The Story of Cooperative Rural Electrification

rural lines—

U.S.DEPARTMENT OF AGRICULTURE • RURAL ELECTRIFICATION ADMINISTRATION • MISCELLANEOUS PUBLICATION No.811

Foreword: from the Administrator

THIS revised edition of Rural Lines—USA is a tribute to the people who helped organize this nation's rural electric cooperatives. During the thirties they called the first meetings in Georgia; they collected easements in Iowa; they drew system plans on road maps in Ohio. In the forties they launched the area coverage idea in Texas and Montana. Wherever you looked, from Alaska to Florida, from Maine to California, rural communities produced the kind of leaders who could get the job done.

Now, just a few years later, nearly 99 percent of our farms and ranches are electrified. There are more than 1,000 REA-financed electric systems with a plant worth $7.7 billion. These organizations that began around a kitchen table have grown into an important and successful part of a big industry.

Looking at this record of accomplishment we might think that the years ahead will be easier. They won't be. The system we have built will continue to need pioneers. Today we need men and women who can find new ways to tell their story to members; who can plan systems to carry many times the present loads; who can chart a sensible and secure financial future. Rural electrification will require new approaches, fresh ideas. In saluting those people who organized the systems, let us also salute the new pioneers, the planners, who will provide leadership in the years ahead.

David A. Hamil, Administrator
Rural Electrification Administration

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Homework by lamplight . . . an everyday event in Rural America of the 30's.

the Early Years

IN the 53–year period from 1882, when the first central station generating system went into service, until 1935, only 10.9 percent of the farms in the United States had obtained electricity.

Since its creation in 1935, the Rural Electrification Administration has helped bring light and power to practically every corner of rural America, raising the proportion of electrified farms to more than 98 percent. REA borrowers also supply electricity to non-farm rural establishments, including residences, businesses, schools and churches, and they continue to meet the rising demand for power by all their consumers.

This record of service is being accomplished by systems designed to serve whole rural areas, including the sparsely populated sections as well as the more densely settled areas. The job is being done through a program of self-liquidating loans.

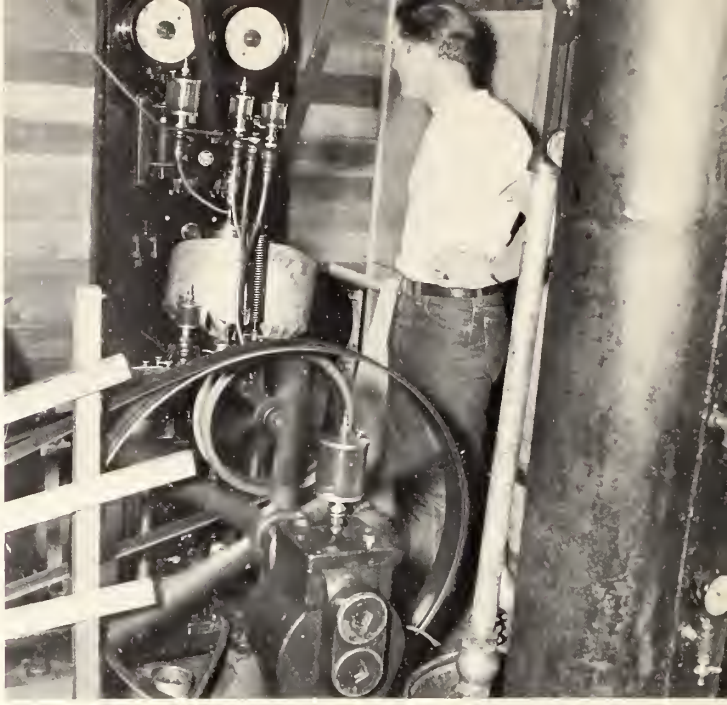
The notion that electricity generated at a central station could be distributed to every farm in the United States took hold of men's minds slowly. Engineers knew how to do the job as early as 1915, when they learned how to transmit power as far as 100 miles. Since most U. S. farmers were then living within 100 miles of a

generating station, large-scale rural electrification—for lighting at least—was technically possible. For the next 20 years, however, most people connected with the electric power industry in this country doubted that rural electrification would pay its way.

In the early 1920's, a growing number of rural leaders and others were demanding rural electrification. In response, the National Electric Light Association in 1923 organized the Committee on Relation of Electricity to Agriculture (CREA), to see what could be done for the U. S. farmer. CREA, largely financed by the electric power industry, combined farm groups, Government agencies, and equipment manufacturers to study the uses of electricity on the farm and determine whether a profitable rural market existed.

CREA's most important study took place near the town of Red Wing, Minn., where a 6-mile electric line was built to serve 20 farms. Ten of the farmhouses were equipped with practically every piece of electric equipment then invented. Electricity also was installed in barns, poultry houses, and milk sheds. Electric motors cut wood and dried hay.

It wasn't long before the 10 farmers with central station electric service could report that their life was happier and healthier. Something else important was happening too. Electricity was raising the whole level of rural living. As their electric bills went up, the Red Wing farmers checked and found that their operating costs were going down. Soon, State electrification committees were formed to spread the news and to show other farmers how to put electricity to work.



Home-made power plants—a safety engineer's nightmare often gave trouble-free service for several days at a time.

The chief problem, however, remained one of getting electricity at a cost that would permit farmers and other rural people to put it to work. Some electric companies were willing to extend service to rural consumers, but the price usually was prohibitive. As a rule, farmers had to pay from $2,000 to $3,000 per mile for construction of the lines to their homesteads. Then, on top of these heavy construction costs, rural people usually had to pay more for the electricity they used than did their neighbors in the city.

One man deeply concerned about the high cost of rural electric service was Morris L. Cooke, an electrical engineer. He set out "once and for all" to solve the puzzle of the true cost of distributing electricity in rural areas. As an adviser to the Power Authority of the State of New York, he and a small staff of engineers started from scratch, adding up labor and material costs. Published in 1933, their findings showed that it was possible to build rural lines from $300 to $1,500 cheaper per mile than power companies claimed they could be built.

But it was evident to many that rural people in 1935 would not get central station electric service at rates they could afford to pay without the Federal Government's lending a hand.

Morris L. Cooke, architect of policy, first REA Administrator, 1935-37.

As a result, the Rural Electrification Administration was created by Executive Order of the President on May 11, 1935. The order, numbered 7037, was less than two pages long, and it granted powers to an REA Administrator to "initiate, formulate, administer, and supervise a program of approved projects with respect to the generation, transmission, and distribution of electric energy in rural areas."

On May 20, 1935, Morris L. Cooke was appointed first REA Administrator, and he opened an office the following day. Within a week, he had assembled a small staff, and within a fortnight, he had moved his fledgling agency to 2000 Massachusetts Avenue in Washington, D. C., the former residence of James G. Blaine and of George Westinghouse, Jr.

The agency was begun as part of a general program of unemployment relief under authority of the new Emergency Relief Appropriation Act, with $100 million in funds for either loans or grants. Cooke insisted, however, that REA would have to be a loan agency, and it would have to be free to use skilled labor where it could find it, as opposed to providing employment for the unskilled.

On August 7, 1935, the President issued Regulation No. 4 establishing REA as a lending agency, freeing it from many relief program regulations, and broadening the Administrator's authority to make decisions.

First REA headquarters was former mansion of James G. Blaine and of George Westinghouse, Jr.

U.S. Department of Agriculture buildings, the home of REA in Washington, D.C.

Regulation 4 transformed REA from an emergency relief agency into something more closely resembling a bank. It created an orderly program of loans on an interest-bearing, self-liquidating basis. It made rural electrification a national business investment.

REA's first year proved a frustrating one. If Cooke had expected a flood of applications from electric companies, he was disappointed. The few applications that did come in from power companies proposed such high rural rates that Cooke felt he could not seriously consider them. His first four loans went, not to commercial companies, but to three electric cooperatives and one municipality.

His disappointment increased when he read a report of a special committee of the utility industry on rural electrification, which stated that "there are very few farms requiring electricity for major farm purposes that are not now served." At that time 89 percent of all farms in the United States still were without central station electric service.

Later, Cooke observed that "before December (1935) . . . it became apparent that the industry was not going to use even a substantial portion of the funds available for rural electrification, and farm organizations of a cooperative character forged to the front as the principal borrowers under the REA program."

It was the feeling of many in Congress and of many local farm leaders that rural people not only needed electric service, but needed that service under rates and conditions that permitted full and productive use. They felt that electricity was too important to the development of rural America to make rural people wait for the commercial electric companies to take on the job, and they saw in nonprofit, cooperative organizations one means of accomplishing their objective.

As a result, early in 1936, companion bills were introduced in Congress directing the REA Administrator to give preference in making loans to "States, Territories, and subdivisions and agencies thereof, municipalities, people's utility districts, and cooperative, nonprofit, or limited-dividend associations."

The REA bill was introduced in the Senate by Senator George W. Norris of Nebraska and in the House of Representatives by Representative Sam Rayburn of Texas, later Speaker of the House. It was largely due to their hard work and to the support of farmers and their organizations, that Congress passed the bill which was signed by the President on May 20, 1936. Rayburn, many years later, described rural electrification as "the biggest lift that farmers ever had."

The Rural Electrification Act of 1936 reestablished REA as a lending agency for 10 years and granted a clear preference to nonprofit organizations.

- It authorized $40 million annually to be apportioned as loans among the States.
- It stated that loans could be made for the purpose of financing the construction and operation of generating plants, transmission lines, and distribution lines for the furnishing of electric energy to persons in rural areas who were not receiving central station service.
- It defined "rural area" as any area of the United States not included within the boundaries of any city, village, or borough having a population in excess of 1,500 including both the farm and nonfarm population thereof.
- It permitted loans to extend over a period of 25 years.
- It geared interest on the loans to the rate paid by the Government on its own long-term securities.
- It provided that loans also could be made to finance home wiring and to purchase electric appliances, equipment, and plumbing.
- It provided for an Administrator, appointed by the President and confirmed by the Senate, for a term of 10 years.
- It required the Administrator to certify that in his judgment the security for each loan he approved was reasonably adequate and that the loan could be repaid within the time agreed upon.
- It required that REA be administered on a nonpartisan basis.

