprint? How big is it?

Mr. Robo. The footprint is tens of acres, it is about an acre a megawatt, so it is about 300 acres.

Mr. Upton. There has been some debate that I have seen in the press -- we mentioned this either today or yesterday at one of these hearings -- that the senior Senator from California has not been all that supportive. Is that true or not? Is it that project or is that another one?

Mr. Robo. No. It is not our project. Our project is already built.

Mr. Upton. Is this another project that is going to rival you as the largest in the world then?

Mr. Robo. There are several new projects that are being considered in California. We have several that are under -- that are trying to be permitted right now. Other folks are being -- other folks are trying to permit projects.

Our, actually, two projects that are furthest along in the permitting process are outside of Senator Feinstein's areas.

Mr. Upton. Now when you began the construction of this or to get the licensing and the approvals, did you have trouble hooking it into the transmission lines? And how long did that take?

Mr. Robo. These projects, the projects we have right now in

California are actually quite old. They were built in the late 1980s-early 1990s and took several years to develop -- any large-scale solar project in any of the areas that we are looking at.

We are developing large-scale solar projects in Florida, California, Arizona, Colorado. It really depends in the jurisdiction. We have built 110 megawatts of solar in Florida in the space of a year. California would take 5 years.

Mr. Upton. Would it be helpful in this bill, if this bill moves forward, to have some type of allowance to allow FERC to step in if folks like your seatmate there are not entirely cooperative in getting things hooked up?

Mr. Robo. We think having FERC have --

Mr. Upton. Constructive.

Mr. Robo. We think having FERC have ultimate siting authority makes good sense.

Mr. Upton. Ms. Grueneich, you talked about California going to 33 percent by 2020. I seem to remember at one point they were 20 percent by next year is; is that right?

Ms. Grueneich. We have -- our current law is 20 percent by next year. There are what some would call flexible provisions that will allow it to be another year or two probably. But we are on target.

Mr. Upton. So you think they will hit it?

Ms. Grueneich. Yes.

Mr. Upton. Again, I am not from California.

Ms. Grueneich. Yes.

Mr. Upton. Last question I have in my minute that is remaining, Messrs. Briggs, Kerr and Trisko, as we look at the issue of carbon capture, something that has to be part of coal's future, there is nothing in this bill, as I understand it, relating to the long-term liability issues.

Does that need to be part of this, if you could each comment on that?

Mr. Trisko. Yes.

Mr. Upton. I don't know if you had it cited in the longer part of your testimony or not.

Mr. Trisko. The bill contains a provision for research on long-term liability issues, and we think that that underscores the need for resolution of the long-term liability question.

Mr. Upton. Would the others dis -- Dr. Kunkel, would you agree? Just maybe to speed this along in my remaining 5 seconds.

Mr. Kunkel. I do think there is the need for kind of a study, but there is also some -- we have a project that we want to take to financing next year. So I think there needs to be some consideration for the pioneering projects, a first group of projects, and to take care of those.

Mr. Briggs. Just very quickly, one of the advantages of our parent companies being familiar with the subsurface, we are willing to move ahead of these sorts of frameworks not being

defined because we are comfortable with it. But we have also been -- we have also suggested a framework for liability as it moves through a project from operatorship to postclosure.

Mr. Kerr. Congressman Upton, I would say "yes" completely, and I would also point out -- and I think Representative Baldwin mentioned the transportation issue in your question. There are a number of these issues around CCS that are very important. And one of the things that this subcommittee needs to focus on is, when you look at EPA analysis of this bill and bills in the last Congress, there are very aggressive assumptions about when resources like CCS will be available, and yet they don't match up with what -- the realistic issues like liability transportation, so I think when you look at the analysis, look at the presumptions and then realize there are a plethora of what seem like sort of minor issues.

The sooner we deal with those in a bill like this, I think the more rapidly we can deploy these technologies, which then will maybe justify some of the assumptions being used in the economic analysis.

Mr. Upton. Dr. Apt.

Mr. Apt. At CMU we have started a large project on the legal and regulatory environment for deep underground sequestration. And a lot of paths through the thicket lead to dead ends.

We have put out a draft of -- a working paper on that. We give presentation on January. We will be happy to talk with you

more about it.

We are expecting to put out a final on that later this summer, and we would love to work with y'all.

Mr. Upton. Thank you. Thank you.

Mr. Inslee. Thank you. The Chair will proceed.

Mr. Reicher, thanks for being here. Thanks for Google's vision and the work they are doing. I wanted to ask, you alluded to the necessity for some financing mechanism across what has been called "the valley of death," particularly for the first commercial projects.

There are a couple of approaches that have been proposed. I have proposed one approach. And we have tried to focus in our approach somewhat more narrowly than others to make sure we target the risky adventures that really do not have access to commercial lending credit -- narrower insofar as the target, but broader as far as allowing the use of the full financial tools that could be available, multiple systems to really finance these.

I just wonder if you want to comment on those approaches and what you think we need.

Mr. Reicher. Congressman, I think the approach that you are looking at which is quite similar to the approach that Senators Bingaman and Murkowski are looking at, I do think that is the right way to go; and let me explain why I reached that conclusion.

The issue we face is the following: There is today in developing new energy technology both private and public capital

to get technologies to the pilot stage. We have a burgeoning venture capital world, there is a variety of funding available at the Federal level for the lower-cost development of this to the pilot stage. The valley of death begins when you get a technology, whether it is renewables, efficiency, clean coal a whole host of technologies, when you get to that successful pilot stage and you have got to go from there to large commercial deployment. But it is those first few large commercial projects that the bankers will say, too risky, we are not interested, come back when you have built the first couple and talk to us then. That is the valley of death, and that is what your bill and that is what Senator Bingaman and Murkowski's bill would deal with well.

The tools, as you say, are quite broad -- loans, loan guarantees, other credit enhancements and also secondary market support so we could, in fact, develop clean energy-backed bonds as well. So a whole set of tools focused right on that, that really critical moment where so many technologies across the entire energy spectrum die, between pilot scale and multiple large commercial projects being built.

So I salute you in what you are doing, Senators Bingaman and Murkowski are doing a hearing next Tuesday to try to advance this.

Mr. Inslee. Great. Thank you very much.

Dr. Kunkel your effort, the Tenaska project, I am told is in Taylorville, Illinois; is that right?

Mr. Kunkel. Taylorville, Illinois.

Mr. Inslee. Is that Mr. Shimkus's district?

Mr. Kunkel. It is.

Mr. Inslee. It is a great district. He is a great Congressman, of course.

If you are successful and we have got a great cap-and-trade bill that helps drive investment into your project, because your project would be more cost competitive once we have a cap-and-trade system, would that allow people to continue to mine coal, also create jobs associated with your project, and continue the coal-based economy in that area?

Mr. Kunkel. It would definitely spur the development of these types of projects and that project in particular.

Mr. Inslee. And would the existence of a cap-and-trade system increase your attractiveness to investors to invest in that coal-sequestered technology? Would it make it more attractive vis-a-vis other technologies?

Mr. Kunkel. We believe it is going to be attractive in any case because of the particular conditions of the project. But certainly that would be helpful in kind of setting a framework in which those investments are going to be encouraged in the future.

Mr. Inslee. Well, I will happily fulfill the responsibility of conveying that to Mr. Shimkus, that a cap-and-trade system could help a business in his district and employ perhaps 1,500 people. Thank you for that.

Dr. Apt, you said something that was really interesting to me. I think -- and I want to make sure that I understood your assessment, and I think you bring up a very interesting point. As I understand what you told us, if we are successful in policies that do, in fact, find the least costly ways of dealing with this -- and I understand that is an "if" at the moment, and you have some critique of that effort -- but if we are successful in that regard, do I understand that the costs you have assessed are about two-thirds of a percent of GDP, which are in the range of what we did successfully in the Clean Air Act?

