WORKS PROGRESS ADMINISTRATION

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Program and Work of the Rural Electrification Administration in the Works Program

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Background

The solution to the problem of achieving wide spread rural electrification in countries with large farm and rural areas has been generally recognized as one requiring an international cooperative effort -- at least in discussion, presentation of mutual problems and exchange of ideas on the subject. To this end, two Congresses had already been held, one in London in 1924 and the other in Berlin in 1930, as well as a number of sectional meetings in Basle, London, Barcelona, Tokyo and Stockholm. That United States representatives took part in these Congresses and sectional meetings, albeit in an unofficial capacity, was an indication that this country had a lively interest in the problem. Because of its interest and because it desired to continue offering its cooperation in the solution of this mutual problem, the United States through its Congress made possible the convening in Washington, D. C. on September 7, 1936 of the previously scheduled Third World Power Conference.[1] The bringing of this Conference to American shores brought to our people the realization that rural electrification problems were world-wide. The papers which were presented at the Conference pointed to the great gains that had been made in extending electricity to farm and rural areas with Government participation and assistance. The continuous thread of thought that pervaded the discussion was that the achievement of wide spread rural electrification could not be left solely to the public utility companies, and that the farmers by themselves could do little without

(1) - The U.S. Congress passed a resolution in August 1935 calling for the convening of the Third World Power Conference in Washington, D. C. on September 7, 1936.

some form of Government aid. Directive planning was deemed essential if the farmers' needs for electricity were to be adequately met. Such planning, it was felt, could be accomplished only on the basis of a national policy and program.

These conclusions of the Conference were not new to the interested groups in the United States who for years had been concerned with this problem. For example, the Mississippi Valley Committee Report of October 1, 1934 and the National Resources Committee Report of December 1, 1934 both reached practically identical conclusions in urging national participation in order to achieve wide-spread rural electrification in the United States. It might be said that the creation of the Rural Electrification Administration in May of 1935[1] was a concrete product of these two studies. The two reports together with the establishment of the REA consisted of a step forward in directive planning and in effectuating a national plan and policy of rural electrification in the United States.

The Mississippi Valley Committee Report recognized that agricultural rehabilitation was a basic national problem and that electrical power had an important part to play in its solution. It also reached the conclusion that only under Government leadership and control, assisted in particular instances by State and Local agencies, was it possible to supply electricity to any appreciable number of "dirt farms"; that the production and distribution of electricity more than most other factors demanded fairly wide coordination as part of a unified national system. The Committee suggested that the Government could spend profitably a billion dollars on the river works in the Mississippi

(1) - The temporary REA was created a year earlier by the President's Executive Order issued under authority given him by the E.R.A.A. of 1935.

Valley in the next 20 years, and recommended an allotment of $100,000,000 to build independent, self-liquidating rural electric lines in the Basin where no lines existed and where it was likely that private interest would not penetrate to any great extent in the near future.

The National Resources Board study consisted of a survey of land and water uses, mineral deposits and public works in the United States in their relation to each other, and was to serve as a basis for future planning in conserving and developing these natural resources. In a special section devoted to hydro-electric power, the Report pointed out that although the United States led the world in the total amount of horsepower of electricity used, the country was not utilizing to anywhere near the maximum ability the electrically derived mechanical power that can be realized by our fabulous store of natural, mineral and water resources. The Board, therefore, suggested that "one of the objectives which national planning should strive to attain is to provide all sections of the country with all the electrical power they may require at the lowest possible cost". It was immediately realized that the Board's inference that a great part of our population was not as yet enjoying the great service of electricity led directly to the consideration of supplying it to farmers and to other residents in our rural regions.

The endeavor to achieve farm and rural electrification to a greater extent and at a more rapid rate than had been accomplished in the past was crystallized with the establishment of the Rural Electrification Administration. After one year of operation under the 1935 Works Program, the Rural Electrification Administration became in May of 1936 a permanent Government agency, based on a 10-year program.

The fact that the Government found it necessary to step into this field was a symptom that certain deterrent forces existed which militated against the universal introduction of electricity on the American farm. These forces were numerous. However, they may be reduced into their two basic elements: (1) The farmers in the United States had assumed that rural electrification must come from the private companies; (2) The traditional policy of the privately owned utilities to extend their franchises into those areas which had proved most profitable.

The launching of the program and its magnitude was based, of course, upon the knowledge of what had and had not been accomplished in the field of rural electrification. In other words, the program was preceded by an examination of the status of rural electrification in the United States as a whole, in the different geographic regions of the country, and in the various states, and also of the degree to which electricity was being applied both in the industrial pursuits and in farming.

Rural Electrification In the United States

Of the total American farms in 1935 about 65 per cent had automobiles, 35 per cent had telephones, 30 per cent had radios, but only about 13 per cent had central station electricity. Moreover, the farmers formed only a small portion of the total number of utility customers served in the entire country.[1] Of the 25,341,203 utility customers in 1935, only 793,977 or about 3 per cent were rural and farm customers, despite the fact that they represent over 25 per cent of the total population. Of the 77,355,000,000 kilowatt hours of electric energy consumed by the entire country in that year, the farmer

(1) - See Table A - Central Station Customers in 1935 by Regions and States.

probably utilized less than 1 per cent. Largely as the result of the absence of electricity, about 32,000,000 farmers were deprived of these social and economic benefits which have become associated with the American standard of living; In 1935, of the 32,000,000 farm population, 73 per cent had to carry water from wells or other sources of supply, 77 per cent had to get along with outdoor toilets, 93 per cent had neither bathtubs nor showers, 76 per cent relied on kerosene and gasoline lamps for illumination and 10 per cent were dependent upon candles, and 48 per cent had to do their laundry out of doors.

Before 1923 there had been practically no movement on the part of the Government or private interests to achieve farm and rural electrification. Neither was there any data on how many farms were electrified since domestic and farm use were not separated. During the period from 1923 to 1935 the number of farms that received electric service from central stations increased from 178,000 to 794,000 or an increase from 3.9 per cent to 12.6 per cent of the total number of farms. In 1936 there were 827,000 farms with central station electricity and 325,000 additional farms with independent generating systems. In other words, on January 1, 1936 only 13 out of every 100 farms were centrally connected.[1] This left about 6,000,000 farms, on which nearly 29,000,000 of the 32,000,000 farm population lived, without electricity from a central generating plant. This potential national demand for rural electrification was strikingly indicated when by March 1936, eleven months after its establishment, the Rural Electrification Administration had received applications for the construction of REA projects

(1) - See Table A-1 - Growth in Farm Electrification

totaling over $90,000,000.

Rural electrification in the United States indicates a wide disparity between regions.[1] For example, the proportion of farms served by central stations was highest in the New England and Pacific States and lowest in the East South Central and West South Central States. In the West, largely because of the extensive practice of artificial irrigation, and in the thickly settled North Atlantic States, one farm in every 3 had central electric service in 1930. The comparative high ratio of electricity on farms in the North East is also explained by their close proximity to urban centers. In the South and in the Middle-West, the percentage of rural electrification was under 10 and in the Gulf States under 5 per cent. The Mississippi Valley, the Nation's granary, showed about 10 per cent farm electrification.

Similarly, the number and proportion of electrified farms in the country varied widely among the states.[2] New Hampshire with 66 per cent of its farms electrified in 1935 ranked highest. California was next with 54 per cent, Utah third with 53 per cent, and New Jersey fourth with 52 per cent. The balance of the 44 states had less than half of their farms electrified from a central station as of December 31, 1934. Fifteen states[3] had less than one farm in 20 which received electric service, with Mississippi lowest, with less than 1 per cent.

The average farm east of the Rocky Mountains used about 930 kilowatt hours per year in 1930, while the average Pacific Coast farm used about 5,700 kilowatt hours of electric energy. The average annual use of 930 kilowatt hours in 1930, however, was largely due to

(1) - See Table H - Number of Farm Service Customers by Regions.

(2) - See Table H-1 and Chart 1 - Rural Electrification, Number of Farms and Farmers Served by Electric Central Stations in the United States by States.

(3) - Arkansas, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, West Virginia, Wyoming.

the large use in the past of perhaps 10 to 20 per cent of the farms. Consequently, the average farm use is probably below the average city use of electric service.

In 1933 electricity furnished about 80 per cent of the energy used to "drive factory wheels and perform other tasks of American industries", while it supplied only about 3 per cent of the power in agriculture. If 800 kilowatt hours is taken as the annual average in the non-irrigation states, the total annual farm use would be about 960,000,000 kilowatt hours as compared with 65 billion kilowatt hours used in industry, or about 100 times as much.

A number of foreign countries have a greater percentage of their farms electrified than the United States. Holland, France, Belgium and Switzerland all have almost universal farm unit electrification. Germany and Japan each have about 90 per cent of their farms electrified. New Zealand and Scandinavia over 66 and 50 per cent electrification respectively, while Sweden, the largest electrified farm area in the world has 60 per cent of the land under cultivation using electric energy.

Of course, no just and accurate comparison of rural electrification between countries can be made without taking into account comparable bases, or well recognized controlling factors. Population density, size of farms, number of farms per mile and per square mile must all be reduced to a common denominator before comparisons are made. However, it does not follow that these controlling factors are exclusive in determining the high or low percentage of rural electrification in any country. The degree of success or failure in achieving rural electrification presents no conclusive evidence when that success or failure is based upon the above mentioned criteria. That

these factors are important in rural electrification, no one will dispute; that they are exclusive determinants for success in this field is open to much doubt. At any rate they must be considered in an international comparative study of rural electrification.

Congregation of farms in limited areas resulting in heavy farm density is probably the most important of the above mentioned four factors sustaining successful rural electrification. Because of the difference in farm density per square mile in the United States and in other countries, the United States as a national unit suffers by comparison in the degree of success in rural electrification. However, if one takes selected areas in the United States approximating the farm density of countries having nation-wide rural electrification, it is found that the discrepancies in accomplishment largely disappear. Thus, New England and the State of Utah, where farms are comparatively small and concentrated, and cultivated lands are a small proportion of the total land areas, resembling in this respect such countries as Norway and Sweden, have approximately the same percentage of farm unit electrification. Similarly, because the French farm population lives in villages and not in isolated farm houses scattered over the land as in America, that country's farm and rural regions have been almost universally electrified. The same is true for Japan and Germany. On the other hand, in Great Britain where the population and farm density per square mile is heavy, rural electrification is smaller than in the United States, and only now getting under way. This is an indication that heavy farm density although it creates favorable conditions is no guarantee in establishing rural electrification.

Population density is another well recognized controlling factor in extending electric service in farm and rural areas. On this

basis the United States with a population density of 41 to the square mile seems to be handicapped when compared to Japan and France which have a farm density per square mile of 433 and 197 respectively. On the other hand, Norway and Sweden which have a lower population density, (24 and 36 respectively), than the United States have almost four times as many farm units receiving electricity. Moreover, New Zealand with a population density per square mile of only about 1/8 as great as non-metropolitan New York supplies electricity to twice as large a proportion of its farms. In 1935 approximately one New York farm in three was electrified, while New Zealand had two in every three receiving this service. Texas with a slightly greater population density than New Zealand had only about two farms in every 100 supplied with electric service in 1935. Here again population density does not seem to be the exclusive agent for successful rural electrification.

A comparison based upon the criterion of the average number of farms per mile similarly reveals no conclusive evidence regarding the progress or lack of it made by various countries in the field of rural electrification. While in the absence of all other governing conditions, it might be argued that France and Japan with an average number of 26 and 38 farms per mile presented a financial incentive to farm electrification, and the United States with an average of only two, did not, yet there are disturbing illustrations disputing this thesis. For example, both the United States and Norway have the same average number of farms per mile, yet the percentage of farms electrified in each country is 13 and 50 respectively. Sweden with twice the farm density per mile as the United States has more than four times the proportion of electrified farms.

