

NRC Research and Technical Assistance Report

INTERIM REPORT

Accession No. _____
ORNL/ED/EAS-81/03

Project Title: Forecasting Electricity Demand by State
and by Utility Service Area

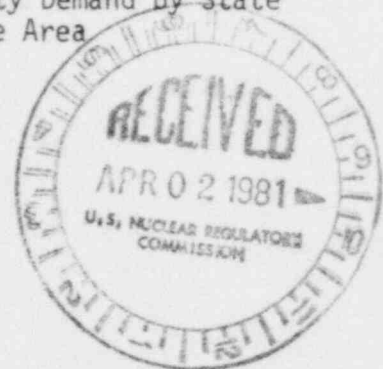
Project Leader: Lawrence J. Hill

Type of Document: Progress Report

Reporting Date: February 1-28, 1981

Date of Document: March 6, 1981

Responsible NRC Individual
and NRC Office or Division: Clark Prichard, Division of Safeguards,
Fuel Cycle, and Environmental Research
Sidney Feld, Division of Engineering



This document was prepared primarily for preliminary or internal use. It has not received full review and approval. Since there may be substantive changes, this document should not be considered final.

Prepared for
U.S. Nuclear Regulatory Commission
Washington, D.C.
Under Interagency Agreement DOE 40-550-75
NRC FIN No. B-0190-8

Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830
operated by
Union Carbide Corporation
for the
Department of Energy

INTERIM REPORT

NRC Research and Technical Assistance Report

8104030824

LES

1. TECHNICAL OBJECTIVES:

The primary objectives of the project relate to the development of econometric models for the purpose of forecasting electricity demand by states and utility service areas.

2. MAJOR MILESTONES ANTICIPATED:

| | <u>Date Anticipated</u> |
|--|-----------------------------|
| a. Draft report, Integrated Forecasting System | 3/81 |
| b. Draft report, Version III ("Varying Elasticity Model") estimation | 3/81 |
| c. Draft report, service area forecast for Bailly Nuclear Generating Station | 3/81 |
| d. Data base maintenance (update) | 5/81 |
| e. Draft report, Version III forecasts | 9/81 |
| f. Draft report, Version IV estimation | 9/81 |

3. PROGRESS DURING THE PERIOD:

- a. A draft report of the integrated forecasting system-including both the description and empirical documentation-has been completed. It is presently undergoing review.
- b. A supplemental study on the industrial sector forecasts for the Bailly "Need for Power" assessment has been completed. The study utilizes data supplied by the NRC staff. The results will be incorporated in the topical report dealing with NIPSCO's service area forecast.
- c. Progress has been made on updating the SLED data base. The majority of variables used in the SLED forecasting system have been updated through 1979. The effort will continue this month.
- d. The theoretical formulation of Version IV of the SLED model (durable-choice, durable-utilization) has been initiated. Several alternative formulations for the theoretical model are being studied.
- e. Empirical results obtained from Version III of the SLED the "Varying Elasticity Model" indicate substantial variation in elasticities among states. In the residential sector, for example, the short run average price elasticity of demand varies from -0.04 in North Dakota to -0.85 in Mississippi. The estimated marginal price elasticity is smaller in absolute value than the average price elasticity for all states.

Furthermore, the empirical evidence suggests that, in some cases, there is a wide variation in intra-region price elasticities of demand. For example, the average price elasticity of demand for the residential sector in the Mountain states varies from -0.11 in Idaho to -0.73 in Arizona. This result, of course, illuminates the problem of assuming a constant price elasticity of demand for states within a geographical region.

4. COMMUNICATIONS:

- a. Susan Manning of Dames and Moore Associates (Washington, D.C.) has expressed interest in obtaining Version III of the SLED model after it is completed.
- b. Attempts have been made to identify and contact state-level organizations that would be interested in working with various versions of the SLED model. The process will continue in the coming weeks.

NRC Research and Technical
Assistance Report

INTERNAL DISTRIBUTION

- | | |
|--------------------|-----------------------------|
| 1. R. S. Carlsmith | 11. F. R. Mynatt |
| 2. H. S. Chang | 12. F. S. Patton, Jr. |
| 3. G. A. Dailey | 13. T. H. Row |
| 4. W. Fulkerson | 14. R. B. Shelton |
| 5. C. A. Gallagher | 15. R. C. Tepel |
| 6-7. L. J. Hill | 16. J. L. Trimble |
| 8. M. T. Huie | 17. T. J. Wilbanks |
| 9. B. D. Holcomb | 18. Laboratory Records |
| 10. R. J. Maddigan | 19. Laboratory Records - RC |

EXTERNAL DISTRIBUTION

20. Wen S. Chern, Senior Economist, Lawrence Livermore National Laboratory, University of California, P. O. Box 808, L 404 Livermore, California 94550
21. Donald Cleary, Division of Engineering, Nuclear Regulatory Commission, Washington, D.C. 20555
22. Sidney Feld, Division of Engineering, Nuclear Regulatory Commission, Washington, D.C. 20555
23. Harry Landon, Division of Safeguards, Fuel Cycle, and Environmental Research, Nuclear Regulatory Commission, Washington, D.C. 20555
24. Darrel Nash, Division of Engineering, Nuclear Regulatory Commission, Washington, D. C. 20555
25. Clark Prichard, Division of Safeguards, Fuel Cycle, and Environmental Research, Nuclear Regulatory Commission, Washington, D.C. 20555
26. Jerome Saltzman, Division of Engineering, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555
27. Miller Spangler, Division of Engineering, Nuclear Regulatory Commission, Washington, D.C. 20555
- 28-29. Division of Technical Information and Document Control (NRC-TDIC), Nuclear Regulatory Commission, Washington, D.C. 20555
- 30-31. Technical Information Center (DOE-TIC), Oak Ridge, Tennessee 37830
32. Office of Assistant Manager for Energy Research and Development, DOE-ORO, Oak Ridge, TN 37830