

Sustainable Energy Strategies for Clean Air in North Carolina

By Larry Shirley, Director of N.C. Office of Energy

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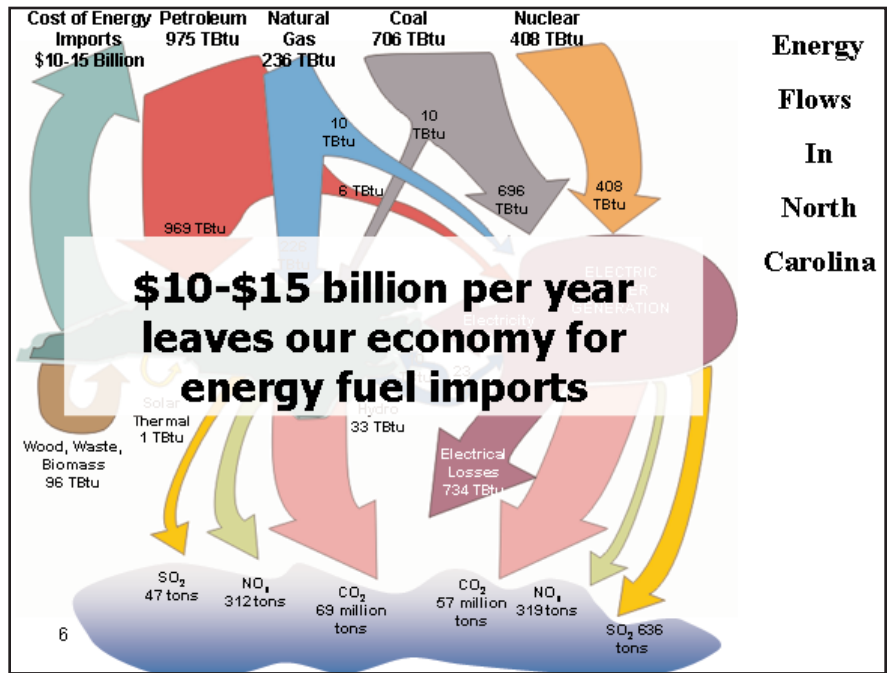
(EDITOR'S NOTE: This is a transcript of the presentation made March 22, 2006, at the Clean Air: Community Strategies for Action Conference at the Catawba College Center for the Environment facility.)

The State Energy Office has four primary goals: 1) to advance energy efficiency in the industrial, utility, transportation, government and residential sectors; 2) to develop the state's abundant renewable energy resources; 3) to accelerate the use of alternative fuels and vehicles; and 4) to respond to energy emergencies.

Katrina and Rita were a wake-up call. For four days the state had no oil coming in at all, then only a very low amount for several days thereafter. We saw for a long stretch of time 2/3 of all production in the Gulf shut down. We saw 54 percent of the natural gas production out.

Most of the natural gas processing plants were out of order. Most of the refineries were down. More and more we're seeing the impacts spilling over into our economy.

What we found in all this was that North Carolina is entirely reliant on the pipelines coming out of that Gulf region. Ninety percent of our petroleum comes up two pipelines from the Gulf, the other 10 percent partially by sea. But that is contrary to many other states in the Northeast. They get a lot coming in by ship. In North Carolina we are heavily dependent and vulnerable.



The other thing is the economic aspect of this. What we are discovering more and more is that we have a lot of money flowing out of this state - going to Nigeria and Venezuela and Saudi Arabia and other states like West Virginia and Texas. Ten to 15 billion dollars a year are leaving our economy, depending on what the current price is and what is happening in that realm. That money could increasingly be kept in the state to produce jobs and to power businesses in our state's economy.

We have the wherewithal to do something about this internally. If we don't, we're going to pay a big price - in fact, we're already paying a price. Those folks in the mountains certainly know that. These are some of the Southern Appalachian Mountain Initiative pictures which demonstrate that what used to be a clearer view -- a 113-mile view is now down to less than 25. This is not a very sustainable picture for western North Carolina - for tourism that fuels the economy.