The size of the farm is another factor in rural electrification because it provides a measure of distance between farm homes. The greater the distance over which current is transmitted, the higher the losses and cost. In this respect the United States as a whole is retarded. The average crop land per farm in the United States is 84 acres as compared to 14 for Sweden, 10 for France and 6.6 for Norway. The American average crop farm is 28 times the size of an average Japanese farm and 5 times larger than the average French crop farm. On the other hand, there are compensating features over and against the losses sustained because of greater distances between farm homes situated on relatively large crop farms. That is to say, the large farms are greater potential users of electricity and once this potential use is realized the losses due to transmission are minimized.

Summarizing this international comparison, three things stand out: (1) Recognizing certain criteria as a basis for a comparative study of achievement in the field of rural electrification, no conclusive evidence exists to prove that these criteria are exclusive controlling factors in determining the success and failure in this endeavor; (2) other economic factors which are discussed in the next section of this paper are probably of greater importance in the success achieved by other countries and for the slow progress made by the United States in the field of rural electrification; (3) in the face of the fact that about 6,000,000 American farms are now without central station electricity, international comparisons can be only of academic interest. A new approach to the problem must be taken if rural America is to be electrified. Other controlling factors such as cost of line construction in rural areas, retail rates, methods of raising capital, terms of service, in addition to those previously mentioned, must form

a basis for future efforts to bring electric service to the vast majority of farms now without it. In the past, progress has been slow and faltering and according to REA Administrator Morris L. Cooke, "unless steps are taken to provide a program of accelerating rural line construction it will -- based on the record of the last 10 years -- be some 50 years before even half of our farms are electrified".

Economic Deterrents in the Past Which Hampered Nation-Wide Rural Electrification

A number of restraining factors are known to exist which in the past have adversely influenced nation-wide introduction of rural electrification in the United States; (1) High cost of rural distribution line construction; (2) low load factors due in part to the lack of electrical farm appliances and equipment; and (3) high losses due to the relatively greater distances over which the current must be transmitted. These in turn have resulted in excessive initial cash payments and high monthly guarantees required by the private companies from prospective farm and rural consumers; high retail rates; and a reluctance on the part of privately owned utility companies to enter the farm and rural field. Rural electrification in this country has been further hampered by a lack of government aid and the absence of a strong farm cooperative movement.

In rural electrification the major problem is the cost of delivering electric energy to the final consumer rather than the cost of generation. The largest item in this cost of delivery is the investment in transmission and distribution lines. Construction costs in rural regions where the customers average about 2 to the mile are of greater importance than in urban areas where the higher density of customers makes expensive construction less serious. A Federal Power

Commission study in 1935 of 328 of the larger utility companies serving about 90 per cent of all rural customers in the United States indicated costs for single-phase lines ranging from $616 to $2,456 per mile with a density of 4 customers to the mile. The average cost of construction per mile of line including transformers, secondaries, house service extensions, and meters with a density ranging from 3.7 to 6.5 customers, was $1,740. These high construction costs have of course been reflected in high rates.

In an effort to defray costs, many private utilities have charged part or all of the cost of constructing rural lines to their customers. Others who bear the entire initial expense of construction require a minimum average revenue guarantee equal to a certain percentage of the construction cost. The Federal Power Commission study of rural rates and rural line construction policies and practices as of February 1935, found that prospective farm customers had to pay first costs ranging from $125 to $250 for a mile of distribution line with a density of 4 customers. On the other hand, minimum annual revenue guarantees over a period of years have been found to vary on a nation-wide basis from 1-1/4 per cent to 6-2/3 per cent of the total cost per month. In general, the companies plan to recoup the costs of construction within three years by requiring an annual gross revenue per mile equivalent to 1/3 of the construction costs. The maximum requirement per mile per month in the United States has been found to be $37.50 charged by a Kentucky utility company and the minimum, $7.00 required by a utility in Idaho, or a range of $1.75 to $9.38 per customer with a line density of four customers.[1] This practice has, of course, made rural electrification prohibitive in most farming areas.

(1) - Federal Power Commission-Electric Rate Survey-Rate Series No. 8-February 1, 1935 - Page 7

High retail rates have discouraged the use of electricity on the farm and in the rural regions by preventing the functioning of an elastic demand which numerous studies have revealed prevails for this service. This largely explains why the normal farmer burns all of his minimum and then stops. As a result the farmer who is ordinarily a greater potential electric user than the city dweller probably uses on the average less than the urban consumer. Moreover, the experience of public utilities in the rural electrification field, indicates that one out of five farmers does not take current on the line constructed in their areas. A recent rate survey of rural electric service by the Federal Power Commission revealed that about 67 per cent of the utilities which reported costs ranging from $1,000 to $1,500 per mile of line and 60 per cent of those whose costs ranged from $1,500 to $2,000 per mile had monthly bills ranging from $1.50 to $3.00 for 25 kilowatt hours, or a rate of 6 cents to 12 cents per kilowatt hour. Since fully one-half of all the farms having electricity consumed in 1935 less than 30 kilowatt hours per month,[1] it is evident that at least 50 per cent of the farmers paid rates falling within this range. However, because the other 50 per cent used a greater quantity of power, the national average rural rate was about 5 cents per kilowatt hour.

The natural traditional policy of privately owned public utilities to extend their franchises into those areas which have proved most profitable is a factor responsible for the absence of wide spread rural electrification in the United States. Utility companies in the past have shown little interest in the field of rural electrification because of the risk and uncertainty in obtaining a fair return on their

(1) - Federal Power Commission - Electric Rate Survey - Rate Series Number 8 - February 1, 1935 - Foreword.

investment. They have penetrated the urban centers where rapid increases in the population and the growing use of electric power for other than domestic purposes such as street cars, street lighting, manufacturing operations, advertising display, and the lighting of the "great white ways" have netted them great profits. It was, moreover, easy to extend electric service to cities because of their proximity to sources of generation. The private utility companies, therefore, in following the road of least resistance ignored rural electrification to a great extent. The existing rural electrification system of the private utility companies cover the lines which are most remunerative, but, according to REA Administrator M. L. Cooke, do not include all districts in which the farmers could afford the service. This phenomenon is explained by the lack of interest shown by private utility companies in rural electrification. When cooperatives and public bodies have taken the initiative and entered such rural areas, the private companies were then made to realize their lost opportunities and often considered such extensions as threats to the investors' profit. This was an admission of the economic feasibility of such projects.

From the experience of foreign countries which have been successful in achieving rural electrification, it appears that Government planning and financial assistance has played an important role. Rural Electrification Administrator Cooke in expressing his appreciation for the methods used by foreign countries said that "there is one rule that runs through all this farm electrification . . . . . and that is that those nations which have made progress in the matter of rural electrification apparently have done it because they had a plan".

Conversely, from the experience of the United States in

failing to achieve any nation-wide rural electrification, the lack of educational and financial assistance from the Government has been an important reason for this failure. For example, the United States with little or no Government assistance during the 12-year period (1922-1934) was able to increase the number of electrified farms from 150,000 to about 750,000 or an increase from 2 to 12 per cent of the total American farms. This still left 88 per cent of the farms and 23 per cent of the entire population without central station electric service. France, however, during the same 12-year period embarked upon a program of rural and urban electrification involving an expenditure of about $355,000,000 which brought the service to about 90 per cent of the communities and increased electrification from less than 20 per cent to over 97 per cent of the population. The program definitely installed universal electrification on the French farms. The execution of the program was made possible by Government financial assistance. Public grants-in-aid by both the National Government and the smaller political sub-divisions consisted of about 2/3 of the investment and the balance was raised through Government loans. Moreover, it is very doubtful whether the Province of Ontario, despite its greater density of farms compared to the entire Dominion, could have achieved rural electrification for almost twice as many of its farms as the rest of Canada, had it not been for Government subsidy. Czechoslovakia also has subsidized its 1,300 cooperatives with grants amounting to from 50 to 75 per cent of construction costs and has made loans on the balance at low rates of interest. That the consideration of subsidies is bound to become a paramount importance in the future may be gauged from the opinion of Administrator M. L. Cooke of REA who believes that "some day the United States has got to come to subsidies as we

rise to higher and higher levels of percentage of electrification".

Because the farmers in the United States on the one hand, have assumed that rural electrification, which they have urgently wanted, must come from private companies, and because, on the other hand, private utilities controlling 95 per cent of the power industry have been reluctant to supply the service to the farm, no considerable progress has been made in this direction. This failure of the farmers to go out and get electricity for themselves through the only possible way open in an industry of high investment cost, namely through cooperative action, has been another factor retarding rural electrification in the United States. Ignorance regarding cooperative principles played an important part in this failure. Where the farmers realized the value of cooperatives, laws permitting their formation did not exist or the private companies opposed their formation. Where cooperatives were formed, private utility companies either controlled the sale of wholesale power and charged high wholesale rates or dominated the management to the detriment of the cooperative. Where reasonable maximum rates have been fixed by a State power commission and consumer operation proved successful, the utility companies have attempted to gain control of the association by buying members' stock at a premium. After obtaining control, the tendency has been to discontinue the less profitable secondary lines and to increase retail rates generally.

Countries like Sweden, Denmark, Switzerland and Czechoslovakia owe much to the farm cooperative associations in achieving rural electrification. Rural electrification in Sweden is accomplished almost entirely through cooperative societies made up of consumers

of electric power. These cooperatives consume a substantial volume of the State's production of electric energy. Most of the rural electric installation in Finland has been accomplished by the Electric Department of the Cooperative Wholesale of Finland. Growth of farmers' cooperatives after the World War is largely responsible for the high proportion of electrified farms in Germany.

The consumption of electricity on the farm, as elsewhere, is dependent upon the number of uses to which it could be applied. In this respect rural electrification in the U.S. has suffered from at least five shortcomings: (1) The inability of farmers to finance first costs of wiring their homes and barns; (2) their inability to purchase electrical equipment and appliances of which it is estimated there are about 300 suitable uses on farms and in farm homes; (3) the fact that about 60 per cent of the farms in the United States in 1930 had farm dwellings valued at less than $1,000 has made it impractical to connect these low valued homes; (4) the reality of forty-two per cent of our farms being tenant operated in 1930 has introduced the difficult problem of cooperation between landlords and tenants to obtain this service; and finally, (5) the absence of electrical farm equipment which could be applied to the basic agricultural functions of plowing, sowing, harvesting, and hoeing has limited the field for rural electrification in the United States.

Since the last mentioned factor militating against wide spread rural electrification is a universal one and not peculiar to the United States, it must be treated separately as a long-time factor. The problem is one of flexible transmission of electric energy which has not as yet been solved by mechanical and electrical engineers. Particularly, does this factor affect agriculture in the United States

with its emphasis on grain and fiber farming. This type of farming presents greater obstacles to the application of electricity than such types as dairying, fruit raising, poultry, and the like.

Previous Government Efforts in Rural Electrification

Besides the previous efforts at directive planning suggested in the Mississippi Valley Committee and the National Resources Board Reports, the Works Division under FERA carried on a rural electrification survey in 48 states and in many districts of these states. These surveys made under FERA auspices were primarily work relief jobs carried on without any idea of a construction follow-up.

On July 24, 1935 these surveys were stopped at the request of Rural Electrification Administrator Cooke in a letter to Jacob Baker of FERA. It was realized at that time that only a small percentage of those who wanted electricity were likely to get it under this effort. It seemed, therefore, to be unwise to continue such surveys except in selected territory.[1]

However, all the information collected in the survey was sent to the office of the Federal Emergency Relief Administration in Washington and later turned over to the Rural Electrification Administration which undoubtedly made use of it before embarking on its program.

(1) - The surveys consisted of information which came on three forms: (1) schedules drawn up by FERA; (2) supporting data of a narrative character, and (3) State reports made by FERA Administrators. The number of schedules collected and sent in from forty states has not been determined. Eight states sent in complete reports, 16 states forwarded semi-complete reports, an equal number transmitted meager reports. Eight states did not send in any at all. The following fundamental principles were followed in ascertaining which projects would eventually become eligible for construction: (1) Project feasibility from the viewpoint of an isolated or regional construction existence; (2) Relative merits of projects with energy consumption per mile and variations in construction; operation and maintenance costs as indices of the merit of feasibility; (3) Determination of sponsors and ownership of projects to the end that maximum efficiency and economy in operation and maintenance would result.

