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FULL COMMITTEE HEARING ON THE COST AND AVAILABILITY OF ENERGY AND THE EFFECT ON SMALL BUSINESSES

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FULL COMMITTEE HEARING ON THE COST AVAILABILITY OF ENERGY AND THE EFFECT ON SMALL BUSINESSES

Friday, August 31, 2007

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON SMALL BUSINESS,
Washington, DC.

The Committee met, pursuant to call, at 10:04 a.m., in the Auditorium, the Johnson City Power Board, 2600 Boones Creek Rd., Johnson City, Tennessee, Hon. Heath Shuler [Chairman Pro-tempore of the Subcommittee], presiding.

Present: Representatives Shuler and Davis.

OPENING STATEMENT OF MR. SHULER

ChairmanSHULER. I now call this hearing to order.

I would like to first thank the Johnson City Power Board for their hospitality in allowing us to hold a Congressional hearing here. And I want to extend an absolute special thanks to my good friend Congressman David Davis here in the First District of Tennessee.

We are both freshman members, we are back to be freshmen all over again. And he has done an outstanding job and we have been able to work together on a lot of issues. And really as you can tell to truly start making—to cross the party lines to do what is right for America. And I think that is the most important thing.

We are here today to hear from a panel of witnesses that can educate the two of us to go back to Washington and send that message what happens in western North Carolina and east Tennessee, we can send that message to Washington that the people there can listen to the testimony that will be today and they can educate us on being able to serve you better in our district and serve America.

So we want to—I want a special thanks to Congressman Davis and what he has been able to accomplish in a very short time, he has certainly made a very good name for himself in Washington.

Today's hearing will focus on the cost and availability of energy and the effects on small businesses.

Here in Tennessee we will examine the matter of energy prices and how it impacts small businesses. It is an issue that affects nearly every industry, whether it is a retailer coping with the higher energy rates or small trucking companies that are dealing with the spiking gasoline prices. It is one of the most critical economic challenges facing our country today.

The increasing cost of energy is making it difficult for small business owners to manage and survive. According to a recent survey published by the PNC, financial service groups, the rise in energy price is the leading concern among small and medium sized business owners. While gasoline prices have dipped recently, the cost of energy remains high for oil and natural gas as well as electricity. While gas prices have—unlike the large competitors, small businesses often lack the cash reserves to cope with a spike in prices.

Here in Tennessee and in my home state North Carolina the manufacturing sector has taken a tremendous hit. Manufacturing jobs have gone oversees for a variety of factors and the cost of energy is adding to these problems. That is one of the reasons that Congress needs to act sooner than later as the energy must become another factor in this—must not become another factor in deciding to move good paying jobs oversees.

I am proud to say that the Committee has worked to highlight the urgent and the significant impacts facing small business when it comes to energy. In our Committee, we have worked for both immediate and long term solutions for these challenges.

The Committee has considered measures for helping and dealing with some of these issues. Earlier this spring, I introduced a Small Energy Effective Business Act, which was included in the comprehensive energy legislation we recently passed in the House.

My bill helped small businesses acquire energy efficient technologies by providing more flexible loans through the SBA's 7A and the 504 lending program. The legislation also requires the SBA to develop a national strategic for education educating small firms about energy efficiency.

The bill will create renewable fuel capital investment programs that invest in research and the production of renewable energy sources for small businesses. This includes the development of biodiesel, ethanol, and related research considering other than more biomass fuels. While this is a start, I believe that we can do more to address this issue of energy prices. That includes making sure that we are encouraging the creation of energy supplies here in America while helping small businesses deal with the current situation.

In the short term, small businesses must deal with the reality that they are going to pay higher prices for electricity, gas, and oil.

To help them cope, I believe that we need to ensure that companies here in America are able to compete in light of these costs. Small businesses often lack the resources to identify equipment and techniques that would save their businesses money down the line through reducing energy consumption. I believe that there is a need for a greater tax incentive for small business to invest in energy efficient equipment. These policies would assist them in decreasing the overall energy consumption without harming their business growth.

We also need to do more to promote more domestic supplies of energy production from organic material and that would otherwise be discarded. The State of Tennessee has obviously been a leader in this forefront. I am please that my alma mater, the University of Tennessee, is working to develop new techniques for these clean energies. This investment will pay off in a number of ways. It will

not only help rural economics, but it will help the potential for long-term energy solutions. Quick action is needed to help small businesses contain their costs, remain competitive, and play the necessary role in reducing carbon emissions in the U.S. This Committee looks forward to working with you to continue solving energy issues important to our nation and small businesses.

And at this time I would like to recognize Congressman Davis, the distinguished gentleman from the State of Tennessee who serves as a ranking member on the Subcommittee on Contracting and Technology, for his opening remarks.

OPENING STATEMENT OF MR. DAVIS

Mr.DAVIS. Good morning. Thank you all for being here to examine the availability and cost of energy and how it has an effect on small business. I am very appreciative of each of our witnesses who have taken time out of their undoubtedly busy schedules to be with us today. Thank you for being here.

Before we begin, I would like to sincerely thank my good friend Congressman Heath Shuler for making the short trip across the Blue Ridge mountains. Heath and I were actually together yesterday on the other side of the mountain, to talk about healthcare. And I cannot think of two more important things facing small business right now than the availability and access to good quality healthcare and the availability and access of energy costs and energy products. Heath and I may come different states, be members of different parties, only one of us can still throw a 12 yard out pattern on the road, and you can probably guess who that is.

[Laughter.]

Mr.DAVIS. But we both care passionately about the survival and prosperity of our small businesses.

Being back here in Tennessee is probably a little bit like a homecoming for you, Heath. I certainly hope that it is. For those of you who may not know, and there are probably not many of you who do not, before he was Congressman Heath Shuler he was Heath Shuler, the 1993 SEC player of the year and NCAA male athlete of the year while playing quarterback at the University of Tennessee-welcome back.

ChairmanSHULER. Thank you.

Mr.DAVIS. What many of you may not know is that following his playing days in the NFL he became a successful entrepreneur and small business owner. He began a real estate brokerage firm and several other successful real estate companies. I consider Heath to be a strong asset to the small business community as he brings real world experience to the Committee as he, like myself, have owned small businesses. He knows the pressures of meeting a payroll, finding affordable health insurance for his employees and complying with government regulations.

Across the United States, small businesses make up more than 99 percent of all non-governmental employees. They also lead our economic growth by creating anywhere between 60 and 80 percent of our new jobs created in the economy. Small businesses are dynamic and continually changing to meet consumer demands and market needs. Almost 700,000 small firms with employees start up every year in America.

Today we are addressing on of the most significant problems faced by small business, the rising cost of energy. In recent years, it has become painfully clear that America is too far dependent on foreign oil. We import nearly two-thirds of the oil that we consume. With gas prices in east Tennessee and throughout the country hovering around $3 a gallon at times, it is important for Congress to continue to explore ways that we can produce more energy domestically rather than relying on oil from the volatile Middle East.

It is quite apparent that the United States must work toward a balanced and diversified energy policy, including locating and developing our own domestic sources of fossil fuels, such as those located in the Arctic National Wildlife Refuge and in the ocean off of our shores. Exacerbating our dependence on foreign oil is the fact that new refineries have not been built in the United States for over 30 years. I believe we must take a long hard look at refining capacity as part of the solution.

Due to the astounding technological advances in recent years, we can now look to the immense potential of renewable energy as alternatives to fossil fuels. Bio-diesel and ethanol are fast becoming household names and their prevalence in the marketplace has increased dramatically in a very short time. There can be little doubt that the increased demand for renewable fuels has had a positive impact on our nation's economy, including small businesses.

When one considers the contributions of wind, solar, and nuclear power, we can begin to see that we have taken great strides in reducing our foreign oil dependence. Diversifying and improving our nations energy production and consumption increases competition, which we all know drives prices down, spurs innovation, and creates opportunities for niche industries to crop up and begin to thrive. In fact, more than 70 percent of renewable fuel producers are small businesses.

With that said, there is still more that needs to be done, including examining more immediate fixes to help businesses and homeowners alike to cope with rising fuel prices. We have asked our distinguished panel to discuss both long and short term solutions to this pressing problem and I am very eager to hear their testimony this morning.

Again, thank you all for being here today and now I would like to yield to the gentleman from North Carolina to introduce his guess Dr. Eggers.

ChairmanSHULER. Thank you, Congressman Davis.

Again, we are faced with lots of adversity for small businesses and at this time, I would like to introduce our first panel. But before I do that, I ask unanimous consent that the record be held open for five days for all members to submit their statement. Hearing no objection so ordered.

At this time I would like to introduce Dr. Dee Eggers as an assistant professor of environmental studies at the University of North Carolina at Asheville.

Dr. Eggers previously worked for the Environmental Protection Agency as well as the North Carolina Department of Environment and Natural Resources.

Dr. Eggers, you are recognized for five minutes.

STATEMENT OF DR. DOLORES EGGERS, UNIVERSITY OF NORTH CAROLINA, ASHEVILLE

Ms.EGGERS. Thank you, very much. Congressman Shuler and Congressman Davis, thank you both for your service and, Congressman Shuler, especially for inviting me here today to speak on energy issues and opportunities as they relate to small businesses.

I am an associate professor now, I got a promotion, but I am an associate professor in the environmental studies department at UNC Asheville and I also serve on the North Carolina legislative commission on climate change and I teach classes in policies, resource management, basic environmental science and strategies for sustainability.

We are all feeling the effects of rising energy costs as global demand for energy increases. Unfortunately, those costs will continue to rise for the foreseeable future. So how can we address that growing impact on our local economy and small businesses? I think the best help you can give small businesses is to make energy efficiency and renewables more affordable and available.

So why efficiency? The most affordable energy is the energy we do not use. According to research done for the North Carolina Utilities Commission, the cost of generating a new kilowatt hour from the least expensive source which is coal, is about seven cents. Whereas, the cost to save a kilowatt hour through an efficiency program is about three cents per kilowatt hour. And in the handout, there is a bar chart that shows the various cost of different sources of energy.

One of the best things about investments in efficiencies is that the savings are usually permanent. A building with extra insulation will save money for that user year after year after year. And with the payback period on many of these investments being pretty short, like one to five years, six months even, those saving soon become additions to the bottom line.

Now most of us—this is the part that you should really pay attention to. Most of us are steeped in the old design mentality of increasing marginal cost, that is for every additional kilowatt hour we conserve, it costs us more than the last kilowatt hour we conserve.

But what we are finding is this effect that Amory Levens calls tunneling through the cost barrier—and there a graph representing that in the handout as well. With this effect, what happens is when we combine many approaches at once, like more efficient HVAC systems, better HVAC controls, efficient windows, better insulation, shading, et cetera, all of a sudden something transformational happens and we see new opportunities emerge for cost savings, because we can downsize certain systems and omit systems all together. So we can put in a more efficient smaller HVAC system and have fewer east and west facing windows while still having great natural light on the inside.

Because of the cost savings from the smaller systems, the total investment decreases. In the example I included in supporting material, total investment in a new building for energy efficiency went from 26,200 down to $4330 and the payback period for some of those things, which may have been like for shading on the order

of 17 years—the payback period for the entire package went to less than one year for a highly efficient building.

Now this is a familiar concept, we call it the whole is greater than the sum of the parts. Everybody who has played on team knows how that works. But people do not expect to see it in efficiency. So this is an opportunity that we need to take advantage of. In some cases it actually costs less to build a highly efficient structure than it does cost to build a conventional structure. And these are some synergies we get to take advantage of and our small businesses get to benefit from these opportunities.

It is a foreign idea for most places or most people in the United States, but it is not a foreign idea in other places. We are seeing this rapid emergence of these technologies applied in Japan, Germany, Holland, Denmark, and even China is coming on board with this. But in the U.S. right now only a handful of architecture and engineering schools are teaching their students those design techniques. For folks in existing structures or who want to build traditionally, we have known for a long time that various investments and individual efficiency projects can provide significant savings. I invested in retrofitting insulation in a house that I have as a rental, that paid back in less than two years.

Most people do not know what the opportunities are for them though and they do not know what projects would be most cost effective for them and we need to bridge those gaps. So what can you do to help small businesses?

I recommend that you support the following types of legislation, I have seven recommendations:

The first one is to establish national goals for renewables and efficiencies to drive the development of this technology, the accessibility of information, et cetera.

Number two, make sure that small businesses have access to tax credits for renewables and efficiencies. The tax credits need to be extended existing tax credits for at least a decade; because of financial planning, we have got to push it a lot farther out. They need to be available for much small projects so that small business owners can really take advantage. They also probably need to be transferrable or available to renters so that businesses that rent space and pay their own utility bills, but do not own the building can actually use the tax credit themselves or be able to transfer them back to the building owners, sell them to the building owner in some way.

Number three, improve the availability of technical support programs. We have some good existing programs at HUD, DOE, and EPA, but they are separated and not coordinated, a lot of duplication of effort and because of that we do not have one that is really good enough at providing technical assistance at the level that we need to support small businesses.

Number four—this is a big one, I recommend that you require all states to decouple utility profits from energy sales. In many places utilities can only make profit by selling electricity, they need to be able to make profit by having energy efficiency programs as well. We need a national carbon cap to simulate markets, address climate change, and meet our 1992 Real Earth Summit commitment. We need to require or encourage better training programs—this is

the key—better training programs for architects, engineers, plumbers, electricians, builders, contractors, et cetera, so they know how to put these systems in place.

And finally I would say we could use some moral authority of Congress to call for a change at the state and local level and perhaps even create a national challenge program, because Americans love a challenge. We really rise to a challenge.

I want to thank you for listening and thank you very much for coming to the people and please let us know how we can help you.

[The prepared statement of Dr. Eggers may be found in the Appendix on page 35.]

ChairmanSHULER. Thank you, so much. Now I yield to the ranking member, for the introduction of the remaining witnesses.

Mr.DAVIS. Thank you, Mr. Shuler. The next witness will be Stanley Snowden. Stanley Snowden is the president of Walker Supply Company, which has locations in Alcoa, Morristown and Danridge, Tennessee. The company employs approximately 100 people and distributes plumbing, lighting, and cabinets to contractors primarily in new construction.

He graduated from the University of Tennessee in 1970 and is past president of the Morristown Area Chamber of Commerce. Mr. Snowden, welcome.

STATEMENT OF STANLEY SNOWDEN, PRESIDENT, SEVEN WHEELS TRUCKING, INC.

Mr.SNOWDEN. Thank you very much and thank you Congressman Davis and Congressman Shuler. After listening to Dr. Eggers I feel totally inadequate to be here. I do not make a living speaking, but I do appreciate the opportunity to be asked and to participate.

As Congressman Davis said, I am president of Walker Supply Company, I am also president of Wallace Hardware Company in Morristown, Tennessee, which is a wholesale hardware distributor that employs approximately 250 people and I am representing today Seven Wheels Trucking, Incorporated, which is a Subchapter S corporation of Wallace Hardware Company. Our primary business at Seven Wheels is we provide transportation for both Wallace Hardware and Walker Supply Company. We have approximately 35 tractor trailers and 150 trailers on the road every day and obviously fuel is a huge concern to us.

The biggest challenge that we have to face is the same challenge that the average consumer has to face and that is the spikes on the cost. When fuel goes from $1.97 a gallon to $3.25 a gallon within the same 12-month period of time, very few people can adjust to that without making some substantial changes in their life styles. And those changes in their life style result in economic depression upon our business. There are only so many discretionary dollars to be spent and when gas goes up as much as it has or diesel fuel, those dollars gets squeezed.

From our standpoint, it really affects our customers, which our customers are primarily small independent retail hardware stores and building supply places. Now fortunately some of those are located in Congressman Shuler's area and they do not know that

there is a depression going on or any economic slowdown or anything. But there is a lot of places when you go into in eastern Kentucky and southwest Virginia and West Virginia that are feeling the effects of it quick heavily.

Our fuel cost at Seven Wheels in one year, from 2004 to 2005, increased 40 percent, while the miles driven increased three percent. In real dollars that was a difference of almost $300,000 just in fuel cost from one year to the next. And we do not make the kind of profits to be able to absorb those kinds of additional cost. We try to pass on as much as we can to our customers, but then that creates problems for them, because that adds to their cost of goods sold or adds to their expense. And then they try to pass it on to their customers in the form of higher prices or they get squeezed, and usually it is a combination of both. And that is the battle we have all been facing for the last three years is how much do we try to pass, how much can we pass, how much do we have to absorb and then trying to find other measures to maintain profitability because of those things.

One of the things that I would hope could come out of this is two things, anything that can help us to promote energy savings, to identify those savings that are out there and that are available to us, and as Congressman Shuler alluded to, the technology that is available that might help us in conserving energy, many times it is hard to know what is out there. If you know what is there then you can do something with it, but the lack of knowledge and the lack of a common place to go to get that information is very difficult.

And one example I will give, we are in the process of building a new building and we were looking at the lighting and we found out that there is lighting available now that will probably save us about $50,000 a year just in energy used, just in lighting in our warehouse. Well, obviously that got our attention and then we find out that there is a an Energy Act of 2005 that provides a tax benefit on that also. But getting the information on the how to do that is virtually impossible. Very few people know the mechanics of how that works or at least the people that we have tried to contact to find out how this truly works, it is very difficult to do.

So one of the things that I would strongly urge is the availability of information, whether it would be a common source or one source or whatever, be made easier to the average person, because most people—we are much busier every day in fighting the battles of keeping people happy and taking care of customers. And if we can find ways to get that information easier and know specifically how to apply that information to where it is beneficial to us, then it also benefits all of us, because anything we do has a ripple effect, just as anything you all do has a ripple effect. And there is only so much that you can pass on and there is only so much that you can absorb.

And while there is 700,000 small businesses starting up every day I think you alluded to, there is probably close to that many closing up every day too. Because the failure rate is extremely high in small businesses, exceptionally in the first three years.

So again, thank you for allowing me to be here and I look forward to seeing the results of this work. Thank you.

Mr.DAVIS. Thank you for presenting today and you did a great job. Our next witness is Mr. John Hutchinson. John is a graduate of West Virginia University and spent the first 50 years of his life in the hard West Virginia coal fields. He has over 38 years of experience in the coal industry working with construction of underground slopes and ventilation shafts, above ground in the construction of coal preparation plants and material handling and laying systems. Currently Mr. Hutchinson serves as Vice President of finance for Powell Company right here in Johnson City, Tennessee. He also serves on the board of director for the Johnson City, Jonesborough, Washington County Chamber of Commerce. John, welcome to the hearing.

[The prepared statement of Mr. Snowden may be found in the Appendix on page 90.]

STATEMENT OF JOHN HUTCHINSON, VICE PRESIDENT - FINANCE, POWELL CONSTRUCTION, JOHNSON CITY, TENNESSEE

Mr.HUTCHINSON. Thank you very much, Congressman. It is an honor to be here today. Like Mr. Snowden said, I am new to this.

I was asked to make a presentation today on coal and the coal industry of which I have spent my life in. From West Virginia I grew up with it, I lived it, I felt it, I learned it every day. I guess I could start out with a comment about our Powell companies and Mr. Snowden has touched on that. We offer a huge fleets of cranes, boom trucks, lot of Low-Boy equipment, a lot of pick-up trucks, in the hundreds and obviously we feel the impact every minute of the energy crisis; particularly gasoline, diesel fuel, oils and so forth. And as he said, many of those we are unable to pass on in our pricing to our customers. We absorb the upswings and do the best that we can, but that is obviously a major part of our cost.

But that is not really why I was here today, I wanted to speak with you regarding coal. I feel that it is our most important and most abundant source of energy in this country for the past, the current days, and the future.

In my handout—and I would encourage everybody to pick one up, if they have not already. I put in a lot of data there and I am not going to bore you with that at this time. But I would encourage you to go through and read some of the statistics, I provided some charts and graphs. But basically just to give you some information today, currently coal is providing about 23 percent of our energy sources in the U.S. today with oil at 39, natural gas at 24, and nuclear, hydropower and the other making up the balance.

Worldwide, coal is at about 23 percent also, we are right in line with the world market. Oil is 35 internationally and natural gas is 21 percent internationally. So we are some where in line with the world, but the U.S. has the largest supplies, reserves of coal in the world. And there is a pyramid in the handout I would like for you to take a look at. Basically we are looking today at active mines, so this is the ones that are being worked, about 19 billion tons of coal with active mines. Keep in mind we use about one billion tons of coal per year in the U.S. So there is 19 billion tons there, but there is a total of 275 billion tons that are mineable and

identified in this country. If you want to look totally at the reserves you can see somewhere near four billion tons, the balance are tons of coal that are probably not economically feasible to get out. So if we use a billion tons a year and we have a 275 billion tons reserve, we have about 275 or 280 tons at the current consumption available for use in this country.

