1. NAME AND LOCATION OF PROPERTY

Historic Name: Reeve REA Power Generating Plant

Other Name/Site Number: Reeve Electric Association Plant; Iowa 47G

Street and Number (if applicable)**:** 1450 110th Street

City/Town: Hampton (vicinity) **County:** Franklin **State:** IA

Designated a National Historic Landmark by the Secretary of the Interior, December 13, 2024.

2. SIGNIFICANCE DATA

NHL Criteria: 1

NHL Criteria Exceptions: N/A

NHL Theme(s): VI. Expanding Science and Technology
2. Technological applications

Period(s) of Significance: 1938-1948

Significant Person(s) (only Criterion 2)**:**

Cultural Affiliation (only Criterion 6)**:**

Designer/Creator/Architect/Builder: Young & Stanley, Inc.
Welden Brothers, Inc.

Historic Contexts: XII – Business
H. Power & Lighting
1. Electric

Paperwork Reduction Act Statement. We are collecting this information under the authority of the Historic Sites Act of 1935 (16 U.S.C. 461-467) and 36 CFR part 65. Your response is required to obtain or retain a benefit. We will use the information you provide to evaluate properties nominated as National Historic Landmarks. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number. OMB has approved this collection of information and assigned Control No. 1024-0276.

Estimated Burden Statement. Public reporting burden is 2 hours for an initial inquiry letter and 344 hours for NPS Form 10-934 (per response), including the time it takes to read, gather and maintain data, review instructions and complete the letter/form. Direct comments regarding this burden estimate, or any aspects of this form, to the Information Collection Clearance Officer, National Park Service, 12201 Sunrise Valley Drive, Mail Stop 242, Reston, VA 20192. Please do not send your form to this address.

3. WITHHOLDING SENSITIVE INFORMATION

Does this nomination contain sensitive information that should be withheld under Section 304 of the National Historic Preservation Act?

___ Yes

_X_ No

4. GEOGRAPHICAL DATA

1. **Acreage of Property:** 1.48

2. **Use either Latitude/Longitude Coordinates or the UTM system:**

   Latitude/Longitude Coordinates (enter coordinates to 6 decimal places)**:**

   Datum if other than WGS84:

	Latitude	**Longitude:**
A:	42.688105	-93.233080
B:	42.688105	-93.232726
C:	42.687159	-93.232725
D:	42.687171	-93.233800

3. **Verbal Boundary Description**:

The nominated area aligns with Franklin County Assessor parcel number 1117300008.

The legal description from the county assessor is: TR IN SE SW COM SE COR, W 204', N 33' POB; N 350', W 76'RR ROW, SW'LY 411' TO N LN, E 293'

The property is bounded by 110th Street on the south, by the Union Pacific Railroad easement on the west, by the parcel boundary on the north, and by the parcel boundary (and electrical sub-station located on the adjacent parcel) on the east.

4. **Boundary Justification:**

The nominated boundary represents the west portion of the original property parcel, which was subdivided in 1975 for construction of the present electrical sub-station to the east. The property boundaries follow the current legal parcel and encompass all related components of the property's historic function.

5. SIGNIFICANCE STATEMENT AND DISCUSSION

INTRODUCTION: SUMMARY STATEMENT OF SIGNIFICANCE

The Reeve Rural Electrification Administration (REA) Power Generating Plant[1] in rural Franklin County, Iowa, has national significance under National Historic Landmark (NHL) **Criterion 1**. The Reeve Plant was one of the first four REA-financed power generating plants in the country. As such, the plant represents the REA's important role in rural electrification in the 1930s. On December 30, 1936, the REA approved loans to two rural electric cooperatives—including the Federated Cooperative Power Association that built the Reeve Plant—to build power generating plants, marking an important shift in the REA's program policies. The new policy of offering loans to rural cooperatives for construction of transmission lines and, when necessary, power generating facilities was designed to overcome the obstacles to accomplishing rural electrification by working with private utilities. Through this loan program, the REA created a path for rural electrification across many parts of the country. The lines and power generating plants built with REA loans brought power to farm households that had not been served by private utilities or by federal dams that produced hydroelectric power, and the REA-supported plants helped lower the rates that private utilities offered rural customers. The Reeve Plant was the object of the nation's first REA power generating loans, the third REA power generating plant in the country to be energized, and the first REA power generating plant west of the Mississippi River to be energized. Of the country's first four REA power generating plants funded and energized, the Reeve Plant is the most well-preserved. With its direct association with these critical events in the early history of the REA and a high level of historic integrity, the Reeve Plant is the best representative of the REA's significant role in the electrification of rural America.

The Reeve Plant is a building supported by an additional twelve contributing resources, represented by three sites (fuel tank foundation, water cooling towers foundation, and transformer foundation) and nine structures (four air intake houses, oil storage tank, sump tank, septic tank, well, and transformers). There is one non-contributing object (historic marker).

The period of significance is 1938–1948, beginning with the year the plant was placed in service and was energized and continuing through the end of the era in which the Reeve Plant actively contributed to rural electrification as an REA power generating plant. Although the Reeve Plant was not decommissioned until 1950, it operated on a standby only basis from April 1948 through 1950, and was thus not an active plant in what had become the Corn Belt Power Association system.

The Reeve Plant is nationally significant for its direct association with critical events in the early history of the REA. The REA was established as part of the Depression-era New Deal programs initiated by President Franklin D. Roosevelt that were designed to create jobs, generate income, and stimulate the economy, while simultaneously addressing national infrastructure needs. Despite a lack of cooperation from private utilities, the REA program was ultimately highly successful, playing a significant role in increasing the percentage of

[1] A variety of names are associated with the resource, which creates confusion in tracking the evolution of the plant and the entities associated with its construction and operation. Iowa 47G is the federal designation for the REA project; Federated Cooperative Power Association is the descriptor that attaches the plant to the entity that was formed to receive the REA construction loan; and Reeve Electric Association Plant is the name used on the National Register of Historic Places nomination. For the purpose of description, the historic name adopted for the NHL nomination includes the key descriptors associated with the resource's significance: Reeve (location) REA (funding source) Power Generating Plant (tying the plant to the change in the REA's approach to rural electrification from which the resource derives its historic significance). For clarity, the resource will be referred to as the Reeve Plant throughout.

America's farms with central-station electric service from 11 percent in 1935 to almost 97 percent by 1960.[2] Electrification of family farms was intended to alleviate rural poverty, lighten the burden of agricultural life, and increase purchase of consumer goods. With electricity in the home and farm buildings, the work day would be less controlled by the availability of natural light. Farming would become more efficient and productive through the introduction of electric equipment such as brooders, cooling units, and milking machines.[3] And life in the home would benefit from the availability of electric appliances like the iron and the washing machine, which promised to shorten the time required for tasks of all types. After its first few years of operation, the REA observed "that electricity on the farm not only makes living better and easier, the very appearance of the farmstead changes, income increases, the family has a new determination and resolve, it appears to be electrified literally and figuratively."[4] Over time, electricity transformed how rural families worked and lived.

The work to bring electricity to American farms had some often-unacknowledged success under private power companies from 1923 to 1933. The most successful of those efforts occurred in western states (e.g., California and Utah) and in the Northeast (e.g., Maine), with much lower areas of impact in the Midwest, South, and Plains.[5] In the 1930s, power production was held in a near monopoly controlled by commercial utility companies, leaving rural systems without the ability to set the cost of service.[6] Initially, the REA intended to entice power companies with low interest loans to extend transmission lines from urban areas into the countryside to serve rural consumers. Despite the financial incentive, the utility companies saw extending service to rural areas as an undertaking without sufficient profitability.[7] To counter the lack of cooperation on the part of the private utility companies, the REA shifted tactics and began encouraging the establishment of rural distribution cooperatives, which would make farmers eligible for REA loans to construct transmission lines. The REA's change in approach was highly successful, with electric cooperatives quickly established across the country. However, utility companies continued to resist offering wholesale rates to rural cooperatives because of the potential impact to profits. As a result, electric service remained unaffordable to many rural consumers.

The REA broke that stalemate by orchestrating a policy shift whereby the REA would provide loans for construction of power generation and transmission facilities in cases where there was no adequate source of power or where the rates offered by existing power sources were higher than those that would be provided by the REA-financed facilities.[8] In this specific way, the REA enabled rural cooperatives to construct power generating plants, by-passing private utility companies to offer affordable electric service to rural residents, significantly contributing to the electrification of rural America. In order to encourage farm families to use electricity, the REA ran public relations campaigns to promote purchases of electric appliances and equipment and offered low-interest loans for wiring houses and purchasing appliances.

The first REA power generating loans in the country were made to the Federated Cooperative Power Association at Reeve (Iowa 47G) and the Central Electric Federated Cooperative Association at Pocahontas,

[2] Rural Electrification Administration, *Rural Lines USA: The Story of the Rural Electrification Administration's First Twenty-five Years, 1935-1960* (Washington, DC: U.S. Department of Agriculture, 1960), 5-6.

[3] Rural Electrification Administration (REA), *Report of the Administrator of the Rural Electrification Administration, 1940* (Washington, DC: Government Printing Office, 1940), 54.

[4] REA, *Report of the Administrator of the Rural Electrification Administration, 1940*, 54.

[5] Richard F. Hirsh, *Powering American Farms: The Overlooked Origins of Rural Electrification* (Baltimore, MD: Johns Hopkins University Press, 2022), 2, 108.

[6] Harold Severson, *Corn Belt: Enthusiasm Made the Difference A History of Corn Belt Power Cooperative, Humboldt, Iowa* (Humboldt, IA: Corn Belt Power Cooperative, 1972), 25.

[7] Milton A. Chase, *Search for Power: Recollections of a Career in Rural Electrification* (Washington, DC: National Rural Electrification Cooperative Association, 1985), 18.

[8] Severson, 25.

Iowa (Iowa 48G) on December 30, 1936.[9] Construction of the diesel, power generating plant at Reeve started on Wednesday, September 1, 1937. The plant "went on the line" on Wednesday, March 23, 1938, less than seven months (including three months of a severe Iowa winter) after ground was broken.[10] Once the rural electrical system was established, demand for electricity grew quickly, particularly after World War II when demand became so great that the systems, including the diesel engines at the Reeve Plant, could not keep up. As a result, the original cooperative system required restructuring in response to the increasing demand of the rural consumer. The Corn Belt Power Cooperative of Humboldt was created in 1947, and the Federated Cooperative Power Association held their final meeting on April 2, 1948, with the Reeve Plant moved to an inactive, as-needed status through 1950, when it ceased operations entirely.[11]

PROVIDE RELEVANT PROPERTY-SPECIFIC HISTORY, HISTORICAL CONTEXT, AND THEMES. JUSTIFY CRITERIA, EXCEPTIONS, AND PERIODS OF SIGNIFICANCE LISTED IN SECTION 2.

The Multiple Faces of Rural Electrification

Rural electrification did not begin with establishment of the Rural Electrification Administration in 1935. As early as the 1890s, agricultural reformers, farmers, and politicians recognized the potential for electrification to increase agricultural production, ease the hard manual labor associated with farming and running a farm household, and narrow the cultural and economic divide between the countryside and cities.[12] In the decades prior to the REA, the work was undertaken by a cross-section of private and governmental entities. While the work of the REA played a critical role in the electrification of rural America, other federal programs also provided electricity to farms but were established to address specific needs and to utilize regional resources. The Bureau of Reclamation (Reclamation) was established in 1902 to manage irrigation and, ultimately hydroelectric power, on the rivers of the West and Northwest, and the Tennessee Valley Authority (TVA) was created in 1933 to address a range of issues, including the lack of electricity, in the Southeast.[13] In addition, while private utility companies have been widely disparaged in histories written about rural electrification and about the work of the REA specifically, private enterprise played an important role in laying the foundation for rural electrification.