With passage of that act, the major decisions concerning rural electrification had been made. The way was cleared for action and action came quickly.

Early REA sign let local people know electricity was on the way.

the Formative Years

John M. Carmody, architect of method, REA administrator, 1937-39.

BY 1937 REA policy was clearly outlined; Administrator Cooke had been an architect of that policy. John M. Carmody, who succeeded him as Administrator in February 1937, was an architect of method. A former coal company manager and magazine editor, Carmody was an apostle of the comparatively new discipline of "scientific management."

One of Carmody's first moves was to make it clear that rural people must take the initiative in getting electricity for their communities. Most farmers had no idea how to go about buying "a package of electricity." When farm people wanted to become eligible for a loan for the construction of their own electrical system, they first had to incorporate and organize under the laws of their State. Next, they had to show REA that their project could operate successfully and that they could repay the Government loan—with interest—within the required period.

To do these things, the farmers had to retain an attorney. They had to elect directors and officers. They had to sign up prospective members, a number of whom were not quite sold on the benefits of electricity. The system had to be designed by engineers.

As if these obstacles were not enough, there were major legal barriers in many States. While there were no laws in most States which specifically prevented rural electric cooperatives from forming, neither were there laws which permitted them. Electric utilities, on the other hand, operated under a well-established body of laws and under the supervision of State regulatory commissions.

In 1937, therefore, the REA legal staff drafted a model law for States called the Electric Cooperative Corporation Act. This uniform act was designed to give the co-ops ample powers to organize and build. It specifically exempted them from regulation by State commissions, since consumer-owned organizations are self-

regulating. In one State after another, rural people sought sponsors for similar legislation, and by 1940, a total of 23 States had given the green light to rural electric cooperatives.

But the basic question of the right of electric co-ops to organize was but one of thousands of questions which were tossed in the laps of REA attorneys during the formative years. One lawyer remarked years later that if he had known of the legal jungle which lay ahead of him, he would never have joined the agency. By the end of 1938, members of the REA legal staff had written more than 900 opinions.

As a result of the pronounced need for help, REA decided to give local guidance to prospective REA borrowers. The Administrator added to his staff a number of people equipped to go into the field to show farmers how to organize and design their projects. Soon REA had assembled staffs for engineering, legal problems, electric utilization, and management advice. The number of employees on the REA payroll climbed fast, rising from 99 in 1935 to 788 in 1939. The number of loan approvals was climbing, too. At the end of 1938, a total of $88 million in loans had been approved. A year later, the total had jumped to $227 million. The young agency was on its way.

As with most new ventures, the hard work of organizing the rural electric cooperatives generally fell to a handful of local leaders. These energetic few had to sell the co-op idea, organize meetings, collect the initial fees, sign up potential consumers and contact REA for specifics on the program. These leaders usually worked without pay. Said one: "Many times my wife drove the tractor while I stopped to talk to a bunch of farmers about REA."

The story of a co-op in a western State is fairly typical. In 1939, 10 men met to see what could be done to get electricity to their ranches. As a starter, they ran an advertisement in the county paper inviting "all who want electricity" to a meeting the following week at the courthouse. They also wrote REA and asked that a Government representative be present at the meeting to answer questions.

So many people turned out for that first gathering that the organizers had to move to the local auditorium. The REA representative said

Hard work of co-op organizing fell to local leaders.

First job was signing up members.

Convincing the farmer's wife was often the deciding factor.

Many struggling farm families worried lest the cost of electricity outweigh its benefits.

Some, who couldn't wait, "advertised" their impatience.

that the first job was to sign up prospective members—at $5 per consumer. If the organizers could sign up as many as three members to the mile, REA was likely to approve a loan to build a distribution system.

The first meeting brought a stampede of applicants for electricity, but it was only the beginning. More meetings followed, sometimes one every night. Finally one winter evening, the 10 men gathered around a kitchen table, spread out county road maps, and began to "plot in" the homes of the people who had already signed up. Then they drew lines where they thought the wires could be strung, picking up as many new members as possible. When they had a general idea of where they were going, they split into teams of two men each to call personally on those farmers along the way who had not yet joined the co-op.

Despite years of talk about rural electrification, rural people were not universal in their demand for electricity. Some still worried about "getting in debt to the Government." A few were not sure that electricity was worth the expense. And in the thirties $5 was not a sum to be taken lightly. A South Carolinian who helped organize a cooperative in Williamsburg County remembers a time when it "was hard to get hold of $5 because $5 looked as big as a tabletop in 1939." In his drive for members he sometimes had to take $2 cash and a note for the other $3.

The sign-up teams got wiser as they went along. They found out that it was better to have the farmer's wife present when they talked about the benefits of electricity. They looked at her when they talked about lights to help the children study or when they described electric refrigeration. Often the housewife would pay the sign-up fee before the organizers had finished arguing with her husband.

When the sign-up campaign was completed, preliminary plans and tabulations were sent to REA for consideration. With REA's approval of the loan, an engineer was hired to begin construction plans.

Then the easement campaign began. At the outset of the electric program, REA had decided not to approve use of loan funds to purchase rights-of-way from members, feeling that payment would be inconsistent with the idea of member-owned cooperatives. As a result, cooperatives had to obtain thousands of easements across property, each one signed by the property owner. Some idea of the size of the task is indicated by the fact that co-ops had collected more than one million separate easements by 1941.

The job would have been difficult enough had all the farmers been agreeable, but many were not. As in the sign-up drive, they had to be sold individually. A number of rural people still had

the idea that in signing an easement, they were mortgaging their property to the U. S. Treasury.

In some cases, easement solicitors had to exercise patience above and beyond the call of duty. In one co-op area, repeated calls on a property owner had failed to secure his signature. He didn't want electric service himself, and he was suspicious of the Government, the cooperative, and everyone connected with the project. To route the line around his property, however, meant hundreds of dollars wasted.

As a last resort, the REA field engineer called on the man, and found him nursing a swollen jaw. A tooth was "killing" him, but he had no way to get to a dentist. The engineer drove the suffering man to town, waited until the tooth was pulled, and took him home again. Hours later, the farmer got around to asking his visitor what he wanted. The engineer explained, the farmer listened carefully for the first time, and finally understood what was being asked of him. The lines went through the following day.

On the other side of the coin was the unhappy fact that many farmers who wanted electricity could not be included in the first systems built. They were too far from the main line, or they lived in areas where not enough neighbors had signed up. Area coverage was a goal in those early days, but co-ops also had to repay their debts. A line had to pay its way or it couldn't be built.

One Georgia farmer who tried to join his local cooperative for $5 was told that his home was too far from the electric line. If he wanted electricity, he would have to pay $165 for a line extension.

A week later he returned, still waving his $5.

"I moved my house," he explained in triumph. It had cost him $50 to prepare a new foundation, roll his house across the fields, and set it up a few feet from the line.

Farmers often helped select routes for power lines.

Mile by Mile

REA engineers were faced with several problems in expanding rural electrification after 1935. There was, first of all, a need for maximum economy in construction. Rural people were in no position to pay the bill for constructing lines that were as heavy and expensive as those built in town.

From the beginning, therefore, REA engineers concentrated on finding new and cheaper ways to build rural lines that were both simple and sturdy. Their research was enormously successful. The cost of building rural lines before REA had been between $1,500 and $2,000 per mile of line. By the end of 1936, nine projects had been built in as many States at an average cost of only $941 per mile of line. By 1939, REA borrowers were building lines for an average of less than $825 per mile.

Crews could lay out several miles of line each day. Another crew would follow and attach wire to poles.

Simple but sturdy construction kept costs down, while maintaining reliability.

Construction costs were cut by the use of high-strength conductors, which permitted longer spans and cut the number of poles needed per mile from about 30 to 18. The use of vertical construction, as opposed to the familiar cross-arm on single-phase lines, and standardization of much of the equipment used also were important cost-cutters.

For the construction itself, REA applied its own version of the moving belt principle, which had proved so successful in the automobile industry. Instead of using a stationary crew beside a moving assembly line, construction engineers moved waves of highly specialized workmen along the rural roadway.

There was little money to invest in elaborate surveys. In more than one instance, borrowers picked up automobile tour maps from local filling stations and used these to lay out systems.

Guided by his road map, the driver of the staking team would move slowly along the route for the new electric line. A boy in the back of the truck, equipped with a 300-foot rope and a pile of wooden stakes, would throw a stake every 300 feet and haul in his rope for the next run.

Behind came a man who drove the stakes, the crew to dig holes and the equipment crew, which determined what type of pole and assembly to drop off at each hole.

Still another crew attached brackets, bolts and insulators to the pole. They were followed by men who set and guyed the pole where necessary.

Wire stringing was a separate function, and more crews came along to hang transformers and install meters and service wires.

On a good day, it was not unusual for a contractor to build 3 miles of line per crew. One contractor on a 75-mile project reported a rate of about 4½ miles per day.

Beyond the emphasis on standardization, there was plenty of individual ingenuity. One resourceful contractor found it impossible to drive his pole truck back into the muddy fields where the line was supposed to go. So he hitched a trailer to his truck and hauled a mule in it. When his crew hit mud, they unloaded the mule and let it drag the pole into position.

