

**BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA
DOCKET NO. 2008-196-E**

INRE:

Combined Application of South Carolina)
Electric & Gas Company for Approval)
of a Certificate of Environmental)
Compatibility and Public Convenience and)
Necessity and for a Base Load Review Order)
for the Construction and Operation of a)
Nuclear Facility in Jenkinsville, South Carolina)

**MOTION TO CHANGE THE LOCATION
OF THE TWO NEW REACTORS
PLANNED BY APPLICANT**

I, Joseph Wojcicki, one of the intervenors in the above case, respectfully submit this Motion ("Motion") in this docket for South Carolina Electric & Gas Company's ("SCE&G's") Application for Approval of a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order for the Construction and Operation of a Nuclear Facility in the presently assumed to be location of Jenkinsville, South Carolina ("Application").

Pursuant to the South Carolina Base Load Review Act ("Act"), the Office of Regulatory Staff's ("ORS") duties are to safeguard the public interest in all matters arising under the Act, and in carrying out this duty, therefore I expect their full support.

INTRODUCTION.

1. My proposed localization close to the Atlantic Ocean has enormous savings over the Jenkinsville location selected by SCE&G. In the "Atlantic location" all necessary water required for cooling will be saved for the State of South Carolina ("SC") as well as for the entire Southeast region of the USA. Here nuclear facilities already had problems in times of higher temperatures and/or drought. The Atlantic Ocean Location ("AOL") will also save electric energy estimated in the hundreds of millions of US dollars, giving a higher chance to keep lower kWh rates and SCE&G competitiveness on the energy market as well as minimizing risk of bailouts.

It is obvious that lower kWh rates are in the great interest of the general public, industry, and several institutions of SC.

2. Everyone who has read the material submitted by SCE&G, experts from ORS, and witnesses could not find a serious analysis of the location aspect as well as the enormous cooling water demand by nuclear installations. There is nothing mentioned about cooling alternatives, such as seawater. Also, a future refinery is planned to be constructed near the shoreline, which will require megawatts of power for operation.

3. I deliver a solution carefully analyzed, having the support by science and common sense. The scope of required knowledge is entirely in my education and experience. A partial list is shown below:
 - 3.1. Over 40 years of engineering experience in programming, design, construction, startups, and troubleshooting from planning to operational stages of small and big projects.
 - 3.2. Over 20 years in education (lecturing in Colleges and Universities), teaching electrical power generation and distribution, process control, cybernetics, mechanical and electronic technology, and computer programming. My students, many graduating Cum Laude, placed my name in the top few percent of USA educators (Who's Who Among American Teachers).
 - 3.3 Over 25 years in design, working as lead designer in large, multi-disciplinary projects within different industries and for different investors.
 - 3.4. Troubleshooter and verifier—over 15 years experience from small to large scale and working with billion dollar investments.

SUPPORTING CALCULATIONS.

4. Basic data from SCE&G: Their reactor needs 31 cubic feet per second (~~—fs~~) of make-up water, mostly for cooling. Two reactors need 62 cfs. This water is mostly evaporated. In the Jenkinsville location, an extra 82 cfs would be taken from Monticello Reservoir. Warm 20 cfs is the effluent discharge to Parr Reservoir. In the maximum case, values are: $138 - 68 = 70$ cfs. See SCE&G Response to ORS CHG 2-29 Request (Page 1301 – Table 3.3-1).

In gallons: $(7.48 \text{ gal/cfs}) * (62 \text{ cfs}) = 464$ gallons per second (~~—g/s~~) is removed from SC water sources, or about 27,800 gpm (gal/min).

Per hour: $(3600 \text{ s/h}) * (464 \text{ gal/s}) = 1,664,536$ gal/h (Note: Over 1.6 million gallons per hour!)

