HarrisCEm Resource

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Subject: Consideration of Conservation and Renewable Energy in EIS for New Nuclear Plants
Attachments: Scoping Comments.pdf

Dear NRC and Experts in Energy Generation and Conservation,

I am a resident of Apex, North Carolina where two new nuclear power plants are being proposed by Progress Energy (73 FR 29785). The Environmental Impact Statement being prepared by the Nuclear Regulatory Commission for these plants will be one of the most comprehensive analyses of energy options in this state, and be used by Federal, State, and local officials to determine energy policy. I feel that there are a number of important questions raised by this proposal that can influence the viability of renewable energy and energy conservation in this state. It is important to properly assess all options, and clearly define the costs and benefits of each option before determining how 2000 megawatts of power will be generated.

I would like to submit my attached comments, and ask the NRC to work with experts in energy policy and technology to accurately describe how the proposed nuclear plants compare to renewable energy and conservation options, and to describe any adverse impacts that the proposed action might have on these efforts in North Carolina. Information regarding the proposed action is available at:
http://www.nrc.gov/reactors/new-licensing/col/harris.html

Progress Energy's preliminary evaluation of renewable energy, conservation, and other alternatives, which will be used by the NRC as a starting point in its evaluation, is available at:

http://adamswebsearch2.nrc.gov/idmws/ViewDocByAccession.asp?AccessionNumber=ML080600913

Comments on the scope of the NRC's review of the impacts of the proposed reactors, renewable energy, and conservation will be accepted until July 17, 2008. Please work to ensure that this evaluation is comprehensive, accurate, and in the best interests of North Carolinians.

Thanks,

Evan Keto
Resident, Apex NC

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Tuesday, June 10, 2008

To the NRC Staff,
Thank you for opportunity to comment on the application for a Combined Construction and Operating License for two new AP1000 nuclear reactors at the Shearon Harris site in Apex, NC. As I understand it, the purpose of the National Environmental Policy Act is to ensure that all facts are on the table when it comes to a proposed Federal action, so the government is aware of the pros and cons of the decision being made, in order to "fulfill the social, economic, and other requirements of present and future generations of Americans". The purpose of the scoping process is to determine who should be involved in the process, which alternatives should be evaluated, and what issues should be used to evaluate and compare the alternatives in order for decision-makers at the NRC and other agencies to make the right call.

Let me say that I am neither for nor against nuclear power or the proposed action. I am for carefully reasoned decisions, clean energy, economic growth, and employment. I am against decisions made in haste or with incorrect information, waste, market failures, and unemployment. Below are what I feel are important points to consider when deciding whether to approve the proposed facilities.

Concerns discussed below:

1. Need for Additional Power
2. Purpose and Need for the Proposed Action
3. Impacts on Renewable Energy and Conservation Development
4. Evaluation Process for Energy Generation and Conservation Technologies
5. Total Cost of Power
6. Costs of Electricity to Consumers as a Disqualifying Factor
7. Jobs
8. Taxes as a Benefit
9. Drought, Warming, Extreme Weather, and Power Availability
10. Fuel Prices and Supply
11. Harris Reservoir Water Level
12. Climate Change
13. Decommissioning Expenses
14. Cost of Long-Term Waste Storage
15. Storage of Non-radioactive and Low-level Wastes
16. Federal Agencies to Consult With
17. Conclusion

1. Need for Additional Power
My first concern is for the need for this additional power. Without a clear need for additional electricity, it does not make sense to spend billions of dollars to create the new facilities.

In the COL application, Progress Energy states "The filed forecast represents a retail growth rate of approximately 1.8 percent across the forecast period before subtracting for DSM." (p. 8-16). Since many economists are predicting economic decline, and increased inflation, why would we assume retail growth? In a receding economy, wouldn't prudent businesses rather cut costs by increasing their own energy efficiency or by generating their own power, rather than buying more nuclear energy? What happens if it turns out this is an overestimate, and we only need 500 additional megawatts of electricity? Then Progress and the Federal government will have spent millions or billions of dollars on

a project that can't pay for itself, and Progress will be forced to charge all of us more for electricity to keep from going bankrupt. Wouldn't it be best to hedge our bets and only build one plant first, and see if the predicted demand actually shows up before building the second?