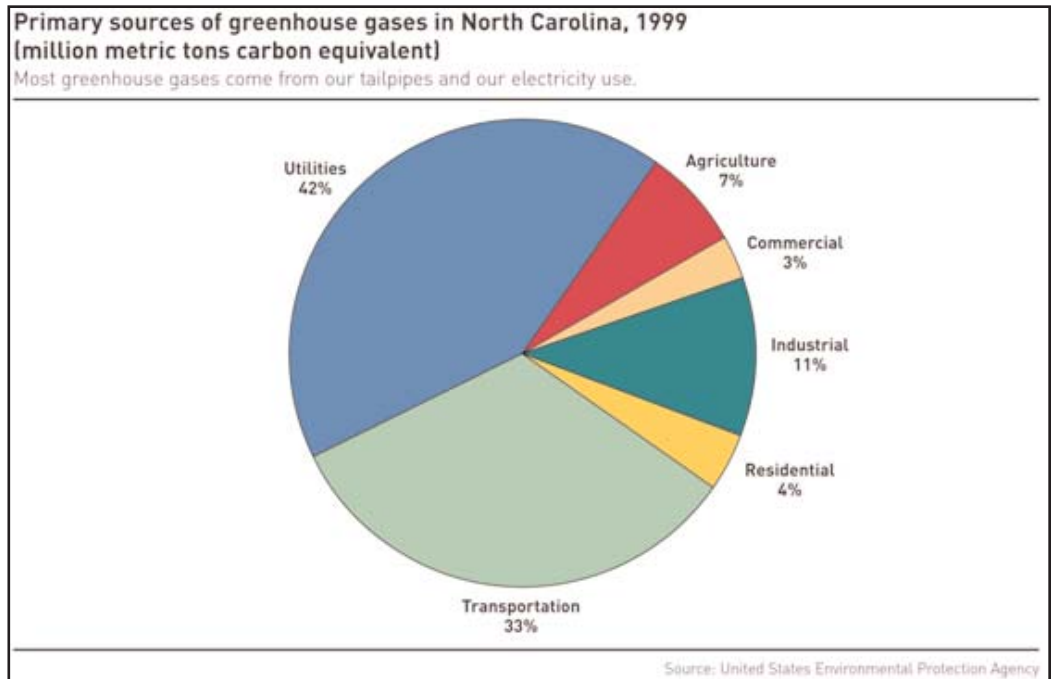
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This map shows the non-attainment areas in the state which are facing a lot of difficulty, including the cut-off of highway funds and the inability to develop further if they don't get themselves back in compliance. We have to work on that issue. What we do about energy is completely connected to whether we make that or not.

The other issue - the big sleeper - is public health. I think you're going to see a lot more studies coming out over the next few years. What we are discovering is that there is a powerful linkage between the condition of our health and what's going on in terms of air pollution. Certainly in the area of asthma - the No. 1 child health issue in our state - 1/3 to 1/2 of the asthma attacks are due to air pollution. And every summer 240,000 asthma attacks, 6,300 emergency room visits, and 1,900 hospital admissions are due to asthma attacks caused by air pollution.

The big issue coming down the road is climate change. For North Carolina we are terribly at risk, particularly in the eastern part of our state. In this map, all the blue areas would be inundated by water by 2100. Some of those areas would be inundated within the next 25 years. That's not a good picture. It would devastate our economy in the state - agriculture, our tourist economy on the coast. The ramifications would be many.

Some of you might have seen the "60 Minutes" episode on Sunday. It was an interview with one of the chief scientists from NASA. He used to argue with the Clinton administration when they tried to make things sound a little worse than



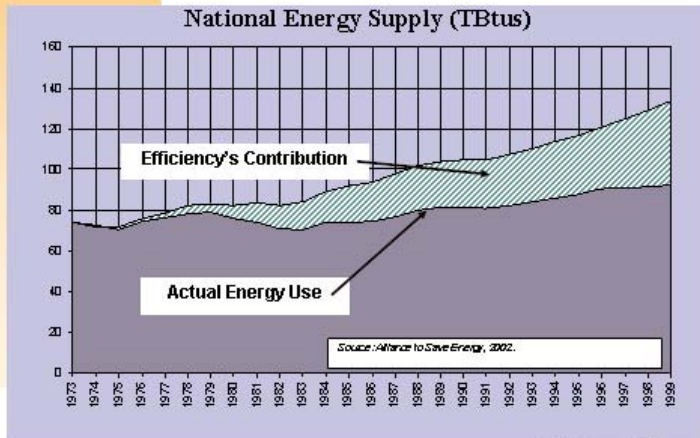
they were. Now he's sending his reports forward and they have to go to the White House for editing. They showed the edit, completely changing the conclusions, completely rewriting the text -- in particular, changing "if we don't take action on this in the next 10 years, our course is largely set." The damage is moving forward at such a pace that we will not be able to turn things around.

