

THE SOCIOECONOMIC IMPACTS OF CHEM-NUCLEAR'S LOW-LEVEL WASTE DISPOSAL FACILITY ON BARNWELL COUNTY

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ABSTRACT

Since 1971, Chem-Nuclear Systems, Inc. (CNSI) has disposed of about 22 million cubic feet of low-level radioactive waste (LLW) in Barnwell County, South Carolina. The facility is scheduled to close at the end of 1992. Over its lifetime, what have been the social and economic impacts of this operation on its host county? Put differently, what would Barnwell County be like if CNSI had not located its LLW disposal facility there? This paper reports on the results of a recent study which attempted to answer this question.

INTRODUCTION

In the summer and fall of 1990, a study was done of the social and economic impacts of CNSI's LLW disposal operation on Barnwell County, South Carolina. Barnwell County (population, about 21,000) is in southwestern South Carolina, on the Georgia border. It is predominantly rural, about 60 percent white and 40 percent black, and has three principal municipalities: Barnwell, the county seat, about 5 miles from CNSI (CNSI is in the very small town of Snelling); and Williston and Blackville, about 15 miles from CNSI. The study was undertaken by the University of Tennessee's Energy, Environment, and Resources Center (EERC), working in conjunction with UT's Center for Business and Economic Research. It was funded by the US Department of Energy's Low-Level Waste Management Program, which requested it to improve understanding of the impacts that might be expected from a commercial LLW disposal facility.

The CNSI disposal facility was selected as the subject of inquiry because the other two commercial LLW disposal facilities still operating are atypical. (US Ecology's facility in Washington is located on a DOE reservation; its Nevada facility accepts only a small amount of waste.) We looked only at the social and economic impacts of CNSI's disposal operation on Barnwell County; we were not requested to assess the facility's environmental impacts. (For discussions of the latter, see, e.g., the US Nuclear Regulatory Commission's Environmental Assessment for the Barnwell Low-Level Waste Disposal Facility (1982) and the recent brief review in "Directions in Low-Level Radioactive Waste Management" (DOE/LLW-103, October 1990).) Barnwell County was defined as the "impact area" because CNSI's main impacts occur there; because data availability and time and financial constraints suggested that looking only at Barnwell County would be prudent; and because we had no indication that the social and economic impacts of CNSI outside of Barnwell County would run counter to those within the county.

The study had three main parts. First, available socio-economic statistics were gathered on Barnwell County for the past 20 years or so, and were compared with similar information for South Carolina as a whole and for four

nearby counties in the Lower Savannah region. Although an elaborate "control group" comparison wasn't feasible given the complexity of the variables, the comparison done enabled a rough determination of the relative effects of CNSI. Second, a quantitative assessment was done of the CNSI disposal operation's potential direct and indirect economic impacts, both positive (e.g., through wages, taxes and special payments, local expenditures, and multiplier effects) and negative (e.g., through public expenditures). And third, a qualitative analysis of the facility's social and economic impacts was done. This analysis, which included an assessment of local support for and opposition to the facility, entailed a small-sample mailed survey and 60 in-depth, semi-structured interviews conducted in person or by phone with CNSI employees, public officials, businesspeople, farmers, educators, social service workers, church leaders, and the media. (No organized environmental groups were identified in Barnwell County.) Local press coverage of the CNSI facility over the past twenty years was also analyzed.

In executing the study, several side issues were important: (1) An important confounding factor was the US Department of Energy's Savannah River Site (SRS), less than one-quarter mile from CNSI's LLW disposal facility. SRS, which has been an important presence in the Lower Savannah region and in Barnwell County since the early 1950's, has had and continues to have a large influence on both the economy and the outlook of Barnwell County. (Approximately 10 percent of Barnwell County's workforce, or 1000 employees, work at SRS, compared with less than 2 percent at CNSI.) To a lesser extent, the economy and attitudes of Barnwell County have also been affected by the Allied General Nuclear Services (AGNS) spent fuel reprocessing plant that was built in the 1970's next to SRS and CNSI site but was never opened. (2) While our study focused on assessing the overall positive or negative socio-economic impacts of the CNSI facility on Barnwell County, an attempt was made to identify differential impacts on different groups (e.g., poverty/non-poverty; black/white; female/male). This was limited, however, by data constraints. (3) The CNSI facility in Barnwell County is scheduled to close in less than two years. While this study mainly considered the impact of its presence, an attempt was made to identify some possible impacts of its absence.