And most of you may not know this, our federal government is the largest owner of coal reserves in this country, most of that is out west, they lease those properties to coal companies for money.

One of the of the points I would like for you to go away with today, is coal gasification. This is not a new concept, it has been around a lot of years, but I think it is pretty much new to the mainstream today. Basically what that means and I learned a lot with this study, is they take the coal, they react it at high temperatures with oxygen and out of that process comes a new fuel, a synfuel. It is available for use in internal combustion engines and it is used for methane gas and it can be used as others syn-fuel uses. So that is a new word and a new concept and a new use for coal that we all should consider strongly going forward.

Also in my handout you will see more detail on the coal reserves; obviously, the eastern coal fields, the Appalachia coal fields produce bituminous coal, that is a very high quality coal. The coal fields in the west produce a lesser quality but greater tonnages and easier to mine and more economically mined. But certainly here in Appalachia we are more familiar with what we call bituminous coal reserves.

In the U.S. coal-fired power plants account for over 50 percent of the electricity generated in this country. Coal provides 90 percent of that coal; and again, it is a billion tons per year that we are currently mining and using.

Regionally, we have the TVA, it operates 11 coal-fired power plants producing 60 percent of TVA's total power outgo. And that is roughly 15,000 megawatts of electricity sold to 158 locally owned distributors, Johnson City Power Board I believe is one.

I have given you some information in the handout on types of mining and you can review that on your own time. Just a comment, a couple of things, in a 30-year period, coal productivity has increased from two tons per man hour to today about seven tons per man hour. The workforce has gone from about 152,000 in 1973 to roughly half of that, 71,000 today. But the total production has gone from about 600 million tons to over a billion tons, less man power, more tons per hour.

Again the world coal reserves, the United States is at 275 billion, Russia is next at 173 billion and China, India, and Australia are also big coal reserve areas.

Coal is also used in the production of chemicals and fertilizers, not many people understand that. Another point I am going to make about Appalachia coal mines is that during World War II their coal supplies was used in the production of steel to make guns and planes and tanks, et cetera. And without that coal I would fear where we would be today.

Coal use has grown in recent years, because of the secure abundant domestic reserves and relatively low prices. They have maintained the demand in both for the domestic and the international

markets through increased productivity, larger mines and mega mines is the terms, new technology and all the while the fewer mine personnel.

The coal mining industry as a whole provides many jobs in east Tennessee, southwest Virginia and eastern Kentucky. These jobs are in the form of not only coal mine jobs, but also construction, such as the Powell Companies, manufacturing, engineering, sales, marketing, and consulting.

I am going to brag about the Powell Companies right now. We have over 500 jobs regionally to this coal industry and according to some statistics, I think there are about 4600 coal miners office worker type jobs in this area creating an estimated 11,500 additional jobs.

History indicates that each significant action of government was accomplished with immediate and negative effect on production. However, the reverse is also true. That is, positive governmental encouragement will likely resulted in the capital investment necessary to sustain future production at or above current levels. This is what we should all strive for.

In closing, it is essential that we as elected officials, business men and women, state and local officials, and everybody in this room today, should do all we can to sustain this eastern U.S. coal production.

I want to thank you for inviting me to be here today. Again, I would encourage everybody to pick up a handout. I have included also some pictures in there of some coal preparation plants that the Powell Companies have been involved in and I think they are impressive. I hope everybody does too. I will try to answer any questions anybody has.

Thank you, very much.

Mr.DAVIS. Thank you for being here today.

Our next witness is Dr. Frances Lamberts. She co-chairs the National Resource Committee for the League of Women Voters in northeast Tennessee and the State League of Women Voters. Previously Dr. Lamberts taught at East Tennessee State University and is a licensed psychologist and director of psychological services at the Green Valley Developmental Center. She has organized several regional educational forums on ground water protection ambient air health standards, endangered species for East Tennessee State University Lung Association League of Women Voters Education Fund. Dr. Lamberts, welcome.

[The prepared statement of Mr. Hutchinson may be found in the Appendix on page 39.]

STATEMENT OF DR. FRANCES LAMBERTS, COMMUNITY ACTIVIST, JONESBOROUGH, TENNESSEE

Ms.LAMBERTS. Thank you. Thank you, Congressman Davis for inviting me to speak for the League of Women Voters on energy matters. Those have been a concern to the League of Women Voters for a very long time. In order to protect our natural resources, in order to make ourselves strategically more independent with regard to energy availability and in order to keep costs down, the League has for a long time promoted energy efficiency and thrift-

iness and conservation in energy use and expansion of renewable resources as our wisest course in energy policy.

In my written testimony, I had highlighted a personal example to show how little we think the energy resource of efficiency investment has been capped in our area; namely, support for energy efficiency investments are not very available here. They are in other areas and for other utilities. Our major utility, the TVA, for quite some time has not had a serious program in energy efficiency.

I have highlighted a small business, very close by here, a very modern recently opened meat packing facility that provides an enormously important service to hundreds of families in our area who when they modernized that plant took great pain to invest in insulation to reduce energy cost, but are still finding because they must meet high standards, health-related standards for processing and cooling, et cetera, and they conscientiously do meet these standards, their electric bill, their electric burden is very, very high, potentially putting them their viability at risk as a small business.

I am very happy to hear therefore these efforts in the Congress to provide more incentives to small business and homeowners with regard to investments in efficiency and in renewable technology, which some generation in renewables this particular company is now looking to see if they can provide that.

We think this is a very opportune time for us to work on efficiency investments, because the State of Tennessee, our legislature, just passed a bill asking the state to develop a comprehensive energy plan. We would hope that the TVA and state government would work together to put some very high energy efficiency goals and performance standards into that plan. I outlined a number of realizable concrete examples of how this can be done. One of which, relates to what Mr. Snowden was talking about namely, we recommend creation of energy consultant teams that go to homeowners and businesses and do baselines on energy use and then make technical recommendations like he was talking about and then do monitoring. We would recommend obviously for businesses and homeowners that should be a voluntary thing. But we think for public buildings that should be an obligatory measure, you know, for us to improve ourselves and also please be aware that Tennesseans, shame on us, at this time our per capita energy consumption is among the two or three highest in the whole country. So we have a long way to go. Energy efficiency and energy reduction can be accomplished very quickly and concretely.

We would urge—we hope for an initiative between state, government and the TVA and hopefully our Congressional leaders so that energy growth demand in electricity be met at least for the foreseeable future in energy efficiency improvements.

We do note with some concern the apparent steps or plans by TVA for a significant expansion in traditional energy, you know, in capacity through traditional sources; we would point out these sources, critical and must reduce dependence on our waters, to the extent that 83 percent according to the statistical abstract of our daily withdraws of fresh water from our rivers and lakes; namely, more than eight billion gallons a day, go to electricity production from the traditional coal-fired and nuclear power plants. And the

latter particularly are especially vulnerable we think when we know and have already seen both in TVA recently and in other countries that in a climate changed world, water itself is becoming a threatened resource. And so we think that this is not a wise way to go when we have alternatives that are totally independent of water and we would like for us very seriously to think about this. We would urge a predominant redirection by the TVA of the plan for electricity expansion into the renewable resource program that they now have under the good green power switch program, which is however, very, very, small.

At the federal level, the League of Women Voters supports adoption of a renewable portfolio standards for the very many benefits that it has with regard to protection of our environment, with regard to job creation and many other aspects with regard to that diversification of the fuel mix and some more competition in the industry, et cetera, et cetera. There are many, many advantages to this.

Finally we would like to bring to your attention what we see as lack of public oversight in the TVA and we would like to see some accounting from the agency on how it can work on increased energy efficiency and expansion of its renewables. We know in Congressman Shuler's state, there is a Public Utility Commission, we do not have this for TVA. Perhaps some accounting in the form of quarterly reports to the Congressional TVA Caucus could accomplish something like this and we would like to have that accessible to the public.

Thank you very much for your concern and for your interest and for your efforts in these regards.

Mr. DAVIS. Thank you, Dr. Lamberts. You did a wonderful job. You mentioned the state legislature passing some legislation. I see at least two of my colleagues from the state legislature. I see Dale Ford, Dale, thank you, for being here. Eddie Oakley, thank you for both being here. Are there any other members of the State Legislature. I see some county commissioners, good friends out in the audience. Thanks to everyone at all levels of government for your willingness to participate in this Congressional hearing.

Now it is indeed a pleasure for me to introduce Dr. Kelly Tiller. And thank you for bringing that mic to yourself there. Dr. Kelly Tiller, this will actually be the second time I have had her testify before a Congressional hearing and I know you have done that even before I took office. Dr. Tiller is the director of internal operations for the University of Tennessee Office of Bio-energy Programs.

In this role she is coordinating a state and university commitment to more than $70 million to develop a cellulosic bio-fuels industry in Tennessee.

Dr. Tiller also holds a faculty appointment in the Agricultural Policy Analysis Center at the University of Tennessee where she has been a faculty member of the Department of Agricultural Economics since 1999. She received her Ph,D from the University of Tennessee in Agriculture Economics. Dr. Tiller, thank you again for being with us today.

[The prepared statement of Ms. Lamberts may be found in the Appendix on page 63.]

STATEMENT OF DR. KELLY TILLER, ASSISTANT PROFESSOR, AGRICULTURAL POLICY ANALYSIS CENTER, THE UNIVERSITY OF TENNESSEE, KNOXVILLE, TENNESSEE

Ms.TILLER. Thank you very much, Representative Davis, Representative Shuler, for the opportunity to be here today and talk to you about our countries energy needs. And the new domestic renewable energy opportunities and the effects on small businesses.

The U.S. is the world's largest consumer of energy. The entire economy of the U.S. is designed to revolve around the availability of safe, reliable, abundant and affordable energy. In our energy supply picture, a reliance on petroleum as a base source of liquid transportation fuels is particularly problematic.

Petroleum products account for 97 percent of our transportation fuel market. The U.S. holds less than three percent of the world's proven oil reserves, but account for 25 percent of the world's oil consumption. In fact, petroleum consumption in the U.S. is greater than in the next five leading countries combined.

Today 60 percent of that petroleum is from imported sources, much of it from unstable and even hostile nations. America's dependence on petroleum, not only jeopardizes its national security, but drains billions of dollars from the U.S. economy and creates environmental concerns. The economic benefits of breaking this addiction to oil would be immense and widespread. Fortunately there is a commercially viable and sustainable way for the U.S. to transition to a low oil and high growth bio-based economy.

The University of Tennessee and the State of Tennessee have made a significant commitment to developing a cellulosic biofuels industry. In July, Tennessee's Governor and legislature committed more than $70 million in funding for renewable biofuels research and programs including an investment of $49 million in the Tennessee biofuels initiative. Led by UT's Institute of Agriculture, the initiative is a synergistic partnership among the University of Tennessee, the Oak Ridge National Laboratory and our private industrial partners to construct and operate a five million gallon per year, cellulosic bio refinery in east Tennessee.

Importantly, the initiative also includes a farm component to develop 8000 acres of switchgrass as a dedicated energy crop. The initiative focuses on research necessary to refine the conversion process, optimize the use of local farm and forest resources and generally improve the economics of the systems to allow commercial scale up and expansion throughout the state and regions.

Businesses and farmers across the state and nation are watching with enthusiastic, yet cautious optimism, as Tennessee actively invests in this new paradigm for fuel production in the new bio-economy. There are several benefits of the cellulosic bio-economy approach that resonate with small businesses.

First the potential for the U.S. farm and forest sectors to supply more than a billion tons annually of biomass feed stock for a mature cellulosic industry bears significant economic opportunities for the farm businesses, equipment dealers, service providers, and input suppliers that would form the backbone of the biomass feed stock supply chain.

Second, on the second anniversary of Hurricane Katrina we are again reminded of the fragility of the system that has evolved to

meet our seemingly endless energy demands. The economics of cellulosic biofuel suggests a highly dispersed system that is more secure and resilient with new opportunities for small businesses to participate in the energy sector.

Third, small businesses are often particularly sensitive as we have heard today to wide and rapid price swings in energy cost and overall higher energy costs. Our research suggests that within three to four years we could be commercially producing cellulosic ethanol at a cost that is very competitive with gasoline and in line with corn based ethanol. Within five years, we could feasibly produce cellulosic ethanol at a wholesale price of a $1.50 per gallon or less. This is certainly good news for small businesses.

In closing I believe that we are on the verge of a dramatic transformation from a hydrocarbon economy to a carbohydrate economy. As an economist, I know that the business economics of cellulosic biofuels industries will ultimately drive this development and expansion. But as a policy economist, I also know, that there are innovative system wide policy measures that can accelerate the growth of the cellulosic ethanol industry while protecting farm income, ensuring market discipline and supporting the sustainability of small businesses.

Thank you, again, for the opportunity to be here today.

[The prepared statement of Dr. Tiller may be found in the Appendix on page 67.]

Mr.DAVIS. Thank you, Dr. Tiller, for your wonderful testimony. You did a great job today as always. Thank you for what you do.

I would like to start with some questions if I may.

Dr. Eggers, you brought up the point that we need to have a better system at the federal level to communicate what is available to bring down energy costs. Could you expand on that somewhat, who do you think would be the best department of government to do that? The SBA, the Department of Energy, Department of Commerce, do you think it would be better if there were a web site? What is your vision for that?

Ms.EGGERS. It is kind of a question where I will alienate most of government no matter what I say I guess, if I identify one branch. I think there are a lot of ways to get it right and there are also ways to get it wrong and there definitely needs to be significant resources on the Internet. And there needs to be live people with good technical backgrounds on the phone.

Instead of giving a kind of magic bullet answer, my answer is that there are many ways to get it right and I would leave it up to thoughtful people who put a lot of time into thinking about where that should be housed. It should be in cooperation with some of the leading institutions, like the Rocky Mountain Institute who can help us provide what is now in this country cutting edge technical support, but is really just the very basic technical support that people at this table are asking for.

Mr.DAVIS. Thank you for that. I heard most of what you had to say and I am sure my staff got the rest of it.

Mr. Snowden, you mentioned that you had just put in some energy efficient lighting into your warehouse. Paul Chapman, my district director, and I have just had the opportunity to visit a ware-

house last week and it was interesting. In this large warehouse, most of the building was dark until we walked down an aisle and as we would walk down the aisle the lights will come on. And as we passed through that area, lights would turn off automatically. Is that the type of system that you put in and if so, how did you find out about it?

Mr.SNOWDEN. Well, yes, it is a combination though. We have put it in one of our facilities and we are in the process of putting it in a new facility that we are building also and we are looking very strongly at retrofitting all of our existing facilities.

We heard about it through a lighting supplier and it is basically T5 high bay lighting that replaces the current T12s and T8s that typically have been used. And basically what it does, it drives a tremendous amount of light from a high distance, which our ceilings are like 35 feet, down to the floor level where people are picking orders and things like that and they need a large amount of light. It gives a lot more light and it uses much less electricity in doing so. I do not really understand all the mechanics of how it does it. But it is very, very efficient. And that is one of the reason that the tax credit of 2005 is allowing, you know, that to be utilized as part of the lighting—there are three components of that package as we understand it. One of it has to deal with wall structures and roof structures and one of them has to deal with HVAC and the third component has to deal with the lighting. And all three of them enable you to qualify for certain tax credits if you meet the criteria. But again, getting the particulars on how that works is not easily done.

But basically it is that type of lighting that you spoke of and also with electronic sensors so that the electronic sensors sense when somebody goes in and activates the lights. And then if somebody has been—if there has been no activity within that region within say five minutes, then the lights go off. So the electronic sensors allow the lights to be on when there is someone in the area and allow them to go off when they are not in the area. And both of those components are part of what I was referring to, yes.

Ms.EGGERS. How did you find out about it?

Mr.SNOWDEN. I found out about it through a lighting manufacturer, Lithonia Lighting manufacturer, is how we found out about it. And to be honest with you, one of their representatives out of Atlanta is the only person that we found that knows very much about it. And we had a meeting with him and our accountant and our CPA and our contractor to make sure that everybody was on the same page before we, you know, made the expenditure to do it.

Mr.DAVIS. I think you make a very good point. And it goes sort of back to my question to Dr. Eggers. The government is always not the answer to every problem. Sometimes, as Ronald Reagan once said, they are the problem, they just shuffle problems around. It is good to know that there are other businesses that are helping your business to learn about new products and that is usually what makes America great, is we have a system of capitalism in America and people are willing to share great ideas and everybody does better.

Have you had that system in place long enough to actually see how much savings you will receive?

Mr.SNOWDEN. No we have not. We have done the analysis on it based upon the usage of energy of the new fixtures versus what we are presently experiencing and that is where we arrived at our computed savings, we estimate a $50,000 in our existing facilities. We just put the first section of lighting in about two months ago in an addition that we did on our existing facility. It has been in effect about two months.

Mr.DAVIS. Thank you for sharing that with me.

Mr. Hutchinson, thank you again, for being here today. Coal, as you testified, is one of the products that we have domestically more of than anybody else in the world. Can you tell me how long you perceive the coal reserves actually holding out in number of years into the future?

Mr.HUTCHINSON. Well, I think as I stated there earlier and this is, you know, based on estimation certainly, with the known and recoverable reserves today, we see about 285 years worth of reserves. There are other reserves out there that are maybe not attainable and maybe in the future with new technology would be, but at least 285 years worth.

Mr.DAVIS. I have been told—and I do not know if it is true, maybe someone on the panel would know—I have been told that if we continue to rely on foreign oil for our energy policy, there is only about 30 years supply of oil. And can you imagine what that would do to our economy and our economic development here in northeast Tennessee, across the mountains in western North Carolina and across America, if we have to worry about energy. And we worry about it now, can you imagine where we would be 30 years from now. I do not know if that is a true figure or not.

Mr.HUTCHINSON. Well, you know, here is my estimation and I am just going to off-the-cuff here. But, you know, I was around in the early 1970s when we had the gasoline situation and some of these younger ladies were not. But we were in lines and we were, you know, we were on alternate days and we were on license numbers and we were on all kinds of crazy things, that was 1972, 1973, 1974, in that area. And here we are in 2007 and unfortunately we, all of us, are in the same situation that we were back then. The only situation that is different is that we do now have the money to pay the higher prices and bring the product in. But we have not replaced that situation. That is just a situation that still exists. Now whether it be coal or natural gas or some of this new technology that we are hearing about today, we have got to do something. We have got to make a move, we have got to commit ourselves to doing something to replace this oil situation. Because as we all know, whether it is 30 years or three years or a war in Iran, we have got a serious issue on our hands in this country today; one that I feel that we have not approached properly in my life time, so I guess that is a concern I have. We talk and we meet and we hear and so forth, but when it comes to driving our automobiles and operating our trucks and our cranes, you know, I think there is a real issue out there for fuel. I would hope that this would spur some changes that helped us deal with this in the very, very near future.

Mr.DAVIS. You mentioned that coal is producing about 500 jobs in east Tennessee and the surrounding area right now. Let me take that a little further, I am going to ask you what would happen to that number of jobs. Back in World War II Germany was taking coal, turning it into a liquid and running basically its war machine, over 50 years ago. So the technology was available then to turn coal into liquid and gas, do we still have that technology? Do we have it in America and do we have the opportunity to take coal that is abundant in these mountains and then turn it into gas and then what would that do to our economy in northeast Tennessee, southwestern Virginia, even over in the mountains of western North Carolina?

Mr.HUTCHINSON. Certainly the technology for coal gasification is there. And let me back up, you know, I said 500 jobs, that is our company, that is the Powell Companies. I think that number for the region is about 4600 jobs.

But, yes, the technology is there and it is a matter of having the capital to put into the plants to build the facilities. There is some underway in southern West Virginia right now and that is what we would like to see more of obviously that means another source for Appalachian coal and, you know, that is what is near and dear to us.

Mr.DAVIS. One last question for you. There are some members of Congress that seem to be moving away from coal, want to discourage the use of coal, would in some instances not allow the use of coal, what would happen to our economy if coal was taken out of the energy equation?