Mr. Apt. That is correct, if the costs are kept to \$35 to \$50 a ton of CO₂.

The difficulty is that that applies to things like coal with CCS. It does not apply to things like natural gas with postcombustion capture that could be about \$80 a ton of CO₂. At the moment, the best solar PV or solar thermal are many multiples of that.

Mr. Inslee. So, if I can, how much loss to the GDP, the no-action scenario if we do nothing, if we do what some have suggested here to do nothing, not to address this issue of climate change, is the amount of loss to our GDP due to drought and, you know, changes in the climate, perhaps some health-related impacts?

Do you think those reductions of our economic well-being will exceed what we tried to avoid in the Clean Air Act? Is this a worse problem than what we tried to solve in the Clean Air Act?

Mr. Apt. The answer is a complicated one because it depends on the details regionally, what happens. In California, one of the things that drove people to action there was the prediction that the snowpack in the Sierra would be much worse off a few years from now without control of CO₂. That is not going to be the case everywhere. There are going to be winners and losers.

In the Clean Air Act there was a clear -- or I should say, dirty and present danger. It is a conceptual thing at the moment for most people. That is why downscaling studies like the Sierra snowpack is so very important in making people understand how it affects them.

Mr. Inslee. Let me just -- I don't want to take too much time.

But I will just tell you, one Congressman's assessment is that the danger to our communities and the danger to our Nation has the capacity to be quite a bit more severe than what we were suffering under the Clean Air Act for a whole variety of different reasons and that, because of that, an investment anywhere close to what we did with the Clean Air Act would make sense because of the potential danger faced.

Mr. Apt. I would concur. Any investment of the type, the two-thirds of a percent of GDP that we did in the Clean Air Act not only makes sense, but it is clear that we accepted that, although with a great deal of kicking and screaming.

Anything much more than that, certainly many multiples of

that, is probably a very different animal.

Mr. Inslee. Thank you. I appreciate that.

Mr. Walden of Oregon.

Mr. Walden. Thank you very much, Mr. Chairman.

Dr. Apt, let me go back to you because you said solar is about \$80 a ton, carbon equivalent.

Mr. Apt. No. That is natural gas with postcombustion capture at the moment. Solar PV and solar thermal are many times that.

Mr. Walden. Many times that?

Mr. Apt. You know, it depends. At the moment, you could bring in a good solar thermal plant for perhaps \$200 a ton of avoided CO2. And I think Mr. Robo would --

Mr. Walden. The reason I ask that is, yesterday we had testimony from the EPA Administrator, Ms. Jackson, who indicated her analysis of this bill, given whatever they plugged in. I thought she said, in the first few years it was \$17 a ton for carbon, that that is what they used as a price, and then maybe as much as \$20 or \$30. We are trying to get all those data points.

So I find it fascinating, you are saying \$35 to \$50; it may be as high as \$80.

Mr. Apt. It is one of the reasons why I think that a carbon performance standard is going to be much more effective than a -- let's say \$17 a ton, because it is going to affect investment. It is going to take \$35 to \$50 a ton to really affect investment in

the area I know about, the electric power industry.

Or you can do a carbon portfolio standard that says, as California has done, you can emit no more than X, in that case, 1,100 pounds of CO2 per megawatt hour; and that declines.

Mr. Walden. Okay. I am going to move down to Mr. Gruenspecht because in your testimony you state, in absolute terms, the key terms are projected to be biomass and wind; but other renewable fuels including solar and geothermal are also projected to grow significantly in percentage terms.

What would constitute the biomass that you reference?

Mr. Gruenspecht. Well, there could be both co-firing of biomass in existing plants that currently burn coal.

Mr. Walden. That would be like woody biomass?

Mr. Gruenspecht. That would be woody biomass. That could be used in a modest proportion as part of the feed to that existing plant. That is attractive to the extent there is not a big capital investment involved.

Mr. Walden. Would that be the primary source you are looking at when you use the term "biomass"?

Mr. Gruenspecht. Or you could have dedicated biomass crops. You could have -- switchgrass as well can be burned, as well as --

Mr. Walden. And I have raised this issue every other chance I have had, the deal with woody biomass on Federal land.

Mr. Hawkins, I understand NRDC is the one who is responsible for the language in the 2007 energy bill that precluded fuel

sources made from woody biomass on Federal lands from being applied toward the fuel standard; is that correct?

Mr. Hawkins. We supported safeguards so that we would not have adverse land use changes associated with the renewables.

Mr. Walden. So it was your language or you were the ones who principally said that?

Mr. Hawkins. I wish we had the power to actually write language and have it show up in legislation.

Mr. Walden. Did you have any role in the language regarding biomass in this draft? Did NRDC have any role in the biomass language in this draft?

Mr. Hawkins. We didn't review any draft before you saw it.

Mr. Walden. Did you submit draft language? Did you participate in the discussions in what you thought ought to be -- that is not a bad thing, by the way. I am just trying to figure it out.

Mr. Hawkins. I don't believe we submitted any language on the biomass provisions.

But if we did --

Mr. Walden. Do you support these biomass provisions that are in this bill?

Mr. Hawkins. Do we support them? Yes.

Mr. Walden. And so you think it is okay to exclude all woody biomass on Federal lands as being considered biomass?

Mr. Hawkins. We think that until and unless we have

safeguards in place that address everyone's concerns about the impact of sourcing some of these biomass resources, that it is an appropriate safeguard, yes.

Mr. Walden. To just simply say, woody biomass off Federal land isn't biomass? That is what you say.

Mr. Hawkins. To say that it shouldn't be an eligible source of a resource for purposes of complying with this obligation, that is appropriate policy.

Mr. Walden. Obviously you can have that opinion. I disagree vehemently with it, as you might have noticed by now, and hope to change it.

Ms. Grueneich.

Ms. Grueneich. Not to be confused with Gruenspecht.

Mr. Walden. Got it. And it is turned as well.

Mr. Gruenspecht. It is a very green panel.

Mr. Reicher. This is the German end of the panel.

Mr. Walden. The German end of the panel, and Mr. Reicher too.

First of all, Google has got a facility in my district. One of the reasons is because of our low-cost hydropower, which I think is renewable, but this bill does not. But I want to go to geothermal because I think both of you may have mentioned that.

I was told by our scientists at Oregon Institute of Technology we could replace two-thirds of Oregon's electricity generation needs by geothermal. I have also been told by

University of Washington scientists you could replace all of Oregon's gasoline consumption with methanol made from woody biomass due to the backlog on our forests. So it looks to me like there are some enormous opportunities here to use new energy types in a very effective way.

When we move off of that, though, and into distributive energy, which I think is also a key element and gets at the real issue of transmission which you have raised, we have got a huge fight out across my district right now about the siting of transmission lines, principally because they go over Federal land.

In one case, a company I believe is trying to avoid any Federal land because of the siting fights. So now they are going to try to drive it right over everybody's farm and field, which is another huge problem.

The other case, we may deny an entire wind project over 180 acres of BLM ground that they need to run the supply line to private land. How do we address these issues?

Ms. Grueneich. I have spent 4 years on transmission permitting.

I will just say, it is not in the bill. I think one of the most significant provisions that somebody needs to put in the bill on transmission -- the planning part is great, and I will talk a moment about that, but we have huge problems with the Federal land use agencies in transmission permitting. And I hear a lot about the problem from the State agencies.

Just about every land permit -- every transmission project in California and it sounds like in Oregon, and it is a lot in the West -- ends up going through Federal lands; and we need somewhere in all these bills that are going through on transmission, something in my -- this is my personal opinion -- that really talks about the Federal land use, agencies having to streamline their transmission permitting projects.

We do MOUs with BLM and U.S. Forest Service on a regular basis that have schedules, and they never stick to the schedules. We have had projects that an entire year has been lost after we have permitted them under our sequel, our environmental review, which is tough, and we still wait another year to finish the Federal permitting.