The White House does not want this to get out, but other countries - Europe in particular - are very aware of this. We're going to have to deal with it on the state level. This is where the greenhouse gas emissions in our state are produced. They are coming largely from utility power plants, from transportation and from industry.

Energy Efficiency

There is something we can do about this. The first place to start is to buy time - buy as much time as we can get. One way to do that is energy efficiency. We already gain 31 percent of our energy supply in energy efficiency. As you all well know, we've only barely scratched the surface on this. There is so much more we can do

Energy efficiency's contribution to our energy supply



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that is highly cost effective. Don't let anyone tell you otherwise.

There are thousands of megawatts that can be produced through energy efficiency. This is another way of looking at it. The top line is what we get from energy efficiency right now. That is what we consume in petroleum, natural gas, coal, etc. Energy efficiency is a real player. It's a serious source that we need to take a hard look at in North Carolina.

There are many ways to do this. This is a program we've had for industry in the state for about 15 years. We saved about \$40 million a year through that program for industry, which helps them with the bottom line, helps them stay competitive.

Most of these are one-to-two, three-year paybacks. We're transferring this program over to government facilities, our universities and community colleges.

Another is the utility savings initiative. We finally said if we're going to talk the talk, we've got to walk the walk. We've got to do it in state government. So we set a goal of 20 percent reduction by 2008, which will be a savings of

about \$40 million. We're now up to \$22 million in savings. We're on track to meet our goal.

That's just the cream. There's a lot more that can be done. Our bill was \$275 million. Universities are about 60 percent of that. We're now going to work on our community colleges, our K-12 schools and then after that, local governments. All have large energy expenditures; all cannot afford it. I can't tell you how many school systems called me last year with the natural gas spikes and said, "What are we going to do? We busted our budget, and we're only three months into the year." It is not sustainable.

Another area we must never forget about is our lower-income citizens. We took a hard look at manufactured housing. In this state manufactured housing has been an arena we haven't been able to solve. Folks pay as much as \$400 per month in the winter time for heating mobile or manufactured homes. You wonder why there are so many repos in this area. It's largely because they can't afford the energy bills.

There's something very simple that can be done with that, and that's change out to a high-efficiency heating system when it goes out to the site. We've been doing that in a 17-county area.

We're seeing a payback of one-to-two years, savings of \$350 to \$700 for these families during the winter time. We plan to expand this program statewide, region by region, over the next two years and hope we cover the state with this program. They pay as much as 25 percent of their disposable income for energy, and that isn't sustainable for these families.

Renewable Energy

We have to buy time through efficiency. In par-

Why Renewable Energy?

High Technology Growth Industries

- » PV, Wind and Fuel Cells combined growth from 2005 – 2014 of nearly 23% annually
- » Combined market is doubling about every 3 years, projected at \$167 billion in 2015

Demand Routinely Outstrips Supply

- » SOLD OUT - N. American Wind manufacturers in 2005 sold-out available capacity



allel, we must move on renewable energy. Renewable energy is something we can do in harmony with our environment that will improve air quality in this state, not hurt it. There are a lot of possibilities here. These are high-growth industries, worldwide that we can tap in North Carolina. The annual growth rate just in the area of solar electricity, wind and fuel cells has been about 23 percent annually. In some years, it gets as high as 30 and 40 percent. It is doubling about every three years, and a decade from now this will be a \$167 million market.