The following are the study's conclusions, quoted from the final section of our report (The Social and Economic Impacts of Chem-Nuclear's Low-Level Radioactive Waste Disposal Facility on Barnwell County, South Carolina, Energy, Environment, and Resources Center, University of Tennessee, January 1991). All conclusions and opinions are those of the researchers and do not necessarily reflect the views of the US Department of Energy.

CONCLUSIONS

As mentioned elsewhere, our study has been constrained by time, money, and data limitations. Census data for 1990 are not yet available; the quantitative economic impact analysis required making a number of estimates and assumptions; the survey of local opinions is based on a small sample. Nevertheless, we feel that this study provides a reasonably good picture of CNSI's social and economic impacts on Barnwell County.

CNSI's Social and Economic Impacts on Barnwell County as a Whole

From this study, we would conclude that CNSI's economic and social impacts on Barnwell County as a whole have been as follows:

- Based solely on various socio-economic indices, it does not appear that CNSI has had either a significantly negative or an extremely positive effect on the county.

In-migration/out-migration rates, the percentage of population with educational deficiencies, quality of housing indicators, median family income, the percentage of families below poverty level, and unemployment rates . . . These all suggest that Barnwell County was somewhat better off in 1970, when CNSI had just arrived, than the four counties in the Lower Savannah area (Allendale, Bamberg, Calhoun, and Orangeburg counties) used by this study as a comparison group. Barnwell County continues to fare better in these respects than the Lower Savannah comparison area, although both have lagged behind South Carolina as a whole at a constant rate. In 1969, Barnwell County's per capita income was 4 percent less than that of South Carolina as a whole, whereas the Lower Savannah comparison area's was 20 percent less. Ten or fifteen years later, those ratios were roughly the same.

- Without any of the special payments made by CNSI, its net effect on the county's public spending and revenues would have been roughly neutral.

We estimate that conventional revenue (e.g., property taxes) generated by CNSI that goes to the various units of government within Barnwell County

(including the county, the municipalities, the school districts, and two special districts) would roughly balance out the expenditures that the county incurs because of the presence of CNSI and its employees. This, however, assumes that the people employed because of CNSI's presence would otherwise have been working elsewhere. If they would otherwise have been unemployed, their financial burden on the county would have been greater. In that event, CNSI would have a positive rather than a neutral net effect on the county's fiscal affairs.

- Barnwell County traditionally has spent somewhat more than the average South Carolina county on local government responsibilities; since 1979, the special business license tax paid by CNSI has helped to keep the county's tax rates down.

In 1967, the average per capita spending by the various governmental units in Barnwell County was 15 percent higher than the average for South Carolina counties as a whole; in 1981, it was 8 percent higher. Because of the business license tax imposed in 1979 by the county on LLW disposal, the county's tax rates have been kept down. (The revenue from the business license tax originally had a cap of \$240,000; in 1983, this was raised to \$440,000, or approximately 25 percent of the budget for the county, exclusive of other local government units.) Our interviews and review of local press coverage of CNSI indicate that the company was held in high esteem by Barnwell County in the 1970's. It is uncertain whether this esteem would have continued in the 1980's, with the greater national attention to the risks of radioactive waste, if CNSI had not become a major economic plus for the county through the special business license tax.

- Economic development in Barnwell County is being helped by the portion of South Carolina's surcharge on LLW waste disposal that is given to the county.

According to the 1985 amendments to the LLWPA [1980 Low-Level Radioactive Waste Policy Act], South Carolina gets 75 percent of the surcharge on LLW shipped to CNSI from outside the Southeast Compact region; of this, Barnwell County by state law gets 10 percent. This revenue, which currently generates about \$1 million annually for the county, is earmarked for economic development and is helping the county to diversify its economy. (The county, with much of its former farm land now in timber or lying fallow, has ample room for economic development.) Diversified economic development will ease the impact on the county of CNSI's sched-

uled closure in 1993, as will the anticipated expansion of employment at SRS.

