AGRICULTURAL ENGINEERING
Sub-Project IV.

Rural Electrification

OBJECT: To aid farmers in securing electric service on the farm, and to demonstrate the use of electricity in improving living conditions on the farm, and for performing various farm operations.

IMPORTANCE: Electric energy on the farm offers a means of reducing some of the farmer's labor and power costs. Electricity in the farm home will be a Godsend to the farm housewife and will be an important factor in improving living conditions on the farm.

PROCEDURE: Promote the project in the county by means of meetings, demonstrations, bulletins, newspaper articles, and other publicity means. The men and women agents should cooperate on this project.

The Agricultural Engineering Department will:

1. Furnish the agent with instructions on methods of handling this project, supply bulletins or data for distributions, furnish educational publicity material for use in the county papers.
2. Send an engineer to the county to make a survey of the community and advise on best methods of securing electrical service; secure the cooperation of the electric power companies.
3. Secure cooperation of electric companies and induce them to maintain rural service departments with qualified agricultural engineers in charge.
4. Prepare a bulletin on Electricity on Virginia Farms.
5. Work out a plan for Rural Line Extensions for approval by State Corporation Commission.
6. Stage at least one Rural Electrification Short Course for instruction of rural service men with electric companies and others interested.

The County Agent will:

1. Promote the project in the county by distributing the publicity material, etc. furnished by the department.
2. Select a group of farmers in a community who are interested in securing electricity on their farms, and arrange for the engineer to visit their farms. Arrange for meetings of the interested farmers.
3. Obtain a record of the results gathered in the county due to the work on the project. Keep records over a series of years.

RESULTS: Results will be measured by the number of farms securing electric service; labor saving equipment and other conveniences installed; reduction of labor and power costs by the use of electricity; companies organizing rural departments, etc.

Rural Electrification Short Course

OBJECT

The course is designed mainly for men and women engaged in the advancement of tural electrification. It is open to all interested in the subjects under discussion.

REGISTRATION

Those desiring to attend the course are requested to register by mail at once. This is desirable as it is necessary to know the approximate number of persons to provide for. There will be no registration fees connected with the course.

ACCOMMODATIONS

Lodging can be secured at Green's Hotel, Old Brick House, University Club, or private homes. Meals can be had at the hotel, restaurants, or college dining hall.

Write the Agricultural Engineering Department, V.P.I., Blacksburg, Virginia, indicating preference for accommodations.

To reach Blacksburg, take the Norfolk and Western to Christiansburg, where automobile transportation can be procured to Blacksburg, a distance of eight miles.

First Annual Rural Electrification Short Course

TO BE HELD AT

Virginia Polytechnic Institute

Wednesday, Thursday, Friday
June 12, 13, 14, 1929

Agricultural Engineering Department
Virginia Polytechnic Institute

The Public Utilities Association of Virginia
The N. E. L. A. and Manufacturing Companies
Cooperating

SESSIONS IN AUDITORIUM
AGRICULTURAL EXTENSION BUILDING
V. P. I.
BLACKSBURG, VIRGINIA

RURAL ELECTRIFICATION PROGRAM

Program

Wednesday, June 12th

MORNING SESSION

8:30—9:30—Registration.
9:30—Address of Welcome, Dr. J. A. Burruss, President, V.P.I.
9:50—"Rural Electrification in Virginia," Chas. E. Seitz, Head Agricultural Engineering Department, V.P.I.
10:10—"A Program for Rural Extensions"
W. E. Wood, President, Virginia Electric Power Company.
J. W. Hancock, Division Manager, Roanoke and Lynchburg, Division, Appalachian Electric Power Company.
Lewis Payne, General Manager, Virginia Public Service Company.
L. E. Long, General Manager, Shenandoah River Power Company.
10:50—"How Can the County Agent Assist in the Rural Electrification Movement?" John R. Hutcheson, Director, Extension Division, V.P.I.
11:15—Discussion.
11:30—"Electric Power a Logical Development in American Agriculture," George W. Kable, Director, National Rural Electric Project.
12:00—Discussion.
12:30—Intermission.