Mr.HUTCHINSON. Well, you know, if you go back to my handout, you look, we are right now providing 23 percent. I do not think that can do anything but go up. So if you remove that, then there is more dependence on foreign oil and natural gas which I guess, you know, the reserves there are kind of an unknown. Basically what they say about natural gas is they are not sure about the reserves until they mine them or pump them. So, you know, I think if we took coal out of the equation, you know, we have got major problems. We have got more dependence on the foreign oil right off the bat.

Mr.DAVIS. Very scary to me.

Mr.HUTCHINSON. Absolutely.

Mr.DAVIS. Dr. Lamberts, thank you again, for being here. And you and I have talked several times about the green power switch. You have convinced me that was good for me to do. I am a member of that. Could you allude a little bit more to the green power switch and what it does for our environment?

Ms.LAMBERTS. The green power switch program was initiated by TVA and I think on Earth Day 2000, and in 2001 our local utility was able to join it. It is a program under which the TVA through methane capture at sewage treatment at the sewage treatment plant that supplies the Allen Plant near Memphis and through wind turbines and through some solar installations provide electricity from these three, at this time, renewable resources. It is a voluntary program that subscribers need to pay additionally for, in order to obtain it. It has grown far too slowly, it is very small and

we would hope that this would be a strong impetus to expanding that relative to additional generations.

Mr.DAVIS. Thank you. Dr. Tiller, you and I have discussed this often. In my opening testimony, I talked about that we really have not had a new petroleum refinery in over 30 years in America. As we start this move over to biofuels and switchgrass and those type of things, I understand that there is going to be new refineries, but they are not going to be in the Gulf. They have the potential of being all across Tennessee. What do you think will be the economic impact in northeast Tennessee and across the state as we go to those and how will that work from the farmer up through the refinery and out to the consumer?

Ms.LAMBERTS. I think we are looking at a totally different system than the one that we have become accustomed to. So rather than a very highly centralized and very large system, this is a very diverse and dispersed system. I think it brings tremendous opportunities for especially rural economic development, for ag development and for general economic development and even keeping that. Right now, we are sending not only money outside our state to those regions, but even outside our country to regions that are not particularly friendly to us. So it is an opportunity to not only generate those products in -- within our borders and within our region, but to keep that money and income and economic development opportunities inside our borders as well.

As far as kind of how the chain works, there would be a very large number of farmers within about a 30 to 50 mile radius of a bio-refinery that would be producing dedicated energy crops and other biomass resources that would be creating job to transport and the logistics associated with getting that material to the bio-refinery, jobs inside the bio-refinery. They are not huge employers but at a large scale several hundred employees to a couple of thousands per those facilities.

There also would be jobs with the transportation and local use and distribution. You cannot transport this very far since it does not go in pipelines today and so it would be more jobs in that distribution process. Also a lot of development of co-products that would lead to satellite industries that would be either collocated or located near those bio-refineries that would take some of those high values but low volume chemicals, the chemical building blocks, the lignin and other sources, and use those to make value added bio-products that today are largely petroleum based.

Mr.DAVIS. Thank you so much. I would like to yield to my good friend, Mr. Shuler.

ChairmanSHULER. I guess I am probably one of the folks that probably disagree on the coal issue, as my colleague has probably alluded to. If you look at coal, you are talking about liquid coal, obviously has been a topic. Dr. Lamberts has obviously talked extensively about fresh water. Do you know how many gallons of water it takes in order to produce one gallon—fresh water does it take to produce one gallon of liquid coal?

Mr.HUTCHINSON. I do not.

ChairmanSHULER. Six to seven gallons. So what are we going to with the storage of this water after, because we cannot put it back in our streams?

Mr.HUTCHINSON. For one thing, it is recycled in the process and filtered and put back into the system. And hopefully it is not discharged into the streams.

ChairmanSHULER. Hopefully.

Mr.HUTCHINSON. But it is a closed system.

ChairmanSHULER. Sure.

Mr.HUTCHINSON. Intended to be a closed system, yes, sir.

ChairmanSHULER. Dr. Tiller, if you were looking at, and we have obviously talked about that we have so many—you know, if we do not increase our production of coal that we may lose some jobs or if we lessen our dependence upon coal that we may lose jobs. You know, you obviously alluded to it. I mean if you look at our whole entire region. If you look at the state of Tennessee alone and we went into more biodiesel and biofuels, biomasses, you know, what kind of jobs—are we putting our farmers back into the economic structure again?

Ms.TILLER. Absolutely, we estimate that within 20 years, we could have about 20,000 farmers in the state of Tennessee growing a million acres of switchgrass or other dedicated energy crops producing hundreds of millions of dollars in new farm revenue that is not there today. This is also not a zero sum game where it is either corn or soybeans, but since this fits very well on some marginal land, these are new opportunities. That is in addition to the economic opportunities within the facilities and jobs those would support as well.

ChairmanSHULER. And then from the environment standpoint which has a better impact on the environment, coal versus the biomass?

Ms.TILLER. Well, that is a pretty complex question, but the simple answer is that the process that we are talking about which is an enzymatic hydrolysis technology for conversion of cellulose to ethanol or other biofuels is a very green process, very low impact, very environmentally friendly.

Chairman SHULER. Dr. Eggers, one of the most important things that we talk about, you know, how does it benefit, what benefits are we going to have, small business benefits on a healthy environment, you know, if we have a healthier environment how will that impact our small businesses?

Ms.EGGERS. And that is another very complex question, but a good one, because there is definitely a relationship. I think the relationship that most people can easily see and find most tangible is that small businesses will be helped by cleaner air because of reduced healthcare costs and healthcare are—you know, we could all be sitting here talking about healthcare costs pretty easily and their effect on small businesses and everybody else.

But just as an example, our local power utility, Progress Energy, had wanted to put in a peaking plant, about 120 megawatt plant, not very big. It would run 10 percent of the time outside of Asheville and just in Buncombe County alone, the federal government models estimated the county at the county health department would spend another $1.9 million a year on respiratory illness caused by the emissions from that plant. And so respiratory illness whether we are talking about asthma or heart attacks which can be stimulated by small, fine particulate matter, strokes which also

can be caused by air pollution events, they cost us mightily through insurance, so a clean environment really helps us all out and fattens up our wallet, you know, a greener world, a greener wallet. And that is very tangible. But also there is a lot of aesthetic benefits and things like that.

I did want to respond also that there is a tremendous opportunity to gain thousands and thousands jobs nationwide for increases in efficiency and if we have federal programs that are stimulating energy efficiency, we are going to be creating a lot more jobs so Mr. Snowden does not have to call Atlanta. Ideally everywhere in the U.S. people would be able to open up the Yellow Pages and find all kinds of local service providers to do energy audits and to provide renewable energy services. And while I agree the federal government usually is very much an inefficient service provider, the opportunity right now to help stimulate that market development and stimulate that job creation is one that I think is morally in the hands of the federal government.

ChairmanSHULER. And to refer back to Mr. Snowden's information, the Small Energy Efficient Business Act, which was my bill that we put through the House, which was passed, we will be able to gain that knowledge of these type of energy efficient tax credits if you will through our local chamber and our small business development areas throughout our region. So once it passes and it is signed off on by the President, hopefully it will be more—our local chambers will be more actively involved and talk about the tax credits that are available.

I certainly would like to thank this first panel for your testimony and I think it has been very encouraging. We can take so much information back to us and I will yield to the gentleman from Tennessee, Mr. Davis for his closing remarks and actually also an introduction of our second panel.

Mr.DAVIS. Thank you, first panel, you have been very informative, well prepared. Thank you for being here today.

And now the Committee staff will actually switch panels and while we are doing that, I would like to thank Gary Mayberry with the Johnson City, Washington County Chamber of Commerce for helping putting this together.

I would like to thank Homer G'Fellers and his staff at the Johnson City Power Board for your hard work in making this possible. Thank you for what you do. I know that we have been joined by Major Dick Grayson, thank you for being here from Johnson County, we have Mayor Lynch from Unicoi County. Thank you, Mayor Lynch for being here and we have Mayor Crockett Lee from Hawkins County. Thank you each and every one of you for being here today. And if we could we will go ahead and switch panels.

[Brief pause.]

Mr.DAVIS. If we could get the second panel and have everyone take their seats.

Well I hope everyone found the first panel to be as informative as Mr. Shuler and I did. And I would like to welcome the second panel. And we are going to start out the second panel with Mr. Jim Keiffer. Jim is the senior vice president of marketing for the Tennessee Valley Authority, TVA, has over 30 years of experience in both natural gas and electric utility industries. He is responsible

for partnering with the distributors of TVA power, to develop strategies to promote energy efficiency as well as efficient consumption electricity in homes and businesses.

Jim holds a bachelor of science degree in civil engineering from West Virginia Institute of Technology and an MBA from West Virginia University.

Jim thank you for your willingness to testify today. Welcome to East Tennessee.

STATEMENT OF JIM KEIFFER, SENIOR VICE PRESIDENT OF MARKETING, TENNESSEE VALLEY AUTHORITY, KNOXVILLE, TENNESSEE

Mr.KEIFFER. Good morning and thank you both. Thank you Congressman Davis and Congressman Shuler for the chance to be here. I am Jim Keiffer. My title is Senior Vice President of Marketing with our company TVA. I am responsible for TVA'S energy efficiency and conservation efforts in our renewable energy program that is known under the trademark of Green Power Switch.

On behalf of TVA I would like to thank you for the opportunity to discuss the role that energy efficiency is paying in our strategy and how it can affect homes and businesses.

TVA is the nation's largest public power company, about 33,000 megawatts of capacity to supply electricity wholesale to those 158 power distributors that have been discussed this morning. They serve the 8.7 million people in our service region. It is also our responsibility that we generate and give our electricity at the lowest feasible cost and that we support and encourage our customers to use that energy wisely.

The customers know and as the first panel mentioned that the cheapest kilowatt is the one that you do not use and that conserving energy can help TVA reduce the investments that are needed to build new generating plants. Ultimately energy efficiency and conservation is in everyone's best interest, especially the small business sector where it is essential that we keep those costs low.

Earlier this year the new TVA board adopted a plan that makes energy efficiency and conservation a key part of our business plan for keeping TVA power rates competitive. We have set a goal to help make our service region a national leader in energy efficiency over the next five years. It is a goal that will produce economic and environmental benefits for everyone. But we cannot do it alone. It requires a cooperative effort with TVA, certainly with our 158 power distributors, with those 62 directly served customers and federal installations and by everyone who uses TVA electricity.

To achieve our goal, we developed a three part approach. The three elements are first, conservation which we define as using less energy. And then there is energy efficiency which simply means using energy smarter and reducing the daily peak demand, which is the brief period each day when electricity is demanded at its highest. For us for TVA in the winter, that peak occurs in the early morning hours and in the summer it is in the mid to late afternoon. The process we are undergoing began this summer with a pilot program launched in cooperation with distributor customers in Chattanooga, Nashville, and Huntsville, Alabama. Through ar-

rangements largely with small commercial users, we are employing what is known as demand response.

In this program participants cut their energy use during critical peak periods in return for incentives. The results of the pilots will be used to determine if we can and should develop a broader program as part of our overall efforts to reduce peak demand growth by at least 700 megawatts during the next five years and make the region a leader in energy efficiency.

TVA has always worked in the past with our distributor customers to provide energy efficiency programs and services for homeowners and for small business customers. We have an existing program called Energy Right where they can access energy management tools to help them reduce those overall energy costs. We also provide small businesses access to affordable financing to enable them to install high efficiency heat pumps as one of the programs. Today, we continue to work with our customers to identify, evaluate, and implement new cost effective initiatives to help consumers to use energy smarter and reduce the amount they use. These initiatives will give energy efficiency, conservation, and reducing peak demand as well as on site generation a greater role in the mix of resources that we use to meet the demand.

Renewable energy is also important. Our efforts to responsibly control the need for new generation include the renewable program known as Green Power Switch, which was also mentioned by the prior panel. Green Power Switch was one of the first renewable energy programs offered by a utility in the southeast. It gives everyone—business, industry, and the homeowners—an opportunity to support the development and growth of green power and our energy portfolio. All of the money generated by this program is used to develop more renewable energy and to fund research aimed at making it even more cost effective.

Currently about 12,000 residential users and almost 500 businesses are participating in Green Power Switch. It is marketed through 100 of the local utilities served by TVA including both the Johnson City Power Board and Holston Electric.

Our numbers show that nearly three-fourths of the businesses enrolled in Green Power Switch came from the small business sector. They know it pays to display the Green Power Switch logo on their business fronts and to show their support for renewable energy. And I will also add the mix between business and residential in the Green Power Switch program is much stronger in the business area than it is many other green power programs.

Currently we have 16 solar sites across the valley, one methane facility near Memphis and a wind farm on Buffalo Mountain near Oak Ridge, which made TVA the first utility in the southeast to use wind power on a commercial scale. Last month, these sites generated more than two million kilowatt hours of electricity.

One of our solar sites is located here in the first Congressional District at Cocke County High School. It offers a good example of creative ways that solar technology is being used. Solar panels are arrayed to form a shelter for spectators at the high school soccer field. The panels themselves generate enough electricity to serve an average home. This types of innovation is helping to expand the use of solar energy here in the southeast and elsewhere.

Homes and businesses account for about 70 percent of the total electricity consumption in our region. To encourage the broader use of renewable generation TVA has established a pilot program called Generation Partners. It pays homes and businesses for the electricity generated by their own wind and solar units. Currently we have about 30 generation partners participating in the pilot. Plans are underway to make this program part of a permanent net metering program to support the increased use of onsite winds and solar power.

Finally as our plan makes clear, there is no single answer to meeting the growing demands of the Tennessee Valley. We must use a balanced combination of strengthening our current system, investing in new generations such as the restart of Unit 1 at the Browns Ferry Nuclear Plant, purchasing power from the marketplace, and using cost effective energy conservation, and energy efficiency initiatives to meet that growing demand.

The Valley has enjoyed some of the lowest cost electricity available in the United States for the past seven decades. However, the cost of fuels to produce electricity such as coal and natural gas are rising due to the increased demand here in the U.S. and worldwide. By focusing on energy efficiency and conservation, we can all help keep the price of electricity as a competitive advantage for the region's economy and for the people in for the people and businesses who live and work here.

Thank you, very much.

Mr.DAVIS. Thank you, Mr. Keiffer. We appreciate what you do for the region. Thank you for being here in Johnson City today.

Mr.KEIFFER. Thank you for having me.

Mr.DAVIS. Our next witness is Mr. Robert White. Robert, thank you for being here, thank you for your friendship. Robert is in his 23rd year in the Johnson City Power Board, I am making you older than you really are, Robert, a public electric utility company serving all of Washington County and parts of Sullivan, Carter, and Greene Counties. He has served in several roles during his tenure with the power board. His roles included, meter reader, assistant stock keeper, supervisor of stores, purchasing, transportation and manager of maintenance, purchasing transportation.

Robert currently serves as the chief public relations officer, where he manages and oversees the public community relations and customer support departments.

Robert, thank you for opening up your beautiful facility to us today. Thank you for your hospitality and thank you for your testimony.

[The prepared statement of Mr. Keiffer may be found in the Appendix on page 81.]

STATEMENT OF ROBERT WHITE, CHIEF PUBLIC RELATIONS OFFICER, JOHNSON CITY POWER BOARD, JOHNSON CITY, TENNESSEE

Mr.WHITE. Thank you. It is a pleasure to be here this morning. Congressman Davis and Congressman Shuler, thank you for the opportunity to appear before this Committee to address the subject

of today's hearing, the Cost of Availability of Energy and the Effect on Small Business.

I am responsible for managing and overseeing our public and community relations and customer support departments. So we hear a lot from our small business customers.

With national energy costs on the rise, it is a pleasure to address you from within the Tennessee Valley Authority service territory. The Johnson City Power Board serves an area of approximately 357 square miles serving all of Washington County and parts of Carter, Greene, and Sullivan Counties.

Johnson City Power Board is fortunate to have access to TVA generated electricity. It is some of the lowest priced and most reliable electricity available in the United States. We at Johnson City Power Board realize however contentedness is akin to stagnation. This is precisely why we continue to reevaluate our programs, practices, procedures, in our unrelenting pursuit of excellence. It is our mission as a power distributor to be recognized by our customers, non-customers, and competitors as the leading energy and energy services provider in the region and to promote and support economic development programs for the benefit of all.

The Johnson City Power Board customer base has increased by an average of two percent the last eight to ten years. This growth rate has been a result of a mirror increase in both residential and our commercial and industrial customers.

We currently serve 73,227 customers, residential customers represent 86 percent of our customer base and commercial and industrial customers represent 14 percent of our customer base. While commercial and industrial customers represent only 14 percent of our customer base, they generate 49 percent of our revenues. This fact is what drives us to promote programs designed to address our small business customers' needs.

An asset that we offer to our customers, including our small business customer, is our ability to serve as a conduit to the many programs and services offered by TVA. Johnson City Power Board energy services and marketing department offer a key accounts program through which various TVA programs are administered. Although, the key accounts program serves mostly large commercial and industrial customers' special needs, the program also serves as a liaison for the small business customer as well. Our key accounts program partners with TVA to offer programs and services such as have already been mentioned, Energy Right, a program offering energy management tools help reduce overall energy cost; heat pump loans to provide access to affordable financing for installing high efficiency heat pumps; and comprehensive services, which provides technical expertise to increase efficiency or to explore the use of new energy technology.

The Johnson City Power Board also participates in TVA's Green Power Switch and Generation Partners. Green Power Switch is a renewable energy program offering customers the opportunity to support the development and growth of more renewable energy. In 2006 our customers purchased over 1.3 million kilowatt hours of Green Power. Generation Partners is a pilot program that pays homes and businesses for the electricity generated by their own wind and solar units. We are proud to say that Johnson City Power

Board currently has two customers of the 30 participating in Generation Partners.

As the Johnson City Power Board plans for the future, we are committed to identifying and addressing the needs of all of our customers including our small business customers and to provide resources available to make them successful. In the words of our general manager Homer G'Fellers, for any challenge, we will either find a way or we will make one.

Thank you.

Mr.DAVIS. Thank you, Mr. White.

Our next witness is my good friend, Larry Elkins. Larry has been employed by the Holston Electric Cooperative for 28 years and been general manager since 1984. During his tenure as general manager he actively participated in programs and served on numerous committees within the Tennessee Valley Public Power Association, Tennessee Electric Cooperative Association, Appalachian District Power Distributors Association, and the National Rural Electric Cooperative Association where he currently serves on the board of directors representing Tennessee.

It was actually Larry and I that discussed about two months ago the need for this Congressional hearing. Larry, thank you for your foresight and thank you for being willing to testify today.

[The prepared statement of Mr. White may be found in the Appendix on page 85.]

STATEMENT OF LARRY ELKINS, GENERAL MANAGER, HOLSTON ELECTRIC COOPERATIVE, ROGERSVILLE, TENNESSEE

Mr.ELKINS. Congressman, thank you for allowing me to testify today and Congressman Shuler, we are glad to have you on this side of the mountain. We were just over on your side of the mountain a couple of weeks ago, at Mount Mitchell playing golf, so we really enjoyed your area.

As Congressman Davis said, I am Larry Elkins, General Manager of Holston Electric. We serve 30,000 members in Hawkins and Hamblen Counties and then a spattering of customers all over Greene, Cocke, Grainger, even a few in the edge of Virginia.

I have been in the business—I actually started in the business in 1974. And if you recall at that time that is when we started an energy crisis. As one of the gentleman spoke to earlier, this same subject matter that we are discussing today was in the headlines and on the evening news about 34 years ago in 1973. We had long car lines, I know there in Rogersville and the energy crisis that we are experiencing today is nothing new. It started back then. The 1973 oil embargo began a painful realization of the vulnerability of energy supplies. However, the crisis of today is much more than just a shortage of gasoline that led to long lines forming at the gas pumps. More than any time in the past, we are an industrialized nation that is dependent upon electric energy as a basis of our economy. And our appetite for electricity continues to increase.

According to the Energy Information Administration, worldwide electricity consumption is expected to double during the period of 2002 through 2025. But while the demand for electric power con-

tinues to increase, no new base generating plants have been built in years. The plants that have been constructed are peaking units and we have talked a little bit about that earlier that have been built generally just to provide power during peaking times. So no baseload plants have been built.

