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ENSURING THE RELIABILITY OF THE NATION'S ELECTRICITY SYSTEM

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND RESOURCES

OF THE

COMMITTEE ON
GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

JUNE 8, 2005

Serial No. 109–87

Printed for the use of the Committee on Government Reform

Available via the World Wide Web: http://www.gpoaccess.gov/congress/index.html
http://www.house.gov/reform

U.S. GOVERNMENT PRINTING OFFICE

24–412 PDF WASHINGTON : 2005

For sale by the Superintendent of Documents, U.S. Government Printing Office
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CONTENTS

	Page
Hearing held on June 8, 2005	1
Statement of:	
Wood, Pat, III, chairman, Federal Energy Regulatory Commission; Michehl R. Gent, president and CEO, North American Electric Reliability Council; David Owens, executive vice president, Edison Electric Institute; and Dr. Mark Cooper, director of research, Consumer Federation of America	8
Cooper, Dr. Mark	59
Gent, Michehl R.	30
Owens, David	42
Wood, Pat, III	8
Letters, statements, etc., submitted for the record by:	
Cooper, Dr. Mark, director of research, Consumer Federation of America, prepared statement of	62
Gent, Michehl R., president and CEO, North American Electric Reliability Council, prepared statement of	33
Issa, Hon. Darrell E., a Representative in Congress from the State of California, prepared statement of	3
Owens, David, executive vice president, Edison Electric Institute, prepared statement of	45
Wood, Pat, III, chairman, Federal Energy Regulatory Commission, prepared statement of	13

ENSURING THE RELIABILITY OF THE NATION'S ELECTRICITY SYSTEM

WEDNESDAY, JUNE 8, 2005

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND RESOURCES,
COMMITTEE ON GOVERNMENT REFORM,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:35 p.m., in room 2154, Rayburn House Office Building, Hon. Darrell Issa (chairman of the subcommittee) presiding.

Present: Representatives Issa, Westmoreland, Kucinich, Higgins and Watson.

Staff: Larry Brady, staff director; Lori Gavaghan, clerk; Dave Solan, Steve Cima, and Chase Huntley, professional staff members; Richard Butcher, minority professional staff member; and Cecelia Morton, minority assistant clerk.

Mr. ISSA. Good afternoon.

A quorum being present, this hearing of the Government Reform Subcommittee on Energy and Resources will come to order.

I want to thank all of our witnesses for their indulgence in the slight delay. I also want to apologize in advance for stepping in and out during this hearing as we vote on U.N. reform in another committee. My vice chairman will do an able job, I am sure, of continuing the meeting.

Meeting the Nation's increasing energy demand is essential to empowering our dynamic economic economy. According to the Energy Information Administration, electricity demand is forecasted to rise 45 percent by 2025. A competitive electricity marketplace must ensure reliability of the system and reasonable prices in the wholesale and retail markets. In the past few decades, the electricity marketplace has moved beyond the depression era legal regulatory framework. The system has been superseded by developments in technology and new ownership structures as well as concerns about the diversity of sources of energy for electricity generation.

Deregulation at the Federal level in wholesale bulk power markets and increased competition at the retail level in many but certainly not all States has occurred with the aim of increasing efficiency and lowering prices for wholesale and retail customers. However, the result of the patchwork of deregulation and restructuring has been inconsistent from State to State. Management, investment, and maintenance of the electricity system have varied widely across geographic regions, as demonstrated by the experience in my

home State of California and the August 14, 2003 Northeast and Midwest blackout.

I will add, as a Californian and a native of Ohio, I have been impacted by both the unfortunate experiences so I have an especially keen interest in these issues. I should also note that I am disappointed to hear reports that southern California has an especially tight supply of electricity and may this summer according to our first witness, experience blackouts again.

Bearing these events in mind, the subcommittee meets today to conduct a frank assessment of the Nation's electricity system, to analyze challenges to investment in transmission infrastructure and capacity, and to discuss how these issues must be addressed as part of a comprehensive energy policy. Ensuring reliability is essential to meeting the growing needs of the 21st century. I look forward to hearing from this panel and I particularly look forward to the passage and the signing of an energy bill out of this Congress, one which the House has passed repeatedly and on which the Senate has not taken action. And as chairman here today, I call on everyone who anticipates that we may have a blackout in California to ask would such blackout occur if we in fact had passed an energy bill 3 or 4 years ago as we should have.

With that, I will yield to the ranking member.

[The prepared statement of Hon. Darrell E. Issa follows:]

COMMITTEE ON GOVERNMENT REFORM
SUBCOMMITTEE ON ENERGY AND RESOURCES

OPENING STATEMENT OF
CHAIRMAN DARRELL ISSA
JUNE 8, 2005

ENSURING THE RELIABILITY OF THE NATION'S ELECTRICITY SYSTEM

Meeting the nation's increasing electricity demand is essential to powering our dynamic economy. According to the Energy Information Administration, electricity demand in the US is forecast to rise 45 percent by 2025. A competitive electricity marketplace must ensure reliability of the system and reasonable prices in the wholesale and retail markets.

In the past few decades, the electricity marketplace has moved beyond the Depression-era legal and regulatory framework. The system has been superseded by developments in technology and new ownership structures, as well as concerns about the diversity of sources of energy for electricity generation.

Deregulation at the federal level in wholesale bulk power markets and increasing competition at the retail level in many—but certainly not all—states has occurred, with the aim of increasing efficiency and lowering prices for wholesale and retail customers.

However, the results of patchwork deregulation and restructuring have been inconsistent. Management, investment, and maintenance of the electricity system have varied widely across geographic regions, as demonstrated by the experience of California and the August 14, 2003, northeast-midwest blackout.

I will add that as a Californian and native Ohiohan I have been impacted by both of these unfortunate experiences, so I have an especially keen interest in these issues. I should also note that I am disappointed to hear reports that Southern California will have an especially tight supply of electricity this summer, a point to which Chairman Wood can attest having recently attended a conference that discussed this very problem.

Bearing these events in mind, the Subcommittee meets today to conduct a frank assessment of the nation's electricity system, analyze challenges to investment in transmission infrastructure and capacity, and discuss how these issues must be addressed as part of a comprehensive energy policy.

Ensuring reliability is essential to meeting the growing needs of our economy in the 21st Century. We look forward to hearing from our distinguished panel.

We are pleased to have:

- The Honorable Pat Wood III, Chairman of the Federal Energy Regulatory Commission.

- Mr. Michehl Gent, President and CEO of the North American Electric Reliability Council.
- Mr. David Owens, Executive Vice President of the Edison Electric Institute.
- Dr. Mark Cooper, Director of Research at the Consumer Federation of America.

Mr. KUCINICH. I want to thank the Chair for holding this meeting. I note in the prepared testimony for Mr. Wood that he cites the need for adequate electric infrastructure. I think I could agree with him on that although I do not agree that the Public Utility Holding Company Act should be repealed.

Mr. Chairman, in the last 10 years, the deregulation of electricity markets has pushed electric utilities to cut their costs to boost profits. I saw that in my own area where First Energy cut costs and did not adequately maintain their infrastructure which led to the blackouts that we had throughout the Northeast. They failed to maintain critical reliability standards and that led directly to the blackouts.

The blackout began in Ohio and spread quickly as far west as Michigan and east to New York, north to Ontario, Canada and as far south as Maryland. The analysis of the blackout revealed that the principal cause was trees short circuiting major transmission lines and then critical computer malfunction. Mr. Wood is familiar with that.

Proper tree maintenance and computer maintenance would have prevented the blackout. An electric utility has the responsibility to ensure reliable electricity. That responsibility includes the prevention of blackouts like the August blackout of last year that crippled the northeastern United States. First Energy Corp. was clearly identified as the leading cause of the blackout because they did a bad job, they didn't trim the trees around the power lines and laid people off who were supposed to do that. So when you talk about infrastructure, you also have to keep in mind there have to be people around to maintain the infrastructure. If you lay them off, then work is not going to get done. Tree trimming has been a necessary task since the electric utilities were created, but First Energy, in order to save money, didn't perform that task and that was one of the reasons for the blackout.

What has happened in response is that First Energy Corp. has swung to the other end of the spectrum and has declared that all the trees be chopped down in these right-of-ways because it is cheaper to chop a tree down than to trim it every 3 years. Think about this. You live in a nice community; it depends on trees for quality of life and all of a sudden, your local utility is beginning to use this axe to chop down all the trees instead of trimming them. This is a problem in some of the suburban areas where these lines run.

First Energy has even instituted a bonus pay system that may, and I underscore may, encourage its tree trimmers to chop down trees rather than trim them. Such a system would incentivize tree trimmer priorities to cut more than necessary and it would harm property values.

So, First Energy is placing profits above all other considerations. The last time it was sacrificing reliability; this time they are sacrificing property values. First Energy has a right-of-way for power lines, and it is not being a good neighbor despite this last House energy bill in efforts to improve reliability of the electric grid. The failure of First Energy and other utilities in placing safety, security and reliability before profits I think is going to ensure continued blackouts.

I want to thank the Chair for holding the hearing and thank the panelists for being here.

Mr. ISSA. We will now hear from the vice Chairman of the committee, Mr. Westmoreland.

Mr. WESTMORELAND. Thank you, Mr. Chairman.

I want to thank you also for having this hearing on the reliability of our electrical system, something each one of us takes for granted every day when we walk into a room and flip on a light switch. I also want to thank the witnesses for being here today. I look forward to hearing your testimony and what you have to say.

Electricity transmission is a complicated issue. When you really get down to it, the bottom line is we have over 680,000 miles of transmission lines in the United States that feeds about 100,000 substations which then distributes the power through 2½ million miles of local power lines to the people, our constituents and all of us.

Our grid is the largest and most reliable in the world and of course we are not without problems. We all know that, but in the past 10 years there have been two instances that come to mind and they end up being international news because it is so unusual for us to have these transmission problems. I think we will have our work cut out for us over the next few years when we look at the growing demand of electricity we are all going to have, but I think before we jump the gun on some of the proposals that are out there, we need to realize that some parts of the country have things under control. I think in the southeast our rates are low, we have a good delivery system and are doing a great job of delivering power and hopefully, we will pass that along to the rest of the country.

While we have been fortunate in our State to escape the power outages that other regions of the country have seen, I know that it is not out of the realm of possibility for us to experience such an outage. I look forward to hearing what everyone has to say and I am sure we will learn a thing or two this afternoon about the importance of making sure that our grid system stays reliable.

Thank you.

Mr. ISSA. Mr. Higgins, do you have an opening statement?

[Mr. Westmoreland presiding.]

Mr. HIGGINS. Actually, I didn't. I have nothing to say because I wanted to hear what was going to be said but I am told we have to fill in some time here, so I will have to give you something.

The reliability issue is obviously very important to the Nation. Lessening our dependence on foreign oil is obviously important for economic reasons as well as national security. Tom Friedman's recent book, "The World is Flat," where he argues the old vertical model of economic superiority is over, that the world is flat, it is horizontal and knowing who is emerging, who is up and down is a much more complicated exercise today.

In the book, he also argues that the United States, in essence, is funding both sides in the war on terrorism. Because of our overdependence on foreign oil, we are paying a lot of money that would be used for other things to help finance the wrong side of terrorism as far as we are concerned. Then, through our tax dollars, we are financing the American interests in the fight against terrorism.

I think when we look at energy reliability, its impact on our Nation, if you consider since World War II, anytime the cost of oil has increased beyond 40 or 50 percent, the economy goes into recession. The reason for that is money, being more broadly spread throughout the world economy, is going to every oil producing nation. If you look at the impact on our cities, why is it kids in the inner city are disproportionately stuck with asthma and upper respiratory diseases? It is our reliance on fossil fuels to move our engines and move us around.

I think when we look at an energy policy in this Nation, obviously reliability is very, very important for the efficient, safe transmission of electricity, but also the issue of a more diversified portfolio of energy sources including renewable sources is fundamentally as important to the economy as it is to national security as well.

I have talked to people from Chariman Wood's office who have been very helpful by the way and I thank you for that.

On the issue of New York State who is experiencing all kinds of problems, we have the State's energy use on a daily basis which is approximately 31,000 megawatts. The supply is about 35,000. Those narrow margins do not produce the cost cutting savings stimulus, if you will, that was to result from competition because there are not enough competitors in the system.

We in western New York have an extraordinary resource in the Niagara Power Project which produces about 10 percent of the State's energy supply but because the demands throughout New York State and through seven States outside of New York are so great, we are unable to use that cheap hydropower for economic development because it is spread so thin over a large campus, if you will. Historically, the Niagara Power Project which is powered by Niagara Falls was built as an economic development tool for western New York and now is being used to subsidize the losing operations of a state authority that is responsible.

The chairman is on his way back and I will stop with my discourse in a minute.

I have talked to your office and they have been very, very helpful in terms of information and confirming certain assumptions, etc. and we appreciate that.

With that, the chairman has returned.

Mr. ISSA [presiding]. Thank you.

No ranking member has ever done better by his Chair.

At this time, I would like to request that the witnesses and anyone else who may be consulting to the witnesses please rise and raise your right hands.

[Witnesses sworn.]

Mr. ISSA. The clerk will report that all present nodded or spoke in the affirmative.

I would like to at this time introduce the Honorable Pat Wood III, chairman, Federal Energy Regulatory Commission, the independent regulator of the Nation's wholesale electric power supply industry and natural gas, oil and refined products, pipelines and hydroelectric facilities.

Prior to joining FERC in 2001, Mr. Wood served as chairman of the Public Utilities Commission in Texas. He has also worked as

an engineer with ARCO Indonesia and as an attorney with Baker and Botts. He holds degrees from Texas A&M and Harvard School of Law.

Without further ado, Mr. Wood, you can deliver your testimony as your able staff prepared it and as we all have copies of it or at any point you may consider it all in the record as it will be, and go off script and give it to us from the heart.

STATEMENTS OF PAT WOOD III, CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION; MICHEHL R. GENT, PRESIDENT AND CEO, NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL; DAVID OWENS, EXECUTIVE VICE PRESIDENT, EDISON ELECTRIC INSTITUTE; AND DR. MARK COOPER, DIRECTOR OF RESEARCH, CONSUMER FEDERATION OF AMERICA

STATEMENT OF PAT WOOD III

Mr. WOOD. Thank you.

Actually, I will give you what I worked on last night which is a version of what I wrote but it tells you a bit more and I think tries to address the concerns you have.

I would venture that nothing is as directly relevant to our Nation's economic well being than the topic you are looking at here today which is a dependable electricity system. The severe economic impact of the 2003 blackout more than underscored how critical electricity has become to our way of life. Not only does there need to be enough power plants to generate the electricity, but the delivery grid also needs to be robust and reliable. And, as we saw in the last decade, the need to keep a vigilant eye on the grid and on the players that use the grid, who buy and sell the power there, is a critical role for the Government.

I would like to focus today on two issues, the current state of our electric infrastructure, which includes the need for more investment, and the actions the Nation should be taking today to beef up the grid. Right now, our electricity transmission system is the weakest link in our electric supply system. Only about 6 to 10 percent of a customer's power bill pays for transmission and the men and women who build and maintain it, but transmission is such a crucial part of keeping the lights on that it doesn't matter that it is only 6 to 10 percent.

Unfortunately, however, transmission investment is not keeping up with customer demand for power. This trend has occurred in every area of the country. Although in the last few years, we have seen a short term increase in transmission investment, growth in transmission capacity still appears to be lagging the growth in demand overall.

According to FERC public reports, transmission investment increased this last year for the 4th year in a row and it is up 69 percent since 2001, but in the same years, few new high voltage lines came on line. So just talking about transmission in the aggregate is a bit of a difficult thing to do when it is really the interconnectivity of the grid that we are talking about. It is challenging to measure those on a form that anybody can agree with.

In the last 4 years, 931 circuit miles nationally out of 150,000 circuit miles were added to the grid on the high voltage side. This modest progress is in contrast to the 500 to 2,000 miles of interstate natural gas pipeline that FERC authorized each year of the last 4 years.

There are a number of factors that cause this and I would like to address those today. At one of our recent workshops on transmission investment which we held about 6 weeks ago, a witness for investor-owned utilities discussed the forecast of a significant increase in transmission investment in the coming few years. Other witnesses at the same hearing asserted that much of the investment is catch up to make up for years of under investment and that U.S. investment levels are significantly below those in other countries.

In any case, there have been two serious consequences for the overall under investment, increased transmission congestion and degradation of reliability. We have seen the increase of transmission congestion in almost every region of the country. When the grid is under built, more expensive, less efficient and in many cases, dirtier, power plants must be run in order to serve the customers' needs, to keep the lights on, or worse yet, economic transactions aren't scheduled in the first place.

Congestion is handled several different ways across the United States from the more market-based mechanisms here in the East and in the Midwest to manual reconfiguring of the system through slower processes elsewhere. The amount of congestion has increased steadily since 2000 and this has cost customers billions of dollars since then.

I would like to show you the extent of the national transmission congestion problem. This schematic map is drawn from the Department of Energy's 2002 National Transmission Grid Study and shows there is significant congestion and transmission constraints across the United States. The red arrows indicate the paths of flow that are often congested which reflect where transactions cannot be scheduled in the first place, or if they can be scheduled, they run the risk of being curtailed.

Only one new large, inter-utility transmission project was completed in recent years and that was the famous Path 15 in central California, 500 kilovolt, which is a very big line, from north to south in the State. The new byproduct of building this one transmission line is that congestion increases on the neighboring line. So Path 26 is now the new poster child of western potential development. This is not unrecognized because after all each of the Nation's three interconnective grids carry a product that moves at the speed of light, 186,000 miles a second, so you can believe the congestion can spread pretty easily.

To focus on southern California, not for any particular reason but just because the chairman mentioned it in his opening statement and our wonderful staff was foresightful enough to envision this, this chart focuses on what we view as one of the most concerning areas for the summer for a few different reasons than we have seen in the past. Yes, southern California is experiencing congestion problems because imports are a major factor in meeting the demand in southern California. Due to a lack of local generation sup-

plies, congestion has to be closely watched there. There are other regions of the country that are similar.

Imports from one source curiously impact the ability to import from another, so depending on how you take power over the D.C. tie from the hydropower in Oregon, it might affect the ability to take in gas-fired power imported from Arizona. So that balancing act is very important and the dispatch of one line may actually pinch off the ability to bring in power another way.

If we have normal temperatures this summer, there should be adequate electricity to meet peak loads in southern California. However, if it is warmer than normal, a 1 in 10 summer, for example, we could have problems meeting electricity demand, particularly in the peak month of August. Population and economic growth will continue in that region which, of course, is a good thing, but southern California will have continued difficulties the next summer to match delivered supplies with the increased demand.

Our commission met at the California Public Utilities Commission's offices with the CPUC commissioners and with the California Energy Commission commissioners and chairman last Thursday to talk about this issue and to work on solutions for this problem so that in fact we do not have a repeat of 2000 even if there are shortfalls and that they can be contained, localized and not replicated elsewhere.

In addition we see this type of congestion not only in southern California but in many regions of the country. I think Mr. Owens' testimony points out how that has increased eight-fold. There are reliability concerns for not having a robust transmission infrastructure. We saw this most recently in the summer of 2003 when the northeast States and Canadian provinces were affected by that. It was estimated that brief but profound blackout cost American and Canadian customers $4 billion to $10 billion in costs for just the day or in some cases, up to 6 days that the power was out in Canada.

If customers are to get the benefits, and there are many, of competitive wholesale markets and also avoid the cost of congestion and reduced reliability, we have to find ways to accelerate investment in transmission. Inadequate transmission infrastructure becomes particularly acute as we look at developing a large transmission grid to handle new clean coal supplies and more nuclear power which I think have to be a big part of our future development. Those types of plants are, by nature, going to be located distant from the cities and from where the load is and will require a much more robust and stable grid than we have today.

I think one of the thoughts we have been grappling with at the Commission since I have been there and actually before are what are the hurdles to getting transmission built? I think from several conferences and several years of experience on my part, and on our staff's part as well, we categorize them into about five: local and State siting approvals; retail rate freezes at the State level that discourage new investment; and where you don't have those, the lengthy regulatory cost recovery proceedings that do ensue; intracorporate competition for capital, if you have a chance to build a power plant or build some distribution lines or build a transmission

line, transmission tends to always be third in that race; and concerns about losing customers to outside competitors.

Why build a line that is going to help your competitor take away your customer? It is just an intuitive thing that you have to address your fiduciary obligation to your shareholders if you are privately held companies, so if it doesn't make a lot of sense to them, why are you building that line to help your competitor take away your customer? It is tough.

We are working within our current statutory authority to encourage an adequate investment climate and additional measures are needed. I think we have before you in the Congress a bill that you mentioned, Mr. Chairman, that I think can address three of these things.

Those things are only in service of a greater vision. We brought copies of a study that came out unfortunately a week or so before the blackout in North America. The Department of Energy did an excellent study which has been a fixture at our Commission for the last couple of years, "The Vision: Where Are We Going To? What is it we want to build toward?" This is Grid 2030, it is a vision, a high level document but it is one I think is important to get the ball rolling. What is it we are building toward? We are building toward interconnection of the regions across the country so that the fuel diversity of our great country can work to the advantage of everybody without working to the detriment of the people who have the supplies near them.

This vision statement is one I fully support and it describes a regulatory framework as well as a technological framework that governs system planning and market operations for the years ahead. It builds on existing infrastructure much as the interstate highway system was built on the old U.S. highway system and doesn't try to Federalize the transmission grid but indicates there are some areas of national interest that need to be addressed. I would highly recommend that as really the end point.

