Electricity for the Farm

through

RURAL ELECTRIFICATION ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE

ELECTRICITY for the Farm

through REA

FOREWORD

The Rural Electrification Administration is an agency of the Federal Government. The letters "REA" are its initials. But they are more than that. They form the symbol of a great movement that springs from the farm men and farm women of America. These farm men and farm women are banding together in increasing numbers to bring themselves the electric service so long denied them. This banding together we call cooperation. It is nothing new for Americans. It is an expression of the spirit of neighborliness and mutual helpfulness that has distinguished rural people especially, since the Nation was founded.

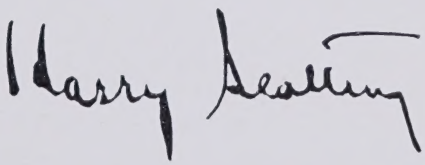
This spirit was shown at Plymouth and Jamestown when settlers came together to help one another build homes and till the soil no less than for defense. It has continued an unbroken

course through the whole history of rural America. It is at work today whenever farmers exchange help at harvesting time, whenever the neighbors unite for a barn raising after a farmer has suffered loss by fire, whenever any common action is taken for mutual benefit. This kind of cooperation is the very essence of democracy. It has been expressed before now through the establishment of farmers' cooperatives to provide for numerous services essential to rural life.

Though cooperation is not new to rural America, the electric service cooperative differs from most farmers' cooperatives in two important respects. Its base is the whole community rather than the producers or purchasers of specified commodities. Also, its service is highly technical, so that its members and officers are called upon to solve technological problems that are new to most of them. These problems involve not only the successful conduct of an electric power system, but also the application of electric energy to productive tasks on the farm and in the farm home. Thus the hundreds of thousands of farm people who are members of REA-financed rural electric cooperatives or citizens of REA-financed rural public power districts, are doing more than strengthen American democracy by putting democratic principles into practice in their daily life. In making electricity pay its way on the farm they are once again asserting their traditional capacity for

mastering a hard job in short order. Undismayed by obstacles, these resolute cooperators today move forward on a wide front.

This pamphlet is designed to introduce the citizen to the REA program—what it is and how it functions. But this is only a pamphlet. The reader who wishes a full understanding of the mechanics and significance of the program can do no better than to visit one of the hundreds of farmer-controlled rural electric power systems that REA has financed. Today these systems are located in almost every State; at least one of them is within visiting distance of virtually any point in the country. Riding the lines, talking with system officials and with farmer members, visiting electrified farmsteads, and attending an annual meeting or an energizing celebration are experiences that will affirm one's faith in the abiding values of American democracy.