Some in Congress say to let the natural laws of economics, supply and demand control the price of electricity, let rates go up so the demand for electricity will go down. We found that out in the 1970s and that approach does work. When I came to work at Holston Electric, we were selling a kilowatt hour for a cent and a half and almost overnight it went to three cents. The demand for electricity was cut severely, but that is on the backs of people that can least afford to pay it. The consequences of such an action would prove to be devastating to our business and industry. Adding an increased power cost to the bottom line of major industries in this region who are already struggling with high labor and operating cost will only add to the elimination of local manufacturing jobs and their subsequent relocation to neighboring countries. And statistics show that every manufacturing job in our economy leads to six other jobs in related sectors. This higher rates, lower demand way of thinking also hurts, as I mentioned, the low income and those on fixed income to a greater extent that it does to middle and higher incomes.

Drastic rate increases for electric power is not the solution. Efforts to conserve electricity and to develop alternative sources of energy such as has been discussed here today, such as solar wind, hydrogen fuel cells are all to be applauded and must continue.

Nuclear plants produce power at minimal cost but are extremely expensive and they require an extensive amount of time to construct. But while these efforts inch forward, the United States is at the mercy of the Middle East for its energy. We are at a point that we are going to have to build a base generated plants to provide for the consistent demand for electric power for industrial, commercial, and residential customers or we are going to have to be ready to live with the consequences of an inadequate supply of electric power for this country.

Electricity can be generated by many different sources. According to the latest Department of Energy statistics American electricity is currently being generated 50 percent by coal, 19 percent by nuclear reactors, 19 percent natural gas, 6.5 percent by hydroelectric, 3 percent by oil, and only 2.8 percent is produced by all other sources that we have talked about, solar and green power, and all the many ways that we have.

By a wide margin, coal is the lead in energy source for generating electricity in the United States and the world, it is also the least expensive way to generate electricity, when you take everything into account. And a few other critical statistics to keep in mind, the United States has 26 percent of the world's supply of coal but only two percent of the world's supply of oil and three percent of the world's supply of natural gas.

The protests in this country against pollution from coal-fired plants continue and have led to stricter emission standards and the development of new cleaner technology, such as coal gasification. Everyone wants clean air to breathe and to be environmentally re-

sponsible. But the United States does not control the emissions of the world.

Asia, but primarily China, accounts for 50 percent of the global coal consumption. China uses coal for 82 percent of electricity generation, India 70 percent, South Africa 92 percent. Another staggering fact is that China is bringing in one new coal-fired generation plant on line every week. My point is, even if we restricted our use of coal in power generation to save the planet, we have no way to control the amount of emissions being put into the atmosphere by the rest of the world.

We need baseload generation coming on line and we need it now. We have the coal reserves to fuel the power plants that are required for our future, but without additional generated plants, quite simply, there will not be adequate power for this region.

The electric utility industry is in a standoff with the coalition of environmental and political activists who are coordinating the tax on new baseload plants projects all over our nation. In short, they do not nuclear plants, they do not want coal-fired plants, even with the promise of technology improvements. Rather they tout the folly that renewable generation and energy conservation measures alone will provide enough electricity capacity for our nation well into the future.

Business and industries rely on us to supply their energy needs. Our customers expect to flip a switch and to have power, and not excuses. We implore the use of common sense in the legislative process. Let American ingenuity work out the details of clean coal and safe nuclear technologies and let the construction of new power plants provide for the future of our citizens business and industry.

Thank you, gentlemen.

[The prepared statement of Mr. Elkins may be found in the Appendix on page 87.]

Mr.DAVIS. Thank you Mr. Elkins for your testimony.

Mr. White, the first panel today talked about the need to market the availability of how you can keep your costs low and use less electricity and other energy sources. Could you tell us how you do that here at the Johnson City Power Board?

Mr.WHITE. Sure, I will be glad to.

As I mentioned in my statement we have a key accounts program that is responsible for mostly large commercial and industrial customers, but they also work a lot with small business. And as I mentioned, they provide a way to administer programs that TVA does offer. I will give you an idea of some of the duties that they do handle. They handle billing issues, energy audits, HVAC recommendations, lighting recommendations—Mr. Snowden would not have to go to Atlanta—you could have it right here via our relationship with TVA. Metering questions, power factor questions are becoming much more important to small business with their electronic machinery that they are using nowadays. Outage information, which is very important, technical assistance. We are very hands on with our small business customers through our key accounts program. We have several people who are available any time, they just need to call and make an appointment. We work with TVA real closely with their expertise, with their engineers,

with their experts to provide small businesses that opportunity for these services.

Mr.DAVIS. I have one last question and I am going to sort of spread it across all three of you if I could.

Larry, I remember very well the gas lines back in 1973. I remember our dependence on foreign oil back then. I remember the change in our economy when we went from 30 cents a gallon up to 90 cents a gallon. And now we have gone up to 2.50-$3.00 a gallon for gasoline. So I remember that very well.

As we continue to move forward, we have heard a lot today about renewable energy and that is something I think we have to do. I serve on Homeland Security Committee and I can tell you, I am very concerned about our dependence on foreign oil and our dependence on people that quite frankly do not like us. That is worrisome for me in the homeland security aspect, it is very worrisome for me for our economy as well. And I think that we need to do everything we can to use the domestic resources so we become less dependent on foreign oil. And I think we need to look at solar and we need to look at wind power, we need to use hydro power. I think all of those need to come into play. I think there are some people in Congress that would like to limit it to those three.

Now the question, after I made my statement, the question across all three of you, what happens to our economy and our access to energy if we prohibit the use of coal and nuclear availability in the whole mix? And Mr. Keiffer, we will just start with you and work our way down the line if we could.

Mr.KEIFFER. I will say that the question I want to make sure is, if we limit the access to no more nuclear and no more coal what would happen. Let me say this, we are growing, TVA just said last, this past couple of weeks, we had the 13 highest peak days that we have had in the history. So our market area is growing. We believe we have to have a mixture of nuclear, of baseload generation of some sort, peaking and energy efficiency. If you were to take away the fact that you could not add any more nuclear or you could not add any more coal, and you try to serve the growing needs of the Valley, I simply do not think you can keep up with the demand. We believe you need to do all of the above.

Mr.DAVIS. Thank you.

Mr.WHITE. I will reiterate that point. I do believe it is a balance approach. I feel that especially from our perspective as a distributor we are so, I guess we are at the mercy of what the purchase power cost and the additional cost may affect TVA, which is going to ultimately affect our wholesale power cost, which is going to affect our end use customer. I think that conservation, efficiency, cutting the peak demand, but at the same time realizing that if there is a demand for that electricity they expect us to have it. They expect when they flip that switch that the energy is going to be provided.

And there is another thing we have to consider as well. We feel it is our responsibility to provide the infrastructure to make sure that as the power is generated and transmitted to us that we have our infrastructure in place to provide it. We are affected by so many different costs, whether it be fuel cost, the lead times for transformers are now up to 12 months. It is affecting our cash flow

with our increased inventory, the cost of having to purchase so much in advance. When you combine all that with the fact that if we are under distress because customers do not want to have nuclear or coal generation, then I think it is going to affect our end use customer a whole lot worst than they would ever anticipate.

Mr.ELKINS. Congressmen, I would answer that question from not being from a power distributor point of view, but being chairman of the industrial development board of Hawkins County and serving in that capacity for the last 20 some years.

We are primarily about creating jobs and economic development for our young people that are growing up here and that are going to East Tennessee State, Northeast State and University of Tennessee, we have got to supply jobs. And we are seeing more and more of our jobs leaving. And I know over in Congressman Shuler's neck of the woods, all of the industries that have left North Carolina. We have got to maintain an industrial base. We cannot live as a service society for long. And as I mentioned statistics show that one manufacturing job creates about six related jobs in the service industry and various things. And we are seeing so many jobs leave because of labor costs and things of that nature. You add on the back of that, electricity and energy costs going sky high and you are going to see industry leaving our country. And that is my main concern. I will be retiring here in a couple or three years out of the power business, but I see so many young people that need jobs and we are going to—if we are not careful in Congress by raising the price up just as I said in my speech to limit the use of demand of electricity, it is kind of like my mother used to say, cutting your nose off to spite your face, and we are going to end up losing a lot of industrial jobs which trickles down to all the other jobs in our economy and it really bothers me from that point of view.

Mr.DAVIS. Thank you, Mr. Elkins. Thank you, panel, you have done a wonderful job. I also see Mike Browder out in the audience from Bristol Electric; Mike, thank you for being here.

Thank every one of you for taking part in this hearing today and with that I yield back the remainder of my time.

ChairmanSHULER. Thank you so much, Congressman Davis. I want to commend all three of you because it is not until your power goes out that you realize what an impact you have on all of our lives. Whether it be a storm or snow or ice, and the people, the men and women work for your different organizations, the time and commitment that they put forth in those wet rainy cold nights. Please extend my special thanks to them, because they are true heroes when the lights come back on.

You know I am very encouraged in a lot of things I hear today, obviously, Mr. Keiffer, what the TVA's approach has been, I commend the TVA for continuing to put scrubbers on those smoke stacks. And truly making a difference on energy efficient waste.

There is so much that we possibly can do. You are exactly right, it is going to take a lot of pieces of a puzzle and we talk about homeland security, part of it is going to be diversifying our energy sources as Dr. Tiller had mentioned earlier. You know, putting back—biomass cellulosic fuels, putting that back into the economy for our farmers. That is going to create—Mr. Elkins, as you say, that is going to create jobs in our district. It is going to take a lot.

I think we are very blessed both in western North Carolina and in east Tennessee. People like where we live. And so part of it, the people that has moved in here has caused some of the reasons for it.

And I think one of the most important things is people are staying here, you know, when they go to East Tennessee State University or they go to UNCA they want to remain and live in the community. We have to do a very good job economically and industrial to be able to protect it. And we have done some things over many administrations that has created a problem and an issue and we talk about losing our jobs and not having adequate enough jobs here to really retain the people we would like to. As we say kind of retain our mountain values, retaining those mountain values is retaining our students.

Whether it be NAFTA or CAFTA, however you look at some of the trade issues, I know the other night at 1:00 in the morning I was still up looking, going through the toys that had the recall on them from China, because of lead base paint, you know. It started out kind of being funny, but by 1:00 in the morning I was still looking through those toys and realizing every single toy that my two children, who are two and six, every one of them were made in China. And so you know, they kind of look Santa Claus brings them all, but momma and daddy took them all away in one day.

So I mean, we have to, I guess that kind of gets back to my point, Mr. Elkins, you know, does China's wrong make it right for us to continue down that path of destroying our environment? That is a question.

[Laughter.]

Mr.ELKINS. No, it does not. And I am concerned and I think it is going to some national treaties between countries the size of China and Russia and the United States on a global basis. And certainly we need to set the standard. I do not want to sound like I am just totally oblivious to everything going on, because as you said, I have spent my 59 years here in the mountains of east Tennessee and I love it and I love the lakes and everything and we want to guard against it. I just do not want to take a reckless approach that some of I have heard. As was mentioned, I serve on a national board and meet in Washington on several times during the year and I hear and read all of the comments from the Congressmen and Senators throughout the United States and there seems to be a movement toward what I would consider to be a reckless abandonment of common sense when it comes to energy.

ChairmanSHULER. I can assure you that Congressman Davis and I are not going to let it go reckless and abandon and some times, do not always pay attention to just the folks that talk on C-span because I do not think they always voice the opinion of the Congress. And, you know, some of them get up on both sides, I would say Congressman Davis, they get up there and I think it is for their—they want to become famous. So we do have to have those approaches, and I think we have to take every aspect. And even personally, I am very fortunate that I can—I am getting ready to put an anemometer up on the seventh, at my home to be able to track the wind right in my district at my home. I am hoping that is going to work. And we have been able to work with the power

company and they are very excited about it. And it is going to take small steps and it ultimately takes each and every one of us as individuals and as a community to truly make that difference and I commend all of you for the work that you are doing, because I know that, you know, is building a plant what you really would like to do, you would probably like to maintain the stuff that you have presently because I know from the TVA and Mr. White, I know from you all of us would like to maintain what we have. If we could find a way to utilize other resources and create the jobs that we have. I think that would make it a better community for all of us. And if we can find technologies and ways to utilize some of the resources that we do have, then I think that is where we have to work together and truly be a big part of the solution and as government, we are a lot of problems sometimes and we have to be a better part of the solution. And hearing your testimony today, it seems like I looked at every single question that the staff had put together and you guys have done an outstanding job of truly answering all the questions and just a wonderful job. And in my closing, I would like to say thank you so much for having us here, Mr. White, in your facility.

Mr.WHITE. It is a pleasure.

ChairmanSHULER. And Tennessee always means a whole lot to me in so many different ways. And I feel privileged to come back and Congressman Davis, a ranking member, having me in his district. And I yield back.

Mr.DAVIS. Heath—and we know you as Heath—thank you for being with us. And I would like to thank Bridget Baird with Senator Corker's office; Bridget, thank you for what you and the Senator do. I was with Lamar Alexander earlier in the week talking about important issues.

I would like to thank my own staff. You can imagine, it takes a lot of work to put one of these together and, Heath, you know that first hand with your staff as well. It is a team approach. And I thank each and every one of you for being here today. And this is something that happens, very unusually, we actually end on time. Thank you.

ChairmanSHULER. Also the staff of the committee has done and understanding, terrific job and my staff as well.

This hearing is adjourned.

[Whereupon, at 12:00 p.m., the Subcommittee was adjourned.]

STATEMENT
by the
Honorable Heath Shuler, Chairman

House Committee on Small Business
Hearing on "The Cost and Availability of Energy and the Effect on Small Business."
The Johnson City Power Board
2600 Boones Creek Rd., Johnson City, TN 37615
August 31, 2007, 10AM

I now call this hearing on "The Cost and Availability of Energy and the Effect on Small Business" to order.

Here in Tennessee, we will examine the matter of energy prices and how it impacts small businesses. It is an issue that affects nearly every industry – whether it be a retailer coping with higher electricity rates or the small trucking company that is dealing with the volatile gasoline prices. It is one of the most critical economic challenges facing our country today.

The increasing cost of energy is making it difficult for many small business owners to manage and survive. It is the reason that the rise in energy prices is the leading concern amid small and medium-sized business owners, according to a recent survey published by the PNC Financial Services Group.

While gas prices have dipped recently, the cost of energy remains high for oil, natural gas, as well as electricity. Small businesses are particularly vulnerable to high prices because they have lower profit margins. Unlike their larger competitors, they often lack the cash reserves to cope when there are spikes in prices.

One of the industries that has been hardest hit by these price hikes both here in Tennessee as well as my home state of North Carolina is the manufacturing sector. Small and medium sized businesses who account for approximately 57 percent of all manufacturers have been facing many challenges over the last two decades and now energy prices are the latest.

Manufacturing jobs have gone overseas for a variety of factors and the cost of energy is only adding to these problems. That is one of the reasons Congress needs to act sooner rather than later as energy must not become another factor in the decision to move good-paying jobs overseas.

I am proud to say this Committee has worked to highlight the urgent and significant impacts faced by small businesses when it comes to energy. In our committee, we have worked for both immediate and longer term resolutions to these challenges.

The Committee has considered measures to help deal with some of these issues. Earlier this spring, I introduced the Small Energy Efficient Business Act (SEEBA) which was included in the comprehensive energy legislation (H.R. 3221) that passed the House with strong support on August 4, 2007.

My bill helps small businesses acquire energy efficient technologies by providing for more flexible loan terms through the SBA's 7(a) and 504 lending programs. The legislation also requires the SBA to develop a national strategy for educating small firms about energy efficiency.

The bill will create a Renewable Fuel Capital Investment (RFCI) program that invests in research and production of renewable energy sources by small businesses. This includes the development of biodiesel, ethanol, and related research concerning other biomass fuels such as cellulosic ethanol.

While this is a start, I believe more can be done to address the issue of energy prices. That includes making sure that we are encouraging the creation of energy supplies here in America, while helping small businesses deal with the current situation.

In the short term, small businesses must deal with the reality that they are going to pay high prices for electricity, gas and oil. To help them cope, I believe we need to ensure that companies here in America are able to compete in light of these costs.

Small businesses often lack the resources to identify equipment and techniques that may save their businesses money down the line through reduced energy consumption. I believe there needs to be greater tax incentives for small businesses who invest in energy efficient equipment. These policies would assist them in decreasing overall energy consumption without harming their business growth.

We also need to do more to promote more domestic supplies of energies using biomass and cellulosic ethanol. The state of Tennessee has obviously been a leader on this front where the University of Tennessee is working to develop new technologies for these clean energies. These investments can pay off in a number of ways. It will not only help rural economies, but it holds the potential for long-term energy solutions.

Quick action is needed to help small businesses contain their costs, remain competitive, and play a necessary role in reducing carbon emissions in the U.S. This Committee looks forward to working together with you to continue solving energy issues important to our nation's small businesses.

I would now recognize Mr. Davis who serves as Ranking Member of the Subcommittee on Contracting and Technology for his opening statement.

Opening Statement
Congressman David Davis
"The Cost and Availability of Energy and the Effect on Small Business"

House Committee on Small Business
August 31, 2007

Good morning. Thank you all for being here as we examine the availability and cost of energy and how that is affecting our small businesses. I am very appreciative of each of our witnesses who have taken time out of their undoubtedly busy schedules to provide this committee with testimony today.

Before we begin, I would like to sincerely thank and welcome Congressman Health Shuler for making the short trip over the Blue Ridge Mountains into our beautiful district. We may come from different states, be members of different parties, and only one of us can still throw a 12 yard out pattern on a rope (you'll have to guess which one of us that is), but we both care passionately about the survival and prosperity of American small business.

Being back here in Tennessee is probably a little bit like a homecoming for you, isn't it? For those of you who may not know (and there's probably not many of you who don't), before he was Congressman Health Shuler, he was Health Shuler, the 1993 SEC player of the year and NCAA Male Athlete of the Year while playing quarterback at the University of Tennessee. Welcome back.

But what many of you may not know is that following his playing days in the NFL, Heath became a successful entrepreneur and small business owner. He began a real estate brokerage firm and several other successful real estate companies. I consider Heath to be a strong asset to the House Small Business Committee as he brings real-world experience to the Committee as he, like myself, has owned a small business. He knows the pressures of meeting payroll, finding affordable health insurance for his employees, and complying with government regulations.

Across the United States, small businesses make up more that 99 percent of all non governmental employees. They also lead our economic growth by creating anywhere between 60 and 80 percent of the net new jobs in our economy. Small businesses are dynamic and continually changing to meet consumer demand and market needs. Almost 700,000 small firms with employees start up every year.

Today, we are addressing one of the most significant problems faced by our small businesses—the rising cost of energy prices. In recent years, it has become painfully clear that America is far too dependent on foreign oil. We import nearly two-thirds of the oil we consume. With gas prices—in East Tennessee and throughout the country—hovering around three dollars a gallon, it is important for Congress to continue exploring ways that we can produce more of our energy domestically rather than relying on oil from the volatile Middle East.

It is quite apparent that the United States must work toward a balanced and diversified energy policy--including locating and developing our own domestic sources of fossil fuels--such as those located in the Arctic National Wildlife Refuge and in the oceans off of our shores. Exacerbating our dependence on foreign oil is the fact that a new oil refinery has not been built in the United States in over 30 years. I believe we must take a long hard look at our refining capacity as part of the solution.

Due to astounding technological advances in recent years, we can now look to the immense potential of renewable energy as alternatives to fossil fuels. Biodiesel and Ethanol are fast becoming household names and their prevalence in the marketplace has increased dramatically in a very short time. There can be little doubt that the increased demand for renewable fuels has had a positive impact on our nation's economy, including small businesses. When one considers the contributions of wind, solar, and nuclear power we can begin to see that we have taken great strides in reducing our foreign oil dependence.

Diversifying and improving our nation's energy production and consumption increases competition, which we all know drives prices down, spurs innovation, and creates opportunities for niche industries to crop up and begin to thrive. In fact, more than 70 percent of renewable fuels producers are small businesses.

That said, there is still more that needs to be done, including examining more immediate fixes to help small businesses and home owners alike cope with rising fuel costs. We have asked our distinguished panel to discuss both long and short term solutions to this pressing problem and I am very eager to hear their testimony this morning. Again, thank you to all of you for being here today and I now yield to the Gentleman from North Carolina, Mr. Shuler.

Testimony of Dolores M. Eggers, Ph.D., M.S.P.H.
University of North Carolina at Asheville
To the U.S. House of Representatives
Committee on Small Business
August 30, 2007

Congressman Shuler and Congressman Davis, thank you both for your service. Thank you also Congressman Shuler for inviting me to speak on energy issues and opportunities as they relate to small businesses.