So I am a strong believer that this cuts both ways, that it is the Federal land use agencies, and a little bit of language in there that has them streamlining some of their processes could help.

There is a terrific process -- I will just be real quick -- going on in the entire western United States called western REZ, Renewable Energy Zone --

Mr. Walden. Right.

Ms. Grueneich. -- that is looking at every single State; and nobody is worried about red, green, blue anything that is really going down to the level again of transmission planning we need, of what are those resources in the States. And we are finding some

really good information.

We talk about, we think that States are resource poor on renewables. When we are actually spending time looking at this, we are finding that there is a lot more, frankly, than we thought about.

And so I do think that this is a ray of hope that we are going to be able to come together. And once we know those resources, that is, where we are able to look at what are the transmission lines that are going to make sense, and then get our act together; and if they are the ones we need, let's get them built.

Mr. Reicher. Mr. Walden, if I could just add, one of other aspects of this is improving citizen engagement, getting people involved earlier, giving them the information they need to understand what the options are in terms of transmission.

We have been working with some organizations, including NRDC, at actually building mapping capabilities using Google tools and other kinds of tools to get this information to people. If you engage them earlier, if you give them the options, walk them through the process, often some of this, some of the opposition can be overcome.

But I would second what Commissioner Grueneich said about the critical need to engage Federal agencies more readily.

Mr. Walden. Mr. Chairman, I know we are over. Are we going to have a second-round opportunity for questions? This is such a

great panel, but there are so many of them.

Mr. Markey. [Presiding.] Okay. And there are so few of us that I think we can do that then as a result. I think it works out well.

Mr. Walden. Thank you, Mr. Chairman.

Mr. Markey. The Chair will recognize himself at this point for a round of questions. And, you know, I think there are two ways you can look at the renewables issue. You can look at it in a rear-view mirror or you can look out the windshield at the future as it is arriving.

So you can use two sets of numbers. One set of numbers can be, oh, my goodness, only 1 or 2 or 3 percent of our electricity comes from renewables, excluding hydro. That is not a good picture. How are we ever going to be able to provide the electrical generation we need for our country in the future?

Of course, another way of looking at it is 2008. 8,500 new megawatts of wind generated in our country, 400 new megawatts of solar generated in our country, 205 new megawatts of biomass generated in our country, 138 new megawatts of geothermal generated in our country; only 1,100 new megawatts of coal and 9,700 megawatts of natural gas, zero in nuclear. So, my goodness, when you add it all up, 45 percent of all new electrical generation in the United States in 2008 was from renewables, and that is before we pass a national renewable electricity standard.

If we were looking out the windshield, looking ahead, and we

had a national renewable electricity standard and we had the incentives that were put on the books in order to give incentives for States and individual companies to deploy renewables; if you look at the State of Texas having the legislature authorize \$5 billion to build a transmission system out to the west in the State to capture the wind and the solar; if you look at Florida Power and Light initiatives -- how many new megawatts of solar in Florida, Mr. Robo?

Mr. Robo. One hundred ten.

Mr. Markey. One hundred ten.

You can see that all over the country there is massive new interest.

And, Dr. Kunkel, you have a technology that you believe is going to give coal a big future, as well, because you believe that we can capture the carbon that is generated from coal burning; is that correct?

Mr. Kunkel. No. That is right. And we think there are technologies we can get financed and go to construction next year.

Mr. Markey. I am feeling so good, you know, after this panel. And that is why I do want a second round. This is just -- you know this is -- you guys are like walking antidepressant pills sitting at this panel. So thank you for coming in today.

Mr. Trisko.

Mr. Trisko. Thank you, Mr. Chairman. We didn't comment directly in our prepared statement on the RES requirements, but

your question recalls --

Mr. Markey. Can I say this, that was not a question. My question there was in the form of an answer, okay, so I was just laying out what the answer is going forward.

But you can take it as a question, and please comment.

Mr. Trisko. I will interpret it as such, Mr. Chairman.

It calls to my mind Commissioner Kerr's comments regarding the effects of a cap-and-trade program on providing significant incentives in the market to bring new renewable energy supplies on; and that very much will be the case, particularly if allowances, as we advocate, are given to the wires companies and to the distribution companies.

The first power sources that they will want to obtain to sell to their customers will be power sources for which they don't have to give up an allowance, that are zero carbon-based sources. So that will create the correct market incentives in the resource, the renewable resource-rich States that the Commissioner referred to, in order to develop those in a very cost-effective and rational manner.

Mr. Markey. Thank you, sir. Very much.

So in listening to the testimony -- and, Mr. Robo, you are making money on this all across the country. You are very optimistic about the vast capacity for our country to generate electricity from renewable sources?

Mr. Robo. That is right.

Mr. Markey. It is going to be a profit-making business?

Mr. Robo. It is a profit-making business and -- you can be successful being green, and I think that has been a critical part of our strategy over the last decade.

Mr. Markey. Thank you.

And again back to you, Dr. Kunkel. Do you have reason to give really a sense of confidence to the coal miners, to the coal industry that there is a real future ahead for them, and the technology will catch up and make them compatible with our goals in reducing greenhouse gases?

Mr. Kunkel. We do look at it differently. We are developers of power projects. That is what we do for a living. And for us, the impediment is not these rules, but the lack of rules. What we need is a set of rules where we can move forward. We can finance projects knowing what the rules are going to be in the future. And in the absence of those rules, is quite an impediment to coal-based development.

Mr. Markey. So in your opinion the best friend of the coal industry will be that we put predictable, consistent rules on the books and then the technology will come into place that makes that electrical generating source compatible with the goals that we are setting for the country?

Mr. Kunkel. I think there have been legitimate concerns about the viability and the technology. Things that we are doing are going to be, you know, many times larger than the next largest

one.

And so we do need some time to go through this scale-up process, but we are convinced we can do it. And we can move forward. And then once those pioneering projects have demonstrated themselves, I think the opportunities for broad deployment are definitely there.

Mr. Markey. Great.

And again, I would like -- and maybe, perhaps you, Mr. Briggs, you could deal with that decline in the cost of generating renewables that Mr. Robo was talking about earlier, this 25 percent decline that has occurred over the last decade.

Do you see the same thing happening over in CCS? Do you see the -- kind of the once the marketplace established that we will see a development of a technology, but then a decline in cost curve for the deployment of that technology?

Mr. Briggs. I believe so, yes. The main thing is to get out there and start getting on the learning curve. I wanted to go on record and answer the question you just asked. Yes. Yes.

Mr. Markey. Thank you, sir.

Mr. Briggs. The technology is there today.

Mr. Markey. Thank you. My time has expired.

Let me turn and recognize the gentleman from Texas, Mr. Burgess.

Mr. Burgess. Thank you, Mr. Chairman. I don't want to create any new depression for you, but actually --

Mr. Markey. He is a physician so he won't do it. I know he won't do it.

Mr. Burgess. I find myself agreeing with you.

Mr. Markey. It is the Hippocratic Oath.

Mr. Burgess. I am so happy that you have recognized the vision and contribution of not just our current governor of Texas, but our former governor -- that would be George W. Bush -- who had the foresight and vision to create this renewable portfolio and standard which allows us to be the number one wind-generating State in the country.

Mr. Markey. I come here to praise Governor Bush for what he did in the 1990s.

Mr. Burgess. And I will have to tell you too, I didn't expect to be encouraged today, but I have been. It is probably more muted than your encouragement.

But, Dr. Apt, your testimony -- and I really appreciate your honesty and recognize that there are a lot of areas where we disagree.

But your last two thesis statements that you have in your written testimony, that you related to us, probably may be the most important testimony that we have received in the last 1,000 hours of testimony we have had on this subject in this committee: Focus on reducing carbon dioxide rather than singling out renewables as the answer. The simplicity is almost -- I am going to use it like a -- as a haiku or something that I can repeat for

myself.