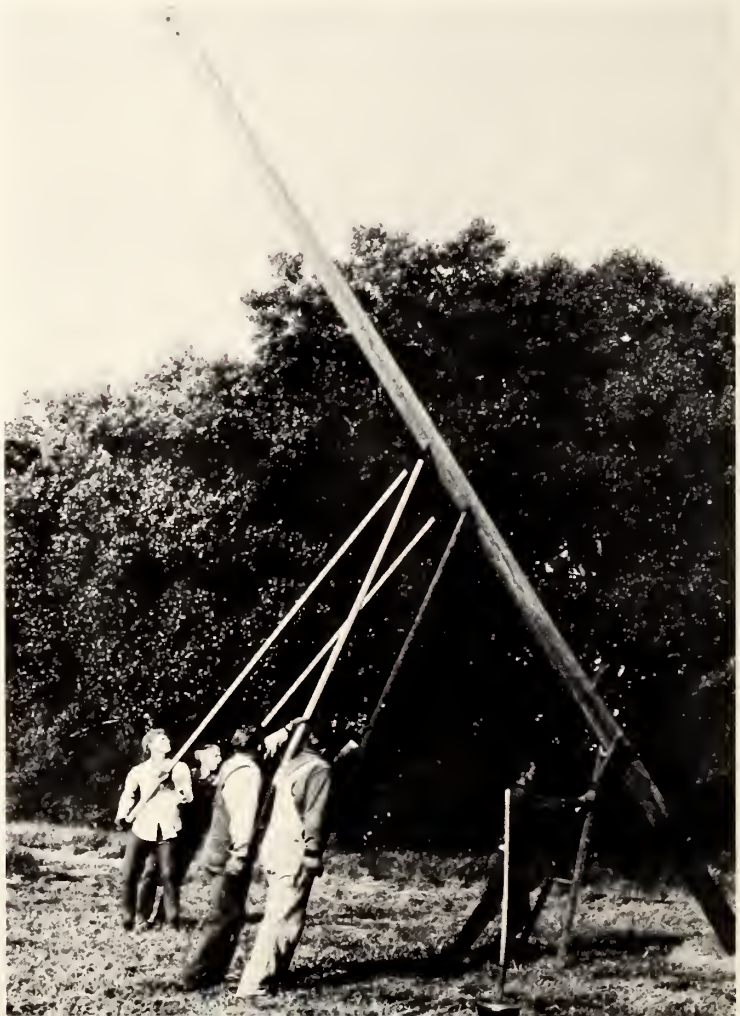
Construction had its dramatic moments. One rainy day in Indiana, a woman lay dying of pneumonia in her farmhouse. The doctor said that an oxygen tent might save her, but there was no electricity in the house to operate the fan in the tent. Working in the storm, three linemen built a 500-foot extension from the co-op line in just 2 hours. The switch was turned in time; the woman's life was saved.

As rural line construction proceeded at a faster and faster pace, private utility companies were spurred by the example of the cooperatives to build their own lines in rural areas. In some cases, this new building led to bitter feelings between co-ops and commercial companies. Frequently, construction took the form of "spite lines"—lines built almost overnight after a co-operative was organized and which sometimes paralleled each other.

At REA in Washington, there was less worry about power companies' lines than about the

Early crews had few power tools to work with. Holes were dug by hand . . .

. . . and the new pole lifted and set into place.



Considerable planning went into the placement of poles. If a windstorm was to topple this one, it would not strike the building. Note storm cellar behind house.

quality of lines REA engineers designed. As building went on, they waited with some apprehension for a real test of their innovations.

The acid test of rural line construction was its ability to withstand natural hazards like ice storms, wind-storms, and lightning. Conditions such as these demanded the adoption of the best techniques that had been developed by the electric and manufacturing industries. In the winter of 1938 in eastern Iowa, REA-financed systems received a strenuous test. The heaviest sleet storm in the records of the local Weather Bureau struck without warning. It brought down more than 5,000 telephone poles and caused over 200,000 wire breaks in telephone lines. On REA-financed electric lines, however, only 200 breaks occurred and only one pole broke off. Some 17 miles of poles came down without breaking and were easily re-erected. REA's recommended lightweight construction was vindicated.

The $5 the farmer paid to join the co-op was but a down payment on electricity for his farm. After construction of lines to his property he still had to wire his house and barn to receive electricity and buy lighting fixtures, appliances and equipment to make use of it.

Like construction costs for the lines, the average price for wiring a farm—although only $70—was a substantial sum to the farmer. REA realized that the cost of wiring would possibly keep many rural people from taking electricity. As a result REA created a "group wiring plan," which cut home wiring costs to about $55. Meetings were held in each project area to explain to farmers why they should complete installation as soon as possible.

Group plans were also developed for plumbing installations; light manufacturers, acting in cooperation with REA, put out "lighting packages" containing fixtures for a six-room house at a price that seemed unbelievably low. Each package contained nine modern fixtures and cost about $18.

These plans paid off. In 1938, the superintendent of a Michigan electric project wrote REA: "If you were here, I could take you to hundreds of homes completely wired, with fixtures hung and bulbs in place, ready for the 'zero hour' when the lines will first be energized. I could take you to homes where electric ranges, electric refrigerators, radios, and even electric clocks are installed and ready to operate."

Few rural people will forget the first night that the lights came on.

After the lights came on

IT is next to impossible for people who have grown up with electric lights to imagine the deep emotion felt by rural families when their homes were first electrified.

But a dairy farmer in Kentucky well remembers that day, and his experience was the experience of several million families across the Nation.

"We kept a lantern hanging beside the kitchen door," he relates. "Winter mornings I'd take the lantern and head for the barn. It would be so dark out you'd think you were in a box with the lid shut. We always had at least a dozen cows to milk, and just my dad and me to do it.

"I had a lot of other chores to do before I went to school . . . that made me late to school some mornings. I'd fill the wood box beside the kitchen stove and I'd bring in a bucket of water. Sometimes the pump would be frozen solid and I'd have to thaw it out before I could pump the water.

"Soon as I'd get home from school I had more

chores to do, and then an early supper, and after that I'd get at my homework. I'd study by a kerosene lamp in the kitchen, up close to the stove. We all spent most of our time in the kitchen during the winter.

"We'd heard that the Government was going to lend us money to get lights, but we didn't believe it until we saw the men putting up the poles. Every day they came closer, and we realized it really was going to happen. So Dad went ahead and had the house wired.

"It was almost 2 months later before they finished the job and turned on the power. I'll never forget that day—it was late on a November afternoon, just before dark. All we had was wires hanging down from the ceiling in every room, with bare bulbs on the end. Dad turned on the one in the kitchen first, and he just stood there, holding onto the pull-chain. He said to me, 'Carl, come here and hang onto this so I can turn on the light in the sitting room.'

"I knew he didn't have to do that and I told him to stop holding it, that it would stay on. He finally let go, and then looked kind of foolish."

A smokeless electric range and refrigerator made cooking chores easier.

That night—"the night the lights came on"—was forever after a significant date to most farm families, ranking with marriages and births as an anniversary of importance. In countless homes, lights remained on all night long, with people getting a good look at the rooms—and at each other.

At a crossroads in Texas, the night the lines were energized, ranchers filed past a newly dug "grave," hurling their kerosene lamps into the pit as a sign of their deliverance.

In a small farmhouse in Missouri, a woman ignored the lamps which suddenly burst into brilliance, and ran instead to the kitchen, where her new refrigerator had stood for a month awaiting current. When she saw that the little light inside really came on, she burst into tears of relief.

At a general store in Georgia, the storekeeper boasted of his new electric light for a month before discovering that it was only the night light over his cash register. When a co-op man showed him how to turn on the rest of his lights, he was speechless with amazement.

One woman, over 100 years old, wrote REA to thank the Government. She had never felt that she had been born too soon, she said, until the night the lights came on. Now she regretted that she would see so little of the future.

"To my mind, the coming of electricity began a new kind of life for most of us," explained a retired South Carolina schoolteacher.

"It meant much more than gadgets and appliances. Tenant children used to quit school in the third grade. Now they go through high school, and many finish college. It all happened after the lines came through."

She remembers a tragic grade school fire which took at least 100 lives in 1926. It began when a child knocked over a kerosene lamp during a lodge meeting in the second floor of the school. The people piled down the one narrow curved staircase, smothering and trampling one another.

The replacement of the coal oil lamp by electricity changed rural education; in fact, it changed many facets of life in the rural community. Rural people were now offered, in one significant respect, equality of opportunity with city people.

The coming of electricity meant the emancipation of the farmer's wife. As a rule, she put electricity to work before her husband did, and the first appliance she bought was an electric iron. Young farm women today are not aware of the origin of the word iron, as they press clothes with lightweight appliances of aluminum or hollow stainless steel. But their mothers and grandmothers know that iron meant just that—a 6–pound wedge of cast iron that had to be heated on a wood range and handled with a pot holder. A housewife had three or four of them, so that several could be heating while one was working. It is little wonder that an electric iron was first on the shopping list of every woman after the lights came.

A close second to the iron in popularity was the radio. It meant the end of the farmer's isolation from the company of his fellow creatures. It meant the end of loneliness. A whole new world opened to the rural family.

For the first time a farmer in Illinois heard the market report—and a rancher in Texas heard the newscast. Now a Gulf Coast family could get hurricane warnings.

"The day we got our radio," wrote one farm wife, "we put it in the kitchen window, aimed it out at the fields, and turned it on full blast. During the first week, the men hated to be out of the sound of it."

When the cooperatives were first organized, many directors wondered how on earth farmers were going to use all the electricity that the lines were built to carry. But their apprehensions were short-lived. Within 12 months after one project was energized, a survey disclosed the following purchases of appliances by members:

Electric irons and radios—84.3 percent.
Washing machines—63.2 percent.
Vacuum cleaners—48.2 percent.
Toasters—35.5 percent.
Electric motors—27.1 percent.
Refrigerators—20 percent.
Electric water pumps—16.2 percent.

Not all rural people, however, felt at ease with their new servant. After all, electricity was the same stuff as lightning; it sounded dangerous to many who had had no experience using it. One woman in Kentucky kept a new electric iron for weeks before she dared use it. Her

Electricity revolutionized rural schools. Improved lighting brought higher grades. Indoor plumbing and central heating increased attendance.

Modern, air-conditioned rural schools could not exist without low-cost electric service.

neighbor always used a pot holder to turn on her electric switches. Another kept sockets plugged at all times for fear the electricity would leak out. And one housewife wrote the REA Administrator to find out how to turn off her bedroom light at night. Nobody had bothered to tell her that she had a switch.

For the new cooperatives, these stories had their serious side. When a co-op depended on building electric load to repay its Government loan, it was no laughing matter that even a few people were too afraid of electricity to use it. And with still others, it wasn't a question of fear, but of habit. They were used to doing things the old way.

The co-ops knew from the start that they had a task of education on their hands. Families asked their cooperatives for advice, and the co-ops often turned to REA.