I am a professor in the Environmental Studies Department at UNC Asheville where I teach U.S. environmental policy, natural resource management, and strategies for sustainability, and other classes. I also serve on the NC Legislative Commission on Climate Change. My own small business is rental property.

We are all feeling the effects of rising energy costs as global demand for energy increases. Unfortunately, energy costs will continue to increase. So how can we address that growing impact on our local economy and small businesses?

The best help you can give to small businesses is to make energy efficiency, conservation, and renewable energy more available and affordable.

Why efficiency and conservation? The most affordable energy is the energy we do not use – the kilowatt hour we save through efficiency and conservation. According to research done for the N.C. Utilities Commission, the cost of generating a new kilowatt hour from the least expensive source, coal, is $0.07 but the cost to save a kilowatt hour through efficiency is $0.03.

Because about half of our electricity is used in buildings, I'm going to talk about energy efficiency in buildings for a minute, then present a list of win-win policy recommendations.

One of the best things about investments in efficiency is that the savings are usually permanent. A day-lit building or extra insulation will save money for the user year after year. With the payback period on many investments being short, those savings soon become additions to the bottom line.

Most of us are steeped in the old design mentality of increasing marginal costs - that is, the more energy you save, the more it costs per kilowatt hour. But what we are finding is an effect Amory Lovins calls "tunneling through the cost barrier" in which, when we combine many things at once, for example better lighting and windows with more efficient HVAC, better HVAC controls, shading, better insulation etc., some of which have long payback periods, then all of a sudden, something transformational happens. We see new opportunities for cost savings emerge. It becomes possible to buy a smaller and more efficient HVAC system and put in place fewer east- and west-facing windows, but still have ample natural light, and because of the cost savings from smaller systems, the total investment in energy efficiency and conservation decreases (e.g., in the full example in the back of the handout, from over $26,000 to just $4,340) and the payback period goes to less than one year for the entire package. This is just the familiar concept: the whole is greater than the sum of the parts, but people don't expect it here, so they

don't look for it. As a result, small businesses lose out on opportunities and our competitiveness lags behind.

In some cases, it actually costs less to build highly energy efficient structures than conventional construction. This is a foreign idea for most people in the U.S., but not in other places. We see this kind of thinking rapidly emerging in other countries - Japan, Germany, Holland and now China. Yet, in the U.S., only a handful of architecture and engineering schools are teaching students these design techniques.

For folks in existing structures, or who want to build traditionally, we have known for a long time that investments in individual efficiency projects can provide significant savings, but most people do not know what the opportunities are, nor do they know what projects would be most cost-effective for them. We need to bridge those gaps.

What can you do to help small businesses?
Support win-win legislation that does the following:

1. Establish national goals for efficiency, conservation, and renewables.

2. Make sure small business owners have access to tax credits for efficiency, conservation, and renewables.
The tax credits should be:
a. extended for at least one decade;
b. available for smaller projects (e.g., start at $300);
c. transferable and/or available to renters so that businesses that rent space and pay their own utility bills can use the tax credits or transfer (sell) them to the building owner or another buyer; and
d. larger.

3. Improve availability and depth of technical support on energy efficiency, conservation, and renewables. Existing government programs at EPA, DOE, HUD, etc. are too small and not optimally coordinated.

4. Require all states to decouple utility profits from energy sales. Utilities must be allowed to make profit from energy efficiency and required to meet efficiency goals.

5. Establish a national carbon cap to stimulate markets, address climate change, and meet our 1992 Rio Earth Summit commitment.

6. Require or encourage better training programs for architects, engineers, plumbers, electricians, builders, etc.

7. Require of encourage the development of "negawatt" programs, such as Austin Energy's.

8. Use the moral authority of Congress to call for change at the state and local level. Perhaps create a national a national challenge of some sort. Americans love a challenge.

Thank you for listening and for coming to the people. Please let us know how we can help you.

Benefits of recommended policies include but are not limited to:

Benefits to small businesses

- Reduced energy costs
- Protection from energy price increases
- Improved resale
- A "level playing field" of access to incentives
- Improved comfort
- Improved aesthetics (e.g., less dust or more light)
- Reduced sick days
- Increased worker productivity

Benefits to utilities

- Transmission and/or distribution savings
- Peak load reductions
- Fewer new power plants needed
- New profit opportunity through renewables, efficiency, and conservation

Benefits to society

- Job creation for renewable technology and energy efficiency
- Growth of renewable energy and energy efficiency technology
- Tax revenue from new businesses and jobs
- Improved housing stock/preservation
- Reduced emissions to air and water
- Reduced health care spending, especially on respiratory and pulmonary illness
- Water and wastewater savings
- Improved national security
- New market opportunity from transferable tax credits

For an average office building in Denver, here are typical payback periods in years, for some efficiency investments, when done separately:

Energy efficient lighting	1.63
Daylighting	3.14
Window glazing	4.18
Energy Efficient HVAC	5.25
HVAC controls	5.73
Economizer Cycle	7.27
Shading	14.77
Insulation	15.84
Combined construction costs of above projects	$26,200

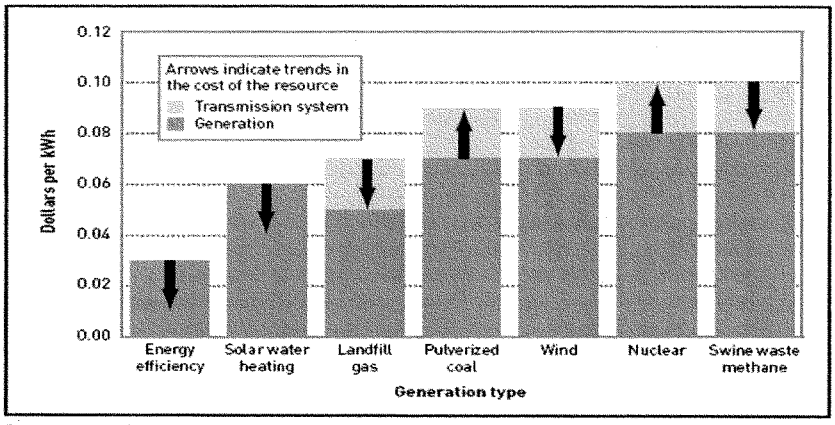
New opportunities for savings when all efficiency options are combined:

Fewer E & W windows	-$4,160
Small and different HVAC	-$17,700
Total capital cost reductions	-$21,860

Total cost increase over conventional building	$4,340
Annual energy cost savings	$4,500

Therefore, payback, when all systems are combined, is less than one year.
(For a detailed description, see Lovins, 2007, lecture 1, from 5:20 to 20:00. Full reference on next page.)

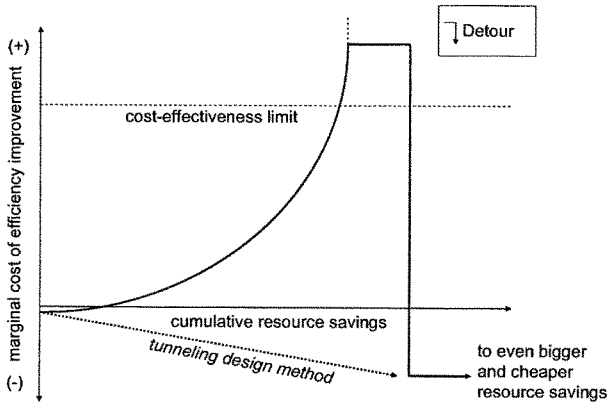
Cost comparison of electricity technologies



Several types of renewable sources of energy are less expensive than coal and nuclear power, including landfill gas and solar hot water. Energy efficiency is one-third the cost of new coal. The cost of renewable energy and efficiency measures is dropping, while the cost of coal and nuclear energy is on the rise.
Source: "Analysis of a Renewable Portfolio Standard for North Carolina," prepared for the North Carolina Utilities Commission by La Capra Associates, Inc., GDS Associates, Inc., Sustainable Energy Advantage, LLC., December 2006.

Source: Environmental Defense (2007) The Power to Choose: North Carolina's Clean-Energy Future. www.environmentaldefense.org/documents/5971_NCCleanEnergyFuture.pdf

New design mentality: expanding returns,"tunneling through the cost barrier"
Source: Lovins, 2007.



From: Amory Lovins (March 2007) Stanford Energy Efficiency Lectures "Advanced Energy Efficiency: Concepts and Practice." Videos of these lectures are available at no cost on the internet. I very highly recommend them. They are clear and filled with examples of opportunities.

The Cost and Availability of Energy and the Effect on Small Business

Presented to

U.S. House of Representatives

House Committee on Small Business

August 31, 2007

Good morning. My name is Stanley Snowden and I am addressing the availability and cost of energy and its effect on small business. I want to thank all the members of the sub committee for allowing me this opportunity.
I was invited as President of Seven Wheels Trucking Inc. of Morristown, Tenn. We are a sub chapter S corporation engaged in contract hauling for Wallace Hardware Co. of Morristown, Tenn. of which I am also President. Our business provides approximately 35 tractors and 120 trailers for the delivery of hardware and lumber to the customers of Wallace Hardware Co. This involves travel in approximately 16 states and approximately 2,400.000 miles per year.

Our primary energy concern involves diesel fuel. Our company nor its sister companies can exist without it. Our business requires we make deliveries daily to many remote locations. Our customers are primarily independent retail hardware and building supply dealers. These folk compete daily with Big Box competitors such as Lowes, Home Depot, and Wal Mart. They rely on us to provide them product in a timely fashion. They cannot have the depth of product that the Big Box stores do so they have to rely on wholesalers such as ourselves to provide them what they need in a just in time fashion. They can turn their inventory quickly and not have to have as large a mark up on the product as they would if they had to stock quantities beyond their capital resources. This is how they are able to compete and stay in business against the Big Box stores. In addressing the effect of availability of energy on the small business we would be out of business without a consistent availability.

Having acknowledged the necessity of fuel for our business let us now turn to cost. Fuel is the largest single cost we have but is also our largest revenue source since we pass the cost on to Wallace Hardware in our charges to them. The effect on Wallace Hardware and its retail customers is much more devastating. Our fuel costs have increased over the past 3 years by 50%. The majority of this was in 2004 – 2005 when our fuel cost for the year went from $749,052 in 2004 to $1,026,179 while our miles driven the two years only changed 3%.

.We absorbed the additional fuel costs for many months since it was a part of our selling price to our customers. We realied we could not continue to do this and implemented a sliding scale fuel surcharge which we added to each delivery we make. The amount is triggered to a base and goes up or down by $1.00 each time the national average on diesel fuel changes $.10. Since we started this it has gone from $0 to as much as $17. It presently is at $13. This enables us to recoup some of our cost but you can never get it

all. We use a large amount of fuel in daily activities other than delivery and there is no way to pass on these additional costs.

The delivery fuel surcharge also has an impact on our retail customers. The charge is a below the item cost for the retailer. It either directly increases their expense this amount resulting in lower profitability or they have to figure out a way to build it into the price to be able to recover and this affects their ability to be competitive. It typically will increase their cost of goods sold by about 2%. We change our charge as fuel goes up and down because we think this is the fair way to do it but it keeps the dealers cost in constant change resulting in an increase work load for them to manipulate it. Ultimately the consumer is paying for all the additional cost.

Our other major cost is power, primarily heat and light. We are currently planning to change out all of our T-12 fluorescent lighting to T-5 which will result in a savings of about $50,000 per year. Last year we repaced our main HVAC to go to a more efficient unit.

In summary energy is a necessity to our business but the cost of that energy is a direct expense to our bottom line and affects our ability to stay in business as an independent business. We must conserve to the best of our ability to be able to stay in business. With the continued demise of manufacturing in the United States we are locked in to importing a large portion of the items we sell and all of this requires trucks and fuel to get to the ultimate consumer.

Sincerely
Stanley Snowden
President Seven Wheels In.
President Wallace Hardware Co. Inc.
President Walker's Supply Co. Inc.

WHY NOT COAL?

August 31, 2007

Coal Facts

* Good morning ladies and gentlemen. I am John Hutchinson and I am pleased to be here this morning to talk with you regarding one of America's greatest and most abundant sources of energy for yesterday, today, and the future..that being coal.

* U.S. energy sources today consist of:

Oil	39%
Natural gas	24%
Coal	23% (roughly 1 billion tons per year)
Nuclear	8%
Hydropower	3%
Other	3%

* Coal is indispensable for the production of electricity and steel. Other key uses include cement, paper, limestone industries and industrial heating.

* Technology is now in place for coal gasification, a process whereby coal is converted into a syngas and is itself a fuel. The advantage is that more of the energy in the fuel is extracted. It may then be burned in internal combustion engines, used to produce methane gas, or converted into a synthetic fuel.

* U.S. coal reserves stand at 275 billion tons, an amount that is greater than any other nation in the world. This includes reserves at active mines and estimated recoverable coal reserves. Our federal government is by far the largest owner of the nation's coalbeds, particularly in the west.

* These reserves are capable of meeting domestic demand for more than 285 years at current rates of consumption.

* Coal reserves at existing mines by selected states include:

Alabama	355 million tons
Illinois	747 million tons
Indiana	382 million tons
Kentucky	1,169 million tons
Ohio	371 million tons
Pennsylvania	616 million tons
Tennessee	19 million tons
Virginia	294 million tons
West Virginia	1,741 million tons

* Total U.S. coal reserves include:

Recoverable reserves at active mines	19.4 billion tons
Total estimated recoverable	275.1 billion tons
Measured and indicated reserves	507.7 billion tons
Total Identified reserves	1730.9 billion tons
Overall reserves, including yet identified	3968.3 billion tons

These reserves are illustrated by a pyramid in your handout. Keep in mind we consume approximately 1 billion tons per year domestically.

* In the U.S., coal fired power plants account for over 50% of the electricity generated.

* In recent years 90% of U.S. coal is consumed for the generation of electricity. That equates to roughly a billion tons per year.

* Regionally, TVA operates 11 coal fired power plants, producing 60% of TVA's power, selling over 15,000 megawatts of electricity to 158 locally owned distributors.

* Types of coal mining include:
    - Underground mining
        - Conventional mining
        - Continuous mining
        - Longwall mining
    - Surface mining
        - Strip mining
        - Contour mining
        - Area mining
        - Highwall mining
        - Mountaintop removal mining

* Coal mining productivity

1973	2.16 tons per man-hour	152,204	employed	599	million tons
1983	2.50 tons per man-hour	175,642	employed	782	million tons
1993	4.70 tons per man-hour	101,322	employed	945	million tons
2003	6.95 tons per man-hour	71,023	employed	1,072	million tons

* World coal reserves include:

United States	275 billion tons
Russia	173 billion tons
China	126 billion tons
India	93 billion tons
Australia	90 billion tons

* Coal is also widely used throughout the world for the production of chemicals and fertilizer.

* During World War II, our Appalachian coal mines provided abundant coal supplies for the production of steel used to make guns, planes, tanks, etc. required for the war effort and significant to the outcome of that conflict.

* Coal use has grown in recent years because of secure, abundant domestic reserves and relatively low prices. Demand has been maintained through increasing mine productivity, larger mines, technology for more efficient systems, and fewer mine personnel.

* The coal mining industry as a whole provides many jobs directly or indirectly to East Tennessee, Southwest Virginia and Eastern Kentucky. These jobs are in the form of, not only coal mine jobs, but also construction, manufacturing, engineering, sales, marketing, and consulting. The Powell Companies alone, headquartered in Johnson City provide over 500 jobs regionally to the coal industry. In total, there are nearly 4600 coal miners/office workers in this area, creating an estimated additional 11,500 jobs.

* History indicates that each significant action of government was accomplished with an immediate and negative effect on production. However, the reverse is also true. That is, positive governmental encouragement will likely result in the capital investment necessary to sustain future production at or above current levels. That is what we all should strive for.

* In closing, it is essential that we as elected officials, businessmen and women, state and local officials, and all of you present here today do all we can to sustain Eastern U.S. coal production.

* Thank you all for this opportunity to speak to you today regarding our coal industry, particularly that portion that impacts us and our businesses here in Appalachia. I will take questions or comments that you may have at this time.

8/31/07

Gasification

From Wikipedia, the free encyclopedia

For the water carbonator, see Gasogene.

Gasification is a process that converts carbonaceous materials, such as coal, petroleum, or biomass, into carbon monoxide and hydrogen by reacting the raw material at high temperatures with a controlled amount of oxygen. The resulting gas mixture is called synthesis gas or syngas and is itself a fuel. Gasification is a very efficient method for extracting energy from many different types of organic materials, and also has applications as a clean waste disposal technique.

The advantage of gasification is that using the syngas is more efficient than direct combustion of the original fuel; more of the energy contained in the fuel is extracted. Syngas may be burned directly in internal combustion engines, used to produce methanol and hydrogen, or converted via the Fischer-Tropsch process into synthetic fuel. Gasification can also begin with materials that are not otherwise useful fuels, such as biomass or organic waste. In addition, the high-temperature combustion refines out corrosive ash elements such as chloride and potassium, allowing clean gas production from otherwise problematic fuels.

Gasification of fossil fuels is currently widely used on industrial scales to generate electricity. However, almost any type of organic material can be used as the raw material for gasification, such as wood, biomass, or even plastic waste. Thus, gasification may be an important technology for renewable energy. In particular biomass gasification is carbon neutral.

Gasification relies on chemical processes at elevated temperatures >700°C, which distinguishes it from biological processes such as anaerobic digestion that produce biogas.

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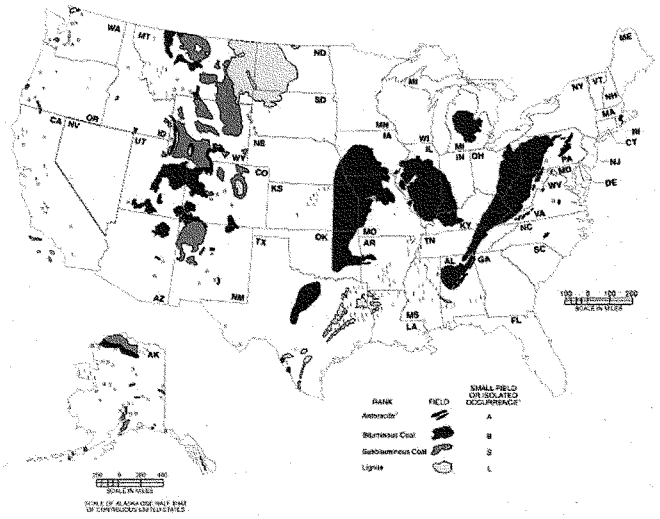
Coal Bearing Areas of the United States



Sources: United States Geological Survey, Coalfields of the United States, 1960-1961; Texas Bureau of Economic Geology, Lignite Resources in Texas, 1980; Louisiana Geological Survey, Near Surface Lignite in Louisiana, 1981; Colorado Geological Survey, Coal Resources and Development Map, 1981; and Mississippi Bureau of Geology, 1983.

Original Internet Location: Energy Information Administration

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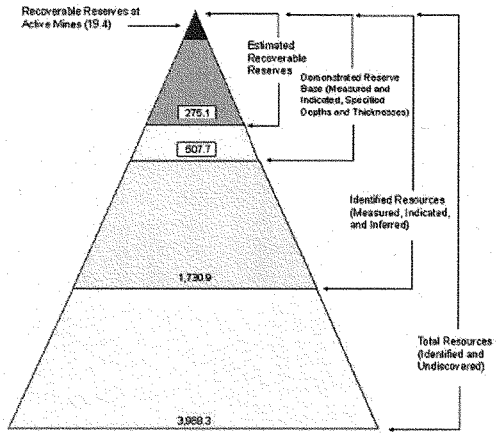
U.S. Coal Resources and Reserves



Notes: Resources and reserves data are in billion short tons. Darker shading in the diagram corresponds to greater relative data reliability. The estimated recoverable reserves depicted near the top of the diagram assume that the 19 billion short tons of recoverable reserves at active mines reported by mine operators to the Energy Information Administration (EIA) are part of the same body of resource data. This diagram portrays the theoretical relationships of data magnitude and reliability among coal resource data. All numbers are subject to revision with changes in knowledge of coal resource data.