This is the correct direction for us to go. I have been terribly disturbed by what I see are some of the inequities in the draft language for a State like Texas that has made the incredible investment to get to where it is. And yet if we have the federally mandated renewable energy standard, we may not produce a percentage that is going to be required, although as far as the number of megawatts we are producing with the renewable energy, we are far ahead of everyone else.

But your concept of, let all technologies compete in satisfying the goals would mean to me then that the technology of energy conservation and some of the newer things that are happening with attic systems and insulation, low-heat glass, high-efficiency air conditioners, tankless water heaters, those should be eligible to be considered just the same as the newest nanotechnology, photovoltaic solar cell.

So I am encouraged when I hear you say that. Unfortunately, the chairman was out of the room. That is why I wanted to be sure I repeated it; the chairman was out of the room when you gave your testimony.

I think this is something that I would like to see us work on in that draft language, to limit the number of -- the percentage that a State like Texas could take credit for in creating efficiencies does not seem to me to be fair; the creation of a standard that is almost unattainable in a State that is as large

as Texas and produces as much power as we do, those concepts have been very troubling to me, that we may mandate a Federal system that sends our already robust State system and moves it into a condition of noncompliance or one where our ratepayers may be punished because we can't quite get up to the percentage standard.

I am and I remain concerned about some of the distributional problems we have -- again, a State as large as Texas.

Mr. Reicher, I apologize. I was out of the room when you gave your testimony, but picking up on what you were discussing with Mr. Walden, clearly there are more innovative ways of going about site and providing the transmission capacity than what historically has happened in the past. And our good friend, Boone Pickens, back home, who is anxious to get his electrons from Amarillo back to the Metroplex, perhaps there are ways to do that without disrupting all of the farmers and ranchers and landowners who live betwixt and between, and that has been the tension and that has been the problem. And then, of course, it is not just Amarillo and Dallas. It is out Interstate 10 and back to the Houston metropolitan area, the San Antonio metropolitan area.

So we have a lot of wind generation capacity. It is just not where the folks are, and then bringing the electrons back to where the folks are has been the challenge. Not that they haven't made great strides; in the last 10 years, they have.

Yes, sir.

Mr. Reicher. Congressman, by way of another antidepressant,

let me point out that your State of Texas -- I am looking at actually the resource map for enhanced geothermal systems. You have an extraordinary resource in Texas. Your total generating capacity today is about 100,000 megawatts; that is all sources -- coal, gas, wind. Two percent of your EGS, Enhanced Geothermal Source, would represent over 175,000 megawatts.

I learned something that you probably know well. You have a quote-unquote problem in Texas called "hot oil." It turns out, what hot oil is is when you drill down you find high temperature oil in many parts of the State, and that is because there is a really robust geothermal resource down there.

What oil companies in your State are now beginning to look at quite carefully is how can we both continue to extract oil and gas but how can we also begin to develop the geothermal resource? And, as I say, yours is a very vast one. It is well distributed. You would reduce the need for transmission.

So I actually think you can get to a 25 by 25 quite readily. Given the wind resource, given this geothermal resource, given the solar resource, you can get there and you can be making money at it.

Mr. Burgess. I don't disagree with that. But I would also -- to Dr. Apt's point, there is no point in discriminating one technology over another. If we have two nuclear plants, one which is being doubled in size over the next several years, why not get credit for that as well? If we have a robust program in

going back and retrofitting homes with energy, products of increased energy efficiency, why not get credit for that as well?

Mr. Reicher. You do, absolutely. The RPS, as written, would allow you to get one-fifth mandate through energy efficiency. That is, in fact, quite clear and, in my mind, quite an improvement.

Mr. Burgess. Let me just ask a question of Dr. Apt.

The fact that it is restricted to one-fifth, does that really comply with your philosophy of treating all carbon equally?

Mr. Apt. My view is that renewables are absolutely a part of the solution. But by mandating a particular technology, whether it be EGS or solar or biomass, you are constraining the problem so that you increase costs and may have other effects.

EGS, the big effect in Texas will be water. I think that, in general, you have got to focus on one issue, and here it is reducing CO2.

Mr. Burgess. And if we use the reduction of CO2 as the currency, then -- whether it is from energy efficiency whether it is from other areas; it does not all have to be wind, solar and biomass. New hydro.

Yes, sir.

Mr. Kerr. If I might add, one of the points I wanted to make, if you are going to have an RES, it will be favored and disfavored States based on the availability of the paper technologies. If you are going to have an RES -- and again I am

not sure if it is consistent with the cap proposal -- but if you would allow efficiency to operate in an unfettered manner, efficiency is available everywhere. It should be put on equal footing with generation, would smooth out some of those resource discrepancies and then the associated costs, inefficiencies and discrepancies.

If you are going to persist, and I am not sure you should, I think it would be a huge improvement to allow efficiency to operate in an unfettered manner.

Mr. Burgess. I really think it is the common ground that I have with Mr. Markey. And you can see I have depressed him by going over time.

Mr. Markey. Not at all. Again, I have nothing to do. I am willing to go on indefinitely on this subject. I love this subject. I find it exciting.

So the gentleman from Utah, Mr. Matheson.

Mr. Matheson. Well, thank you, Mr. Chairman.

Mr. Grueneich, I should tell you, as someone who represents a large public land State, your comments about the challenges of dealing with Federal lands agencies and permitting are certainly -- I am sympathetic to what you are saying. I think as part of a discussion about encouraging opportunities for new types of generation, renewable energy to have an opportunity to get to market in this country, we do have to have a serious discussion in this committee and legislation about how to encourage siting of

transmission, because it is not happening now. And there are impediments to it and I think it is something where the draft legislation is a little light right now.

So any suggestions people have in that to beef up that part of the bill, to encourage development of transmission infrastructure, I think would be very welcome to everyone. I think that is one of the least -- I think everybody on this committee, actually on both sides of the aisle, has a pretty strong feeling about the need for enhanced transmission infrastructure.

At the risk of going a little bit off topic for what this panel was asked to talk about, which was low-carbon electricity and carbon capture and storage and renewables, I wanted to at least frame the issue as also associated with the renewable fuel standard that was passed by this Congress previously.

Do you think that this legislation ought to revisit that issue? And I may be asking this panel the wrong question. But it seems to me that the corn ethanol policy we had in this country is actually creating far more greenhouse gases in the life cycle context than people first anticipated. A lot of organizations have come up with information to help validate that.

The subsidy of corn ethanol, in my opinion, is -- personally, I think it is bad Federal policy at this point. Do people think that we ought to take a look at opening that up as part of this effort as we look at broad-based energy legislation? And again, I

apologize if folks on this panel, it is not their area of expertise. Has somebody got a thought on that?

Mr. Hawkins. Thank you, Congressman Matheson. I am Dave Hawkins from NRDC, and NRDC is part of U.S. Climate Action Partnership, and USCAP has recommended a low-carbon fuel standard and recommended that it be one that is implemented as we transition from the renewable fuels standard.

Mr. Matheson. Right.

Mr. Hawkins. And the speed of that transition, the timing of that transition, the conditions of that transition are things that this committee will need to wrestle with. But we do think that having a low-carbon fuel standard that applies to all of the transportation fuel options, including electricity -- which actually does connect to the topic of this because if we do produce electricity with carbon capture and storage and use it to run plug-in hybrids, we can back out oil that way, as well, and that should be regarded as a low-carbon fuel.

Mr. Matheson. And I concur. I think the low-carbon fuel standard is the way to go and I think that the current RFS should be phased out so I think that is helpful.

Mr. Apt. May I make one comment? We have done some analysis of the California low-carbon fuel standard. It is superb. It is really an excellent way to reduce greenhouse gas. And it has the right structure.

Ms. Grueneich. And here I was going to just bring it up. So

I will defer to Dr. Apt.