HARRY SLATTERY, *Administrator.*

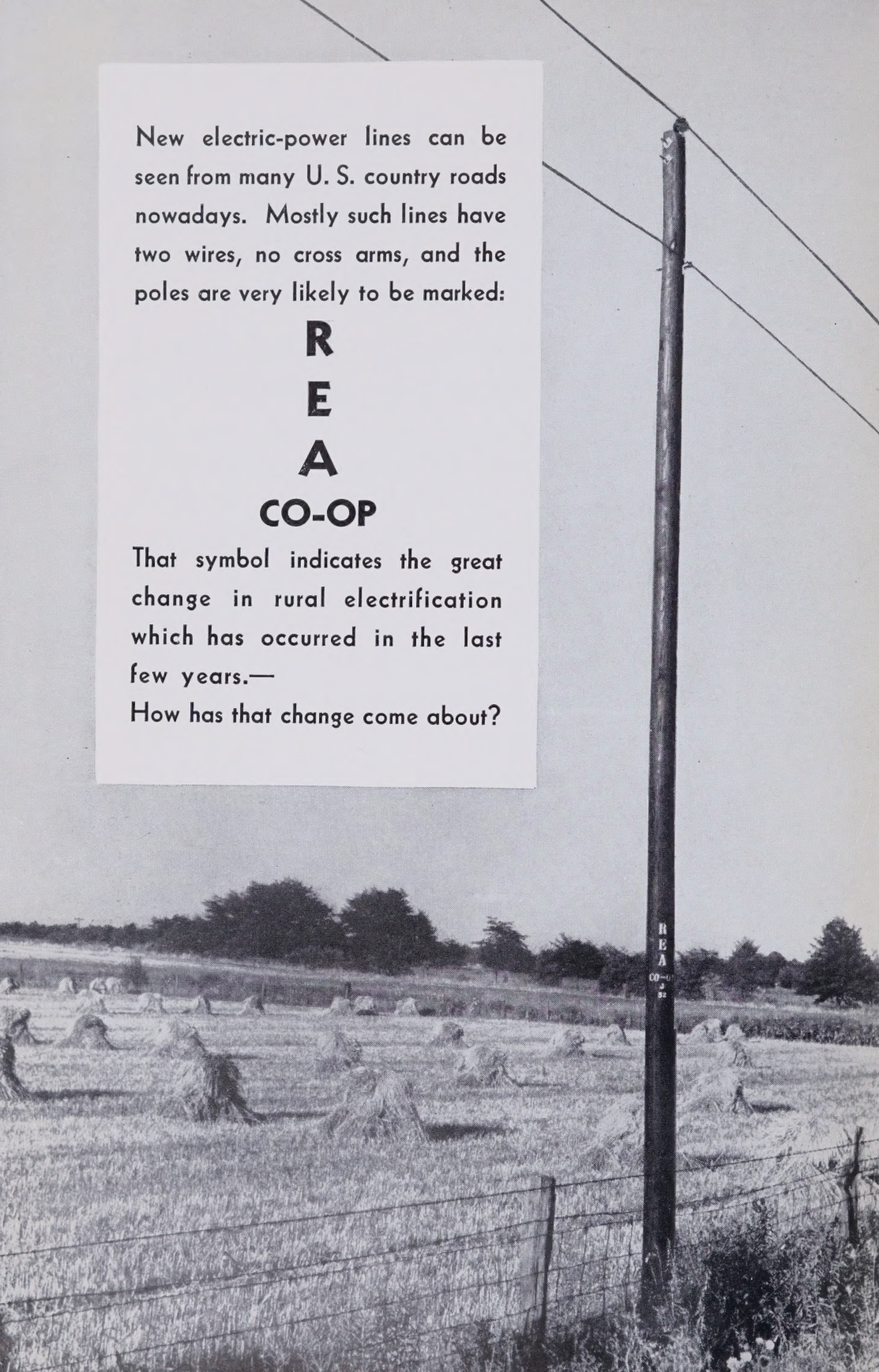
RURAL ELECTRIFICATION ADMINISTRATION

New electric-power lines can be seen from many U. S. country roads nowadays. Mostly such lines have two wires, no cross arms, and the poles are very likely to be marked:

R
E
A
CO-OP

That symbol indicates the great change in rural electrification which has occurred in the last few years.—

How has that change come about?



the REA—
what it is

BACK of the growing electrification of rural America is the Rural Electrification Administration. It is an agency of the Federal Government, created by the Congress to take electricity to rural people who otherwise could not obtain it.

REA brings electricty to rural areas by lending money to organizations qualified to build and maintain lines on a self-liquidating basis. It is authorized to lend money to private utilities for this purpose; but it is required by law to give preference to requests from nonprofit groups such as cooperatives, membership corporations, public power districts, municipalities, and other public bodies.

REA was first established by Executive order of the President in May 1935 as an emergency agency. A year later the Congress passed the Rural Electrification Act of 1936, establishing the present REA and charging it with a 10-year program of self-liquidating rural electrical development—a program which provided for lending $40,000,000, each year. In 1938 the Congress made available an additional $100,000,000, and for 1941 the amount authorized for REA loans totals $100,000,000.

REA became an administration within the United States Department of Agriculture on July 1, 1939.

This is the gist of REA's history; but how does the REA program work, and what has it accomplished in the way of electrifying America's farms?

how the REA program works

HOW FARMERS ORGANIZE FOR ELECTRICITY.

An REA project usually starts when a group of farmers get together and organize to build an electric distribution system in order to provide themselves with efficient and economical electric service. Sometimes a private utility has not built lines even remotely near their neighborhood; sometimes private utility lines have come nearby but only skimmed the cream along the main road. Whatever the reason, there is no high-line electricity to be had when farmers organize and appeal to REA.