Sources: The DRB estimate was compiled by the EIA as of January 1, 1997. Estimated recoverable reserves were compiled in EIA's Coal Reserves Data Base (CRDB) program. Recoverable reserves at active mines were reported in EIA's Coal Industry Annual, 1996. Identified resources and total resources are estimates as of January 1, 1974, compiled and published by the U.S. Geological Survey in Coal Resources of the United States, January 1, 1974.

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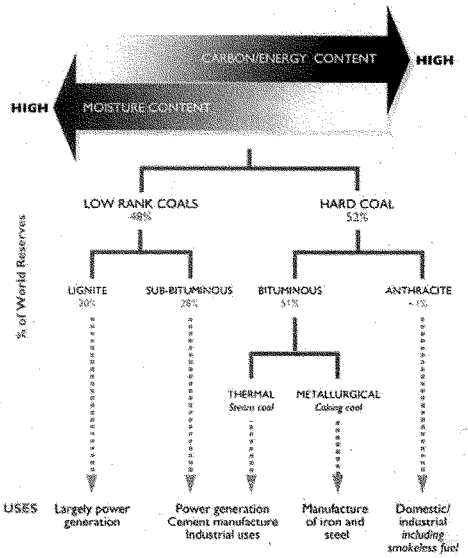
Coal Types and Distribution



Source: World Coal Institute: "Coal - Power for Progress"

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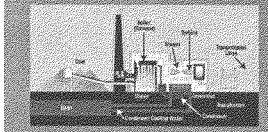
How a typical coal-fired power plant works

- Coal is pulverized into a fine powder and blown into the furnace, where it is burned.
- The burning coal heats treated water in a boiler, turning the water into steam.
- The steam, under tremendous temperature and pressure, flows into a turbine, where the force of the steam spins the turbine blades.
- The turbine spins a magnet within copper coils in a generator to produce the flow of electrons called electricity.
- The electricity travels through the transmission and distribution systems which to provide power to homes and businesses.
- After passing the turbine, the steam passes into a tube filled with river water in a condenser, where the steam changes back to water and is cleaned.
- River water, used to condense the steam, is returned to the river at a slightly higher temperature that is in compliance with environmental regulations.



Overview — TVA's coal-fired plants

	Number of units	Winter Net Capacity (megawatts)	Construction Span
Allen	3	753	1956-59
Bull Run	1	870	1962-67
Colbert	5	1198	1951-65
Cumberland	2	2530	1968-73
Gallatin	4	988	1953-59
John Sevier	3	1112	1952-57
Johnsonville	10	1254	1949-59
Kingston	9	1530	1951-55
Paradise	3	2273	1959-70
Shawnee	10	1000	1953-56
Widows Creek	8	1629	1950-65

Overview — TVA's combustion turbine sites

Allen	20	874	1970-74
Colbert	8	486	1970-72
Gallatin	4	952	1970-75
	4	410	1999-00
Johnsonville	15	994	1970-72
	4	378	1999-00
Kingston	5	370	2001-02
Lagoon Creek	12	1125	2000-02

For information on each of these generating plants, go to www.tva.com/sites.

TVA's plants are consistently ranked among the best-performing coal-fired facilities in the nation.

Bull Run has been ranked among the nation's 10 most efficient coal-fired plants every year since 1996. It has earned the top slot several times on the list, which is compiled annually by *Electric Light and Power* magazine.

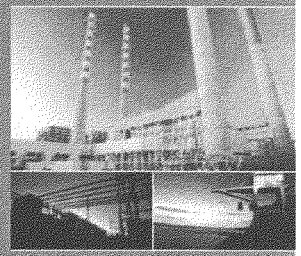
Tennessee Valley Authority

Looking ahead

By emphasizing operational efficiency, safety, and innovation, TVA's fossil system will continue its trend of excellent service to the people of the Tennessee Valley. TVA's Fossil Power Group is prepared to meet the challenges of the future—protecting the environment through its extensive projects to reduce power plant emissions and helping TVA respond to competition and restructuring in the electric utility industry by continuing to provide the bulk of TVA's reliable, affordable power.

www.tva.com

Fossil Plants



The backbone of the TVA power system

For internet benefit of the visually impaired, call 423-632-2000 and ask the operator to unscramble.

TVA

TVA is the nation's largest public power provider, supplying electricity to large industries and 158 power distributors that serve 8.6 million consumers in seven southeastern states. TVA also offers economic development services and manages the Tennessee River system to provide multiple benefits, including flood damage reduction, navigation, recreation, and water quality and supply. Although TVA is owned by the federal government, all of its programs and business operations are self-financed.

Fossil plants are fired by fossil fuels such as coal, natural gas, and petroleum products, which are formed from animals and plants that died millions of years ago. TVA's fossil fleet includes coal-fired plants and combustion turbines that are fueled by natural gas and fuel oil.

The 59 units at TVA's 11 coal-fired plants represent about 50 percent of the company's generating capacity and provide about 60 percent of the power produced by TVA. In addition, 72 combustion turbines provide power primarily during peak operating periods, when the demand for electricity is high.

The coal-fired and combustion turbine units contribute to TVA's diverse generating mix—which also includes, nuclear, hydropower, and renewable energy sources—helping to provide flexibility and reliability and keep costs competitive.

Safety

Safety is given the highest priority by TVA's Fossil Power Group. Based on data reported by the Edison Electric Institute, TVA's system of fossil plants ranks among the safest in the country.

Emission controls

More than half of the electricity produced in the U.S. comes from plants that burn coal. These coal-fired plants emit several substances, including sulfur dioxide (SO_2) and nitrogen oxides (NO_x), that are regulated by the Environmental Protection Agency (EPA).

A report issued in 2004 by the EPA indicates that air quality in the Southeast and the nation has steadily improved over the past 10 years. And while TVA's coal plant emissions meet all EPA requirements for protecting public health and safety, TVA is further reducing emissions from its coal-fired power plants while continuing to provide a reliable supply of electricity.

Since the early 1970s, TVA has invested more than $4.5 billion in emission-control equipment at its 11 coal-fired power plants. Additional scrubbers and other control equipment to further reduce emissions will raise that total to nearly $5.7 billion.

TVA has reduced emissions of SO_2, which contributes to acid rain, by more than 80 percent since 1977. Adding five more scrubbers and switching to lower-sulfur coals on some other units will reduce SO_2 emissions by 85 percent.

TVA has installed selective catalytic reduction (SCR) systems on 21 of its coal-fired units to reduce NO_x emissions. The SCRs, along with other controls operated from May through September, have reduced NO_x emissions during the ozone season by 80 percent since 1995.

By improving the efficiency and increasing the capacity of its cleanest sources of power, while also improving the efficiency of its fossil system, TVA has avoided emitting almost 275 million tons of carbon dioxide (CO_2) over the past decade.

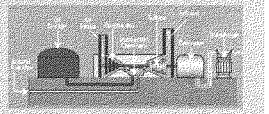
A research project at TVA's Paradise Fossil Plant is testing the usefulness of planting trees on reclaimed coal-mining lands to capture and store carbon and keep it out of the atmosphere. The project is also evaluating the use of gypsum by-products and wastewater from the plant's operations for soil enrichment and irrigation to increase the trees' growth.

For more information about TVA's clean-air initiatives, go to www.tva.com/environment/air.

Combustion turbines

Combustion turbines (CTs) are industrial-sized gas turbines similar to jet engines that are used to make electricity. TVA's combustion turbines operate primarily on natural gas but can also burn fuel oil, adding to the flexibility and economical operation of the power system. The units are designed to start quickly and are operated on an as-needed basis, providing power during periods of high consumer demand.

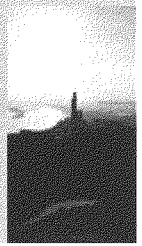
There are 72 combustion turbine units at six CT sites in the Tennessee Valley. The CT units produced some 595 million kilowatt-hours in 2003. While they accounted for only 0.4 percent of the total generation, the availability of these quick-start facilities at times of peak demand bolsters TVA's ability to ensure that its customers have reliable, affordable power at all times.



Good neighbor

The states and counties where TVA-owned power property is located receive tax-equivalent payments based on power sales revenues. TVA and its employees also spend millions of dollars in the communities around the plants.

Many TVA employees are known as good neighbors because of their volunteer service and participation in community activities.

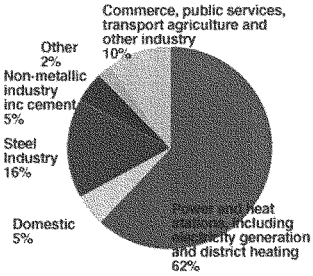


THE USES OF COAL

Coal is Indispensable for the Production of Electricity and Steel

Coal has many important uses, but most significantly in electricity generation, steel and cement manufacture, and industrial process heating.

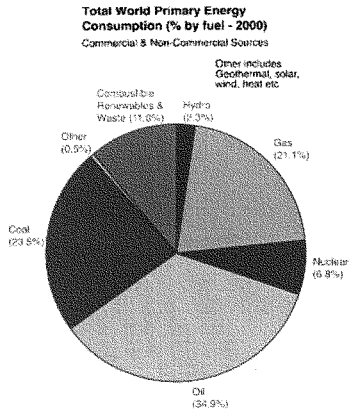
HOW COAL IS USED AROUND THE WORLD
Global hard coal consumption in 1997



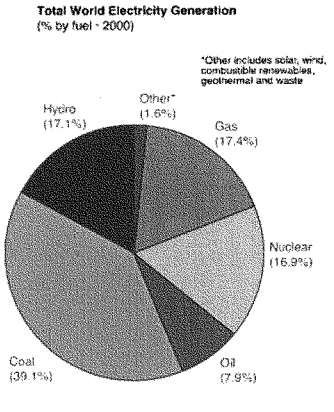
(Source - World Coal Institute)

COAL'S SHARE OF ENERGY CONSUMPTION & ELECTRICITY GENERATION

Coal provides over 23% of global primary energy need and generates about 39% of the world's electricity.



(Source - IEA Key World Energy Statistics, 2002 Edition)



(Source - IEA Key World Energy Statistics, 2002 Edition)

COAL'S ROLE IN THE PRODUCTION OF STEEL

Currently 67% of global steel is produced in Basic Oxygen Furnaces (BOF); in this process about 0.63 tonnes (630 kg) of coal are used to produce 1 tonne (1,000 kg) of steel. The remaining 33% of steel is produced in Electric Arc Furnaces (EAF); much of the electricity used in this process is generated from coal-fired power stations.

1. What Is Coal?

Coal is a fossil fuel created from the remains of plants that lived and died about 100 to 400 million years ago when parts of the earth were covered with huge swampy forests. Coal is classified as a nonrenewable energy source because it takes millions of years to form.

The energy we get from coal today comes from the energy that plants absorbed from the sun millions of years ago. All living plants store energy from the sun through a process known as **photosynthesis.** After the plants die, this energy is released as the plants decay. Under conditions favorable to coal formation, however, the decay process is interrupted, preventing the further release of the stored solar energy.

Millions of years ago, dead plant matter fell into the swampy water and over the years, a thick layer of dead plants lay decaying at the bottom of the swamps. Over time, the surface and climate of the earth changed, and more water and dirt washed in, halting the decay process. The weight of the top layers of water and dirt packed down the lower layers of plant matter. Under heat and pressure, this plant matter underwent chemical and physical changes, pushing out oxygen and leaving rich hydrocarbon deposits. What once had been plants gradually turned into coal.

Seams of coal--ranging in thickness from a fraction of an inch to hundreds of feet-may represent hundreds or even thousands of years of plant growth. One important coal seam, the seven-foot thick Pittsburgh seam, may represent 2,000 years of rapid plant growth. One acre of this seam contains about 14,000 tons of coal, enough to supply the electric power needs of 4,500 American homes for one year.

2. History of Coal in America

North American Indians used coal long before the first settlers arrived in the New World. Hopi Indians, who lived in what is now Arizona, used coal to bake the pottery they made from clay.

European settlers discovered coal in North America during the first half of the 1600s. They used very little coal at first. Instead, they relied on water wheels and burning wood to power colonial industries.

Coal became a powerhouse by the 1800s. People used coal to manufacture goods and to power steamships and railroad engines. By the American Civil War, people also used coal to make iron and steel. And by the end of the 1800s, people even used coal to make electricity.

When America entered the 1900s, coal was the energy mainstay for the nation's businesses and industries. Coal stayed America's number one energy source until the demand for petroleum products pushed petroleum to the front. Automobiles needed gasoline. Trains switched from coal power to diesel fuel. Even homes that used to be heated by coal turned to oil or gas furnaces instead. Coal production reached its low point in the early 1950s. Since

then, coal production has steadily increased, reaching record highs again. Today coal supplies 22 percent of the nation's energy needs. Its major use today is for electricity production.

3. Mining, Processing, and Transporting Coal

Coal Mining

There are two ways to remove coal from the ground: surface mining and underground mining.

Surface mining is used when a coal seam is relatively close to the surface, usually within 200 feet. The first step in surface mining is to remove and store the soil and rock covering the coal (called the "overburden"). Workers use a variety of heavy equipment--draglines, power shovels, bulldozers, and front-end loaders-to expose the coal seam for mining.

After surface mining, workers replace the overburden, grade it, cover it with topsoil, and fertilize and seed the area. These steps help restore the biological balance of the area and prevent erosion. The land can then be used for croplands, wildlife habitats, recreation, or as sites for commercial development.

Although only about 32 percent of the nation's coal can be extracted by surface mining, some 63 percent of all U.S. coal is mined using this method today. Why? Because surface mining is typically much cheaper than underground mining.

Underground mining is used when the coal seam is buried several hundred feet below the surface. In underground mining, workers and machinery go down a vertical "shaft" or a slanted tunnel called a "slope" to remove the coal. Mine shafts may sink as much as 1,000 feet deep.

One underground mining method is called **room-and-pillar mining.** With this method, much of the coal must be left behind to support the mine's roofs and walls. Sometimes as much as half the coal is left behind in large column formations to keep the mine from collapsing.

A more efficient and safer underground mining method, called **longwall mining,** uses a specially shielded machine which allows a mined-out area to collapse in a controlled manner. This method is called "longwall" mining because huge blocks of coal up to several hundred feet wide can be removed.

Processing and Transporting Coal

After coal comes out of the ground, it typically goes on a conveyor belt to a preparation plant that is located at the mining site. A "prep" plant cleans and processes coal to remove dirt, rock, ash, sulfur, and other impurities. Removing the impurities increases the heating

value of coal.

After the coal is mined and processed, it is ready to go to market. Transportation is a very important consideration in coal's competitiveness with other fuels because sometimes transporting the coal can cost more than mining it.

Underground pipelines can easily move petroleum and natural gas to market. But that's not so for coal. Huge trains transport most coal (almost 60 percent) for at least part of its journey to market. It is cheaper to transport coal on river barges, but this option isn't always available. Coal can also be moved by trucks and conveyors if the coal mine Is close by. Ideally, coal-fired electric power plants are built near coal mines to minimize transportation costs.

4. Coal Reserves, Production and Use

Coal Reserves

When scientists estimate how much coal, petroleum, natural gas, or other energy sources there are in the United States, they use the term **reserves.** Reserves are coal deposits that can be mined using today's mining methods and technology. Experts estimate that the United States has about 265 billion tons of coal reserves. If we continue to use coal at the same rate as we do today, we will have enough coal to last 285 years. This vast amount of coal makes the United States the world leader in known coal reserves.

Where is all this coal located? Coal deposits can be found in 38 states. Montana has the most coal--about 120 billion menial tons. Other top coal states in order of known reserves are: Illinois, Wyoming, Kentucky, West Virginia, Pennsylvania, Ohio, Colorado, Texas, and Indiana. Western coal generally contains less sulfur than eastern coal (which is good for the air when coal is burned), but not always.

The federal government is by far the largest owner of the nation's coalbeds. In the west. the federal government owns 60 percent of the coal and indirectly controls another 20 percent. Coal companies must lease the land from the federal government in order to mine this coal.

Coal Production

Coal production is the amount of coal mined and taken to market. Where does mining take place in the United States? Although coal is mined in 27 states, more coal is mined in eastern states, especially coal that is taken from underground mines, than in western states. However, the West's share of total coal production has increased steadily since 1968 when it provided just five percent of U.S. production. Today the West provides 45 percent of the nation's total production.

Total U.S. production of coal reached one billion tons in 1990, an historic high. The leading coal producing states are Wyoming, Kentucky, West Virginia, Pennsylvania, and Texas.

Some coal produced in the United States is exported to other countries. Last year, foreign countries imported seven percent of all the coal produced in the U.S. The five biggest foreign markets for U.S. coal are Japan, Canada, Italy, Brazil, and Belgium.

How Coal Is Used

What do we use coal for? Electricity is the main use. Last year 88 percent of all the coal used in the United States was for electricity production. (Other energy sources used to generate electricity include nuclear power, hydropower, and natural gas.)

Another major use of coal is in iron and steelmaking. The iron industry uses coke ovens to melt iron ore. **Coke,** an almost pure carbon residue of coal, is used as a fuel in smelting metals. The United States has the finest coking coals in the world. These coals are shipped around the world for use in coke ovens.

Coal is also used by other industries. The paper, brick, limestone, and cement industries all use coal to make their products.

Contrary to what many people think, coal is no longer a major energy source for heating American homes or other buildings. Less than one percent of the coal produced in the U.S. today is used for heating. Coal furnaces, which were popular years ago, have largely been replaced by oil or gas furnaces or by electric heat pumps.

5. Coal and the Environment

When coal became an important energy source for American industry over a century ago, concern for the environment was not at the forefront of public attention. For years, smokestacks from electrical and industrial plants emitted pollution into the air. Coal mining left some land areas barren and destroyed. Automobiles, coming on strong after World War II, contributed noxious gases to the air. Eventually, as the effects of pollution became more and more noticeable, Americans decided it was time to balance the needs of industry and the environment.

Federal laws passed in the 1960s and 70s, namely the Clean Air Act and the Clean Water Act, required industries to reduce pollutants released into the air and the water. Laws also were passed that required coal companies to reclaim the land destroyed by strip mining. Since the passage of these laws, much progress has been made toward cleaning up the environment.

The coal industry's most troublesome problem today is removing *organic sulfur, a* substance that is chemically bound to coal. All fossil fuels, such as coal, petroleum, and natural gas, contain sulfur. When these fuels are burned, the organic sulfur is released into the air where it combines with oxygen to form sulfur dioxide. Sulfur dioxide is an invisible gas that has been shown to have adverse- effects on the quality of air we breathe. It also contributes to **acid rain,** an environmental problem that many scientists think adversely affects wildlife

(especially fish) and forests.

However, the coal industry is doing something to solve this problem. One method uses "scrubbers" to remove the sulfur in coal smoke. Scrubbers are installed at coal-fired electric and industrial plants where a water and limestone mixture reacts with sulfur dioxide to form a sludge. Scrubbers eliminate up to 98 percent of the sulfur dioxide, but they are very expensive to build.