AFTERNOON SESSION

1:30—"Requirements of Electrical Equipment for the Farm Home," Miss Eloise Davidson, Research Department, National Electric Light Association.
2:00—Discussion.
2:15—"Rural Electrification in the United States," Dr. E. A. White, Director, National Committee on Relation of Electricity to Agriculture.
2:45—Discussion.
3:00—"Rural Line Construction," W. I. Whitefield, Manager, Roanoke Division, Appalachian Electric Power Company.
3:30—Discussion.
4:00—"Contracts and Rates." C. N. Schoonmarker, Virginia Public Service Company.
4:30—Discussion.
7:00—"Good and Bad Practice in Farm Lighting," W. C. Brown, National Lamp Works, General Electric Company.
7:30—Discussion.
8:00—Rural Electric Movies, "Romance of Sleepy Valley," American Farm Bureau Federation; "Yoke of the Past," General Electric Company.

Thursday, June 13th

MORNING SESSSSION

8:30—"Irrigation by Electricity," W. H. Coles, President, Skinner Irrigation Company.
9:00—Discussion.
9:30—"Electricity and the Poultry Industry," H. L. Moore, Extension Division, V.P.I.
10:00—Discussion.
10:15—"Electric Brooding, Incubation and Poultry House Lighting," Geo. W. Kable, Director, National Rural Electric Project.
·00—Discussion.
11:30—Inspection of V.P.I. Poultry Plant and Electrical Equipment.
12:30—Intermission.

AFTERNOON SESSION

1:30—"Electric Water Systems for the Farm," Professor P. B. Potter, Agricultural Engineering Department, V.P.I.
2:00—Discussion.
2:30—"The General Purpose Portable Farm Motor," F. T. Smith, Industrial Department, General Electric Company.
3:00—Discussion.
3:30—"Peak Loads on the Farm" (Methods of Building a Profitable Rural Load), Geo. W. Kable, Director, National Rural Electric Project.
4:00—Discussion.
4:30—"Demonstration of the Rural Electric Truck," L. T. Wood, Agricultural Engineer, Virginia Electric Power Company.
5:00—"Demonstrations of Farm Electric Equipment," Agricultural Engineering Laboratory.
7:00—Dinner. Address, F. W. King, Vice-President, Virginia Public Service Company.
"Cooperation of Individual Light Plant Dealer and Electric Utility Companies," J. E. Waggoner, Public Relations Department, Delco Light Company.

Friday, June 14th

MORNING SESSION

8:30—"Electricity and the Dairy Industry," Professor C. W. Holdaway, Head Dairy Husbandry Department, V.P.I.
9:00—Discussion.
9:30—"Electric Milk Cooling and Storage on the Farm," C. W. Pegram, Dairy Manufacturing Specialist, Extension Division, V.P.I.
10:00—Discussion.
10:30—"Electric Milking Machines and Separators," P. M. Reaves, Dairy Husbandry Department, V.P.I.
11:00—Discussion.
11:30—"Electric Feed Grinding Equipment," Professor V. R. Hillman, Agricultural Engineering Department, V.P.I.
12:00—Discussion.
12:30—Intermission.

AFTERNOON SESSION

1:30—"Methods of Merchandising Electrical Equipment to the Farmer"
As Viewed by Sales Manager of Electric Company," L. F. Riegel, Virginia Electric Power Company.
2:00—Discussion led by N. F. Lawler, Virginia Public Service Company.
2:30—"As Viewed by Manufacturers of Farm Electrical Equipment," J. W. Savage, Merchandising Department, General Electric Company.
3:00—Discussion led by C. G. Hillier, Mansfield Works, Westinghouse Electric and Manufacturing Company.
3:30—"As Viewed by Rural Service Field Man," R. R. Choate, Agricultural Engineer, Appalachian Electric Power Company.
Remainder of afternoon to round table discussions and demonstrations of equipment.

November 26, 1929.

RURAL ELECTRIFICATION IN THE ROANOKE DISTRICT OF THE APPALACHIAN ELECTRIC POWER COMPANY - 1929

By
R. R. Choate, Rural Service Engr.
Appalachian Electric Power Company, Roanoke, Va.

