Rural Electrification Administration

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Market Failure in Delivering Electricity to Rural Areas Before 1930

The advent of the electric industry in the 1880s ushered forward a rapidly expanding domestic market in the United States. The physical scale of the electric utility industry mirrored the national economy that sprung up with it — massive power generation facilities, substantial capital investments for network construction, high maintenance costs, and production technologies that were obtrusive and degrading to the natural environment. But the adaptation of electricity to manufacturing and services further liberated firms from having to locate in proximity to moving water, and with rising immigration from liberal naturalization policies accelerated the pace of economic growth.

While urban households and businesses gained electricity in large numbers after 1910, the more sparsely populated rural regions of the United States were generally without electricity and were denied the commercial progress it brought. Electrical service providers ignored the rural market due to its high network construction costs and the prospect of meager immediate profits. From the supplier standpoint, rural homes, farms and businesses were stretched too far apart and offered too little demand relative to the cost of investment. Unlike their counterparts in cities, rural residents were expected to advance the financing for the necessary infrastructure to the firm supplying electrical power from a distant location. In rural areas that were serviced, electrical rates in the 1920s were commonly twice as high as urban rates (Brown, 1980, p. 5).

The disincentives to investment in electrical infrastructure left rural America increasingly distant from the rising standard of living in the urban and emerging suburban settings of the national economy. Lacking the greater productive efficiencies secured by the adaptation of electricity, productivity growth in agriculture, the industry that served as the central organizing principle for rural life, lagged other sectors in the economy over the 1880 to 1930 period. Rural demands for the newest manufactured items found in urban American homes — telephones, radios, refrigerators, washing machines, hot water heaters, and household appliances — were latent. Given the widening disparities between rural and urban settings, it was not surprising that rural Americans reverted to the cooperative lifestyles of the nineteenth century as the urban markets for their agricultural products collapsed in the Great Depression.

The Origins of the New Deal Rural Electrification Initiative

The failure of the market to deliver affordable electricity to rural locales led to over thirty state rural power initiatives during the 1920s and early 1930s, as President Herbert Hoover argued that responsibility for rural electrification rested with state government (Brown, 1980, pp. 6 and 29). Governor of New York Franklin Delano Roosevelt aggressively promoted rural electrification, and the New York Power Authority was created in 1931 to develop a substantial new source of inexpensive hydroelectric generating capacity along the St. Lawrence River (Brown, 1980, p. 32). But the Depression led to the collapse of many state power authorities and further raised the bar in discouraging private investment in rural electrical infrastructure. When Roosevelt assumed the Presidency on March 4, 1933, the market for new rural electrification investment no longer existed.

While Roosevelt clearly understood the benefits electrification would bring to the rural American economy, it was Morris L. Cooke who provided vision and leadership to rural electrification efforts under the New Deal. Cooke had led Giant Power, the Pennsylvania rural electrification program, and Roosevelt invited him to address the problem at the federal level. Using data supplied by the utility industry, electrical engineers, Giant Power, and the U. S. Census of 1930, Cooke authored an eleven-page report in 1934 that provided the foundation for a federal rural electrification program. In an appendix to the report, Cooke included detailed estimates of the cost per mile of "high wire" distribution lines and suitable construction materials and standards to use in rural regions. He wrote: "This cost of the line with transformers and meters included for one to three customers will range from $500 to $800 the mile. To amortize this cost in twenty years at four percent involves a cost to each of the three customers on a mile of line of about one dollar a month" (Cooke, 1934, p. 6). Studies commissioned by Cooke suggested that household payments for electricity would be a minimum of one dollar per month for the first ten kilowatts of electricity, three cents per kilowatt for the next forty kilowatts, and two cents per kilowatt for the remaining balance (Cooke, 1934, p. 8). All told, the estimated cost to provide electricity to 500,000 farms, at an average of three farms per mile of rural road, was $112 million, or $225 per farm. In a worst case scenario, if new generating facilities were needed for all 500,000 farms, the 333 power plants that would have to be constructed would cost an additional $87 million. Consequently, Cooke's high-end estimate for the complete electrical infrastructure needed to bring electrical service to 500,000 rural American farms was $200 million, or $400 per farm (Cooke, 1934, p. 9). The concluding paragraph of his report states that a new "rural electrification agency" should build the necessary infrastructure since the market would not otherwise furnish electricity to sparsely populated localities (Cooke, 1934, p.11).

Presidential Executive Order 7037 created the Rural Electrification Administration, or R.E.A., on May 11, 1935. With passage of the Norris-Rayburn Act the following year, Congress authorized $410 million in appropriations for a ten-year program to electrify American farms. The rural cooperative model, which had been successfully employed by Giant Power in Pennsylvania, was adopted by the R.E.A., with Congressional Representatives serving as the administrative liaisons for the formation of cooperatives within their districts (Brown, 1980, p. 68). Cooperatives were not-for-profit consumer-owned firms organized to provide electric service to member-customers. Each cooperative was typically governed by a board of directors elected from the ranks of its residential customers. The board established rates and policies for the cooperative, and hired a general manager to conduct the ordinary business of providing electricity to customers within the service region. Only two restrictions were placed on the formation of cooperatives: they could not compete directly with utility companies, and coop members could not live in areas served by utilities or within a municipality with a population of 1500 or more (Brown, 1980, p. 69).