This bill before the Congress has a number of steps in it that I think move in that direction and for that reason, I share your exultation that the Congress should adopt and get it to the President so he can sign it. You have passed it a few times as has the Senate. It is just sewing that suit together that makes an ugly part, so if that could be done this year, I think it will be important for America.

I want to close with three things of particular interest to us at the Commission as we try to look after the broad public interest that are real critical parts of this bill. The first is the mandatory and enforceable reliability standards of setting up a system by which the rules of the road are not only clear and enforceable but they have a sting if you don't obey them. That is an important step we do not have today. As I have heard my friend Michehl Gent say a lot of times, this is going to be one of the most important things we could do this century to make our grid reliable and it could have prevented what happened in your colleague's hometown and I think your former hometown.

An important thing the House did stick in was a specific explicit authority over the interstate grid's cyber-security standards. While I think anybody would view these as incorporated in reliability

standards, the current situation that allows utilities or doesn't really govern utilities' ability to get inconsistent cyber protection for their grid across the country would be remedied here and be put under all the other reliability standards and treated that way.

I think a focused cyber attack is one of the things I am concerned about. I think, more than inadequate tree trimming, the potential for somebody at a desk to infect the weakest part of the grid and reek some damage is a real concern. I think the standards that govern that need to be very agile and very smart and need to be mandatory and consistent. It has been 2 years since the blackout and I think it is unconscionable that we don't have this enacted despite the recent actions of the Congress.

Back stop siting authority for our Commission is the second of the three big items. I think some certain critical electric corridors can be identified by the Department of Energy. Much like the Grid 2030 vision, those types of corridors are the ones where you would focus the backstop authority, but not Federalize the whole system as we have on natural gas which admittedly has worked quite well, but make sure the focus is on the backbone systems that are not being built if a State cannot or does not act in a timely manner.

Finally, I know there are some points of discussion about this but I do think repeal of PUHCA, the Public Utility Holding Company Act, is overdue. I think the protections that were not in place in 1935 that would have prevented the need for PUHCA in the first place are in place and have been in place for quite a while at the State and Federal level both at the utility commissions and at the Securities and Exchange Commission. I think those laws do ensure quite an amount of redundant customer protection which PUHCA was intended to adopt. I think it would spur investment in transmission infrastructure and would facilitate competition across the country.

Thank you for the opportunity to talk on a topic near and dear to my heart and I look forward to any questions you may have after our good panelists get through.

[The prepared statement of Mr. Wood follows:]

Summary of Testimony of
Pat Wood, III
Chairman, Federal Energy Regulatory Commission
Before the Government Reform Subcommittee on Energy and Resources
United States House of Representatives
June 8, 2005

Without adequate electric infrastructure, grid reliability is compromised and supply can falter. A reliable supply of wholesale electricity at reasonable prices rests on a three-part foundation: adequate infrastructure, sound market rules, and vigilant oversight of the marketplace. Competition in wholesale power markets has increased substantially since passage of the 1992 Energy Policy Act. Trading in bulk power has increased and the Commission has continued to promote efficiency in wholesale electricity. However, while electricity demand has been increasing, transmission investment and construction has not kept pace. The present environment does not adequately encourage infrastructure investment, and we must do more to reach the level of investment required to maintain the reliability of the Nation's bulk power system.

Congress should focus on three issues affecting the electric industry in the pending energy legislation. These issues are: creating a mechanism for mandatory and enforceable reliability standards, providing federal backstop electric transmission siting authority, and the repeal of the Public Utility Holding Company Act of 1935.

Getting through present challenges would be more focused with public ratification of the vision of the future. The Administration's Department of Energy has developed the Grid 2030 Vision as a national goal for our transmission system. Grid 2030 builds on the existing infrastructure, but takes advantage of new technologies, tools, and techniques to increase the efficiency, quality, and security of existing systems and enable the development of a new architecture for the electric grid. In order to provide for a robust bulk power system, we need to ensure all investment in transmission infrastructure moves us toward the Administration's Grid 2030 vision. We need a more modernized, efficient, and reliable grid, and we must provide a legal and regulatory framework that encourages investment toward this goal.

Testimony of
Pat Wood, III
Chairman, Federal Energy Regulatory Commission
Before the Government Reform Subcommittee on Energy and Resources
United States House of Representatives
June 8, 2005

Thank you for the invitation to speak to you today about the Nation's electricity infrastructure and reliability. A reliable supply of wholesale electricity at reasonable prices rests on a three-part foundation: adequate infrastructure, sound market rules, and vigilant oversight of the marketplace. FERC is working hard to address all three areas. As we saw in the last decade, weakness in any one element can hurt markets, American energy customers and, ultimately, the entire U.S. economy.

Today I will address several issues. First, I will review the recent history of our Nation's electric system, focusing on the development of wholesale competition. Second, I will describe the current state of our electric infrastructure, including the need for more infrastructure investment. Last, I will discuss the future of the electric grid, and the goals the Nation should set for enhancing the grid. I will highlight the importance of technology and innovation in improving today's infrastructure.

I. Past

Without adequate electric infrastructure, grid reliability is compromised and supply can falter. In past decades, this risk was addressed by individual utilities, with varying levels of oversight by state regulators, who have chiefly focused on the rate impact of utility decisions. Reserve margins often exceeded twenty percent, service was usually reliable, and utilities routinely made new infrastructure investments to serve their own customers.

The Federal Power Act was enacted in 1935, an age of mostly self-sufficient, vertically integrated electric utilities. Generation, transmission, and distribution facilities were owned by a single entity and power was sold as part of a bundled service (delivered electric energy). Most utilities entered into interconnection and coordination arrangements with neighboring utilities, and entered into long-term contracts to sell bundled power to wholesale customers such as municipal utilities and cooperatives. Each system covered a defined service area. This structure of separate systems arose primarily because of the cost and technological limitations on the distance over which electricity could be transmitted.

In the late 1960s and throughout the 1970s, events occurred in the electric industry that began a shift to a more competitive marketplace for wholesale power. This was a time of rapid inflation and higher nominal interest rates. Higher capital

costs increased the cost of financing infrastructure investments, and construction schedules were extended by, in part, more stringent safety and environmental requirements. Particularly hard-hit were the utilities in the midst of nuclear power plant construction. At the same time, economic conditions in some regions of the country slowed the increase in, or even reduced, demand for electricity. As a result, some utilities sought to include in rates the cost of large expensive baseload plants for which there was little or no demand.

Electricity rates began to increase. Between 1970 and 1985, average residential electricity prices more than tripled in nominal terms, and increased by 25% after adjusting for general inflation. Moreover, average electricity prices for industrial customers more than quadrupled in nominal terms over the same period and increased 86% after adjusting for inflation.

Also in the 1970s, the energy shortages caused by oil embargoes heightened interest in more efficient ways to generate electricity. One such technology was cogeneration, a means of generating electricity while using the byproducts such as heat and steam for industrial or commercial uses. In response, Congress enacted the Public Utility Regulatory Policies Act of 1978 (PURPA), facilitating the efforts of some industrial customers to build their own cogeneration facilities and laying the groundwork for competitive wholesale power markets.

The "rate shocks" of the 1970s led customers to pressure regulators to investigate the prudence of utility decisions to build generating plants, especially when construction resulted in cost overruns, excess capacity, or both. Between 1985 and 1992, write-offs of nuclear power plants totaled $22.4 billion. These write-offs significantly reduced the earnings of the affected utilities. Delays in obtaining rate increases further reduced investor returns. For the first time, there was significant risk associated with siting and constructing even coal-fired power plants due to higher environmental standards. Thus, many utilities became reluctant to commit capital to construction of large generating plants.

At the same time, technological changes, along with the low cost of natural gas, allowed some new entrants in the power markets to sell electric energy with smaller scale technology at a lower price than many utilities selling from their existing generation facilities. However, the potential customer benefits of using the power supplied by these new market entrants could be realized only if the more efficient generating plants could obtain access to the regional transmission grids. Many traditional vertically-integrated utilities did not offer open access to third parties and, even when they did, they still favored their own generation.

In an effort to increase competition in wholesale power markets, Congress enacted Title VII of the Energy Policy Act of 1992 (Energy Policy Act). This legislation exempted certain wholesale generators from the restrictions of the

Public Utility Holding Company Act of 1935 (PUHCA), and expanded FERC's authority to require transmission service on a case-by-base basis.

In April 1996, in Order No. 888, the Commission established the foundation for strong competition in bulk power markets: non-discriminatory open access transmission services by public utilities. Order No. 888 found that unduly discriminatory and anticompetitive practices existed in the electric industry, and that transmission-owning public utilities had discriminated against others seeking transmission access. Accordingly, Order No. 888 required all public utilities that own, control or operate facilities used for transmitting electric energy in interstate commerce to: (1) file open access non-discriminatory transmission tariffs containing, at a minimum, the non-price terms and conditions set forth in the Order; and (2) functionally unbundle their wholesale power services. In 2002, the Supreme Court affirmed Order No. 888.

II. Present

After the issuance of Order No. 888, the industry underwent sweeping restructuring activity, including the divestiture of generation plants by some traditional electric utilities, entry into the wholesale markets of many new power marketers and independent generation owners, the establishment of independent system operators (ISOs) and Regional Transmission Organizations (RTOs) as operators of large parts of the transmission system, and an effort by a number of

States to open their retail service area franchises to competition. Trade in bulk power markets increased significantly and the Nation's transmission grid began to be used more heavily and in new ways.

In 1999, in response to these changes, the Commission issued Order No. 2000, encouraging the formation of RTOs to promote efficiency in wholesale electricity markets and ensure that electricity customers receive a reliable supply of electricity at reasonable prices. Today, RTOs and ISOs benefit customers by, among other things, coordinating the operations of electrical facilities over a large region and establishing wholesale markets to set efficient and transparent prices for the region. These transparent prices allow the regional grid operator to more reliably dispatch the regional system based on lowest-cost resources.

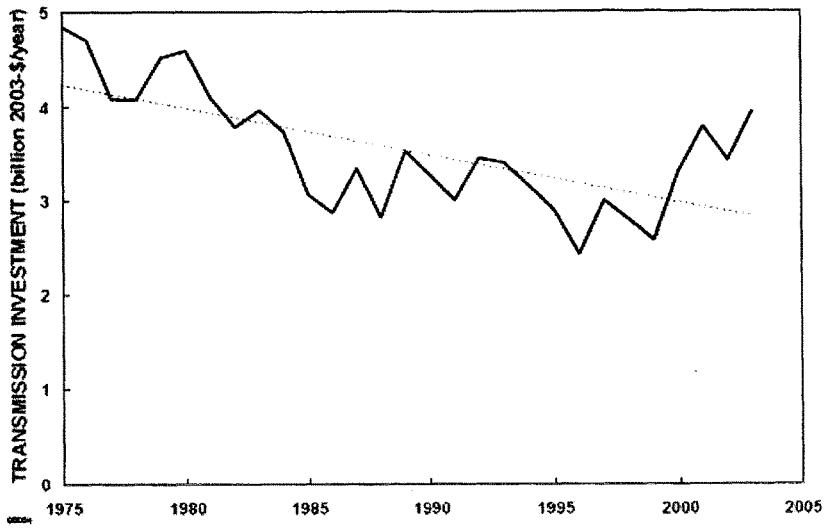
Many regions of the country have formed RTOs or ISOs to operate their electrical facilities. Currently, 69 percent of the nation's $10 trillion economy is being served by RTO/ISOs, including New England, New York, the Mid-Atlantic region (PJM), the Midwest (MISO), the Southwest (Southwest Power Pool, or SPP), California and Texas. Although this establishment of regionally-focused, independent grid operators is a good step forward in promoting wholesale electric reliability, we have not yet reached the goal in all regions.

Transmission accounts for less than 10 percent of the final delivered cost of electricity, but it is critical to keeping our Nation's lights on. [Department of

Energy, National Transmission Grid Study at 8 (May 2002) (2002 National Grid Study).] Nonetheless, transmission investment is not keeping up with load growth. This trend has occurred in every area of the country. Construction of high voltage transmission facilities is expected to increase by only 6 percent (in line-miles) during the next 10 years, in contrast to the expected 20 percent increase in electricity demand and generation capacity (in MW).

Figure 1 shows the level of investment in transmission (in constant, inflation-adjusted 2003 dollars) over the past 30 years. Transmission investment in 1999 was less than half of what it had been 20 years earlier. Although the last few years have seen a short-term increase in transmission investment, growth in transmission capacity still appears to be lagging growth in demand.

Figure 1: Transmission System Investment over Time
Source: E. Hirst, U.S. Transmission Capacity: Present Status and Future Prospects (August 2004)



Increasing transmission congestion as evidenced by differences in locational prices and more use of transmission loading relief procedures illustrates the problem. In many regions of our country, facilities are often congested, and congestion appears to be growing. [2002 National Grid Study at 6 (data on increasing number of transmission loading relief events), 16 (calculation of the costs of congestion).] This results either in higher congestion costs being paid by customers or curtailment of otherwise economic transactions. Interregional transmission congestion costs customers hundreds of millions of dollars annually.

In addition to congestions costs, there are additional economic costs of decreased reliability. One example of the latter is the blackout of August 2003, which has been estimated to have cost U.S. and Canadian customers between $4 and $10 billion dollars.

The Commission recently held two public workshops on investment in transmission. At our first workshop, a witness for investor-owned utilities discussed the forecast of an unprecedented increase in transmission investment over the coming few years. [EEI Survey of Transmission Investment – Historical and Planned Capital Expenditures (1999-2008) at 5 (Edison Electric Institute, May 2005).] Other witnesses asserted, however, that much of this investment is a direct function of historic underinvestment in transmission and that U.S. investment levels are significantly below transmission investment levels in other countries.

The industry and its regulators (state and federal) must find ways to accelerate investment in transmission, if customers are to receive the many benefits achievable with competitive wholesale markets. Underdevelopment of the transmission grid impedes the achievement of the benefits of competitive markets. Significant transmission constraints limit access to competing electric resources. Since generation units cannot always be built close to load, competition in generation relies on the existence of sufficient transmission infrastructure to support such competition. This needed level of transmission infrastructure is missing in many areas of the nation. This issue becomes particularly acute as we

look more seriously at larger scale development of new coal-fired and nuclear power generation. These sources, which are almost always going to be located distant from load centers, require a more robust and stable grid than we have today.

An underdeveloped grid can cause problems even in an RTO or ISO, including the need to: mitigate potential exercises of local market power, retain otherwise uneconomic and inefficient generation for local reliability, and provide contractual support for some units needed for reliability in constrained areas.

Utilities seeking to build new transmission face a number of hurdles. Most traditional, vertically-integrated utilities with retail service obligations must go before their state commissions to seek retail rate recovery for any investment they make in new transmission. This can involve opening up all of their costs as well as their entire rate structure for reevaluation, a step few utilities desire. Often utilities are subject to retail rate moratoria, which can jeopardize their ability to recover any investment in new transmission from retail customers during the period of the retail rate freeze. Moreover, building transmission is subject to state and local siting approvals, essentially requiring utilities to negotiate not just with their state regulators and legislators, but also with a variety of other stakeholder groups prior to beginning construction of new transmission. Within a vertically-integrated utility, the need to build transmission must compete for capital with other investments such as building generation (which has been viewed by

investors as typically easier to build and having greater earnings potential) or distribution (which more directly affects and is more visible to end-use customers and the retail regulators). Finally, development of a robust inter-utility transmission grid may come into conflict with an individual utility's fiduciary responsibility to its shareholders if such a grid will allow competing generators to more economically serve the transmission-owning utility's wholesale customers.

The Commission has taken steps within our jurisdiction to ameliorate these disincentives. In the recent past we have granted rate incentives to utilities which, either through a stand-alone, transmission-only business model or through regional transmission expansion programs, have the ability to engage in beneficial expansions. As a routine matter we look at a number of factors before granting these rate incentives: why the incentive is necessary to facilitate a needed grid expansion or new form of transmission ownership, the level of independence of the applicant, and the geographic and participatory scope of the proposal.

Although the Commission is working within its current statutory authority to encourage infrastructure investment, additional measures are needed to reach the level of investment required to maintain the reliability of the Nation's bulk power system. The energy legislation currently pending before the Congress addresses certain impediments to investment in the short term, but more may be needed in the future.

III. The Future

The Administration has developed an ambitious goal for our electrical grid, a goal I fully support. In July 2003, the Department of Energy published its Grid 2030 Vision, describing the Administration's vision of the future electric system. The focus was on electric delivery – "the grid," or the portion of the electric infrastructure that lies between the central power plant and the customer – as well as the regulatory framework that governs system planning and market operations.

The 2030 Vision builds on the existing infrastructure, but would take advantage of new technologies, tools, and techniques to increase the efficiency, quality, and security of existing systems and enable the development of a new architecture for the electric grid. As a part of Grid 2030, DOE has developed a roadmap identifying near-, mid-, and long-term actions necessary to achieve a modernized, expanded, and reliable electric system. Approval of future ratepayer-funded transmission projects should consider whether the projects support this vision.

In addition, a reliable grid will be easier to achieve through investment in a safety margin of transmission capacity. We need to have an investment and regulatory platform that is receptive to cost-efficient and energy-efficient technology. We must invest in technologies such as new overhead power conductors with double the electrical transmission capacity of conventional

conductors of the same diameter. Xcel Energy plans to install one such conductor on a 10-mile transmission line in the Minnesota Twin Cities region, for example. We must encourage the industry to continue to develop and test these new technologies so that we can move forward in achieving a more modernized and efficient grid.

One of the most critical tools missing in the current environment is demand response, but this issue raises difficult questions about federal and state jurisdiction. For example, one pending formal complaint before the Commission involves certain large commercial and industrial customers asserting that they are being blocked from participating in an RTO's demand response programs based on the local utility's claims about conflicting state law. Demand response programs can reduce energy costs and increase efficiency, but these programs are hindered because of blurred jurisdictional lines.

First, however, Congress should focus on three issues addressed in the pending energy legislation. These issues are: creating a mechanism for mandatory and enforceable reliability standards, providing federal backstop electric transmission siting authority, and the repeal of the 1935 Public Utility Holding Company Act (PUHCA).

In the wake of the August 2003 blackout, federal legislation is necessary to provide a clear, enforceable framework for reliability rules. Specifically, a system

of mandatory reliability rules, with penalties for violations of these rules, is needed to maintain the reliability of our nation's transmission system.

In addition to encouraging investment in our transmission grid, we must continue to take all appropriate measures to secure our existing infrastructure. For instance, currently there is no mandatory authority to enforce cyber security standards in the electric industry. This allows inconsistent levels of cyber security to be applied by utilities based on available resources and perceived risk. A focused cyber attack will use the least protected system as an entry point to impact a wider region. The grid is only as protected as the weakest link, that is, the least protected entity. Cyber security standards need to be mandatory, consistent, and rapidly upgraded. The House of Representatives has passed a version of the energy legislation which gives the Commission explicit authority over the interstate grid's cyber security.

It has been almost two years since the 2003 North American Blackout. Although both the House and the Senate have repeatedly passed reliability provisions, it is unconscionable that provisions obligating all users of the nation's transmission grid to comply with reliability rules have not become law. The reliability of the transmission grid is too important to let another year go by without legislation providing for nation-wide mandatory reliability rules.

The pending energy legislation would also provide the Commission with backstop interstate transmission siting authority for certain critical electric transmission corridors identified by the Secretary of Energy, in the event a state or local entity does not have authority to act or does not act in a timely manner. This authority would help facilitate the development of important transmission expansions and thus enhance the reliability of the grid, reduce the total cost to customers, or both. It is very similar to the development, a half century ago, of the interstate highway system, which elevated the principal highways of the then-existing U.S. highway system to "national interest" status and directed their expansion and improvement under a separately funded program.

Finally, the repeal of PUHCA is necessary to spur investment in the transmission infrastructure and facilitate competition. PUHCA was enacted primarily to undo the harms caused by certain holding company structures that no longer exist. In the almost 70 years since PUHCA was enacted, utility regulation has increased substantially under the FPA, federal securities law and state laws, all of which ensure that customers are protected. The existing integration requirement of PUHCA actually encourages market structures that impede competition. In particular, under PUHCA, acquisitions by registered holding companies generally must tend toward the development of an "integrated public-utility system." To meet this requirement, the holding company's system must be "physically interconnected or capable of physical interconnection" and "confined

in its operations to a single area or region." This requirement tends to create greater geographic concentrations of generation ownership, which may increase market power at a time when we want a diverse and competitive generation marketplace. Further, PUHCA may impede investment in transmission companies in more than one region by subjecting any owner of ten percent or more of a public utility to becoming a holding company and possibly being required to register under PUHCA. PUHCA is a statute that has served its usefulness and now needs to be repealed.

Conclusion

Thank you again for the opportunity to address the Committee on issues involving the nation's electric infrastructure. In order to provide for a robust bulk power system, we need to promote investment in transmission infrastructure to move us toward the Administration's Grid 2030 vision. As President Bush stated on April 27th of this year, "[w]e have modern interstate grids for our phone lines and our highways. It's time for America to build a modern electricity grid." For the national public interest, we need to move forward to a more modernized, more efficient, and more reliable grid and provide a statutory framework that drives private investment toward this goal.

Mr. ISSA. I will note for the record, without objection, the entire document, "The Grid 2030," will be included in the record of this hearing.

[NOTE.—The U.S. Department of Energy document entitled, "Transforming the Grid to Revolutionize Electric Power in North America 'Grid 2030' A National Vision for Electricity's Second 100 Years, July 2003," may be found in subcommittee files.]

