Questions for Public Comment, South Carolina Public Service commission.

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1. What action do you anticipate from the U.S. Congress as to climate change legislation? What impact may this have on South Carolina?

Since we exceed the allowed EPA limits for clean air in many parts of South Carolina, any act by Congress to toughen the Clean Air Act will detrimentally impact how South Carolina generates power as a good portion of its power comes from coal.

Both of the presidential candidates pushed for a Carbon Cap and Trade program, so it is likely that the Congress will pass some form of legislation enacting this kind of program. This will increase the cost of all energy except nuclear, solar and wind.

Another topic that coincides with energy efficiency is improvements in the national electricity grid. A large part of the grid in SC is owned and maintained by the Co-ops which aren't regulated in the same way as most power companies. Thus, any new legislation regarding the grid may not have the same beneficial impact to SC as the rest of the nation.

2. Does South Carolina have governmental resources available to study, plan, or act upon current or future energy policies? Are these resources sufficient? Are these resources appropriately empowered to act? Is there any overlapping of roles?

Unlike most states, SC government has the benefit of being the largest generator of power in the state. Any changes that Santee Cooper makes will ripple through most of the state either through its own customers or the co-ops which are legally obligated to buy only from Santee Cooper.

It would be helpful to educate the legislature and other policy makers so they can understand the issues and have a basic grasp of the technology. Most often overlooked are the externalities that are not accounted for in the price. The cost of cleanup is often borne by the taxpayers and not the corporation that caused the problem to begin with. For example, one argument against solar is that too much land is required. What is missed is the massive amount of land involved in strip mining the coal in the Appalachians.

South Carolina's many fine universities have resources to identify, monitor, quantify, etc. the different energy policies via their engineering and business schools. They also have both sustainability and small business/entrepreneur programs to train students and the business communities and create new jobs.

3. How do we use electricity in South Carolina? How is our use different from other states with respect to amount of use and type of use? What factors drive this usage? What can we do to better use our energy resources? What demographic or other factors prohibit or inhibit our ability to be more energy efficient?

I have heard that SC is one of the least efficient energy users in the U.S. How much is due to the mix of residential and industrial is unclear, but it is hard to imagine that there is more industry per capita than other states. It should be easy enough for the power companies to measure and report how much they sell to residential vs. industrial. In comparing my 7 year old house vs. the house I grew up in Illinois, my new house is much less efficient which is probably indicative of most of the new homes built in SC recently. In other states with cold winters, the incentive to insulate homes better is much higher because a drafty home is uncomfortable to live in during winter. In a warmer climate, however, most people deal with poorly insulated homes by cranking up their ACs. This is one of the drivers of highly inefficient consumption of energy in SC and the reason for the perpetuating problem of inefficient (poorly insulated) old and new homes.

I think there is a public misconception is that energy efficiency is too expensive and not a significant energy source. Maybe the upfront cost is what is too expensive. I think it's imperative to first educate the public that energy efficiency is important and then second give them the resources to offset the initial cost. If there are roughly 1.5m households in SC and they reduce their power usage from 1000kWh/month to 990 kWh/month (just 1%), it could eliminate the need for a 500MW power plant. It requires only small changes to make a large impact if implemented across the population.

4. What types of renewable sources of energy are available in South Carolina? What is the expected cost to produce and transmit electricity from those resources?

South Carolina has several sources of renewable energy. One of the most pragmatic renewable programs is a solar hot water system. Even before federal and state tax credits, the breakeven is roughly 13 years. After federal and state tax credits, it is roughly 6 years. It acts as a pre heater to your existing water heater, heating 100% of your needs on sunny days and using either natural gas or electricity on cloudy days. On average it can eliminate 70% of your annual hot water expense.

USC has installed a Bio-Fuel plant that runs off of wood waste from an International Paper mill and will save the university millions of dollars. It generates 1.4MW and supplies almost all the heat and steam for USC.

Off Coast Wind – The Department of Energy says offshore wind is good to excellent and in a limited area in the Upstate. Offshore wind is more expensive than land based, but the wind is more constant which may offset the increase costs of construction and transmission. The cost will also depend of the size of the wind farm. Land based costs range from $0.02-$0.07 kWh.

South Carolina has one of the best solar resources outside of the Southwest according to the Department of Energy. The average cost on an industrial sized installation (0.5MW) is roughly $0.214 kWh[1] before any federal or state rebates are applied. For a small residential system (2kw), it is roughly double the industrial rate $0.378.

Geothermal Heat Pumps use the constant temperature a few feet below the surface of the ground. This system basically preheats or precools the air before it enters the heat exchanger. These systems cost roughly $3500 more than a comparable sized HVAC unit with air conditioning. The breakeven for this additional upfront cost is roughly 5-10 years depending on the below ground temperature. Depending on the system, they can save 25-50% on the heating/cooling bills as well as providing 100% of hot water needs. As mentioned earlier, just a 1% reduction in electricity usage across the state can eliminate the need for a medium sized power plant.