As I understand it, in a free market system, there are three elements of an economy; supply, demand, and price. Increasing the price of electricity makes a strong incentive to reduce energy use and invest in renewable energy. Increasing the supply of electricity releases this pressure, and makes it harder for energy conservation or generation projects to break even. Additionally, a nuclear power plant and the highly trained staff that run it are expensive, and it's hard to believe that electrical rates won't go up as a result of this action. If demand levels off, then the end result could be more expensive power, an excess of electricity, and no demand for energy conservation or renewable energy projects. This would be a terrible scenario, detrimental to the rural economies of this state, to ratepayers, and to the small businesses that are working to on energy efficiency and renewable energy.

Therefore, I ask the NRC to carefully evaluate the demand for electricity under a range of possible economic scenarios, including a negative growth rate, and under a range of prices per kwh. If raising electricity prices by a few cents per kwh lowers demand and stimulates development of renewable energy, then it makes sense to take thus action rather than building two new plants, which will also raise prices, but leave us with excess supply that harms small businesses in the energy field.

2. Purpose and Need for the Proposed Action

The need for the proposed action is not to generate electricity, but to allow Progress Energy to use nuclear fuel to balance energy supply with energy demand. This should not be viewed as the only way to reach balance; alternatives that reduce electricity demand either through raising prices or providing incentives for conservation, or that shift it to times when more energy is available should also be evaluated.

Using the free market to make these decisions would not only control supply and demand problem, but would also create a market for more effective energy storage technologies. Lithium batteries have come down in price due to the demand from electronics, and it's only a matter of time before other storage technologies take off.

Because of the structure of the current electricity system, it has been hard for rural and independent providers to gain access to the market. Resolving these access issues may lead to the balance between supply and demand that we seek. We need to consider all alternatives that can balance supply and demand.

3. Impacts on Renewable Energy and Conservation Development

It seems to me that if we have two new nuclear plants producing 2000 megawatts of electricity, then there is little incentive to allow smaller companies and individuals to participate in the energy generation and conservation market.

Contractors, electricians, and home improvement suppliers would like to help reduce consumer demand for electricity through efficiency and conservation. Farmers and foresters across North Carolina would like to help produce clean electricity and reduce our impacts and reliance on foreign energy. Hog farms along the Neuse River are interested in capturing the natural gas generated in hog lagoons; foresters want to use low-quality woody biomass for fuel; landowners on the coast and in the mountains would like to install small wind turbines and microhydro facilities; and farmers across the state would like to supplement their profits with wind and solar energy revenues. Additionally, there are hundreds of

square miles of rooftops, parking lots, and highway medians where solar collectors could be placed with no significant adverse environmental impacts, allowing homeowners and businesses to generate electricity, reduce their own energy costs, and profit by selling excess power to their neighbors. As a side benefit, because the energy would travel shorter distances, the grid would be under less stress, and less energy would be lost in reaching the end user. With decreasing costs, increasing efficiencies, and a rapidly growing number of demonstration projects, the question is not if conservation and distributed renewable energy sources can make up a significant portion of our electrical demands, but when.

The main restriction, I have heard, facing these technologies and small businesses is not cost or efficiency or environmental impact, but access to the transmission system. People would like to get paid for the energy on their properties, but are excluded from the market. It seems to me that approving 2000 mw of nuclear power will not help these folks get connected. It would, in all likelihood, lead people to believe that our energy problems are solved, and delay any progress in opening the electricity market to small businesses.

The proposed action could prevent homeowners and businesses from lowering costs, increasing wages, and creating jobs through renewable power. If farmers and foresters are able to supplement their profits by contributing to energy generation, they are more likely to keep working lands working, and less likely to sell them to become subdivisions or shopping centers. Please consider the social, economic, and environmental impacts both positive and negative, of the proposed action and all alternatives. Also consider how the proposed action and alternatives can affect the impacts associated with the continued loss of working lands in North Carolina.