The Work of the Rural Electrification Administration

Of the $4,000,000,000 direct appropriation for the prosecution of the Works Program during the fiscal year 1935-1936 the Emergency Relief Appropriation Act of 1935 earmarked the sum of $100,000,000 for Rural Electrification. In September of that year this fund was reduced to $10,000,000 with the understanding that it would be augmented if and when the need arose. In accordance with the Act, an Executive Order dated May 11, 1935 established the Rural Electrification Administration "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". Actually, however, the REA is confining its activities to electric distribution systems rather than high voltage transmission lines and the construction of generating plants. In rare instances where there is no nearby source of power for a project, a short transmission line and sub-station or even a small generating plant may be included as part of a project. Up to date REA has not built a mile of transmission line and is not contemplating a single new generating system.

The fundamental purposes of the REA are: (1) To take, as it can, electricity in the shortest time possible to as many farms and farm houses which at present are not served by any other lines; (2) To initiate and activate sound policies upon which rural electrification may proceed in the United States. Thus, the immediate objective is to bring the economic benefits and living comforts of electricity to about 2,000,000[1] of the more than 5,000,000 farmers

(1) - The Mississippi Valley Committee estimated in 1934 that from one to three million farmers could economically be given the service.

who have heretofore been denied them. At the same time it is a start in completely electrifying rural America by giving the movement an impetus to adopt new policies and new techniques in order to enable it to proceed on its own momentum. As a farm welfare program, therefore, it aims to reduce the drudgery of farm life and increase its comforts, increase farm production and lower unit costs, and insure against farm desolation by insuring the continued occupancy of such farms.

In this effort to improve the economic and social conditions of American agriculture, REA is cognizant of its limitations. Rural electrification alone will not make for a prosperous American agriculture. The productivity of the soil, type of farming and farm products, the state of the national and international markets, supplementary sources of income, changes in population and in diet are more vital factors in successful farming. However, rural electrification has one contribution to make to American farm and rural life which once achieved will go a long way towards placing it on an equal basis with industry and urban life.

From the point of view of the Works Program, REA accomplishes two things: (1) It provides directly useful jobs to persons at present unemployed, with special emphasis on relief employables; (2) It tends to promote national recovery and reemployment by creating new and profitable business for producers of electrical and plumbing equipment and appliances. It has been estimated that 75 per cent of the money spent for rural electrification will go into industry for poles, wire, insulators, transformers, meters, and other manufactured products. It has also been estimated that for each dollar spent for the construction of lines $3.00 will be expended for house wiring and electrical appliances.

The REA is a finance organization which lends money on equal terms to private utility companies, state and local public and semi-public bodies and farm cooperatives for the purpose of constructing electric distribution lines and for the wiring of farm buildings and dwellings. Loans are made on a 20-year amortization basis at a 3 per cent rate of interest. No loans are made to public utility non-operating companies. No grants have been made, and no grants are contemplated in its program. Under suitable conditions, the REA lends the entire cost for the construction of electric power and light distribution lines in areas now without electric service. This includes service lines to the farm house usually not more than 150 feet from the main road, and the customers' meters. It does not finance projects situated in sub-marginal agricultural areas nor does it finance construction of competing lines or the rehabilitation of existing lines. No part of REA funds loaned is permitted to be spent for promotion activities or for a professional promoter. The borrowers are carefully selected with an eye to their ability to liquidate the advances. Loans are well secured. In the case of public bodies, the security provided is a lien upon the line constructed and the revenue bonds based on anticipated collection of taxes. Farm cooperatives pledge the line and its revenue. Loans to privately owned utilities are secured by the general credit of the borrower. In all cases, loans are protected against loss by a stipulation in the loan contract providing that one year's debt service is to be set aside by the borrower out of profits from the revenue of the line constructed. This is in addition to the pledge of the physical property after the line is completed.

Moreover, because there are no tangible assets at the outset, REA is exercising the utmost care in judging the self-liquidity of all projects. This is especially true of cooperatives which are building entirely new lines and not extensions to existing ones. For this reason, preliminary analysis is made of projects to obtain all pertinent data having a bearing on the cost of construction, cost of operation and maintenance, cost of power, together with all available information concerning tax rates and the economic status of the territory to be served. Investigation is made of the ability of the prospective consumers to use and pay for electricity in their homes and on the farms. In making the application for the loan, the applicant is requested to state what amount he can afford to spend each month for electric service and what additional amount he can afford to pay each month on installment payments for electric appliances. This information is checked against Census Bureau Publications and other available material concerning the economic status of the particular community, county, and state in which the project is located. This analysis is made to determine the wisdom of the loan by ascertaining what the balance between expected income and expected expenditures will be.

The REA does no building or planning of the actual construction. It, however, suggests standards and specifications and exercises such supervision and inspection of the progress of the work as may be helpful and necessary. These specifications for a type of line construction best suited for rural needs are drafted by REA engineers with the object of reducing construction costs to a minimum consistent with satisfactory performance and operation. Thus by

determining specifications and by guiding the progress of construction, REA has estimated that rural lines can be built in most localities for about $1,000 per mile on the basis of 3 customers to the mile. This will include 3 transformers, service lines from the road, and meters. Moreover, REA engineers have found that an electric distribution system which is to be owned and operated independently by a farmers' cooperative or non-profit corporation can probably not be operated on a sound financial basis unless it embraces at least 25 to 30 and preferably more miles of line to serve an average of not fewer than three customers per mile. The policy of REA tends to larger projects than this, and if an otherwise feasible project fails fully to serve an unserved area, REA will require that it be enlarged to include as much of the unserved area as is economically possible.

REA has discouraged the requirement of initial cash contributions and high minimum monthly guarantees to defray the cost of line construction. It has suggested: (1) That for an areas having between 3 and 4 customers to the mile, rural extensions should be built without customers' contributions; (2) That a customer's contract for rural service which provides for a monthly guarantee should have a definite termination period; (3) That rates be adjusted to yield annually a gross income per mile equal to 1/5 of the construction costs. Such provisions are usually incorporated in the loan agreement made between the REA and the borrower.

Although REA is not a rate regulatory body -- such regulations being more properly a function of the State Public Service Commissions -- low rates to promote consumption is one of its major considerations. In considering an application for a loan, an informa l

consideration of the rates is made. A proposed project whose rates do not seem reasonable on the basis of its financial and engineering structure does not receive a loan. REA has suggested that the minimum retail charge is not to exceed $2.50 to $3.75 per month to include 40 to 50 kilowatt hours of current.[1] Moreover, service and transformer charges as well as any demand or other fixed charges which do not include current is to be avoided. Rates and charges based on room and areas criteria are likewise not to be practiced. REA recommends a simple system of block rates to include minimum charges and varying levels of blocks (price per kilowatt hour dropping in the second and following blocks of the schedule) so that on the one hand the principles of varying costs may receive application, and, on the other hand, the recognized existance of elastic demand for electricity be given free play. According to REA standards, wholesale rates to be paid by REA financed lines are to range from less than 1 cent to 2 cents per kilowatt hour.

REA's attitude towards the private utilities as component parts in the execution of the program has been one of consideration and cooperation. On May 20, 1935, REA Administrator M. L. Cooke, requested the Committee of Utility Executives representing privately owned plants to make a national survey to ascertain the approximate extent to which further development of rural electrification may be effected promptly in cooperation with REA. This Committee submitted a report to Administrator Cooke on July 24, 1935 which proposed a program of rural electrification for 1935-1936 amounting to $238,000,000 "to serve and equip a total of 351,000 rural prospects of which 247,000" would be farmers. This survey had served as a

(1) - The average monthly bill, however, must be higher than this minimum for the project to be self-liquidating.

guide for the rural electrification program of the REA, although the latter has not adopted all of the principles upon which rested the Committee's suggested program.

The private utility companies, with minor exceptions, have reacted favorably to the REA program and its methods. In most cases private utility companies have come in voluntarily to take advantage of the easy lending terms. Others have entered the rural field because of the activities of the farm cooperative associations. Many private companies have been content to permit farm cooperatives and public bodies to construct distribution lines because they see in them an increased market to absorb their generated power. This expectation of a new market for the power generated by the private utilities is justified because of the fact that in 93 out of a 100 cases farm cooperatives are going to buy current from existing private or municipal generating plants. All construction thus far will take current from existing power generating plants, and all developments have been on the basis of using the current of private companies and other existing plants.

Although REA is extending loans on equal terms to all public and private groups which manifest a willingness to undertake to supply farmers with electricity and who demonstrate an ability to operate these lines successfully and to repay loans, special consideration is given to loan applications of public, semi-public bodies, farm cooperatives, non-profit and limited dividend corporations. This special consideration in REA's general policy of selection of loan applicants is based upon the study of forces which had operated in the past and which had adversely affected successful nation-wide introduction of electricity in farm and rural areas.

For example, large overhead and operating cost, due to a large extent to piece-meal construction, has tended to increase construction costs of private utility companies and has resulted in their charging prohibitive retail rates. Moreover, the private utilities in building lines sporadically have covered comparatively small mileages which not only contributed to high cost but led to insufficient coverage. In contradistinction to these methods, cooperatives have built large mileages in the past and are building longer lines under the REA program. Thus large scale planning and mass construction is more likely to be carried on by the cooperatives than under the initiative of private utility companies. Also, where equal mileages are involved, overhead and operating costs promise to be lower under cooperative operation and management.

Another reason why REA has been particularly concerned with electric farm consumers' cooperative associations is their economic ability to operate successfully on lower rates charged to the consumer. A study made in May 1935 of "Cooperative Consumer Associations for Rural Electrification" covering 12 cooperatives, organized in three states during the 30-year period from 1914 to 1934 which have constructed over 600 miles of line and serving over 2,000 customers, revealed rates considerably lower than those charged by the private utility corporations. Retail rates ranged from one to 4 cents per kilowatt hour for the first 100 kilowatt hours of current and declined thereafter. Only one cooperative in this group which had 24 members charged a higher rate than 4 cents. As a result of these low rates, consumption increased. The Alcorn County Cooperatives in Mississippi, for example, had reached an average of 130 kilowatt hours per month

after 18 months of operation. This was an increase of about 220 per cent. Similar increases occurred in Fortetoc County in the same State and in many other counties in the Tennessee Valley. Moreover, the cooperatives have demonstrated a financial soundness and ability to "pay-out". A group of 11 cooperatives[1] in Hamilton County, Iowa, which were formed during the period between 1919 and 1926, have during all the years of the 1929 depression maintained their lines, payed all obligations incident to their operation, have not lost one customer, and are financially sound today. These lines have 300 miles of line and serve 450 farmers. There are in all about 30 such electric cooperatives which have come into existence in the United States and have maintained themselves without Government loans or other help. This has warranted the conclusion that what these existing cooperatives have been able to do without Government help, many groups can achieve with it. On the other hand, lack of funds or hard terms on borrowed capital has been the chief reason for the failure of cooperatives. Whatever the Federal Government could do to help finance rural electric construction easily amortized over a period of years would help considerably in providing electric service, that through another medium could not be accomplished.

Also, the policies and practices of the Tennessee Valley Authority have to no small extent influenced REA in its attitude towards cooperatives. TVA which is engaging in the generation and transmission of electric energy in the Tennessee Valley is selling, for the most part, power at wholesale to municipalities and county cooperative associations. For this reason, REA has been anxious to ar-

(1) - See Rural Electrification News - March 1935 - Page 10

courage the formation of the cooperatives in the South.

Finally, public ownership of rural lines by cities or counties has not provided a solution to the problem of rural electrification. Often it has been impossible and economically unfeasible for municipally owned plants to include rural areas in a power district. In addition, areas in need of rural electrification are often not confined within the county limits in which such plants are located. Similarly, state ownership of rural lines is not easily achieved since the number of people to be served is comparatively small and their problems are of little interest to the voters of a State as a whole.