Farmers in most States ordinarily find a cooperative the most satisfactory type of organization. Most REA systems, therefore, are cooperatives—and thoroughly democratic in form. In general, each consumer receiving service from the cooperative must be a member and pay a membership fee. Thus, consumers and owners are the same persons. Responsibility for general direction of the cooperative is vested in a board of directors, or trustees, elected by the members. Directors serve without pay. The actual management is delegated by the board to a paid superintendent or manager appointed subject to REA's approval of his technical qualifications. All members have equal voting rights: One member—one vote

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PREPARING THE PROJECT.

Once the borrowing organization has been formed, REA surveys probable power consumption and carefully appraises the economic soundness of the proposed electric system. "Where will the lines go?" "Will right-of-way easements be difficult to get?" "How many consumers will there be to each mile of line?" "What will they use electricity for?" "How much are they likely to use?" "Are there natural obstacles to run up costs excessively?" "Is the community cooperative-minded?"—these and other questions must be answered.

For example, take the question of easements. An easement is merely written permission, granted by a landowner, to build and maintain a line across his property. Obviously, farmers' electric systems cannot afford to pay for such easements. To do so would make electric rates unnecessarily high. When landowners fail to give easements, lines must be rerouted, thus increasing costs. Every consumer and the community as a whole benefits when easements are signed promptly in a cooperative spirit.

Much of the initial work of developing a rural electric system must be voluntary if costs are to be kept down and electric rates kept within the farmers' reach. County and home demonstration agents can often help materially because of their knowledge of the area. Of course, the more completely and thoroughly the "pre-allotment" groundwork is done, the more quickly can REA in Washington respond to applications. Complete information on pre-allotment procedures—that is, the steps taken before REA earmarks funds—

can be obtained by writing to the Rural Electrification Administration in Washington.

If the project seems sound and feasible and funds are available, the Administrator of REA makes an allotment to cover the cost of building the new electric system. Private contractors—the lowest and most competent bidders—do the actual construction. In order to protect the Government's loan, REA requires that rigid specifications be followed, that standard materials be used, and that the contractor abide by the National Electrical Safety Code of the Bureau of Standards and by any State or local codes when these are more stringent. REA engineers, lawyers, and other specialists are called into service to help the farmer-users trim expenses and to safeguard the Government's loans.

REA LOANS.

REA makes loans of the following types:

1. Construction loans for distribution systems.

REA loans covering the entire cost of electric distribution systems are made with the object of being self-liquidating. They are investments, not grants. Borrowers are given 25 years to pay back the loans, at interest equal to the average rate of interest payable by the United States Government on its long-term obligations issued during the fiscal year just preceding that in which the loan is made. This is simple interest on the unpaid balance of the loan.

2. Generating plant loans.

REA lends money on the same terms as above to build generating plants. Such generating plants are built, however, only if