Please weigh these impacts carefully, and evaluate the alternative where the State Government provides access and incentives for grid interconnection of small energy projects. These incentives should at least be equal to the total costs imposed on society (whether as taxpayers or ratepayers) in constructing the plant (including DOE incentives); moving facilities from the area to be flooded by the lake; the total costs of running the plant, including fuel, salaries, and supplies; the collateral impact of in migration on local schools and roads; and the total costs of decommissioning both facilities in 40 years.

As a second scenario, please evaluate the impacts of Progress building one power plant, and agreeing to purchase at least 1000 megawatts of energy from small energy producers through an open enrollment net-metering program.

4. Evaluation process for Energy Generation and Conservation Technologies
When evaluating the proposed action and alternatives, please begin your evaluation by analyzing the impacts of demonstration or commercial projects which have already been constructed, and use these to illustrate what typical impacts might be. From there, consider the technologies that are on the horizon to estimate what the impacts of each technology will be in 2018. Please avoid speculation regarding potential impacts that are remote or unproven. Also, the NRC should actively seek out the energy experts at the federal, state, and local levels to ensure that the discussion is correct and reflects the most recent information.

When comparing alternatives, please consider the following:

- Installing smart meters that provide a financial incentive for residents and businesses to reduce their peak energy demand, and to utilize renewable energy sources when there is an excess of available power.
- Passing a state law that allows and encourages small businesses and homeowners to produce and sell electricity to the grid.

- A system of revolving credit or long-term leases to make renewable energy facilities more affordable up front.
- Keeping electricity supply at current levels and using prices and financial incentives to encourage energy conservation.
- Microhydro and run-of-the-river hydro systems.
- Small wind turbines generating less than 1 mw, including vertical axis turbines placed on existing towers and buildings and freestanding towers in agricultural, coastal, and mountainous portions of the state.
- Harnessing the drainage from existing lakes and ponds with microhydro power.
- Woody biomass energy using the most recent technology in particulate capture.
- Wave power along the Atlantic coast.
- Solar thermal and photovoltaic power, to be placed on buildings, over parking lots, in transmission corridors, along highway medians, and in other locations.
- Biogas production from livestock wastes and sewage treatment plants.
- Conservation through improved building design, landscaping, and more efficient appliances.

5. Total Cost of Power
It seems to me that there should be an accounting of the total costs of the proposed action, whether borne by ratepayers or taxpayers. As ratepayers, we would pay higher electricity bills to cover construction of the plant. As taxpayers, we would pay the DOE to store the nuclear waste and to help Progress construct the plant with through financial incentives, and the NRC to monitor the safety of the plant. We also would pay higher taxes to cover impacts to roads by cars and trucks associated with the plant, increased costs of schools, etc. When describing costs of the proposed action and alternatives, please look at the total costs, and include these in the total price per kwh. I'd hate to think that we're saving 5 cents per kwh for electricity, but paying an extra 10 cents per kwh in taxes.

6. Costs of Electricity to Consumers as a Disqualifying Factor
As Americans, we do not wait for the world to create the right environment for progress. We are leaders, and create that progress ourselves. If our main criteria for a decision was saving money, we never would have declared independence from Great Britain in the first place. World War 2 was expensive; going to the moon was not cheap, and energy alternatives might cost money, but that doesn't mean we shouldn't go ahead with them. In fact, there was a time where nuclear energy was not cost-effective, but the US government provided a lot of money to remove the barriers and make it feasible. So please don't consider cost to be a deal-breaker, since such reasoning would fly in the face of our Nation's history.

7. Jobs
As previously stated, producing 2000 mw of nuclear power might make it harder for business owners, farmers, foresters, and communities to generate their own power, and sell excess power to the grid. Additionally, it will mean that we won't need people who would sell, install, and service these power facilities. While the expected employment benefits of the proposed action are well-documented, numerous studies have shown that renewable energy creates more jobs for the same amount of energy. Additionally, there are many jobs related to energy efficiency, ranging from landscapers planting the right kinds of trees to shade buildings and reduce cooling costs, to contractors installing skylights and foam insulation, to to electricians putting in smart electricity meters and energy-efficient heat pumps. A huge number of blue- and white- collar jobs are created in North Carolina by building renewable energy and focusing on energy conservation, and these jobs might be more than those provided by nuclear energy. Please provide a direct comparison of the number of jobs per 1000 mw of nuclear

power versus the number created by 1000 mw of energy efficiency, biomass, microhydro, wind, solar, biogas, wave power, or any other alternative considered.