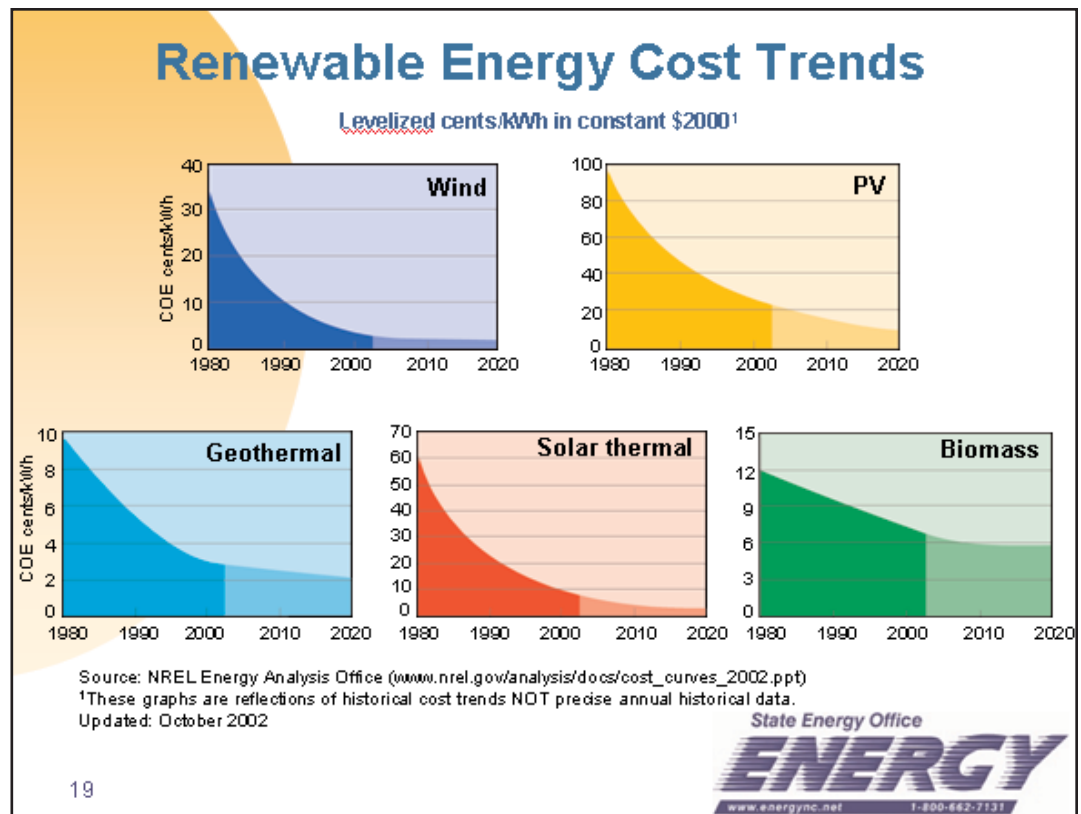
The solar panel manufacturers can't keep up. They are moving three shifts a day, seven days a week. They can't make enough panels. Wind manufacturers can't make enough turbines. This is a growing industry that we really need to tap and bring to North Carolina.

This is why we are very

optimistic about folks being able to tap into renewable energy. We have seen serious steep declines in the cost of these renewable fuels over the past 20 years and are now looking into the future for additional declines. Many of these, such as biomass, is down around 5-6 cents per kWh; wind is now as low as 2 ½ to 3 cents per kWh in Nebraska and Iowa. We have tremendous potential in the East.

We also have some things going for us in North Carolina. One is that we have the best tax credits for renewable energy in the country for both commercial/industrial and individuals. A total of 35 percent of the cost can be financed by the state - up to \$10,500 for consumers. Recent federal credits were also passed in the National Energy Act. They can be stacked on top of it.

For solar energy, for example, that's 30 percent, so about 65 percent can be paid through state and federal credits. We offer credits for manufacturing plants. Rowan needs to look into



becoming a renewable energy zone to encourage manufacturers to come into the county and set up in this area.

Currently fuel cells and hydrogen are not part of this, and that's something we need to take care of.

These are some of the benefits of wind power. We don't have a good wind resource right here in the county but we do have it in the western and the eastern parts of the state. It can be an additional crop for farmers. There are over 2500 megawatts that we think are easily developable in the state - a lot more if we ever develop the sounds in the Outer Banks.

Landfill methane is another source. We're trying to connect local governments and their landfills with users. Universities, industry can use that gas which can become a staple over a long period of time with costs well below the cost of natural gas. It can also lead to economic development.