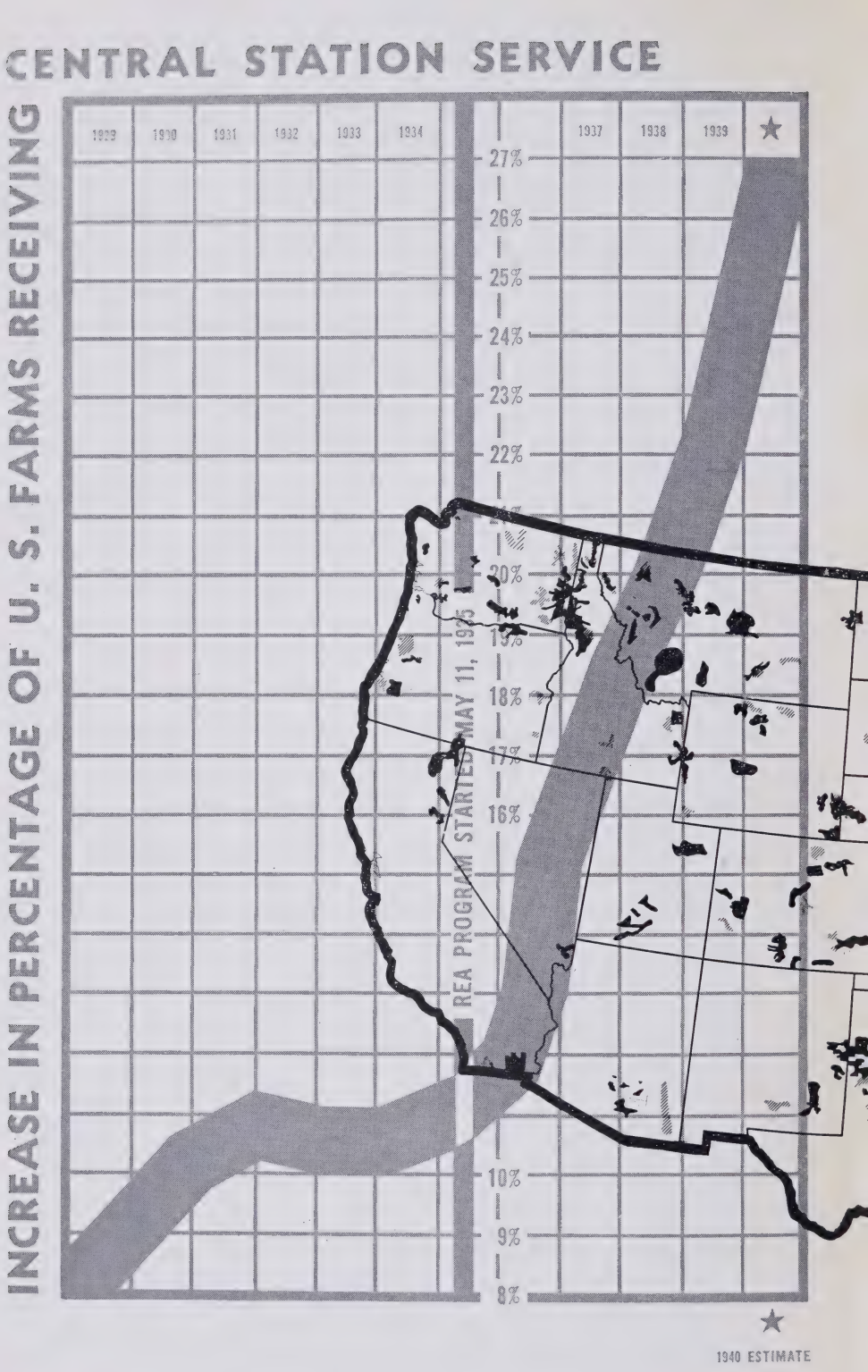

CHART SHOWS TOTAL RURAL ELECTRIFICATION IN U. S. —

RURAL ELECTRIFICATION ADMINISTRATION SYSTEMS

As of June 30, 1940

MAP SHOWS REA FINANCED SYSTEMS ONLY

adequate sources of power are not readily available, or if a reasonable wholesale rate cannot be obtained.

At times money is lent to finance the purchase of mobile generating plants to furnish temporary sources of power or to establish a reserve of power against periods of unusually large use.

3. Wiring loans.

REA makes wiring loans, on a 5-year repayment basis, to REA-financed power systems at the same interest rate as construction loans. The systems can relend to members up to 80 percent of the cost of their wiring installations. The average rate of interest which systems charge for such loans is 6 percent (to cover handling charges and interest paid to the Government). The local system—not REA—is the direct credit agency for its members.

Wiring loans are provided to assist members in using power to best advantage from the moment the lines are energized. Safe, adequate wiring is absolutely necessary to satisfactory use of power in the home and on the farm.

4. Plumbing loans.

Running water is essential to profitable farm operation and to the maintenance of healthy living conditions in the farm home. For this reason REA also makes loans for plumbing on the same repayment basis as wiring loans.

5. Appliance and farm equipment loans.

REA makes loans similar to wiring and plumbing loans to finance specified types of electrical appliances and farm equipment. Loans are made only to cooperatives and other

agencies that operate REA-financed systems. Loans of this type are often used to finance the group purchase of farm equipment and plumbing fixtures so that members may take advantage of savings through quantity purchase and installation of such equipment.

LIABILITY.