Mr. ISSA. At this time, if I may go back to regular order for a moment, I would like to introduce the rest of our speakers and then get to Mr. Gent.

Our next speaker will be Michehl R. Gent, president and CEO, North American Reliability Council. After he speaks, we will have Mr. David Owens, executive vice president, Edison Electric Institute; and then Dr. Mark Cooper, Director of Research, Consumer Federation of America.

With that, we would next go to Mr. Gent.

STATEMENT OF MICHEHL R. GENT

Mr. GENT. Thank you.

As we approach the second anniversary of the largest blackout in North American history, I think it is important that I share with you the status of our efforts to prevent such a reoccurrence. I thank you for that opportunity. My prepared comments have the details of many of the programs, processes and standards that we have implemented and I again make the case that the next move, passing the reliability legislation, is up to Congress.

The electricity industry has undergone profound changes in the past decade as competition has taken the place of regulation in major parts of our country. Those changes have had significant consequences for how the industry maintains the reliability of the bulk electric supply systems serving North America. The introduction of competition means that we must change the way we deal with reliability matters. I think the blackout of August 14, 2003 proves that the old way of handling reliability will not work effectively in a restructured electricity market.

There are understandable reasons why the old ways will not work. Before restructuring, the industry was comprised of entirely vertically integrated utilities, both investor owned and publicly owned, each owning its own generation, each owning its own transmission, its own distribution system, and in fact owning its own customers, if you will.

Utilities sold electricity to one another but it was mostly between neighbors trading back and forth and then in later years, it developed into emergency purposes and then finally with the advent of the passage of the Energy Act of 1992 we have more transactions on the interconnections.

As the competitive wholesale electric market developed, trade in electricity spanned longer and longer distances with organizations moving larger and larger blocks of power from one region to the other. However, the electric transmission system was not designed, nor was it built, to move such large amounts of power. In fact, it hasn't changed substantially in the last 10 years.

Along with the increased competition and supply of electricity came what we call corporate restructuring. Here are just a few ex-

amples of what has happened. Some organizations have sold off generation assets as part of their move to competitive wholesale markets. Other organizations have turned operation of their transmission system over to independent transmission operators or regional transmission organizations. Some have become transmission only organizations. Independent power producers have become the primary developers of new generation plants and services have been unbundled in many parts of the country. We no longer have this link between the generation plant and the customer.

The net result is often that several generating plants under separate ownership might now sell their output to an unaffiliated marketer who would arrange for an unaffiliated transmission company to transmit the electricity to an unaffiliated distribution company for delivery to the ultimate customer who may feel unaffiliated. With that degree of unbundling and restructuring, the required near constant coordination and communication among the operators of the transmission system that formerly took place in a vertically integrated system became at the same time more difficult and yet more important than ever.

An important indicator of the status of the electric system, as Chairman Wood said, is the amount of congestion occurring on the system. For each year in the last decade, more transmission lines have been experiencing congestion for more hours of the year. We have fashioned reliability rules for handling that congestion but that could also mean that someone doesn't get transmission service. Someone is going to have to pay more for their electric energy because of the congestion. It is obvious to me that the needed construction of additional transmission capacity has not kept pace either with the expansion of generation or with the increase in the customer's demand.

Since the blackout of August 14, 2003, the electricity industry has accomplished much to strengthen the reliability of bulk electric systems in North America, yet much more needs to be done. Long before the blackout, the industry realized that the way we had been handling reliability for the previous three decades would no longer suffice. The voluntary system of cooperation and peer pressure that had worked so well for 30 years would not be sufficient to maintain the reliability of the system. We all agreed that the answer was to make the reliability rules mandatory and enforceable.

To accomplish that, we started about 6 years ago—that is NAERC and a broad coalition of the electric industry stakeholders from all industry sectors as well as the customers and regulators—to put together legislation that we could all live with. We have been seeking amendments to the Federal Power Act and as you mentioned, that has been passed in the House bill. That legislation would make reliability rules mandatory for all owners, operators and users of the bulk electric system regardless of those entities' jurisdictional status under the Federal Power Act.

It would authorize creation of an industry-based electric reliability organization to set and enforce reliability standards subject to the oversight in the United States of the Federal Energy Regulatory Commission. I might add, in Canada, that would include a provisional agreement.

Legislation also recognizes that the international nature of the interconnected grid does exist and that the reliability activities have to be carried out by regional entities, not some central force located in either Washington or Princeton, again with FERC oversight.

Congress now appears poised to finally enact the reliability legislation that we have been seeking as part of the comprehensive energy bill, but we have been here before and we have been disappointed before. This time it is a little different because, as a result of the blackout we had 2 years ago, we even have the support of the United States and Canadian governments. In fact, the U.S.-Canada Power System Outage Task Force that investigated the 2003 outage concluded, "The single most important step for maintaining a high level reliability is for Congress to enact the reliability provisions in the pending legislation you already passed." NERC is very hopeful that this will be our year.

I am convinced that if we had the legislation 3 years ago, the blackout would not have occurred. In my written testimony is a brief description of many of the steps that we have taken to assure that a blackout like the one that occurred in August 2003 cannot be repeated. We have implemented many of the steps that were called for in our own report, recommendations in the report of the U.S.-Canada Power System Outage Task Force and steps in the proposed legislation.

Those implemented steps include a rewrite of our standards to make them sharp and clear; required training programs for system operators that will be handling emergencies; standards for vegetation management; and readiness audits of the operating centers to just name a few. However, memories are short and all we have are promises. We need the reliability legislation to make all of this mandatory and lasting.

After the blackout, we were able to accomplish much because everyone was focused on reliability. However, as time has passed, priorities have shifted, people have moved on, and other issues are competing for your time and my time. Having the reliability legislation in place finally will make sure that NERC and the entire electricity industry can make the proper focus on reliability an ongoing and sustainable activity.

Thank you, and I would be pleased to answer your questions.

[The prepared statement of Mr. Gent follows:]

TESTIMONY OF MICHEHL R. GENT ON BEHALF OF THE NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL BEFORE THE SUBCOMMITTEE ON ENERGY AND RESOURCES COMMITTEE ON GOVERNMENT REFORM U. S. HOUSE OF REPRESENTATIVES JUNE 8, 2005

Good afternoon, Mr. Chairman and members of the subcommittee. My name is Michehl Gent and I am President and Chief Executive Officer of the North American Electric Reliability Council (NERC). As we approach the second anniversary of the largest blackout in North American history, I want to thank you for this opportunity to discuss the status of the electricity industry, particularly as it relates to the reliability of the bulk electric system.

Since the blackout on August 14, 2003, NERC, working with its ten regional reliability councils and all sectors of the electricity industry, has accomplished much to strengthen the reliability of the bulk electric system in North America. Yet more needs to be done if the United States and its trading partners to the north and south, Canada and Mexico, are to continue to have the assured delivery of the electricity on which so much of our economy and our social order vitally depends.

NERC is a nonprofit corporation formed after the 1965 Northeast blackout to promote the reliability of the bulk electric system that serves North America. NERC's mission is to ensure that the bulk electric system in North America is reliable, adequate, and secure. NERC works with all segments of the electricity industry as well as electricity consumers and regulators to set and encourage compliance with rules for the planning and operation of reliable electric systems. NERC comprises ten regional reliability councils that account for virtually all the electricity supplied in the United States, Canada, and a portion of Baja California Norte, Mexico. NERC also coordinates electricity industry activities to promote critical infrastructure protection of the bulk electric system in North America. NERC works with the Department of Homeland Security, the Department of Energy, and the Federal Energy Regulatory Commission on security matters and serves as the U.S. government's designated sector coordinator for the electricity sector, including operating the Electricity Sector Information Sharing and Analysis Center (ES-ISAC).

People normally take the reliability of the bulk electric system for granted, and that is understandable, because the system works very well, day in and day out, year in and year out, to the point where North Americans have the most reliable electric system in the world. On rare occasions the system fails in dramatic fashion, with enormous consequences, as happened on August 14, 2003. The U.S. Department of Energy has estimated that the cost of the August 14 blackout ranged between 4 and 10 billion dollars.

The blackout of August 14, 2003 should not have happened, and we must take all reasonable steps to forestall a recurrence. But the electric system is a very large, complex machine designed, assembled, and operated by humans. Machines sometimes break; humans sometimes make mistakes. So the industry must have in place the processes and mechanisms to arrest the spread of a local outage, should one begin. We must also develop the processes and mechanisms to allow rapid recovery from an outage. In the wake of the blackout, NERC and industry participants have redoubled their efforts to ensure the reliability of the bulk electric system in North America.

Reliability and the Changing Electricity Industry

The electricity industry has undergone profound change in the past decade, as competition is taking the place of regulation for major parts of the industry. Those changes have had significant consequences for how the industry maintains reliability on the bulk electric system that serves North America. It is not that the introduction of competition is wrong from a reliability standpoint. Rather, the introduction of competition means that NERC and the entire industry must adjust how they deal with reliability matters. What is wrong is to assume that the old ways of handling reliability will continue to work effectively in a restructured electricity industry.

In the first three decades of NERC's existence, the industry was characterized by vertically integrated utilities (both investor-owned and publicly owned), with each owning its own generation plants, transmission lines, and distribution systems to serve a defined group of customers that essentially "belonged" to each utility. Utilities sold electricity to one another, but it was mostly neighbors trading with neighbors, at first just in emergency situations, and then increasingly for economic reasons. As competitive wholesale electricity

markets developed, trade in electricity spanned longer distances, with organizations moving large blocks of power from one region to another. However, the electric transmission system was not designed and built to move large amounts of power from one region to another.

Along with increased competition in the supply of electricity came corporate restructuring. Some organizations sold off generation assets as part of their move to competitive wholesale markets. Others turned operation of their transmission systems over to independent system operators or regional transmission organizations. Some became transmission-only organizations. Independent power producers became the primary developers of new generating plants. Services were "unbundled," and in many parts of the country the link between generation plant and ultimate customer was broken. Several generating plants under separate ownership might now sell their output to an unaffiliated marketer, who would arrange for an unaffiliated transmission company to transmit the power to an unaffiliated distribution company for delivery to the ultimate customer. With that degree of unbundling and restructuring, the near-constant coordination and communication that formerly took place within the traditional vertically integrated utility became, at the same time, much more difficult and much more important.

The Bulk Power Transmission System Is Becoming More Congested

An important indicator of the status of the bulk electric system is the amount of congestion occurring on the system. Each year in the last decade more transmission lines have been experiencing congestion for more hours of the year. Construction of additional transmission capacity has not kept pace with either the expansion in generating capacity or the expansion in demand. In the first three decades of NERC's existence, significant transmission additions were included as an adjunct to the construction by utilities of large, central station generating plants. One of the consequences of the move to smaller generating units, largely constructed by non-utilities, is that the focal point for making major additions to transmission capacity was lost. With ownership of generation and transmission assets divided, decision-making is also divided. We've lost the centralized planning of both generation and transmission that formerly took place. Regional transmission organizations

may be able to provide this planning function, but not all are doing so, and RTOs don't exist in all parts of the country.

Other factors also contribute to the lack of transmission expansion. Difficulty in siting is a major factor. Another contributor is the considerable uncertainty over how a company that adds transmission capacity to the system will be able to recover its investment, and what return it will earn on that investment. Added together, these several factors mean we are not getting the transmission built that we need to support the amount of regional trade associated with competitive wholesale markets.

Industry restructuring is also proceeding at different paces in different places. The physical electric system hasn't changed, but the ownership and control over facilities has changed, as have the business models being employed by the increasing number of industry participants. But things are not uniformly different. In some parts of the country we have regional transmission operators or independent system operators; transmission owners may or may not also own generation; in other parts of the country we continue to see a predominance of vertically integrated utilities. In some places the new models and the old model exist side by side.

Because all these different entities are still interconnected to one physical system, they all need to operate to a common set of rules. That is where NERC's reliability rules come in.

Congressional Action to Authorize Mandatory and Enforceable Reliability Rules Is Overdue

Beginning in the late 1990s, NERC and leaders both inside and outside the electricity industry realized that the way reliability had been handled for the previous three decades would no longer suffice. The voluntary system of cooperation and peer pressure that had worked well for 30 years would not be sufficient to maintain the reliability of the system, given the changes that were taking place. The answer was to make the reliability rules mandatory and enforceable.

For the past six years, NERC and a broad coalition of electricity industry stakeholders from all industry sectors, as well as customers and regulators, have been

seeking amendments to the Federal Power Act that would make the reliability rules mandatory and enforceable. That legislation would apply the reliability rules to all owners, operators, and users of the bulk electric system, regardless of those entities' jurisdictional status under other parts of the Federal Power Act. It would authorize creation of an industry-based electric reliability organization to set and enforce reliability standards, subject to oversight in the United States by FERC. The legislation also recognizes the international nature of the interconnected grid and envisions having reliability activities carried out by regional entities under delegation agreements from the ERO, again with FERC oversight.

Congress now appears poised to finally enact the reliability legislation we have been seeking, as part of the comprehensive energy bill. The House passed H.R. 6, its version of the comprehensive energy bill, in April. In late May, the Senate Energy and Natural Resources Committee reported out its version of the bill. With prompt Senate action, the two versions of the bill can move to conference. The U.S.-Canada Power System Outage Task Force investigating the August 2003 outage concluded that the "single most important step" for maintaining a high level of reliability is for Congress to enact the reliability provisions from the pending legislation. NERC is very hopeful that this year will be the year. We are convinced that if we had had the legislation three years ago, the blackout would not have occurred.

When the comprehensive bill gets to conference, we will be working with members of the conference committee and staff to resolve any remaining issues in the reliability language. Pursuant to a mechanism approved by FERC, the ERO and regional entities will collect funds from users of the bulk power system to support their reliability operations. In an effort to reduce the Congressional Budget Office "score" for the energy bill, however, the House reliability language contains a cap on spending by the electric reliability organization and its regional entities. That cap would limit annual spending by the electric reliability organization and its regional entities to less than what NERC and the regional reliability councils now spend, before we've implemented some of the programs required by the pending legislation. The bottom line is that without an adequate budget, the electric reliability organization cannot be successful, and reliability will inevitably suffer. The Senate Energy Committee has not included any such funding limitations in its energy bill.

We hope to work with the conference committee to eliminate the House reliability funding cap.

NERC Has Not Waited on Congress to Bolster the Reliability of the Bulk Electric System

As soon as the legislation is adopted and FERC completes its implementing rulemaking, NERC will apply to be designated as the electric reliability organization under the new legislation. But NERC has not waited for legislation.

In March 2001, NERC restructured from a stakeholder board of trustees to the independent board of directors that is specified in the legislation. In 2003, NERC initiated a new standards development process that is fair, open, balanced, and inclusive — we believe this also meets the requirements found in the pending legislation. NERC's standards process has been accredited by the American National Standards Institute. NERC used that new standards process to restate all of its existing standards, so that both the requirements and the accountability are clear and measurable. The new standards received overwhelming support from industry stakeholders and took effect on April 1, 2005.

With respect to compliance with its standards, NERC and the regional reliability councils began in 1999 to develop the processes and procedures necessary for administering a compliance and enforcement program, including the use of simulated penalties. Until the legislation is passed, NERC has no authority to impose actual penalties. Each year, NERC and the regional councils develop and post a report on the prior year's compliance activities.

Following the August 2003 blackout, NERC was an integral part of the joint fact-finding investigation into the blackout conducted by the U.S.-Canada Power System Outage Task Force. We fully supported the task force's findings and conclusions set forth in its interim and final reports. NERC also prepared its own detailed technical report and recommendations, which closely tracked the government's findings and recommendations.

It was and remains a great concern to me that NERC reliability standards were violated in August 2003, and that these violations contributed directly to the blackout. I am also very concerned that some of the same problems identified in studies of prior large-scale

blackouts also contributed to the August 2003 blackout. I stated then and I'll say it again: we must do better than this.

In October 2003, NERC requested all control areas and reliability coordinators to examine their systems for problems similar to those emerging as possible contributors to the August 2003 blackout, and to certify they had completed that review by December 2003. In February 2004, NERC directed those entities directly involved in the blackout to take remedial actions to correct a long list of deficiencies that had been identified by the joint NERC-Power System Outage Task Force investigation and to certify completion of the corrections by June 30, 2004. NERC followed up with audits to verify that the corrective actions had been completed.

NERC also initiated a program of readiness audits to assess the capability of all control areas and reliability coordinators throughout North America to carry out their responsibilities under the reliability rules. This readiness audit program is, I believe, the single most important step that NERC can take to guard against a recurrence of a major blackout. The program does not focus on past compliance with the rules; rather, the program is forward-looking, assessing each entity to see whether it has in place the processes and procedures as well as the trained personnel and tools needed to carry out its responsibilities for the reliable planning and operation of its portion of the bulk electric system. The program identifies examples of excellence (so that others in the industry may benefit from how an entity deals with a particular issue) as well as identifying areas for improvement.

To date, NERC has completed more than 50 readiness audits, and the final reports from those audits are posted on NERC's website. During the course of those audits, NERC identified ten examples of excellence, and those are also posted on the NERC website. NERC issued its first report to the industry describing those examples of excellence in March 2005. NERC expects to publish additional reports on examples of excellence on a quarterly basis.

NERC continues to strengthen its compliance program. As part of this effort, we have committed to ensure that greater visibility is given to those who violate NERC reliability standards. NERC now posts quarterly reports of compliance violations, including the identities of the organizations involved, once the violations have been confirmed.

NERC has a number of other strategic and technical initiatives under way to address problems identified in the blackout investigation. NERC is developing new reliability standards for vegetation management, determining facility ratings and operating limits, system personnel training, system frequency response, and nuclear offsite supply reliability. NERC has technical studies under way to develop an improved operator-training program, to examine issues related to voltage support and reactive power, to investigate improved operator tools for visualizing the operating status of the grid, and to improve system protection. The results of these efforts and others will be implemented over the next few years.

Despite the absence of the reliability legislation we have been seeking, NERC has made a concerted effort to use all available means to obtain full compliance with our reliability standards. We have worked closely with the Federal Energy Regulatory Commission and other applicable regulatory authorities in North America to ensure that the public interest is met with respect to compliance with NERC and regional reliability standards. NERC recognizes that we must do everything within our power to regain the public's trust and provide reassurance that preserving the reliability of the bulk electric system is of paramount importance to NERC and to the entire electricity industry.

Conclusion

I will conclude my testimony where I began, with an urgent request that Congress enact the reliability legislation this year. Following the blackout we were able to accomplish much because everyone was focused on reliability. However, as time has passed since the August 14 blackout, priorities have shifted, people have moved on; other issues are competing for attention. Having the reliability legislation in place will make sure that NERC and the entire electricity industry can maintain the proper focus on reliability on an ongoing, sustainable basis.

Thank you.

Executive Summary of Testimony of
Michehl Gent, President and Chief Executive Officer of the **North American Electric Reliability Council (NERC)**
Subcommittee on Energy Resources, House Government Reform Committee, June 8, 2005

NERC is a nonprofit corporation formed after the 1965 Northeast blackout; its mission is to ensure that the bulk electric system in North America is reliable, adequate, and secure. On rare occasions the transmission system fails in dramatic fashion, with enormous consequences, as happened on August 14, 2003. NERC and industry participants have redoubled their efforts to ensure the reliability of the bulk electric system in North America.

The electricity industry has undergone profound change in the past decade, as competition has begun to take the place of regulation. Those changes have had significant consequences for how the industry maintains reliability on the bulk electric system that serves North America. It is wrong to assume that the old ways of handling reliability will continue to work effectively in a restructured electricity industry.

The bulk power transmission system is becoming more congested each year. Construction of additional transmission capacity has not kept pace with either the expansion in generating capacity or the expansion in demand. We are not getting the transmission built that we need to support the amount of regional trade associated with competitive wholesale markets.

The reliability rules must be mandatory and enforceable. Many different entities are interconnected to one physical system, and they all need to operate to a common set of rules. The voluntary system of cooperation and peer pressure to follow NERC's reliability rules that worked well for 30 years is no longer sufficient to maintain the reliability of the system, given the changes that are taking place.

Congressional action to authorize mandatory and enforceable reliability rules is overdue. For the past six years, NERC and a broad coalition of electricity industry stakeholders from all industry sectors as well as customers and regulators have been seeking amendments to the Federal Power Act that would make the reliability rules mandatory and enforceable. It is critical that Congress pass the reliability legislation this year.

NERC has not waited on Congress to bolster the reliability of the bulk electric system. NERC has already implemented many of the changes that the legislation will require: an independent board of directors; a fair, open, and balanced standards development process; a set of clear and measurable standards; and a fair compliance process.

Following the August 2003 blackout, NERC took a series of strong actions designed to avoid a recurrence of a major blackout. NERC directed those entities directly involved in the blackout to remedy the deficiencies identified in the NERC and government investigations, and NERC followed up with verification audits. NERC initiated a program of readiness audits to assess the capability of all control areas and reliability coordinators throughout North America to carry out their responsibilities under the reliability rules. NERC strengthened its existing standards and began the process to add new standards (such as vegetation management) to correct problems found to contribute to the blackout.

Having the reliability legislation in place will make sure that NERC can maintain the proper focus on reliability on an ongoing, sustainable basis. Following the blackout we were able to accomplish much because everyone was focused on reliability. However, as time has passed since the August 14 blackout, priorities have shifted; people have moved on; other issues are competing for attention. **The most important step for assuring the long-term reliability of the bulk electric system remains passage of legislation to make the rules mandatory and enforceable for all system owners, operators, and users.**

Mr. ISSA. Mr. Owens is executive vice president for business operations with the Edison Electric Institute. He joined the Institute in 1980 and has held a number of positions related to power supply policy and industry regulation. Prior to joining Edison, he served as Chief Engineer of the Division of Corporate Regulations of the Securities and Exchange Commission.