Mr. Matheson. But I think it is consistent. As you said before, you are not picking a specific technology; you are saying, set the standard and let the market figure out the best way to reach it. I think that that is what we have seen, as opposed to Congress saying, Oh, well, let's make ethanol from corn.

Mr. Apt. Let me make just one remark that harks back to something that was said earlier about transmission.

Bringing in the folks early is really crucial. A Federal eminent domain is unlikely to do anything more than get people to dig in their heels. It is just not going to go down that well.

Mr. Matheson. Well, those are fighting words where I come from: Federal eminent domain.

Mr. Apt. You know what actually happens, when you look at a lot of the transmission that has gotten built is that people monetize their pain. And it happened in Connecticut with a crosstown cable; it is happening in West Virginia with AEP's line. And folks get involved and they get their pain recognized. They get people to respect them, and then the transmission gets built. It doesn't get built with eminent domain.

Mr. Matheson. Okay. Mr. Chairman, my time is about to expire. I will yield back. Thanks.

Mr. Markey. I thank the gentleman.

So we need Dr. Burgess back again because now we are at the pain management.

But it can be managed. Okay? Willing to pay the price?

The gentleman from Florida, Mr. Stearns.

Mr. Stearns. Thank you, Mr. Chairman. And I obviously welcome Mr. Robo, who is CEO of Florida Power and Light. I don't know when you got hired whether they told you this is part of your job description to sit here on a Thursday afternoon at 5:15 answering these questions. But we appreciate your being here.

And also Florida Power and Light is one of the leaders in Florida in renewables. So that they are in a way ahead of the curve. So they saw this in advance.

But my question is for Mr. Hawkins and Mr. Kunkel. In Poe County, Florida, which is a little south of my congressional district, we have a state-of-the-art coal gasification plant that has successfully produced electricity since 1996. This technology is well suited to carbon capture. And so as we look to coal gasification and other clean coal technologies as part of the climate solution, the question would be, what do you see as the best way to incentivize these technologies so that we can continue to have them available, considering their efficiency?

Mr. Hawkins. Thank you, Congressman Stearns. Yes, the Poe County plant run by Tampa Electric is certainly one of the leaders in doing gasification in the United States and one that has provided a great deal of operational experience. The first couple of years of that plant had some operational difficulties, but they have learned how to run that plant, run it reliably.

I think that their testimony today, if they were here, would be that it is the most reliable unit on their system and the one that is dispatched the most. It was built with some Federal support. It doesn't capture its carbon. And if we want to create a structure that will allow plants to be built that actually capture their carbon, then we are going to need the kind of policy package which is in the Waxman-Markey discussion draft, a policy package that combines clear regulatory requirements both for the storage of the CO₂ and also for the performance of the new coal-fired power plants and coupling it with financial incentives that are bankable financial incentives for the early deployment opportunities in this area.

And it is very important that they be bankable, which means a different model than applying to the Federal Government for an award and hope that you win. The odds are better than the lottery, but they are not all that much more certain than the lottery.

We need something that -- if you want to go to Wall Street and get your project financed, you need something that is better than the lottery. And the structure that is in the Waxman-Markey bill I would commend to your consideration because what it says is that if you have a project which captures the CO₂, you are entitled to get a payment of X dollars per ton, captured.

There is no government uncertainty there. There is no sort of, you know, "file your application and hope that you win the

lottery." You have an expectation that you can go to Wall Street with, and that will help finance the project.

Mr. Stearns. Why haven't the folks in Poe County done this?

Mr. Hawkins. We don't have the policy enacted yet. But with your help, maybe they will.

Mr. Stearns. So you say you need a policy before you do it with the coal sequestration or the carbon capture? You wouldn't do this on your own; you would need the incentives?

Mr. Hawkins. That is exactly right. We operate in an electricity generating system where the marginal operating costs determine how much the plant gets run. And if you don't have the marginal operating costs covered for this additional cost of capturing the carbon, then you are not going to install that kind of capture. It will only happen if you get the economics right. And for the early projects, that means that you need a financial incentive payment.

Mr. Stearns. Mr. Trisko, I was going to ask Mr. Kunkel and then I will ask you. Thank you.

Dr. Kunkel.

Mr. Kunkel. Yes. I really agree with that very much. The types of project development we do are project-financed projects. In other words, we will sell the entire output of electricity for a 25- or 30-year project life right up front with our, you know, some customer to whom we are selling this power. And then we will operate that plant for them over the long term.

These are large, large financings. Each of these projects we are working on is over \$3 billion. So these are very large financings. And one of the things that is happening to us in looking at this future commodity market of carbon dioxide is that it will be a highly volatile potential commodity market.

So if there are incentive systems that give us kind of a known stream of financial support for these new technologies, and early on, the program when -- if it is designed right, carbon prices should actually be pretty low. If there is a known stream for that, then that is something I can take to my finance guys to put in their pro forma, and they can persuade investors and lenders that that is real.

So those aspects are critical to really moving these projects forward.

Mr. Stearns. Mr. Trisko.

Mr. Trisko. Yes, Congressman. Thank you.

And I have also had the pleasure of visiting the Poe County plant. It is a marvel of technology. I was just going to point out that we have a precedent in Title IV of the Clean Air Act, in the acid rain title that was added in 1990 for the provision of bonus allowances for utilities that employed scrubber technology early in Phase I rather than later in Phase II, and that bonus allowance program was so popular that it was oversubscribed.

It was known before the allowances were to be given out that there was more demand for them than supply. And the Utility Air

Regulatory Group basically did an allocation of the available pool among its membership so that everybody had certainty as to the amount of allowances that they would receive. And that pool, which was not nearly as large as the one that the United Mine Workers had advocated, was responsible for putting about 13 gigawatts of scrubbers on in Phase I rather than waiting until Phase II.

Mr. Stearns. Thank you.

Mr. Briggs wants to answer and then thank you, Mr. Chairman.

Mr. Briggs. Very briefly Congressman. I concur with the MLDC's comments and also add, if one of the reasons why, in the early phases of these projects, you are looking for all the value you can get to supplement the value of CO2 as a commodity value in the absence of incentives.

And it is obviously dependent on States. One of the reasons we are in California is, you are looking at States who will go ahead of that policy mechanism and take the lead.

Mr. Stearns. Thank you, Mr. Chairman.

Mr. Markey. Could I just ask, Mr. Robo, what do you think by 2025 is the achievable goal for Florida under a national renewable electricity standard? Do you think Florida has capacity for 25 percent of its electricity to come from renewables?

Mr. Robo. Chairman Markey, I am very bullish, solar PV economics. And we have seen just in the last year the cost of solar photovoltaic come down from July -- from our first project

to the ones we are proposing right now -- come down from 20 percent; and I think by the middle of this decade we are going to see grid parity with solar PV in Florida.

And so I think we have a real opportunity to have a big penetration of solar in Florida, but certainly by the middle of the next decade.

We have been very --

Mr. Markey. By 2025. But by 2025 do you think 25 percent is possible?

Mr. Robo. I do think it is possible, depending on how quickly the technology comes down the cost curve. But I have been -- actually, I have been personally surprised at how quickly it has come down.

Mr. Markey. But is your gut now telling you that that decline in the cost curve now is now inexorable, and you can see how their economies of scale are kicking in?

Mr. Robo. Yes. Yes, sir.

Mr. Markey. The Chair recognizes the gentleman from Vermont, Mr. Welch.

Mr. Welch. Thank you, Mr. Chairman.

The discussion draft includes energy efficiency resource standards, as you know, requiring the utilities to achieve a certain level of electricity or natural gas savings. In many cases, energy efficiency measures more than pay for themselves by reducing electricity bills. Not all, but I want to ask a couple

of questions about that; and I will start with you, Ms. Grueneich.