No individual member of an REA-financed cooperative or other electric system is liable for the organization's debt. No one is ever asked to mortgage his farm as security for an REA loan. A mortgage on the power lines and other physical property of the cooperative or other borrowing organization usually secures the loan.

Of course, each member shares responsibility for the successful management of the undertaking, on which depends repayment of the Government's loan. Every system has available from REA the assistance of trained specialists in various fields of operation, who help establish businesslike procedures. This protects both the welfare of local members and the security of the Government's investment.

AREA DEVELOPMENT.

REA believes that rural electric distribution systems should fully cover whole areas, not just the thickly settled districts along the roads or in the villages. REA borrowers can serve the farmers in more thinly populated regions because they can average their costs. In addition, cooperatives, public power districts, and other nonprofit organizations need not include charges to holding companies or dividends to stockholders. Bringing electric service to farms in thin areas thus becomes

economically feasible, and farmers can benefit from electricity at a price within their reach.

RATES.

The abundant use of electricity requires rates as low as costs permit. The elimination, by cooperative organization, of profit margins natural to private utilities, has contributed significantly to lower prices for rural electricity. Numerous economies become possible to people whose sole interest is in the use of electricity. For example, members of REA systems often read their own meters and send in the result by postcard to their local office, thus sharply cutting meter-reading costs. Sometimes they make out their own bills as well. Other similar economies have been introduced. Rates also have been reduced by cutting construction costs and making other savings which directly affect the consumer.

The rate the farmer pays depends largely on the rate the system pays for its wholesale power. REA helps systems negotiate for favorable wholesale power terms. REA strives to simplify rate contracts and to help systems guard against tricky clauses.

When REA-financed systems are not able to secure electricity at favorable wholesale rates, a generating plant can be built if necessary and practical.

The cheaper the farmer gets electricity, the more likely he is to put it to productive use.

USING ELECTRICITY.

Electricity is a universal servant; but to render its greatest service it must be used fully and wisely. Through planned

and liberal use it can be made to pay its way and add to farm income and reduce farm drudgery.

Since electricity is new to many agricultural areas, rural people usually need information on the best ways of using it effectively. Liberal use of electricity is also vital if a system is to pay its way without excessively high rates. Conscious of the close relationship between the welfare of the consumer and that of the rural electric system, REA makes available educational material and special advisory service to help farm people get the greatest use out of electricity.

REA's efforts in this sphere are concerned largely with demonstrations of electrical equipment. Meetings, led by agricultural engineers and home economists, cover such topics as farm wiring, plumbing, electric cookery and refrigeration, chick brooding, poultry lighting, feed grinding, and other applications of electricity to the farm home and the farm plant.

To supplement such local meetings, REA has developed a "Farm Equipment Show"—a tent demonstration which takes to rural people a complete display of income-producing and labor-saving electrical equipment for farm and home. This electric equipment show has been seen by several hundred thousand farm people.

Finally, REA has helped farmers by preparing plans and specifications by which farmers can build simple, inexpensive, and safe electrical devices such as pig brooders, chick brooders, and hotbeds. With such equipment, farmers can put electricity to profitable use with very little investment.

"SELF-HELP" ELECTRICITY.

In some low-income areas where every penny counts, cooperative members have done much of the nontechnical work

of line construction. On such "self-help" systems the members apply their wages to wiring or appliance costs; thus hard-working farmers bring in electricity with their own hands.

Under special conditions REA lines have been erected on poles furnished, cut, trimmed, delivered, and set by REA members. Other activities on "self-help" systems include such work as the making of membership and appliance surveys, clearing of right-of-way, the securing of easements, and miscellaneous labor required by the contractor.

GROUP PURCHASE.

Cooperative members have found that great savings can be made through group purchase of home and farm appliances and plumbing fixtures. Group purchase is a feature of nearly all "self-help" systems and many others are adopting it because of economies for the individual and increased power use for the system as a whole. In this way thousands of refrigerators, electric irons, washing machines, motors, bathtubs, chick brooders, etc., are purchased at prices which bring them within the reach of nearly everyone.

what REA has accomplished

FARMS ELECTRIFIED SINCE 1935.