Mr. Owens holds a Bachelors and Masters degree in engineering from Harvard University as well as a Masters from George Washington University.

Welcome, Mr. Owens. Your entire testimony will be put in the record. So again, feel free to, within our timeframe, expand upon your written testimony.

STATEMENT OF DAVID OWENS

Mr. OWENS. Thank you.

You dated me a little. In 1980, I was a child prodigy. I was about 4 years old when I started my career.

Mr. ISSA. I was a child prodigy captain in the Army at that time, so our prodigy background is duly noted. [Laughter.]

Mr. OWENS. On a serious note, EEI is the association of U.S. shareholder-owned electric utilities and industry affiliates and associates worldwide. We certainly do appreciate this opportunity to testify on electric reliability and transmission issues.

As you know, the energy bills now pending in Congress contain a number of important transmission reform provisions that would help to strengthen our Nation's transmission infrastructure. EEI strongly supports these provisions. I would like to take a moment and highlight for you eight items I think are very critical to maintaining reliability and enhancing our overall transmission infrastructure.

Like the other witnesses, I feel very strongly that Congress should establish mandatory reliability rules for all market participants with important FERC oversight. We strongly urge the inclusion of these provisions in an energy bill, but without the budget limitations contained in this year's House passed version of H.R. 6.

My second point would be that Congress should require FERC to reform its transmission rate policy in a manner that will provide greater certainty to investment in the transmission system. We certainly do support the FERC pricing and technologies provisions in H.R. 6, and particularly those incentives to expand transmission infrastructure. I also appreciate the comments that Chairman Pat Wood has made with respect to some of the things FERC is seeking to undertake.

Third, I would urge that Congress give FERC backstop transmission siting authority for many of the various reasons that Chairman Pat Wood spoke of. In my view, regional electricity markets require a transmission siting process that has the ability to consider regional and even national needs. As you know, most siting laws do not allow the consideration of regional benefits. Many of them also do not recognize the role of some new important entities such as multi-state, regional transmission organizations or independent transmission companies. These entities, in my view, play a significant role in the planning and siting of transmission.

H.R. 6 would give FERC limited backstop transmission siting authority. This authority would certainly not be as comprehensive as the authority that FERC currently has with respect to natural gas pipelines, but it would help site transmission lines in interstate congested areas, which are designated by the Department of Energy. This would occur only if States have been unable to agree or to act within a year.

My fourth point is that Congress should reform the transmission permitting process on Federal lands by designating the Department of Energy as the lead agency to coordinate and set deadlines for the Federal environmental review and permitting process. As you know, the Federal transmission permitting process needs to be coordinated, needs to be simplified, and needs to be able to work. It is a very cumbersome, complicated process today. We strongly support the provisions in H.R. 6 that would accomplish this goal.

My fifth point is that Congress should ensure all transmissions providers must allow open access to their transmission lines to any third party power seller. The current system that we have today is one where government-owned utilities and electric cooperatives collectively own and operate about 32 percent of the Nation's transmission system. Unfortunately, these transmission owners are not subject to the same level of FERC jurisdiction over transmission that applies to shareholder owned utilities.

In my view, this bifurcated regulation of interstate transmission lines certainly will not work as the industry structure continues to evolve. We believe that sound public policy to protect consumers would mean putting all utilities participating in interstate wholesale electricity markets under FERC's full, just, and reasonable requirements. At a minimum, EEI strongly supports inclusion of an effective FERC-lite provision in any electricity bill, which would make all types of utilities subject to non-discriminatory open access transmission rules.

My sixth point is that Congress should clarify Federal law to authorize Federal utilities to join an RTO or independent transmission system operators voluntarily. I am not supporting mandatory RTOs but I do believe that certain Federal entities, such as in the Pacific Northwest, where the Bonneville Power Administration controls over 70 percent of the transmission system in that region, has to have the clarity that they can become a part of a regional transmission organization.

My seventh point is that Congress should repeal and modernize the Public Utility Holding Company Act of 1935. As the Chair correctly pointed out, PUHCA acts as a substantial impediment to new investment in energy infrastructure. It is keeping billions of dollars of capital out of the industry and particularly capital that could be very useful in modernizing our transmission system. We believe this outdated statute has contributed to the failure of electricity infrastructure to keep pace with growing electricity demand and the development of regional wholesale electricity markets.

H.R. 6 contains provisions that will repeal PUHCA and transfer consumer protections to FERC and the States. These provisions are similar to PUHCA repeal language that has been included in every major electricity bill considered by the Congress over the last decade, and which have been endorsed by every administration, Re-

publican and Democratic, since 1982. They should be included in the energy bill again this year.

My eighth and final point is that Congress should provide for enhanced, accelerated depreciation for electric transmission assets, in other words, reducing the depreciable lines from 20 years to 15 years similar to the tax treatment governing other major capital assets. Currently, transmission assets received less favorable tax treatment than any other critical infrastructure and technology. Accelerated depreciation for transmission will help increase investment in and strengthen our energy infrastructure.

Let me conclude. Congress needs to finish the job and pass an energy bill as soon as possible to help promote fuel diversity, to improve the energy efficiency and conservation of our systems, to provide regulatory certainty in energy markets, and to encourage investment in critical infrastructure. We urge Congress to adopt an energy bill that includes the transmission provisions contained in H.R. 6.

This completes my statement and I would be pleased to answer any of your questions.

[The prepared statement of Mr. Owens follows:]

TESTIMONY OF DAVID K. OWENS
ON BEHALF OF THE EDISON ELECTRIC INSTITUTE

BEFORE THE SUBCOMMITTEE ON ENERGY AND RESOURCES
COMMITTEE ON GOVERNMENT REFORM
U.S. HOUSE OF REPRESNTATIVES

JUNE 8, 2005

Mr. Chairman and Members of the Subcommittee:

My name is David K. Owens, and I am Executive Vice President of the Edison Electric Institute (EEI). EEI is the association of U.S. shareholder-owned electric utilities and industry affiliates and associates worldwide. We appreciate the opportunity to testify on electric reliability and transmission issues.

A Strong Transmission System Benefits Electricity Consumers

The U.S. electric system is comprised of an interconnected network of generating plants, transmission lines, and distribution facilities. Transmission lines carry electricity instantaneously over long distances from power plants to areas where it is needed. Reliable electric service and robust regional electricity markets depend on strong transmission systems.

A number of critical changes are needed now to encourage new transmission construction to meet the growing demands for electricity and to support regional wholesale markets. H.R. 6, the Energy Policy Act of 2005, which passed the House of Representatives in April, contains a number of important transmission reform provisions that would help to make our nation's transmission infrastructure stronger and more reliable. In the Senate, we are encouraged by recent committee action, and the prospect of floor action soon, on an energy bill that contains many of these same provisions. We urge Congress to finally enact a comprehensive energy bill that addresses these issues as soon as possible this year.

Transmission: A Brief Legislative and Regulatory History

The Federal Energy Regulatory Commission (FERC) regulates rates for transmission of electricity in interstate commerce. States retain jurisdiction over rates for transmission used for retail sales by vertically integrated utility companies (those owning both power plants and power lines). The nation's transmission system has operated under this dual regulatory regime since the Federal Power Act was enacted in 1935.

When Congress passed the last comprehensive energy bill 13 years ago, one of the purposes of the electricity title was to encourage competition in wholesale electricity markets. Proponents believed that wholesale competition would benefit consumers through lower electricity prices. Since the Energy Policy Act of 1992, FERC has moved aggressively to foster wholesale competition by opening up the transmission grid to competitive electricity generators.

In 1996, FERC required utilities under its jurisdiction (basically shareholder-owned utilities) to provide open access to their transmission systems to all participants in wholesale electricity markets. In 2000, FERC issued a rule calling for voluntary formation of regional transmission organizations (RTOs) to control the operations of shareholder-owned utilities' transmission systems. These orders were intended to ensure that other players in wholesale markets could gain non-discriminatory access to shareholder-owned utilities' transmission lines to move their power to willing buyers.

The Transmission System Is Stressed

Our current transmission system was built primarily to ensure reliable, local electric service. It was not built to support competitive regional wholesale electricity markets that require moving large quantities of power across long distances.

The volume of actual transmission transactions has increased by 300 percent in the last five years. According to the North American Electric Reliability Council (NERC), transactions that could not be completed because of congestion on transmission lines increased almost eight-fold to more than 2,300 in 2004, compared with 300 uncompleted transactions in 1998.

EEI member companies, which own transmission as either vertically-integrated utilities, or as stand-alone transmission companies, are planning to make major investments in the nation's transmission infrastructure. But companies will not be able to follow through on those plans unless Congress enacts, and FERC implements, measures to help improve the investment climate by providing greater regulatory certainty.

From the mid-1970s through 1999, the growth in transmission investment did not keep pace with growth in the demand for electricity and capital additions in the generation sector. However, since 1999, we have seen signs of a reversal of this trend through growth in transmission investment by both vertically integrated companies and stand-alone transmission companies. For example,

- Annual transmission investment increased from $2.6 billion in 1999 to $3.6 billion[1] in 2000, $3.7 million in 2001, $3.8 billion in 2002, and $4.1 billion in 2003. Taken together, this represents a 12-percent annual growth rate over the period.
- Total circuit miles of high-voltage and extra-high voltage transmission lines (188 kV and above) owned and operated by shareholder-owned utilities increased 2.8 percent annually over the 1999-2003 period.

[1] Throughout this portion of this statement, all dollar values are expressed in constant 2003 dollars.

- In contrast, kWh sales of electricity from the nation's shareholder-owned electric utilities and affiliates to end-use customers increased only 0.7 percent annually over the same period.

This data confirms that the industry has begun to increase its transmission investment in excess of demand growth. However, to better understand whether this trend of increased investment will be sustained in the future, EEI members were recently asked to identify the level of planned transmission investment in their capital budgets over the 2004-2008 period.

The results show that member companies have preliminary plans to invest $28 billion over the 2004-2008 period, as compared to the $18 billion in recorded investment over the 1999-2003 period. Without question, shareholder-owned utilities are poised to make substantial investments in transmission infrastructure over the next five years. However, those investment plans are dependent upon greater legal and regulatory certainty. Congress must act now to help ensure these investment plans reach fruition.

While investment in transmission systems has begun to increase, the new transmission lines being built primarily are to help serve a utility's local customers and to connect new power plants to the grid. The level of investment in the long-distance, high-voltage wires that move electricity around and between regions of the country is not keeping pace with the growing demands being imposed on the system.

Significantly, the number of circuit miles of high-voltage and extra-high-voltage transmission lines (188kV and above) owned or operated by shareholder-owned utilities has grown by only 2.5 percent annually since 1999. These are the so-called "trunk line" facilities that are so critical for moving electricity around and between regions of the country. If these trends in transmission congestion and construction continue, they will inevitably undermine

the consumer benefits of wholesale competition and could even render it more difficult to maintain the reliability of the system.

Transmission Reforms in H.R. 6, the Energy Policy Act of 2005

Reliable delivery of electricity to consumers remains paramount. And reliable electric service and robust regional electricity markets depend on strong transmission systems. H.R. 6, the energy bill passed by the House of Representatives, contains a number of important transmission reform provisions that would help to strengthen our nation's transmission infrastructure. These provisions include the following:

- **Mandatory Reliability Rules:** ***Establish mandatory reliability rules on all market participants, with FERC oversight.***

Today's electricity market requires a mandatory reliability system, with enforcement mechanisms. The August 2003 blackout was a dramatic reminder of the need for mandatory reliability rules.

The electric industry and the North American Electric Reliability Council (NERC) are addressing the immediate problems that led to the August 2003 blackout. These include:

- Adding new audit programs;
- Disclosing reliability violations and results of audits;
- Strengthening existing reliability standards and enhancing compliance with reliability rules;
- Improving operator training; and,
- Enhancing vegetation management practices around power lines.

The industry's actions are consistent with the recommendations of the U.S.-Canada Power System Outage Task Force, which studied the blackout and released its final report in April 2004.

All participants in wholesale electricity markets should be subject to mandatory, enforceable reliability standards that are developed or approved by an electric reliability organization, with oversight and enforcement by FERC. Since early 1999, a broad group of stakeholders, including EEI and many of its individual member companies, have supported legislation to achieve this goal. The version of the language that we support was in the energy bill conference report in the 108th Congress. We strongly urge the inclusion of these provisions in an energy bill, without the budget limitations contained in this year's House-passed version of H.R. 6.

- **Transmission Pricing Reform:** ***Require FERC to reform its transmission rate policy in a manner that will provide greater certainty to investment in the transmission system.***

Capital investments in upgrades and new transmission lines must increase to help strengthen the transmission grid. Furthermore, increased transmission investment can help reduce electric bills.

We believe that FERC and the states should utilize innovative transmission pricing incentives to attract the capital necessary to fund needed investment in transmission. Transmission pricing should (1) allow for cost recovery of fixed and variable costs and a reasonable return on transmission investment; (2) eliminate the pancaking of rates within a regional transmission organization (RTO) region; (3) ensure that cost responsibility follows cost causation; (4) minimize the potential for cost shifting; (5) permit the recovery of all prudently incurred transition costs, and (6) promote efficient siting of new transmission and generation facilities.

We support the FERC pricing and transmission technologies provisions in H.R. 6, particularly incentives to expand transmission infrastructure, such as the recovery of costs for planning and pre-certification of transmission facilities and the recovery of costs through

construction work in progress for transmission facilities. While some of these incentives are targeted specifically to transmission providers that participate in RTOs, we believe their benefits should be expanded to include all transmission providers. Likewise, we encourage the states to assure that utilities can recover their costs for investments for transmission under state regulation, with a reasonable rate of return.

According to a December 2001 FERC "Electric Transmission Constraint Study," transmission costs make up only 6 percent of the current average monthly electric bill for retail consumers. On the other hand, generation costs make up 74 percent of the average bill. By reducing transmission congestion, investments in new transmission will allow greater use of lower cost generation.

FERC estimates that a 20-percent increase (or $12.6 billion) in transmission investment would add only *87 cents* to an electric customer's average monthly bill. But, since increased transmission investment will help reduce congestion and enable lower cost power to reach consumers more easily, FERC anticipates that the net benefits to overall electric bills could be potentially quite large.

For example, FERC estimates that if the reduced transmission congestion resulted in just a 5 percent savings in generation costs, consumers would see more than a $1.50 decrease in their average monthly bills. If the generation savings from reduced congestion were 10 percent, the average monthly bill for consumers would drop by $4.00. So, a small increase in transmission investment can reap a much more significant benefit in lower generation costs.

In addition to investments to relieve congestion, investments in new technology to help improve the control and use of existing transmission lines are critically important to promote reliability.

In addition to assuring cost recovery, transmission pricing reform should assure that those who cause transmission investments are responsible for their costs. The energy bill conference report in the 108th Congress contained another very important transmission rate reform to assure that entities that cause transmission costs to be incurred will help bear their fair share of those costs. While not included in H.R. 6 this year, the "voluntary transmission pricing plans" section of last year's conference report recognized "participant funding" plans could pay for transmission upgrades and expansions so that transmission providers who are not currently members of RTOs or ISOs would have the same pricing flexibility that FERC allows in those organized markets. We support the inclusion of participant funding language in the final version of the energy bill in this Congress to provide an important option for transmission construction.

- **FERC Backstop Siting Authority:** ***Give FERC very limited backstop transmission siting authority to help site transmission lines in Department of Energy (DOE)-designated "national interest electric transmission corridors" if the proposed transmission line is consistent with the public interest and a state lacks the authority to site the transmission line or is unwilling to site the line within a certain time period.***

Regional electricity markets require a transmission siting process that has the ability to consider regional and even national needs. FERC has jurisdiction over rates for interstate transmission and wholesale electricity markets, but it currently does not have any authority over transmission siting to help ensure that there is sufficient transmission capacity to support those markets.

Even though transmission lines and natural gas pipelines serve essentially the same purpose – to move large amounts of energy across long distances – their siting processes are very different. Congress has given FERC the authority to site interstate natural gas pipelines, but individual states have jurisdiction over siting transmission lines. EEI would prefer that

FERC be given transmission siting authority equal to its authority to site natural gas pipelines, but Congress should, at the least, give FERC limited backstop siting authority to get the most critically needed transmission lines built in certain areas.

While traditional state siting processes will be adequate for most local upgrades to existing transmission systems, limited FERC backstop siting authority could be a critical aid in developing the more significant transmission infrastructure needed to support regional wholesale electricity markets. That's because most state siting laws do not recognize the role new entities, such as multi-state RTOs or independent transmission companies, will play in transmission planning and siting. In many states, these new entities are not even considered utilities under state laws and, therefore, are not eligible to obtain the necessary permits from states to build new transmission.

Before states will grant utilities siting permits, utilities typically must prove that the new facilities are needed. The determination of "need" often focuses on service to in-state consumers. Most state siting laws do not allow for the consideration of regional, or out-of-state, benefits of new transmission lines. If states consider only intrastate benefits and not regional benefits, they may have little choice under state law but to reject the proposed line, even if the benefits to the region are significant.

FERC has decades of experience in siting energy facilities. Since 1948, interstate natural gas pipelines have gone to FERC for certificates that grant them eminent domain authority. Hydroelectric developers have used this federal permitting process since 1920. Protection of the environment is a top consideration in FERC's processing of natural gas pipeline certificates. Under the National Environmental Policy Act, FERC is required to perform a comprehensive environmental analysis of all gas pipeline construction proposals.

H.R. 6 as passed by the House would require the same environmental protection process for any transmission line construction proposal.

H.R. 6 would give FERC very limited backstop transmission siting authority. This authority extends only to helping site transmission lines in "interstate congestion areas" designated by the Department of Energy (DOE) and only if states have been unable to agree or act within a year. We strongly urge its inclusion in the final energy bill.

- **Federal Permitting Reform:** ***Reform the transmission permitting process on federal lands by designating DOE as the lead agency to coordinate and set deadlines for the federal environmental review and permitting process.***

The unnecessarily complicated, time-consuming and difficult multi-jurisdictional federal permitting process to site energy facilities is another major impediment to building new transmission. It may be even worse for transmission facilities than any other energy project because long transmission facilities often cross federal lands within the jurisdiction of many different agencies and bureaus that simply do not coordinate well with each other. In some areas of the country, this is the principal impediment.

Problems with the federal permitting process include (1) a severely fragmented process, where each federal agency with potential jurisdiction has its own set of rules, timelines for action and processes for permitting; (2) the tendency by federal agencies to require multiple and duplicative environmental reviews; (3) a failure to coordinate with any state siting process; and (4) a lack of harmonized permit terms from one agency to the next.

The federal transmission permitting process needs to be coordinated, simplified and made to work with any state siting process. H.R. 6 accomplishes this objective by designating DOE as the lead agency to coordinate and set deadlines for the federal environmental and permitting process. In addition, DOE would be responsible for coordinating the federal process with any state and tribal process. A state where a transmission facility would be

located could appeal to DOE when a federal decision deadline has been missed or a federal authorization has been denied. To further facilitate siting, the bill sets deadlines for the designation of transmission corridors across federal lands. We strongly support these provisions.

- **"FERC Lite":** ***Ensure that all transmission providers must allow open access to their transmission lines to any third-party wholesale power seller.***

Government-owned utilities and electric cooperatives collectively own and operate about 32 percent of the nation's transmission system, but in some regions that figure is much higher.

In the Pacific Northwest, the federal Bonneville Power Administration (BPA) alone owns and controls nearly three-quarters of the region's high-voltage transmission capacity. The entire state of Nebraska and most of Tennessee are served by utilities that are not regulated by FERC, yet they are integrated into a multi-state transmission grid.

These transmission owners are not subject to the same level of FERC jurisdiction over transmission that applies to shareholder-owned utilities. As previously mentioned, under a 1996 rule (Order No. 888), FERC requires all shareholder-owned utilities to provide non-discriminatory open transmission access to any third-party wholesale power seller.

According to a December 2002 GAO report, "Lessons Learned From Electricity Restructuring," because of FERC's lack of jurisdiction over government-owned utilities and electric cooperatives

> FERC has not been able to prescribe the same standards of open access to the transmission system. This situation, by limiting the degree to which market participants can make electricity transactions across these jurisdictions, will limit the ability of restructuring efforts to achieve a truly national competitive electricity system and, ultimately will reduce the potential benefits expected from restructuring.

We believe that this bifurcated regulation of interstate transmission lines is ultimately unsustainable as the industry's structure continues to evolve. The nation's transmission grid is physically integrated. Electrons do not recognize boundaries between public and private transmission ownership.

We believe sound public policy to protect consumers would mean putting all utilities participating in interstate wholesale electricity markets under FERC's full "just and reasonable" requirements. At a minimum, EEI's member companies strongly support inclusion of an effective "FERC lite" provision in any electricity bill.

The "FERC lite" provisions of H.R. 6 would impose only open-access requirements on a limited basis, and only in the wholesale market. They would not force government-owned and cooperative utilities to open up their systems to retail competition. Nor would these provisions subject them to any other FERC requirements imposed on shareholder-owned utilities in wholesale markets.