Per day: $(24 \text{ h/d}) * (1,664,536 \text{ gal/h}) = 40,068,864$ gal/d

Per week: $(7 \text{ d/w}) * (40,068,864 \text{ gal/d}) = 280,482,048$ gal/w

Per year: $(52 \text{ w/y}) * (280,482,048 \text{ gal/w}) = 14,585,066,496$ gal/y (Note: Over 14.5 billion gallons annually)

Per reactor's life expectancy: $(60 \text{ y/life}) * (14,585,066,496 \text{ gal/y}) = 875,103,989,760$ gal/life

5. Unit price (UP) of water.

At Wal-mart today: 37 cents to 600 cents per gallon

I paid \$29.30 per 2,035 gallons for city water. $UP = 2930 \text{ cent} / 2035 \text{ gal} = 1.44 \text{ cent/gal}$. Even at this price you may see \$ billions saved on water.

Note to readers: **calculate cost of the water** with any of your assumptions. Respect the perspective of increase ~~—base demand/load~~ in the next 60 years. Do calculation for the disaster time as post hurricane, drought, highest temperature recorded in your county, etc. Remember, at these times water becomes very expensive.

My proposed location entirely eliminates the necessity to use water from SC land natural resources. In addition, cooling will be much better using seawater.

6. Better location in a network topology will lower transmission losses.

In this case, losses may be estimated as 2 or more percent of rated power (i.e. 2,234 MW). Planned time is 95%. Therefore, annual losses in energy could be at least:

Energy lost per year = $0.02 * 2,234 \text{ MW} * 0.95 * 8760 \text{ h/y} = 371,827 \text{ MWh /y}$.

Using approximate future rate: 10 cent / kWh * 2 = \$0.20 / kWh or \$200 / MWh. Note: Here are eliminated the demand charges for MW, MVA, Power factor, etc. as well as construction and operation costs.

Lost minimum amount in earning: $(\$200 / \text{MWh}) * (371,827 \text{ MWh /y}) = \$74,365,392 / \text{y}$.

Maximum could be (if more wholesale customers would be connected to the grid and other factors come to life) up to 2.5, so max losses could be over \$180 million annually.

Detailed estimation can be done after SCE&G will submit realistic network configuration with topology of future loads, especially the big ones planned in the state and the southeast region.

7. Savings on energy using seawater for cooling is another significantly big number.
8. Selection of the two AP 1000 units location at Jenkinsville is shown in response to ORS Request CHG 2-1 (Page 898) in SCE&G Audit Information (Pages 909-942) from the analysis of only two options: VCSNS/Jenkinsville and SRS/Aiken. Other locations analyzed in the 1970's were rejected. Skipping the discussion on selection criteria (Criterion P1-P10) we may find an interesting summary on Table 3-1 (Page 917).
 - 8.1. Adding to the table a third option, my Atlantic Ocean Location, will significantly change the rating at least for P1 (Cooling water supply) and P8 (Transmission access). SRS and VCSNS must be corrected, lowering their rating to almost zero (0) compared to AOL which would get a value of five (5).
 - 8.2. Composite Site Rating for AOL would exceed the selected VCSNS location by at least 7 points.
9. More supporting arguments will add to a better economical model, lowering overall capital investment dollars for construction and optimize operational costs.
10. An initial set of information is in PSC Docket 2008-196-E as doc #195528 entered on 10/15/2008.

We have to remember that any legal arguments CANNOT OVERRULE the laws of physics, chemistry, energy, and common sense.

CONCLUSION.

Considering my proposal of the "Atlantic Ocean Location" (AOL) with its enormous savings and assurance of water for the SC Midlands and the southeast region of the United States, it should convince the applicant to reanalyze this part of the application. It should also influence in a positive way other SC projects.

This win-win situation will be for:

- _ SCE&G and Santee Cooper costumers because of lower rates
- _ SCE&G competitiveness
- _ SCANA shareholders
- _ People of SC and the southeast region because of better stability of water supply
- _ Industry of SC – lower MVA, MWmax, MVAr, MWh rates and a reserve in water
- _ Possible positive influence on future AP 1000 installations all over the world

SCE&G has not considered in their election of a location those factors and also ignored the planned Duke Power's reactors that need water, too.

The initial proposal, which I have submitted to the PSC on 10/15/2008 (doc #195525), has some details supporting this Motion.

The suggested AOL will have a significant effect on the economy of South Carolina.

Very truly yours,

Joseph "Joe" Wojcicki - Intervenor.

Columbia, SC November 10, 2008