The first Rural Service Department of the Appalachian Electric Power Company was established in the Roanoke District on November 1, 1928. At this time I was placed in charge of the Rural Service Department of our Company. My experience in practical Rural Electrification seemed very limited, although I had completed the Agricultural Engineering Course at Virginia Polytechnic Institute and a four months' training course on Rural Electrification given by General Electric Company.

In this article I wish to give you a brief summary of the work we have experienced in the Roanoke District during the past year, 1929.

After beginning work with our company I spent some time studying the set-up of the Power Company organization before contacting the rural customer. Much valuable information was gained by studying the history of the development of rural electrification in our Company, rural line construction, rural line costs, application of rates for the different service made available for our customers, and the relation of one department to another in the company which affected either directly or indirectly the type of service we had to offer the rural people in our territory.

Our first step in dealing with the rural people was to make a survey of the existing farm customers in the Roanoke District to obtain pertinent data on each for our record files. The first visit to each farm customer served two purposes:

1. Making contact with the customer and explaining our company's recently established Rural Service Department for aiding the farm customers in the application of electricity on the farm and to assist our customers in securing the type of electrical appliances best suited for their needs.

2. To secure accurate data on the customer's present use of electricity and his need for further appliances and uses.

From the first survey of the existing farm business on our rural lines the following figures will give an indication of the farm customers' consumption of current and revenue during the year 1928. These are average figures taken from the total amounts.

Number of farm customers receiving electric service at the end of the year 1928 - - - - - - - - - - - - - - - 194

Number of farm customers connected for electric service less than one year - - - - - - - - - - - - - - - - 62

Average total number of K.W.H consumed per customer for the year 1928 - - - - - - - - - - - - - - - - - - 1,003.3

Average amount of revenue paid per customer for the year 1928 - $53.48

	Lighting		D. U. R.		Power	
Year	K.W.H	Amount	K.W.H	Amount	K.W.H	Amount
1928	67,317	$6,103.59	56,634	$1,966.66	70,699	$2,305.49

Total	
K.W.H	Amount
194,650	$10,375.74

It was estimated that there were 10% more farm customers on our rural lines than the above figures indicate, as some of these customers were overlooked during the survey and classed with non-farming resident customers.

When each farm customer was first called on it was explained how the Rural Service Department would be glad to assist the customers in solving their electrical problems without any responsibility to the consumer whatever. Each farmer was given a copy of the magazine "Electricity on the Farm", a monthly magazine which is educational and instructive in furnishing first-hand information on the value of electricity at work on the farm. The Company sends this magazine monthly to all its farm customers.

The attitude of the rural people toward the power company in general is very satisfactory. We find that the progressive Virginia farmer is interested in electrical merchandise for his home and his business, where it can be used at a profit, in time and effort saved, and as a means of contributing to his personal pride and satisfaction.

The farmer is an entirely different prospect from the city man, the man of industry or the college graduate, and in order to deal successfully with him, we must talk his own language, in terms he understands. Mr. Farmer is not interested so much in the fact that the power company will have to install a 3 kilowatt transformer and give him 220-110 volt service or that he is buying a motor that will use 200 or 500 watts or that it will take 3 kilowatts to grind four bushels of oats. He wants to know what the equipment will cost in dollars and cents and what it will save for him in dollars and cents or hours of labor. The farmer and his wife know the value of money and both know what work is. Although they do not care a great deal about technical terms which may be used, however, the farmer can be gradually educated to understand the more common electrical terms used. Nevertheless we should always talk in a language which he understands in order to attain his interest.

At the completion of our first farm survey, December 15, 1928, we had a list of 18 dairy farmers using electric milking machines in the Roanoke District. The total number of cows kept by these farmers were 654 head. Twenty-one farmers using electric current owned a total of 317 cows or an average of about 16 cows per customer who did not make use of the electric milking machine.

During the past year 14 additional dairy farmers have begun using the electric machines which bring the total number of electrically operated milkers up to 32, used to milk approximately 864 cows daily. This shows an increase of over 77% in the use of electric milkers used by our farm customers during the past year. Although the greatest increase is due to new customers added to the line the past year. About 100 farm customers, about one-third of those served, are interested in some phase of the dairy business. The other types of farms are classified as general, truck, fruit, and poultry farms.