Private Utilities

Private utilities had been providing electricity to urban areas for nearly fifty years by the time the REA was established in 1935. Their systems, however, typically extended only to the edge of densely populated locales, with limited extension into the countryside. Their position in that regard was purely one of business. With an eye on profits, the utilities were reluctant to invest in the infrastructure required to bring electricity to rural areas simply because the potential revenue from that undertaking did not warrant its cost. As the utilities saw it, extending service to rural areas, where perhaps two or three customers to a mile would be served, was unprofitable. In an urban neighborhood, investment in one mile of power lines, transformers, and other

[9] Chase, 34.
[10] *Iowa Falls Citizen*, March 24, 1938.
[11] Severson, 48.
[12] Hirsh, 98–99, 135–136; Sarah T. Phillips, *This Land, This Nation: Conservation, Rural America, and the New Deal* (New York: Cambridge University Press, 2007), 13–14.
[13] Bureau of Reclamation, "Reclamation History: 120 Years of Managing Water in the West, 1902-2022," Reclamation History, last updated 09/11/2023, https://www.usbr.gov/history/.

distribution equipment could result in over 1,000 customers, allowing companies to recover the cost of that investment fairly quickly while charging reasonable rates. In contrast, the utility companies maintained, payments for electrical usage from three rural customers—or even from thirty-five or forty customers in small towns—were not sufficient to recover the infrastructure costs and charge reasonable rates.[14] In the West, where commercial farmers needed to irrigate their fields, high electrical usage for irrigation guaranteed power companies sufficient revenue to make rural electrification profitable.[15] However, in other areas of the country where irrigation was not necessary and farmers had low incomes, such revenue was far from guaranteed. Private utilities considered well-off farmers to be the only viable customers for electricity in rural areas and believed that poorer farmers lacked both the means and inclination to modernize their homes and farms through electrification.[16]

Despite the economic challenges of rural electrification, the utilities were not blind to the potential benefits electricity posed for rural areas, nor to the possibility that serving rural customers could be profitable. In the first two decades of the twentieth century, some power companies successfully and profitably extended service to rural areas near cities and in California.[17] Not surprisingly, private utilities strongly opposed government intervention in their industry. Studying the possibilities for rural electrification helped power companies deflect calls for government-run electric utilities. By publicizing their efforts at rural electrification, private companies countered public power advocates' allegations that the companies had little interest in providing service to rural areas on terms that were practical and economical for farmers.[18]

In the 1910s and 1920s, private power companies' efforts to make rural electrification profitable proceeded along two lines: reducing expenses associated with the initial investment and increasing the potential revenue from rural customers by promoting use of electricity on farms.[19] To reduce the cost of constructing power lines, some power companies required up-front contributions from rural customers; in some cases, farmers could contribute labor rather than cash. Other companies worked with state utility regulatory organizations to secure guarantees of minimum revenues from rural customers over an initial period in order to recoup costs of investment.[20] They also developed more economical methods for constructing power lines over long distances.[21]

Private companies partnered with agricultural engineers at the country's land-grant colleges, government agencies, and farm associations to conduct research on potential uses of electricity by America's farmers that would result in profitability for both provider and consumer.[22] Created by industry executives in 1923, the Committee on the Relation of Electricity to Agriculture (CREA) collected data on power consumption in the farm setting, allowing agriculture-related industries to develop goods and services that would benefit the farmer. In 1923, the Northern States Power Company extended an experimental rural electric line to eight farm customers near the town of Red Wing, Minnesota. Provided with a range of electric-powered equipment such as water pumps, ranges, laundry equipment, and brooders, the farm families provided important data that allowed

[14] Hirsch, 5, 33, 36–38.
[15] Hirsh, 97, 103–109.
[16] Ronald C. Tobey, *Technology as Freedom: The New Deal and the Electrical Modernization of the American Home* (Berkeley: University of California Press, 1996), 120–121.
[17] Hirsh, 100–103.
[18] Hirsh, 7, 117–125, 133.
[19] Hirsh, 182.
[20] Hirsh, 177, 179–181.
[21] Hirsh, 186–188.
[22] Hirsh, 7.

CREA to track demand and consumption as well as changes in productivity levels.[23] Companies established rural service departments, hired agricultural engineers with expertise in rural electrification, and worked with land-grant colleges to develop educational materials demonstrating how electricity could benefit farmers.[24] The electrical industry—as well as manufacturers of electric appliances—developed publications and marketing materials designed to convince farm families to use electricity not just for lighting but for a range of household appliances and farm machinery that would improve rural life and generate income for the power company.[25]

Although a nationwide agricultural depression in the 1920s and rising rates of agricultural tenancy hampered their efforts, private utility companies tripled the number of rural customers between 1923 and 1929.[26] However, their efforts were scattered and heavily favored the Northeast and the West, which also benefited from hydroelectric plants discussed below. In some states in the Northeast and West, more than half of all of farms were electrified with central-station power by 1933. In the South, Midwest, and the Great Plains, private utility companies made little progress towards widespread rural electrification. In most states in these regions, more than 75 percent of rural households lacked connection to central-station power in 1933, and in sixteen states, over 95 percent of farms remained unconnected.[27]

Despite these shortcomings, private companies' rural electrification programs laid important groundwork for future government-led efforts. Through the establishment of CREA and cooperation with land-grant colleges, the utility industry was an active and important participant in research that provided the foundation for understanding the potential impact of rural electrification as it related to both recovering the cost of construction and increasing productivity on farms. Private power companies also developed strategies for increasing the profitability of rural electrification, such as encouraging consumption of electricity in order to increase revenue, turning to customers for assistance with the up-front costs, reducing the cost of building transmission lines, and cooperating with land-grant institutions. Federal agencies would draw on similar strategies when they embarked on rural electrification projects during the Great Depression.[28]

The Bureau of Reclamation

In the late nineteenth century, interest in harnessing the multi-faceted power of the nation's waterways resulted in the development of more comprehensive plans for use of entire river basins specific to navigation, irrigation, flood control, urban water supply, and hydroelectric power. A power plant in Appleton, Wisconsin, was the first to generate electricity from flowing water in the 1880s, and the first private hydropower turbines on Washington State's Columbia River tributaries were installed in the late nineteenth century. However, it was completion of a power plant at Niagara Falls, New York, in 1905 that marked the beginning of large-scale hydroelectric generation across the country.[29]

The National Reclamation Act was signed into law by President Theodore Roosevelt on June 17, 1902, establishing the Reclamation Service, later to become the Bureau of Reclamation (Reclamation). Reclamation projects were initially focused on harnessing the West's rivers for irrigation and flood control. Dam construction required large amounts of power, and after a few short years of using other power methods,

[23] Hirsh, 133–146.
[24] Hirsh, 183–186, 189–200.
[25] Hirsh, 146–147, 200–203.
[26] Hirsh, 39–42, 247
[27] Hirsh, 2.
[28] Hirsh, 188, 216–217, 220–221, 246.
[29] David P. Billington, Donald C. Jackson, and Martin V. Melosi, *The History of Large Federal Dams: Planning, Design, and Construction in the Era of Big Dams*, prepared for the U.S. Department of the Interior, Bureau of Reclamation (2005), 36.

Reclamation started creating hydroelectric plants onsite to power the projects' construction. Realizing they had a power source the government could exploit, in 1906 Congress gave Reclamation the legal authority to sell its excess power to pay off the cost of constructing the dam and associated aspects of the project. Thereafter, Reclamation factored surplus electricity sale into each one of its project designs.[30]

Completed in 1906, the Minidoka Project power plant in Idaho generated as much as 13 percent surplus power by the 1910s. As costs made it prohibitive to build power lines to outlying areas of the Minidoka Project, Reclamation was slow to arrange sales to farmers. Instead, the surplus power was sold to the nearby towns of Burley, Rupert, and Heyburn, the latter two having been laid out by Reclamation. Area farmers were encouraged by Reclamation to organize cooperative utility companies to build rural power lines, and by 1920, nearly half of the 2,400 farms on Minidoka Project lands had been wired for electricity, decades before many other rural areas across the country. By 1929, the Salt River Project had electrified 100 percent of the project area's 7,000 farms.[31]

In Arizona, the Salt River Project first generated electricity to construct Roosevelt Dam. After using electricity to operate irrigation and drainage pumps, in 1907, Reclamation sold 1,500 kilowatts of electricity from the project to Pacific Gas and Electric Company (PG&E) for each of the next ten years. Reclamation built transmission lines from the Roosevelt power plant to Phoenix, where PG&E distributed the power to the city. The potential for hydroelectric power in Phoenix and the surrounding area was evident. In 1917, the Salt River Project was turned over to the Salt River Valley Water Users Association, whose board decided to build additional hydroelectric dams downriver from the Roosevelt Dam. Although these were not Reclamation projects, electricity was made possible because the water stored behind Roosevelt Dam was released to supply much of Phoenix's early power needs, including "lighting homes and businesses, running streetcars, ice plants, and alfalfa mills, and supplying the electricity that fueled the state's copper industry."[32]

Hydroelectric power accounted for 16 percent of all electricity produced by 1912 and was the nation's fastest growing source of electric generation. Hydroelectric power continued to increase—and standardize its industry—during the United States' involvement in World War I. Thereafter, a "long-standing and often contentious debate" over whether private business or government should generate and deliver hydroelectric power intensified. Private power companies feared competition from public power projects, cast them as socialist undertakings, and argued that government energy projects were inefficient compared to private business. Proponents of public power believed that energy prices under them were fair and lower than private energy. The debate eventually led to the creation of the Federal Power Commission (FPC) by way of the Federal Water Power Act of 1920. The FPC was authorized to issue fifty-year permits for hydroelectric dams on the nation's navigable waters, ensuring future federal involvement in the development and regulation of hydroelectric power. However, the electrification of America was still largely in the hands of private enterprise and, by 1932, three holding companies controlled half of the country's electric utility industry, charging exorbitant service fees and overvaluing purchases, generating public distrust of the industry.[33] President Franklin D. Roosevelt's New Deal gave a boost to public power production, increasing Reclamation's capacity to undertake massive hydroelectric dam projects with funding provided by the Public Works Administration

[30] Billington, et al., 29, 98.

[31] National Park Service, "6. Hydroelectric Power and the Bureau of Reclamation," Travel Bureau of Reclamation's Historic Water Projects webpage, accessed 08/01/2024, https://www.nps.gov/articles/6-hydroelectric-power-and-the-bureau-of-reclamation.htm; National Park Service, "Idaho: Minidoka Dam," Travel Bureau of Reclamation's Historic Water Projects, accessed 08/02/2024, https://www.nps.gov/articles/idaho-minidoka-dam.htm.

[32] National Park Service, "6. Hydroelectric Power and the Bureau of Reclamation."

[33] National Park Service, "6. Hydroelectric Power and the Bureau of Reclamation."

(PWA).

On the Colorado River, Reclamation utilized—and continues to do so—a series of dams to provide hydroelectric power to the states of Nevada, Arizona, and California. Most notable amongst these is the Hoover Dam, completed in 1936. Reclamation designed and oversaw the construction of the dam by a private contractor, while the project was funded by the PWA. The sale of electricity generated by the dam would, eventually, pay for the construction of the dam, and set a "yardstick" for measuring whether the rates charged by private utility companies were reasonable. The energy produced at the Hoover Dam since its opening spurred enlargement of the Southwest's electrical grid, massive expansion of the region's agricultural production and industrial capacity, and substantial population growth.[34]

The Hoover Dam project is the most notable example of the thirty-seven PWA-funded Reclamation projects that were undertaken prior to the United States' entry into World War II in 1941. A similar example includes the Grand Coulee Project on the Columbia River in Washington. Completed in 1941, the plant at Grand Coulee Dam began generating electricity in 1942, which proved instrumental in powering the development of the atomic bomb at Hanford, Washington, and a large part of the aluminum for the United States' World War II air fleet.[35] Another of Reclamation's massive projects was the Shasta Dam, constructed between 1938 and 1945 in California's Central Valley. The dam's powerplant was initially capable of generating 8.1 billion kilowatt-hours of electric energy annually, which was sold to PG&E who then distributed it. Similar to other Reclamation projects, the Shasta Project's hydroelectric production primarily went toward powering cities, with rural electrification as a secondary consideration.[36] As populations continued to increase and the regional economy grew, demand for electricity surpassed the output the dams could provide. Over time, Reclamation has supplemented their power generation efforts with other types of plants and large numbers of wind turbine generators.[37]

The work and impact of Reclamation contrasts with that of the REA in that the former's first mandate was not the generation of electricity. Reclamation's hydroelectric power production was a byproduct of water management projects that were recognized to have profound potential to electrify the surrounding area and help pay for dam construction. Reclamation's sale of excess power was generally urban-focused, providing power to cities and towns first, and then providing power to rural areas once cooperatives built their own transmission lines. Additionally, the process associated with Reclamation projects was vastly more complicated than REA projects due to the mix of private and public landownership, which commonly created conflicts in how projects were designed, paid for, and controlled. Reclamation's impact is concentrated around large water sources in the eighteen states it created to serve, whereas REA projects were executed in every state in the country.[38]

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[34] Michael Duchemin, "Water, Power, and Tourism: Hoover Dam and the Making of the New West," *California History* 86, no. 4 (2009): 65.