The logical outcome of these considerations for the farm and rural population unable to obtain electricity at reasonably low rates from private or public power distributing agencies, is to have the potential beneficiaries organize themselves into some form of cooperative association by which they can obtain and distribute power to themselves at rates covering all necessary cost but not loaded with a tribute of profits to extraneous stockholders or holding companies. The cooperatives offer a practical solution to the rural electrification problem; in many instances even the only feasible solution.

REA has maintained also that electricity on the farm must be used for more than lighting purposes if rural power and light projects are to be successfully established and operated. The use of electricity for lighting alone will not yield a sufficient return to warrant building a project and will not result in rural electrification. "The cost of installing the lines and house wiring is an item too large to be undertaken for the sake of a water spigot in the bathroom and a waffle iron on the table. If utilized only for its (electricity) own

comfort, the non-electrified farm would not be a prospect worthy of REA attention", remarked Administrator Cooke. For this reason, REA has certified that for a project to be economically sound and self-supporting, each household on the line, as a general rule, must have a minimum number of electrical appliances sufficient to consume about 100 kilowatt-hours per month. It has been estimated that on a basis of this monthly consumption, the farm will need about $350 worth of appliances and equipment. That this consumption is possible has been demonstrated in the Tennessee Valley where members of farm cooperative associations have reached an average residential consumption of 120 kilowatt hours per month by December 1935.

The realization that the consumption of electricity on the farm is dependent upon the number of uses and the number of appliances to which it could be applied, has led the REA to incorporate as an integral part of its program, the financing, on easy terms, the wiring of individual farm buildings and dwellings as well as the purchase of appliances, equipment, and supplied. The REA, therefore, is supplementing its financing of new power line construction by also making farmstead wiring loans. Two other Federal agencies, the Electric Home and Farm Authority and the Federal Housing Administration are financing loans for electric appliances and plumbing fixtures respectively. Finally, REA has established a Utilization Section to encourage larger and more effective use of electricity, and to educate its users to the value of a wide variety of home and farm appliances and equipment. The work of this section is to make rural America electricity conscious.

Status of Projects as of July 31, 1936

Through July 31, 1936 net allocations for the construction

of 89 rural electric distribution line projects[1] in 28 states[2] amounted to $14,960,728. The average allocation per project was equivalent to $168,098. In addition to the above total allocations the sum of $179,000 had been made for the purpose of financing the wiring of customers' premises. The distribution line projects will when completed provide 13,588 miles of line and will serve 52,629 customers.

Of these total allocations, loan contracts for distribution line construction have been executed to a total amount of $10,441,728 and one loan contract of $30,000 has been executed in the State of Ohio for financing the wiring of customers' premises.[3] The average loan made as of July 31 was $183,188, with loans ranging from $5,616 for Iowa 6 Dallas to $600,000 for Minnesota 25 McLeod. The 57 projects on which loan contracts have been executed will provide about 9,360 miles of line and when completed will serve 36,076 customers who have not previously been provided with central station power.

On July 31, there were 14 projects under construction employing 473 persons of whom 124 were of relief status. These projects involving total allocations of $3,620,076, will provide 3,321 miles of line and serve 14,622 customers.[4] As of the same date, four projects had been fully completed involving allocation of $173,616 and providing approximately 128 miles of line to serve 825 customers.[5]

(1) - See Table C - Approved Projects of the Rural Electrification Administration as of July 31, 1936.

(2) - See Table D - Status of Rural Electrification Administration Projects By States - Total Projects Approved

(3) - See Table D - Status of Rural Electrification Administration Projects By States - Projects With Loan Contracts Executed

(4) - See Table D-1 - Status of Rural Electrification Administration Projects By States - Projects Under Construction

(5) - See Table D-1 - Section on Projects Completed

On these completed projects the estimated employment involved 126,971 man-hours of labor.

In addition to these fully completed projects, work had been fully completed to energize in whole or in part lines on 12 projects involving allocations of $1,561,050 and providing a total length of 1,437 miles designed to serve 9,646 customers. The recapitulation as of July 31, 1936 is as follows:

1. Approved Projects
   a. Total number of projects -- 89
   b. Total net allocations -- $14,960,725
   c. Total number of miles -- 13,533
   d. Total number of new customers 52,629

2. Projects for which loan contracts have been executed
   a. Total number of projects -- 57
   b. Total value of the contracts $10,441,728
   c. Total number of miles -- 9,360
   d. Total number of new customers 36,076

3. Projects under construction
   a. Total number of projects -- 14
   b. Total net allocations -- $3,620,076
   c. Total number of miles -- 3,320
   d. Total number of new customers 14,622

4. Projects completed
   a. Total number of projects -- 4
   b. Total net allocations -- $173,616
   c. Total number of miles -- 128
   d. Total number of new customers 825

Because of the fact that a great proportion of the expenditure in the construction of REA projects will be on equipment, materials and supplies, the man-year cost will be considerably higher than for the average WPA project. The estimated man-year cost on all approved projects as of July 31 was found to be $2,878, while the estimated man-year cost for projects with loan contracts executed was equivalent to $2,738. Projects under construction showed an estimated man-year cost of $2,290, and for those projects completed it

equaled to $2,042.

The estimated average cost per mile for the 89 projects approved as of July 31 equaled about $1,100, with costs ranging from $338 to $3,109. These variations in costs are largely explained by the differences in local conditions of terrain, required amount of tree trimming, number of customers per mile, etc. The estimated average cost per mile for projects with loan contracts executed was equivalent to $1,118, while projects under construction showed an estimated average cost of $1,090 per mile of line. The actual average per mile cost for the four projects completed is unavailable as yet, but there are indications that the figure will be very close to $1,000.

An analysis of the distribution of projects among the 28 states indicates a positive relationship between the number and value of projects on the one hand, and the ability of the states to finance them on the other. This is, of course, in line with REA's practice of operating on a self-supporting basis and to insure self-liquidity of the project before loans are made. Outside of an individual examination of each project showing the number of customers and their ability to pay for the service on a project, the three basic criteria which can be used for determining the ability of a state to successfully finance rural electrification projects on its farms and in its rural areas, are the value of farm dwellings, other farm buildings and the average income per farm. The following picture throws some light on the economic causes motivating the geographical distribution of REA projects:

As of July 31, 1936, 53 projects representing about 60 per cent of the total number and 69 per cent of the total allocations

were located in states which had an average value for farm buildings and farm dwellings above the 1930 national averages of $2,059 and $1,126 respectively. Moreover, 59 projects representing about 67 per cent of the total number and about 73 per cent of the total allocations were located in states which had an average farm income above 1935 national average of $1,020. Even those counties, with REA projects, which were located in states falling below the national average valued of farm buildings, dwellings and income, indicate, with few exceptions, higher average values for these three items than for the states as a whole.[1] In a number of cases these county averages not only approached the national averages very closely, but were even higher. Cases in point are New Hanover county in North Carolina, Pinnelas and Orange counties in Florida and Rockingham and Prince William counties in Virginia.

In examining the logic behind the location of REA projects from another angle, it is found that the lowest 10 states in which rural electrification projects are located, on the basis of average value of farm buildings and dwellings, had 27 per cent of the projects with 23 per cent of the total allocations, while the 10 highest had 51 per cent of the projects with 64 per cent of the total allocations. Similarly, the lowest 10 states on the basis of 1935 average farm income had 31 per cent of the projects with 22 per cent of the allocations, while the 10 highest had 50 per cent of the projects with 48 per cent of the allocations.

The special consideration that the cooperatives, public bodies and other non-profit making groups have received is apparent

(1) - See Table F - Comparison of the State's 1930 Average Values of Farm Buildings, Farm Dwellings and Gross Income Falling Below the National Average, with Those of Its Counties in Which REA Projects are Located.

from the following: As of July 31, 1936, these groups were sponsoring about 85 per cent of the total number of projects and 92 per cent of the total allocations. They also receive 92 per cent of the loans. The cooperatives, taken separately, received allocations and loans amounting to over 77 per cent of the total. Moreover, the farm cooperative associations combined with the public bodies receive allocations sufficient to build about 90 per cent of the mileage to be provided under the REA program as of July 31, 1936.[1] This mileage will serve over 90 per cent of the total number of customers.

A comparison of the size of the average project sponsored by cooperatives, public bodies and private utilities reveals significant differences, which confirm the analysis made earlier in this paper regarding advantages of economy and greater coverage when rural line construction is undertaken by non-profit making groups. The average value per project sponsored by the cooperatives equaled $184,612 for an average project length of 166 miles. This is about the same as the average project value and mileage of public bodies with $180,452 and 168 miles respectively. On the other hand, privately owned utilities' projects showed an average value of only $84,683 and an average mileage of only 85. Thus, the average project sponsored by the cooperatives and public bodies was larger in terms of dollars and mileage than the average project sponsored by private utility corporations. Practically similar results are obtained when the size of the loan contract and the average project mileage are examined for each of the three sponsoring groups. As of July 31, the public sponsors received the highest average loan of $251,376 for an average project of 229

(1) - See Table 6 - Rural Electrification Projects by Sponsors

miles. The private sponsors were the recipients of the lowest average loan of $93,096 for an average project mileage of 92. The average loan to the farm cooperatives equaled $185,865 and the average size of project was 164 miles.

The Rural Electrification Act of 1936

On May 20, 1936 the President approved the Norris-Rayburn or the Rural Electrification Act of 1936 which made the Rural Electrification Administration permanent. The Act provides for the appropriation of $410,000,000 over a 10-year period beginning July 1, 1936. Thus, a long-term program was established to achieve rural electrification on a nation-wide scale to the end that a balance of urban and rural standards of industry and living be reached.

The principles enunciated by the Emergency REA are being followed by the permanent organization: (1) To supply electricity to farmers not receiving it; (2) to make no loans for the construction of competing lines; (3) to make loans only and not grants; (4) to finance parallel line construction only when it becomes absolutely necessary, and then only on condition that no current is to be taken off the line already in existence; (5) to make all electric distribution lines constructed with REA funds self-liquidating; and (6) to give preference in lending to public and semi-public bodies, cooperative associations, and other non-profit or limited dividend associations.

However, the terms and conditions of loans under the new set-up were changed so as not to exceed a maturity of 25 years, and at interest rates equivalent to an average rate of interest payable by the United States Government on those of its obligations having a maturity of 10 years or more. Moreover, no loan is to be made for the con-

struction, operation or enlargement of any generating plant", unless the consent of the state authority, having jurisdiction in the premises, is first obtained.

For a period of one year, ending June 30, 1937, the Reconstruction Finance Corporation is authorized and directed to make loans to the REA Administrator upon the latter's request provided of course that they have first received Presidential approval. The aggregate of such loans is not to exceed $50,000,000 with interest at 3 per cent amortized over a 25-year period. Reconstruction Finance Corporation loans are to be secured by the obligations of the borrowers of the Rural Electrification Administration. Although the Act does not specify the conditions of the loans made by the RFC to REA, the Reconstruction Finance Corporation, as a general rule, makes no loans exceeding 85 per cent of the amount of the collateral presented by a borrower. This arrangement will apply to the Rural Electrification Administration acting in the capacity of a borrower. Consequently, the REA will have to supply, at least in the first year, $15 from its own resources for every $100 loan that it makes. This is expected to be obtained from the approximately $15,000,000 of collateral that the Rural Electrification Administration had purchased during its emergency regime.

Beginning with the fiscal year July 1, 1938 and running through the fiscal year June 30, 1946, authorization has been given for an annual sum of $40,000,000 to be appropriated by the United States Treasury to the Rural Electrification Administration. This annual sum is to be apportioned in the two following ways: (1) Fifty per cent is to be made available or apportioned "for loans in the several states in the proportion which the number of their farms not

receiving central station electric service bears to the total number of farms of the United States not then receiving such service"; and (2) "The other 50 per cent is to be made available for loans in the several states and in the territories" in "such amounts for each state and territory as in the opinion of the Administrator may effectively be employed for the purpose of the Act", with the limitation that not more than 10 per cent of this sum may be employed in any one state or in all of the territories.