In 1935, REA employed two women to plan a program to teach the use of electricity, and in 1936, the agency published leaflets to answer questions on the cost of lighting and operating various appliances. These were distributed through the cooperatives.

Before long, it was evident that the printed word alone wouldn't do the job. REA expanded its utilization division, and sent six teams of specialists into the field to work with co-ops in showing members how to use electricity. The teams were on the road for months at a time, holding meetings in homes, schoolhouses, and co-op offices.

Radio ended rural isolation.

The electric iron was the most wanted appliance in the early days of REA.

REA organized the Demonstration Farm Equipment Tour, or "REA circus," in 1938, and put on shows in 20 States. Under a tent seating 1,000 people, REA employees, county agents, and extension specialists of State agriculture colleges demonstrated the proper use of farm equipment and household appliances.

An enterprising Kentucky pullet had her own "ideas" about the proper use of electricity. Inspired by her newly lighted chickenhouse, she laid an egg shaped like a miniature light bulb.

The press was delighted; the egg was mentioned in a nationwide radio broadcast; months later, REA received clippings of stories about the egg from newspapers in Sweden and Spain. Still later, it wound up at the New York World's Fair in 1939.

The editors who liked that story so much knew it concerned more than a pullet and a bulb-shaped egg. They sensed that something big and new was happening to American agriculture, and they were right. Electricity was the biggest thing that had happened to rural life since the arrival of the Model T.

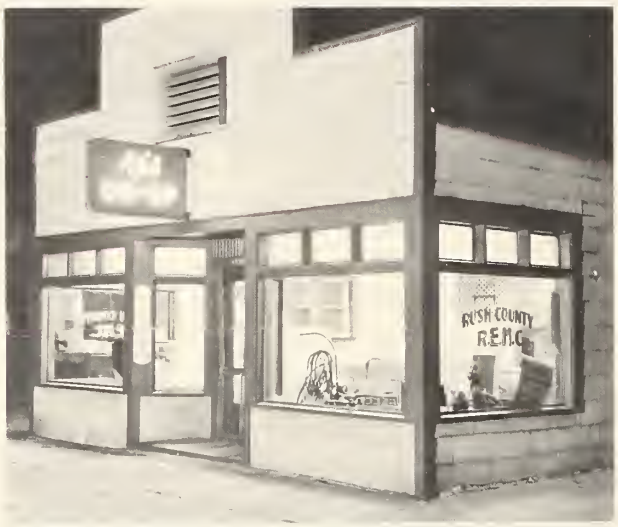
While the women were experimenting with electricity in the kitchen, the men and boys were trying it out in the barn. The farmer was quick to prove that he was a bigger potential user of power than his neighbor in the city, who had enjoyed the benefits of electricity for many years. Little by little, electricity began to take over the chores. It could milk cows, pump water, warm pigs, hatch eggs, brood chicks, sharpen tools, and drill holes. Electricity was a hired hand that paid for its own keep.

Frequently, farm boys were quicker to apply electricity to new jobs than their fathers. They were not so used to doing things in a certain way. Many boys took on electrified farming experiments as 4–H or Future Farmers of America projects, and they kept books to prove how electricity could be used for greater production and profit. They learned to use power machinery in high school and they saw to it that similar tools were installed in the farm shop at home. They suspected that the success of a farmer would someday depend considerably on his ability to put machines to work for him.

The name of the program, however, was not "farm" electrification, but "rural" electrification. Within a short time the meaning of that "rural" became clear. Electricity changed everything it touched in rural America.

Electricity made a difference in country schools all across the Nation. Teachers and principals reported that pupils' grades improved remarkably after lines were energized. Both better lighting and the influence of radio were credited with improving scholarship. Students were cleaner, too. At one school, they used five times as much liquid soap a year after running water was installed inside the schoolhouse.

Every community, every co-op, had its own stories about the way members were putting electricity to work. It was the beginning of a revolution in rural America that is still going on.



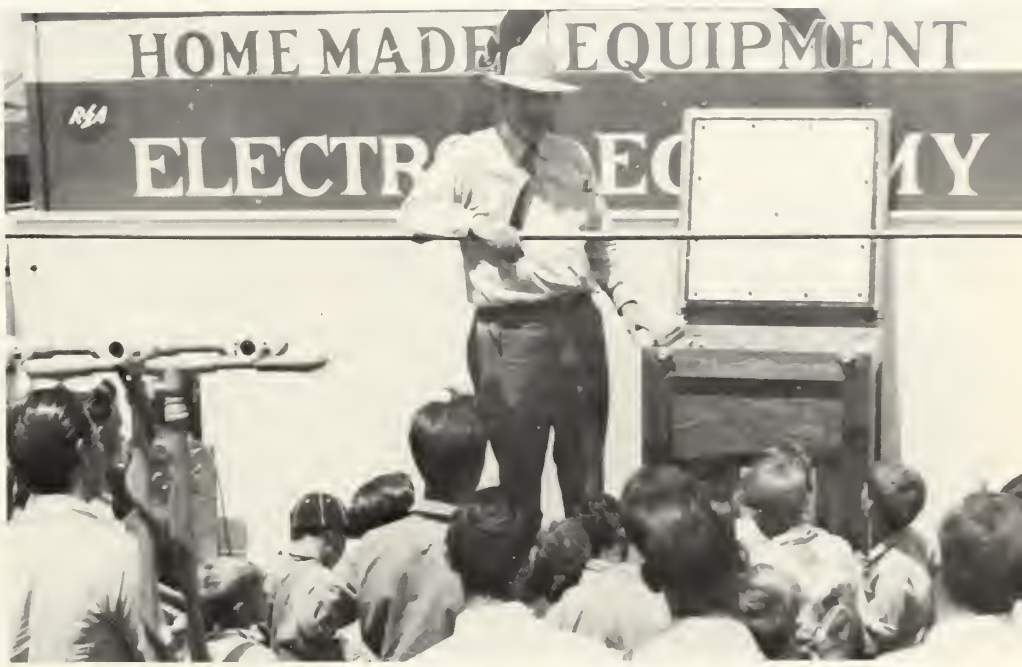
Here is a typical early rented "store-front" co-op headquarters. Later, co-ops designed and built their own facilities.

At first it appeared that the typical electric cooperative had two strikes against it, but it turned out in the long run to be an enormously successful organization. Behind that success was an intangible that doesn't show on the balance sheet—enthusiasm. The consumers, the directors, and the co-op employees were sold on electricity. They had waited a long time to get it, and they weren't going to give it up.

To one farmer it meant that his sons possibly would make farming a career, something they had never considered before electricity.

"Today," he said, "the boys are talking about going to the agricultural college and making big

REA "Travelling Circus" showed rural people how to use their newly acquired electricity.



Young farmers were eager to learn to make own electric equipment.

The hand saw and axe were no match for electricity.

More than one rural child owes his life to electric service, especially if he happened to be born prematurely.

The electric washing machine cut hours off a once-burdensome task, made washday almost fun.

plans for the farm. I would never have believed electricity could do that."

Consumer enthusiasm showed up in many ways. One thing was that people paid their bills ahead of time. At harvest, thousands of farmers deposited from $30 to $60 with the local co-op against future billings.

One cooperative, short of employees, had trouble keeping track of all the money and had to write members that "it would convenience us greatly if bills were not paid at the office until statements are received."

Most cooperatives let members read their own meters and, in some cases, figure their own bills. Almost everyone was scrupulously honest. One farmer whose meter was damaged by lightning was told to pay a bill of $5, the same as his previous month's bill. He sent in $10 instead.

"I'm sure I used at least that much current this month," he said.

Self-billing, coupled with a watchful eye to spot trouble before outages occurred, helped hold operating and maintenance costs down.

By and large, local businessmen were enthusiastic about the new co-ops, too. Electrification boosted the economy of towns in rural areas. It brought new appliance stores and equipment dealers to Main Street. It created new jobs for the young people from farms. The co-op's payroll made a difference to merchants, too, for the cooperative was often the biggest business in town. A banker in Preston, Minn., confessed that the largest check ever written on his bank was for $53,700 by the local cooperative to the contractor who built a portion of its lines. The $90,000 Government check deposited by the co-op was the largest single deposit the bank had ever received.

Among the men whose spirit kept the cooperatives going were the managers. Qualifications for the job were severe.

What some managers lacked in experience and in training, they made up for in hard work and courage. Many of them set up cots at the office, brought hot plates, and lived on the job for years. They went sleepless during storms. Frequently, they drove their employees hard, but they took the toughest jobs for themselves. During a storm in Nevada, for example, lightning blew a fuse at the main disconnect switch

on a transmission line. A flood that followed the storm washed out the only bridge in the area, so that the manager had to drive more than 200 miles over dangerous mountain roads to replace the fuse. It took him 10 hours at night to do it, but he was on the job the following morning.

Electricity had come to rural America to stay.

On July 1, 1939, REA ceased to be an independent agency and became a part of the U. S. Department of Agriculture. The change allowed REA to retain its administrative integrity, while placing its operations under the general supervision of the Secretary of Agriculture.

The electrification of rural America continued at an even faster pace. By 1940, loans totaled $268 million, and in 1941, the agency had its biggest year up to that time, approving more than $100 million in loans.

The war put a virtual halt to rural construction. It was getting hard to procure materials in 1941, and by 1942, systems required priorities to get things they needed. REA moved from Washington to St. Louis, Mo., to release office space in the Capital for agencies connected with the war effort.

But REA did not go out of business. It continued to examine applications and to earmark funds for projects. In January 1943, the War Production Board, which was responsible for the order of priorities, relaxed its restrictions somewhat so that rural people close to existing power lines could obtain extensions—if they could show that electricity would mean an increase in food production or a decrease in labor.

During the war years, American farmers broke one production record after another. Their output filled our own military and civilian requirements, plus part of the needs of our allies.

Rural electrification also meant that more plants and businesses—many supplied materials for the prosecution of the war—could be built in the country. The number of rural firms on REA lines tripled during World War II.

REA engineers concentrated on a number of wartime tasks. At the request of the military, they solved a problem of electrical interference of a submarine detector. Twenty-one REA technicians were assigned by the Signal Corps to assist in development of communications during construction of the Alcan Highway to Alaska.