[35] Earl Clark, "Rufus Woods: Grand Coulee Promoter," *Montant: The Magazine of Western History* 24, no. 4 (Autumn 1979): 40. Specific numbers of homes or people served are not readily available, but as of 1965, the electricity generated at Grand Coulee sold for approximately $12,500,000 annually. See Elbert E. Miller, "Economic and Social Changes in the Columbia Basin, Washington," *Land Economics* 41, no. 4 (November 1965): 338.

[36] Elizabeth Eiselen, "The Central Valley Project: 1947," *Economic Geography* 23, no. 1 (January 1947): 30; Billington, et al., 341; Water Education Foundation, "Shasta Dam," Aquapedia website, accessed 08/02/2024, https://www.watereducation.org/aquapedia/shasta-dam.

[37] Northwest Power and Conservation Council, "Dams: History and Purpose," accessed 03/13/2023, https://www.nwcouncil.org/reports/columbia-river-history/damshistory/; Donald J. Pisani, "Federal Reclamation and the American West in the Twentieth Century," *Agricultural History* 77, no. 3 (Summer 2003): 412.

[38] Billington, et al., 100.

The Tennessee Valley Authority

The Tennessee Valley Authority (TVA) is a wholly government-owned corporation created by act of Congress on May 18, 1933 (16 U.S.C. 831-831dd). A joint vision of President Franklin D. Roosevelt and Nebraska Senator George Norris, the TVA was a holistic effort aimed at elevating living conditions in the Tennessee Valley, an area covering most of Tennessee and extending into six other states in the Southeast—Alabama, Mississippi, Kentucky, Virginia, North Carolina, and Georgia.[39] The TVA set out to construct dams that would control flooding in the Tennessee River watershed, enhance navigability of the river, control insect populations, create recreational reservoirs, assist soil conservation, support resource management, and generate electricity.

The TVA had a specific mandate to supply and distribute power to farms and small towns, and it marked President Roosevelt's first foray into rural electrification, a cause he had championed as governor of New York and incorporated into his 1932 campaign for president.[40] By bringing power to farm families, Roosevelt and TVA director David E. Lilienthal hoped to improve standards of living, increase agricultural productivity, and attract industries that would provide jobs.[41] The TVA almost immediately assumed control of Wilson Dam at Muscle Shoals in Alabama and soon began selling the power generated by the dam to municipalities. The agency also helped organize rural electric cooperatives that would purchase power and assist in distributing electricity to farms.[42] As additional dams were constructed along the Tennessee River, the number of municipalities and cooperatives contracted to TVA increased.

In areas where the TVA was active, power rates fell, and tens of thousands of farm families received electricity from TVA hydroelectric facilities.[43] However, the benefits were not evenly distributed. White, landowning, well-to-do farm households were more likely to gain access to electricity through the TVA and associated rural electric cooperatives. The TVA excluded Black farmers from its model communities, made little or no effort to extend educational, training, and marketing programs to Black farmers, and hired few Black men to work on construction projects. In addition, thousands of farmers lost their land as a result of dam and reservoir construction. Black farmers were disproportionally represented among those displaced and typically received less compensation from the TVA than displaced White farmers.[44]

The TVA's influence on rural electrification reached far beyond the number of farms electrified in the region. Whereas private utilities had been skeptical that people in rural areas would buy electricity, the TVA demonstrated that farmers would purchase and use electricity if the rates were low enough and that they would buy electric appliances on credit if the terms were favorable. Its strategy of lowering power rates and facilitating

[39] Federal Register, "Tennessee Valley Authority," Office of the Federal Register, National Archives and Records Administration and U.S. Government Printing Office, accessed 04/02/2024, https://www.federalregister.gov/agencies/tennessee-valley-authority.

[40] Casey Cater, *Regenerating Dixie: Electric Energy and the Modern South* (Pittsburgh: University of Pittsburgh Press, 2019), 112, 114; Hirsh, 210; Phillips, 70–71.

[41] National Archives and Records Administration, "Tennessee Valley Authority Act (1933)," Milestone Documents, last updated 02/08/2022, https://www.archives.gov/milestone-documents/tennessee-valley-authority-act.

[42] Originally constructed to supply power for nitrate production during World War I, Wilson Dam's wartime mission had ended by the time it was completed in 1925, and it was producing excess power. Billington, et al., 111–114; Carl Kitchens, "The Role of Publicly Provided Electricity in Economic Development: The Experience of the Tennessee Valley Authority, 1929–1955," *The Journal of Economic History* 74, no. 2 (2014): 394; Hirsh, 210; Cater, 114–115.

[43] Tennessee Valley Authority, *Annual Report of the Tennessee Valley Authority for the Fiscal Year Ended June 30, 1939* (Washington, DC: Government Printing Office, 1940), 68. Carl Kitchens argues that the TVA's impact on rural electrification was statistically minimal. See Kitchens, 389–419.

[44] Michelle Mock, "The Electric Home and Farm Authority, 'Model T Appliances,' and the Modernization of the Home Kitchen in the South," *Journal of Southern History* 80, no. 1 (2014): 94–95; Melissa Walker, "African Americans and TVA Reservoir Property Removal: Race in a New Deal Program," *Agricultural History* 72, no. 2 (1998): 418–419; Cater, 117.

the purchase of electric appliances "taught private utilities and manufacturers that they could profit from sponsoring social modernization of the poorest households."[45] When the REA developed its approach to nationwide rural electrification, it drew on strategies employed by the TVA, notably collaborating with rural electric cooperatives and promoting the purchase of electric appliances and equipment in order to increase electricity usage and bring down rates.[46]

The TVA inspired other river development and rural electrification projects, including the federally authorized Bonneville Power Authority, which sold power generated by the Bonneville and Grand Coulee Dams on the Columbia River in the Pacific Northwest.[47] Although the TVA and BPA made important contributions to rural electrification and regional economic development, their reliance on dams and hydroelectricity limited their geographical reach.[48] As a result, the TVA and similar agencies could not power all of rural America, nor were they practical models for nationwide rural electrification.

Summary

The success of rural electrification relied on multiple entities, both public and private. Each played an important role in bringing the benefits of electricity to all corners of the country, and each was driven by a specific agenda. Private utilities were businesses driven by the potential for profitability and made limited progress towards rural electrification in some areas of the country. Reclamation was charged with the task of harnessing water power for a variety of purposes, one of which became the generation of electricity. The TVA also utilized water power for electrical generation, but electricity was one piece of the larger effort to provide a better standard of living. Despite facing stiff resistance from private utilities, the REA program was ultimately highly successful, contributing substantially to an increase in the percentage of America's electrified farms from 11 percent in 1935 to almost 97 percent by 1960.[49] Ultimately, the country—urban and rural—was electrified by the collective efforts of private utilities and federal agencies, with the REA playing a decisive and influential role.

Creation of the Rural Electrification Administration

The Rural Electrification Administration (REA) was established as part of the Depression-era New Deal programming initiated by President Franklin D. Roosevelt. New Deal programs, including the Works Project Administration (WPA), the Public Works Administration (PWA), and the REA, among others, were designed to create jobs, generate income, and stimulate the economy, while simultaneously addressing national infrastructure needs. Alleviating rural poverty and narrowing the wide gap in standard of living between rural and urban Americans was a key component of President Roosevelt's strategy to return economic prosperity to the nation as a whole. Roosevelt and his economic advisors contended that farmers' low incomes curtailed their purchasing power, which limited nationwide demand for manufactured goods and stifled economic growth. The agricultural depression of the 1920s, followed by drought in the early 1930s, had widened the income gap between cities and farms and resulted in migration from farms to cities, where there were not always enough jobs. New Deal programs such as the REA, the TVA, and Soil Conservation Service were intended to increase agricultural productivity and rural standards of living; as rural incomes rose, the theory was that farm families

[45] Tobey, 119–125 (quotation, 124)
[46] Cater, 114, 210; Tobey, 124.
[47] Billington, et al., 217, 222.
[48] Cater, 118–119. An agreement with private power further reduced the area that the TVA could serve.
[49] REA, *Rural Lines USA,* 5–6.

would purchase more goods, provoking industry to expand and hire workers to meet that demand. Rural electrification also promised to modernize rural life, enhance agricultural efficiency through labor-saving devices, and reduce migration from the countryside to cities.[50]

In December 1934, just months before creation of the REA, comprehensive rural electrification—meaning central-station power extending beyond urban areas and away from main rural roads—reached just 10.9 percent of American farms. Where urban lines extended beyond the city limits, they were constructed of materials and methods conducive to the demands of a concentrated population, not a rural one, and thus exceeded what was required for more dispersed rural customers. That over-construction came at a high cost, which ranged from $1,200 to $1,800 a mile which was, of course, reflected in high rates for consumers.[51]

The REA was established on May 11, 1935, as a temporary relief agency by Executive Order 7037 under powers granted by the Emergency Relief Act of 1935. As stated in the order, President Roosevelt prescribed the function of the agency: "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."[52] The order promised to make electricity available to rural residents in all parts of the country, rather than the existing condition which largely limited the benefits of electric service to those living near large population centers.[53]

The newly established agency was headed by Morris L. Cooke, a trained industrial engineer with a reputation for the depth of his knowledge regarding rural electrification—a specialty in which there were few experienced leaders in the United States. Cooke envisioned a ten-year program requiring $1.8 billion to serve 3,600,000 rural customers, an estimate that ultimately proved close to the mark.[54]

The REA initially made grants to public entities through the PWA while it developed plans to work with private power companies to extend existing service from urban facilities to rural areas. The monthly agency publication *Rural Electrification News* monitored and reported on all aspects of the program from the time of the agency's creation. In its first edition, the publication laid out policy basics that included self-liquidation loans[55] covering all investment costs. The government offered a twenty-year repayment period, 3 percent interest, and preference to public bodies and cooperatives. It soon became clear, however, that such an approach was not viable due to the reluctance of private power companies to extend transmission lines to rural areas. In the 1930s, the production of power was held in a monopoly by commercial utility companies in urban areas, leaving the rural systems without the ability to set the cost of service. Initially, the REA intended to entice power companies to construct transmission lines to serve rural consumers, offering low interest loans to complete that work. Even favorable loan terms were not sufficient to bring utility officials to the table.[56]

Efforts to pass permanent legislation to promote rural electrification were underway by 1936. By that time, legislation surrounding New Deal measures was facing additional resistance. Specific to the issue of electrification, resistance by private power companies to the program had coalesced, creating further challenges

[50] Phillips, 2–4, 24, 63–71.
[51] Rural Electrification Administration (REA), *Report of the Administrator of the Rural Electrification Administration, 1941* (Washington, DC: Government Printing Office, 1941), 1.
[52] "Executive Order 7037 – Establishing the Rural Electrification Administration," The American Presidency Project, ed. Gerhard Peters and John T. Wooley, University of California – Santa Barbara, accessed 01/03/2023, https://www.presidency.ucsb.edu/documents/executive-order-7037-establishing-the-rural-electrification-administration.
[53] Chase, 18.
[54] Chase, 4.
[55] A self-liquidation loan is a short-term loan that is repaid with money generated by the assets the loan is used to purchase. In the case of the REA, the loans were repaid by the money generated by cooperatives through membership and electric service fees.
[56] Chase, 3, 18; Severson, 25; Phillips, 133–134.

to attempts to legislate a permanent agency. REA administrator Cooke worked with Senator George Norris of Nebraska, a longtime champion of public power and rural electrification, to secure passage.[57] In making the case for an effective and efficient electrification program, Cooke summarized the work of the REA:

> Much of our planning has been directed to reducing the cost of service to the rural consumer. This can be done by simplifying and standardizing the type of line construction, by planning for extensions to serve entire areas to effect the economies of mass construction, by building lines by contract after competitive bidding, by lowering overhead and capital charges, by encouraging rates which promote the abundant consumption of electricity, and by making it possible to secure loans for electric appliances on reasonable terms.[58]

The Rural Electrification Act of 1936 was signed by President Franklin D. Roosevelt on May 20, 1936.[59]

To counter the lack of cooperation on the part of the private utility companies, the REA shifted tactics and began to encourage the establishment of rural distribution cooperatives. As an organized cooperative, farmers would be eligible for REA loans to construct transmission lines. As a solution to the problem of rural electrification, the establishment of cooperatives (or co-ops) was a promising solution. Co-op membership typically ranged from fifty to 200 families. Start-up costs to construct transmission lines were covered by a membership fee of $100 to $200. The cooperatives typically required an initial membership fee representing a percentage of the total fee with the balance paid in installments or incorporated into the monthly power bill. Both the membership cost and the payment arrangement were far more advantageous than those offered by the power companies, which commonly charged a $2,000 per mile rate with a high deposit required. The REA's change in approach regarding the creation of cooperatives was highly successful, with electric cooperatives quickly established across the country. In Iowa, the American Farm Bureau Federation was the driving force behind cooperative membership drives, with county agents directing volunteers across the countryside to sign up members. With sufficient memberships to satisfy loan criteria, maps and documentation were prepared to support applications for REA loans.[60]

In Franklin County, county agent Manning Howell was determined to convince hesitant farmers that the path to electrification was through the REA. The Franklin County Electric Cooperative was organized in March 1936, with officers assigned and directors selected to represent each of the county's sixteen townships. The newly formed group orchestrated a series of events aimed at educating farmers about the potential for electric service, with the intention of garnering support for the cooperative and its work to bring electric service to the county. By the end of 1936, some 1,350 members had joined the cooperative. To serve that number, the board estimated 418 miles of transmission line would be required and, in December, an authorization of a $418,000 mortgage to construct those lines was approved.[61]

In the early days of evaluating loan applications from newly formed cooperatives, REA officials moved with care. Once finally approved for loans to construct transmission lines, the cooperatives commonly found that utility companies continued to refuse to sell power to them at reasonable rates. This conflict between utility officials and REA officials, who held firm to the basic premise that low-cost power was the key to successful

[57] Senator Norris is perhaps most recognized for his role in establishing the Tennessee Valley Authority (TVA). Norris is often remembered as the "father of the TVA."