Projects financed through allocations from the Emergency Relief Appropriation Act of 1935 will be completed with those funds, while in the future, funds secured from the RFC and direct Government appropriations will be utilized on new allocations, loan contracts and operations.

Organization and Administration

The administration of the Rural Electrification Administration is completely centralized. The direction for its activities comes from Washington, and all correspondence relating to inquiries involving authorization of projects and loans is sent there. The Administration has no State or Regional offices, although it employs traveling field representatives most of whom are engineers. In the field, REA cooperates with any interested parties such as State agricultural colleges, state public utility commissions, state and county electrification authorities, farm organizations, etc. These groups usually assist farmers in taking advantage of the opportunities to achieve rural electrification in their districts.

The Rural Electrification Administration has been divided into four operating divisions, each in charge of a Director who is responsible to the Administrator, Morris L. Cooke. The Engineering

Division, under the direction of Willard E. Herring, reviews and analyzes projects, supervises construction and service operations, makes rate analyses and conducts special studies. Melvin O. Swanson is the chief engineer. The Management and Finance Division, under the direction of Perry R. Taylor, is in charge of procurement, payrolls, vouchers, auditing and accounting. The Legal Divisions, under the direction of Vincent D. Nicholson, General Counsel, studies state statutes, decisions and regulatory procedures bearing on construction projects. It drafts loan contracts, attends to legal matters arising during construction and reviews legal opinions concerning the agency's activities. The Information and Research Division under the direction of M. L. Ramsey, is in charge of information and program development, research and statistics. In addition, the Administration employs persons who act as consultants and do special assignments.

Steps Leading to an Application for a Rural Electrification Project Loan

In order to facilitate the organization of rural electrification projects, the REA has issued instructions to all organizers and sponsors of such projects. These instruction are primarily intended for organizers of projects to be owned by cooperatives or other non-profit organizations. However, they also apply to municipally and privately owned plants sponsoring rural electrification projects.

The instructions suggest several preliminary steps to be taken prior to the application for a loan. Among these are included the planning and launching of an educational campaign, a mass meeting of prospective customers and the set up of an organization to effectuate the program for a project.

If the vote at the mass meeting is feasible, a Temporary Committee[1] is suggested to be formed. The task of this body is to arrange and supervise a survey of the project areas which will supply information on the number of unserved farmers and other rural or town and village residents in the project area who will buy electricity if it is made available and the quantities they will probably consume. It will also be the duty of this Committee to supply the REA with a large consolidated map on which will be plotted data describing the physical, geographical and economic environment of the project area bearing on the feasibility of the project.

After REA has studied this material and its Engineering and Legal Divisions have ascertained the engineering feasibility, the economic soundness and the legality of the project, the sponsors are advised to apply for a loan. Upon approval of the loan application, the REA requests an allocation from the Bureau of the Budget. The President may then authorize the allocation after the Bureau of the Budget advises him by means of a treasury warrant that the funds are available. The counter-signature of the Comptroller General re-

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(1) - The Temporary Committee is to include one representative from each township, school district and all other major county subdivisions. It is to serve as the contact agency between the project and REA in the earlier stages of negotiation. The Committee or sub-committees or to be sufficiently large to visit all the prospective customers in each township, school district, etc. Members of these committees are to be furnished Project Survey Blanks in a form suggested by REA as well as maps of the area covered by them on which to jot down data for a large consolidated map to be eventually drawn up. Every prospective customer will be asked to fill out and sign the Project Survey Blank as an indication of his intention to join in the project and take electricity when available. The Blanks, among other questions, will carry queries asking the prospective customers to promise to grant rights of way and easements. Additional items reported by the Temporary Committee to REA will be as follows: (a) total number of miles

leasing the funds is usually followed by the execution of the loan contract between the borrower and REA.

Finally, both the signed and unsigned Project Survey Blanks together with the data collected, to be used for making the consolidated REA map as well as the extra plotted map of each town or village are to be turned over to the REA. After the loan contract has been executed, the borrower is ready to enter into a construction contract which is consummated only after a prior examination of it has been made and approved by the Rural Electrification Administration. Subsequent to the making of the construction contract, the United States Treasury places specified sums, which are usually portions of the loan, in local banks acting as depositories. Each requisition subsequent to the first will be made after information on the physical progress and financial status is submitted to REA. When the borrower is ready to proceed with construction, he notifies the REA in Washington, D. C., which in turn informs the Treasury and the local banks to meet payments at the request of the borrower.

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(1) (continued from preceding page)
in the proposed project; (b) total number of signed customers; (c) number of these signed customers who can be served from the proposed lines drawn on the map; (d) the total number of unsigned probable customers; (e) the number of these unsigned probable customers who could be served from the proposed lines shown on the map; (f) the rate of state and county taxes which would have to be paid on the proposed lines; and (g) all possible sources of supply of wholesale energy including joint municipal plants and private power companies.

The large consolidated REA map will be plotted to show the following information: (a) a county name; (b) county subdivisions (townships, school districts, section, etc.); (c) highways; (d) railroads; (e) streams; (f) farm and other rural residences; schools, churches, filling-stations, industries, store and garages; (g) names of towns and villages; (h) point of connection with source of power; (i) existing power lines; (j) proposed lines; (k) "ground return" telephone lines where they parallel proposed lines; (l) points of compass; (m) scale of miles; (n) location of each signed customer.

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(1) [illegible]

Chief Provisions in the Loan Agreement

For each project the REA Administrator is given exclusive authority to approve and to execute with the borrowing agency a loan contract in which "REA agrees to lend not greater than the sum or "sums" approved for the project. The execution of a loan contract is conditioned upon several factors which are incorporated in the loan agreement; (a) The borrower agrees to construct or cause the project to be constructed in accordance with specifications determined or approved by REA; (b) the REA Administrator is to determine and authorize the borrowing agency as to the method for the prosecution of work - that is, either on force account or under contract with or without competitive bids; (c) bids for contract work must be advertised and awarded to the lowest bidder; (d) the contractor is to perform directly and without sub-contrading not less than 25 per cent of the construction calculated on the basis of the total contract price; (e) all construction contracts for work to be done and entered into by the borrowing agency with contractors and sub-contractors must conform to specifications approved by REA; (f) REA reserves the right to supervise the performance of the construction, and the right to inspect all work and materials; (g) all construction contracts and sub-contracts shall contain such provisions as the REA Administrator may determine for effectuating the purposes

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(1) -- (Continued from preceding pages)
To the above REA map should be attached an extra plotted map of each town or village showing the town streets along which the proposed line would run, and the location of each residence or other building occupied by a signed customer or an unsigned prospect. The approximate population of each town and village should also be stated.

of the Emergency Relief Appropriation Act of 1935 and the applicable provisions of the Executive Orders, Rule and Regulations issued thereunder, and the Administrative policies of the WPA; (h) not less than 25 per cent of the total amount made available from Federal funds is to be expended in payment of wages for labor employed on the site of the project; (i) borrower not to take any steps for re-organization, consolidations or merger into any other corporation, or to sell, lease, transfer, mortgage or pledge the property without written consent of WPA.

TABLE A

Central-Station Customers in 1935
By Regions and States

Region and State	Total Number	Farms Served	Percent that farm customers are of total customers
UNITED STATES	25,341,203	793,977	3.13
NEW ENGLAND	2,269,343	61,547	2.71
Maine	196,111	14,346	7.32
New Hampshire	128,672	11,367	8.83
Vermont	80,787	8,084	10.01
Massachusetts	1,206,023	14,430	1.20
Rhode Island	190,018	1,980	1.04
Connecticut	467,731	11,350	2.43
MIDDLE ATLANTIC	7,249,625	128,070	1.77
New York	3,895,016	64,900	1.67
New Jersey	1,205,923	15,800	1.31
Pennsylvania	2,158,687	47,370	2.19
EAST NORTH CENTRAL	5,946,833	196,624	3.31
Ohio	1,680,252	53,100	3.36
Indiana	701,089	25,178	3.59
Illinois	1,869,389	30,877	1.65
Michigan	1,131,446	46,490	4.11
Wisconsin	664,547	40,979	6.17
WEST NORTH CENTRAL	2,413,404	99,036	4.10
Minnesota	499,511	13,947	2.79
Iowa	469,236	33,570	7.15
Missouri	692,702	22,340	3.23
North Dakota	72,179	2,132	2.94
South Dakota	86,328	2,940	3.40
Nebraska	241,460	9,854	4.08
Kansas	351,988	14,252	4.05
SOUTH ATLANTIC	1,960,532	58,558	2.99
Delaware	51,189	2,270	4.43
Maryland	353,064	7,095	2.01
District of Columbia	145,307	63	0.04
Virginia	287,013	15,995	5.57
West Virginia	214,694	4,335	2.02
North Carolina	278,344	10,245	3.68
South Carolina	117,777	3,906	3.32
Georgia	241,017	8,416	3.49
Florida	271,927	6,233	2.29
EAST SOUTH CENTRAL	856,160	33,352	3.90
Kentucky	289,862	8,995	3.10
Tennessee	257,562	11,871	4.44
Alabama	196,929	9,968	5.06
Mississippi	101,807	2,518	2.47

TABLE A
(Continued)

Region and State	Total Number	Farms Served	Percent that farm customers are of total customers
WEST NORTH CENTRAL	1,286,390	24,694	1.92
Arkansas	122,503	3,563	2.90
Louisiana	220,913	3,203	1.45
Oklahoma	232,805	5,848	2.07
Texas	730,078	12,080	1.65
MOUNTAIN	663,345	50,694	7.64
Montana	93,795	2,891	3.08
Idaho	85,490	14,790	17.30
Wyoming	32,882	574	1.75
Colorado	208,031	7,319	3.52
New Mexico	38,618	1,374	3.56
Arizona	74,394	6,133	8.24
Utah	113,415	16,576	14.62
Nevada	16,600	947	5.09
PACIFIC	2,626,673	141,403	5.39
Washington	438,336	42,387	9.66
Oregon	246,456	18,366	7.45
California	1,940,809	80,748	4.16

Source: "Electrical World" - January 4, 1936 - Page 64

GROWTH IN FARM ELECTRIFICATION

(Figures on electrified farms do not include those with individual lighting plants)

Year	Total number of farms	Electrified farms (Dec. 31)	Per Cent of Total
1900	5,737,372		
1910	6,361,502	(Data Not Available)	
1920	6,448,343		
1921	. . . . .		
1922	. . . . .		
1923	. . . . .	177,561	2.8*
1924	. . . . .	204,720	3.2*
1925	6,371,640	246,150	3.9
1926	. . . . .	309,126	4.9*
1927	. . . . .	393,221	6.2*
1928	. . . . .	506,342	8.0*
1929	. . . . .	576,163	9.2*
1930	6,288,648	649,019	10.4
1931	. . . . .	698,785	11.1*
1932	. . . . .	705,075	11.3*
1933	. . . . .	713,588	11.4*
1934	. . . . .	743,554	11.6*
1935	6,812,350	793,977	11.7

* - Percentage estimates since the Bureau of the Census reports total number of U.S. farms only every five years.