In the alternative fuels area, the state now has 4,600 vehicles using ethanol (E-85). Our Department of Transportation is the lead user of biodiesel in the state at 2.5 million gallons. We need to increase this. The General Assembly said so this last go around. They said in four

years we need to cut petroleum use of all state vehicles by 20 percent. I think that's a goal localities can match as well.

Right now, in the area of ethanol, we produce almost four million gallons in the United States, but 1/3 additional is under construction. This is a big arena where we can make a lot of economic development occur, particularly for our rural areas in the state.

Minnesota is a good example. Every gallon of gasoline in that state has a 10 percent ethanol requirement. They now have 14 production plants and four more under construction. So for North Carolina, we have a billion-dollar opportunity in ethanol production.

We think we can produce and supply 10 percent of our gasoline requirements in the state. When we talk about bio-energy and biomass, all the energy from plants and waste, we are rich in North Carolina.

These are the counties with the greatest biomass resources but it's spread throughout the state. Just in terms of electricity, these are some of the amounts you can get from all these different sources, like landfill gas, poultry litter, hog waste, crop residue. It's the equivalent of about two nuclear plants.

Alternative Fuels

- ▶ Ethanol: 4,600 state vehicles/E-85
- ▶ E-10 useable by anyone/MTBE Ban
- ▶ Biodiesel: Soybean/Canola or Waste Oil
- ▶ 20% blend can be used by everyone
- ▶ State must cut petroleum use by 20% by 2010
- ▶ Clean Cities Programs

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Electric Power Production

- ▶ Hog waste.....79 MW
- ▶ Poultry litter.....111 MW
- ▶ Crop residue.....216 MW
- ▶ Urban, mill, & forest residue.....900 MW
- ▶ Energy crops.....356 MW
- ▶ Landfill gas.....116 MW
- ▶ Total generating capacity.....1,779 MW
- ▶ Tons of coal displaced.....4,321,813
- ▶ Value of coal displaced/year.....\$112,367,151

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In the biodiesel area, we just required a 5 percent blend in every gallon of diesel in the state. It will lead to 29 bushels of soybeans being used, a million acres in soy or 300,000 acres in rapeseed or canola, and we will have less air pollution as a result of that.

We're getting a lot of competition from other states. It seems that other states have gotten the point here and are starting to take off. Pennsylvania and New York are two of the latest. Pennsylvania just landed a factory of 400 jobs making wind turbines. New York has gone whole hog into biofuels. They have set up a statewide tax-free zone for renewable energy companies.

What can you do?

What can you do? On the state level, there are several pending pieces of legislation. They include performance contracting to raise the ceiling so we can do more of that. Local governments can do that now. These are guaranteed energy-saving contracts where companies come in, put the improvements in and they are paid for through the savings.

There's a tax credit for energy-efficient homes. Expanding renewable energy credits to include hydrogen and fuel cells is also up for consideration.

We have an alternative fuel tax credit for hybrids and alternative-fuel vehicles up for consideration as well as a tax holiday for biofuels for our state. That should give you a sense of what's on the table right now where every time I turn around, I'm being bombarded in the media with energy-related stories of one kind or another.

Here are some of the things I think you need to consider. You should take advantage of any of the pending legislation. Talk to your legislators to let them know how you feel about it.

Secondly, local governments together with the state government need to be the role models for this, for the private sector, for households. They need to set the example in terms of what they do.

You need a plan for petroleum reduction and for where the energy is being used in your buildings. This is something we require of all our state agencies and universities.

Non-profit agencies, the backbone of your human and social services, need to weatherize their buildings. They can't afford these price spikes. Any new buildings that are built need to be green buildings. There's no reason not to buy ethanol fuel-ready vehicles now or not to use biodiesel. It's doable.

Look to Catawba College as the catalyst. Look to them to help you out. ■

Recommendations

- ▶ Carefully consider pending state legislation
- ▶ Lead by Example: Local and State Governments should be the model
- ▶ Community Energy Plan: establish Energy Efficiency and Renewable Energy Goals
- ▶ Weatherize Nonprofit Agencies & Schools
- ▶ New Buildings = Green Buildings
- ▶ Alternative Fuels and Hybrids for Fleets
- ▶ Food Lion and Catawba College: catalysts

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