An automatic electric water pumping system is one of the first installations considered by rural people using the hand pump or spring. The survey of 307 farms now using electric service in the Roanoke District bring out the following information in regard to water systems used by farm people:

Total number visited	307
Springs, wells, and hand pumps used	104
Gasoline engines used for water pumping	29
Gravity systems	32
Rams	17
City water systems	10
Number using electric water systems	115
Number using all other systems	192
Total number of farms using gasoline engines for water pumping and other power jobs	58

The above figures are correct for the farm business up to December 1, 1929. The number of electric water systems installed and gasoline engines replaced during the past twelve months has been very good.

Four farm customers that used electric motors for filling silos this year state that the cost of operation and convenience of the motor for power jobs on the farm are far superior to the tractor or gasoline engine, and it is an interesting fact to note that all of these farms use tractors for field work and cultivation of crops.

Three home-made electric dairy sterilizers have been installed. That is, the customer ordered an electric emersion heating coil and had the proper size galvanized tank made to suit his own needs for sterilization.

Many other applications of electricity have been applied to the farm, such as electric ranges, refrigerators, and small household appliances, the use of which is steadily increasing each month.

We have established a Farm Demonstration Room in our Roanoke office of the Appalachian Electric Power Company, where local dealers and manufacturers are allowed to place certain electrical appliances, such as a portable electric farm motor, automatic electric water pumping system, feed grinding mill, utility motor, and milking machine, for the purpose of demonstrating to the farmer this equipment in actual operation. The Colonial Home within the office was designed to furnish an outstanding example of the modern electric ranges and refrigerators, and the last word in an electrically equipped kitchen. The lecture room connected with it will seat about fifty people. It is an excellent place for the home economist to conduct group demonstrations. A cordial invitation is extended to all of our customers to make use of thie practical laboratory in order that they may receive the maximum benefit from their electric service. This enables the farmer to come to us for first-hand information that he may be interested in, and at the same time the Rural Service Man can be of advantage to the farmer by helping him select the type of equipment best suited to his individual needs. The average farmer learns by observations, as he does very little reading about electrical applications. The Rural Service Man is in a better position to help the farmer solve his problems and thereby win his confidence where he does not have the responsibility of actually closing sales, although he may often work with the salesman in his territory.

Besides demonstrating certain electrical applications in operation we give the farmer circulars and literature explaining the use of electricity on the farm, show him pictures of electrical installations used by his neighbors, refer him to maps, charts and records which show the type of farms served in our territory and call his attention to farmers who may be considered as having model electrified farms.

Through the Rural Service Department we keep in close touch with the work carried on by the State Extension Division Service, Agricultural Engineering Department of the Virginia Polytechnic Institute, Farmers' Organizations, and County Farm Agents, who are directly interested in rural electrification as one important phase in the development of the rural communities in our State.

We found that there were a number of people along our old rural lines that were not connected for electric service. In order to acquaint these people with our present rural extension plan a visit was made to each prospective customer to find out the existing conditions and the reasons why more customers could not be connected for service, principally between the small towns and villages along these lines. The farm record card was used to record the data of all prospective customers interviewed.

For the past three months I have made a close survey of the Roanoke-Pinsastle rural line, approximately twenty-five miles in length, to find out

the number of existing homes along this line that were not connected for electric service. The following report covers about 75% of this line:

Total number of homes visited - - - - - - - - 54

Total number that have signed contracts for electric service in the past ninety days - - - 28

Total monthly guarantee signed for by the twenty-eight customers - - - - - - - - - - - - $97.23

Average minimum monthly guarantee per customer $ 3.47

Total number of meters installed to serve customers added - - - - - - - - - - - - - 38

Number of farm customers added to the line - - - 26

We expect to cover all of our rural territory each line in a similar manner as described in the report of the Roanoke-Pincastle line in order to add as many prospective customers to the existing lines as possible. In the different farming sections of our rural territory we are helping certain farmers who own the various types of farms, such as dairy, fruit, truck and general, equip their farms with all the electrical labor saving devices suited for their needs and use these as model electrified farms for the purpose of demonstrating to our farm people the actual electrical equipment in operation.

It is hoped by giving the rural people the proper type of supervision and assistance we will be able to build up a rural load which will be profitable to the consumer as well as to the Power Company.