- CNSI has been a stable source of employment for the county for the past 20 years.

The company, while not the county's largest employer, has been a stable source of employment. CNSI has a policy of hiring locally if possible, and it is willing to hire people with only graduate equivalent degrees. It has approximately 200 employees in total -- 160 in its disposal operation. Of these 160, 110 live in Barnwell County. (SRS employs approximately 1000 people from Barnwell County.) When spin-off employment is taken into account, we estimate that CNSI's disposal operation generates in total about 188 jobs for people living in the county. This is about two percent of the county's work force.

- CNSI has a good corporate image in Barnwell County.

Barnwell County residents generally regard CNSI as a good corporate citizen. There are several reasons for this, apart from the economic benefits of the company to the county noted above.

First, CNSI has a long-standing policy of having management live in the county to the extent possible, and there have been only two managers of the disposal operation since it started. The current manager has been on the job since 1980, had lived in the county as an employee of AGNS for seven years prior to that, and is a respected member of the community. Second, CNSI appears to have a policy of responding to requests by local organizations for donations, and staff members have contributed significant amounts of time to local nonprofit events and organizations. Third, CNSI has been open with county residents about its operation, by giving tours of the facility and presentations at schools and public events, and apparently by staying in contact with local officials if an event that might cause local alarm occurs. Fourth, CNSI has maintained good relations with the local media. And finally, SRS may make CNSI look good to Barnwell County residents, both because SRS traditionally has paid little attention to Barnwell County's welfare, and because it has had so many well-publicized environmental problems.

- CNSI has not placed a strain on the county's public services.

The greatest impact of facility on a host community's services is likely to occur during construction. The amount of construction entailed in CNSI's Barnwell County disposal operation was not significant, especially compared with the AGNS

facility then under way. According to local officials and CNSI staff, its routine operational demands on local public services are also not out of the ordinary.

- It does not appear that firms have been deterred from locating in Barnwell County solely because of the presence of CNSI.

Based upon our conversations with local and regional officials, no businesses are known to have been deterred from locating in Barnwell County because of its LLW disposal industry. It is, of course, possible that companies could have been deterred without local or regional officials' realizing it. Without having significantly more information than could be gathered in this study, we cannot speculate on whether businesses and individuals are making a priori decisions to exclude Barnwell County from consideration because of CNSI. However, such "nuclear stigma" effects would likely be dominated by SRS rather than the much smaller and less conspicuous CNSI facility.

- It does not appear that CNSI has had an adverse effect on the minimal tourism in the area.

Tourism is negligible in Barnwell County, but this does not appear to be due to CNSI. As with the decisions of businesses regarding whether to locate in Barnwell County, it is difficult to tell whether unrecognized adverse effects may be occurring. However, if they were, it is likely that they would be due in large measure to the presence of SRS. (Barnwell County's frontage on the Savannah River, which was taken by SRS, might also have been the county's prime natural asset for tourism.) Furthermore, it does not appear that significant adverse effects have occurred to Barnwell County because of CNSI: tourism-related employment in Barnwell County in 1988 (59 jobs) was very close to the level of tourism-related employment in the four-county Lower Savannah comparison area.

- It does not appear that CNSI has had a significant adverse impact on local farming.

Farming has declined in Barnwell County since CNSI arrived, but it has also declined at about the same rate in the Lower Savannah comparison area and in South Carolina as a whole. Cash receipts from farm marketings are about the same per acre in Barnwell County as in the Lower Savannah comparison area. Although they are less than the average cash receipts per acre for South Carolina as a whole, this could be due to a number of factors unrelated to CNSI (e.g., soil fertility, access to markets). However, approximately half of the farmers

interviewed for this study expressed some concerns about the disposal site's long-term health effects.

- It does not appear that CNSI has had an adverse impact on local property values, and it may have had a positive effect.