- **Federal RTO Participation:** ***Clarify federal law to authorize federal utilities to join an RTO or independent transmission system operator (ISO) voluntarily.***

We believe it is essential to eliminate any legal uncertainty about whether federal utilities can delegate authority over their transmission systems to a RTO. In the Pacific Northwest, it will be impossible to form a successful RTO without participation by the Bonneville Power Authority. Federal utility participation is important to RTO formation in other regions as well. H.R. 6 includes a provision that explicitly authorizes federal utilities to join RTOs.

- **PUHCA Modernization:** ***Repeal and modernize the Public Utility Holding Company Act (PUHCA) to help attract significant amounts of new investment capital to the industry, which will help strengthen the transmission infrastructure.***

We also believe that repealing PUHCA will help attract significant amounts of new investment capital to the industry. By imposing limitations on investments in the regulated energy industry, PUHCA acts as a substantial impediment to new investment in energy infrastructure, keeping billions of dollars of new capital out of the industry. As a result, we believe that this outdated statute has contributed to the failure of the electricity infrastructure to keep pace with growing electricity demand and the development of regional wholesale markets.

PUHCA imposes outmoded restrictions on the business activities of electric and gas utility holding companies and acts as a barrier to efficient competition. Furthermore, it prevents consumers from reaping the economic and efficiency benefits that can accrue from having access to products and services offered by companies of national scope and scale.

For instance, under PUHCA, a registered holding company must confine its operations to a "single integrated public utility system" (with certain exceptions) located in a "single area or region" of the country. This outdated "physical integration" requirement prevents utility companies from investing capital outside their geographic region, shutting off a valuable potential source of domestic capital investment in needed energy facilities and, ironically, fostering the very kind of concentration in regional energy markets that FERC is trying to reduce.

Even without PUHCA, utility customers and investors are protected. Retail customers are protected fully by state regulation or oversight of retail electric service, and wholesale customers are protected by FERC oversight and regulation. Utility companies have long been, and will continue to be, among the most heavily regulated businesses there are.

H.R. 6 contains provisions that would repeal PUHCA and transfer consumer protections to FERC and the states. These provisions are similar to PUHCA repeal language

that has been included in every major electricity bill considered by Congress over the last decade, and which have been endorsed by every Administration—Republican and Democratic—since 1982. They should be included in the energy bill again this year.

- **Accelerated Depreciation:** ***Provide for enhanced accelerated depreciation for electric transmission assets, reducing the depreciable lives from 20 to 15 years, similar to the tax treatment governing other major capital assets.***

The U.S. tax code should be amended to provide enhanced accelerated depreciation (from 20 to 15 years) for electric transmission assets, similar to the tax treatment governing other major capital assets. Currently, transmission assets receive less favorable tax treatment than other critical infrastructure and technologies. Accelerated depreciation for transmission will help increase investment in, and strengthen, our energy infrastructure.

Conclusion

Congress needs to finish the job and pass an energy bill as soon as possible to help promote fuel diversity, improve energy efficiency and conservation, provide regulatory certainty in energy markets, and encourage investment in critical energy infrastructure. We urge Congress to adopt an energy bill that includes the transmission provisions contained in H.R. 6.

Mr. ISSA. Thank you, Mr. Owens.

We now turn to Dr. Mark Cooper, an author of many books and writings and a scholar. Dr. Mark Cooper is director of research, Consumer Federation of America, where he is responsible for energy, telecommunications and electronic policy analysis. Dr. Cooper is author of a book, "Equity in Energy," and has published numerous articles on energy policy and deregulation over the last 20 years.

Dr. Cooper received his Ph.D in sociology from Yale University, a Masters degree in sociology from the University of Maryland, and a Bachelors degree in English from the City College of New York.

With that, I very much look forward to hearing parts of your written testimony and anything wlse you may be willing to give us that is not yet included in your written statement.

STATEMENT OF DR. MARK COOPER

Mr. COOPER. There is always a tendency to just throw them away and respond to what went before because I have a rather different point of view, but let me sort of lay the base by explaining why we view the electric utility industry rather differently from the market philosophy you have heard heretofore. Then I will try and go through about 10 points at which we disagree.

Frankly, the failure of Congress to pass the legislation the last couple of years has not troubled us a great deal because bad legislation is worse than no legislation. We don't think that the legislation will do us a great deal of good.

I want to start with a simple observation. I commend the committee for focusing on the important point here, the reliable supply of electricity and casting a very broad net, because the framework of the letter invited me to go where I thought I needed to go to make my points.

Electricity is like oxygen in the 21st century. The way I like to get my audiences to understand this is the "E" in e-commerce stands for electronic. If the electrons don't flow, all the gee-whiz digital gadgets we love won't work. This is the foundational service in our society. In fact, we believe that reliability is a public good. The transmission system is a commons in the following sense.

The benefit of reliability is shared. Once people are hooked to the grid, it is hard to exclude anyone from enjoying the benefits of the reliability that is provided to the group as a whole and is nonrivalrous. That is, the fact that I get the benefit of reliability does not deny my neighbor the benefit of reliability. In that sense, it is a classic public good. But there is more than that.

Electricity has massive positive externalities. You heard the numbers. A few days' blackout cost $4 billion to $6 billion. That is the external value of electricity. There are also severe negative externalities with respect to building these facilities, so people do resist having lines built through their neighborhoods because there are environmental, health, and property values that are undermined by these facilities. This is a legitimate source of debate between people about the private value of transmission versus the external negative values that it imposes on people.

We firmly believe that as long as you try and take this public good and commodify it, this infrastructure, you will in fact restrict

the supply of reliability and undermine the public benefits that it can provide. So we see critical public values here in electricity. The law says it is affected with the public interest. It is a public good in its infrastructure, it relies on public resources, it demands public participation and cooperation between all these many entities that must make the system work.

I believe that we had the best electric utility system in the world precisely because we found the way to balance the public obligations with the private incentives, the social responsibility, and the private profit motive. We believe irrational exuberance for deregulation in the 1990's undermined that important balance.

Electricity is not a commodity that can be easily sold in the marketplace on a spot market basis, and we have seen that in the last 10 years. It is not shirts or shoes. You can't build them in Taiwan, transfer them to Brooklyn and put them in a warehouse for a year and wait to sell them. It is not a store-bought commodity. It doesn't behave well as a commodity market, and therefore, we have to treat it very, very differently.

The cost of capital in this industry, if you try and treat it on a merchant basis, goes through the roof because it needs a very long term perspective, but the merchants want to recover the costs on a very short term basis. You have heard about accelerating depreciation to 15 years. This is for facilities that will last 30 and 40 years. When I studied economics, the idea of financial accounting was to match the financial life to the economic life because that is what keeps things in balance. These are assets that need long financial lives because they have long economic lives and they are shared facilities.

As we look out at the experience of deregulation, we understand that restructuring puts stress on the grid. You heard some of the reasons here: a dramatic increase in the number of transactions, a dramatic increase in the complexity of transactions, increased difficulties of coordinating these sales, and contracts which were not what the system was built to do.

It is a physical system, intending to move electrons, and electrons are the most nasty little beings in nature on which we depend. First of all, they go where they want, the path of least resistance; when they arrive under the wrong circumstances, they actually do a great deal of harm. In the end, the engineers are going to tell what is supposed to happen, not the market transaction. So we have wasted a tremendous amount of effort and energy in trying to build transactions on top of the physical system.

This leads us to a very different view of how to deal with the transmission system. It needs to be affected deeply at its core, its root has to be in the public interest, not in the maximizing of profits and markets transactions. When we look down the list of things, you have heard about what needs to be done. We need long term, integrated resource planning around these facilities, that is a comprehensive, rigorous approach. We need a study of the grid to figure out exactly which facilities need to be built.

We don't need the marketplace to figure out where we need to build facilities; the engineers know exactly where to build facilities. In fact, we can move that around if we want, but the simple, phys-

ical nature of the system dictates in the end. We don't need to have the marketplace to discover that mechanism.

Frankly, every time we amend the Public Utility Holding Company Act, a consumer pays the price. Enron lost its Public Utility Holding Company Act exemption about 2 years after the disaster in California and, in fact, if they had never been given it, the consumer would have been better off.

The Public Utility Holding Company Act has a simple purpose, to keep utilities focused on their central task, which is providing electrons to consumers, to not get distracted with other businesses, to not get distracted with maximizing profits. In California, we learned a lesson. Electric utilities worry about keeping the lights on. Merchant generators only worry about getting paid and maximizing profits. When the lights went out, we have now discovered they were joking in their control rooms about the pain being imposed on people. We cannot run the system that way. The Public Utility Holding Company Act went a long way to protecting us from those difficulties.

Ultimately, we believe in open access systems, but the problem is not with governmental entities who are in fact created to promote solely the public interest. We think the problem has been with the investor-owners who have used their control over the grid to prevent the flow of electrons.

On each of these points we have a rather different view which arises from a fundamental difference of opinion about how we need to organize this sector. The primary core of the electric utility industry, the transmission grid, is not a market, it is a commons. It is a public good and that needs to be the way it is designed, thought about and administered.

Thank you.

[The prepared statement of Dr. Cooper follows:]

Consumer Federation of America

STATEMENT OF
DR. MARK COOPER
DIRECTOR OF RESEARCH,
CONSUMER FEDERATION OF AMERICA,

On Behalf Of

THE CONSUMER FEDERATION OF AMERICA

and

CONSUMERS UNION

on

ENSURING THE RELIABILITY OF THE NATION'S ELECTRICITY SYSTEM

Before the

SUBCOMMITTEE ON ENERGY AND RESOURCES
COMMITTEE ON GOVERNMENT REFORM
U.S. HOUSE OF REPRESENTATIVE

June 8, 2005

Mr. Chairman and Members of the Committee,

My name is Dr. Mark Cooper. I am Director of Research at the Consumer Federation of America (CFA).[1] I also appear today on behalf of Consumers Union.[2] We have been deeply engaged in the debate over electricity restructuring and deregulation for almost two decades. I have submitted to you a list of appearances I have made before Congress and Federal Agencies, as well as state regulatory commissions, on this issue. I have also submitted the studies and analyses of the faltering efforts to deregulate electricity, which we have conducted since 1997, soon after the first radical restructuring laws were passed in a couple of states. Every six months for the last twenty years we have been cautioning policymakers not to experiment with electricity or treat it like any other commodity.

I greatly appreciate the opportunity to appear before you today to present the residential ratepayer view of the federal role in the ongoing troubles of deregulated electricity markets. It is about time that the voice of the little guy and gal, the people who pay the bill, is heard on this matter.

I also commend the Committee for focusing on the central purpose of the electricity network – to provide reliable power for a 21st century information economy – and for casting a broad net in its inquiry. Thus this hearing inquire into the purpose of "Ensuring the Reliability of the Nation's Electricity System." To conduct such an inquiry, as the Committee notes, one must "assess the status of the electricity system within the current regulatory environment, challenges to investment in transmission infrastructure and capacity, and how these issues must be addressed as part of a comprehensive energy policy."

In my remarks today, I will take just such a broad view, particularly in light of the fact that two-thirds of the states have figured out that deregulation is a road to ruin. They have had the good sense not to go down the road of electricity restructuring and deregulation or have decided to change course after being badly burned by deregulation and restructuring. It is time for federal authorities to change course too, or at least to pause for a substantial period while they rebuild the physical and institutional infrastructure of the electricity gird.

The Unique Nature of Electricity

Public Goods and Public Values: The reliability of the nation's electricity grid cannot be thrown to market forces. Reliability is a public good. The transmission system is a commons. The benefit of reliability is shared. Once you are hooked to the grid, it is hard to exclude anyone from enjoying the benefits of reliability. The benefit I get from reliability does not diminish the benefit my neighbor gets and all those who are hooked to the grid benefit together. Keeping the lights on has huge positive externalities and building these projects has large negative externalities. As long as policymakers try to commodify this infrastructure, they will restrict the supply of reliability and deny the public its full benefits.

For twenty years I have been delivering this message to policymakers,[3] backed up with detailed analysis of the travails of deregulation.[4] Last year, the Cato Institute saw the light and flip-flopped on the issue.

> In regulated markets, it is usually quite easy for economists to demonstrate that consumers do not benefit from regulation, but unlike many other markets, electricity markets have characteristics that are difficult to manage through property rights and contracts. Accordingly, regulation has at least the possibility of a plausible rationale.[5]

Public values deeply affect electric and telecommunications utilities, which are quintessential infrastructure industries. The public values involve the public good nature of infrastructure, the proper use of public resources, public participation and cooperation, as well as public responsibility and accountability of those providing the service. This industry is "affected by the public interest" and requires a proper balance between public obligations and private incentives. I believe that the genius of the American system in the 20th century was to find a way to impose social obligations without undermining the profit motive.

Capital-intensive assets in these industries are long-lived, sunk, and inflexible parts of an integrated network. Their value is to the network as a whole and not easily allocated. Long-term, public commitments are needed to support these infrastructure projects. Economics of scale and scope result in very small numbers of facilities and little head-to-head competition. The unique characteristics of electricity mean market forces will never be adequate to keep supply and demand in balance.

Demand: Electricity is a necessity that has no substitute on the demand side in the short-term. Electricity is like oxygen to the Twenty-First-Century economy and way of life. Denial of access to this service results in deprivation; access based only on price and the ability to pay results in discrimination.

Demand is highly sensitive to weather, which can create severe peaks in demand. Demand is not only driven by weather, it is also geographically focused. Typically, many consumers can be affected by the same factors that increase demand at the same time. This makes the demand on local and regional networks and commodity markets subject to extreme peaks and valleys.

Moreover, for the vast majority of consumers and over the relevant range of economic values, reliability is an externality. This is a network industry in which the fate of each depends upon the actions of all. Individuals cannot create their own reliability or capture its full value in private transactions.[6] Economic and institutional barriers make it difficult for small consumers to freely self-supply or to bargain effectively for supplies. Allocation of costs and benefits in this shared network is a difficult and ultimately arbitrary task.

In sum, the price elasticity of market demand is very low in the short-term and low in the long-term. The demand side cannot be counted on to discipline abusive pricing behavior.

Inflexibility of demand and its sensitivity to weather renders the market volatile and vulnerable to abuse.[7]

One of the key factors that drive prices up is the need of utilities to ensure the physical availability of supply. Imposing an obligation on utilities to serve creates an uneven bargaining context. Entities with the obligation to serve are at a disadvantage to those who simply produce or transport electricity. Consumers have generally supported this fundamental principle of utility service because electricity service is just too important to be unreliable.

The low elasticity of demand is now recognized as the most critical factor in rendering the market volatile and vulnerable to abuse. When demand is inelastic, consumers are vulnerable to price increases, because they cannot cut back or find substitutes for their use of the commodity. When the most important market force in disciplining market power, demand elasticity, is as low as observed for electricity, there are many opportunities to exercise market power.

Supply: Electrons are among the most demanding, ornery little beings in nature. They go where they want and if they arrive under the wrong circumstances, they can do serious harm. The physical system demands perfect balance on a real-time basis. Because of the basic physics of electricity, the production, transportation and distribution networks are extremely demanding, real-time systems. Electricity cannot be stored economically. The system requires perfect integrity and real-time balancing much more than other services and commodity systems do. The infrastructure to produce, transport, and deliver electricity is extremely capital-intensive and inflexible.[8] It takes a long time to build and bring power plants and transmission lines into service, and they last a long time. Thus, the ability to expand supply in the short and medium term is severely limited.[9] This is the critical factor that creates volatility and vulnerability to the abuse of market power on the supply side.[10]

Empirical studies show that strong economies are achieved by coordinating electricity supply and demand. Before restructuring, the electricity industry was a reasonably well-run, complex, integrated network that was under some stress.[11] Creation of markets for electricity services leads to a huge growth in the number of transactions conducted every day and creates heavy administrative requirements. An entity that once maintained real-time balance as an insulated operation that could oversee its own supply, demand, and delivery, must now contract to achieve real-time balance simultaneously in five, six, or seven different markets over broad geographic areas.[12] This has proven a daunting task[13] that consumes substantial resources.[14]

Accidents have a special role in market networks such as these. Because of the demanding physical nature of the network, accidents are prone to happen. Because of the volatile nature of the commodity, accidents tend to be severe. Because of the integrated nature of the network and demanding real-time performance, accidents are highly disruptive and difficult to fix. To keep things in balance, the system needs either plentiful reserves close at hand, ample amounts of transmission capacity readily available to move abundant supplies

from far away, or a great deal of load that can be quickly shed. Most electricity markets do not have those luxuries today,[15] or any chance of acquiring them any time soon.

The interstate highway system for the movement of electrons is inadequate and was not designed to handle market transactions.[16] Transmission capacity is constrained and extremely difficult to expand for environmental and social, not economic, reasons.[17] Getting approval to site new transmission lines is extremely difficult because of the negative impact on public spaces and concerns about public health. Similar constraints on the availability of distribution exist.[18] Wires are difficult to repair or replace in response to outages.[19] This places a premium on flexibility of supply and reserve margins, but neither of these is well-accommodated in the industry.[20]

In sum, the elasticity of supply is low. Short-term supply responses are constrained by the difficulty of storing electricity. Provision for reserve margins is uncertain in a competitive market because the provision of reserves is unattractive to business interests, unless peak prices are extremely high. Consequently, electricity markets free of reserve planning and coordination may be chronically tight or subject to extreme price instability.

Weak Market Forces Make for Bad Markets: The most important market forces are demand and supply elasticities—the ability of consumers to cut back or shift their demand for something and the ability of producers to increase their outputs in response to price increases. If these elasticities are too small, market forces are weak and the exercise of market power becomes more likely. Firms raise prices to increase their profits because they do not lose many sales to competitors, or because consumers lack alternatives. This is the reality of the electricity industry. As a result, deregulation or restructuring turns supply into a strategic variable.[21]

The inelasticity of supply gives rise to a second deviation from a typical competitive market, excessive scarcity rents. An economic rent is "a payment to a factor in excess of what is necessary to keep it at its present occupation."[22] More importantly, "in perfect competition, no rents are made by any factor, because changes in supply bid prices of inputs and labor down to the level just necessary to keep them employed."[23]

In economic theory, these sources of overcharges could be competed away if supply and demand elasticities are high and electricity markets worked well. In reality, because of the economic characteristics and social impacts of the electricity industry, supply and demand do not respond. The results are elevated prices and a transfer of wealth from consumers to producers that achieves little or no real costs savings or efficiency gains. Excessive scarcity rents accrue where changes in supply are slow or nonexistent,[24] exactly the circumstances that apply to electricity markets. The supply curve is so steep (supply is so inelastic) that the scarcity rents make up the vast majority of the market price, as demand moves toward the peak. Supply cannot respond to price signals, thus the owners of existing facilities just collect windfall profits.

Merchant Generators and Transmission Raising the Cost of Capital: The merchant generators and transmission owners claim that they must be compensated for the risk of development in an uncertain market, but that comes at the price of a much higher capital costs. Under market conditions there is no long-term security of demand, thus merchant generators demand higher rates of return and seek to recover their capital as quickly as possible. The result is to raise capital costs in the near term. A regulated utility approach to supplying electricity lowers the cost of capital. It lengthens the time horizon for investment, to match the lives of the assets. It brokers the relationship between the supply and demand sides to lower risk.

The implications of the increase in the cost of capital are striking. In analyzing "cost-plus" regulation for peaking facilities, the DOE (U.S. Department of Energy) focused its attention on a financial scenario in which merchant generators insisted on a 16 percent return on investment and a three-year cost recovery period (even though the facilities last twenty or thirty years).[25] In that analysis, a ten-year recovery results in a revenue requirement that is about half as large. The discussion shows clearly that very short cost recovery periods are driving industry behavior in critical areas, like bidding strategies and investment decisions.[26]

Regulated cost of capital results in lower costs for electricity.[27] Although the DOE analysis does not state enough of its assumption to consider the cost structure of a "utility" building peak plant, a financial analysis prepared by the California Energy Commission does.[28] Merchant finance raises the cost of capital by between 25 and 50 percent in these analyses. Merchant finance raises the costs of capital by almost 25 percent in the California Energy Commission view, because of a higher cost of equity. Shortening the cost recovery period, as the DOE does, drives capital costs up by another 20 percent. Reliance on more expensive equity (or more expensive debt) as is likely to be necessary for merchant plants, would drive the cost of capital even higher. Thus, the cost of capital for merchants is likely to be 50 percent higher than utility financed projects.

Contrary to the claims of some,[29] utility finance did not produce inadequate supply. In fact, if anything, the primary complaint against regulation was not that it resulted in too little capacity, but that it resulted in too much.[30] Regulators, who took the job of keeping the lights on very seriously, tended to authorize the building of too much capacity.[31] Primarily concerned with profit and not caring whether the lights go on, merchant generators are likely to build too little and charge much more for what they do build.

Striking the Right Balance Between Public Values and Private Incentives

Because public policy recognized that these industries are "affected with the public interest" almost from their inception a century ago, the United States developed a uniquely pragmatic approach that blended private and public interests. Unlike most other capitalist countries, where state monopolies provided these services, we relied primarily on private capital that was subject to direct oversight by state utility commissions. Utilities were granted franchises to serve in specific areas, which allowed them to finance projects with a low-cost,

long-term mix of debt and equity. In exchange, they shouldered public responsibilities like the obligation to serve all comers on demand, a commitment to "keep the lights on" or ensure the dial tone to a high level of reliability by building capacity, and a duty to interconnect on "just, reasonable and nondiscriminatory rates, terms and conditions."

"Public ownership" was used to meet specific needs in parts of the country where private capital would not go and to provide a benchmark comparison between service areas. It was kept close to the people through municipal or direct consumer ownership, which prevented the growth of entrenched national bureaucracies. These segments of the industry, which avoided being swept up in the deregulation frenzy, have fared much better than the rest of the industry.