To encourage the use of renewable energy, South Carolina needs to implement a Renewable Energy Portfolio Standard. Our neighbors in the Southeast have already implemented them and have seen dramatic changes to their energy production and to their economies. Solar companies providing good jobs are locating to North Carolina because it is a pro-solar state.

5. What types of non-native renewable resources are available to South Carolina? What is the expected cost to transmit electricity from those resources to South Carolina?
Florida will be building 110MW of solar generated power in 2009 and additional 300MW over the next couple of years. Duke Energy is installing $50 million in solar panels in NC.

6. What programs that promote energy efficiency exist in our state? Are these programs affordable to all South Carolinians? Should they be affordable to all South Carolinians? Are energy efficiency measures a cost-effective alternative to the construction and operation of generation facilities? How should energy efficiency incentives be designed?

All South Carolinians should be able to afford to improve their energy efficiency. As stated by my co-op, 50% of their customers have a median income of $22,000. Low income households spend a large amount of their paycheck on power. They should have the education on how energy efficiency can improve their finances and the resources to do so. One area that is overlooked is the disconnect between property owners making energy efficiency improvements in a multi-unit and the renters who receive the lower power cost benefits. The lack of return or other incentives for property owners discourages them from making the improvements.

Oregon created an energy efficiency plan[2] in a 1999 energy restructuring bill. Part of the bill called for a 3% charge on power bills that went into a fund that invests in cost effective energy conservation projects and helps to pay for the above market rates for renewable energy. With a $0.02 kWh rate for hydro generated power, they are still planning on reducing energy needs by 430MW of electric and 25 million therms of natural gas on an annual basis. They are also supporting an increase of 140MW of renewable energy generation.

The town of Berkeley, CA has created a program that allows the homeowner to install solar panels and pay for them over a long period of time via the home's tax bill. If the owner moves, the payments for the bond will be taken over by the new owner until the bond is paid off. This program removes two of the primary problems of installing solar, the large upfront cost, and the question of "Why install solar if I'm not going to be here in 10 years?"

Current residential building codes in South Carolina don't encourage energy efficiency. One barrier that many people cite against tightening building codes is that South Carolinians are too poor to pay for the extra expense of better codes. What is overlooked in this logic is that, with lower average income, South Carolinians spend a significantly higher proportion of their earnings on heating and cooling. Consequently, they can get a big relief from living in more efficient homes that generate lower utility bills. A friend of mine who is a realtor, surveyed local Columbia mortgage companies, and she couldn't find one lender that had heard of a Energy Efficient Mortgage (EEM), much less offer them. The EEM[3] is a federally recognized, easy to use, and can be applied to most mortgages. It allows energy efficiency expenses on new and existing homes to be part of the mortgage. This allows home buyers and renovators to afford to increase energy efficiency and save on their power bills. There is room for improvement all around for the housing industry in this state.

As Oregon's modest conservation program shows, they will be able to reduce or eliminate the building of a power generation facility

7. The heavy use of concrete and steel to construct coal and nuclear generating facilities in China, India, and other developing nations and the importation of fuel needed to create energy from those facilities has increased the price of these raw materials and commodities beyond most projections. Is this level of growth sustainable? Will prices continue to be driven by this global demand? How will South Carolina be affected by this global demand?

As developing economies with large populations continue to grow in population and wealth, they will need more and more resources. As they attempt to achieve U.S. level of consumption, this level of growth will not be sustainable. China is already feeling the impacts of their coal driven economy. The Chinese government sponsored a report[4] showing their energy inefficiency is costing the economy $248 billion due to increased health costs, smog, mining waste, water pollution, etc. However, unless the global economy goes into recession, I would continue to expect the cost of concrete,

steel, coal, and uranium to continue to increase as the world's developing economies strive for western economic levels.

8. How has the current economic situation affected the projections for energy use?

South Carolina has many positives and will continue to attract new comers (residents and new businesses) from other parts of the U.S. This will drive overall energy usage unless a strong energy efficiency program is put into place. Another point is that the current economic situation has reduced the cost of oil has dropped dramatically which doesn't directly impact the cost of power generation here in South Carolina, but the cost of coal which has increased from an average of $50/ton in 2007 and climbed to a high of $150/ton over the summer of this year has only dropped to $115/ton recently.[5] This does point to higher power costs for most South Carolinians.

Sources:

1. *http://www.solarbuzz.com/solarindices.htm*
2. *www.energytrust.com*
3. *http://www.pueblo.gsa.gov/cic_text/housing/energy_mort/energy-mortgage.htm*
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