Source: Electrical World - January 4, 1936 - Page 62

TABLE C

NUMBER OF FARM SERVICE CUSTOMERS
BY REGIONS

1930-35

(As Of December 31)

Region	1935	1934	1933	1932	1931	1930
United States	793,977	743,954	713,558	705,075	698,786	649,919
New England	61,547	58,006	55,725	52,923	52,237	48,996
Middle Atlantic	128,070	118,169	109,001	106,759	104,911	96,342
East North Central	196,624	181,261	172,467	170,421	166,893	151,113
West North Central	99,035	91,398	89,460	89,652	89,717	82,283
South Atlantic	58,558	53,307	50,558	49,080	47,958	42,539
East South Central	33,352	32,062	30,311	31,947	31,513	29,949
West South Central	24,694	22,883	22,371	22,653	22,170	21,438
Mountain	50,694	47,876	46,516	45,026	44,308	42,536
Pacific	141,403	138,992	137,149	136,614	139,079	134,723

Source: "Electrical World" - January 4, 1936 - Page 62

TABLE 3

RURAL ELECTRIFICATION

Number of farms and farms served by electric central stations in the United States, by states

	Number of farms Jan. 1, 1935 1/	Rank	Number of farms served Dec. 31, 1934 2/	Rank	Percent of farms served	Rank
UNITED STATES	6,812,350	----	743,984	----	11.0	----
Alabama	273,455	7	11,055	22	4.0	33
Arizona	18,824	45	6,977	35	39.6	13
Arkansas	253,013	9	3,943	38	1.5	47
California	150,360	24	81,093	1	53.9	1
Colorado	63,644	33	7,148	30	11.2	25
Connecticut	32,157	39	10,138	23	31.6	10
Delaware	10,381	46	1,791	43	17.3	20
Florida	72,807	30	5,700	33	7.8	26
Georgia	250,544	10	6,963	31	2.8	41
Idaho	45,113	34	13,433	19	29.8	11
Illinois	231,312	11	28,379	9	12.3	23
Indiana	200,835	15	23,476	10	11.7	24
Iowa	221,956	12	32,047	8	14.4	22
Kansas	174,569	21	13,234	20	7.6	28
Kentucky	278,293	5	8,480	28	3.0	39
Louisiana	170,216	22	2,936	40	1.7	46
Maine	41,907	36	13,959	17	33.3	8
Maryland	44,412	35	6,726	32	15.1	21
Massachusetts	35,094	38	14,494	16	41.3	7
Michigan	196,517	18	42,152	5	21.4	17
Minnesota	205,392	14	15,715	18	7.6	29
Mississippi	311,583	2	2,903	41	0.9	48
Missouri	278,454	4	17,993	11	6.4	31
Montana	50,564	33	3,768	42	7.5	32
Nebraska	133,616	25	9,544	26	7.1	29
Nevada	3,695	48	946	47	25.6	15
New Hampshire	17,696	44	9,498	27	53.7	2
New Jersey	39,375	41	18,152	14	51.6	4
New Mexico	41,369	37	1,380	46	3.3	37
New York	177,025	20	57,826	3	32.7	9
North Carolina	330,967	3	9,672	25	2.9	38
North Dakota	84,606	27	1,988	44	2.3	43
Ohio	255,146	8	48,048	3	18.8	19
Oklahoma	213,325	13	5,649	34	2.6	42
Oregon	64,825	31	17,989	12	27.5	14
Pennsylvania	191,284	19	46,182	4	25.6	16
Rhode Island	4,327	47	1,979	43	45.6	6
South Carolina	166,504	26	5,795	36	3.3	44
South Dakota	83,303	29	2,930	39	3.5	35
Tennessee	275,785	6	9,727	24	3.6	34
Texas	501,017	1	11,466	21	2.3	45
Utah	30,695	40	16,130	13	52.5	3
Vermont	27,061	42	7,945	29	29.4	13
Virginia	197,632	17	14,954	15	7.6	27
Washington	84,381	28	40,040	6	47.5	5
West Virginia	104,747	26	3,647	37	3.5	36
Wisconsin	199,877	16	39,306	7	19.6	18
Wyoming	17,497	45	887	48	5.0	40

Sources: 1/ 1935 Census of Agriculture; 2/ E.E.I. Statistical Bulletin No. 2 - P. 38

TABLE 6

STATUS OF RURAL ELECTRIFICATION ADMINISTRATION PROJECTS BY STATES

Projects approved and projects with loan contracts executed as of July 31, 1936

(Compiled by the Works Progress Administration)

State	Total projects approved A/				Projects with loan contracts executed A/			
	No. of projects	Allocations	Miles of line provided	Customers served	No. of projects	Allocations	Miles of line provided	Customers served
TOTAL	90	$14,960,728 B/	13,588.0	52,629	57	$10,441,728	9,360.5	36,076
Alabama	1	65,000	58.4	267	1	65,000	58.4	267
Arkansas	2	43,900	48.0	322	-	-	-	-
Colorado	1	105,000	104.0	427	-	-	-	-
Florida	2	213,000	244.1	696	1	164,500	184.6	455
Georgia	7	773,500	725.9	4,148	7	525,600	483.0	2,499
Idaho	2	89,750	75.0	320	2	89,750	75.0	320
Illinois	3	183,500	207.0	649	2	141,500	167.0	484
Indiana	4	781,526	797.0	3,060	3	764,426	782.0	2,979
Iowa	10	825,416	804.8	2,681	4	500,616	482.6	1,623
Kansas	1	65,000	60.0	241	-	-	-	-
Kentucky	2	261,700	191.7	1,424	1	71,700	38.7	291
Maryland	1	90,000	68.0	492	-	-	-	-
Minnesota	7	1,461,000	1,379.2	4,717	6	1,291,000	1,196.2	4,275
Mississippi	1	81,000	55.3	361	1	81,000	55.3	361
Montana	1	130,000	110.0	447	-	-	-	-
Nebraska	7	2,138,900	1,951.1	5,036	5	1,576,000	1,397.7	3,799
North Carolina	4	645,250	587.4	3,356	4	415,250	357.1	2,217
North Dakota	1	96,000	51.0	265	-	-	-	-
Ohio	7	2,484,300	1,881.0	7,631	6	2,171,000	1,711.0	6,850
Oklahoma	2	130,000	166.0	515	1	70,000	61.0	315
Pennsylvania	1	400,000	375.0	1,343	1	101,000	67.0	250
South Carolina	3	648,328	623.0	3,548	3	648,328	623.0	2,548
South Dakota	1	77,000	67.0	320	-	-	-	-
Tennessee	3	260,258	252.1	1,547	2	250,258	239.9	1,600
Texas	2	483,000	350.1	1,366	2	485,000	330.0	1,422
Virginia	4	646,800	646.4	2,743	1	266,800	405.0	1,511
Washington	2	70,400	81.0	401	-	-	-	-
Wisconsin	8	1,766,600	1,648.5	5,246	3	644,000	625.0	2,010

A/ In addition to the projects listed the sum of $179,000 has been allocated for the financing of wiring of customers' premises. Of this sum one loan contract in the amount of $30,000 has been executed in Ohio.

B/ Excludes $1,650,680 rescinded on Presidential Letter No. 1795, dated July 27, 1936, but not acted upon by Comptroller General as of July 31, 1936. Rescinded projects to be prosecuted with RFC Funds.

TABLE V

STATUS OF RURAL ELECTRIFICATION ADMINISTRATION PROJECTS BY STATES

Projects under construction and projects completed as of July 31, 1936

(Compiled(by the Works Progress Administration)

State	Projects Under Construction				Projects Completed			
	No. of projects	Allocations	Miles of line provided	Customers served	No. of projects	Allocations	Miles of line provided	Customers served
TOTAL	14	$3,620,076	3,320.2	14,622	4	$173,616	127.9	825
Florida	1	164,500	184.6	455	-	-	-	-
Georgia	1	109,200	99.1	663	-	-	-	-
Idaho	-	-	-	-	1	54,000	40.0	248
Illinois	1	81,500	98.0	300	-	-	-	-
Indiana	1	567,926	597.0	2,200	-	-	-	-
Iowa	-	-	-	-	1	5,616	2.6	50
Kentucky	1	71,700	58.7	291	-	-	-	-
Mississippi	-	-	-	-	1	81,000	55.3	361
North Carolina	1	142,250	128.5	1,000	-	-	-	-
Ohio	4	1,424,000	1,118.0	4,430	-	-	-	-
Oklahoma	1	70,000	81.0	315	-	-	-	-
South Carolina	1	530,000	500.7	2,128	-	-	-	-
Tennessee	1	92,200	78.6	1,279	-	-	-	-
Texas	-	-	-	-	1	33,000	30.0	166
Virginia	1	366,800	406.0	1,511	-	-	-	-

TABLE G

VALUES OF FARM BUILDINGS AND DWELLINGS AND GROSS CASH INCOME FROM FARM PRODUCTION* OF STATES IN WHICH REA PROJECTS ARE LOCATED

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	SPECIFIED FARM PROPERTY VALUES (1930)				CASH INCOME (1935)			REA ACTION	
STATE	A/ AVERAGE VALUE OF FARM BUILDINGS (DOLLARS)	B/ RANK	AVERAGE VALUE OF FARM DWELLINGS (DOLLARS)	B/ RANK	AVERAGE INCOME PER FARM (DOLLARS)	B/ RANK	NUMBER OF PROJECTS	ALLOCATIONS (AS OF JULY 31) (DOLLARS)	B/ RANK
UNITED STATES	2,059	---	1,126	---	1,020	---	89	14,960,728	---
ALABAMA	576	27	408	26	381	28	1	65,000	25
ARKANSAS	677	26	391	27	446	25	2	43,900	26
COLORADO	1,975	14	1,074	16	1,673	5	1	105,000	18
FLORIDA	1,195	18	807	18	1,224	13	2	213,000	15
GEORGIA	714	25	483	25	509	23	7	773,200	7
IDAHO	1,848	16	1,117	15	1,857	3	2	89,750	21
ILLINOIS	3,641	6	1,803	5	1,571	6	3	183,500	16
INDIANA	2,516	11	1,358	11	1,229	12	4	781,526	6
IOWA	4,827	1	2,212	1	2,103	1	10	825,416	5
KANSAS	2,329	13	1,271	13	1,520	8	1	65,000	25
KENTUCKY	1,122	19	664	20	479	24	2	261,700	13
MARYLAND	3,651	5	2,051	2	1,313	10	1	90,000	20
MINNESOTA	4,623	2	1,704	7	1,375	9	7	1,461,000	4
MISSISSIPPI	504	28	377	28	424	26	1	81,000	22
MONTANA	1,783	17	910	17	1,936	2	1	130,000	17
NEBRASKA	3,449	7	1,719	6	1,696	4	7	2,136,900	2
NORTH CAROLINA	987	22	653	21	681	20	4	645,250	10
NORTH DAKOTA	2,964	9	1,408	10	1,219	14	1	96,000	19
OHIO	3,013	8	1,619	8	1,028	17	7	2,424,200	1
OKLAHOMA	1,037	21	620	22	801	19	2	130,000	17
PENNSYLVANIA	3,905	4	2,038	3	1,107	16	1	400,000	12
SOUTH CAROLINA	754	24	519	24	556	21	3	648,328	8
SOUTH DAKOTA	2,596	10	1,432	9	1,138	15	1	77,000	23

TABLE 8 (CONTINUED)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
TENNESSEE	926	23	602	23	385	27	2	260,000	14
TEXAS	1,079	20	708	19	883	18	2	488,000	11
VIRGINIA	1,887	15	1,226	14	530	22	4	646,800	9
WASHINGTON	2,231	12	1,318	12	1,562	7	2	70,400	24
WISCONSIN	4,104	3	1,888	4	1,257	11	8	1,766,600	3

* RECEIPTS FROM SALE OF PRINCIPAL FARM PRODUCTS PLUS RENTAL AND BENEFIT PAYMENTS FROM A.A.A.

A/ INCLUDES FARM DWELLINGS

B/ RANK DESIGNATED IS THE RANK AMONG THE 28 STATES IN WHICH REA PROJECTS ARE LOCATED.

SOURCES: U.S. CENSUS OF AGRICULTURE 1930;
U.S. CENSUS OF AGRICULTURE 1935

TABLE H

Comparison of the State's 1930 Average Values of Farm Buildings, Farm Dwellings, and Gross Income falling Below the National Average, With Those of its Counties in which NHA Projects are Located.