A quantitative analysis of property values was not possible, but the majority of Barnwell County residents surveyed in this study indicated that they think that their property values have not been affected by CNSI. Most of those who think their property values have been affected by CNSI believe that they had gone up because of it. The median value of owner-occupied housing in Barnwell County in 1980 (the most recent year for which data are available) is comparable to that for the Lower Savannah comparison area.

- To the limited extent that there is concern about CNSI in Barnwell County, it tends to focus either on stigmatization of the county by outsiders or on concerns about the long-term environmental and health effects of the facility.

Most people surveyed in this study think that CNSI has been a plus for the county. Of those that have reservations about the facility, most are concerned mainly about the negative (and to their thinking, misguided) image that outsiders have of the county because of its nuclear industry. Some -- approximately one-quarter of all those surveyed -- mentioned concerns about the disposal facility's health effects, especially over the long term after it has closed. While the sample size of our study is not large enough to draw definite conclusions about which population groups are most concerned about health effects, it appears that this concern correlates positively with residence in the Blackville community and, to a lesser extent, with blacks, females, and those with more formal schooling.

CNSI's Social and Economic Impacts on Segments of Barnwell County

Because of the limitations of this study, less can be said about the CNSI's impacts on different geographical and social parts of Barnwell County. However, it appears that:

- The municipalities most proximate to CNSI, including Barnwell and Snelling, have received the greatest social and economic benefits from CNSI's presence, but the rest of the county has benefited as well.

The special payments that accrue to the county because of CNSI's presence (in particular, the special business license tax and the surcharge fund for economic development) apply to the county gener-

ally. However, the county has used the surcharge fund primarily, although by no means exclusively, for economic development in the vicinity of the city of Barnwell. Similarly, revenue from the business license tax would tend to affect residents of the city of Barnwell the most, if only because it is the county seat, although benefits from public services and relief on property taxes because of this revenue would apply to residents throughout the county. Of the 14 CNSI employees interviewed for this study, nine are from Snelling or the city of Barnwell. While this may be happenstance, it suggests that CNSI employees are either drawn from or choose to locate in the vicinity of the county's major municipality. This emphasis on Barnwell is also seen to a limited extent in the charitable contributions of time and money by CNSI and its staff. Again, however, this is due in part to Barnwell's being the county seat, and it also appears that CNSI has been responsive to the needs of other parts of the county.

- Educated white males have benefited the most directly from CNSI's presence, but others have benefited as well.

Seventy-six percent of CNSI's disposal operation staff is male, and 87 percent of it is white. The average level of educational attainment is completion of high school. It is reasonable to assume that the employment generated indirectly by CNSI's presence is also predominantly (but not exclusively) male and white. However, families of these men would also benefit, of course, as would others in the county whose economic well-being or opportunities are improved because of the special payments discussed above. While this suggests that people who are poorly educated, nonwhite, and/or female heads of households might have an absolute improvement in their lives, at least economically, the question remains open whether they have a relative improvement, compared with others. In other words, has CNSI helped to narrow the gap between the "haves" and "have-nots" in Barnwell County, or has it helped to widen it? Unfortunately, our data are insufficient to answer this question.

However, our random-sample survey did suggest that blacks and people with relatively low incomes are less likely to regard CNSI as having benefited them personally.

- Effects of CNSI's Scheduled Closure on Barnwell County

The focus of our study was on what Barnwell County would have been like over the past two decades without CNSI's LLW disposal operation, not on

what it will be like without it. Nevertheless, CNSI's scheduled closure was an important subtheme in this study. It appears that:

- The US Department of Energy's newly increased payment in lieu of taxes to Barnwell County for SRS, expansion of SRS's workforce, and the surcharge fund for economic development all will soften the economic blow of closure of CNSI's disposal operation. So will adult education opportunities in the county or nearby.