[58] Chase, 3.

[59] Living New Deal, "Rural Electrification Administration (REA) (1935)," accessed 01/03/2023, https://livingnewdeal.org/glossary/rural-electrification-administration-rea-1935/.

[60] D. Clayton Brown, *Electricity for Rural America: The Fight for REA* (Westport, CT: Greenwood Press, 1980), 14; Chase, 18.

[61] Severson, 102.

operation of the distribution cooperatives, was the battle which set the stage for creation of generation cooperatives. The utility companies were confident that it was simply a matter of time before the cooperatives would have no choice but to pay the established rates. What they failed to consider was that there was an entirely different option forthcoming.[62]

The REA broke the log-jam between the power utilities and the rural cooperatives by orchestrating a policy shift which provided that "the Rural Electrification Administration will make loans to finance the initial construction of generation facilities and transmission facilities … where no adequate and dependable source of power is available in the area to meet the borrowers' needs, or where the rates offered by existing power sources would result in a higher cost of power to the borrowers than the cost from facilities financed by the REA."[63] In this specific way, the REA enabled rural cooperatives to by-pass the utility companies and construct power generating plants as a means to offer affordable electric service to rural residents. Given that there had been decades of debates about whether the federal government should become directly involved in providing electrical power, Cooke was concerned that there was not widespread support for government-supported power generation. However, the private companies' refusal to lower rates for rural customers left the REA with little choice.[64] The April 1938 edition of *Rural Electrification News* later explained that the

> REA is empowered by law to finance generating plants in connection with distribution projects as it becomes desirable to do so. However, its policy is to construct such plants only as a last resort. The decision to build a power plant is never reached until every means of securing satisfactory terms from an existing agency has been exhausted, or where conditions exist making it impracticable to connect to existing lines, or where there is no source of power available without a very great expense in the construction of transmission lines. Most of the plants constructed or now under construction with the use of REA funds have been made necessary because the existing local utilities did not quote rates which would enable the projects to live. Although they were born of dire necessity, these plants have an unquestioned value in determining the wholesale rates which can be secured in the future; they prove to cooperatives that they need not be entirely at the mercy of existing utilities.[65]

With poles erected and wire strung for hundreds of miles across the countryside but lacking access to a power source, thousands of Iowa farms remained without electricity, and Iowa's cooperatives were helpless to supply it. Although not all farmers supported seeking REA assistance, the availability of loans to construct generating plants provided the solution, which required that the county distribution cooperatives work with one another and with the REA. To that end, they had to organize power cooperatives to break the monopoly held by the power companies.[66]

Despite the pressure from the utility companies and the political storm that accompanied it, the REA committed to assisting the formation of two power generating cooperatives in Iowa. One of Morris Cooke's final acts in his position at the helm of the REA was signing the nation's first two REA loan documents for Iowa 47G, Federated Cooperative Power Association (Reeve) and Iowa 48G, Central Electric Federated Power Cooperative (Pocahontas), thus binding the REA to the future of rural electrification through their support of

[62] Chase, 18.
[63] Severson, 25.
[64] Phillips, 134. In the decades preceding the REA, the debates over public power often centered on hydroelectric power, control of waterways, concerns that the private utility companies functioned as monopolies, and whether government should intervene in the free market. These debates addressed not just rural electrification, but cities' and town's access to electrical power at fair rates. See Hirsh, 117–125; Phillips, 25–53; Cater, 81–113.
[65] Franklin Wood, "REA Generating Plants," *Rural Electrification News* 3, no. 8 (April 1938): 3–5, 20.
[66] Wood, 18, 20.

cooperative power generation.[67]

The Country's First REA Power Generating Cooperatives

In late 1936, delegates from Franklin, Butler, Hardin, and Grundy Counties in Iowa met to discuss the state of rural electrification and to create a plan to represent the number of rural residents ready to purchase power from their newly formed cooperatives. The group forwarded that data to the REA. On December 30, 1936, Morris Cooke signed a document allotting funds for construction of two diesel plants in Iowa to serve REA-financed distribution cooperatives in the northwest and north-central parts of the state with contracts executed on May 1, 1937.[68] As noted in the National Register nomination of the Reeve Plant, "the co-op generating loans to the Central and Federated co-ops in Iowa to build diesel plants at Reeve and nearby Pocahontas thus made them the nation's first expression of the REA's dramatic shift in policy."[69]

On February 10, 1937, a group of Iowa farmers representing nine Iowa rural electric cooperatives crowded into a room at the Hotel Wahkonsa in Fort Dodge, Iowa. Joining the farmers at the meeting was John M. Carmody, the soon-to-be REA administrator, with whom the group had conferred in Washington, DC just weeks earlier.[70] Carmody came to the REA as deputy administrator with a background in industrial engineering. Where Carmody's predecessor Morris Cooke is widely considered the "architect of the rural power program," author Harold Severson describes Carmody as "the great line builder."[71] As administrator of the REA from 1937 to 1939, Carmody has been characterized as "a hard-driving, no nonsense 'let's-get-the-job-done' type of administrator."[72] With Carmody at the helm, the agency moved forward quickly with its effort to support the establishment of generating cooperatives, to provide low-interest loans for construction of power generating plants, and to maintain oversight of all aspects of those efforts.

Apparently unaware that Cooke had signed REA loan documents in December to construct two power plants in Iowa, the group of Iowa farmers that gathered were prepared to continue the ongoing discussions about how to break the hold on rural electrification held by the private utilities in their areas. Instead, Carmody offered the solution to that ongoing roadblock by announcing that, per the official announcement dated December 30, 1936, the REA had allotted funds for the construction of two generating plants in Iowa to serve REA-financed distribution cooperatives. Funds in the amount of $225,000 were allotted to construct a 2,000 kilowatt plant located in the vicinity of Bradford, Iowa (Reeve) and $185,000 for a 1,600 kilowatt plant in the Palmer, Iowa area (Pocahontas).[73] As Carmody reflected many years later, "The mere fact that we decided to build those generating plants led to immediate, voluntary reduction of wholesale quotations by power companies in other parts of the state." Plans for constructing cooperative generating plants proceeded despite that immediate impact to wholesale rates because both the co-ops and the REA believed that they could generate power at a cost lower

[67] Chase, 6, 23.
[68] Chase, 34.
[69] Mrs. Robert Butson and Lowell J. Soike, "Reeve Electric Association Plant," Franklin County, Iowa, National Register of Historic Places Registration Form (1989), 8:2.
[70] Severson, 9.
[71] Severson, 24.
[72] Severson, 26.
[73] Chase, 34. At the time the loans were made the sites for the two power plants had not yet been chosen, only the vicinities associated with the two cooperatives. It was soon determined that the plant in the Bradford vicinity would be located at Reeve in Franklin County and the plant in the Palmer vicinity would built just south of Pocahontas in Pocahontas County.

than the reduced quotes that began to be offered by the power companies.[74]

With the REA loans already approved, the work of that February day was to get organized. The men elected officers, signed incorporation papers for the two generating cooperatives, and chose an attorney and engineer.[75] Each cooperative had their own board of directors, which operated independently of the other while maintaining a close working relationship.[76]

The REA maintained control over all aspects of the development of power generating plants that utilized agency loans. In an effort to best judge the appropriate size of a plant, the REA investigated the number of consumers likely to be served by the power plant, the consumers' likely usage, as well as their ability to pay for the service. From that information, the REA made recommendations regarding requirements for sufficient capacity. Cooperatives were required to submit thorough documentation regarding site choice, building design, equipment design (including rationale for generator sizes), and contractors, all of which the REA reviewed and approved prior to the start of the project. Consideration of these issues dictated the amount of the REA loan.[77] As documented in correspondence by the Reeve Plant designer, the engineering firm of Young & Stanley, the initial plant design provided by the firm had to be revised when the REA determined that the plant as proposed was too large.[78] Although the investigations completed by the REA were aimed at providing an informed rationale for plant design, the reality of consumer demand would only be evident over time. To make informed recommendations regarding the size of the individual power generating units, the REA also considered the appropriate type of plant for the location. While both steam and waterpower were options, prior to World War II most plants utilized internal combustion engines most commonly powered by diesel oil or natural gas, in areas where it was available. That would change after the war when more loans for steam plants were made in order to obtain adequate capacity at lower costs.[79]

In July 1937, construction contracts for Iowa's two REA cooperative generating plants were approved by the REA. At the time of their completion, the two power plants were designed to provide electric current to 9,500 farms in eleven counties across northern Iowa.[80]

The Federated Cooperative Association REA Power Generating Plant at Reeve

Construction of the Reeve Plant started on Wednesday, September 1, 1937. Working through months of some of Iowa's worst winter weather, the plant was energized on March 23, 1938, just seven months later. The building remained in full service through 1948 when, due to ever-increasing consumer demand which exceeded the plant's capacity and the resulting establishment of the Corn Belt Power Cooperative, the Reeve Plant was placed on standby to be used only when system load or operational difficulties required its use as a supplemental power source; it was decommissioned in 1950. The Reeve Plant is the most well-preserved representative of that moment in time when the REA's policy shifted to provide loans for the construction of power generating plants, establishing the path forward toward the electrification of much of rural America.

The site for the Reeve Plant was originally about six acres of rural Iowa farmland located adjacent to the

[74] Dr. Tom Venables, "The Early Days, a Visit with John M. Carmody," *Rural Electrification* 19, no. 1 (October 1960): 20–21, 62, 64.
[75] Severson, 10, 21.
[76] Severson, 22.
[77] Wood, 3–5, 20.
[78] Young & Stanley, Project Records, Franklin County Historical Society Museum, Hampton, Iowa.
[79] Rural Electrification Administration (REA), *Report of the Administrator of the Rural Electrification Administration, 1948* (Washington, DC: Government Printing Office, 1948), 12.
[80] "Contracts Approved for Power Plants," *Carroll Daily Herald* (Carroll, IA), July 10, 1937.

diagonal-running Chicago, Rock Island & Pacific Railroad line. The site name is derived from James B. Reeve, an early settler to the area, and the township which bears his name. In 1937, only the rail line and a siding track that had served a grain elevator once located adjacent to the line remained of whatever infrastructure had been constructed in the vicinity. Proximity to the railroad line was a determining factor in choice of the site, with the existence of a siding track facilitating the delivery of construction materials, heavy equipment, and fuel.[81]

Months before construction began, representatives from the engineering firm of Young & Stanley, Inc. of Muscatine, Iowa, had been developing plans and specifications, which they presented to both the Federated Cooperative Power Association board and the Central Electric Federated Power Cooperative board by April 1937. Both boards approved the Young & Stanley plans, which allowed bids to be let for construction of the buildings, manufacture of the generating equipment, and the electrical work.[82] Having won the contract with a bid of $51,875, Welden Brothers of Iowa Falls, Iowa, was named the general contractor for construction of the Reeve Plant building, electrical wiring, and installation of the electric equipment.[83] Delta Star Electric Company of Des Moines was awarded the contract for installation of switch gear at both plants, and Electrical Engineering Construction of Des Moines was awarded the electrical contract, also at both the plants.[84]