State and County	Average value of farm buildings per farm (dollars)	Average value of farm dwellings per farm (dollars)	* Average gross income per farm (dollars)
	Only for those States in which projects are located in two or more counties of that State		
UNITED STATES	2,059	1,126	1,335
Arkansas	576	408	936
1. Craighead	741	465	1,508
2. Izard	516	359	764
Georgia	714	483	1,011
1. Crisp	790	515	1,262
2. Lowndes	844	552	1,362
3. Wilkes	578	419	666
4. Catoosa	883	612	946
5. Toombs	550	373	1,230
6. Troup	930	666	995
7. Newton	726	527	893
North Carolina	967	653	1,040
1. Wilson	946	594	1,394
2. New Hanover	2,339	1,624	3,544
3. Johnston	974	682	1,304
4. Edgecomb	1,018	623	1,673
Oklahoma	1,037	620	1,615
1. Oklahoma	1,295	1,051	1,706
2. Comanche	1,159	694	1,853
South Carolina	754	519	935
1. Richland	955	601	779
2. Calhoun	550	385	856
3. Greenwood	807	555	719
Tennessee	926	602	945
1. Meigs	895	484	1,203
2. Rhea	972	635	1,176
Florida	1,195	807	1,696
1. Pinellas	2,453	1,696	4,059
2. Orange	2,527	1,783	2,323
Virginia	1,887	1,226	1,252
1. Caroline	1,486	1,011	838
2. Rockingham	3,829	2,076	1,809
3. Prince William	3,610	2,090	1,918
4. Lancaster	1,258	944	691

* Value of farm products sold, traded or used by operator's family plus receipts from boarders, etc.

Source: Computed by the Works Progress Administration from the 1930 Census of Agriculture.

TABLE I

RURAL ELECTRIFICATION PROJECTS BY SPONSORS

ALL APPROVED PROJECTS

CHARACTER OF THE APPLICANT OR BORROWER	TOTAL NUMBER OF PROJECTS	PER CENT OF TOTAL	VALUE OF PROJECTS (DOLLARS)	PER CENT OF TOTAL VALUE	AVERAGE VALUE PER PROJECT (DOLLARS)	MILES OF LINE PROVIDED	PER CENT OF TOTAL MILEAGE	AVERAGE MILEAGE PER PROJECT	NUMBER OF CUSTOMERS ON PROJECTS	PER CENT OF TOTAL CUSTOMERS	AVERAGE NUMBER OF CUSTOMERS PER PROJECT
PRIVATELY OWNED UTILITIES	14	16	1,195,585	8	84,683	1,108	10	85	5,000	9	357
PUBLIC OR SEMI-PUBLIC BODIES	17	20	3,057,586	21	180,452	2,859	20	168	8,828	17	519
FARM CO-OPERATIVE ASSOCIATIONS AND OTHER NON-PROFIT MAKING BODIES	58	64	10,707,475	71	184,612	9,341	70	165	38,801	74	669
TOTAL * ALL PROJECTS	89	100	14,960,728	100	168,099	13,308	100	153	52,629	100	592

SOURCE: COMPUTED BY THE WORKS PROGRESS ADMINISTRATION

TABLE 1 (CONTINUED)

RURAL ELECTRIFICATION PROJECTS BY SPONSORS

PROJECTS WITH LOAN CONTRACTS EXECUTED

CHARACTER OF THE BORROWER	TOTAL NUMBER OF PROJECTS	PER CENT OF TOTAL	VALUE OF LOANS (DOLLARS)	PER CENT OF TOTAL LOANS	AVERAGE LOAN PER PROJECTS (DOLLARS)	MILES OF LINE PROJECTED	PER CENT OF TOTAL MILEAGE	AVERAGE MILEAGE PER PROJECT	NUMBER OF CUSTOMERS ON PROJECTS	PER CENT OF TOTAL CUSTOMERS	AVERAGE NUMBER OF CUSTOMERS PER PROJECT
PRIVATELY OWNED UTILITIES	8	14	744,755	8	93,094	732	8	92	1,374	8	172
PUBLIC OR GOVERNMENT-OWNED PUBLIC BODIES	9	16	2,222,398	21	251,378	2,050	22	229	6,662	18	740
FARM COOPERATIVE ASSOCIATIONS AND OTHER NON-PROFIT MAKING BODIES	40	70	7,434,575	71	185,865	6,568	70	164	28,140	73	654
TOTAL - ALL PROJECTS	57	100	10,441,728	100	183,190	9,348	100	164	36,076	100	633

SOURCE: COMPUTED BY THE FARMS PROGRESS ADMINISTRATION

TABLE J

APPROVED PROJECTS OF THE RURAL ELECTRIFICATION ADMINISTRATION
AS OF JULY 31, 1936

(1) Name of Project	(2) O.P. Number	(3) No. of Miles	(4) Preliminary Estimated Cost	(5) Estimated Cost Per Mile	(6) Estimated Man-Years of Employment	(7) Estimated Man-Year Cost	(8) No. of New Rural Customers Line Will Serve	(9) Character of the Applicant or Borrower	(10) Status of Project (As of July 31, 1936)
1) Alabama 9 Clarke-Washington	57-42	58.4	$ 55,900	$ 1,113	33.3	$ 1,962	267	Cooperative	Loan contract executed 5/5/36
2) Arkansas 1A Craighead	57-126	16.	5,400	338	3.3	1,010	74	Private Corporation	No further action
3) Arkansas 3 Izard	57-151	32.	38,500	1,203	13.0	2,962	248	Cooperative	No further action
4) Colorado 7 Mesa	57-172	104.	168,000	1,010	37.8	2,778	427	Cooperative	No further action
5) Florida 7 Pinellas	57-50	154.6	194,500	891	61.3	2,684	455	Private Corporation	Loan contract executed 1/13/36 Date work started 3/23/36
6) Florida 12 Orange	57-132	59.48	48,900	819	22.1	2,195	241	Private Corporation	No further action
7) Georgia 2 Crisp	57-8	60.	60,000	1,900	25.1	2,390.4	200	Cooperative	Loan contract executed for only $50,000 on 5/12/36

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
8) Georgia 19 Lowndes	57-49	99.1	100,200	1,102	33.0	3,300	663	Private Corporation	Loan contract executed 1/24/36 Date work started 4/10/36
9) Georgia 6 Tilrea	57-53	11.2	12,000	1,071	5.7	2,105	53	Cooperative	Loan contract executed 2/14/36
10) Georgia 7 Catoosa	57-127	353.9	375,000	1,060	130.8	2,867	2,074	Cooperative	Loan contract executed for only $157,400 on 6/25/36. This project combined with Ga. 72 Catoosa and Ga. 70 Catoosa.
11) Georgia 42 Toombs	57-129	20.	23,000	1,050	10.8	3,153	205	Cooperative	Loan contract executed 7/9/36
12) Georgia 20 Troup	57-135	76.7	74,000	965	25.7	2,879	400	Cooperative	Loan contract executed 7/23/36
13) Georgia 57 Newton	57-136	75.	90,000	1,200	24.7	3,644	550	Cooperative	Loan contract executed 7/23/36
14) Idaho 4 Bonner	57-14	40.	54,000	1,350	23.5	2,118	248	Cooperative	Loan contract executed 12/13/35 Work started 3/21/36; work completed and line energized 7/11/3

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
15) IDAHO 6 BONNER	57-53	35.	37,750	1,021	16.3	2,133	72	COOPERATIVE	LOAN CONTRACT EXECUTED 12/13/35
16) ILLINOIS 4 PEORIA	57-34	95.	91,300	632	38.4	2,122	300	PRIVATE CORPORATION	LOAN CONTRACT EXECUTED 12/1[illegible]/35; WORK STARTED DURING WEEK ENDING 5/[illegible]/36
17) ILLINOIS 9 ST. CLAIR	57-123	40.	42,000	1,050	14.7	2,857	105	PUBLIC AGENCY	NO FURTHER ACTION
18) ILLINOIS 7 HENRY	57-103	69.	69,000	999	19.9	3,173	194	COOPERATIVE	LOAN CONTRACT EXECUTED 7/29/35
19) INDIANA 5 ROANE	57-3	387.	357,325	923	209.2	1,[illegible]	2,200	COOPERATIVE	LOAN CONTRACT EXECUTED 11/4/35; WORK STARTED 1/7/36
20) INDIANA 2 BELLS	57-23	15.	17,100	1,140	4.7	3,[illegible]	81	PUBLIC AGENCY	NO FURTHER ACTION
21) INDIANA 7 WHITLEY	57-137	60.	54,[illegible]	1,000	20.0	3,[illegible]	202	COOPERATIVE	LOAN CONTRACT EXECUTED 7/9/35
22) INDIANA 14 SHELBY	57-139	115.	112,500	978	37.1	3,032	517	COOPERATIVE	LOAN CONTRACT EXECUTED 7/31/35
23) IOWA 2 LUCAS	57-119	150.	127,[illegible]	850	44.4	2,[illegible]	332	PUBLIC AGENCY	NO FURTHER ACTION

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
24) Iowa 6 DALLAS	57-26	2.59	5,616	2,168	1.2	4,660	50	PRIVATE CORPORATION	LOAN CONTRACT EXECUTED WEEK ENDING 11/4/35; WORK STARTED 11/16/35; WORK COMPLETED AND LINE ENERGIZED 12/15/35
25) Iowa 9 SCOTT	57-55	260.6	260,000	996	79.3	3,279	900	COOPERATIVE	JOINT LOAN CONTRACT EXECUTED FOR THIS PROJECT AND FOR Iowa 29 MUSCATINE ON 7/28/36
26) Iowa 29 MUSCATINE	57-160	69.2	70,000	1,012	20.7	3,382	200	COOPERATIVE	SEE Iowa 9 SCOTT
27) Iowa 11 WEBSTER	57-120	26.	26,000	1,000	22.5	1,156	76	PUBLIC AGENCY	NO FURTHER ACTION
28) Iowa 18 WRIGHT	57-115	40.	45,000	1,125	13.3	3,363	118	COOPERATIVE	LOAN CONTRACT EXECUTED 6/12/36
29) Iowa 19 ADAMS	57-121	110.	120,000	1,091	36.4	3,297	355	COOPERATIVE	LOAN CONTRACT EXECUTED 6/4/36
30) Iowa 20 BREMER	57-122	79.3	79,300	1,000	26.3	3,015	254	PUBLIC AGENCY	NO FURTHER ACTION
31) Iowa 12 IOWA	57-139	11.9	37,000	3,109	6.3	5,873	246	COOPERATIVE	NO FURTHER ACTION
32) Iowa 5 CARROLL	57-171	55.	55,000	1,000	16.4	3,354	160	PUBLIC AGENCY	NO FURTHER ACTION

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
33) KANSAS 2 ALLEN	57-151	60.	65,000	1,083	17.9	3,439	241	COOPERATIVE	NO FURTHER ACTION
34) KENTUCKY 1 JEFFERSON	57-37	36.7	71,700	1,953	19.9	3,603	291	PRIVATE CORPORATION	LOAN CONTRACT EXECUTED 12/13/35 WORK STARTED DURING WEEK ENDING 6/12/36
35) KENTUCKY 14 HENDERSON	57-129	153.	190,000	1,241	66.1	2,874	1,193	COOPERATIVE	NO FURTHER ACTION
36) MARYLAND 2 CALVERT	57-174	68.	90,000	1,324	22.1	4,072	492	COOPERATIVE	NO FURTHER ACTION
37) MINNESOTA 5 AITKIN	57-39	100.	100,000	1,000	32.3	1,388	309	PRIVATE CORPORATION	LOAN CONTRACT EXECUTED 2/5/36
38) MINNESOTA 3 MEEKER	57-109	420.	450,000	1,071	112.0	4,018	1,490	COOPERATIVE	LOAN CONTRACT EXECUTED 5/12/36
39) MINNESOTA 25 POLK	57-118	526.	600,000	1,140	210.	2,857	2,074	COOPERATIVE	LOAN CONTRACT EXECUTED 7/1/36
40) MINNESOTA 4 LAKE	57-141	60.	60,000	1,000	19.3	3,109	283	COOPERATIVE	LOAN CONTRACT EXECUTED 6/17/36
41) MINNESOTA 13 DOUGLAS	57-134	50.	50,000	1,000	17.5	2,857	133	COOPERATIVE	LOAN CONTRACT EXECUTED 7/1/36
42) MINNESOTA 15 FARIBAULT	57-31	33.25	30,000	902	10.5	1,702.7	95	COOPERATIVE	JOINT LOAN CONTRACT COVERING THIS PROJECT AND MINN. 158 FARIBAULT EXECUTED 7/9/36