Meanwhile, there were other developments. In 1942, a number of REA borrowers organized their own trade association—the National Rural Electric Cooperative Association. It is a nonprofit, private organization, incorporated in the District of Columbia, and during World War II, its membership increased to include 349 rural electric systems financed by REA. Today, it claims 977 systems as members.

By 1942, a number of statewide organizations of REA borrowers also had been formed. Many other State groups have been formed since that time. In all States where REA borrowers are operating, systems have made arrangements for assisting one another following damage to lines by floods, storms or other disasters.

In 1944, Congress passed the Department of Agriculture Organic Act, familiarly known as the Pace Act. By this act, the loan authorization authority of REA, which would have expired in 1946 without new legislation, was continued indefinitely. The act also changed the rate of interest charged on outstanding and future REA loans to a flat 2 percent, abolishing the old interest formula based on the Government's cost of money. Previous interest rates had fluctuated from 2.46 percent to 3 percent. The Pace Act also extended the maximum amortization schedule on all REA loans from 25 years to 35 years.

Adequate electric power opened the door to services once denied rural people.

Before the war many rural people had looked upon the REA program as a short-term affair. In the floor debate over the Pace Act, however, the Congress had made it clear that it intended for all of rural America to be electrified. Many felt that REA's basic objective must be to help make electricity available to all rural people under rates and conditions comparable to those available to town and city people. Congress was told what to expect in the way of applications, and the Congress responded. With the end of the war, the appropriation bills for 1946 and 1947 made available a total of $550 million in loan authorizations.

Co-op directors and managers were finding out that it would take increasing amounts of capital to increase the capacity of the rural systems to serve consumers already on the lines, for farmers were using more and more electricity with each passing year.

In addition, nobody had to sell anybody on rural electrification. Veterans were returning home to the farm, and they had learned to take electricity for granted. They had had electric lights on battleships, in barracks in Texas, in tent cities in Hawaii. One young man who had begun shaving while in the service got back to his farm before he recalled that he couldn't use his electric razor in his unelectrified home.

The wartime slow-down in construction created a log-jam of applications for electricity. As a result, everybody in rural America demanded service and wanted it right away. At that time there were 2½ million farm families still living without electric light and power. By and large, the unserved people were in the thinner, less densely settled areas.

Electrifying these farms proved to be a tougher job than anyone had suspected. Manpower was scarce and so were materials. The REA staff had been cut considerably during the war, and trained technicians were hard to recruit. Poles were in short supply. Transformers, pole hardware, and other line construction components also were hard to get.

Not until the end of 1948, was the worst of it over. Construction then began to move full speed ahead. More than 40,000 consumers per month were being connected to REA-financed lines, far exceeding all pre-war records. By June 1949, more than 78 percent of the farms in this country were receiving central station electric service.

In the process, electric lines began to cross vast areas of the Nation which had not shared in early rural electrification. The first lights came on in farm homes in the Dakotas and on Montana ranches. In more thickly populated States, new construction picked up farms and stores that had missed electricity the first time around. Cooperatives hurried to make area coverage a reality.

Farmyard security lights guard against intruders, help the farmer perform early morning and twilight chores.

A 14,000 kW generating plant built in 1941, far left, contrasts with a 300,000 kW unit, center. An experimental 50,000 kW nuclear plant (round dome) was completed in 1969.

the Demand for Wholesale Power

THE construction of electric distribution lines into rural America is only part of the job of rural electrification. Electricity cannot be distributed to rural people without an adequate and dependable supply of wholesale power at a reasonable cost.

Rural electric systems typically buy their power wholesale from existing suppliers and deliver it at retail to their consumers. In 1970 they purchased about three-quarters of their power supply from commercial power companies, from Federal agencies, such as TVA, and from other public bodies, including municipally owned systems. The remainder they produced themselves, utilizing REA generation and transmission loans to finance the facilities.

Although the Rural Electrification Act of 1936 grants the REA Administrator broad authority to make loans for generation and transmission, it is REA policy to approve such loans only where: (1) no adequate and dependable source of power is available to meet consumer needs; or (2) where the rates offered by existing power sources would result in a higher cost of power to the consumers than the cost from facilities financed by REA. The amount of the power cost savings resulting from the REA-financed facilities must also bear a significant relationship to the amount of the REA loan.

The first REA-financed generation loans were made to distribution borrowers for small emergency plants, usually diesel. Essential as these units were in the early days of the program, many were too small to be efficient and delivered high cost power.

To provide their consumers the benefits of lower cost power from larger and more efficient generating units, a number of distribution cooperatives joined together to form federated generation and transmission cooperatives. The board of directors of a federated G&T cooperative includes representatives of each of its member co-ops and the system supplies wholesale power to all of them. The largest of these G&T cooperatives is the Dairyland Power Cooperative of LaCrosse, Wisconsin.

As men and materials were released after World War II, an upsurge in the demand for electric power in rural areas began. In 1944,

Lignite coal—once considered useless—powers huge steam generating plants in north central states.

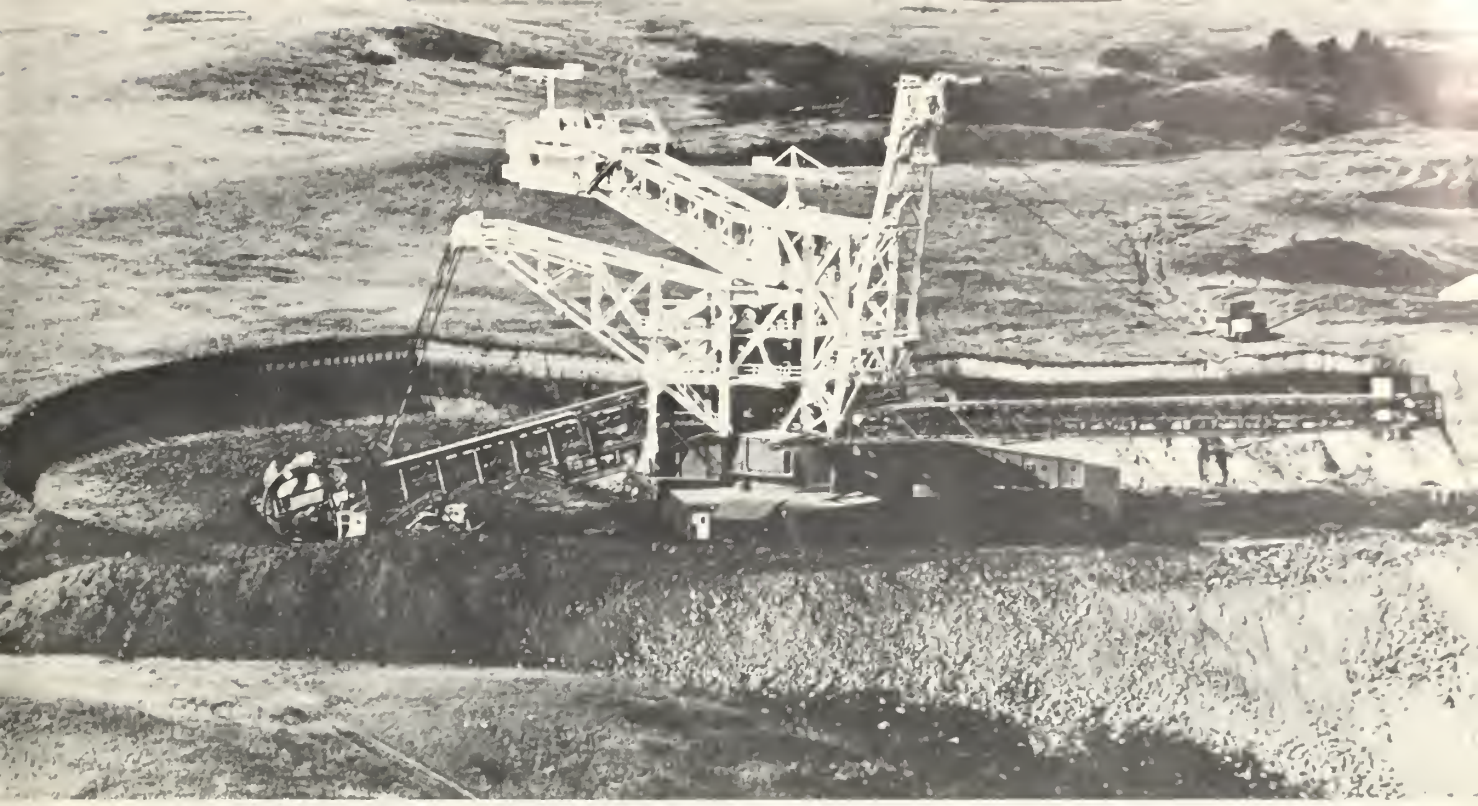
only 2.0 billion kWh was purchased by REA's distribution borrowers. By 1954, the demand had climbed to 14.3 billion kilowatt hours and at the end of 1964 it had passed 38 billion. The rapid upward trend continues—in 1970, it reached 69.2 billion kWh.

The growing demand for power keeps crews busy throughout rural America.

This fast-growing demand for electric power in rural America, coupled with advancing technology in the electric industry, called for large generating plants and extra high voltage transmission lines.

In 1958, the Central Nebraska Public Power and Irrigation District began operation of the first REA-financed 100,000–kilowatt single-unit generating plant. In 1964 REA made a loan to Dairyland Power Cooperative for a 300,000–kilowatt generating unit to meet the rising power needs of 104,000 consumers of its 27 rural distribution systems in 4 States as well as to meet the expanding needs of Cooperative Power Association with its 18 Minnesota distribution system members serving 78,000 rural consumers.

By the electric industry's standards, a 300,000–kilowatt unit is not exceptionally large. A 1972 loan to Associated Electric Cooperative of Springfield, Missouri, provides for a 600–megawatt unit. It takes no prophet to foresee that by 1980, one-million-kilowatt units will be commonplace in the United States. Units with capacities of 1.5 million or 2 million kilowatts by 1980 are being considered, with nuclear plants



Ten-story mobile earth mover exposes coal deposits for trucking to generating plant (opposite).

accounting for a growing share of production.