This pragmatic, diverse approach exhibited inefficiencies. Nevertheless, the balance between public and private was critical to ubiquitous, affordable, and reliable service. The result was the best utility sector in human history.

While economic theory could find ways to make these utilities better, economic reality proves the core characteristics are too powerful and important to fool with. Deregulation did just that, imposing market transactions and encouraging competition where vertical integration and cooperation are more efficient. The destabilizing effects of deregulation emerged first and worst in the competitive electricity and telecommunications sectors because these utilities require long-term perspectives and public obligations that are ill-suited for the "one size fits none" commodity market structure that policy makers imposed on them in the 1990s. Policy makers tried to force people to shop in the market for innovative utility products, when reliable, affordable service was all they wanted and really needed. "Deintegration" quickly turned into disintegration because capital and commodity markets would not support the public functions served by these industries.

Deregulation undermined the long-term perspective needed for funding and stability of utilities, resulting in a dramatic increase in the cost of capital. Both electricity and telecommunications are "wires" industries, dependent on public rights of way and use of common resources (air, water, and airwaves). Deregulation underestimated the need for management of these public assets and bottleneck facilities. Deregulation let the lights go out and removed the obligations to provide just, reasonable, and nondiscriminatory access to vital networks, imposing substantial disruption costs on the public. Deregulation short-circuited the cooperation (seamless interconnection and smooth operation) necessary to run highly complex, integrated networks, thus raising transaction costs. Deregulation has not produced transparent, dependable sources of information, making it difficult to gather and share information on network operations and conditions, making management arduous and less efficient. In short, deregulation increased costs by raising the cost of capital, creating excessive scarcity rents, increasing transaction costs, and increasing reserve requirements.

Even the Cato Institute Finally Understands Electricity: Cato has discovered that the grid is a public good. In economic jargon, it provides the stage for a comedy of the commons. For example, the alternating current (AC) grid is a "commons." [32]

> Power added by any generator on an AC transmission system follows all paths but favors those with least resistance rather than the shortest distance between generator and customer. Thus, bilateral contracts between any willing seller and buyer of electricity affect all other buyers and sellers within each interconnected system in ways that are not captured by prices—the textbook definition of externality (6).
>
> Moreover, transmission additions confer benefits across all generators and consumers on the grid and thus have public good characteristics. The development of property rights and prices that internalize those characteristics is very difficult. (6)

Demand elasticity is extremely low.

> Market forces, it was hoped, would introduce marginal-cost pricing and as a result reduce peak demand, increase off-peak demand, and reduce the needless political fighting (most notably, the eternal fight over more supply versus less demand) that inevitably arises in electricity markets because of the absence of prices as a signaling device. (3).
>
> Prices in San Diego were free of all control from July 1999 though August 2000: a doubling of prices resulted in a demand reduction of 2.3 percent, an extremely disappointing response.
>
> Even though demand does respond to price, many observers have concluded that demand responsiveness is too low, and, therefore, price spikes would be too high for too long in a truly deregulated environment with tight supplies.

Cato has discovered the problem that utility assets create because of their long-term fixed nature. The problem that results is one that frequently afflicts common pool resources, a tragedy of the anti-commons:

> [I]n an unregulated world, the relations between electric firms and consumers would likely be governed by long-term contracts because the dedicated nature of electricity assets implies that each side can "hold up" the other.
>
> In short, the weakness of the private solution is the inability of investors to capture the full benefits of their investment. (7)

Administrative challenges strain the grid:

> Although the blackout was not caused by market forces, it is likely that the increased loads and flows across a transmission grid that has experienced little new investment is causing greater stress upon the hardware, software, and human beings that are critical components of the system. (4)

Supply-side scarcity rents are extreme in this industry:

> In unregulated electricity markets, then, marginal sources of electricity – such as high cost generators typically in operation only during the peak-demand periods – would need to earn at least a normal return. That implies that those facilities with lower marginal costs whose supply is limited… would receive payments in excess of marginal cost (and a normal return) in an unregulated market. (5)
>
> If we are correct, this implies that gains to trade not occurring under the current balkanized system are much smaller than many observers believe. Accordingly, the fight between the old regime and a restructured regime (that is, the case for a transmission-intense versus balkanized system) is a fight about wealth rather than efficiency. (6)

The authors also discover political economy.

> This is why low-cost states vigorously resist a national integrated electricity market – it would allow their electricity to go to the highest bidder rather than to those who happen to reside within an electric utility's current service territory.
>
> State decision makers understandably resist using ratepayer dollars to pay for investments that will primarily help parties outside the state. (4)

Deregulation Increases the Demands on the Transmission Network and Decreases the Capacity of The Grid

Given the characteristics of electricity, we have long doubted the benefits of deregulation; these doubts apply with special force to transmission. Investment in these facilities is constrained by social concerns. There is no prospect of competition in transmission and the physics of electron flows leave little room for market transactions to improve on engineering decisions. That is why two major government studies in the past couple of years and one by the South Eastern Regulatory Utility Conference[33] have all reached the same conclusion: there are few efficiency gains to be made by creating regional transmission organizations.

Moreover, this analysis can be used to pinpoint numerous economic and operational mechanisms through which electricity restructuring and deregulation increased pressures on the nation's electricity transmission network:

- A dramatic increase in the number and complexity of transactions, which the system was not designed to support.
- Difficulties of coordination and planning as competition and contracts replace vertically integrated operational and administrative decisions.
- Disincentives to invest in transmission because the private interests of facility owners conflict with the shared, public nature of the transmission grid and to

spend on maintenance because of profit pressures and the perceived competitive disadvantage associated with spending on a system shared with potential competitors.

- Increasing needs for excess capacity to cope with the market manipulation problems that plague electricity markets and to dampen price spikes that result from trying to treat electricity like a commodity.
- Failure to account for the social and environmental constraints on increasing transmission capacity and provide a framework for comprehensive planning that integrates alternative approaches, like energy efficiency and local (distributed) generation (such as co-generation, etc.)
- Deregulation certainly does contribute to stress on the system, making accidents more likely, more severe and more difficult to respond to.

Increasing the Number of Transactions: Creation of markets for electricity services leads to a huge growth in the number of transactions conducted every day and creates heavy administrative requirements.[34] Over the past decade, the number of traders increased over 50-fold; the quantity of electricity traded increased several hundred times.[35] There were also complications of financial and ownership relationships between entities which made managing those transactions a difficult and costly task.[36] A system operator requires significant resources raising the total cost of operating the system, as those costs are included in the cost of each transaction. The complexity of scheduling power delivery for multiple generators and retailers also adds costs to the system.[37]

In addition to the administrative transaction costs and managerial functions are facilities' costs. Demands on network facilities increase as a result of the wide range of transactions taking place. An increase in the number of transactions requires costly improvements to the transmission system in order to ensure reliability.

Reliance on financial relationships, rather than physical relationships, adds another problem.[38] Market participants have discovered that they cannot count on firm financial transactions and that they are subject to what they perceive to be arbitrary declarations of emergencies or contractually correct, but extremely disconcerting actions by merchants and utilities.[39]

Increasing Difficulty Of Coordination: The critical coordination and integration functions performed by vertically integrated, non-competitive firms that are essential to the operation of the electricity grid become more difficult as utility service is de-integrated and competitive transactions expand.[40] These functions are further undermined by breaking the industry into competing component parts.

One of the central activities of electric utility monopolies is to balance load — to aggregate customers who use electricity at different times of the day or year. By bringing together customers with dissimilar load patterns, utilities are able to use their facilities more

fully — to balance periods when some customers are off line with other customers who are on line. Market participants do not have an incentive to cooperate. Under deregulation, sellers and buyers seek the best deal for themselves and will not necessarily consider the needs of balancing and coordination.[41] They may withhold capacity and misreport information.[42] The failure of the Federal Energy Regulatory Commission to investigate the price spikes of 1998,[43] its belated recognition of the massive abuses in California,[44] and its inability to come to grips with the problem,[45] not to mention the ongoing scandal in natural gas pricing, demonstrate the folly of relying on after-the-fact investigations of abusive market transactions.[46]

Moreover, the rules for allocating scarce transmission resources during times of stress have not been worked out. In a competitive market, some entities gain by hoarding transmission capacity—in other words, reserving more transmission capacity than is actually needed to move that firm's power to end use customers. As a result, transmission markets may appear more constrained to buyers than they are in real physical terms.[47] This type of market-driven behavior, interacting with real, physical transmission constraints, makes it difficult to determine the true physical condition of the transmission system.

Thus, we have a new market in which a multitude of complex transactions are being made. One of the most important requirements for coping with this new market situation would be good information. Unfortunately, such information is not available. There is simply no centralized, reliable source of information. Information is much more difficult to gather for system aggregators.[48] What is more, the information available may be unreliable. Brokers and facility owners, who seek to maximize profits and are the sources of information, may well have interests that would be served by skewing information in one direction or another.[49] After a decade of deregulation, the Federal Energy Regulatory Commission has yet to create an information system for assessing the status of the grid or even the actual price of electricity and natural gas being sold in the market.

Disincentives to Invest: Policymakers compounded all of the problems by rushing ahead with deregulation where transmission facilities were inadequate and not designed to support the transactions that policy makers were stimulating. The problem of inadequate capacity was immediately reflected in both the inability to move power between regions of the country and the existence of load pockets within regions.[50] The inadequacy of transmission is pervasive and widespread; policymakers were irresponsible to push deregulation ahead without first ensuring there was adequate capacity.

It is true that the problem became worse during the transition to deregulated markets as a number of factors interacted to create a disincentive to expand and maintain transmission assets.[51] Incumbent utilities, which were being stripped of their franchise territories, were reluctant to invest in transmission facilities while the rules were uncertain, but this is not simply a transitional issue. Since expanding transmission capacity would facilitate competition with electric utility merchants' own generation assets, it is not in their best, private interest, to do so. Merchants in the electric utility industry do not have an interest in building excess capacity and they bear none of the disruption costs if supply is interrupted.

Worse still, markets are sufficiently concentrated that gaming repeated auctions is a chronic problem.[52] They make more when markets are tight and they have certainly shown in California that they do not care if the lights go out.

Inadequate Incentive to Maintain Facilities: Facing greater pressure on their earnings, an easy way for formerly regulated entities to maintain profits was to cut back on maintenance. The tendency to scrimp on maintenance is not solely a function of the transition, however. Whenever competition is introduced into utility industries, a lowest common denominator mentality takes over. Investments in public obligations, like system-wide maintenance, are seen as imposing a competitive disadvantage so such activities go begging.[53]

In theory, in a competitive market, poor service would induce customers to switch to different suppliers. In practice, there has been little switching in electricity generation markets, where competition was supposed to be the most intense. It is very unlikely that there will ever be competition in the transmission and distribution facilities over which competitively generated electricity was supposed to flow. The notion that multiple sets of electricity wires will compete for customers or business is fanciful at best. The burden of inadequate service and poor quality falls on the public, which as consumers, has no choice.

Increasing Needs for Increasingly Expensive Excess Capacity: Reserve margins and excess capacity emerge as critically important factors for maintaining system reliability and for disciplining market power. In a restructured industry, keeping the lights on involves two problems, not one. Not only must the electrons be available, but the consumer must also be able to afford to flip the switch.

Provision for reserve margins is uncertain in a competitive market because the cost of provision of reserves is unattractive to business interests, unless peak prices are extremely high. Merchant generators also demand higher rates of return and shorter payback periods, further increasing costs.[54] Consequently, electricity markets free of reserve planning and coordination may be chronically tight or subject to extreme price instability.

Based on restructured market performance, reserve margins need to be well above traditional levels of 15 to 20 percent and perhaps as much as 30 percent to prevent the abuse of market power.[55] In addition to the normal operating reserve that the industry has required, there must also be a competitive, or economic, reserve whose primary function is to restrain pricing abuse and instability.

Social and Environmental Constraints on Transmission Capacity: The fundamental problem with transmission is not inadequate economic incentives to invest;[56] the primary problem is resistance to the building of additional transmission lines for environmental, health and safety reasons. The social cost of transmission facilities is far greater than their economic costs. For this reason, scarcity of transmission in the economic sense is likely to be a permanent part of the industry landscape.

Moreover, the benefits of these shared transmission facilities that support the overall network are difficult to align with costs. The problem is both geographic, determining which benefits accrue to which areas, and intergenerational, recognizing that different parts of the system may benefit differently from the same investment across time. Today's investment to serve a long distance transaction may be a core part of tomorrow's system serving native (local) load. The shared nature of the facilities makes it more difficult for private investors to recover their costs and to overcome the social resistance to the siting of facilities. The shared nature of the facilities across jurisdictions makes it more difficult to reconcile competing interests.

Such public investment is best carried out within the framework of a comprehensive plan. Yet, integrated resource planning is harder to implement in the deregulated model, if it is not abandoned altogether.

Conclusion and Recommendations

The New Deal laws that governed electricity and telecommunications for 60 years (the Public Utility Holding Company Act (PUHCA) and the Federal Power Act) were heavily criticized as out-dated in the 1980s and 1990s. Recent events make these laws look far more reasonable.

PUHCA was designed to simplify ownership structure of electric utilities. Properly implemented, PUHCA would require simplified structures, examine accounting practices, review affiliate transactions, and restrict diversification by requiring direct functional relationships between activities.

The Federal Power Act enshrined the concept of just and reasonable rates based on cost, rejecting the concept of allowing monopolies to charge whatever the market would bear in the hope of inducing competition. It strove for universal service and focused incentives within strictly defined lines of business, providing more than adequate returns to induce investment in the provision of these basic necessities. It suppressed abuse and created a stable investment environment.

Misled by the effectiveness of this legislation, deregulation undervalued consumer and investor protections as well as the importance of smoothing out boom and bust cycles. Deregulators assumed that the correlation between the sharp increase in public interest obligations codified by the New Deal legislation and the subsequent growth in these industries was just a coincidence. However, there is growing evidence that they were wrong.

The success of electrification and deployment of telecommunications was largely accomplished in the half century after New Deal legislation established a national commitment to universal service in these industries. The evidence does not stop there. Take a look at the analysis published by the Cato Institute under the title *The Greatest Century that Ever Was: 25 Miraculous Trends of the Past 100 Years*.[57] If one looks closely at the figures, the title should have been *The Greatest Half-Century That Ever Was: How the 50 Years after*

the New Deal Transformed America. If one looks at improvements in public health, education, wealth, and welfare, it was the half-century after the New Deal that made the 20th Century the American Century.

For the past decade, policy makers and regulators in Washington, D.C., and the Northeast have spent a lot of time trying to make the new electricity markets work. At the same time, they have neglected to upgrade and maintain a reliable electricity transport system. Congress and the FERC should devote all of their energy to studying, strengthening and managing the interstate transmission system – to promoting the public interest, not the profits of merchant generators and transmission owners.

During the 1990s, stodgy "old economy" utilities, with their slow growing but secure, dividend-paying stocks, were reviled on Wall Street in comparison to the "sexy" paper returns of the dot-coms. Utility stocks reflected the economic environment that public policy had created for them, one founded on the principle that the infrastructure building blocks for the rest of the economy need stability and long-term commitments. Now that the bubble has burst, investors will flock back to a dull sector that offers a solid and stable total return provided that public policy rediscovers the principle that electricity and telecommunications are deeply "affected with the public interest" and restores the balance between private incentives and public interest in these industries. This analysis suggests that we need an explicit reorientation to public values, not a tweaking of rules governing private behavior in these sectors.

The failure to recognize the important role of the continuing monopoly in transmission resulted in the under-regulation of the wires segments of the industry. This is a highway system, not a market. It constitutes an essential, bottleneck facility with virtually no redundancy and is never likely to support head-to-head competition. Proposals to let the marketplace solve the wires problem will not succeed, given the market power that the wire "owner" would possess and the non-market barriers to expanding capacity. Profit maximization on the transmission system would only result in the abuse of market power and the creation of artificial scarcity rents. "Getting the prices right" from a monopolist's point of view for a bottleneck resource like transmission in a critical infrastructure network industry like electricity is not the answer to the problem of maximizing societal welfare.

Congress and FERC are headed in the wrong direction. Consumer Federation of America and Consumers Union recommend:

- Congress should not repeal the Public Utility Holding Company Act.
- Congress should pare back the Electricity Title of the Energy Bill to a reliability-only title. Both the physical and institutional infrastructure of the industry needs careful study and consideration.
- Congress should require a comprehensive survey of the national grid, since such a survey has not been conducted in forty years. It should identify the upgrades that are necessary for reliability and those whose primary purpose is to expand transactions.

- Congress should study the question of how best to establish standards and regulatory oversight over privately owned transmission lines. Voluntary self-regulation has been uneven and inadequate. Mandatory self-regulation is little better. More public oversight is necessary.
- Congress should examine new institutions that can reconcile the interests of the states and include representation of consumer interests. FERC's proposal for regional, quasi-voluntary institutions of nebulous authority and ill-defined rights and responsibilities is not a solution.
- Congress should require a framework for comprehensive planning that considers all alternatives. It should get serious about energy efficiency. It could also give a boost to local (distributed) generation, which has the double benefit of adding generation resources to the system while not using the long distance transmission lines, whose failure triggered the recent black out.
- FERC should abandon its Standard Market Design.

I appreciate the opportunity to appear today and look forward to working with the Congress to fashion an electricity policy the serves the public interest.

ENDNOTES

[1] CFA is the nation's largest consumer advocacy group, a non-profit association of 300 pro-consumer groups, with a combined membership of 50 million, founded in 1968 to advance the consumer interest through advocacy and education.

[2] Consumers Union is a nonprofit membership organization chartered in 1936 under the laws of the State of New York to provide consumers with information, education and counsel about goods, services, health, and personal finance; and to initiate and cooperate with individual and group efforts to maintain and enhance the quality of life for consumers. Consumers Union's income is solely derived from the sale of *Consumer Reports*, its other publications and from noncommercial contributions, grants and fees. In addition to reports on Consumers Union's own product testing, *Consumer Reports*, with approximately 4.5 million paid subscribers, regularly carries articles on health, product safety, marketplace economics and legislative, judicial and regulatory actions which affect consumer welfare. Consumers Union's publications carry no advertising and receive no commercial support.

[3] Cooper, Mark, Industrial Organization and Market Performance in the Transportation and Communications Industries: A Review of Current Theories and Empirical Applications to the Railroad, Electric Utility, Airline, Telecommunications and Oil Pipeline Industries with Hypotheses about Natural Gas Pipelines (Washington: Consumer Federation of America, January 1986); "Theory vs. Reality," paper presented at the Consumer Federation of America Utilities Conference, Washington, April 6, 1987); "Protecting the Public Interest in the Transition to Competition in New York Industries," The Electric Utility Industry in Transition (New York: Public Utilities Reports, Inc. & the New York State Energy Research and Development Authority, 1994); Residential Consumer Economics of Electric Utility Restructuring (Washington: Consumer Federation of America and Consumers Union, July 1998)

[4] Cooper, Mark, *Electricity Restructuring and the Price Spikes of 1998* (Washington: Consumer Federation of America and Consumers Union, 1999), *Behind The Headlines Of Electricity Restructuring* (Washington: Consumer Federation of America, 2000, *Reconsidering Electricity Restructuring* (Washington: Consumer Federation and Consumers Union, 2000), "Back To Basics In Analyzing The Failure Of Electricity Restructuring: Accepting The Limits Of Markets," paper presented at Energy Markets in Turmoil, Institute for Regulatory Policy Studies Illinois State University, Normal, Ill., May 17, 2001, *Electricity Deregulation And Consumers: Lessons From A Hot Spring And A Cool Summer* (Washington: Consumer Federation of America, 2001); *All Pain, No Gain: Restructuring and Deregulation in the Interstate Electricity Market* (Consumer Federation of America, September 2002), "An Economic Explanation of Why the West and South Want to Avoid Being Infected by FERC's SMD and Why Market Monitoring is Not an Effective Cure for the Disease," *SMD Market Metrics Conference*, Federal Energy Regulatory Commission, October 2, 2002, "Economics of Power: Heading for the Exits, Deregulated Electricity Markets Not Working Well," *Natural Gas*, 19:5, December 2002, *How Electricity Deregulation Puts Pressure On The Transmission Network And Increases It's Cost* (Consumer Federation of America, Consumers Union and U.S. PIRG, August 2003), "Recognizing the Limits of Markets, Rediscovering Public Interest in Utilities," in Robert E. Willett (ed), *Electric and Natural Gas Business: Understanding It! (2003 and Beyond)* (Houston: Financial Communications: 2003).

[5] Taylor, Jerry, and Van Doren, Peter. (2004). *Rethinking Electricity Restructuring*. Washington: Cato Institute, p. 6.

[6] It has now become apparent that the value of peak load reduction is far higher than the market clearing price at the peak. Marcus, William B., and Greg Russzon, *Cost Curve Analysis of the California Power Markets*, (Sacramento: JBS Energy, Inc., 2000), estimates the value of peak shaving at between 5 and 10 times the market clearing price. Borenstein, Severin, *The Trouble With Electricity Markets* (University of California Energy Institute, Program on Workable Energy Regulation, January 2001) (hereafter, Borenstein, *Trouble)*, uses an example in which the value of reduced demand is just under four times the market price. He argues that the ISO should capture this externality. The point is that it is highly unlikely that this externality will be internalized in direct, bilateral market transactions.

[7] Phillipovic, Dragana, *Energy Risk: Valuing and Managing Energy Derivates* (New York: McGraw-Hill, 1998), p. 3, cites a number of factors that distinguish energy from other commodities, but makes it quite evident that the need to physically consume the product on a real-time basis is the central factor.