When REA was established in 1935, about 1 in 10 American farms had high-line electric service. By February 1941 nearly 1 in 3 had high-line service. This increase is largely due to REA, both directly and indirectly, since the REA program not only lent money for line construction, but stimulated private utilities to build in many areas they had formerly neglected. Now, for the first time, in the more than 50 years since central-station service was established in the United States, the farmer is beginning to get a real chance at electricity. More farms were electrified during the 5 years after the Government program began than were electrified in all the decades preceding.

NUMBER OF RURAL PEOPLE SERVED.

The story of REA accomplishment can be told in human terms. By February 1, 1941, REA-financed systems were serving 691,000 consumers, and allotments made for service to 450,000 more—or a total of about 4,000,000 rural people. From 1942 (fiscal year) appropriations, several hundred thousand more consumers probably will be served.

For the first time, hundreds of thousands of American farm families will have the opportunity to read by electric lights instead of oil lamps—to get water at the turn of a faucet

instead of carrying it from a well—to bring in the outside world by radio without worry about run-down batteries—to wash, sweep, bake, churn, saw, grind, hoist, milk, and do countless other jobs by electricity.

MILES OF LINE.

By February 1, 1941, over 295,000 miles of line were completed, and allotments made for 50,000 miles more—together, enough to cross and recross the continent nearly 115 times. From July 1939 to February 1941 an average of over 400 miles of line were built each operating day. These thousands of miles of rural line mean light, power, freedom from drudgery, and new money-making opportunities for the farmer.

MONEY ALLOTTED.

By February 1941 REA had allotted $358,000,000 for the electrification of rural America. About $10,750,000 of this sum went for construction of 52 generating plants, and about $7,300,000 went for wiring and plumbing loans to farmers.

By February 1941, 800 systems had been financed by REA—90 percent of them cooperatives—in 45 States. The energy purchased for resale during the fiscal year ending June 30, 1940, totaled over 400 million kilowatt-hours costing approximately $4,500,000. Of the total, 53.1 percent came from private utilities, 16.3 percent from municipal plants, 22.3 percent from the Tennessee Valley Authority, and 8.3 percent from other public sources.

ENGINEERING ACHIEVEMENTS.

The farmer benefits from all construction savings. By introducing "assembly-line" mass-production methods, REA has eliminated much waste and useless expense. Spans have been

lengthened to take advantage of the new high-strength conductors. The cross arm has been discarded on ordinary lines, and unnecessary hardware on all. The result has been that the cost of building lines has dropped from the one-time $1,500- to $2,000-a-mile range to an over-all cost of less than $800 a mile. Construction costs are much lower. Although REA-financed lines are light and inexpensive, they are both strong and safe. They have stood up through many a sleety blizzard.

REA has made other engineering advances which definitely benefit the low-income farmer. Such developments as a low-cost transformer, a special service cable, and an inexpensive cyclometer-type electric meter bring the simplest benefits of electricity within the reach of many families whom even the lines of REA-financed systems had until recently passed by.

CHANGES IN RURAL COMMUNITY LIFE.

The spread of electrification offers new opportunities to rural industry, improves the quality of rural schools, increases the efficiency of rural community services. Industry is more apt to be attracted to rural regions, when a reliable and cheap power supply is available. Especially in a period of concentration on national defense, decentralized power for industry is of strategic importance. Local industries, such as agricultural grading and packing plants, creameries, cheese factories, garages, and the like are also given new impetus. To rural schools, electricity brings ample light on dark days, improved sanitation, more modern instruction in laboratory and home economics and manual-training classes, and the whole new world of the motion picture and radio. With electricity, rural hospitals can keep pace with the best, and rural churches can render new service.

RURAL ELECTRIFICATION AS CONSERVATION.

The great volume and steady stream of requests on "How do we get electricity?" which have come to REA from farmers, prove that rural people are awake to the advantages of electricity. When they are without it, they want it badly. When they get it, they put it to work in scores of different ways. They are eager for the opportunity to bring farm life up to modern standards. REA's problem is to take electricity to as many farms as possible on a sound, self-liquidating basis.

In a broad sense, rural electrification helps to conserve our national resources by strengthening agriculture. The greater well-being of agriculture is invariably reflected in the greater well-being of the nation as a whole. Though there are yet vast stretches of rural America, vast numbers of farms, which do not have electricity, REA has proved that electric power can be taken to many rural areas at a price the farmer can afford.