The coal industry is also concerned about the carbon dioxide that is produced when coal is burned. Carbon from burning coal reacts with air to form carbon dioxide. When carbon dioxide and other gases, such as those emitted from automobiles, accumulate in the earth's atmosphere, they form a shield that allows the sun's light and heat in, but doesn't let it out. This condition is called the **greenhouse effect.**

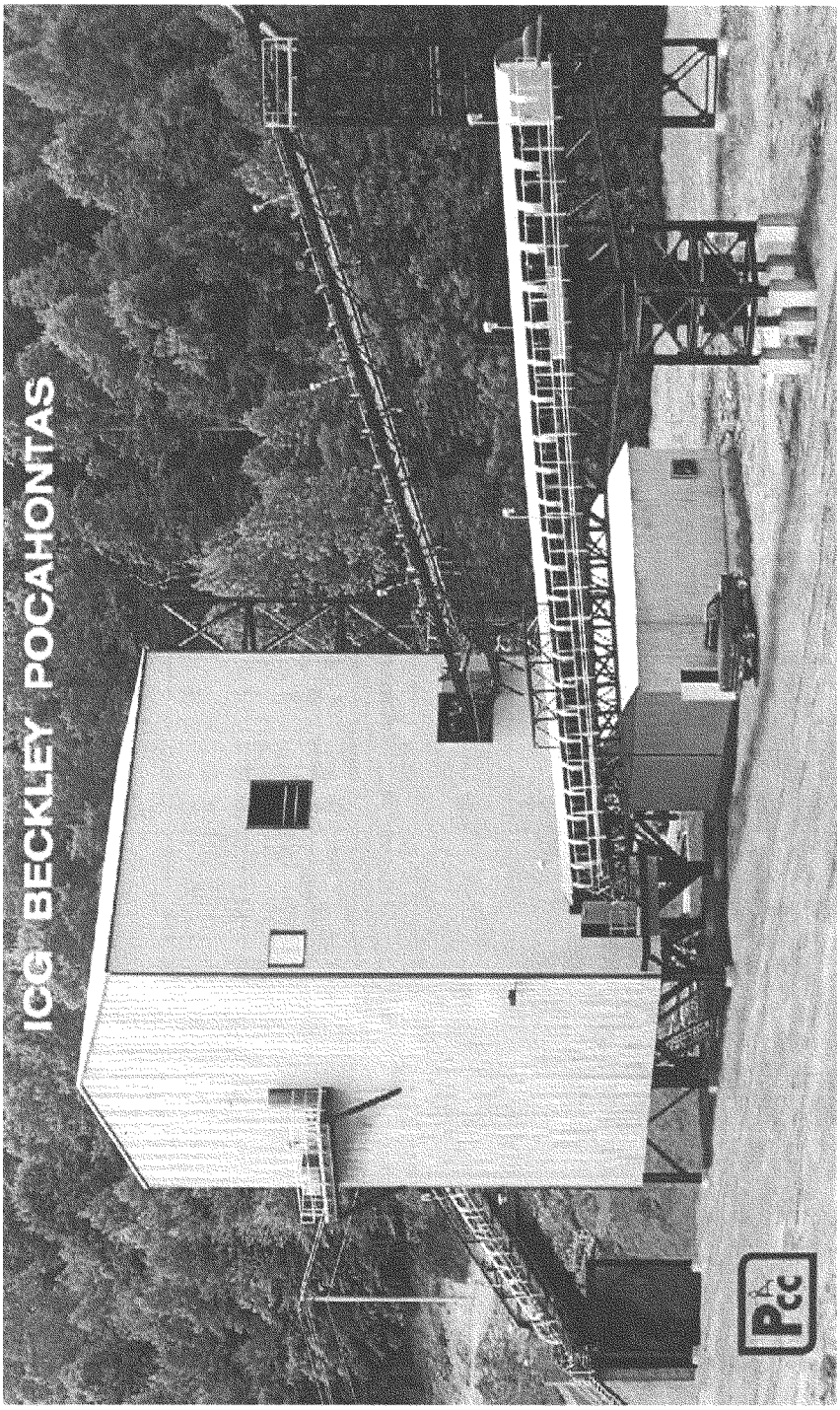
Scientists and others are concerned about the greenhouse effect because it could cause a change in the earth's climate. Some say the earth is already experiencing a warming trend due to the greenhouse effect; others are not so sure yet. While warmer weather might be appreciated by some in northern climates, it could cause drought in some areas of the world (the American grain belt, for example) and the erosion of ocean coasts due to rising sea levels in all areas.

The coal industry is currently researching ways to lower carbon dioxide emissions. But a wholesale approach will be needed to stop the greenhouse effect. This approach must look not only at the burning of fossil fuels as a problem, but also at automobile emissions, the deforestation of the world's forests, and several other possible contributors.

America's Most Dangerous Jobs

Ranking	Occupation	Deaths per 100,000 Workers
1	Fishermen	142
2	Pilots	88
3	Loggers	82
4	Iron & Steel Workers	61
5	Refuse Collectors	42
6	Farmers	38
7	Electrical Power Workers	35
8	Roofers	34
9	Drivers	27
10	Agricultural Workers	22

Source: Forbes Magazine 2007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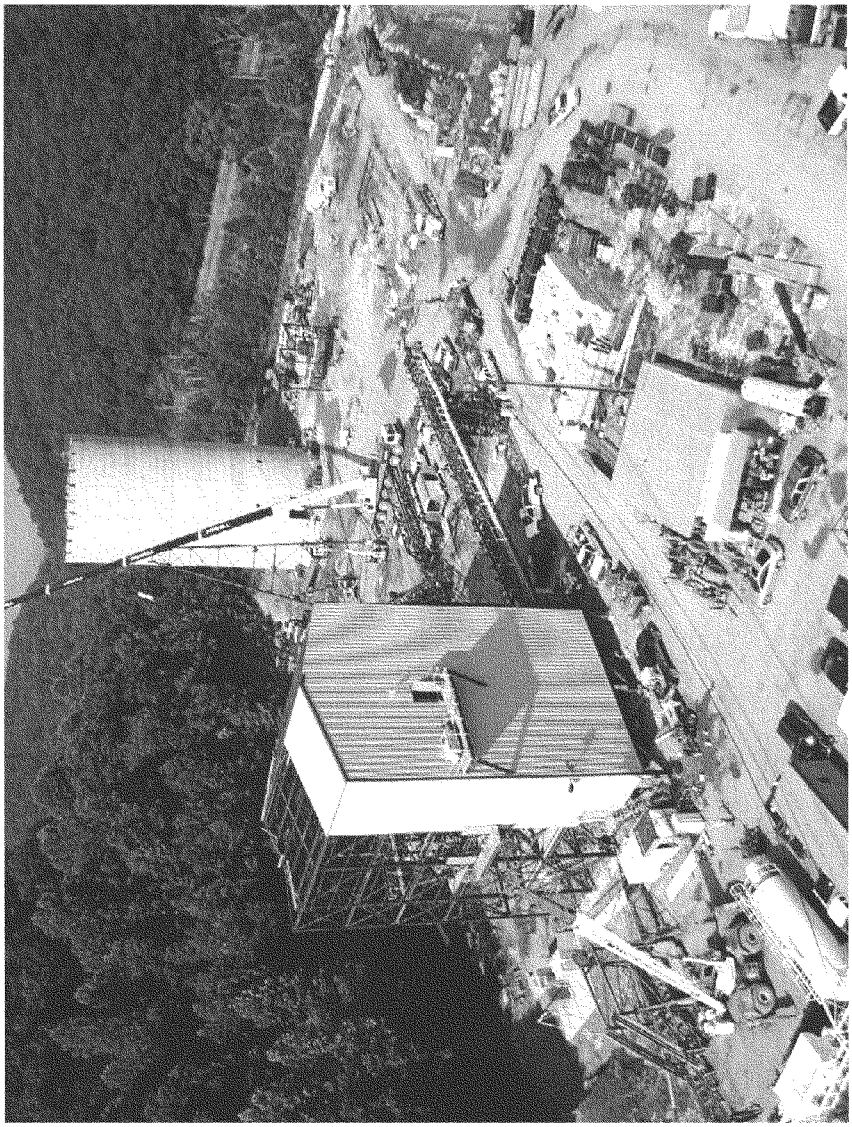
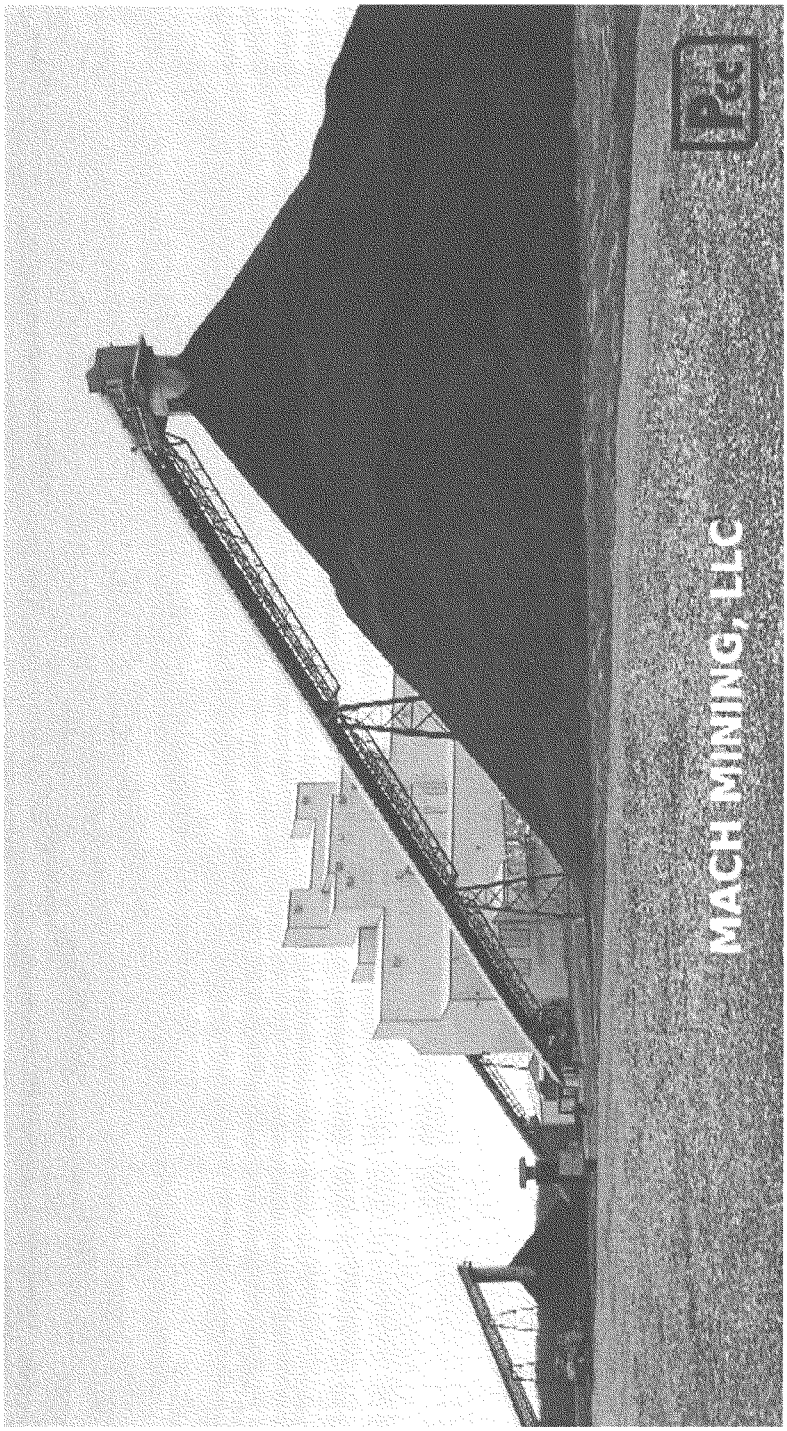
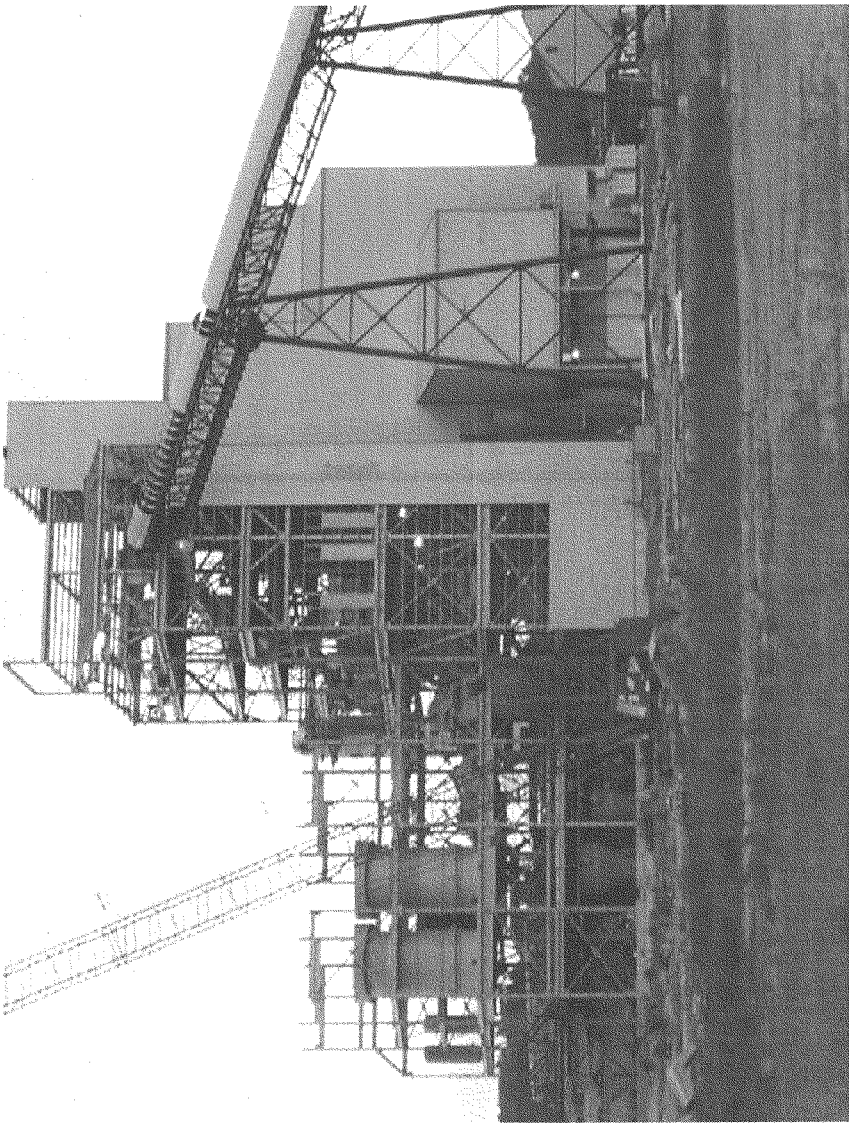



MACH MINING, LLC



August 31, 2007

District Hearing: United States House of Representatives, House Committee on Small Business, 8/31/2007, in Johnson City, TN

"The Cost and Availability of Energy and the Effect on Small Business"

I thank Congressman Davis for inviting me to speak on energy matters, as representative of the League of Women Voters of Northeast Tennessee, and LWV of Tennessee. Energy availability and cost, as they affect all citizens' lives in fundamental ways, have been of concern to the League of Women Voters for a long time. In order to maximize stability and sustainability of the resources and to hold down costs, the League advocates thriftyness and conservation, and the use of renewable energy sources, as wisest course in regional and national energy policy. Our region indeed is blessed with a diversity of renewable resources--whether from the sun or wind or bioenergy--and with great natural beauty. To use these resources well, and preserve them for future generations, is our challenge and responsibility today.

Allow me to let a personal experience highlight what in Tennessee is a vast and untapped energy resource. In 1992, doing a comprehensive retrofit, for energy efficiency, of my 1960's style home, I expended close to $300 on compact fluorescent light bulbs, these being rather costly at that time. Within that year, on a visit to Washington, D.C., I learned that the Virginia Electric and Power Company (VEPCO), seeking to defer construction of a new power plant had provided coupon books to VEPCO customers that enabled these to perform similar lighting retrofits at expense of less than $100. Neither my electric utility (Johnson City Power Board) nor the Tennesseee Valley Authority as I found upon inquiry, were providing or inclined to assist customers with similar incentives for energy saving. The VEPCO customers realized the continuing benefit of lowered electricity bills and the company, to my knowledge, still hasn't had to build a new generating plant. Additional energy efficiency investments in my case, in major appliances, passive-solar and solar water-heating technology have resulted in quite low monthly electric bills.

A small and modern, family-owned meat packing plant near here provides a greatly needed service for hundreds of families who keep cattle on their pasture land and need slaughtering facilities and a market for the meat. The business meets all the necessary, US Department of Agriculture health standards in processing, cooling, freezing, etc. but struggles with monthly electric bills close to or exceeding $2,000. Although, the owner states, the cost of electricity was examined when the plant was modernized, the strain on the budget is great, especially during summer time when production is low, and profitability and future security of the business are much influenced by it. To help secure their own long-

term viability and lower the electricity cost burden, the company is investigating its options and ability of some independent generation through solar or wind power.

1. Many other small businesses face similar circumstances in face of rising energy costs, as do families on fixed and small incomes. Their situations highlight what the League believes to be the greatest need, and of greatest benefit, to the people in our region, namely, energy efficiency investment and promotion. Over several decades, TVA has not pursued serious programs to advance efficiency, with the effect that Tennesseans' per capita electricity consumption is among the highest in the country. The TVA's almost sole focus on production instead of demand-side management, in addition to high bills to its customers, comes at very high cost to the Appalachian region, including the Cumberland region in Tennessee, through modern-day coal mining. That price is defaced mountains, lost forests and their wildlife, destroyed geological strata in mountain watersheds, acidified and even buried streams

The cheapest and greenest kilowatt is that which didn't have to be generated. The best way, we believe, to insure this economic benefit to users, and the environmental benefit to future Tennesseans, is an aggressive investment in energy efficiency. As the State Legislature has passed a bill mandating development of a comprehensive energy plan for Tennessee, now is a most opportune time for state government and the TVA to work together to incorporate strong efficiency and related performance goals into this plan. Specific opportunities, easily delineated and expanded by professionals in the field of energy conservation, can include:

Provision by the TVA of grants or low- or no interest loans toward optimal building insulation, through retrofits as possible or at the design/construction stage;

Adoption of state wide, residential and commercial building codes with high efficiency mandates; for future state-owned buildings adopt standards such as the US Green Building Council's LEED certification;

Adoption of standards for high-efficiency appliances and low energy lighting and subsidies for these, as TVA now subsidizes high-efficiency water heaters;

Promotion of combined heat and power systems;

Creation of energy consultation teams that establish use baselines, audit buildings, advise on efficiency measures and audit energy reduction performance; voluntary for private homes and businesses, implement these measures obligatorily in public facilities;

Promotion of performance-based contracting where builders' financial reward is tied to savings resulting from the energy efficiency improvements implemented;

Assistance for municipalities to reduce energy demand in illumination and mechanical traffic regulation in public spaces.

2. As other states and utilities are seeking to accomplish, we recommend an initiative for our state, through action by the Governor, our Congress members and the TVA and its local distributors, toward meeting growth in electricity demand, for the near future at least, through energy-efficiency improvement.

Two additional concerns and recommendations of the League of Women Voters relate to needed expansion of renewable-energy infrastructure, and a method of public oversight of TVA's attainment of energy efficiency and green-power goals.

3. We view with great concern the steps and apparent plan by TVA for a significant expansion of traditional electricity generation capacity, nuclear power in particular. The traditional, coal and nuclear plants are critically dependent on water. In Tennessee, as per the *Statistical Abstract*, more than 82 percent of daily water withdrawals from our lakes and rivers, or more than 8 billion 300 million gallons daily, goes to the making of electricity from these plants. When water temperature rises or when water becomes scarce--as now in some areas in the state and in several areas in other, recent drought years--electricity production must be scaled down. This affects nuclear facilities especially, as a temporary shutdown of a Browns Ferry reactor two weeks ago has demonstrated. The TVA must then "compensate for the loss of power," in the words of a TVA spokesman commenting on the Browns Ferry shutdown, by "buying power elsewhere." The cost of replacement power is typically very large, however and will fall on the rate payer, burdening the public with higher electricity bills. As we know from France, nearly a third of that country's energy production was lost, in a similarly dire heat wave four years ago, due to inoperability of many of its nuclear plants. The purchase of replacement power (and subsequently of insurance to guard against future such energy losses) cost the French government nearly a billion dollars. The League of Women Voters, therefore, urges a predominant redirection of TVA's power investment to solar, wind and other renewables, such as it now taps in the Green Power Switch program. These, renewable energy sources are not dependent on our waters, essential as these are to life and for many uses other than electricity, and their flow adequacy and quality already threatened by droughts in a climate-changed world. Along these lines, we urge <u>against</u> steps by TVA to reduce the rate at which it compensates small producers under its Generation Partners program. Although its 15cent reimbursement rate is generous, with TVA's own, on-line green-power capacity at such small fraction of its generation mix as yet, incentives for small businesses and private homeowners, to aid the expansion of renewable-electricity in the region should be raised instead of reduced.

4. At the federal level, in order to boost electricity nationwide from carbon-neutral, water independent, homegrown and environmentally benign energy sources, the League supports the adoption of a national, renewable portfolio standard.

5. Finally, we bring to your attention the lack of public oversight, as a Public Utility Commission provides in Congressman Shuler's state neighboring ours, the TVA being a federal agency. Being, thus, a public utility yet "self-regulatory," we recommend an accounting by the agency on its actions and accomplishments regarding the above matters, perhaps through provision of quarterly reports to the Congressional TVA Caucus, to be accessible to the public.

Again, thank you for inviting comments from the League of Women Voters on energy, its impacts on our state, and on small businesses in particular and all our citizens.