California has its own energy efficiency resource standards, so you have had some experience with this type of policy. Do you think that the energy efficiency resource standard in this discussion draft strengthens our prospects for success?

Ms. Grueneich. Absolutely. The energy efficiency performance standard is certainly among the top three items that need to --

Mr. Welch. I would like to elaborate on this because the debate we are having here is whether the action we take creates jobs or causes jobs, reduces costs or increases costs. And we are deeply divided on that. And those States that have taken steps that we are proposing be taken nationally are in a special place, I think, to offer some practical experience.

Ms. Grueneich. Certainly.

First of all, we in California, as in -- everywhere in the United States and just about everywhere in the world, we are in terrible, terrible economic times. I haven't heard one person say, "And the reason why California is having all these problems is because you have got ahead of the country on clean energy." I mean, the economic problems we are suffering from are not stemming from the fact that we have engaged in clean energy. In fact, a lot of the jobs that we have that we still have are because people are still pursuing energy efficiency; and they are expanding because people are looking at installing solar.

And so the whole job conundrum actually, I think, in the little bit I have been listening yesterday and today, to me is turned around, quite frankly. We should be looking at the jobs we have been able to grow. And here, just quickly, a study that came out from the University of Berkeley for the jobs that we have created in California over our -- from 1972 to 2006 -- on our energy efficiency is that we have created about 1.5 million full-time equivalent jobs with a total payroll of over \$45 billion, driven by well-documented household energy savings of \$56 billion.

As a result of this, it was able to direct a greater percentage of its consumption to in-state employment-intensive goods and services, whose supply chains also largely reside within the State, creating a multiplier effect of job creation.

I want to take a moment to recognize Vermont. You have got a terrific energy efficiency program and you are doing the same thing too. You are keeping the jobs within the State and growing them. And that is what this is all about.

Mr. Reicher. Congressman, could I add that --

Mr. Welch. I was going to ask you a different question, Mr. Reicher. Good to see you.

Mr. Reicher. Good to see you, Congressman.

Mr. Welch. Some folks are arguing we should just include efficiency in the renewable electricity standard and skip the energy efficiency resource standard. And I am asking your

thoughts on that.

Mr. Reicher. I think that what is proposed makes sense, both standards, but with a -- the carve-out of around 20 percent within the renewable energy standard. I think that how those get integrated is not completely clear in the bill right now and needs some further fleshing out. But I think the two concepts, as multiple States have adopted renewable energy standards -- as we know, multiple States have adopted energy efficiency resource standards; they are working well -- I think it makes sense for the Federal Government to step up and do both, but as I say, make sure that there is integration across there.

I just wanted to add one quick thing about energy efficiency. The hot new opportunity in the venture capital -- the clean technology venture capital world right now is indeed energy efficiency. As we sit here in Washington, there is a whole conference out in California called the Energy Efficiency Finance Forum. This is bringing financial people to the table saying, all right, how can we bring even more capital to energy efficiency? Because that is the low-hanging fruit right now.

And California, as the Commissioner said, has made great strides keeping energy use flat per capita for the last 20 years while it has grown 50 percent in much of the rest of the country.

Mr. Welch. Okay. Thank you.

Mr. Robo, how do you see the renewable electricity standard? Bottom line: job creator or job killer?

Mr. Robo. We see it as a large job creator, Congressman.

Mr. Welch. Thank you.

I yield back. My time has expired. Thank you.

Mr. Markey. The gentleman from Oregon is recognized for a second round.

Mr. Walden. Thank you, Mr. Chairman. I want to pick up on a couple of comments here. Ms. Grueneich, you talked about how we can create and grow jobs. I want to get back to my soap box on biomass. I can't resist because Harney County, Oregon, is up to seasonally unadjusted 20 percent unemployment; Oregon is second to Michigan in unemployment overall.

My district has 11 national forests. There is a lot of interest in biomass. But when you have got a county that is 70 or 80 percent controlled by the Federal Government and you have got 20 percent unemployment, they don't get where Mr. Hawkins is coming from. And why when you have a forest like this -- may look good on a poster like that, but it is completely out of sync with nature in terms of being managed for old growth characteristics for Ponderosa pine. That is a fire waiting to happen.

That forest, exact same scene, has now been thinned. And that is how an old growth forest should be managed.

The issue before us is, after you have done this work and thinned it out to where the biologists and botanists and everybody else say it should be, why shouldn't you be able to take the waste material that came out of that thinning project and have it count

toward biomass in renewable energy? And this is the frustration we have.

There was a biomass facility with green investors ready to go into Harney County, who could not get a guaranteed supply of woody biomass to make their investor satisfied. And yet the forest there, at the rate they are treating, will take 25 to 28 years at the current rate of treatment to get it in balance.

So you see why they don't get where Mr. Hawkins' organization is at when it comes to saying, nothing off this Federal ground can you count as woody biomass for renewable energy consideration? Does California have that standard?

Ms. Grueneich. I honestly don't know. I will be happy to look into it.

It seems to me that the difficult issue here is the balancing that we know forests are a way in which we are helping to reduce greenhouse gases because of --

Mr. Walden. If they are properly managed and don't go into fire.

Ms. Grueneich. And what we want to avoid doing is on the one hand having more forests cut down in order to then produce the biomass fuel to meet the renewable standard to satisfy the climate change, and then on the other hand to think about how are we going to continue to have sustainable forests.

I am not a forestry expert, so where you draw the line going into the forests or not --

Mr. Walden. Here is the deal. Here is the deal. This legislation is so poorly written on those areas.

First of all, it directs the Departments of Interior and Agriculture to come up with adaptive management plans for the forest dealing with carbon and do so in 1 year. Each forest already has to come up with its own management plan, follow full NEPA, and that is just to do the planning process. Those often take 5 to 8 years, to develop a 10-year plan. I am not making this stuff up.

Ms. Grueneich. That, I am aware of.

Mr. Walden. You understand this.

So this legislation says to every agency in all Federal ground, you will create a plan in 1 year and report back. That is just never going to happen. I mean these timelines in this bill are embarrassingly poorly constructed, to be honest with you.

But then I go to like page 368 and it talks about electricity sources. And it excludes renewable biomass from, I guess, the base load. And have you all by the way read the full text of the bill? I have asked every panel this. Yes or no.

Have you read the whole bill, Dr. Apt.

Mr. Apt. I read the parts a nonlawyer can understand.

Mr. Walden. I stayed in a Holiday Inn, but I am not even a lawyer. Mr. Kerr.

Mr. Kerr. Not all parts.

Mr. Briggs. Not all parts, no.

Mr. Trisko. Not all parts, sir.

Mr. Hawkins. I have got mine already tabbed and indexed.

Mr. Walden. So you have read the whole bill?

Mr. Walden. I have skimmed the whole thing and some pages faster than others.

Mr. Walden. I understand. I am struggling too.

Mr. Kunkel. Not all parts.

Mr. Robo. Not all parts.

Ms. Grueneich. Just about the whole thing, but I have to confess, I think I skipped over the biomass definition.

Mr. Walden. Go back to that.

Mr. Reicher. 648 pages. I have looked at every page.

Mr. Walden. Yes, sir.

Mr. Grueneich. Absolutely not.

Mr. Walden. Perfect. All right. As I say, I wore out one pair of reading glasses. I have got another in my desk.

I am trying to figure out, even on page 368 when it talks about compliance obligations and then talks about electricity sources, it excludes renewable biomass as an electricity source.

Now renewable biomass is already defined early on to be all -- to exclude all Federal lands and all this. So can somebody tell me why renewable biomass would be excluded in this electricity source?

Mr. Hawkins. I can answer that one.

It is because if you make electricity from renewable biomass,

you don't have to turn in an allowance. This is the compliance obligation section of the bill, and this is a benefit for renewable biomass.