Number and percentage of farms receiving central-station electric service, 1934 and 1940 [1]

State	Farms reported by census	Number of farms receiving central-station service		Percentage of farms receiving central-station service	
	Jan. 1, 1935	Dec. 31, 1934	June 30, 1940	Dec. 31, 1934	June 30, 1940
United States total	6, 812, 350	743, 954	1, 871, 994	10. 9	27. 1
Alabama	273, 455	11, 053	39, 900	4. 0	14. 0
Arizona	18, 824	5, 577	8, 000	29. 6	41. 3
Arkansas	253, 013	2, 943	14, 624	1. 2	5. 8
California	150, 360	81, 093	133, 000	53. 9	76. 2
Colorado	63, 644	7, 145	14, 300	11. 2	23. 4
Connecticut	32, 157	10, 138	17, 000	31. 5	48. 5
Delaware	10, 381	1, 791	4, 656	17. 3	41. 1
Florida	72, 857	5, 700	9, 500	7. 8	11. 8
Georgia	250, 544	6, 956	48, 900	2. 8	19. 2
Idaho	45, 113	13, 433	26, 300	29. 8	57. 1
Illinois	231, 312	28, 379	83, 900	12. 3	35. 7
Indiana	200, 835	23, 476	96, 100	11. 7	46. 6
Iowa	221, 986	32, 047	65, 700	14. 4	30. 1
Kansas	174, 589	13, 224	24, 500	7. 6	15. 1
Kentucky	278, 298	8, 480	36, 100	3. 0	12. 0
Louisiana	170, 216	2, 826	16, 180	1. 7	9. 1
Maine	41, 907	13, 959	19, 904	33. 3	44. 5
Maryland	44, 501	6, 791	16, 687	15. 3	37. 7
Massachusetts	35, 094	14, 494	16, 500	41. 3	46. 2
Michigan	196, 517	42, 152	136, 900	21. 4	69. 6
Minnesota	203, 302	13, 783	47, 800	6. 8	23. 9
Mississippi	311, 683	2, 802	24, 500	. 9	7. 6
Missouri	278, 454	17, 893	35, 424	6. 4	12. 9
Montana	50, 564	2, 768	7, 400	5. 5	18. 2
Nebraska	133, 616	9, 544	20, 300	7. 1	16. 9
Nevada	3, 696	946	1, 700	25. 6	41. 6
New Hampshire	17, 695	9, 495	9, 000	53. 7	50. 2
New Jersey	29, 375	15, 162	24, 314	51. 6	78. 1
New Mexico	41, 369	1, 350	5, 500	3. 3	12. 5
New York	177, 025	57, 825	100, 000	32. 7	55. 5
North Carolina	300, 967	9, 672	80, 600	3. 2	25. 0
North Dakota	84, 606	1, 968	2, 110	2. 3	3. 0
Ohio	255, 146	48, 048	143, 200	18. 8	53. 7
Oklahoma	213, 325	5, 648	17, 500	2. 6	8. 5
Oregon	64, 826	17, 839	36, 700	27. 5	49. 6
Pennsylvania	191, 284	45, 182	105, 000	23. 6	54. 1
Rhode Island	4, 327	1, 975	4, 100	45. 6	93. 7
South Carolina	165, 504	3, 796	30, 400	2. 3	18. 3
South Dakota	83, 303	2, 939	2, 600	3. 5	3. 6
Tennessee	273, 783	9, 727	31, 000	3. 6	10. 7
Texas	501, 017	11, 466	70, 668	2. 3	14. 7
Utah	30, 695	16, 130	17, 000	52. 5	55. 9
Vermont	27, 061	7, 945	10, 500	29. 4	37. 2
Virginia	197, 632	14, 954	49, 300	7. 6	24. 8
Washington	84, 381	40, 060	60, 900	47. 5	66. 0
West Virginia	104, 747	3, 647	20, 827	3. 5	18. 3
Wisconsin	199, 877	39, 206	82, 000	19. 6	41. 3
Wyoming	17, 487	527	3, 000	3. 0	19. 4

[1] Data from Edison Electric Institute.

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