Striking technological changes likewise are taking place in power transmission. Only a few years ago, movement of power over a distance of more than 200 miles was not considered practical. Now voltages have been stepped up from 110,000 volts to 345,000. Two commercial companies already have built 500,000-volt systems. Lines with voltages as high as 1,000,000 volts transmitting power more than 1,000 miles are already on the horizon.

Some G&T cooperatives own no facilities but serve as a bargaining agent in purchasing power in large blocks for member systems. A few REA power-type borrowers own transmission facilities only.

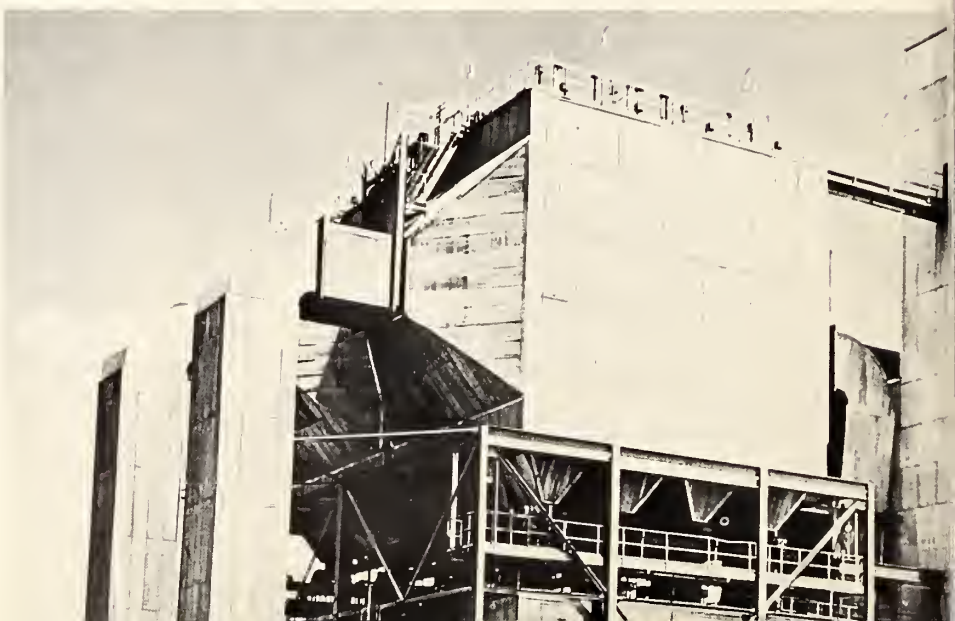
For example, KAMO Electric Cooperative, a federation of 16 distribution cooperatives in Kansas, Arkansas, Missouri and Oklahoma, delivers purchased power over its high-voltage lines to the load centers of member systems. In Missouri, G&T borrowers joined forces to establish the Associated Electric Cooperative. This cooperative federation, pooling and marketing the output of its member systems, also has power exchange contracts with the Southwestern Power Administration; a Federal agency which markets power from Government-built multipurpose projects in the Southeast; and with several power companies. Such a pooling arrangement reduces the amount of standby generating capacity needed, provides for alternate routing of power in case of breakdowns from storm damage or other causes, and effects significant economies in the cost of power for all suppliers participating in the pool.

Transmission systems are being interconnected State by State and region by region. The American electric industry is talking about a nationwide grid that will interconnect the lines of all power suppliers eventually. But interconnection is nothing new to rural electric cooperatives. Today, virtually all REA-financed plants are interconnected in some way with other facilities. Tying together large-scale steam generation with hydro-electric facilities and moving power in giant quantities from region to region will bring enormous benefits to consumer-members of rural electric cooperatives all across the land.

In areas of the country where philosophical differences have been strong enough to produce conflict, REA and its borrowers are working to create an atmosphere of mutual respect. Leaders

Packaged diesel units, right, or gas turbines, below, are used to generate power in remote Alaskan villages. Isolation and extreme weather conditions make long-distance transmission lines impractical.

Precipitator removes solid waste pollution from power plant smoke.



in the electric power industry—both cooperative and private—have been urged to work out their differences in point-by-point negotiation.

Rural electric power cooperatives have discovered that pooling arrangements and interconnections with local power companies not only improve their own operations, but benefit the general public as well. They can often mean the difference between a brownout and a blackout in the larger metropolitan areas of this country.

Keeping pace with the growing technological demands of the electric industry requires ever increasing amounts of capital. By the early 1970s the loan needs of REA's power supply borrowers were substantially exceeding the funds available from REA. The total loan needs to be considered in Fiscal Year 1973 approached $1.5 billion, and included a backlog of about $585 million carried over from fiscal 1972.

To meet the need, methods were developed whereby a large portion of the capital requirements for power supply borrowers could be obtained from non-Governmental sources. REA instituted the "seed money" approach to major loans for bulk power supply facilities.

An example of this approach was a June 1972 loan made to 43 distribution cooperatives receiving power from the Associated Electric Cooperative, Inc., of Springfield, Missouri. The estimated cost for the project contemplated by Associated was $240.6 million. Supplying the full amount needed would have taken better than half the funds allocated to REA for its entire electric loan program that year.

A financing arrangement was worked out whereby REA loaned 30 percent of the requested funds, the National Rural Utilities Cooperative Finance Corporation provided 10 percent, and the remaining 60 percent was obtained from other sources, primarily a group of insurance companies.

CFC's future plans call for an expansion of its loan program by raising capital through its borrowing power. Under such an arrangement, REA would continue to loan 30 percent of the needs, and CFC would provide the remaining 70 percent of the borrowers' requirements through the sale of its debentures on the private money market and from the borrowers additional investments in CFC.

Protecting the Environment

Public concern for the environment increased sharply during the latter part of the 1960's. REA borrowers, along with the rest of the utility industry, were faced with the task of supplying more and more services with less and less environmental impact. The industry generally agreed that reasonable standards would have to be met with respect to air and water pollution, and the preservation of rural beauty and historic sites and other aspects of the environment.

At the same time, they were committed to insuring adequate sources of energy to support our civilization and our industry. They required a reasonable amount of time to make changes and install equipment to reduce pollution. In some cases, suitable types of pollution control equipment had not yet been invented.

REA added a provision to all its loan contracts specifically requiring the borrower to meet all applicable environmental requirements with respect to the loan. Meeting the new environmental requirements, however, increased construction costs. In some cases new air quality requirements necessitated the installation of additional pollution control equipment at existing power plants. Borrowers soon discovered that anti-pollution equipment alone could sometimes cost more than half as much per kilowatt as the entire plant had cost a few years previously. Priority was given to REA loans for such purposes.

REA considers the environmental impact of all loans, and for certain types of facilities, borrowers are required to publicize their plans and invite comments. For construction plans which may significantly affect the quality of the environment, formal environmental impact statements are prepared, made available to the public, and sent to official agencies. All comments are fully considered and construction plans modified when necessary. The final environmental statement includes the comments received and REA's responses.

The last frontiers of isolation are being opened up by rural electrification.

Test of the Future

THE impact of REA-financed electrification upon rural America has gone far beyond the dreams of its early pioneers. Besides improved farming and better living, it has brought new and challenging opportunities for jobs and careers in the rural areas.

Some measure of the changing pattern of life in the rural community can be observed in the growing use of electricity. In 1941, the average farm and residential consumer on REA-financed lines used only about 50 kilowatt-hours of electricity per month. By 1961, this rural residential average had risen to about 375 kilowatt hours per month, or seven times the 1941 average. By 1971, it had risen to 730 kilowatt hours per month.

With dependable round-the-clock electric

service available, businesses and industrial plants have sprung up along rural electric lines, creating new jobs, markets and services for rural people. Rural electric cooperatives have taken the initiative to raise the economic standards of the areas they serve.

In North Carolina, the once-chronically depressed area served by the Blue Ridge EMC has been transformed into one of the most progressive regions of the Nation. Sparked by the co-op, the program began with a drive to boost community pride and self-respect. People were asked to clean their yards, mend fences, repair streets and roads. From this start, the development of industrial parks, business sites, shopping centers, housing developments and recreational enterprises followed.

More than half of Blue Ridge EMC's 135 employees are actively involved in community development efforts. Results are easy to see, easy to measure:

In 5 years, 3,751 new homes were built and per capita income increased from $1,533 to $2,091. In a decade, agriculture income increased by 126 percent. A total of 41 new industrial plants were established; 90 existing plants expanded; and 8,570 new jobs created. Total employment by local industry increased 45 percent in the 10 year period from 1961 to 1971.

This pattern of rural resurgence has been repeated in areas throughout the country. In Colorado, along with white-face cows and ski lodges on the western slope of the Continental Divide, sugar beets, cereals, peaches and corn are growing where cactus flourished, thanks to hardy hybrid strains and electric powered irrigation. Much of the State's expanding coal industry as well as many feed lots and packing plants are served by REA electric borrowers.

In Iowa, Winnebago Industries—the largest manufacturer of recreational vehicles in the U.S. —pays wages to 3,000 local employees, many of whom are on the lines of an REA-financed cooperative. New homes, new schools, and a college have appeared in an area which 15 years ago was considered economically depressed.

A South Dakota borrower serves the $5 million EROS Data Center near Sioux Falls. A boon to people throughout the State, the EROS Center is scheduled to orbit a 1,788 pound observatory spacecraft to scan every inch of our globe with television eyes. Data concerning crops, weather, water, storms and other matters will be sent back to EROS for evaluation. Community

Electricity enhances recreation areas, powers sprinkler systems to circulate and aerate water for swimming.

Modern community water and sewer systems, powered by electricity, are an essential to rural development.

With adequate water purification and sewage facilities available, lines can be laid and building sites staked out.

Tourist accommodations and service stations now dot the countryside, within easy reach of any traveller.

Modern rural electric cooperative buildings are functionally designed, often architectural pacesetter in their areas.

development activity will be spurred for hundreds of miles.

Since mid–1961, more than 5,600 commercial, industrial and community facilities projects have been assisted by REA borrowers. The direct jobs created in these undertakings have risen to an estimated 232,000. About 147,000 indirect jobs in related industries have followed, bringing total jobs created to over 379,000.