CNSI's disposal operation is scheduled to close in 1993; because of agreements made with North Carolina, most of its staff will not be transferred to the CNSI site due to open there in the mid-1990's. This will most directly affect CNSI's employees, especially the relative few who, with limited educations, will have trouble finding other work. (Some, for example, might have difficulty getting hired by SRS.) However, economic development in Barnwell County partly enabled by the surcharge fund is already helping to create jobs in the county. How many jobs, in what parts of the county, and for what types of employees remain to be seen. The outlook for those who otherwise might be out of work is made better by South Carolina's apparently vigorous employee training system and the availability of a number of adult education possibilities in the vicinity. Available jobs, however, may have lower wages than CNSI's.

The impact of the closure of the disposal facility on the county's finances would have been potentially severe. (The business license tax applies only to LLW disposal activities and thus as it stands would not apply to any CNSI operations remaining in the county after the disposal site's closure.) However, this slack in the county budget will be more than taken up by the federal government's payment in lieu of taxes for SRS, which just increased more than eight-fold, from about \$200,000 per year to about \$1.7 million per year.

- The potential effect of CNSI's scheduled closure on the social fabric of Barnwell County, and especially the city of Barnwell, is unclear.

CNSI has been more than a business in the county; it has, as indicated above, been important as a supporter of many local activities, and some of its key employees (who are, perhaps, likely to be transferred) have become part of the local social establishment. SRS apparently has not been similarly active in Barnwell County. Although Westinghouse, when it became the SRS contractor for the US Department of Energy, instituted a policy of having

its key employees live in the vicinity of SRS, SRS orients to Aiken County rather than to Barnwell County. Whether the social gap left by CNSI will be filled by other firms coming into the county remains to be seen.

- The potential effect of CNSI's scheduled closure on the views of those concerned about the facility's long-term health effects is also unclear; it is clearer that a number of people are concerned about the impending closure's economic impacts.

As noted above, approximately one-fourth of those surveyed expressed concern about the disposal facility's effects on local health and environment -- especially its long-term effects, after the site is closed. While a few people expressed relief that it was due to close, a few mentioned concern about the environmental integrity of the site in the long run and the adequacy of monitoring and upkeep after closure. Our study did not specifically ask those surveyed whether they would prefer to see the site remain open, and why. While it would be useful to have this information, it appears, from our interviews at least, that most are mainly concerned about the closure's adverse economic impacts -- but they were interviewed before the Department of Energy's increased payments to the county became official.

- Intangible Impacts of SRS and AGNS on Past and Current Attitudes toward CNSI

In thinking about the conclusions of this study, it is important to remember Barnwell County's cultural context. SRS has been a presence in the county for nearly two generations now: many middle-aged people who grew up in Barnwell County had parents who were employed by SRS, and some moved there as children because of SRS. As one local banker noted, his father worked for SRS, and his son and son-in-law, both of whom previously worked for CNSI, now work for SRS. The AGNS spent fuel reprocessing facility initiated in the 1960's was another large nuclear project for the county. (E.g., the six-mile four-lane highway out to Snelling from the city of Barnwell was apparently built because of AGNS.) CNSI was unobtrusive compared with AGNS, and the county was already predisposed by its two decades of involvement with SRS to be receptive to another nuclear industry. The late 60's and early 70's were a time when, nationally, trust in the safety of commercial nuclear power (the main generator of LLW) was still high in most quarters. It was also a time when views of the nation's defense

industry were regarded by many as a litmus test for patriotism.

All of this created in Barnwell County a climate of belief in the benefits of science and technology, and a confidence in those responsible for the management of new technologies. For example, the banker mentioned above commented that the educational level of the people managing CNSI's operation is testimony to its safety, and that if they're comfortable with it, he should be too. But this confidence is not necessarily shared throughout Barnwell County, especially by those who have not been part of the nuclear industry culture, either directly or through family or business ties.

If SRS and AGNS had not existed in Barnwell County and CNSI's disposal operation were being proposed today, it is uncertain what the local reactions would have been. At least one person interviewed said that they would have looked at it a lot more carefully, but he didn't say that they would have objected to it. And if CNSI's disposal operation were in the middle of the county, rather than in a corner that has for four decades been dedicated to nuclear industries, local views about the facility might also be different. It is, however, useless to speculate on such scenarios, since they are counterfactual. Barnwell County, like all other places, has been shaped by its physical and cultural past.