The Federated Cooperative Power Association awarded the contract for the diesel engines, generators, and other equipment at Reeve to Nordberg Manufacturing Company with a bid of $116,968. Nordberg's bid included a 525-kilowatt generating unit and a 700-kilowatt generating unit with an option for a third generating unit of 700 kilowatts at an added cost of $76,000.[85] Nordberg Manufacturing was founded in 1890 by Finnish born and educated Bruno V. Nordberg. After immigrating to the United States in 1880, Nordberg worked for E.P. Allis & Company, which was a major American manufacturer with particular expertise in steam engines. Nordberg moved on from Allis to establish his own company with a license to use the patents of Rudolf Diesel, German inventor of the first successful diesel engine in 1897. With Diesel's American patents, Nordberg was positioned to lead in the manufacture of diesel engines in the U.S. with limited competition until 1912 when the patents expired. By 1916 Nordberg had diversified by extending their manufacturing to include steam engines and other equipment. The company is noted as manufacturing the country's largest diesel engine ever built in 1944. Nordberg's manufacture of diesel engines continued into the 1950s.[86] That shift aligns with REA's trends which, in 1950, showed that more loans for steam plants were made in order to obtain adequate capacity at lower costs.[87]

The Reeve Plant was designed with a generating capacity of 2,750 horsepower,[88] produced by diesel engines supplying electric current for the Wright, Franklin, Hardin, Grundy, Hancock, and Butler County rural electric cooperatives, which comprised the Federated Cooperative Power Association. It was estimated that power from the Reeve Plant would serve approximately 5,000 customers over 1,200 miles of distribution lines.[89] Under construction concurrent to the Reeve Plant, the Pocahontas Plant would serve 4,500 farms in Humboldt,

[81] Marvin O. Kruse, "Project Summary," REA Power Plant: Original Information (folder), Young & Stanley, Project Records.
[82] Severson, 33.
[83] Severson, 32.
[84] Severson, 33.
[85] This initial bid was ultimately modified with the power of each of the first two units increased and an additional two units installed in 1939 and late 1941.
[86] Alexander Belovsky, "Nordberg Manufacturing Company," in *Encyclopedia of Milwaukee*, ed. Margo Anderson and Amanda I Seligman, University of Wisconsin–Milwaukee, accessed 01/15/2024, https://emke.uwm.edu/entry/nordberg-manufacturing-company/
[87] REA, *Report of the Administrator of the Rural Electrification Administration, 1948*, 14.
[88] Use of the term horsepower represents the size of units with kilowatts indicating the amount of energy produced by the unit. The first unit at the Reeve Plant was reported as a 750-horsepower unit, which was capable of generating 520 kilowatts of electricity. Most often, historic records refer to the units by their potential kilowatt output.
[89] "Contracts Approved for Power Plants," *Carroll Daily Herald* (Carroll, IA), July 10, 1937.

Calhoun, Pocahontas, Sac, and Buena Vista Counties, bringing the total farms served in an eleven-county area to nearly 10,000.

With plans and specifications for both the Reeve and the Pocahontas Plants developed by Young & Stanley, the two share exterior design characteristics, construction method and materials, and presumably, a general interior layout. Historic images of the pair document the consistency of character.

In a communication with a representative of the trade journal, *Diesel Progress*, Young & Stanley stated, "The power plant building is constructed of reinforced concrete which gives a very attractive appearance and a very substantial and permanent building. This type of construction seemed to fit the nature and use of the plant very satisfactorily and permitted a cost slightly less than the conventional construction of steel and brick."[90] The choice of reinforced concrete for the Reeve and the Pocahontas Plants provides an exterior design contrast to those constructed at Chippewa Falls, Wisconsin, and Dayton, Virginia, which were brick constructions. Interestingly, correspondence included in the Young & Stanley archives documents that some effort was made by a brickmaker in nearby Mason City to construct the Reeve Plant from brick.[91]

At the official September ground-breaking, Ralph M. Mason, chairman of the Federated Cooperative Power Association board, turned the first spade of dirt. Over the coming months, the project of constructing and powering the Reeve Plant was completed under the supervision of Marvin O. Kruse, who was the "Resident Engineer" representing Young & Stanley. Kruse was on site from start of construction through May 1938, and his note-keeping and correspondences produced a remarkably thorough record of the project and its many challenges.[92]

In a July 7, 1937, communication from Young & Stanley to the Federated Cooperative Power Association, the engineers confirmed that plans and specifications were underway, but noted that they had "found it necessary to make a considerable number of changes in order that the building satisfactorily fits the Nordberg engine and this, coupled with the delay in getting final approval on the engine contracts, has prevented us from having the specifications ready as quickly as we expected."[93] This type of complication is indicative of the practice of providing a generically sized building for the bidding process and the subsequent need to revise to fit the equipment ultimately approved by the REA. In the case of Reeve, the plant size was reduced to conform to the limitations of the REA loan, and only two generating units were initially approved, despite Young & Stanley's recommendation to install three units concurrent with the plant's construction. Despite the reduction in size, the completed plant was sufficient to accommodate a total of four generating units.[94] Power plants constructed using REA loans frequently had space for additional generators. Allowing space for more generators reflected their confidence that demand would increase over time, while limiting the number of generators installed initially helped control start-up costs for the cooperative and consumer and helped ensure that the loan would be paid back.[95]

Welden Brothers quickly gathered a crew of form builders, reinforced steel installers, concrete finishers, and laborers. The concrete was mixed on site in a one-half cubic-yard stationary mixer, then moved by wheelbarrows to the necessary location. To pour the walls, a crane lifted a bottom-dump bucket to the top of the

[90] Correspondence, August 23, 1938, Young & Stanley, Project Records.
[91] 2017 Presentation, Young & Stanley, Project Records.
[92] Kruse, "Project Summary," Young & Stanley, Project Records.
[93] Correspondence, July 7, 1937, Young & Stanley, Project Records.
[94] Correspondence, July 7, 1937, Young & Stanley, Project Records
[95] Sarah Rovang, "The Grid Comes Home: Wiring and Lighting the American Farmhouse," *Buildings & Landscapes: Journal of the Vernacular Architecture Forum* 23, no. 2 (2016): 69, 70, 71.

forms, where the concrete was then released into the forms.[96] While the plant structure was designed for the primary purpose of housing the generating equipment, it was intended to have a substantial character and a pleasing aesthetic from the exterior. To those ends, the plant design limited vertical joints between concrete pours to the structure's corners. Additionally, horizontal joints between pours on the south, east, and west sides were kept to two levels, located at about ten and twenty feet above the plant foundation. Forms were lined with plywood to create a uniform texture to the wall surfaces, with the joints between plywood sheets specified to be uniformly spaced and to be smooth and tight.[97]

With work underway in the autumn, the approaching winter months quickly required the development of plans for adapting the work of pouring and curing concrete during an Iowa winter where temperatures typically dropped well below the freezing point. To that end, a steam boiler was located next to the aggregate pile and the concrete mixer in order to heat the mixing water and to generate steam that was used to keep concrete pours from freezing during the curing process.[98] These plans proved critical when winter arrived early, bringing temperatures that dropped so low overnight that the length of the curing process had to be extended by an additional five days to ensure the concrete would not be damaged by the severe weather. For additional protection, the concrete aggregates were warmed by wood fire in steel culvert pipes placed in the piles, and mixing water was heated to near boiling so that the fresh concrete went into the form at about seventy to eighty degrees Fahrenheit. Once a pour was completed, it was enclosed in tarpaulins and steam was fed under the "tents" on both sides of the wall to assure the concrete remained warm through a full, five-day cure. The second pour of the west wall (from ten feet to twenty feet above the foundation) was poured on December 4, 1937; the following morning, the temperature stood at minus three degrees Fahrenheit.[99]

By December 11, all concrete for the walls had been poured, with the roof decks and roofing placed in the first week of 1938. The doors and windows were installed at about the same time, leaving the structure fully enclosed by mid-January. The challenge then became removing the many tons of ice (six inches thick in some places) from the plant interior that had resulted from a combination of December snowfalls and the steam condensation used to keep concrete pours warm while they were curing. Even with temporary heaters installed inside the structure, it took a full week to chop the ice loose and wheel it outdoors.[100]

The plant was designed to house four generating units, each unit being comprised of a diesel engine, a generator, and an exciter. The first unit, which had a three-cylinder, 750-horsepower Nordberg engine, arrived on a flat car at the railroad siding during the week the crew spent removing ice from the structure. Harry Pelz from the Nordberg Manufacturing Company arrived to supervise installation. The engine was rolled from the railroad siding into position in the building using heavy timbers and rollers of six-inch steel pipe. The second engine, a four-cylinder, 1,000-horsepower Nordberg, its generator, and exciter arrived in February 1938. As noted, the addition of a third generating unit was recommended by Young & Stanley from the start of the planning process but was delayed by the REA's initial analysis of the anticipated level of consumer demand. The third generating unit was installed in 1939 following the results of a system planning study conducted in early 1938. The installation of the third generating unit included an additional fuel storage tank and a switchgear unit with cable and wiring for a total cost of $72,527. As demand for electricity rose, so did the need for an additional generating unit. In November 1941, the fourth engine foundation was poured, and the generating unit

[96] Kruse, "Project Summary," Young & Stanley, Project Records.
[97] Kruse, "Project Summary," Young & Stanley, Project Records.
[98] Kruse, "Project Summary," Young & Stanley, Project Records.
[99] Kruse, "Project Summary," Young & Stanley, Project Records.
[100] Kruse, "Project Summary," Young & Stanley, Project Records.

installed soon thereafter.[101]

Electrical work was underway simultaneous to plant construction, with conduits installed in walls and floors as construction proceeded. Once the structure was enclosed, the lighting system was installed, and power circuits were run to control points and to motors for operating auxiliary equipment. Switch gear cubicles manufactured by the Delta Star Electric Company arrived in February and were installed in the control room.[102]

Construction of transmission lines was also underway across the six-county Federated system during this period. In a February 10, 1938, communication from Young & Stanley to the Iowa Agricultural Business Corporation Service, the engineers inquired about progress on the line in Wright County, which would serve as a feeder line to provide temporary power distribution from the Reeve Plant to the Pocahontas Plant. Young & Stanley noted that the "Iowa 47G Franklin generating plant" was nearing completion and expected to be energized in early March. In its response to Young & Stanley, the Iowa Agricultural Business Corporation Service stated that "the line is now completed and hence energy can be served from the Franklin generating plant clear through to the Pocahontas plant."[103]

On March 12, 1938, Unit No. 1 at the Reeve Plant was sufficiently installed and connected to its auxiliary equipment to allow for a trial test.[104] The unit was started and allowed to run for just a few minutes with minor adjustments made before restarting to re-test. The plant officially went "on the line" on Wednesday, March 23, 1938, less than seven months—including three months of a severe Iowa winter—after ground was broken. In the daily inter-office communication between project manager Marvin Kruse and Young & Stanley dated either March 24 or 25, 1938, Kruse reported, "Mr. Oliphant [plant manager] is only running the plant through the day and early evening … claims there are only about a dozen customers connected as yet."[105] That note corresponds to the generally slow start to consumer use, a circumstance that was soon to change.

An area newspaper reported on the progress at the Reeve plant in its Thursday, March 17 edition:

> "Climaxing more than six months of construction and more than a year's work in obtaining a Federal REA allotment, electric current began to hum through the Reeve power plant Saturday [March 12] at 10:00 a.m.," Arthur T. Oliphant, plant superintendent, said yesterday. Oliphant noted further that, "by the end of the month, nearly 4,000 farm homes [in the Reeve service area] will be receiving electricity through the Reeve plant."[106]

The first home to be powered by the Reeve Plant was owned by E.H. Messerschmidt, secretary of the Franklin Rural Electric Cooperative. With several local and federal officials on hand to witness the historic event, lights were turned on at the farmhouse on Monday, March 21, 1938. It was reported that there was at that time a single, north-running line from the Reeve plant to a few miles southeast of Sheffield, a distance of some thirteen miles, with other lines to be connected as quickly as possible. Although many farmhouses across the six service counties had been wired, some delays were anticipated because other farms were slow to "wire up."[107] Days later, an area newspaper reported, "Yesterday [Wednesday, March 23] at 8:30 a.m., the switch was turned on …

[101] Kruse, "Project Summary," Young & Stanley, Project Records; Correspondence, February 14, 1938, Young & Stanley, Project Records.
[102] Kruse, "Project Summary," Young & Stanley, Project Records.
[103] Correspondence, February 10 and 11, 1938, Young & Stanley, Project Records.
[104] Internal Memorandum, March 12, 1938, Young & Stanley, Project Records.
[105] Internal Memorandum, March 24 or 25, 1938, Young & Stanley, Project Records.
[106] *Iowa Falls Citizen*, March 17, 1938.
[107] "R.E.A. Opens Service. E.H. Messerschmidt Home is First to Get Light," *Hampton Chronicle,* March 24, 1938.

to furnish 24-hour electrical service to farm homes in Hardin, Franklin, Hancock, Wright, Grundy, and Butler counties."[108] With full service in place, it is this date—March 23, 1938—that marks the day the Reeve Plant went "on the line."

