

1952

Farm Electricity Use

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Recommended Citation

Odegard, Mary (1952) "Farm Electricity Use," *The Iowa Homemaker*: Vol. 32 : No. 7 , Article 5.

Available at: <http://lib.dr.iastate.edu/homemaker/vol32/iss7/5>

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*Housewives, Research Workers
Cooperate and Discover . . .*

Farm Electricity Use

by Mary Odegard

Technical Journalism Junior

THE average housewife's knowledge of electricity doesn't extend much beyond plugging in an appliance or exclaiming over the monthly electric bill. Yet there is a good reason why women, especially those living in rural areas, should know about peak load periods on the lines in their area and seasonal times when certain types of equipment are going full tilt.

The reason is this: The farmers' use of electricity is increasing at a rapid rate. While use is important, it is the demand which the use creates that determines the design of farm wiring systems, transformers, distribution and transmission lines, and

Use of Electricity on Sixteen Farms in the Eastern Livestock Area of Iowa," they selected farms for testing in this way:

- Group I — four families
owned electric ranges and electric water heaters
- Group II — four families
owned electric ranges
- Group III — five families
owned electric water heaters
- Group IV — three families
had neither electric ranges nor electric water heaters.

These families owned other electric equipment also, but the study was to determine the influence of water heaters and ranges on electric demand.

Meters give the answers

The sixteen cooperating farms were metered regularly for one year. The complicated equipment used and the careful check which had to be made on each farm limited the study to sixteen farms. The equipment used helped the researchers draw conclusions on the following questions asked by these farm families and their power suppliers: How much electricity do farms use with various combinations of electrical equipment? When do peak loads occur? What is the electrical demand of specific equipment? When do voltage variations occur on rural distribution systems? Is farm service and farmstead wiring adequate?

Since the test involved only sixteen farms in one part of Iowa, and since no two farms in the state have exactly the same electrical equipment, there are no over-all findings which would apply to all families. However, some general facts were discovered which should be of interest to all.

Electrical peaks discovered

There was little variation in electrical demand between different days of the week. But all four groups had decided peaks of electrical demand during certain morning hours and early evening hours. Families owning electric ranges also had a midday peak. For the families owning electric ranges, the morning peak was discovered to be from 6 to 8 a.m. in July and 7 to 8 a.m. in September, December and March. Eve-

(Continued on page 17)



A complicated meter system such as this was installed on each farm being tested for electricity consumption.

generation facilities. Many of the demand characteristics of present farm loads are not known to power suppliers.

Information for suppliers of electricity to insure adequate electric service to farmers was the object of the study carried out by Miss Kathryn Philson, household equipment graduate student and U.S.D.A. collaborator; Mr. Landy B. Altman, Jr., and Mr. Ernest J. Buresh, associate agricultural engineers. In their project entitled "Demand and Diversity of

Farm Electricity—

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ning peaks for families not owning electric water heaters or electric ranges were from 6 to 7 p.m. in July and 5 to 6 p.m. in September, December and March.

The power demand of various individual pieces of equipment was also determined from the records. Information obtained concerning washing equipment is especially interesting. Monday, it was discovered still tends to be wash day for those families with conventional washers, and most of them do their washing from 10 to 10:30 a.m. Use of automatic washers was more widely distributed throughout the week.

It is because electric service free from interruptions and excessive voltage variations is particularly important on farms that this project is valuable. Un dependable or low-voltage service interferes with the operation of necessary farm equipment such as milking machines and refrigeration systems, and times of low voltage occur most frequently during times of high peak demand. The project was carried out to discover the electricity demand characteristics on certain types of farms.



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