Additionally, I was wondering who would be hired under the proposed action. Would North Carolinians make up the majority of the workforce at the proposed facility? Or would more people move to the area to work at the plant, adding to congestion problems? I think most people would much prefer that people already in this state be given preference to work here, if it is approved, to reduce unemployment.

8. Taxes as a Benefit

I don't think you can count the taxes created by a nuclear power plant to be a benefit of the plant. Those taxes come from people paying their electrical bills. Instead of going into the bank or to put better insulation on their houses to reduce their total energy costs, it is going to local and state government to offset the impacts of the nuclear plant on local roads and schools. In a way, the proposed action might be raising taxes, not lowering them. Please be clear to state what the total costs and benefits are of the proposed action, and any negative costs that are created by apparent benefits.

9. Drought, Warming, Extreme Weather, and Power Availability

Nuclear power facilities may not be ideal for a world with weather extremes. As technologies go, steam plants do best when it's cold and dry outside, and there's a lot of water that can be evaporated in the cooling tower. But in this area in recent years, it has been getting hotter, and water is in shorter supply. Won't output decrease and electricity costs increase as summers get hotter and we start having more droughts like most climatologists predict? Isn't this when we need the most power for air conditioning, and are at greatest risk of blackouts? Wouldn't the resulting blackouts be increasingly dangerous, especially to the elderly?

Also, there is a general agreement that climate change is increasing the intensity and number of hurricanes that are likely to occur along the Atlantic. Since North Carolina is likely to be hit by some of these hurricanes, as well as more frequent tornadoes and floods, it seems like there is a good chance for grid failure as trees and power lines fall down. It seems like a large number of small power plants would be able to come back on line more quickly than a centralized set of large power plants with transmission lines stretching across the state. Isn't that why FEMA and DOD rely on portable diesel generators in the wake of a natural disaster?

It seems like placing all 3 nuclear power plants in the same small area would increase the risk of having all three plants shut down at once. What happens if a tornado comes through, or the dam breaks? We wouldn't only have one plant down, we'd have all 3 down. Wouldn't it be better to spread the risk and spread our power facilities out?

Also, since all three plants use the same fuel, isn't there a risk of uranium supply getting stretched thin by the expected nuclear renaissance? What's to ensure that we'll be able to keep all three running at full power in a world with increasing uranium demand?

Please describe how a nuclear power plant can be expected to fare under drought conditions like those faced last year, and extended periods of 90 to 100 degree temperatures. When evaluating alternatives, please compare their performance under the same conditions. Additionally, please compare the pros and cons of having a large number of smaller power facilities scattered across the service area in a time of increasing threats from storms and other disasters.

10. Fuel Prices and Supply
As far as I know, uranium is a mineral resource with a finite supply, and which will increase in price over time, as the best resources are extracted and we move to lower-grade resources. As gas and diesel prices increase, won't it cost more to extract, refine, and transport uranium? Given these factors and an increasing demand on uranium from a predicted nuclear renaissance, what effect will the demand-adjusted costs of extracting, processing, and transporting uranium have on electricity prices?

11. Harris Reservoir Water Level
I don't understand the need to raise the water level in Harris Reservoir. There are air-cooled technologies to remove heat from steam power plants which require very little water, like the radiators in cars and trucks. It might be a bit more expensive, but raising the lake will destroy bridges, boat ramps, park facilities, and wetlands, which is also costly, and passed on to ratepayers with higher electricity bills. Please evaluate the costs and benefits of the alternative of a dry cooling tower, and keeping the lake at the current water level.

12. Climate Change
I am interested in the total life-cycle impacts of this action, as compared to the other alternatives. It takes a lot of energy to make cement, and a nuclear power plant contains a lot of cement. When it cures, this cement releases carbon dioxide, which one group estimates is responsible for 7-10 percent of carbon dioxide emissions. Additionally, we all know that bulldozers and other heavy construction equipment burns diesel, and the people and materials going to and from the plant require burning gas.