Beginning with the initial generating unit tests in mid-March through full operation and transmission of power through the system, testing and tweaking continued with a number of adjustments made to stabilize the system. A first-hand recollection from plant operator Jake H. Bruns about the process of starting the engines is documented at the Reeve Plant museum.

> To start [the diesel engines] we used a big [jacking] bar that fit in holes of the flywheel and turned it over to a mark that said TDC (top dead center), then in … sequence, you turned the 'before and after oil pump' on, made sure the water valve was open so cooling water would circulate (can't remember that it was ever off), be sure you didn't leave the jacking bar in the fly wheel, then came the big moment: you pushed the lever to start the compressed air (which was in a huge tank in the basement along with a big compressor) through the lines, the flywheel started to move and as it gained momentum you moved the lever to 'run' and it took off!!! Slowly you moved the throttle to ¾ load. Then the … generator had to be put on the line so you walked over to the electrical board on the east side (it took up most of the east wall), wait for the proper cycle on a dial, and trip a lever and you were on line. Grab the clip board and monitor all the gauges again, diesel as well as electrical input and outgo.[109]

One specific issue with the system was reported in early April when Young & Stanley inquired to Delta Star Electric about "failure of feeder breakers to trip out when short circuits have occurred on the line," an issue related to Nordberg No. 1 and the line feeding the Pocahontas Plant.[110] From the time it was energized through early May 1938, Reeve transmitted power to the Pocahontas plant distribution cooperative by a 12,500-volt feeder line. The line was used many times for the exchange of power and generating capacities between the two systems. In September 1938, the plant's circuit relays were upgraded to automatically sense when service needed to be interrupted.[111]

In 1942 the Reeve plant was the location of a six-week program focused on diesel engine training for men about to enter the armed services in World War II; naval vessels used during the war commonly relied on diesel engines. Under the direction of Arthur Oliphant, the plant superintendent, the program was reportedly the first of its kind in the country. Oliphant instructed twelve men during four weeks of evening classes held at the high school in Hampton and two weeks of fundamental training at the REA plant.[112] The students were trained to monitor the plant engines, run periodic system tests, and monitor the system load to increase power efficiency. One enrollee noted that, "Monday and Tuesdays were bad days as 5 to 7 a.m. was milking time and as that died down Ma would start the washing or ironing or whatever took all that juice and all the engines would be put on line [to handle the demand]. When we could hear #4 get overloaded it was simple, you just created a blackout by tripping a segment of the line. In ten minutes or so we could handle it again. The phone started ringing about the same time!" In addition to learning plant operation and equipment maintenance, enrollees also received instruction in theory. At the completion of the six-week program, enrollees were Firemen 2nd Class USNR, entering the U.S. Navy with that designation.[113]

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[108] *Iowa Falls Citizen*, March 24, 1938.
[109] Exhibit, Franklin County Historical Society Museum at Reeve Plant.
[110] Internal Memorandum, April 9, 1938, Young & Stanley, Project Records.
[111] Severson, 41; Internal Memorandum, September 10, 1938, Young & Stanley, Project Records.
[112] "Hampton Plans Diesel School," *Globe-Gazette* (Mason City, IA), June 30, 1942.
[113] Reeve REA Plant Records and Files, Franklin County Historical Society Museum, Hampton, Iowa.

During World War II, power plants across the state and country were guarded against sabotage, which posed the potential to cripple industries that were aiding the war defense. At Reeve, the plant was kept under armed guard with a closed gate and posted notice that no visitors were allowed. A small look-out structure was constructed on the rooftop with three guards working eight-hour shifts.[114] The chain-link and barbed-wire fence retained on the property was erected at that time.

The Reeve Plant reached its peak operational capacity by 1948. Once the rural electrical system was established, demand for electricity grew so quickly that, by the end of the 1940s, the original cooperative system required restructuring in order to grow efficiently and serve the ever-increasing demand. To that end, the Corn Belt Power Cooperative was created in 1947. Comprised of fourteen cooperatives including both the Federated Cooperative Power Association (Reeve) and the Central Electric Federated Cooperative Association (Pocahontas), Corn Belt received REA loans to construct a 41,500-kilowatt plant near Humboldt, Iowa. From 1948 to 1950, the Reeve REA Plant operated on standby status, providing power only when the larger system required it. The Reeve Plant was closed in 1950.[115]

Rural Demand for Electricity and "Heavying Up"

When the generating plants at Reeve and Pocahontas were being planned in 1937, a common belief was that because farmers rose before sunrise and went to bed at sundown, they simply would not use a significant amount of electricity. This notion drove the planning, which estimated between 8,000 and 12,000 farms would be served by the two generating plants and eleven distribution cooperatives; these numbers were considered very optimistic.[116]

Experts focused on estimating how much energy would be used by the average farm family, which they determined to be about 100 kilowatt hours per month. As they considered it, "only a handful will be using enough light and power to push their consumption past the 100 kilowatt mark each month." When greeted with skepticism, the consultants revised their projections downward, based on the premise that "the average cooperative will be serving members limited to a radius of about 35 miles in all directions from each of the two power plants." From their calculations came recommendations for the size of the generating units at the plants. Initially, the recommendations proved sound because the newness of the service and a desire to control costs kept farmers and their families frugal in applying its use. With operators keeping a close eye on the loads, the plant managers were able to adjust the power output to meet the variation in use throughout the day. In that first year of 1938, there were 3,900 farms on the Reeve Plant system's line with most of those farms using thirty to forty kilowatts of power monthly, amounting to a peak demand on the system of 1,450 kilowatts in total.[117]

Demand for electricity soon outpaced the experts' estimates, justifying the REA's policy of including space for additional generators. The ballooning demand was soon more than the power plants at Reeve and Pocahontas could handle with their original generating equipment. The situation precipitated the installation of the third and fourth generating units at the Reeve Plant, which were operational in 1939 and 1941, respectively. Once again, those in charge underestimated demand and, even with the additional generating units, the plant could not keep up with the pace of consumer demand. Power shutdowns lasting from fifteen to thirty minutes became increasingly common. Because the shutdowns occurred during hours of peak demand—often during milking

[114] "REA Plant Is Kept Under Armed Guard," *Hampton Chronicle*, January 1, 1942.
[115] Reeve REA Plant Records and Files. Franklin County Historical Society Museum, Hampton, Iowa.
[116] Severson, 39.
[117] Severson, 40, 46.

time or nighttime chores—the outages raised the ire of local farmers and became a frequent source of complaints.[118]

Power shortages at the two plants continued even after installation of additional generators, requiring the distribution cooperatives to shut off power on different sections of their systems to lighten the load in order to prevent damage to the generating equipment and avoid system-wide collapse. Despite the efforts to limit damage to equipment, the constant stress of heavy loads caused parts failures that required repairs and resulted in shutdowns. The power shortage caused the boards of the Federated Cooperative Power Association and the Central Electric Federated Cooperative Association to discuss the possibility of merging. While board members disagreed about the wisdom of the idea, REA administrators fully supported consolidation which, they argued, would result in better voltage conditions and service while reducing operating costs. After investigating all related issues, including the viability of constructing a large steam generating plant, the two boards passed a resolution on March 28, 1941, declaring their support for consolidation of the organizations. It appeared that a merger was certain, but by September, both boards formally rejected the consolidation.[119]

The increasing demand for electricity, as demonstrated by the Reeve and Pocahontas plants, occurred across the country. The REA reported that on July 1, 1941, the percentage of American farms with central-station service was 27.1 percent. By June 30, 1942, the number had risen to 34.9 percent with 732 REA systems in forty-five states serving 780,482 consumers.[120] Such was the situation when the United States entered the war on December 7, 1941.

World War II changed the limited view which saw rural electrification in the U.S. as largely a way of making the work of farming and life in a rural setting easier and more profitable. With the nation at war, leaders and citizens alike came to understand the vital role that rural electricity played in national security, particularly at a time of crisis. The country's electrical system powered many companies that were manufacturing materials vital to national defense. The system also powered companies tasked with locally processing raw materials to reduce the strain on the country's transportation systems, and it provided essential power to the country's military bases.[121]

Following the United States' entry into World War II, demand for electricity continued to rise. By 1943, there was little recourse to address increasing demand due to material shortages (including the steel needed to manufacture engines), the assets of the country's industries being focused on supporting the war effort. Because of the shortage of critical materials, the REA put a halt to mass construction activities in July of 1942.[122]

With the close of World War II, the ability to manufacture additional generators and to construct more plants was restored. In fiscal year 1945, the REA allotted some $2,250,000 for power generating plants and transmission lines. In that year, the generating capacity of REA-financed plants reached a ten-year total of 88,400 kilowatts, about 57,000 kilowatts (nearly 65 percent) of which was provided by diesel generators.[123] Assisted by the end of wartime rationing, the demand for electricity continued to rise, breaking use records year

[118] Severson, 42.
[119] Severson, 42, 43, 45.
[120] Prior to 1974, the government's fiscal year started on July 1 and ended on June 30. REA, *Report of the Administrator of the Rural Electrification Administration, 1941*, 2.
[121] REA, *Report of the Administrator of the Rural Electrification Administration, 1941*, 2.
[122] Severson, 46; "County REA Celebrates 14th Year," *The Humboldt Republican*, October 6, 1950; Rural Electrification Administration (REA), *Report of the Administrator of the Rural Electrification Administration, 1943* (Washington, DC: Government Printing Office, 1943), 1.
[123] Rural Electrification Administration (REA), *Report of the Administrator of the Rural Electrification Administration, 1945* (Washington, DC: Government Printing Office, 1945), 8.

after year. From 1938 to 1949, the number of farms served by the Reeve and Pocahontas Plants jumped to 23,000, a gain of some 15,000 farms. Average monthly use increased from thirty to forty kilowatt hours to 350 kilowatt hours with a peak demand of 30,000 kilowatt hours, up from 1,450 in 1938. This pattern was mirrored on a national level. In 1948, more than 320,000 farms and some 100,000 rural, non-farm consumers were served by REA-financed, locally owned, nonprofit cooperatives and public power districts. That number represents about two thirds of all farms receiving central-station power for the first time that year. As of June 30, 1948, 68.6 percent of the nation's farms had central-station service. The tremendous increase in the amount of electricity used by rural consumers was also highly significant. The total of 1948 consumption was 40 percent higher than in 1947 and 84 percent higher than in 1946, with the daily kilowatt usage nearly double the 1941 average. As the REA had predicted in its opening years, the agency claimed in 1948 that farm people had embraced the full value of electrification, using it to improve farm production efficiency and to add greater conveniences by way of electrically powered appliances and equipment.[124]

Large-scale construction programs and the addition of thousands upon thousands of new consumers created large and complex cooperative electrical operating systems, which despite their size were not sufficient. Demand for electrical power by all types of both rural and urban users placed a severe strain on the power supply across the country. By 1948, the power shortage felt by REA borrowers posed a serious threat to the progress of rural electrification, becoming acute by June of that year. Due to the backlog of materials, and the time required to add or upgrade infrastructure required to resolve the shortage, no measure of relief was anticipated before 1950, with recovery in some areas not expected until later. In the Northwest, where increased power supply relied on development of natural resources (e.g., water supply), the strain was expected to get worse before it got better.[125]

With the ever-increasing demand on the power system and resulting breaks in service, the focus of the REA became provision of "heavying up" of many rural distribution systems in order to provide consistent and dependable service. As described in the 1948 REA annual report, "systems, designed originally to permit economical expansion as loads grew, are at a state of development where many of them need to increase the capacity of their systems to maintain the best type of service." Many borrowers undertook expansion programs in response to the addition of consumers and the ever-growing demand required for distribution of greater quantities of power. The tendency toward expansion is reflected in the applications for REA loans during fiscal year 1948. In that year, in proportion to its total loans, the REA lent more than twice as much for improving existing systems as it had in 1947. System improvements included stringing heavier lines, adding new substations, increasing transformer capacity—all the activities necessary to strengthen the rural electrical systems.[126]