Mr. Walden. Okay. Good. But now we know that if you make it from woody biomass off Federal ground, which is occurring in my district now, where they are heating -- they replaced an oil-burning stove in a high school in Enterprise; using hog fuel wood chips, they are saving an enormous amount of fuel, replace it with wood, very few emissions, a lot less than that, it doesn't qualify. How does that make sense?

Mr. Hawkins. Well, you know what I would say? These hearings are educational experiences for the witnesses sometimes too.

And you have obviously thought a lot about this issue, Congressman. And I am not the organizational expert on the biomass issues. But if you have the time, we would very much like to come in and visit with you.

Mr. Walden. I would be happy to do that. My door is always open.

Because the hospital in Harney County, where this biomass -- they switched to a wood pellet-burning stove, and they cut their fuel costs by two-thirds. And DEQ, our Department of Environmental Quality -- at least the hospital folks told me this -- it has virtually no emissions; and they take out a garbage-can size of ash every 2 to 3 months, and it is from wood

chips.

In Sweden, 18 percent of their renewable energy now is from woody biomass.

You have said, from the energy information, this is where we are going. We have got the Federal land, 47 percent of the Forest Service budget spent fighting catastrophic fire. You know that in California. We know that in Oregon.

And my time is way over. You have been most generous, sir.

Mr. Markey. I am learning a lot too. It is an interesting subject.

Does the gentleman from Vermont wish to be recognized again?

RPTS JURA

DCMN ROSEN

[5:30 p.m.]

Mr. Welch. Thank you, Mr. Chairman.

I want to talk a little bit about carbon capture sequestration, and address my questions to Mr. Hawkins.

Mr. Hawkins, I just wish if you would elaborate on why U.S. Cap members believe that we need a set of complementary policies in place for carbon capture and sequestration and, more broadly, I guess, for coal; and, what would happen if we don't have a comprehensive approach?

Mr. Hawkins. Yes. The cap-and-trade program by itself in the early years, especially one that has a substantial number of offsets and cost containment provisions, is likely to have a fairly modest economic signal. And as Dr. Kunkel and others have testified, these early projects, whether it is for carbon capture or some advanced forms of renewables, these early projects are likely to have incremental costs that are higher than the carbon clearing price in the early years of these programs.

So if you rely solely on the market signal from the cap as the only device, you are likely to get a bunch of decisions which look optimal from the standpoint of the individual investor, but in fact, are suboptimal from the standpoint of where society needs to head.

We have got to -- this is a marathon. Controlling carbon is a marathon. And if you run it like a sprint, which is what tends to happen when you have these short-term economic signals and a high discount rate, you are not going to finish the race.

So we tend to think that having a multiple set of strategies, which are enabled by the bill and incented by the bill, is very powerful. I say that a bicycle is more stable than a pogo stick, a tricycle is more stable than a bicycle, and a wide-stanced four-wheel vehicle is more stable than all of them. And we have a bunch of platforms here that can be used to drive home CO2 reductions.

And so my variant on Dr. Apt's point is, yes, the focus needs to be on CO2, but sometimes it is good to have a turtle strategy, have a log of eggs on the beach, because you are not entirely sure right now what is going to be the one that is going to get you to victory, and you probably need more than one. And having a strategy that gets all of these in the game so that you have as many things to pick from we think is the right way to do it.

Mr. Welch. So just describe, what will happen with the deployment of the new coal-based power plants these provisions are adopting? And one of the concerns folks have been -- things we need to do, one of the concerns folks have expressed is this dash for gas and what the displacement would occur and how that would affect the price in a very disruptive way. Could you comment on that?

Mr. Hawkins. Yes. We discussed this at great length in the U.S. Cap group, and everyone was concerned about the dash to gas being something to be avoided. And that is why there is a package that says there is an emission performance standard for new coal and there is a financial incentive, the stream of payments for carbon capture. And our view is that that payment stream ought to be sized at a level where an investor that is looking at a fossil investment plant says, you know, this is a better business proposition to build a coal plant that captures its carbon and we get that financial incentive than it is to build a natural gas plant that vents its carbon and we get no financial incentive.

Mr. Welch. And there has been lot of concern raised about the timing of the deployment of the carbon capture and storage technology, saying that commercial deployment is not expected until 2025. But those estimates assume there is no cost to emitting global warming pollution, no requirement to use carbon capture and storage technology, and no significant financial support for the technology. What do these estimates tell you about the timing for deployment of CCS technology if this legislation in its draft form or close to it is adopted?

Mr. Hawkins. Well, what we do is pay attention to witnesses like Dr. Kunkel from Tenaska and Hydrogen Energy. And Dr. Kunkel has testified that they could break ground next year on their project if they have the right policy support, and that could be up and running as fast as any coal plant that breaks ground next

year.

Our view is that this can happen very quickly. There are a bunch of commercial operators that are ready to go as soon as the policy signals get straightened out.

Mr. Welch. Mr. Trisko.

Mr. Trisko. Congressman, if I could elaborate on David's point.

First, from a practical standpoint. If you were talking about having a plant, an operating advanced coal plant equipped with carbon capture and storage that was online and producing electricity in the year 2020, that plant in effect would need to be in the permitting stage today leaving aside all of the issues concerning financial incentives in the bill and the like. To get a plant on line by 2020, the plant needs to be in permitting today. We do not have at this point, beyond the number of plants such as AEP, the Duke plant, the Tenaska facilities, we do not have any assurance of significant penetration at a commercial scale by the year 2020 beyond the kind of three gigawatt level that is proposed in the Boucher bill. And the Boucher bill is designed to handle the demand, if you will, for commercial scale demonstration facilities between now and 2020. It is after the year -- it is after the year 2020 when we would anticipate that the second suite of financial incentives, those that are to be defined by what is now the open-ended section 115 that David has spoken about, those plants would come online after the year 2020.

And the indications are that there would be significant demand for them going out to 2030 and 2040.

Mr. Welch. Dr. Kunkel, do you agree with the 2020 timeline assessment?

Mr. Kunkel. Well, not for us. And, of course, we are in permitting, and our project in Illinois has received a permit and so on. And, of course, it does take time to develop these projects.

One of the things I would point out is that in the post-combustion capture technologies that we are looking at as opposed to IGCC, that the period of time required to build that piece on the back of an existing power plant as a retrofit might be something like two and a half years of construction time. I mean, these things all take significant amounts of time. But it is less than the full construction cycle of a power plant.

So if we could demonstrate that technology at commercial scale, let's say, at Trailblazer, by 2015, and run it for a year and convince people this really works, then the designs and so on could be perfected and a new generation could be online and operating as retrofits within a couple of years after that point. So maybe that gets you around to the 2020 time frame for that. But, maybe let hydrogen energy talk more about the IGCC opportunity.

Mr. Welch. Yield back to the chairman.

Mr. Markey. The gentleman's time has expired. The Chair

recognizes the gentleman from Texas.

Mr. Barton. Thank you, Mr. Chairman. I really came down here just to ask you to give this panel a meal voucher since they have been here all day and probably didn't get to eat much lunch or whatever. But as long as I am here, I thought I would ask one question.

I want to ask Dr. Apt, I believe -- first, thank you for your service to the country as an astronaut and all that you have done. But I am told that you testified that you think a performance-based standard based on the Clean Air Act model is much better to use in terms of some very complex cap-and-trade scheme. I just got a synopsis of Congressman Boucher's letter to Congressman Waxman that is single-spaced, four pages of changes to the proposed cap-and-trade legislation. And that is just a summary of the changes.

So, in the Republican alternative that has yet to be unveiled, we are waiting to see the allocation scheme in the main bill, but we are going to have a Republican alternative. We use a performance-based standard for coal based on the best available clean coal technology, and then put some incentives in in terms of beating that standard of accelerated depreciation so that we could encourage new technology but at the same time allow coal to be used as a fuel source for electricity. Could you comment on that?

Mr. Apt. Sure. Thanks very much.