Frances Lamberts, Co-Chair, Natural Resources

League of Women Voters of Tennessee

Prepared Statement of

Kelly J. Tiller, Ph.D.
The University of Tennessee

U.S. House of Representatives
Committee on Small Business
Field Hearing on "The Cost and Availability of Energy and the Effect on Small Business"

August 31, 2007
Johnson City, Tennessee

My name is Kelly Tiller, and I am an agricultural economist and the director of external operations for the Office of Bioenergy Programs at the University of Tennessee. I would like to thank Member Davis, Member Shuler, and the House Small Business Committee for the opportunity to speak to you today about our country's energy needs, new domestic renewable energy opportunities, and the effects on small business.

U.S. Energy Supply and Demand: A Petroleum Problem

The U.S. is the world's largest consumer of energy. Our energy needs are as diverse as they are vast. The entire economy of the United States is designed to revolve around the availability of safe, reliable, abundant, and affordable energy.

Energy consumption for the industrial, transportation, residential, and commercial sectors is satisfied from a variety of sources. According to Energy Information Administration statistics for 2006, about 40 percent of our total energy needs are met with petroleum, 23 percent from coal, 22 percent from natural gas, 8 percent from nuclear, and 7 percent from renewable energy sources.[1]

In this energy supply picture, our reliance on petroleum as a base source of liquid transportation fuels is particularly problematic. Petroleum products account for 97 percent of our transportation fuel market. The United States holds less than 3 percent of the world's proven oil reserves, but accounts for 25 percent of the world's oil consumption. In fact, petroleum consumption in the U.S. is greater than that of the next five largest consuming nations combined.[2]

Today, 60 percent of the petroleum consumed in the United States is imported.[3] In 2006, nearly two thirds of those petroleum imports originated from countries that are rated as unstable, according to the Failed State Index[4] that considers economic, political, and social indicators, and

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[1] Energy Information Administration, 2006. Annual Energy Review.

[2] Ibid.

[3] Ibid.

[4] Foreign Policy. 20 June 2007. The Failed State Index 2007.

more than 40 percent were from OPEC countries. A reality of today is that the provision of reliable and sustainable energy—particularly transportation fuels—is a matter of national security.

America's dependence on petroleum not only jeopardizes its national security, but drains billions of dollars from the U.S. economy and creates environmental concerns. The economic benefits of breaking this addition to oil would be immense and widespread.

Domestic Renewable Biofuels Opportunities: The Tennessee Biofuels Initiative

Fortunately, there is a commercially viable and sustainable way for the United States to transition to a low-oil and high-growth biobased economy. The University of Tennessee and the State of Tennessee have made a significant commitment to developing a cellulosic biofuels industry. It is important to note that our emphasis is on bioenergy and bioproducts produced from plant and woody biomass, not just grain, as is the focus of corn-based ethanol.

In July 2007, Tennessee's governor and legislature committed more than $70 million in funding for renewable biofuels research and programs, including an investment of $49 million in the Tennessee Biofuels Initiative. The Tennessee Biofuels Initiative, developed through the University of Tennessee Institute of Agriculture, is an innovative business model for research and demonstration and commercialization of cellulosic ethanol made from local farm and forest resources.

The focus of the Initiative is the conversion of plant material to ethanol fuel.[5] The Initiative is a synergistic partnership among the University of Tennessee, Oak Ridge National Laboratory, and private industrial partners to construct and operate a 5 million gallon per year cellulosic biorefinery in East Tennessee. Importantly, the Initiative also includes a farm component to develop 8,000 acres of switchgrass as a dedicated energy crop on farmland near the biorefinery to supply the facility with biomass feedstock. The demonstration-scale facility will focus on research necessary to refine the conversion process, optimize the use of local farm and forest resources, and generally improve the economics of the system to allow commercial scale up and expansion throughout the state and region.

The principal product will be Grassoline™ – ethanol derived from cellulosic biomass. In addition to the high-volume production of biofuels, the facility will also focus on research to develop high-value coproducts and platform chemicals that can improve the economics of the biorefinery and substitute for petroleum-based products and chemicals in today's marketplace.

Benefits and Effects on Small Businesses

Businesses and farmers all across the state and nation are watching with enthusiastic, yet cautious, optimism as Tennessee actively invests in this new paradigm for fuel production and a new bioeconomy. There are several benefits of this cellulosic bioeconomy approach that resonate with small businesses.

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[5] Additional details about the Tennessee Biofuels Initiative are available at: www.UTbioenergy.org.

First, the potential for the U.S. farm and forest sector to supply more than a billion tons of biomass feedstock for a mature cellulosic bioenergy industry[6] bears significant economic opportunities for the farm businesses, forest landowners, farm equipment dealers, service providers, local cooperatives, and input suppliers that would form the backbone of the biomass feedstock supply chain.

Second, on this second anniversary of Hurricane Katrina, we are again reminded of the fragility of the system that has evolved to meet our seemingly limitless energy demands. The economics of using a bulky biomass resource to create sustainable renewable energy systems suggest a highly dispersed system, located primarily near rural communities that supply the biomass resources. A system with a large number of biorefineries generating fuels and power that is consumed locally is more secure and resilient. A distributed system also provides significant new opportunities for small businesses to participate in the energy sector.

Third, significant research efforts are underway to discover more efficient and effective ways transform cellulosic ethanol manufacturing into a truly integrated biorefinery process. The vision is similar to that of today's petroleum refineries, where a range of biomass feedstocks come in the front end and are transformed to biofuels as well as a range of high-value biobased chemicals and material building blocks for other products and industries. As an example, the lignin component of biomass, which is more difficult to break down into simple sugars, has significant potential as a source of carbon fiber and aromatics for chemical applications. As new coproduct technologies are demonstrated, they provide significant opportunities for small businesses to develop satellite chemical and biobased product manufacturing industries in close proximity to cellulosic biorefineries.

Fourth, small businesses are often particularly sensitive to wide and rapid swings in energy costs and overall higher energy costs. Our research suggests that within the next three to four years, we could be commercially producing cellulosic ethanol at a cost that is very competitive with gasoline and in line with corn-based ethanol. Within five years, we could feasibly produce cellulosic ethanol at a wholesale price of $1.50 per gallon or less. This is certainly good news for small businesses.

Further, it is important to reiterate that the cost of energy at the gasoline pump today does not reflect its full economic and social cost. Our markets do not encourage retail energy prices to incorporate the less tangible cost of energy security, environmental sustainability, economic stability, and national security.

In closing, I believe that we are poised today to make the bioeconomy vision a reality. As an economist, I know that the business economics of a cellulosic biofuels industry will ultimately drive its development and expansion. As a policy economist, I also know that there are innovative, system wide policy measures that can accelerate the growth of the cellulosic ethanol industry while protecting farm incomes, ensuring market discipline, and supporting the sustainability of small businesses. Further, while we are aggressively pursuing next generation

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[6] Perlack, R.D., et al. 2005. Biomass as Feedstock for a Bioenergy and Bioproducts Industry: Technical Feasibility of a Billion-Ton Annual Supply. Joint U.S. Department of Energy and U.S. Department of Agriculture report.

biofuels and renewable, sustainable domestic energy sources, we must not discount the important role of energy efficiency in addressing our energy problem.

Thank you again for the opportunity to appear before you today. I believe that we are on the verge of a dramatic transformation from a hydrocarbon economy to a carbohydrate economy. As we press toward this worthy goal, we look forward to working with you to develop supportive policies that benefit American businesses and consumers and our economy and security.

James D. Keiffer
Senior Vice President, Marketing
Tennessee Valley Authority

Testimony
of
James D. Keiffer, Senior Vice President, Marketing
Tennessee Valley Authority
before the
House Committee on Small Business Field Hearing
Johnson City, Tennessee
August 31, 2007

Opening Statement
Thank you, Congressman Davis and Congressman Shuler.
I'm Jim Keiffer, Senior Vice President of Marketing in the Customer Resources organization at TVA. I am responsible for TVA's energy efficiency and conservation efforts and our renewable energy program, which is known under the trademarked name of Green Power Switch.

On behalf of TVA, thank you for the opportunity to discuss the role that energy efficiency plays in our strategy for keeping electricity prices affordable and reliable for homes, business and industry in the Tennessee Valley.

TVA is the nation's largest public power company, with 33,000 megawatts of dependable generating capacity. We supply electricity wholesale to 158 locally-owned utilities that serve the 8.7 million people who live in our service region. TVA's responsibility is to ensure that we generate and deliver electricity at the lowest feasible cost, and that we support and encourage our customers to use energy wisely.

Energy Efficiency and Conservation
Consumers know that the cheapest kilowatt is the one you don't use, and that conserving energy can help TVA reduce the investments needed to build new generating plants. Ultimately, energy efficiency and conservation is in everyone's best interest, especially the small business sector where it's essential to keep the cost of doing business as low as possible.

Earlier this year, the TVA Board adopted a Strategic Plan that makes energy efficiency and conservation part of our business plan for keeping TVA's power rates competitive. We have set a goal to help make our service region a national leader in energy efficiency over the next five years. It is a goal that will produce economic and environmental benefits for everyone.

We can't do it alone. It requires a cooperative effort by TVA with our 158 distributor customers, the 62 large industrial customers and federal installations directly served by TVA, and everyone who uses TVA electricity. To achieve our goal, we're developing a three-part approach.

The three elements are:

- Conservation – which means using less energy
- Energy efficiency – which means using energy smarter; and
- Reducing the daily peak demand – which is the brief period each day when electricity demand is at its highest. In the winter, the peak occurs in the early morning hours, and in the summer it's mid- to late afternoon.

The process began this summer with a pilot program launched in cooperation with our distributor customers in Chattanooga, Nashville, and Huntsville, Alabama. Through arrangements largely with commercial users, we're employing what's known as "demand-response." In this program, the participants cut their energy use during critical peak periods in return for financial incentives. The results of the pilot will be used to determine if we should develop a broader program as part of our overall efforts to reduce peak demand growth by at least 700 megawatts during the next five years and make the region a leader in energy efficiency.

TVA has traditionally worked with our distributor customers to provide energy efficiency programs and services for residential and small business consumers. Through our existing *energy right* program they can access energy management tools to help them reduce their overall energy costs. We also provide small businesses access to affordable financing to enable them to install high-efficiency heat pumps. Special technical expertise is also available to business and industry to increase efficiency or to employ the use of new electro-technologies.

Today, we are working with our customers to identify, evaluate and implement new cost-effective initiatives to help consumers use energy smarter and reduce the amount they use. These initiatives will give energy efficiency, conservation, reducing peak demand and on-site generation a greater role in the mix of resources we use to meet demand.

Renewable Energy

Our efforts to responsibly control the need for new generation include expanding our renewable energy program, known as Green Power Switch. Green Power Switch was one of the first renewable energy programs offered by a utility in the Southeast. It gives everyone – business, industry and the residential user – an opportunity to support the development and growth of green power in our nation's energy portfolio. All of the money generated by this program is used to develop more renewable energy and to fund research aimed at making it more cost effective.

About 12,000 residential users and almost 500 businesses are participating in Green Power Switch, which is marketed through 100 of the local utilities served by TVA, including the Johnson City Power Board and Holston Electric

Cooperative. Our numbers show that nearly three-fourths of the businesses enrolled in Green Power Switch come from the small business sector. They know it pays to display the Green Power Switch logo on their business fronts to show their support for renewable energy.

Currently, we have 16 solar sites across the Valley, one methane facility near Memphis, and a wind farm on Buffalo Mountain near Oak Ridge, which made TVA the first utility in the Southeast to use wind power on a commercial-scale.

Last month these renewable sites generated more than two million kilowatt-hours of electricity. One of our solar sites is located here in the First Congressional District at Cocke County High School. It offers a good example of creative ways that solar technology is being used. The solar panels are arrayed to form a shelter for spectators at the high school soccer field. They can generate enough electricity to serve an average home. This type of innovation is helping expand the use of solar energy here in the Southeast and around the country.

Homes and businesses account for about 70 percent of the total electricity consumption in our region. To encourage the broader use of renewable generation, TVA established a pilot program called Generation Partners. It pays homes and businesses for the electricity generated by their own wind and solar units. Currently, we have about 30 Generation Partners participating in the pilot. Plans are under way to make this program part of a permanent Net Metering program to support the increased use of on-site wind and solar power.

Conclusion

As TVA's Strategic Plan makes clear, there is no single answer to meeting the growing energy demands of the Tennessee Valley. We must use a strategically balanced combination of strengthening our current system, investing in new generation, such as the restart of Unit 1 at Browns Ferry Nuclear Plant, purchasing power from the marketplace, and using cost-effective energy conservation and efficiency initiatives to meet growing demand.

We appreciate the priority being placed on energy security in Congress. TVA is working to contribute to that security through its goals for increased energy efficiency, conservation, and the strategic development of new generation.

The Tennessee Valley has enjoyed some of the lowest cost electricity available in the United States for the past seven decades. However, the costs of fuels to produce electricity – such as coal and natural gas – are rising due to increased demand here in the U.S. and worldwide. By focusing on energy efficiency and conservation, we can all help keep the price of electricity as a competitive advantage for the region's economy and the people who live here.

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Testimony
of
Robert L. White, Chief Public Relations Officer
Johnson City Power Board
before the
House Committee on Small Business Field Hearing
Johnson City, Tennessee
August 31, 2007

Opening Statement
Congressman Davis and Congressman Shuler, thank you for the opportunity to appear before this committee to address the subject of today's hearing: **The Cost and Availability of Energy and the Effect on Small Business.** I'm Robert White, Chief Public Relations Officer at Johnson City Power Board. I am responsible for managing and overseeing our Public/Community Relations and Customer Support Departments.

With national energy costs on the rise, it is a pleasure to address you from within the Tennessee Valley Authority's service territory. The Johnson City Power Board serves an area of approximately 357 square mile serving all of Washington County and parts of Carter, Greene and Sullivan counties. Johnson City Power Board is fortunate to have access to TVA generated electricity; some of the lowest priced and most reliable electricity available in the United States. We at the JCPB realize however, contentedness is akin to stagnation. This is precisely why we continually reevaluate our programs, practices and procedures in our unrelenting pursuit of excellence. **It is our mission as a power distributor to be recognized by our customers, non-customers and competitors as the leading energy and energy services provider in the region and to promote and support economic development programs for the benefit to all.**

Our Customer Base
The Johnson City Power Board's customer base has increased by an average of 2% the last 8 to 10 years. This growth rate has been a result of a mirror increase in both residential and commercial/industrial customers. We currently serve 73,227 customers. Residential customers represent 86% (63,007) of our customer base. Commercial/Industrial customers represent 14% (10,220) of our customer base.

While commercial/industrial customers represent only 14% of our customer base, they generate 49% of revenues. This fact is what drives us to promote programs designed to address our small business customers' needs.

A Conduit for TVA Services
An asset we offer to our customers, including our small business customer, is our ability to serve as a conduit to the many programs and services offered by TVA. Johnson City Power Board's Energy Services & Marketing Department offers a Key Accounts Program through which various TVA programs are administered. Although the Key Accounts Program serves mostly large commercial/industrial customers' special needs, the program also serves as a liaison for the small business customer as well.

Our Key Accounts Program partners with TVA to offer programs and services such as;

- *energy right*, a program offering energy management tools to help reduce overall energy costs
- *heat pump loans*, to provide access to affordable financing for installing high-efficiency heat pumps
- *comprehensive services,* to provide technical expertise to increase efficiency or to explore the use of new energy technologies.

The Johnson City Power Board also participates in TVA's Green Power Switch and Generation Partners. Green Power Switch is a renewable energy program offering customers the opportunity to support the development and growth of more renewable energy. In 2006, our customers purchased over 1.3 million kilowatt hours of Green Power. Generation Partners is a pilot program that pays homes and businesses for the electricity generated by their own wind and solar units. Johnson City Power Board currently has two customers participating in Generation Partners.

Conclusion

As the JCPB plans for the future, we are committed to identifying and addressing the needs of all of our customers with any and all resources available to us. In the word's of our General Manager, Homer G'Fellers, **"For any challenge we will either find a way or make one."**

Testimony
of
Larry Elkins, General Manager,
Holston Electric Cooperative
before the
House Committee on Small Business Field Hearing
Johnson City, Tennessee
August 31, 2007

Opening Statement

Thank you, Congressman Davis and Congressman Shuler for the opportunity to address this committee.

I'm Larry Elkins, General Manager of Holston Electric Cooperative, a TVA power distribution system that serves 30,000 customers in upper East Tennessee. I am the chairman of the Hawkins County Industrial Development Board and Tennessee's elected representative to the Board of Directors of the National Rural Electric Cooperative Association.

I appreciate your efforts to understand and ease the energy related problems for businesses and industries of this region.

Energy Problems Continue

An energy crisis. Gentlemen, this same subject matter we're discussing today was in the headlines, on the evening news and at the height of interest thirty-five years ago during the 1973 Oil Embargo. Some of you *may not remember* 1973 – some of you *may not have been born* in 1973 – but the energy crisis we're experiencing today is nothing new.

The 1973 Oil Embargo began a painful realization of the vulnerability of energy supplies. However, the crisis of today is much more than just a shortage of gasoline that led to long lines forming at the gas pumps. More than any time in the past, we are an industrialized nation that is dependent on electric energy as the basis of our economy. And our appetite for electricity continues to increase. According to the Energy Information Administration, worldwide electricity consumption is expected to double during the period from 2002-2025. But while the demand for electric power continues to increase, no new base generating plants have been built in years. The plants that have been constructed are peaking units to

cover the increased demand for power that generally comes during extreme weather conditions and temperatures.

Rates Control Demand

Some in Congress say to let the natural laws of economics (supply and demand) control the price of electricity. Let rates go up so the demand for electricity will go down. We found out in the 1970's that approach does work, but the consequences of such an action would prove to be devastating to our businesses and industries. Adding increased power costs to the bottom line of major industries in this region who are already struggling with higher labor and operating costs will only add to the elimination of local manufacturing jobs and their subsequent relocation in neighboring countries. And statistics show that every manufacturing job in our economy leads to six other jobs in related sectors. This higher rates/lower demand way of thinking also hurts the low income and those on fixed incomes to a greater extent than those with middle and high incomes. Drastic rate increases for electric power is not the solution.

Conservation and Alternative Energy Sources

Efforts to conserve electricity and to develop alternative sources of energy such as solar, wind and hydrogen fuel cells are to be applauded and must continue. Nuclear plants produce power at minimal cost but are extremely expensive and require an extensive amount of time to construct. But while these efforts inch forward the United States is at the mercy of the Middle East for its energy. Gentlemen, we are at the point that we are going to have to build base generating plants to provide for the consistent demand for electric power from industrial, commercial and residential customers or we are going to have to be ready to live with the consequences of an inadequate supply of electric power for our country.

Electricity can be generated by many different sources. According to the latest Department of Energy statistics, America's electricity is currently generated 50% by coal; 19% nuclear reactors; 19% natural gas; 6.5% hydroelectric; oil 3%; and other sources, 2.8 %. By a wide margin, coal is the leading energy source for generating electricity in the United States and

the world. It is also the least expensive way to generate electricity when you take all factors into account. And a few other critical statistics to keep in mind, the United States has 26% of the world's supply of coal, but only 2% of the world's oil and 3% of the world's natural gas.

New Generation Plants Required

The protests in this country against pollution from coal-fired plants continue and have led to stricter emission standards and the development of new, cleaner technology such as coal gasification. Everyone wants clean air to breathe and to be environmentally responsible. But gentlemen, the United States does not control the emissions of the world. Asia, but primarily China, accounts for 56% of global coal consumption. China uses coal for 82% of electricity generation; India 70%; and South Africa, 92%. Another staggering fact: China is bringing one new coal-fired generating plant on line every week.

My point is -- even if we restrict our use of coal in power generation to save the planet, we have no way to control the amount of emissions being put into the atmosphere by the rest of the world. We need base load generation coming on line and we need it now. We have the coal reserves to fuel the power plants that are required for our future. But without additional generating plants, quite simply, there will not be adequate power for this region.

Conclusion

Businesses and industries rely on us to supply their energy needs. Our customers expect to flip a switch and have power, not excuses. We implore the use of common sense in the legislative process. Let American ingenuity work out the details of clean coal and safe nuclear technologies and let the construction of new power plants provide for the future of our citizens, businesses and industries.

Thank you.

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