Added to the challenge of "heavying up" the electrical system to meet demand, in 1948, the rural electric cooperatives purchased about 90 percent of their power from commercial power companies and public agencies. In June of that year, the electricity demand of REA borrowers represented 20 to 30 percent of the total load for those suppliers. Private utilities had lowered the wholesale rates that they charged REA-supported rural distribution cooperatives, but power shortages led some wholesalers to refuse to deliver additional power to REA borrowers. The wholesalers also took to limiting the total kilowatt demand of cooperatives, suggesting the cooperatives seek another power source, cutting power to cooperatives during peak periods, or reducing line voltage without notice to the cooperative. Due to these conditions, applications to REA for generating plants increased in 1948. The year saw a record volume of loans approved to finance construction. The annual report

[124] REA, *Report of the Administrator of the Rural Electrification Administration*, *1948*, 2; Severson, 42, 43, 35.
[125] REA, *Report of the Administrator of the Rural Electrification Administration*, *1948*, 10.
[126] REA, *Report of the Administrator of the Rural Electrification Administration*, *1948*, 3, 15.

for fiscal year 1948 documented that, since 1935, more than 3,275,500 farms had received central-station service. Of that number, 53.2 percent were served by REA-financed lines. Of all farms in the United States, 68.6 percent had central-station service, as compared with 10.9 percent in 1935.[127]

Within the context of the strained electrical system, the REA noted that, although the amount of power supplied by REA-financed power generating plants represented only a small fraction of the total distributed by the rural electric co-ops, the value of the plants was disproportionate to that percentage. In areas where it was necessary to build REA-financed generating plants, those plants were critical to the power supply.[128]

The REA remained focused on responding to rural consumers' demand for power. During fiscal year 1950, loans aimed at increasing capacity amounted to $136,439,210, which financed the construction of 338,578 kilowatts of generating capacity and 7,750 miles of transmission line. The program saw thirty-nine new systems energized, and a total of 178,651 miles of new line placed in operation to serve 473,607 consumers, the majority of which were in Kansas, Missouri, Nebraska, North Dakota, South Dakota, and Texas. Growth occurred in the Great Plains states and the southern states, which were generally the most active in constructing new lines. Data collected by the REA indicates that the period of peak construction was reached in fiscal year 1949, which suggests that the peak of miles energized may have been reached in 1950. From that point on, construction of new lines and consumer connections was expected to be slow, owing to the fact that many borrowers had completed their primary systems and were then focused on extending service to isolated areas.[129]

From 1938 to 1941, the majority of REA-financed generating plants were small in scale and utilized internal combustion diesel engines. That status changed after World War II when more loans were made for steam plants, which could be constructed at a lower cost while producing adequate capacity. The 1950 annual report reflects that shift, documenting that steam plants accounted for 90,000 kilowatts of the capacity energized that year, with only 50,000 kilowatts of power generated by new (not counting existing) diesel generators.[130] The diminishing use of diesel generators continued; by 1961, with a total generating capacity of 204,937 kilowatts energized, 170,500 kilowatts were steam, 16,900 kilowatts were hydroelectric, and 17,537 kilowatts were internal combustion.[131]Likewise, construction of transmission lines trended toward use of higher voltages, with an excess of 60 percent of the total of all transmission lines constructed during the year being in the 69-kilovolt class.[132]

The pattern of expansion in REA-financed rural cooperatives is reflected in Iowa where, between October 1945 and December 1948, seven additional plants were built and energized, giving the Federated and Central Cooperatives a total of twenty-three diesel units producing 25,555 kilowatt hours of energy. The expanded system supported the primary plants at Reeve and Pocahontas by the construction of sub-stations until even the expanded system proved insufficient to meet demand. Energy use doubled, then quadrupled, leading the cooperatives to revisit the previously discarded idea of consolidating. On August 29, 1947, the Corn Belt Power Cooperative, with headquarters in Humboldt, Iowa, was established through the consolidation of the Federated Power Cooperative Association and Central Electric Federated Power Cooperative; Federated held its last meeting on April 2, 1948. In 1949, the Corn Belt Power Cooperative constructed a large-scale REA generating plant south of Humboldt. The new cooperative received a $5,300,000 loan toward the construction of a 15,000-

[127] REA, *Report of the Administrator of the Rural Electrification Administration*, *1948*, 4, 6, 13.
[128] REA, *Report of the Administrator of the Rural Electrification Administration*, *1948*, 14.
[129] REA, *Report of the Administrator of the Rural Electrification Administration*, *1948*, 5, 11.
[130] REA, *Report of the Administrator of the Rural Electrification Administration, 1948,* 12.
[131] Rural Electrification Administration (REA), *Report of the Administrator of the Rural Electrification Administration, 1961* (Washington, DC: Government Printing Office, 1961), 3.
[132] REA, *Report of the Administrator of the Rural Electrification Administration, 1948*, 12.

kilowatt steam generating plant and 307 miles of high voltage transmission lines to serve 30,000 farms in north central Iowa.[133] Sixteen step-down sub-stations supported the high voltage transmission lines from the Humboldt Plant. The substations regulated the voltage by reducing it to feed the end consumer. The system extended from the Humboldt Plant in Humboldt County to new step-down plants located at Dinsdale, Garner, and Dickens, among others.[134] The Reeve Plant remained on standby from 1948 to 1950, at the ready to provide energy on occasions when the system required it. With consolidation of the cooperatives and construction of the Humboldt Plant, the Reeve Plant was decommissioned in 1950.

In 1950, the REA reported that since the start of the program in 1935, more than 4.5 million farms had received central-station service, with more than half of that number connected post-war. REA-financed systems brought electric service to 2,550,000 of that total, or more than half of the farms served by June 30, 1950.[135]

As a post-script, the Reeve Plant was held by the Corn Belt Power Cooperative until 1975, when the original parcel was divided, and the plant site was sold to Don Yadon of Hampton; the cooperative retained the east portion of the original site where their sub-station remains today. Soon after purchasing the plant property, Yadon undertook removal of three of the four engines, leaving Nordberg No. 1 in place. The new owner also cleared deteriorated structures from the site; it is likely that the wood louvers of the cooling tower were removed at that time. The structure was used by Yadon as a tool rebuilding facility through 1988, when he transferred ownership to the Franklin County Historical Society. Soon thereafter, the historical society established the REA Power Plant Museum to care for the property and to plan for its future.[136] The Reeve Plant remains in use as a county museum with a mission dedicated to retention of the original plant and its equipment as a resource that represents the national significance of the REA's role in rural electrification.

The REA Effort to Promote Electricity

The early years of rural electrification by the REA were characterized by hesitancy on the part of some farmers, excitement on the part of the cooperatives, and assertive recruitment of potential rural customers on the part of the REA. Despite the role taken by farmers in the establishment of rural cooperatives, they were independent in how they chose to utilize—or not utilize—electricity. Most farmers initially limited their use to lights, eschewing large energy-consuming appliances that were an expensive investment in tough economic times. Cultural and practical considerations played a role as well. This hesitancy was anticipated by the REA, and countering it was one facet of the REA's work to bring electricity to rural America.[137]

At the very start of the REA, administrator Morris L. Cooke identified the important work to be done regarding the rural consumer, noting that "our big job is to build up the psychology of the generous use of electricity – a few lights in a home is not rural electrification … Really to electrify America we must adopt every possible means for building up its use."[138] The REA math figured that "the combined cost of power-line construction,

[133] Severson, 47, 48; "New Power Plant to Service All of Humboldt County," *The Humboldt Republican*, June 21, 1946; "Speakers Tell of New Humb't Plant for Electricity," *The Humboldt Independent*, February 17, 1948.

[134] "Humboldt REA Plant Gets $5,994,000," *Kossuth County Advance* (Algona, IA), January 11, 1949.

[135] Rural Electrification Administration, *Report of the Administrator of the Rural Electrification Administration, 1950* (Washington, DC: Government Printing Office, 1950), 13.

[136] Reeve REA Plant Records and Files, Franklin County Historical Society Museum, Hampton, Iowa.

[137] Ronald R. Kline, *Consumers in the Country: Technology and Social Change in Rural America* (Baltimore, MD: The John Hopkins University Press, 2000), 178; Audra J. Wolfe, "'How Not to Electrocute the Farmer': Assessing Attitudes Towards Electrification on American Farms, 1920-1940," *Agricultural History* 74, no. 2 (2000): 515–529.

[138] Quoted in Kline, 178.

wiring, and appliances averaged $600 per farm family. At 3 percent interest, a family could pay off their debt over twenty-five years by paying $3.50 a month the first year and less in each succeeding year."[139] Investment in and use of household appliances benefitted the efficiency of the electrical system. Cooke noted that, "The more irons, refrigerators, heaters and other appliances that are in use, the greater is the quantity of electric energy required. Thus, a large load is built up, which, in turn, makes possible better service at less cost."[140] The REA also promoted the position that, in addition to the direct benefit to farm families found in both convenience of electric appliances and the lower rates resulting from increased loads, purchase of appliances would benefit the American economy: "Besides contributing a great deal toward increasing comforts on the farm, an important effect of the program will be the creation of considerable business for the lumber, copper and other industries, and for the manufacturers of electrical and sanitary equipment and appliances."[141] In addition, the more effective the rural electric cooperatives were at generating revenue through usage, the more likely it was that they would repay REA loans.[142]

To help promote the use of electricity on farms, the REA's loan arsenal included loans to individual farm families for wiring their farms and for the purchase of electric appliances, lighting, and equipment. Local cooperatives helped electrify member farms by offering "group wiring plans." Such plans allowed co-op members to join together to wire their farms before the lines were energized, a bundling that kept costs lower. In some areas of the country, co-ops advanced money to their members for wiring and the cost of fixtures. In other instances, the REA worked with manufacturers to offer "lighting packages" at discounted prices.[143]

REA-financed cooperatives also entered into agreements with the Electric Home and Farm Authority (EHFA), which offered low-interest installment plans to purchase of electric appliances. Initially established in 1934 as a subagency of the TVA, the EHFA soon became an independent federal agency with nationwide reach. In addition to encouraging purchase of electric appliances, the EHFA aimed to help lower power rates by offering the financing only to consumers whose electricity came from sources that were approved by the EHFA and met its rate standards. By entering into agreements with the EHFA, REA-supported cooperatives made EHFA financing available to their customers. The REA not only helped promote EHFA financing, but also worked with manufacturers and the EHFA to develop appliances and equipment whose cost and design were suited to rural life.[144]

Based on the idea that "to electrify rural America … every possible means for building up its use" must be adopted, the technical reality that increased load reduced cost, and the potential benefits to the economy, the REA responded to low usage of the growing electrical system through its Utilization Division, established in 1937. The Utilization Division was a carefully organized and implemented undertaking to educate the rural consumer. The division employed a wide-ranging campaign using a team of REA agricultural engineers and home economists who worked in the field with extension services, cooperatives, and farmers. The teams, together and independently, distributed bulletins and informational pamphlets, held demonstrations, offered trial

[139] Jellison, 99.
[140] Quoted in Jellison, 99.
[141] Quotation from *Wallaces' Farmer*, in Jellison, 100.
[142] Rovang, 69.
[143] Jellison, 99; Richard A. Pence, ed., *The Next Greatest Thing: 50 Years of Rural Electrification in America* (Washington, DC: The National Rural Electric Cooperative Association, 1985), 96; Rovang, 66, 71, 78.
[144] Joseph D. Coppock, *Government Agencies of Consumer Instalment [sic] Credit*, Studies in Consumer Instalment Financing Number 5, Financial Research Program, National Bureau of Economic Research (New York: National Bureau of Economic Research, Inc., 1940), 94–96, 99; Mock, 78-80, 93-94, 95.

installations of equipment, and worked with appliance dealers on special promotions.[145]

The Utilization Division's major promotional event was the Farm Equipment Tour, which became known as the "REA Circus." Initially a sort of experiment, the Farm Equipment Tour was first held in October 1938 in eastern Iowa. Making twelve two-day stops across Iowa followed by ten stops in Nebraska, the tour ended just before Christmas. The traveling show operated from 1938 to 1941 with nearly 175,000 people across the country attending in 1939. In 1940, the show made 120 two-day stops in twenty-two states with 350,000 in attendance. The event typically set up its big tent in a farm field near a recently energized power plant. Male demonstrators regaled the male farmers with a large array of electrically powered agricultural equipment while female demonstrators focused their efforts on farm wives and the many household appliances intended to simplify their lives. The event brought together potential consumers with appliance dealers and manufacturers in a setting that was intended to be both educational and fun. The "REA Circus" proved to be a success, contributing to increases in cooperative memberships, the sale of electric appliances, and use of electricity.[146] (See Table 01.)