WEEKS 3

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
43) MINNESOTA 37 JACKSON	57-176	190.	171,000	900	57.	3,000	442	COOPERATIVE	NO FURTHER ACTION
44) MISSISSIPPI 1 MONROE	57-19	55.3	81,000	1,465	40.8	1,985	361	COOPERATIVE	LOAN CONTRACT EXECUTED 11/6/35; WORK STARTED AND COMPLETED ON FORCE ACCOUNT ON A 3 MILE SECTION DURING WEEK ENDING 1/17/36, THE BALANCE OF THE PROJECT STARTED UNDER CONTRACT DURING WEEK ENDING 4/3/36.
45) MONTANA 9 YELLOWSTONE	57-162	110.	130,000	1,182	40.7	3,194	447	COOPERATIVE	NO FURTHER ACTION
46) NEBRASKA 1 SCOTTS BLUFF	57-21	226.5	310,000	1,369	162.6	1,907	839	PUBLIC AGENCY	LOAN CONTRACT EXECUTED 11/4/35
47) NEBRASKA 2 SCOTTS BLUFF	57-23	47.2	65,000	1,377	33.1	1,964	143	PUBLIC AGENCY	LOAN CONTRACT EXECUTED 11/4/35
48) NEBRASKA 7 GAGE	57-57	450.	440,000	978	150.7	2,920	1,117	PUBLIC AGENCY	LOAN CONTRACT EXECUTED 12/6/35
49) NEBRASKA 24 LANCASTER	57-22	354.	396,000	1,119	122.0	3,246	900	PUBLIC AGENCY	LOAN CONTRACT EXECUTED 5/8/36
50) NEBRASKA 44 CASS	57-125	320.	365,000	1,141	107.0	3,411	900	PUBLIC AGENCY	LOAN CONTRACT EXECUTED 5/20/36
51) NEBRASKA 26 PLATTE	57-124	354.3	391,000	1,104	105.0	3,724	815	PUBLIC AGENCY	NO FURTHER ACTION
52) NEBRASKA 52 PLATTE	57-177	179.1	171,900	960	48.1	3,574	422	PRIVATE CORPORATION	NO FURTHER ACTION

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
53) N. CAROLINA 3 WILSON	37-35	120.	161,000	1,292	47.1	3,418	650	COOPERATIVE	LOAN CONTRACT EXECUTED 6/2/36
54) N. CAROLINA 9A HANOVER	37-31	130.5	142,250	1,107	49.3	2,885	1,000	PRIVATE CORPORATION	LOAN CONTRACT EXECUTED 3/12/36; WORK STARTED DURING WEEK ENDING 5/15/36; SUSPENDED BECAUSE OF FIRE DURING WEEK ENDING 6/27/36, AND RESUMED WORK 7/12/36
55) N. CAROLINA 13 JOHNSTON	37-165	222.3	310,000	1,049	108.6	2,855	1,000	COOPERATIVE	LOAN CONTRACT FOR ONLY 65 MILES EXECUTED 6/29/36; THIS PROJECT A CONSOLIDATE NORTH CAROLINA 13A JOHNSTON & N. CAROLINA 15? JOHNSTON
56) N. CAROLINA 16 EDGECOMB	37-156	35.	32,000	917	12.0	2,491	163	COOPERATIVE	LOAN CONTRACT EXECUTED 7/10/36
57) N. DAKOTA 8 BENSON	37-167	51.	96,000	1,882	22.1	4,344	265	COOPERATIVE	NO FURTHER ACTION
58) OHIO 1A MIAMI	32-13	183.	254,000	1,316	132.7	1,914	3,620	COOPERATIVE	LOAN CONTRACT EXECUTED 11/4/35; WORK STARTED 1/11/36 THIS PROJECT CONSOLIDATED WITH OHIO 21 SHELBY AND OHIO 20A CHAMPAIGN GROSS COMBINED TOTAL CUSTOMERS IS ESTIMATED TO BE 3,620
59) OHIO 21 SHELBY	37-17	270.	350,000	1,296	184.4	1,900	———	COOPERATIVE	LOAN CONTRACT EXECUTED 11/6/35 WORK STARTED 1/11/36; SEE OHIO 1A MIAMI

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
60) OHIO 26A CHAMPAIGN	57-112	440.	593,000	1,322	146.7	4,036	———	COOPERATIVE	LOAN CONTRACT EXECUTED 2/27/36; WORK STARTED DURING WEEK ENDING 6/27/36; SEE OHIO 1A MIAMI
61) OHIO 29 PIKE	57-44	170.	233,200	1,489	65.2	3,983	701	COOPERATIVE	NO FURTHER ACTION
62) OHIO 31 HOLMES	57-40	221.	269,000	1,217	60.6	4,439	720	COOPERATIVE	LOAN CONTRACT EXECUTED 4/21/36
63) OHIO 36 LORAIN	57-63	372.	478,500	1,284	124.3	3,940	1,644	COOPERATIVE	LOAN CONTRACT EXECUTED 5/20/36; THIS PROJECT COMBINED W TH OHIO 50B LORAIN
64) OHIO 71 LOGAN	57-82	215.	225,000	1,047	64.9	3,467	990	COOPERATIVE	LOAN CONTRACT EXECUTED DURING WEEK ENDING 1/4/36; WORK STARTED DURING WEEK ENDING 5/30/36
65) OKLAHOMA 5 OKLAHOMA OKLAHOMA 8B OKLAHOMA	57-61	81.	70,000	864	24.4	2,868	315	PRIVATE CORPORATION	LOAN CONTRACT EXECUTED 12/13/35; WORK STARTED 2/29/36; WORK COMPLETED ON THIS SECTION DURING WEEK ENDING 6/20/36; OKLA. 8B OKLAHOMA IS AN ADDITIONAL ALLOTMENT FOR WHICH A LOAN CONTRACT WAS EXECUTED 6/3/36, BUT WORK ON THIS ADDITIONAL SECTION HAS NOT STARTED.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
66) OKLAHOMA 7 COMANCHE	57-143	65.	60,000	706	22.6	2,685	200	PRIVATE CORPORATION	NO FURTHER ACTION
67) PENNSYLVANIA 4A CRAWFORD	57-144	375.	400,000	1,066	137.4	2,911	1,340	COOPERATIVE	LOAN CONTRACT FOR ONLY 62 MILES WAS EXECUTED 7/1/36
68) S. CAROLINA 9 RICHLAND	57-24	530.7	530,000	1,038	250.6	1,900	2,128	PUBLIC AGENCY	LOAN CONTRACT EXECUTED 11/6/35; WORK STARTED 6/0/36; THIS PROJECT HAS BEEN COMBINED WITH SOUTH CAROLINA 1 CALHOUN
69) S. CAROLINA 1 CALHOUN	57-7	10.3	12,328	1,197	5.2	2,371	----	PUBLIC AGENCY	LOAN CONTRACT EXECUTED 11/6/35; SEE S. CAROLINA 9 RICHLAND
70) S. CAROLINA 13 GREENWOOD	57-130	112.	100,000	946	28.7	3,693	420	PUBLIC AGENCY	LOAN CONTRACT EXECUTED 7/29/36
71) S. DAKOTA 3 CLAY	57-168	67.	77,000	1,149	23.6	3,263	320	COOPERATIVE	NO FURTHER ACTION
72) TENNESSEE 1 MEIGS	57-4	201.	212,200	1,055	65.3	2,488	1,279	COOPERATIVE	LOAN CONTRACT EXECUTED 5/6/36; WORK STARTED WEEK ENDING 5/29/36
73) TENNESSEE 2 RHEA	57-6	51.1	48,058	940	22.5	2,136	268	PUBLIC AGENCY	LOAN CONTRACT EXECUTED 11/4/35; WORK STARTED ON FIRST SECTION ON 11/15/35 AND COMPLETED 1/14/36 LOAN CONTRACT FOR SECOND SECTION FOR WHICH $10,000 HAS BEEN ALLOCATED HAS NOT BEEN EXECUTED.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
74) TEXAS 7 BELL TEXAS 78 BELL	57-16	50.1	35,000	719	17.5	2,057	165	COOPERATIVE	LOAN CONTRACT EXECUTED FOR TEXAS 7 BELL ON 11/4/35; WORK STARTED ON 1/6/35 AND COMPLETED 7/4/35. LOAN CONTRACT FOR TEXAS 78 BELL FOR WHICH $3,000 HAS BEEN ALLOCATED HAS NOT BEEN EXECUTED.
75) TEXAS 21 MILAM	57-117	380.	452,000	1,207	95.3	4,743	1,200	COOPERATIVE	LOAN CONTRACT EXECUTED 7/30/36
76) VIRGINIA 22 CAROLINE	56-107	406.	356,000	903	840.0	2,620	1,911	COOPERATIVE	LOAN CONTRACT EXECUTED 1/24/36; FORCE ACCOUNT WORK STARTED 1/23/36 AND CONTRACT WORK STARTED 6/10/36
77) VIRGINIA 11 ROCKINGHAM	57-100	120.	185,000	1,000	41.1	3,041	543	COOPERATIVE	NO FURTHER ACTION
78) VIRGINIA 20 PRINCE WILLIAM	57-101	22.3	30,000	1,345	0.2	3,550	110	PRIVATE CORPORATION	NO FURTHER ACTION
79) VIRGINIA 10 LANCASTER	57-130	93.1	125,000	1,343	40.7	3,071	570	PRIVATE CORPORATION	NO FURTHER ACTION
80) WASHINGTON 7 MASON	57-53	68.	57,400	844	22.6	2,540	340	PUBLIC AGENCY	NO FURTHER ACTION

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
21) WASHINGTON 14 RURAL	57-145	13.	13,000	1,000	4.7	2,766	61	COOPERATIVE	NO FURTHER ACTION
22) WISCONSIN 31 COLUMBIA	57-131	244.	254,000	1,041	89.3	2,744	801	COOPERATIVE	LOAN CONTRACT EXECUTED 5/25/36
23) WISCONSIN 35 DANE	57-132	231.	230,000	1,052	86.2	2,834	732	COOPERATIVE	LOAN CONTRACT EXECUTED 5/16/36
24) WISCONSIN 36 DANE	57-133	130.	130,000	1,057	49.9	3,205	457	COOPERATIVE	LOAN CONTRACT EXECUTED 6/20/36
25) WISCONSIN 38 ROCK	57-147	414.	430,000	1,038	137.9	3,116	954	COOPERATIVE	THIS PROJECT IS A CONSOLIDATION OF WISCONSIN 30A ROCK AND WISCONSIN 30B ROCK. NO FURTHER ACTION.
26) WISCONSIN 19 CHIPPEWA	57-146	60.	56,000	1,000	20.8	2,992	321	COOPERATIVE	NO FURTHER ACTION
27) WISCONSIN 37 TREMPEALEAU	57-170	424.	445,000	1,049	140.4	3,165	1,273	COOPERATIVE	THIS PROJECT IS A CONSOLIDATION OF WISCONSIN 37A TREMPEALEAU AND WISCONSIN 37B TREMPEALEAU. NO FURTHER ACTION.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
88) WISCONSIN 10 WASHINGTON	57-183	29.5	31,000	1,051	8.9	3,483	93	COOPERATIVE	NO FURTHER ACTION
89) WISCONSIN 16 DOUGLAS	57-182	96.	100,600	1,048	32.0	3,144	315	COOPERATIVE	NO FURTHER ACTION
TOTAL	89	13,588	$14,960,728	$1,101	5,196.9	$2,878	52,629	———	———