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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 21 1979

MEMORANDUM FOR: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

FROM: Saul Levine, Director
Office of Nuclear Regulatory Research

SUBJECT: RESEARCH INFORMATION LETTER # 56 - EFFECTS OF NUCLEAR POWER
PLANTS ON COMMUNITY GROWTH AND RESIDENTIAL PROPERTY VALUES

Introduction and Summary

This memorandum transmits the results of completed research to evaluate the effects of nuclear power plants on residential property values and community growth at four nuclear plant sites. This work was performed by the Institute for Research on Land and Water Resources of Pennsylvania State University under the direction of the Environmental Effects Research Branch of RES.

The National Environmental Policy Act of 1969 requires NRC to assess the effects of nuclear power plant construction and operation on property values and community growth in the local area as part of an overall socioeconomic impact assessment. Prior to this study, quantitative information on the effects of nuclear plants on property values and community growth was negligible, and there was a clear need for improvement in the methods of assessing these impacts. This research effort was designed to provide quantitative information on property value and community growth impacts for a small sample of plants.

Methodology

The study was based on the assumptions that any diverse impacts of a nuclear plant on nearby residential properties would be reflected in the housing market and that adverse impacts on nearby communities would be reflected in the rate of growth of these communities.

Four nuclear plant sites in the Northeast which went into operation during the period, 1969-1971, Oyster Creek (N.J.), Pilgrim (Mass.), Ginna (N.Y.) and Millstone (Conn.), were the subject of the study. These plants were selected primarily on the basis of data availability and cost-effectiveness of field investigation. Two methods of analysis were employed: to measure the impact of the plants on community growth, time series analysis was used; and to measure the impact of the plants on nearby residential property values, cross sectional analysis was used.

Cross Sectional Analysis

Data on a total of 540 residential properties at all sites formed the base for the cross sectional analysis. These properties were selected from sales which took place in 1975, 1976 and 1977 in certain housing developments located within a 20 mile radius of the plant. A variety of data on characteristics of each residential property along with the sales price were used in the study. The hypothesis was that properties located closer to the plant would trade at lower prices than those at a greater distance from the plant, all other factors being equal. Multiple regression analysis was applied to the data, the dependent variable being the sales price of the property and the size, condition and other physical characteristics of each property as well as its distance from the nuclear plant and the visibility of the plant from the property constituting the independent variables.

The hypothesis would be supported if the coefficients of the independent variables dealing with distance from the plant and plant visibility turned out to be negative and statistically significant.

There was no evidence to support the hypothesis that proximity to a nuclear plant lowers the market value of a residential property. Despite employing several forms of regression equations, and grouping the data by individual plant location as well as pooling the data from all plant locations, none of the coefficients of the variables dealing with distance from the plant and plant visibility were negative and statistically significant.

Time Series Analysis

Total assessed real property values, adjusted for differences in assessment ratios and inflation, of municipalities within a 20 mile radius of each plant, collected on an annual basis for the period 1960-1976, formed the data base. Average annual growth rates of this variable were computed for sub-periods 1960-1970 (pre-operating) and 1970-1976 (post-operating). The hypothesis was that municipalities near the nuclear plants would suffer adverse effects on community growth. Growth rates should slow following the introduction of a nuclear plant and growth rates for municipalities closest to the nuclear plant should be lower than growth rates for other similar municipalities in the local area. To test this, 1970-1976 average annual growth rates of total assessed real property values for the four municipalities in which the nuclear plants were located were compared with those for 1960-1970. For three of the four plants, the later period showed a higher growth rate than that of the previous period. Growth rates for 1970-1976 were higher for municipalities within a 10 mile radius of the plant than for those within a 10-20 mile radius. When data from all four plant sites were combined, average annual growth rates in 1970-1976 were higher than for the previous period and the magnitude of the increase in growth rates from 1960-1970 to 1970-1976 was highest for municipalities within

which the plants were located and lowest for those furthest from the plants (10-20 mile radius). Growth rates during 1970-1976 were higher for municipalities within which a nuclear plant was located than for other municipalities within a 10 mile radius of the plant or a 10-20 mile radius of the plant. In summary, there was evidence that a nuclear plant caused a slowdown in a nearby community's growth rate in only one out of four individual cases, and when the data from all plant sites was grouped together, no slowdown was detected. There was no evidence that communities located nearest a nuclear plant experienced a slowdown in growth relative to other communities in the immediate vicinity.

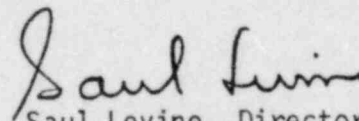
Conclusions and Recommendations

The results generally indicate that nearby nuclear plants had no significant adverse impact on residential property values or on community growth for the four areas studied. However, these conclusions cannot be applied to nuclear plant sites in general due to the non-random nature of the selection process for the four sites which were studied. More general conclusions could only be drawn from a study utilizing a larger, randomly selected sample.

In addition, as the authors note, society's perceptions and values change over time in response to various factors. This study was completed prior to the accident at the Three Mile Island plant, and such an event could significantly alter perceptions and values, thus rendering the conclusions of the study invalid for the post-Three Mile Island period.

Additional studies would be required to correct these deficiencies. A larger scale study undertaken in the post-Three Mile Island period would be necessary to definitively assess the impact of nuclear plants on land values and community growth.

The results of this study should be useful to your staff in the analysis of land value impacts as part of the environmental impact statement for nuclear plant construction and operation, as well as in considering the direction of future research in this area. For further information on this study, please contact Dr. Clark Prichard (427-4358).



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Original Signed by
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