For the new generation growing up today, rural electrification can be an exciting challenge. Unlike their forebears, today's young people will not be plodding through the mud to one-room schoolhouses to learn how to "get lights" in their homes. Instead, they will look to industry, to government and to universities to find new and better ways to employ electric power in their homes, on their farms and in their rural businesses.

New housing developments are quickly filled by people seeking the tranquility of rural living.

The promise of a good job close to home, can prevent move to already crowded city.

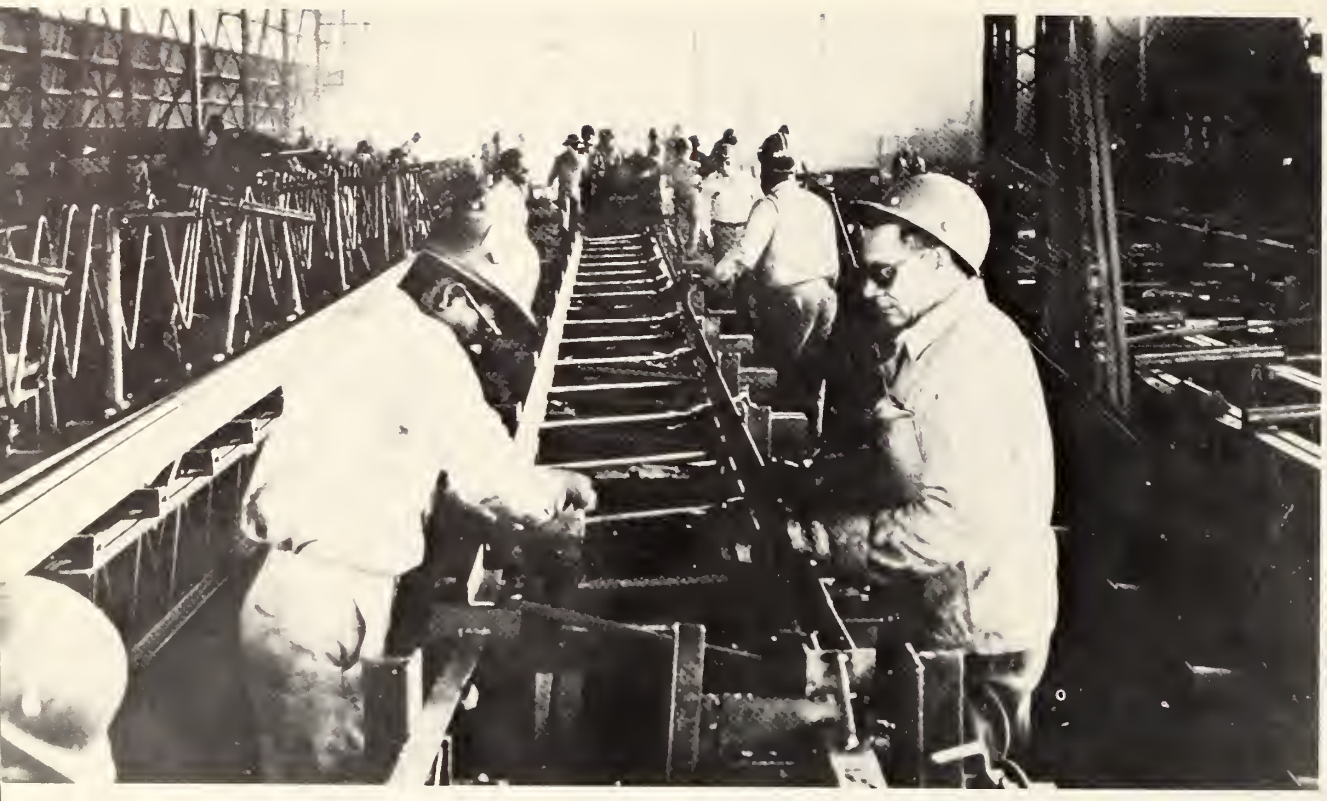
Complete undergrounding of electric distribution systems preserves the natural beauty of the countryside.

Once underground, little evidence remains of unsightly poles and wires. Hazards for people and livestock decrease.

Today's electric consumer is demanding that service be adequate and reliable, while at the same time every effort is made to protect the environment. He wants power lines either placed underground or built to conform with the surroundings in which they are located. He insists that air pollution from smoke be cut as low as possible.

The accomplishments of the rural electrification program are in the final analysis measured by its contributions to making life more attractive in rural areas. The many advantages of rural America as a place to live and work include clean air, water in its natural state, the beauties of nature and the absence of noise or objectionable odors.

By working together in the future as they have so successfully done in the past, rural electric systems can both meet the demand for power and preserve the rural environment. It will not be easy, but the odds are no more formidable than those which faced the pioneers of this great program.



New industries for rural South Carolina are "Stand Tall!" objectives.

Rural Electric Systems stimulate local progress

HELPING improve the living conditions and "business climate" of rural areas through its rural electric and telephone programs is a major component of REA's efforts in rural development.

The availability of these utility services to all who desire them regardless of race, religion or national origin not only improves living conditions, but also makes possible the establishment and expansion of businesses and industries. Each time a rural electric system connects a new consumer or provides additional services for an existing consumer, community development is stimulated.

As grass roots organizations, electric and telephone systems, working with other groups and agencies, frequently take the lead in getting community support and mobilizing local leaders for needed development activities. Their office is often the meeting place for local groups concerned with development.

In some States, community development activities are coordinated at the statewide level by an association of electric cooperatives. By pooling their resources, projects of a broader scale can be accomplished. Specific activities include: developing brochures describing the resources of the area; surveying the available labor supply; organizing local development corporations to help finance businesses and industries; and seeking technical and financial sources for recreational projects and health facilities.

South Carolina electric cooperatives instituted a statewide action program for rural community and industrial development.

Sponsored by the statewide association, the "Stand Tall" program seeks to involve everyone.

The disadvantaged as well as community leaders work together in planning area development and expansion.

Rural South Carolinians who have lived out their lives in homes like these . . .

. . . will find better quality of life through Farmers Home Administration loans for new homes like these.

Surveys taken by volunteer "Stand Tall" Commission workers show employment, training skills, housing conditions and human needs.

HIGHLIGHTS of RURAL ELECTRIFICATION

1935

April 8
President signs Emergency Relief Appropriation Act of 1935. It includes rural electrification as one of 8 categories of projects.

May 11
Executive Order No. 7037 creates Rural Electrification Administration, under authority of Emergency Relief Appropriation Act.

May 20
Morris L. Cooke is appointed first Administrator of REA.

August 7
President's regulation No. 4 establishes REA as a lending agency.

1936

January 6
Senator George W. Norris of Nebraska and Rep. Sam Rayburn of Texas introduce bills to establish new Rural Electrification Administration.

May 20
President signs Rural Electrification Act of 1936.

December 29
REA approves first loans to 2 federated power cooperatives, both in Iowa, later merged into Cornbelt Power Cooperative, Humboldt, Iowa.

1937

February 15
REA drafts the Electric Cooperative Corporation Act, a model state law for formation and operation of rural electric co-ops.

February 23
John M. Carmody is appointed REA Administrator.

1938

January 10
Federal court upholds right of five distribution co-ops to organize a federated cooperative to generate electric power for members.

October 1
In Iowa, REA Farm Equipment Tour begins its 4–year trek across the Nation to acquaint rural people with applications of electricity on the farm.

1939

July 1
REA transferred to the U. S. Department of Agriculture under Reorganization Plan II.

September 26
Harry Slattery is appointed REA Administrator.

December 31
Average monthly kilowatthour consumption on REA-financed lines reaches 50 during December.

1940

June 30
More than 30 percent of U. S. farms are receiving central station electric service.

September 12
Loan approved to serve millionth rural consumer.

1941

June 30
REA-financed systems number 732 in 45 States. . . REA assists in supplying electric power to new military installations.

December 19
REA moves its headquarters to St. Louis, Mo., to free Washington office space for war agencies.

1942

March 19
National Rural Electric Cooperative Association is organized in Washington, D. C.

July 1
Borrowers halt mass construction because of wartime material shortages . . . Efforts of REA borrowers and power companies boost percent of electrified farms to 38.3.

1943

January 1
War Production Board eases restrictions to permit borrowers to build short extensions to farmers who need electricity to increase production.

December 24
Nearly 53,000 farmers ruled eligible by WPB county war boards to receive short-line extensions from REA borrowers during year.

1944

September 21
President signs Pace Act, extending life of agency indefinitely, and changing amortization schedule and interest rate on all REA loans.

1945

February 1
REA publishes preliminary report "Rural Electrification After the War" outlining a 5–year program of expansion.

May 12
WPB issues first of several orders, removing major restrictions on line construction.

June 30
Claude R. Wickard is appointed REA Administrator.

September 27
Secretary of Agriculture calls REA back to Washington.

1946

May 23
REA loan provides for service to 2–millionth consumer.

June 30
Administrator re-emphasizes "area coverage", noting that many more borrowers adopted principle during fiscal year. . . First loans are approved to serve sparsely settled areas in Great Plains and West. . . New consumers being connected at rate of 26,000 per month.

1947

May 22
Administrator reports that 2½ million farm families and 2 million other rural consumers still are without electric light. . . Sixty percent of unelectrified farms, he says, are east of the Mississippi.

June 30
Borrowers connect two consumers per minute during fiscal year. . . Thirty-three new systems energized. . . About 3½ million farms receiving service.

1948

November 10
REA approves loan to provide electric service to 3–millionth consumer.

1949

June 30
During fiscal year . . . funds advanced pass $1 billion mark.
October 28
President signs H.R. 2960, amending Rural Electrification Act to provide for a rural telephone loan program.

1950

January 1
Area coverage pledge is made part of REA loan contract.
June 30
More than 77 percent of all U. S. farms are receiving central station electric service.
September 8
President signs Defense Production Act, and REA borrowers again face wartime material controls.

1951

June 30
REA estimates 16 percent of farms still dark. . . REA borrowers now serving 3.5 million consumers. . . Average farmer on REA lines uses 146 kilowatthonrs per month.