In my view, best available technology has frozen technology

in a lot of areas. I would encourage you to look, rather, at an emissions standard that lowers with time. As you know, the California standard is 1,100 pounds per megawatt hour. That has the effect of saying, okay, we will freeze things at natural gas or better. And that is okay if you just take a snapshot in time. But it would be better if it declined in time so that you know you have got to take 80 percent of the CO2 out of the electric power industry by let's say 2040, 2050, so that if you had something like that that declined, then Mr. Briggs' plant that emits 400 pounds per megawatt hour looks pretty good.

On the other hand, if you think it is going to freeze at 1,100, it doesn't look so good. So that is a modification that I hope you would consider.

Mr. Barton. Thank you, Mr. Chairman.

Mr. Markey. Does the gentleman from Vermont have any other questions? Okay. Well, let's do this then, with my apologies to the ranking member. I was going to give each one of these witnesses one minute to tell us what they want to remember. But given the size of the panel, that is double the time which any member would have to question a witness. But, with unanimous consent, I will make that motion that we give each one of you a one-minute opportunity to tell us what it is that you want the committee to retain as we go through the drafting and ultimate markup of this legislation. We will go in reverse order of the original panel. And we will start with you Dr. Apt.

Mr. Apt. Well, since I have got to go back to Pittsburgh, I will be short. Two things. Focus on CO2. Renewables and low carbon aren't synonyms. And two, allow efficiencies all through the system, generation and transmission, as well as on the customer side of the meter, to count.

Mr. Markey. Thank you. Mr. Kerr.

Mr. Kerr. I would adopt those two points. And I would also say focus on what you are trying to do, and not put inconsistent or contradictory pieces of policy together in a way that will operate to make things less efficient, more expensive to ratepayers. And, also, that aren't just jobs following renewables, there are jobs that are followed by CCS and nuclear and other noncarbon-emitting technologies. And a job is a job. They don't distinguish between renewable jobs or CCS or other sorts of jobs.

Mr. Markey. Thank you. Mr. Briggs.

Mr. Briggs. Well, first of all, I am very pleased that CCS seems to be given as part of the mix. I would also say there is a distinction, we haven't really touched on it too much, between our technology and Tenaska's technology pre and post. It doesn't really matter. CCS is available today. But I think the right incentive mechanism is important as we have covered, I think. And then one regulator to cover the actual policy framework around it is also vital.

Mr. Markey. Mr. Trisko.

Mr. Trisko. Ensure that the targets and time tables that are adopted in the bill, particularly in the short term, are consistent with the expected widespread availability of CCS technology, so as to avoid the result, for example, evident in EPA's analysis -- preliminary analysis of the bill that suggests that generation from fossil-based electricity would decline from 4.3 terawatt hours in the year 2050 to 1.3 terawatt hours in the year 2050 under scenario three. That, to us, is an unacceptable outcome.

Mr. Markey. Thank you. Mr. Hawkins.

Mr. Hawkins. First, I would say avoid focusing on technologies, but keep in mind the facts on the ground that need to change to cut carbon emissions. And I feel quite confident in predicting that, regardless of technology pathways, 50 years from now we are going to have electricity, we are going to have vehicles, we are going to have fuels, and we are going to have buildings. And we need strategies that are going to drive decarbonization in each one of those areas. And you have got a lot of policies in the bill that are aimed at doing just that, and there can be good and useful debate about how to focus on harmonizing those so they integrate well. But those are the four big linemen that we have to think about, electricity, vehicles, fuels, and buildings.

Mr. Markey. Thank you. Dr. Kunkel.

Mr. Kunkel. One of the most relevant things we can do as

Americans on this large problem is to tackle the problem that the Chinese and Indians will have, which is CCS, basically. They are building a lot of coal-fired power plants, new ones, pretty good ones I bet, and improving ones. But they don't have this technology. If we can find cost-effective ways to employ it, if we can develop that, then that will be a huge contribution.

Mr. Markey. Thank you. Mr. Robo.

Mr. Robo. Enacting a renewable electricity standard is really critical for the U.S. to continue to drive its success in the clean energy economy and to retain its competitiveness globally. Clean tech is the way of the future, and we need to be competitive as a Nation in that industry.

Mr. Markey. Thank you. Ms. Grueneich.

Ms. Grueneich. Four points. One, the bill, you got it right. Let's get it passed. Two is we do need the renewable portfolio standard. We can't just say let's have carbon standards. To do transmission, you need to plan for something. And we are just not going to be able to get the transmission we need unless we have that renewable standard set out there. Three, States are your partners. In all of this legislation, think about how you can be really utilizing the States, helping the States working together. And four as I have two 15-year-olds, and they thank you. I don't want to go home without being able to say, you know, we have been working hard at the state level; we need the Federal level to step up, and my children need that. Thank you.

Mr. Markey. Mr. Reicher.

Mr. Reicher. Mr. Chairman, there are a broad array of ways that we can get at this climate crisis that we are facing, and there are smart ways from both an environmental and an economic perspective. Energy efficiency is indeed the low-hanging fruit. We ought to go out and pick it. It does grow back because of the improvements in technologies. Renewable is coming on strong. There was a huge array of opportunities. The resource base is vast in this country. We do need to crack the code on transmission, or a lot of what we need to get done isn't going to happen. I think the subcommittee's bill is headed in the right direction. Please do look at this issue of making sure there is adequate capital. And I do commend the work that Congressman Inslee and also Senators Bingaman and Murkowski are doing on that front.

And, lastly, let's take a look at this geothermal stuff. It is the sleeping giant. Whether it is Texas or it is Alaska or it is Florida, there is a lot there. The oil and gas industry is interested in it. Let's do a hearing and explore it.

Mr. Markey. Thank you. And Dr. Gruenspecht.

Mr. Gruenspecht. Mr. Chairman, beyond endorsing Mr. Reicher's surprise endorsement of my agency, I would say that EIA looks forward to providing the committee, both sides of the committee, with data and analyses to support your policy deliberations. EIA's first administrator, Lincoln Moses -- great

name -- once said there are no facts about the future. However, I think policymakers can definitely benefit from considering how transparent and objective, if not always prescient, projections are affected by the different policies that they have under consideration. So, I am from the Federal Government, the executive branch. I am here to help you.

Mr. Markey. Thank you, Doctor. And we will leave you out of this final quick question.

I will ask each one of you, yes or no, do you think we can construct a cap-and-trade system that can work and can be done consistent with the long-term economic goals of our country? Mr. Reicher.

Mr. Reicher. We can and we must.

Mr. Markey. Ms. Grueneich.

Ms. Grueneich. Ditto.

Mr. Markey. Mr. Robo.

Mr. Robo. Absolutely.

Mr. Markey. Dr. Kunkel.

Mr. Kunkel. I think we can. I think the guy on the street needs to see the benefit to him, and he doesn't quite see it yet.

Mr. Markey. Mr. Hawkins.

Mr. Hawkins. Absolutely. This is the most important work that you will do in your career.

Mr. Markey. Thank you. Mr. Trisko.

Mr. Trisko. Absolutely. And the devil will always remain in

the details.

Mr. Markey. Mr. Kerr.

Mr. Kerr. Absolutely. But timing, technology, and the avoidance of severe economic disruptions in the early years are key to gaining the public support for the long-term success.

Mr. Markey. Thank you. Dr. Apt.

Mr. Apt. Yes. I think it can. But I worry that you will labor mightily and give forth with a cap-and-trade that will produce a carbon price that is too low to affect physical change. And that really worries me.

Mr. Markey. Thank you. By the way, Doctor, you were born in Springfield, Massachusetts, and an astronaut. Congratulations. We are proud of you. Thank you. This is just a fantastic panel. Thank you all so, so much for your great contributions to this discussion. Thank you.

[Whereupon, at 5:58 p.m., the subcommittee was adjourned.]