Furthermore, water vapor is a greenhouse gas, and methane, a greenhouse gas many times more potent than carbon dioxide, is produced when vegetation decays underwater, which is a likely if the lake is raised. Therefore, I feel it would be useful for the NRC to quantify exactly the impact of the proposed action and the alternatives on the changing climate, in order to make a clear comparison.

13. Decommissioning Expenses
It seems to me that if the economy slumps and fuel prices skyrocket over the next 40 years, it will be very expensive to run the bulldozers and cranes needed to safely decommission these new plants when their life expires. What are the total projected costs of decommissioning this site if the plants operate for 40 years, and fuel prices continue to increase at current rates? How do they compare on a per-megawatt basis with decommissioning other technologies? What is the likelihood that it might be so expensive to remove these two plants that they stay where they are until they fall down from age? How much would fully decommissioning these facilities add to the per kwh cost of electricity? How does this compare to the alternatives?

14. Cost of Long-Term Waste Storage
The DOE is responsible for storing nuclear waste. At the very least, it seems reasonable that there will have to be a small team of people monitoring and guarding nuclear waste to make sure it is safely kept. It also seems reasonable to assume that the more waste we generate, the more people will need to watch it, since some predict we'll fill up the proposed Yucca Mountain facility and need to find another place to bury high-level waste. Since these guards and monitors will need salaries, this represents a long term cost that will exist long after these plants have been decommissioned. What are the total pro-rated costs of the additional security and managerial forces needed to oversee the nuclear waste that will be produced by the proposed facilities? How many total manhours will this vigilance require, projecting out 10,000 years? What is the value of this time at current minimum wage rates? How does this compare to alternatives not requiring continuing long-term security for waste products?

Additionally, what are the costs of constructing a long-term waste storage facility, and what are the prorated costs associated with these two plants, assuming that they operate for 40 years each at full power? How does this affect the per-kwh price of electricity that will be borne by us not as ratepayers, but as taxpayers?

15. Storage of Non-radioactive and Low-level Wastes
Where will the non-radioactive and low-level radioactive waste from this project be stored? How many loads of waste per year will be generated, and how much fuel is turned into pollution by these trucks? How does this compare to the alternatives? How many tons of resources, like paper, rubber gloves, tools, and glassware will be converted into waste over the lifetime of these two facilities? What is the estimated value of these resources, and how does this compare to the alternatives? Of these resources, what percent are consumed? Turned to waste? Recycled?

16. Federal Agencies to Consult With
NEPA states that the responsible Federal agency "shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved." Therefore, I formally ask that the NRC consult with and actively obtain the comments of the following federal agencies with jurisdiction by special expertise before producing a Draft EIS for the proposed action:

- The Department of Energy's National Renewable Energy Laboratory, regarding the impacts of renewable energy development and conservation in North Carolina, and how the proposed action may affect this development.
- The United States Marine Corps, regarding the environmental impacts of ocean wave power at their demonstration project at the USMC base located on the island of Oahu.
- The Federal Energy Regulatory Commission, regarding the impacts of hydropower including hydrokinetic power.
- The Army Corps of Engineers, regarding the impacts of wind power, particularly offshore wind.
- The U.S. Department of Agriculture regarding the impacts of energy generated on farms, whether by biogas, biofuels, wind, or solar energy.
- The U.S. Forest Service, including the Croatan National Forest in Eastern North Carolina, regarding the impacts of using low-value biomass from forestry operations for energy.

17. Conclusion
In conclusion, I trust the NRC to complete a very comprehensive review to see whether this proposed action is really in the best interest of North Carolinians. I think Progress Energy is an excellent company, with many hardworking employees, and feel that we really do need clean energy. But we must make sure that it is done in a way that maximizes employment, preserves the environment, saves current and future ratepayers and taxpayers money, avoids waste, and does so in a way that is not sensitive to small changes in the economy or the weather. Nuclear energy is not perfect, and we need to recognize both the benefits and the costs before deciding if we need 2000 more megawatts of it. I hope you'll address these concerns, and provide the information needed to make a decision that best meets our needs.

Thank you for your consideration,

Evan Keto
Resident, Apex NC