1952

June 30
Twelve percent of Nation's farms still unelectrified. . . REA borrowers are operating more than 1,000 energized systems.

1953

April 29
Ancher Nelsen appointed Administrator. . . Henry Connty REMC, Newcastle, Ind., becomes first electric borrower to pay off loan, ont of earnings.
June 30
Censns reports less than 10 percent of farms withont central station service.
December 31
Net worth of all REA electric horrowers passes $200 million mark.

1954

February 3
REA institutes simplified loan procedure ("short form") for borrowers who can meet stringent financial requirements.
September 12
REA officials and co-op lenders explore atomic energy possibilities with staff members of Atomic Energy Commission.

1955

January 1
First REA borrower reaches monthly average power usage of 1,000 kilowatthours (Lincoln Electric Cooperative, Davenport, Wash.)
June 15
Rural Electrification Act amended to revise formula for State allotment of electrification loan funds.

1956

May 14
REA approves first loan for conventional components of nuclear power plant, to Rural Cooperative Power Association, Elk River, Minn.
June 26
David A. Hamil appointed REA Administrator.
June 30
Payments made by borrowers ahead of schedule approach $100 million mark.

1957

April 18
REA approves largest single electric loan to date, $18,620,000, to Dairyland Power Cooperative, LaCrosse, Wis.
June 30
Five percent of farms are now withont central station electric service.
July 1
Total number of consnmers receiving service from REA-financed lines passes 4.4 million.

1958

March 19
President directs Secretary of Agricnltnre "to accelerate necessary constrnction and purchase of materials and equipment nnder already approved loans."
April 11
In response to President's request, REA inaugurates stepped-up sales campaign.
April 30
Total electric repayments pass hillion dollar mark.
May 31
Largest single generating nnit financed by REA, 100,000-kW steam plant, goes into operation near Lexington, Nebr.
June 27
REA approves contract between Atomic Energy Commission and Elk River, Minn., co-op for operating reactor power plant.
June 30
REA borrowers are serving more than 4.5 million consumers.

1959

May 11
REA begins 25th year, with 1,030 electric systems energized.

1961

March 3
Norman M. Clapp appointed Administrator.
June 15
REA approves largest loan to date: $60.2 million to G&T cooperative in Indiana.
October 9
REA receives one billionth dollar repaid on the principal of electrification loans.

1962

May 8
REA approves G&T loan to Basin Electric Power Cooperative, Bismarck, N. Dak., for first generating plant to be fired by lignite coal.
June 20
New Mexico rancher is 5 millionth consnmer to receive REA-financed electric service.

1963

January 1
Bndget recommendation for $425 million in loan funds, highest in REA history, is submitted to Congress.
June 28
REA approves $30.4 million G&T loan in Missouri to enable cooperative to pnt into effect major power pooling arrangement.

1964

May 25
Total loan payments by electric horrowers pass $2 billion mark.
October 30
REA approves $51 million G&T loan to Dairyland Power Cooperative for 300,000-kilowatt generating plant —largest single-nnit plant to be financed by REA to date.

1966

October 25
Joint REA-Borrower Cash Management Program announced to defer all postponable construction and step up advance repayments to minimize net cash demands on U. S. Treasury.

1967

June 13

REA announces 50 billion kilowatt-hour input by borrowers in fiscal 1966 highest on record; average consumer uses 708 kWh a month.

October 20

REA borrowers, electric and telephone, pass $3 billion mark in loan repayments.

1968

July 1

In fiscal year 1968, REA borrowers reduced cash expenditures of U. S. Treasury by $142.8 million in Joint REA-Borrower Cash Management Program.

September 6

REA approves loans for part ownership by three cooperatives in Vermont Yankee Nuclear Project near Vernon, Vermont; first arrangement of its kind involving REA borrowers.

October 17

REA approves $5 million loan to Alaska Village Electric Cooperative, Inc., Anchorage, Alaska, to bring first-time electric service to 20,000 Alaskans—Indians, Eskimos, and Aleuts—in 59 remote villages.

October 25

REA approves largest loan to date: $97 million for G&T to Basin Electric Power Cooperative, Bismarck, N. Dak.

1969

January 24

David A. Hamil first Administrator to be appointed to second term.

April

The National Rural Utilities Cooperative Finance Corporation (CFC) incorporated to provide supplemental financing for rural electric systems. Owned and controlled by its members, CFC is funded by membership fees, proceeds from the sale of its securities and margins from its lending operations.

April 7

Washington staff reorganized to provide "one-point of contact" for borrowers through Area Offices.

May 2

Interest payments by REA borrowers pass billion-dollar mark.

September 1

The 6 millionth consumer is added to REA-financed electric lines.

September 11

REA approved $15.1 million loan to new rural electric cooperative, Mt. Wheeler Power, Inc., Baker, Nev., to serve last "power desert" in continental U. S., a 12,800 square mile area.

1971

February 16

First two long-term loans made concurrently by REA and CFC.

May 7

Rural Telephone Bank created by amendment to the Rural Electrification Act to provide supplemental financing for REA telephone borrowers.

1972

June 1

REA announces largest loan day—"seed money" loans of $110 million for $365.6 million of generating and transmission facilities in Kentucky and Missouri.

June 30

REA completes most eventful year in its history. Largest number of loans (467); Second highest total amount loaned ($438.3 million); and highest dollar amount of advances ($418.5 million). The combination of REA, CFC and other supplemental lenders provided a record $751 million in long-term financing for rural electric systems. Borrowers achieve a new plateau of 300,000 new service connections annually.

To Order Photographs

Photographs, identified by page and negative number, are for sale by the Photography Division, U.S. Department of Agriculture, Washington, D.C., 20250. Glossy photographs, 8x10 inches, $2.00 each; 5x7 inches $1.75 each.* Page 3, BN35848. Page 4, upper, REA 14,190; lower, REA 694. Page 5, upper, REA Information Services Division; lower, N60909. Page 7, left, REA 42; right, BN6578. Page 8, upper, REA 7785; middle, REA 9196; lower, REA 1735. Page 9, upper, REA 6937-D; lower, REA 2507. Page 10, BN32208. Page 11, REA 2343-A. Page 13, REA 8900. Page 14, upper, REA 1869; lower, REA Information Services Division. Page 15, REA 2342-A. Page 16, REA 1816-B. Page 17, REA 149. Page 18, upper, REA 2326; lower, ST 100-69. Page 19, upper, REA 134; lower, REA 10,427. Page 20, REA 5257. Page 21, upper, REA 2351-A; middle, REA 6551; lower, REA 11,048. Page 22, upper, REA 13,110; lower, REA 352. Page 23, REA Information Services Division. Page 24, REA Information Services Division. Page 25, Dairyland Power Cooperative, 2615 E. Ave. S., LaCrosse, Wisconsin, 54602. Page 26, upper, Basin Electric Power Cooperative, Provident Life Bldg., Bismarck, North Dakota, 58501; lower, REA Information Services Division. Page 27, BN32597. Page 28, upper, BN39915; middle, BN32594; lower, BN39912-RE. Page 30, REA Information Services Division. Page 31, KY-W-2. Page 32, upper, REA 15,148; lower, REA Information Services Division. Page 33, upper, REA Information Services Division, lower, REA 11,379. Page 34, upper, REA 14,170; lower photos, Rural Arkansas Magazine, P.O. Box 510, Little Rock, Arkansas, 72203. Page 35, both photos, LaFayette Electric Cooperative, Darlington, Wisconsin. Page 36, BN32361. Page 37, REA Information Services Division. Page 43, Cooke, REA 694; Carmody, BN6578; Slattery, 71-655-B; Wickard, BN0097; Nelsen, REA 13,092; Hamil, BN3225; Clapp, BN26382; Hamil, BN33356; Craig, 72,077-B; Neal, BN35805; Haggard, BN35806; Wise, REA 12,775; Strong, BN5359; Foreman, BN1104; Dell, BN12932; Hausler, BN14026; Weitzell, BN22735.

*Prices subject to change.

CFC

The National Rural Utilities Cooperative Finance Corporation (CFC) is an independent, self-help credit institution, created by its member rural electric systems to provide supplemental financing for the REA-financed rural electrification program.

Incorporated under the cooperative laws of the District of Columbia, CFC is a nonprofit organization. Its board of directors are elected by the membership.

Capital for CFC is obtained from three primary sources: (1) member systems investments; (2) earnings from CFC operation; and (3) capital raised in the private money market through issuance of long-term securities. By investing their own funds in CFC as seed capital the rural systems created a basis for additional credit utilizing funds borrowed from other sources.

A significant factor in the establishment of CFC was the development of a common mortgage agreement, giving CFC's loans equal status with those of REA on a pro-rata basis. However, it should be emphasized that CFC is a supplemental source of financing and is not in any way intended to be a substitute or replacement for REA.

The first two concurrent loans to be made by REA and CFC were announced on February 16, 1971. This marked the first time in the history of the rural electrification program that the concept of supplemental financing was utilized by the rural electric systems. By the end of fiscal year 1972, CFC had made 416 long-term loans for more than $100 million.

* U.S. GOVERNMENT PRINTING OFFICE 1973 O—497-246

ADMINISTRATORS

left to right:

Morris L. Cooke
1935 - 1937

John M. Carmody
1937 - 1939

Harry Slattery
1939-1945

Claude R. Wickard
1945 - 1953

left to right:

Ancher Nelsen
1953 - 1956

David A. Hamil
1956 - 1961

Norman M. Clapp
1961 - 1969

David A. Hamil
1969 - present

DEPUTY ADMINISTRATORS

John M. Carmody
1936 - 1937

left to right:

Robert F. Craig
1940 - 1943

William J. Neal
1943 - 1949

George W. Haggard
1949 - 1951

left to right:

William C. Wise
1951 - 1953

Fred Strong
1954 - 1958

Ralph J. Foreman
1958 - 1961

left to right:

Richard A. Dell
1961 - 1966

Richard M. Hausler
1966 - 1969

Everett C. Weitzell
1969 - present

ADMINISTRATORS and DEPUTY ADMINISTRATORS 1935 – 1972