The R.E.A. was essentially a government-financing agency providing subsidized loans to private companies, public agencies, or cooperatives for the construction of electrical supply infrastructure in rural regions. The loans were guaranteed by the federal government and had an attractive interest rate and a generous repayment schedule of twenty-five years. The interest rate initially matched the federal funds rate when the loan was executed, but after 1944 the rate was fixed at two percent (Joskow and Schmalensee, 1983, p. 17). R.E.A. loans furnished the incentive for rural electric cooperatives to form and connect to the existing electrical network at rates comparable to the national average. R.E.A. cooperatives quickly became one of the largest capital investment projects of the New Deal, and low-cost financing for construction of electrical supply infrastructure was the key provision of the program (Brown, 1980, p 41).

R.E.A.: The Outcomes

Five decades after urban municipal electrical distribution system first appeared in the United States, the process of introducing rural areas to the twentieth-century economy began with the creation of the Rural Electrification Administration. The R.E.A. overcame the unwillingness of private utilities to bring power to households, farms and businesses in sparsely populated regions where profits were too low. The failure of the market, which left rural areas literally and figuratively in the dark, required an aggressive federal initiative to insure that residents of sparsely populated areas were no longer comparatively disadvantaged in the twentieth-century American economy.

The R.E.A. is considered one of the most immediate and profound successes in the history of federal policy-making for the national economy. By the end of 1938, just two years after its inception, 350 cooperative projects in 45 states were delivering electricity to 1.5 million farms (Schurr, Burwell, Devine Jr., Sonenblum, 1990, p. 234). The success of the R.E.A. over the next two decades was even more impressive, especially as a self-sustained financing agency. By the mid-1950s nearly all American farms had electrical service that was provided through the R.E.A. or by other means. Monies lent through the R.E.A. were also largely repaid, as the default rate was less than one percent (Brown, 1980, p 114). Moreover, as with any significant surge in investment, the accompanying new demands for household electrical appliances spurred growth in home appliance manufacturing, and spawned the electrical and plumbing trades in rural communities. Electrical service also brought revolutionary new mediums of communication to rural farms, firms and households. Radio was followed by television, and the new streams of information narrowed the cultural, educational and commercial divide between urban and rural America. Rural electrification contributed to the rapid growth of suburbs, and helped create a more integrated national market.

The REA Today

The R.E.A., originally created by executive order in 1935, was authorized as a federal agency within the United States Department of Agriculture (U.S.D.A.) when Congress passed and President Roosevelt signed the Rural Electrification Act of 1936. After 1949, the R.E.A. was authorized to finance the formation of telephone cooperatives, through low-interest federal loans, to extend telephone service to underserved rural areas. Repeatedly extending the original authorization of a ten-year program of subsidies, the federal government actively promoted rural electrification through the R.E.A. until the end of the twentieth century. In 1994, Congress established the Rural Utilities Service (R.U.S.) as a federal agency within the U.S.D.A., and it absorbed the R.E.A. and its responsibilities for rural electrification and telephone service.

Although the subsidized loans for the R.E.A. helped bring electricity and improved living standards to remote rural locales during the Great Depression, controversy has surrounded the agency in recent decades. Critics argue that the costs of the subsidies for providing electricity and telephone service must be weighed against the benefits. Beneficiaries of the R.E.A. enjoyed considerable interest rate subsidies throughout the second half of the twentieth century, long after the end of the Depression. Today, almost all rural Americans have electric service and 98 percent have telephone service. Critics of federally subsidized electrical cooperatives suggest that service would not be reduced if the subsidies were to end.

Table 1 compares the share of the electric utility market for investor owned companies, publicly owned companies, and rural cooperatives in the United States in 1998. Cooperatives served eleven percent of the nation’s population and delivered nine percent of kilowatt hours sold. The data show that in contrast to investor or publicly owned firms, the rural market continues to impose hardships to producers for costs and revenues. Rural electric cooperatives account for a much smaller portion of revenue per mile of wire ($7,873) than investor or publicly owned electrical utilities, and a greater portion of distribution plant investment per consumer ($2,352).

Table 1: Electric Utility Market Comparisons, United States, 1998

	Investor Owned	Publicly Owned	Rural Cooperatives
Number of Organizations	239	2009	930
Customers, % of U.S. total	74%	15%	11%
Revenues, % of U.S. total	77%	14%	9%
Kilowatt hour sales, % of total	75%	15%	9%
Number of consumers, per mile of line	33	43	6
Revenue per mile of line, in dollars	60,921	70,670	7,873
Distribution plant investment per consumer, in dollars	1,890	1,870	2,352
Assets, in $ billions	606	126	70

Source: National Rural Electric Cooperative Association Strategic Analysis, March 1999, www.nreca.org/coops/elecoop3.html

As Table 1 indicates, rural electric cooperatives continue to serve sparsely populated areas in the United States as not-for-profit public utilities. The R.U.S., which oversees rural electric and telephone cooperatives, has even begun to encourage the development of rural municipal water and waste disposal systems. To date, the R.E.A. and R.U.S. have organized nearly $57 billion in federally guaranteed low interest loans for the development of electric and telephone cooperatives. In recent years, despite calls for the elimination of the R.U.S., legislation has been introduced in Congress to extend its authority to offer low interest loans to firms willing to provide high-speed (broadband) Internet access to rural America (Malone, 2000, pp.12-13). As markets further expand, and rural America is comparatively disadvantaged relative to suburban and urban regions, advocates are likely to call for federal initiatives to address the disparities that arise between rural and urban and suburban regions from market failures and disincentives to investment in new forms of infrastructure.

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