[8] Gegaux, Douglas and Kenneth Nowotny, "Competition and the Electric Utility Industry," *Yale Journal on Regulation*, 10 no. 63, 1997; Gilsdorf, Keith, "Testing for Subadditivity of Vertically-Integrated Electric Utilities," *Southern Economic Journal*, 18 no. 12 (1995): Henderson, J. Stephen, "Cost Estimation for Vertically Integrated Firms: the Cost of Electricity," in M. A. Crew (Ed.), *Analyzing the Impact of Regulatory Change in Public Utilities* (Lexington, Mass., Lexington Books, 1985); Hirst, Erick and Brenda Kirby, "Dynamic Scheduling: The Forgotten Issue," *Public Utilities Fortnightly*, April 15, 1997; Kaserman, David L. and John W. Mayo, "The Measurement of Vertical Economies and the Efficient Structure of the Electric Utility Industry," *Journal of Industrial Economics*, 29 no. 5 (1991); Kwoka, John E. Jr., *Power Structure: Ownership, Integration, and Competition in the U.S. Electricity Industry* (Dordrecht, Boston:

1996); Roberts, Mark J., "Economies of Density and Size in the Production and Delivery of Electric Power," *Land Economics*, 62 no. 4 (1986).

[9] Hirst, Eric and Stand Hadley, "Generation Adequacy: Who Decides," *Electricity Journal* (October 1999) and Borenstein, *Trouble*, argue for market-based solutions to ensure capacity sufficiency on the basis of demand side responsiveness, not supply-side construction of reserves.

[10] Pirrong, Stephen Craig, *The Economics, Law and Public Policy of Market Power Manipulation* (Boston: Kluwer, 1996), pp. 10, 24, 59, 70, identifies storage and transportation costs, as well as low elasticities of demand as critical factors making market manipulation more likely.

[11] Mistr, Alfred E. Jr., "Incremental-Cost Pricing: What Efficiency Requires," *Public Utilities Fortnightly*, January 1, 1996; Oren, Samuel S., "Economic Inefficiency of Passive Transmission Rights in Congested Electricity Systems with Competitive Generation," *The Energy Journal*, 18 no. 1 (1997), "Passive Transmission Rights Will Not Do the Job," *The Electricity Journal*, 10 no. 5 (1997); Ostroski, Gerald B., "Embedded-Cost Pricing: What Fairness Demands," *Public Utilities Fortnightly*, January 1, 1996; Radford, Bruce W., "Electric Transmission: An Overview, *Public Utilities Fortnightly*, January 1, 1996; Volpe, Mark J., "Let's Not Socialize Transmission Rates," *Public Utility Fortnightly*, February 15, 1997; Bohi, Douglas and Karen Palmer, "The Efficiency of Wholesale vs. Retail Competition in Electricity, *The Electricity Journal*, October 1996; Cornelli, Steve, "Will Customer Choice Always Lower Costs?" *The Electricity Journal*, October, 1996.

[12]Geographic scope is needed to achieve what network economists call "pool effects" in network industries. Stabell, Charles B. and Oysteing D. Fjeldstad, "Configuring Value Chains for Competitive Advantage: On Chains, Shops and Networks," *Strategic Management Journal*, 19 (1998); or load balancing in the electric utility industry, Cooper, *Residential Consumer Economics.*

[13] Earle, Robert L, Phillip Q. Hanser, Weldon C. Johnson, and James D. Reitzes, "Lessons from the First Year of Competition in the California Electricity Market," *The Electricity Journal* (October 1999), describe the process in a context that finds the potential for market power and inefficiency.

[14] FERC, Staff Report to the Federal Energy Regulatory Commission on the Causes of the Pricing Abnormalities in the Midwest during June 1998 (Washington, D.C., 1998) (hereafter, FERC, Staff Report), p. 3-2; Public Utilities Commission of Ohio, Report; Kiah, E., *Thoughts on Wild Prices*, July 1998; Department of Energy, *Interim Report of the U.S. Department of Energy's Power Outage Supply Study Team*, (Washington, January 1999) (hereafter DOE, Outages).

[15] Cambridge Energy Research Associates (CERA), *Electric Power Trends: 2001* (Cambridge, Mass.: 2000); *High Tension: The Future of Power Transmission in North America* (Cambridge, Mass.: August 2000) (hereafter, CERA, *High Tension);* Stipp, David, "The Real Threat to America's Power," *Fortune*, March 5, 2001.

[16]CERA, *High Tension.*

[17] Brendan, Kirby and Eric Hirst, "Maintaining Transmission Adequacy in the Future," *Electricity Journal* (1999), acknowledge the primary importance of noneconomic factors.

[18] DOE, *Outages*, Finding, 30.

[19] Ibid., 9, 31.

[20] Ibid., 1, 16.

[21] Even introductory economics texts now contain long discussions of strategic behavior and game theory [see, for example, Taylor, *Economics,* Chapter 11] and it has become a routine part of applied policy analysis [Hasting, Justine, "Factors that Affect Prices of Refined Petroleum Products" (Washington, D.C. Federal Trade Commission Public Conference, August 2, 2001)].

[22] Pearce, George, *The Dictionary of Modern Economics* (Cambridge, Mass.: MIT Press, 1984), p. 124.

[23] Bannock, Graham, R.E. Banock and Evan Davis, *Dictionary of Economics* (London: Penguin, 1987), p. 128.

[24] The origin of the concept has been associated with land, hence it is occasionally referred to as ground rents (Rutherford, Donald, *Dictionary of Economics* (London: Routledge, 1992), p. 137).

> As land was regarded in **classic economics** as the only fixed factor of production, it alone earned rent. However, as any factor of production can be fixed in supply, "rent" can be earned by any factor of production. Popular examples of factors with an **inelasticity of supply** abound; labor can earn economic rent as persons with rare talents (e.g. opera singers and top sports players) have high earnings largely consisting of economic rent.

Teece, David, J. and Mary Coleman, "The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries," *The Antitrust Bulletin* (Winter 1998), p. 819, define scarcity rents as:

> In many contexts where knowledge and other assets underpin a firm's competitive advantage, additional inputs cannot simply be purchased on the market to expand output… historically at least, economists have associated Ricardian rents with scarce natural resources like land or iron ore.

[25]U.S. DOE, Office of Economic, Electricity an Natural Gas Analysis, *The Impact of Wholesale Electricity Price Controls on California Summer Reliability* (Washington, June 2001).

[26] Ibid., *p. 13.*

Thus, a new combustion turbine would have to operate for more than 55 percent of the hours in a year in order to recover its fixed costs over a 3-year period if it were paid only $25/megawatt hour above its operating costs...

Because combustion turbines have high operating costs and are built to meet peak demand, developers generally expect that they will have relatively low capacity factors, ranging from 10 percent to 30 percent, significantly less than would be required to recover capital costs in 3 years under the cost-plus proposal. Although capacity factors for new combustion turbines in California are likely to be above average for the next year, the projected break-even point of more than 55 percent represents a considerable risk for developers, which many will be unwilling to bear. Even if a developer expected to spread the plant's fixed costs over a 10-year period, the risk would still be high at a projected capacity factor of nearly 30 percent every year for 10 years.

[27]Watts, Price C., "Heresy? The Case Against Deregulation of Electricity Generation," *The Electricity Journal*, 2001 (March 3).

[28] Staff Report, *Market Clearing Prices Under Alternative Resource Scenarios: 2000–2010* (Sacramento: California Energy Commission, February 2000). The alternative analyses focus on a combined-cycle plant, but the only difference in the financial assumptions is to increase the fixed charge factor for combustion turbines by assuming a higher rate of return on equity.

[29] Lawrence B. Lindsey, identified as "Mr. Bush's chief economic advisor," ("A Triumph of Politics," *Washington Post,* June 20, 2001, p. A-14), stated the claim as follows in describing the FERC decision to impose price mitigation measures in California and the West "What they are trying to do is achieve two incompatible missions, preserving what is called 'just and reasonable pricing' and assuring an adequate supply of electricity."

[30] Watts.

[31] Vasapoli, Joe, "Cost-Based Electricity Rates: Do They Cause Over- or Under-Supply?" *Energy Daily,* July 5, 2001, makes the obvious point that the long-term commitment to buy power is the key to inducing construction under cost-based rates.

[32] Numbers in parentheses in this section are page numbers in Taylor and Van Doren.

[33] Southeastern Association of Regulatory Utility Commissioners, *The Benefits and Costs of Regional Transmission Organizations and Standard Market Design in the Southeast,* November 6, 2002.

[34] Outage Report, although not strictly a problem of "manipulation," the outage report identifies incentive and behavioral problems that can be classified in this category. The complaint about inefficient short-term transactions is essentially a complaint about the market transaction mechanism (Finding 25). The new market also elicited a reliance on nonfirm sales, which simply could not be sustained in a stressed market (Finding 24).

[35] FERC, Staff Report, pp. 3-1, 3-2.

[36] Public Utilities Commission of Ohio Report, Ohio's Electric Market: June 22-26, 1998, *What Happened and Why: A Report to the Ohio General Assembly* (Columbus, Oh; 1998) (Hereafter, Ohio Report), p. 28.

[37] Bohn, Roger E., Alvin K. Klevorick and Charles G. Stalon, Market Monitoring Committee of the California Power Exchange, *Second Report on Market Issues in the California Power Exchange Energy Markets* (March 9, 1999) (Hereafter Cal, Second Report). p. 66.

[38] FERC Staff Report, pp. 4-1, 4-16; American Public Power Association, *Electricity Prices and Volatility in Transition to Competitive Market (*Washington, D.C, May 1998). FERC, Staff Report, p. 4-9.

[39] Ohio Report, p. 25.

[40]Rosen, Richard, Freyr Sverrisson and John Stutz, *Can Electric Utility Restructuring Meet the Challenges It Has Created,* (Tellus Institute, November 2000). raise questions about the ability of any set of institutions to run the industry based primarily on external market transactions. On the problems in the electric utility industry, see, Cooper, *Industrial Organization,* which identified basic economic conditions in the electricity and telecommunications industries that raise doubts about the prospects for deregulation as the debate was beginning. .

[41] Letter from Rederick H. Ritts, Attorney for Steel Dynamics Inc., a large industrial consumer of electricity to Alan Richardson of the American Public Power Association and Roy Thilly of Wisconsin Public Power, Inc., dated August 19, 1998; FERC Staff Report, pp. 5-6, 5-7.

[42] Outage report, identifies numerous problem with information including a general lack of data (finding 6), poor load projections and forecasts (findings 8, 17, 28), unit ratings (finding 11), cable conditions and incipient failure (finding 5,14), inadequate notice (finding 20) and failure to preserve records (finding 33).

[43] Cooper, Spike, p. 21.

[44] "Motion To Intervene And Request For Rehearing Of The Consumer Federation Of America," before the Federal Energy Regulatory Commission, *San Diego Gas & Electric Company, Complaint, v. All Sellers of Energy and Ancillary Services Into Markets Operated by the California Independent System Operator and the California Power Exchange,* Docket Nos. EL00-95-000 et al,."Reply Comments of the Consumer Federation Of America," before the Federal Energy Regulatory Commission, *San Diego Gas & Electric Company, Complaint, v. All Sellers of Energy and*

Ancillary Services Into Markets Operated by the California Independent System Operator and the California Power Exchange, Docket Nos. EL00-95-000 et al.

"[45] Initial Comments Of The Consumer Federation Of America," *Remedying Undue Discrimination through Open Access Transmission Service and Standard Electricity Market Design*, Federal Energy Regulatory Commission, Docket No.RM01-12-000.

[46] "Initial Comments of the Consumer Federation of America," Remedying Undue Discrimination through Open Access Transmission Service and Standard Electricity market Design, Federal Energy Regulatory Commission, Docket No. RM-01-12-000, October 15, 2002, West and South.

[47] FERC Staff Report, p. 3-20.

[48] The information problem received the most attention in the Outage Report. A number of information and management weaknesses are noted including inadequate forecasting tools (Finding 8, 13, 17, 18 20), a lack of monitoring instruments (Findings 5, 11, 14), and little real time information to respond to problems (Findings 6, 27).

[49] FERC Staff Report, pp. 3-2, 4-3, 4-4, 4-16.

[50] Cambridge Energy Research Associates (CERA), *Electric Power Trends: 2001* (2000); *High Tension: The Future of Power Transmission in North America* (August 2000) (hereafter, CERA, *High Tension)*; Stipp, David, "The Real Threat to America's Power," *Fortune*, March 5, 2001; Harris, Kiah, E., *Thoughts on Wild Prices*, July 1998, p. 1.

[51] Id.

[52] Klemperer, Paul, *The Economic Theory of Auction* (Nuffield College, July 2000); McDiarmid, Robert C., Lisa G. Dowden, and Daniel I. Davidson, "A Modest Proposal: Revoke the Nobel Prize? Recognize the Limitations of Theory? Or Grant a License to Steal?," *Electricity Journal*, January/February 2001; Newberry, David M., "Competition, Contracts, and Entry in the Electricity Spot Market," *Rand Journal of Economics*, 29:4, 1998, citing in particular Wolfram, Catherine, D. "Strategic Bidding in a Multi-unit Auction: An Empirical Analysis of Bids to Supply Electricity in England and Wales," *Rand Journal of Economics*, 29, 1998. Newberry cites von der Fehr, N-H.M. and D. Harbrord, "Spot Market Competition in the UK electricity Industry," *Economic Journal*, 103 1993, as the origin of the auction theory approach. Brunekreeft, Gert, "A Multiple-unit, Multiple-period Auction in the British Electricity Spot Market," *Energy Economics*, 23, 2001, reviews this debate from the auction side. Kahn, Alfred, et al., *Pricing in the California Power Exchange Electricity Market: Should California Switch from Uniform Pricing to Pay-as-Bid Pricing* (California Power Exchange, January 23, 2001) Klemperer, Paul, *What Really Matters in Auction Design* (Nuffield College, February 2001. Bolle, Friedel, "Supply Function Equilibria and the Danger of Tacit Collusion: The Case of Spot Markets for Electricity," *Energy Economics*, April 1992; see also "Necessary Conditions for Efficient Multiple-bid Auctions, in R. Nau, E. Gronn, M. Machina and O. Bergland, *Economic and Environmental Risk and Uncertainty: New Models and Methods* (Kluwer, 1997).

[53] A classic example is utility resistance to conservation investments and distributed generation as systems become physically constrained (see for example, Alderfer, R. Brent, M. Monika Eldridge, and Thomas J. Starrs, *Making Connections: Case Studies of Interconnection Barriers and their Impact on Distributed Power Projects* (National Renewable Energy Laboratory, May 2000), Kahn, Michael and Loretta Lynch, *California's Electricity Options and Challenges: Report to Governor Gray Davis*, (hereafter, *Options*); Marcus, William and Jan Hamrin, *How We Got into the California Energy Crisis*, JBS Energy (2000).

[54] Staff Report, *Market Clearing Prices Under Alternative Resource Scenarios: 2000 –2010* (California Energy Commission, February 2000). U.S. Department of Energy, Office of Economic, Electricity an Natural Gas Analysis, *The Impact of Wholesale Electricity Price Controls on California Summer Reliability* (June 2001); Watts, Price C., "Heresy? The Case Against Deregulation of Electricity Generation," *The Electricity Journal*, 2001 (March 3).

[55] Rudkevich, Alesandr, Max Duckworth, and Richard Rosen, "Modelling Electricity Pricing in a Deregulated Generation Industry: The Potential for Oligopoly Pricing in a Poolco," *The Energy Journal*, 1998 (19). The Cal-ISO has argued for a dependable reserve of 14 to 19 percent, which translates into a nameplate reserve in the range of 20 to 25 percent. Borenstein, Severin and James Bushnell, "An Empirical Analysis of the Potential for Market Power in California's Electricity Industry," *Journal of Industrial Economics*, 47:3, September 1999; Bushnell, James, Christopher Knittel and Frank Wolak, *Estimating the Opportunities for Market Power in Deregulated Wisconsin Electricity Market* (Consumers First, ND). Sweetser, Al, *An Empirical Analysis of a Cominnat Dominant? Firm's Market Power in a Restructured Electricity Market: A Case Study of Colorado* (April 1, 1998);

[56] Brendan, Kirby and Eric Hirst, "Maintaining Transmission Adequacy in the Future," *Electricity Journal* (1999), acknowledge the primary importance of noneconomic factors.

[57] Moore, Steven, and Simon, Julian. (1999). *The Greatest Century That Ever Was: 25 Miraculous Trends of the Past 100 Years*. Washington DC: Cato Institute.

Mr. ISSA. Thank you.

With that, I would ask unanimous consent that all Members be allowed to put their opening statements and any other pertinent or extraneous information into the record for 5 days after this hearing.

The Chair would recognize, as is our custom, myself for 5 minutes. I will make my questions short and we will alternate, and undoubtedly, we will get a second round.

Dr. Cooper, I really enjoyed your testimony. I say that with no reservations. I think you hit on something that is very, very important. Perhaps I agree with you in part and disagree with you in part. You said that electricity isn't a market. Might I ask you a leading question, isn't it, no matter how you look at it, a market? What we are debating in deregulation is whether it is, as you used the term, a spot market or whether it is a market in slow motion, in other words a market of 30 year purchases, a market of 30 minute purchases.

In California, we had a market of 30 year purchases for 100 years. You bid the plant prior to construction based on a formula of what you anticipated to be the cost and you recovered it. If you bid a hydroelectric plant that cost 2 cents a kilowatt hour and never changed prices for all practical purposes for 100 years, or you bid a natural gas-fired plant that might be 2 cents a kilowatt hour at the beginning, but over the years because of the cost of that fuel, might go up higher and higher, you were still bidding its cost plus a profit.

Would it be fair to say that the debate is between that model which I would still call a market, but a market that in a sense is a 30 year market versus the market that you didn't seem to like which you called the spot market?

Mr. COOPER. We were vigorous supporters of the 1992 EPACT. We were one of the few groups that supported it. There was not a market before that. There were regulated franchise service territories. There were no bids or a few bids but very little bidding. In the 1980's, we discovered that every time a utility was told to go out to bid, this was for bid chunks, not a retail spot market. Every time they went out to bid for capacity, they were offered 10 megawatts for every 1 they needed. It looked like why couldn't we run the system in that bidding framework.

In fact, the previous 30 years, the whole history of the industry did not have that market discipline. We were interested in that market discipline, but let us be clear, in the 1990's, we never tried that model of what we could call managed competition. It wasn't very popular around here when you talked about health care, but that was the model that was in the 1992 act.

That model was never tried. It got hijacked into the short term spot market transactions model, the Enron model, which I have testimony from 1997 in Pennsylvania where we were opposing it even before we saw how ugly it was precisely for these principles.

I agree with you in that sense. There was a middle ground which was not dependent upon the spot market, and in fact, in a certain sense when people tell me just get long term contracts and you can protect yourself, the utility franchise was a long term contract between the ratepayers and the utility. So one answer is yes, there

may be a middle ground we need to get back to but that looks very different than what we had in the one-third of the States that tried it.

The second problem with the 30 year versus 30 minutes, once you start with the mixed model, what happens is, and you heard this described, the people who think they can maximize their profit in the 30 minute market don't want to sign deals in the 30 year markets. So it gets very difficult to have that mixed basis. So there are people outside in two-thirds of the States who are signing long term contracts and doing long term deals, but in the area where you have this 30 minute market, you have difficulty raising funds even around prominent projects obviously needed.

On the one hand, there is a middle model; on the other hand, it is very, very difficult to run this mixed set because everyone keeps holding out for the fantastic profits they think they can make in the 30 minute market, starving the 30 year market of the capital it needs.

Mr. ISSA. Let me ask not a followup question but a question that came out of the part of your testimony that was extemporaneous. I appreciate that. You seemed to be concerned that accelerating depreciation was somehow unjust. Perhaps I am a recovering businessman, but say we are talking 30 year assets, matching assets with depreciation is an interesting question of accounting more than economics.

Isn't it true that for the first 15 years of a 30 year depreciation, even if you accelerated the 30-year lifespan to 15, what you really have is you have loaned the Federal Government money because you have put in your tax paid capital and now you are waiting to get back against the loss. At the 15-year mark, in a 15 year depreciation of a 30 year asset, you actually only get even. You paid the Government as though it was profit, and then get your money back over 15 years.

I might suggest for your future testimony, that when you match it, remember that capitalization is to a certain extent loaning the Government against tax revenue and getting it back over time. If you match it 30 for 30, what it really means is you put all your money up front, pay the taxes and then were allowed to depreciate it as it went to zero value, but essentially you still made a loan of that tax money to the Government.

Mr. COOPER. In the utility model, the matching between the long and the short term is much less of a problem because you have that long term relationship, which is precisely why the cost of capital is so much lower.

The other problem that I see with the incentives schemes, and you heard two of them here, accelerated depreciation and higher rates of return, is that the theory of giving those incentives is to induce people to build things that they might not otherwise have built. The impediment to building transmission by and large is not an economic impediment. We have social impediments, we have socially imposed scarcity frequently, and we have heard a lot about that. We can argue about whether that is a rational or irrational choice, but it certainly is a choice that people have to make.

From my point of view, throwing incentives at transmission projects is good money out for bad. I don't need to incentivize these

things. I know where they are, I can guarantee, or pretty much guarantee, the rate of return without paying too much for them. So to me these two incentive schemes are in fact not efficient. The problem in this industry is that it is rich in rents, and rents have nothing to do with efficiency.

The other point about acceleration is that on the tail end, the rate payer is supposed to get it back because what they are paying for depreciation declines. Our experience has been that when the tail end finally arrives, as it did with the nuclear power plants, they decided to find some other way to make sure they didn't lower my rates. They decided they needed to transfer those assets to companies that were about to face competition.

My problem is that I paid the price in the short term and I don't tend to get the benefit in the long term.

Mr. ISSA. I appreciate that.

My time has really expired. I will give one more question for Commissioner Wood if I have my vice chairman's permission.

The repeal of PUHCA, or its substantial elimination and reform, is timely according to Warren Buffett, one of the most trusted men in America. And we might all say Warren Buffett is no Enron and get very little if any argument. His estimate is that there will be $10 billion to $15 billion in new energy capital that will come in if PUHCA is either reformed or repealed, a win-win, if you will.

Could you give us your thoughts on how accurate Mr. Buffett is and how much of that relates to your belief as an outgoing commissioner that PUHCA ought to go?

Mr. WOOD. Of course that may be Mr. Buffett's share, what he is talking about.

Mr. ISSA. It could be just his share. That is a good point.

Mr. WOOD. I think it is common knowledge.

Mr. ISSA. I apologize, it is his share, so I guess we are talking about probably double that if we include the rest of the investors.

Mr. WOOD. It is an attractive business, if the two big impediments which are cost recovery and siting issues can be dealt with. As a regulator of a State that has kind of gone through the full transition, when it was all fully regulated, the cost recovery and the siting issues were dealt with pretty cleanly, so there was investment in transmission, not necessarily the kind of transmission we need to facilitate a market but transmission got built.

When it gets fully unregulated, you have clear mechanisms in place as, for instance in my home State of Texas where they have now transmission, is getting built there as well, windmills are getting interconnected, and new power plants. It is this awkward transition that we are in and I think PUHCA can address all three worlds.

Allowing utilities to bulk up is not a bad thing, if we are talking about their wires business. Having one wires company over maybe four States like in Mr. Westmoreland's case, Southern Co. covers a lot of States as opposed to having four companies in one State, just natural intuition tells you economies of scale, those four companies could pack together and become one company and you could probably save some money and run a smooth operation That is not a bad thing and PUHCA doesn't necessarily prevent that but I think it does discourage that the way it is set up.

So unleashing capital, yes, I think you would have also some foreign investment in the United States, which I am not concerned about, you would allow companies to buy across the country, which from a generation market power point of view, we actually like better than companies buying their next door neighbor, which is about the only thing you can merge with the way PUHCA is written.

I think the capital is there, but I do think the bigger questions honestly could be addressed by cost recovery and siting. PUHCA is important. I don't know if it is the dispositive one.

Mr. ISSA. As a followup, wouldn't you say that we have hundreds of billions of dollars of foreign investment coming into this country from Canadian electricity, Canadian gas, Middle Eastern oil, and soon to be large amounts of LNG. In a sense, we have that investment and the choice is will it be dollars, or will it be an imbalance of payments that we have to make every day by buying their products?

Mr. WOOD. That is fair and I think certainly electricity is a little different for the reasons I think Mark Cooper laid out. It is going to be made in America because of the way you can't store it and you have to consume it right away, but the interconnectivity of us with Canada, as a good example, one Mr. Gent went through with the blackout, we do have a lot of investment across border and energy, particularly to the north going both ways. Now with LNG coming in, we will have it much more like it is with oil, stretched around the world. It is not necessarily a bad thing.

I do think the balance of payments issue is of concern, but an interdependent economy does probably lead to a more peaceful world. I guess as one who plans to be here a few years longer, that is not a bad outcome.

Mr. ISSA. Very good.

I will now turn to Mr. Westmoreland for his questions. You certainly will have any extensions of time you feel you need. I have taken them.

Mr. WESTMORELAND. Thank you, Mr. Chairman. You have always been fair about that.

I want to put it on a simpler level since we are talking about the reliability of electricity. Most people who go into a room and turn on their light may not know where this electricity comes from. They just know they have it. They know when they have a power outage. I think a lot of people assume when they have a power outage that it is the lack of electricity when it could be too much electricity or too much demand on the lines.

As you mentioned, electricity cannot be stored. This is an energy that you cannot store, so it is a complicated situation I am sure when you look at how much power is being generated and how much of the 680,000 miles of transmission line can put into these substations that distributed 2.5 million miles of power lines. We were talking about building more generation plants.

I know in my district we have built what they call peak plants. When the loads are there, they cut on and in the peak power use, they put them through there. It is almost as if we are taking congestion, and I will use traffic congestion as an example, and saying rather than building more roads, we are going to build more cars to help with the congestion.

I think Mr. Owens said to let any generation go on anybody's transmission line, you can't use more power than what that transmission line will accept. It can only handle X amount of power. So I don't know that generating more and allowing somebody else to put on a commodity that cannot be used, unless it is used at that moment, it can't be stored anywhere.

I guess my question is this, is there any technology, or whatever, that is going about? We talk about the siting problems. Nobody wants a transmission line in their backyard. Is there anything about these lines being able to carry more electricity on the same routes as they are now? I know it used to be when you had a telephone line put in your house, that is exactly what you got, one line.

Now, with some of the cables and capabilities that we have, you can get an unlimited number of telephone lines in your house by just running one line. Is there any technology that we are looking at from that standpoint that may make our power situation more reliable?

Mr. WOOD. One that comes to mind is one I heard about 2 weeks ago, XCEL Energy, which is the investor-owned utility that serves Minneapolis Twin Cities as well as other areas which put in a conductor, the same diameter conductor, the same diameter wire. It has the capability to carry over a 10 mile period a pretty tight right-of-way, right there in the Twin Cities and was able to double the capacity without a new right-of-way. They didn't have to condemn any more land or have any more landowner hearings, or do any more environmental reviews. They were able to use a newer technology for metal alloy and actually use a line that was lighter and because it is lighter, it can carry more load and not require a bigger tower.

Those types of things cost more, so each of these utilities is going to run through a cost benefit. Is it cheaper for me to buy more expensive wire than to go through another siting hearing?

I saw the same thing in New England. They are using some newer technologies in some of the cities there and go underneath the city. We have seen that in Detroit as well. I think the cost benefit issues are very real to these utilities. It is true with public power as well. TVA and Bonneville have been very much leaders in exploring new technologies because they had some leeway from their boards and from their corporate structure to do that.

I do think the laboratories, and I know Mike probably knows about them as well, are approving a lot of new technology. As with telecoms, the power industry will be transformed by technology I would predict. Right-of-ways is certainly the most easy point to think of it.

Mr. COOPER. I would just offer the observation, Chairman Wood has sort of described of what is an incremental advance. I don't think we will see the exponential advances that you have mentioned in the digital products, telephone products. One of the fundamental differences is in contrast to electrons, which are these nasty little beings, bits are wonderfully, remarkably behaved. You can take a bit and tell it what to do and if you download something on your screen, you will see the packets arriving as it goes in pieces, so they are very different, the physics of the two things are different.

So the incremental improvement is certainly there and ought to be encouraged. Things like distributed generation which saves on both generation and transmission are interesting and advances in technology, but I think it is incremental as opposed to the exponential hope and advances that we have had in information services.

Mr. WESTMORELAND. Thank you.

I guess the last question is for Mr. Wood and I will give you these extra questions since you are leaving in a couple weeks.

You mentioned four companies becoming one company. Does that not take away a little of the competition? I know you said maybe they could do it for less money by having one company but what we found especially in Georgia is we have some EMCs and different power companies along with the Southern Co. and even though we have not deregulated, we do offer competition. I think if you use more than 900 kWs or something you have your choice of using any power company that will come in there. It has made it very competitive.

I was talking to some folks that do business in Georgia and some of the other southeast States and they were talking about how much money they save by us doing that and not just having to buy from one power company. I guess my question is, do you think we need to federally deregulate power and what is the real reason, the guts of it? Why do you think it would be better?

Mr. WOOD. That has kind of been my career for the last 10 years, which is allowing customers to choose. What we do at FERC is regulate the wholesale level between and among parties but I think I differ from what Mark Cooper laid out, in that I do think it is very important not just for ideological reasons but for the innovations in both technology and in customer service, the improvement in price, to allow customers to pick.

A guy introduced me the other day who was chairman of the Maryland Commission. He said the best way to get to deregulated power in Maryland would be to put my poster board up and say, do you want this man setting your power rates or do you want to pick them yourself? That is a little flippant but the point is true. In so much else in our economy, customers have gotten a choice in items we never dreamed we would have choices in. I do look forward in a month to moving home to Houston and I have 21 choices of electric power providers. Some are 100 percent renewable, some give you airline miles with it, one was at an 18 percent discount to the going rate everybody else was paying. I like that, I like that when I shop for cars, but I do think that the State should make that choice.

You asked me about Federal. I testified 9 years ago to Mr. Blyley's committee and I had to think long and hard about that, but I think each State is different. Some of the States, for example, that have low cost resources, some of the hydro and coal plants that have been depreciated, it is probably better to keep those in rate base because customers have paid those off and the price would actually go up in the competitive market.

My four to one comment was really talking about the part that stays regulated. Wires are regulated yesterday, today and tomorrow. If you aggregate a bunch of generation in one area, then you

have a problem because of what Congress said in 1992 and everybody has agreed since that generation is competitive. So if you have one big competitor on the block, that does deprive customers of the choices that they should have. We have tools to deal with that.

Mr. WESTMORELAND. So you are talking about just the grid?

Mr. WOOD. Yes. I think the aggregation of just the grid companies is a good idea. I hope it does accelerate. I do think PUHCA reform could allow that to happen and so long as either our commission or the Justice Department, Congress or somebody is keeping an eye on making sure that the generation stays diverse and competitive, then I think we have a win-win there.

Mr. WESTMORELAND. Thank you.

That is it, Mr. Chairman.

Mr. ISSA. Thank you.

Since Chairman Wood did such a great job of mentioning his testimony 9 years ago, I will read my testimony of much less than that ago before the Energy and Commerce Committee when I said three markups ago of the energy bill, "I would like to urge the body to think federally, to think long term. First of all, deregulation has not proven to be a failure because," and this was at the time the lights were going out in California, "because California has not deregulated. Second of all, deregulation of any free market system to work, it must tear down barriers to entry. California did not do so."

Mr. Chairman, like you, I believe in deregulation. I just was in Moscow last week and I have seen they haven't quite figured out that they can't run things from the top anymore, proven by the government taking over Yukos, in order to get back one of their significant commodities that happens to be producing today but much of its efficiency came from the time in which it was privatized. Now they want it back because oil is at $50 a barrel and at that point, any inefficient organization can make a profit. It really rings a bell, doesn't it, that anyone can make a profit if the price is high enough?

Looking at the likelihood that California is going to be somewhere between just enough power and very tight and not quite enough power and the lights go out, more than 3 years after we had the lights go out or 4 or 5 years after we had the lights go out, and more than 3 years after an energy bill initially left this House, do you think that if we had passed the energy bill, we would have gone a long way toward not having that tight market this summer in California? Because I suspect that alone wouldn't have done it. What should California and States like it be addressing now if we are not going to have the lights go out? That goes more broadly to yourself but also to Edison and so on because you are part of the producers.

Mr. WOOD. Let me say I don't think the problem you have in southern California would have been addressed by the Federal bill, either the 2002 version or the one on deck now. The California issues have to be solved by California. The first one they have to resolve is do they want to go to a retail and bundled state, do they want to stay at the interim phase, or do they want to go all the way back?

I think the debate is probably between go all the way to a competitive world and stay in the middle. Nobody will make investments unless they know we are talking about the 5 to 10 year future. You can't ask utilities or even public power companies to live in that world. That is one of the problems, there is not a vision about where they are going longer term.

Second, I think what is problematic in southern California is what is called resource adequacy. This is what we had our hearing about with the California PUC last week. That is a problem that is actually teed up. The Governor has gotten very involved, the bipartisan commission of the CPUC is very engaged on this issue and I think they will be resolving some core points on that by the end of the summer.

By next summer, every utility and everybody serving power in California will be obligated to have 15 percent or X percent margin over and above their peak needs, and the PUC will be looking at making sure everybody has that and is enforcing that. That provides more security. That obligation does not exist under State law there today.

I don't think that a Federal solution was even offered that would have fixed this. This is one the State knows it has to fix and to their credit, they are addressing it although I think a little more slowly than I would have liked.

Mr. ISSA. Being the sixth largest economy in the world, California tends to be closer to France than to a small State. France is fifth I understand but soon California will pass them.

Following up on that, and my ranking member has arrived—this is the real ranking member not each of the other ranking members I introduced earlier—I just want to ask one sort of leading question. Mr. Westmoreland talked about peaker plants and as some here know, I have a 500 megawatt peaker plant that is under proposal. It has gone through the FERC, it is going through the process, it has been funded. It is a pump storage station in my district and I am very excited about that because I think it brings that opportunity not to build a 500 megawatt plant somewhere else and yet still have 100 percent clean power when you need it.

To that extent, particularly for those who look at the savings we have had in California, isn't it true that California to a certain extent has been its own worst enemy because of its past good behavior? We have a good system of shutting down or peak shaving due to various uses, we have done a good job of insulating, we have done a good job of updating our air conditioners, lights and so on.

What we have done is all the easy fixes other than build power production and now aren't we in a position in which for all practical purposes, the things others will say what about this, "what about this, you don't have to build," have already been done and in some ways we would have been better off if we had been building. Isn't that sort of the trend that public utilities often incentivize us to do things that reduce consumption or at least reduce peak and that is good except at some point you run out of that and then you have to build that capacity?

Mr. WOOD. Build now or build later. I think that conservation buys you some time but it doesn't avoid the need to do it at all. That California was able to wait until much later to build probably

is a lot of money that stayed in their pocket, but it is not free. To do conservation, in which California certainly probably leads the world, costs money and I think the customers have paid for it.

Mr. ISSA. Mr. Gent.

Mr. GENT. I can speak to that issue personally because I worked in Los Angeles in the 1960's and it was well known to every electric utility in the State that we could never build a plant in-State again. That was public policy. You may not be able to find that in the papers or in the books, but it was certainly known to all of us in the business.

Mr. ISSA. Mr. Owens.

Mr. OWENS. I think you have to have all of the above and I do agree with Chairman Wood, you can only count conservation once. I think unfortunately California historically had an attitude against building major new facilities.

You made reference to peaking facilities. I think there is also a recognition that there is a need for base load facilities. All the things Dr. Cooper talked about increased electrification of our systems, and so forth, and the average consumer—even though we are conserving—is still using more electricity and they are using it longer hours of the day. Obviously that suggests to me that the infrastructure, particularly in California that exists, will not be sufficient to sustain the level of service customers are demanding.

I think there is a need to recognize that more and new and efficient facilities need to be constructed. Unfortunately, California had an environment that was opposed to that.

Mr. ISSA. Thank you.

Mr. COOPER. Let me offer the observation that is exactly one of the things that needs to be in the Federal legislation is the fact that California did do more than other States and their neighbors didn't and in the public good sense, if you go back and look at the press when the lights started going out, the first tune was oh, those Californians consumed too much energy for their swimming pool heaters and stuff and they were mostly solar installations and we quickly discovered that California was more efficient than other States.

So precisely because this is a public good, reliability is a shared product, the neighboring States and the other States in their grid who haven't done what California has done need to do it. They need to stop being free riders, the classic economic question, and make their contribution to the public good. That observation is fundamentally correct. Californians have higher standards.

Mr. ISSA. I appreciate that. You are going to get a followup question before you can blink, because Ms. Diane Watson has joined us and she has not had a question yet and I know she has them for you.

Ms. WATSON. I would like to read my statement because it then places the position that I probably share with you as well.

Mr. ISSA. We have already put it in the record but you can read all or part of it as you see fit. That is what you get to be the ranking member for.

Ms. WATSON. Let me just say I thank Dr. Cooper for coming and I am sure he expressed the position coming from a consumer standpoint. I want to join the Chair of the committee and really com-

ment that I think California has been shortchanged. You have to take into consideration, and I am sure you have, the size of our State and the climate of most of our State and the need for air conditioning and the need for warming, cooling and so on, all electrical matters and the fact that we over the years have set in place policies that would restrain the use, not necessarily rationing, but we have been very sensitive to the issue.

Solar power has come into play in the last few decades and many people are turning toward it, but I don't think we were treated fairly by the FERC and the middleman. I do think that California is owed some credit and maybe some returns, and I can't appreciate enough the fact that you have presented this timely hearing publicly.

If my statement is already in the record, I won't reiterate it but I just wanted to say that we have to look at ways of restructuring and ways of saving and ways of implementing our policy so it is serving the public good. I promise you I will not be late on the next hearing of this kind.

Thank you very much, Mr. Chairman.

Mr. ISSA. Thank you and you can now go forward with your questioning. For everyone's understanding, to be honest you were doing your duty in the International Relations Committee while I was flicking back and forth and not quite doing my duty to either one, so I appreciate your efforts in IR.

Ms. WATSON. One of the questions I would like to raise, to whoever would like to respond, is—I think a couple of years ago—the Governor of the State of California said we would need 19 new peaker plants. One was proposed in a neighborhood in which I live. I never saw so many homeowners at a meeting, 1,800. That was a miracle. That peaker stack was going to go right up in the center of their residence and so they were very concerned.

That one was taken off the list but the Governor at that time had a goal of 19. Can someone inform me if those 19 peaker plants and stations were completed?

Mr. WOOD. Ms. Watson, I work at the FERC. We do track that. I will get that information to you. I know all were not built, some were. I was actually at the dedication of one Friday in San Jose. It is more than a peaker though. I think it runs a bit more often than that but some progress has been made. Governor Davis did set some ambitious goals. He directed his agencies to process the permits and to his credit, they were. It is the investment climate: people were reluctant to come and invest there.

As one who has dealt with siting, there is always another site that will work if you have to. That is probably why yours got taken off.

Ms. WATSON. There were a couple of Native American reservations that came forth with proposals, particularly in the Palm Springs area. Are any of you familiar with those proposals and what happened to them in the long run? I know I was getting telephone calls and trying to get some consideration for their proposals but something happened with the ownership of the land and so on. Can anyone shed any light on what happened with those proposals?

It seemed like they had the capacity to take care of the peaker operations and so on. I just want to get a followup as to what has happened?

Mr. WOOD. I will get that information for you.

Ms. WATSON. Good. If you can give it to me in writing, I would be satisfied.

Mr. WOOD. I would be glad to.

Mr. OWENS. Congresswoman, I think you are raising a fundamental point. I don't know the details or the status of any of those facilities. A point we were trying to make and I think all of the witnesses sought to make, I think even Dr. Cooper sought to make, was the recognition that if we are expanding our infrastructure, siting is always going to be a big issue. Nobody wants a power plant built in their backyard, nobody wants a transmission system running through their neighborhood but the reality is if we are going to seek to provide the level of reliability and low cost electricity that our customers are demanding, then we do have to find a way to streamline and harmonize the siting laws and get public acceptance of these areas.

Ms. WATSON. This is the reason I was so interested, Mr. Owens, in the proposals that came from the Native American groups, because there is a lot of vacant land, desert land and so on out there. It seems to me there was a mechanism by which they could pump electricity into the urban areas in southern California. So I just need to have some followup.

Mr. COOPER. Let me make two points to followup on that. I said this on the Senate side at one of the first forums they held. I think there are three critical elements and these are going to be tough decisions. The health and safety and land value impacts are real and this is a democracy, so we are going to have to deal with them.

I think it is important to have a structure in decisionmaking that accomplishes three things. One, the people have to be convinced that you really need this facility, whether it is a transmission line or power plant. A lot of debate goes around whether we really need it. You have to have a framework that they come away with, understanding that we really need it. Second of all, they have to be convinced this is the best way to meet that need. Third, they have to be convinced they have the opportunity to represent their interests in the process. There will always be people who are disgruntled, but a fair and democratic process is critical to getting these things built.

The more we work on designing that process so that they understand they need it; this is the best thing to do and they get to give their side about why they would be the most impacted and have others come forward and say if there is an economic benefit here, we will take the impact. That process is a part of the democracy and we have not spent a lot of time working on that process. We have spent more time fighting about jurisdiction than really figuring out whether it is the State or Federal level, how to accomplish those three things in the process.

Ms. WATSON. Mr. Chairman, if I can reclaim my time for a second, I would like you, Dr. Cooper, to put that in writing to me and I am asking the Chair to talk to the FERC. We might see a piece of Federal policy here. We ought to be doing this all over the coun-

try in grids. So if we can concentrate maybe in the southwestern areas of the United States, it might be very helpful as we try to solve this problem.

Mr. ISSA. You are absolutely right and even before you came in, it was one of the areas of great agreement between the FERC and Dr. Cooper that some of these things can very much be agreed on and we certainly understand the impediments. Nimbyism is not a debatable infection. It is certainly something we have.

If it would be OK with Dr. Cooper, we can allow 2 weeks for any answers to any questions, any additional information you want to add. If you need more time, let us know, but without objection, we will hold the record open for 2 weeks from this date.

Mr. OWENS. Are we also invited to provide some additional input as well?

Mr. ISSA. Absolutely. Not only would we enjoy it, but so would the majority and minority staffs that made this all possible today, that did all the background work to have this be effective and who lobbied all of you to come here. We don't get the kind of great witnesses we had here today without their efforts coaxing and I suspect making promises they can't keep.

Once again, I want to thank our witnesses and our staff for making this happen and with that, this hearing is adjourned.

[Whereupon, at 2:52 p.m., the subcommittee was adjourned.]