Many advocates of rural electrification and farm reform believed the key to gaining broad support and increasing the use of electricity on the farm was the farm wife. In the fall of 1937, the agricultural magazine *Wallace's Farmer* held a contest to encourage women to write in, telling the story of how electricity had changed their lives. Many women responded with their personal experiences, one explaining, "Electricity has completely changed our home.… We have big washings, and it used to take us all day, but this quick electric way gets us thru in about four hours."[147]

Table 01. REA – Serviced Farms Reporting Ownership of Selected Appliances, 1938-1941[148]

Appliance	1938	1939	1940	1941
Radio	86%	82%	88%	90%
Iron	81%	84%	84%	85%
Washing Machine	47%	59%	55%	55%
Refrigerator	26%	32%	33%	42%
Toaster	24%	31%	29%	32%
Water Pump	17%	19%	15%	18%
Vacuum Cleaner	16%	21%	21%	21%
Hot Plate	12%	19%	15%	15%
Coffeemaker	6%	6%	8%	9%
Range	5%	3%	4%	4%
Cream Separator	5%	14%	8%	8%
Milking Machine	2%	4%	2%	3%
Chicken Brooder	1%	6%	6%	6%

Other means of promoting the benefits of electricity were part of the marketing effort, including ceremonies celebrating turning on power at a farmhouse. Reports of such events appeared in local newspapers, often accompanied by a photograph of the farmhouse and its happy occupants. Sometimes these opportunities were used to provide demonstrations and to bring farm folks together in the shared experience. The Hampton, Iowa, newspaper carried a photograph of the first home to receive electricity supplied by the Reeve Plant on March

[145] Kline, 179.
[146] Pence, 118.
[147] Jellison, 100.
[148] *Rural Electrification News* 3, no. 11 (July 1938): 4–10; *Rural Electrification News* 5, no. 5 (January 1940): 6–8; *Rural Electrification News* 6, no. 2 (October 1940): 10–11; Kline, 293.

21, 1938. Although a relatively modest celebration, the electrification of the E.H. Messerschmidt (secretary of the Franklin Rural Electric Cooperative) house in Westfork Township was witnessed by cooperative association officers, REA representatives, and a superintendent of Lytle Construction Company, contractors for the first 100 miles of transmission line.[149]

Production and distribution of the promotional film *Power and the Land* epitomizes the REA's efforts to market electricity to the rural consumer. In 1939 the REA contacted Pare Lorentz about making a film that would supplement its ongoing activities. Lorentz was known for creating visually powerful work, having received awards for previous government-sponsored films. The REA had employed similar tactics such as its recruitment of graphic designer Lester Beall to create a set of modern art posters in 1937 and 1939.[150] Filmed in black and white, *Power and the Land* was a highly dramatic illustration of the transformation of the life of a typical farm family provided by electricity. The film opened in St. Clairsville, Ohio (near the Pennsylvania farm featured in the film), on August 31, 1940, and was distributed across the country through the RKO Radio Pictures system of movie houses; more than 1,000 theaters booked the film in the first month after opening.[151]

The Impact of the REA on Rural Electrification

The multi-pronged effort to educate the rural consumer about the many benefits of electrification and the value of utilizing electric appliances and equipment, combined with the loans to rural cooperatives for construction of transmission lines and power generating plants, began to show its impact in the early 1940s. Progress was severely stunted by the entrance of the U.S. in World War II, but the post-war years were a boom to the work of rural electrification. Passage of the Pace Act in September 1944 removed the ten-year limit on the REA program, set the loan rate at 2 percent, and increased the amortization period from twenty-five to thirty-five years.[152] These changes, along with the re-establishment of a full workforce and competent REA leadership, allowed the REA to finish their portion of the job of rural electrification. In the period from 1945 to 1954, the percentage of electrified farms grew from 48 to 93 percent, with the most rapid growth in the Midwest and South.

Table 02. U.S. Farms Reporting Electrification, 1920-1954[153]

Year	USA	Northeast	Midwest	Far West	South
1920	7%	15%	10%	15%	3%
1930	13%	35%	17%	37%	4%
1940	33%	66%	40%	60%	19%
1950	78%	92%	84%	87%	71%
1954	93%	97%	95%	95%	90%

In the nine years from 1945 to 1954, more than 900 REA electric cooperatives constructed almost 900,000 miles of line, connecting more than 1.6 million new consumers. In addition to individual consumers, the cooperatives served rural industry, churches, schools, and townspeople. At the end of 1954, about two-thirds of the REA's 4.1 million consumers were farms, accounting for 61 percent of the country's farms with central-

[149] "R.E.A. Opens Service Here Last Monday," *Hampton Chronicle*, March 24, 1938.
[150] Kline, 189.
[151] Kline, 195.
[152] Kline, 219.
[153] U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Agriculture, 1954: General Report*, vol. 2, *Statistics by Subjects* (Washington, DC: GPO, 1956-57), 199.

station power.[154]

The impact of the REA did not end here, rather the work of "heavying up" continued over the coming years. While the REA was not the only Federal agency to play a significant role in the electrification of rural America, it was the agency with a singular mandate to do just that. Just two years after it was established, the REA had financed 350 cooperative projects in forty-five states that resulted in the delivery of electricity to 1.5 million farms. Growth over the next twenty years was such that by 1950, 86.3 percent of the country's farms were receiving central-station service with REA-financed systems, accounting for more than half of all farms electrified by June 30 of that year.[155] By 1960, there were 1,053 REA-financed rural systems, again accounting for more than half of all electrified farms in the nation. In 1961, there were 981 active borrowers representing all 50 states, and the program served nearly 5.5 million rural consumers with approximately 97 percent of American farms served by central-power, more than 50 percent being REA-financed systems.[156]

Rural electrification did not live up to all of its promises, nor were its effects entirely positive. Farmers continued to migrate from the countryside to the cities, and the economic viability of small family farms continued to decline.[157] For rural women, labor-saving electric appliances sometimes led to higher standards of household care, generated new kinds of labor, or eliminated paid jobs assisting with labor-intensive tasks such as laundry. Some rural residents believed that electrification contributed to a decline in interactions among farmers, resulting a loss of community.[158]

The work of the REA in rural electrification had far-reaching effects, including making farming and household labor less strenuous.[159] The electrification of the countryside spurred growth in home appliance manufacturing, creating a need for the electrical and plumbing trades, particularly in rural communities. The arrival of electricity brought with it new communication technology, including the telephone and the television, which all served to bridge the cultural and education gap between rural and urban populations.[160] The structural model created for the creation of the rural electrification system was applied to development of the rural telephone system, the foundation of which was established in 1949. Like the electrical system, bringing telephone service to rural America extended over the decades that followed its inception.[161]

Comparable Properties: The Nation's First REA Power Generating Plants

The efforts made by the REA to electrify rural America resulted in the construction of generating plants in states across the county. As discussed, TVA-sponsored electrification projects dominated the Tennessee Valley, and portions of the West and Northwest were largely electrified by a system of agencies under Reclamation that worked to harness the power of water sources in those parts of the country. In rural areas outside those with available hydroelectric power, the REA established electric power cooperatives and built generating plants,

[154] U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Agriculture, 1954: General Report*, vol. 2.
[155] REA, *Report of the Administrator of the Rural Electrification Administration, 1950*, 2.
[156] REA, *Report of the Administrator of the Rural Electrification Administration, 1961*, 14; REA, *Rural Lines, USA*, 3.
[157] Roger Biles, *The South and the New Deal*, New Perspectives on the South (Lexington: University Press of Kentucky, 1993), 54–55; Jellison, 152–153.
[158] Wolfe, 516, 520–521
[159] Wolfe, 527; Ruth Schwartz Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic Books, Inc., 1983), 201, 214.
[160] Laurence J. Malone, "Rural Electrification Administration," in *EH.et Encyclopedia of Economic and Business History*, ed. Robert Whaples, Economic History Association, accessed 04/02/2023, https://eh.net/encyclopedia/rural-electrification-administration/.
[161] REA, *Report of the Administrator of the Rural Electrification Administration, 1961*, 14.

thereby driving electrification in swathes of the country between the TVA and the West-Northwest as well as more targeted areas outside the reach of the TVA, western agencies, and private utilities. Determining the number of REA-financed power generating plants is difficult. The statistics provided in the annual REA reports paint a clear picture of the annual financial allotments for power generating facilities by dollar amount, but they do not denote the number of generating plants constructed except in fiscal year 1940 when loans for constructing thirty-five generating plants representing both rural cooperatives and municipal facilities were approved; it appears that twenty-two of that number were rural cooperatives. The 1943 report stated that since 1935, the REA had financed sixty-one generating plants; at least twenty-five REA generating plants and step-down plants were constructed in Iowa alone (two of those accounted for in the 1940 report). Post-war power demand resulted in a rise in the number of loans given for construction of plants. From these pieces of information, we can extrapolate that the number of REA plants constructed across the nation in the period of 1935–1960 likely more than doubled from the 1943 report of sixty-one power plants. The number of generating plants that remain today also remains to be determined. However, the relevant means of understanding the significance and historic integrity of the Reeve Plant is by comparison with its immediate contemporaries—those plants that received REA loans and were the first in the nation to be energized. These early plants represent the shift in the program's policies to fund construction of transmission lines and, when necessary, power generating plants. By the provision of such loans, the REA created a path for rural electrification across the country. There are three comparable properties.

Shenandoah Valley Electric Power Cooperative Power Plant – Dayton, Virginia

The nation's first REA generating plant to be energized was the Shenandoah Valley Electric Cooperative Power Plant in Dayton, Virginia, which "came on the line" January 29, 1938.[162] The cooperative received an REA loan six weeks after the Reeve and Pocahontas Plants, on February 13, 1937. At the time that construction of the Dayton Plant was approved, less than 25 percent of farms in the Shenandoah Valley were electrified, a percentage expected to triple within two years after the generating plant's completion.[163] The red brick generating plant was equipped with three diesel-powered generators with a combined capacity of 1,120 kilowatts capable of supplying electricity to 2,000 farms across portions of four counties and along 566 miles of line.[164] The Dayton Plant was constructed with space available to add a fourth generating unit should consumer demand warrant it.

The last of the diesel generators at the Dayton Plant was taken out of service in 1955. At that time, the structure was renovated to make room for the cooperative's office, with an addition on the southwest built to house the engineering department and the home economist's facilities known as the Living Center.[165] The structure of the Dayton generating power plant is extant but substantially altered from the original; the existing exterior character reflects the 1955 alterations and there is no evidence of auxiliary equipment remaining on the site. The Dayton Plant is not listed in the National Register.

Chippewa Falls Power Plant – Chippewa Falls, Wisconsin

The second REA generating plant to be energized was the Chippewa Falls Power Plant, located five miles north

[162] Chase, 34; Malone; "Electric Current Turned on Co-operative Lines in West Rockingham; 97 Homes Served," *Daily News-Record* (Harrisonburg, VA), January 31, 1938.

[163] "Dayton Gets Power Plant," *Daily News-Record* (Harrisonburg, VA), April 8, 1937.

[164] Wayne and Sally Hannah, *The Light Still Shines* (Bridgewater, VA: Shenandoah Valley Electric Cooperative, 2006), 15; "Electric Current Turned on Co-operative Lines in West Rockingham; 97 Homes Served," *Daily News-Record* (Harrisonburg, VA), January 31, 1938.

[165] Hannah, 43; "Valley Electric Co-op Meeting Attracts 3,000," *Daily News-Record* (Harrisonburg, VA), August 14, 1957.

of Chippewa Falls, Wisconsin. The Wisconsin Power Cooperative received a $650,000 REA loan in June 1937 for construction of its brick power plant. The 4,000-kilowatt plant, which was designed to serve eleven Wisconsin counties, came online March 17, 1938.[166] In December 1941, the Wisconsin Power Cooperative and the Tri-State Power Cooperative (with electric cooperatives in Wisconsin, Minnesota, and northeast Iowa) were consolidated to become the Dairyland Power Cooperative, creating the world's largest cooperatively-owned system for the generation and transmission of electricity.[167] After the consolidation, the Chippewa Falls Plant remained in operation through 1975, when it was decommissioned and dismantled.[168]

The Chippewa Falls Plant, which is not listed in the National Register, remains extant and in use by a manufacturing company, Alliance Plastics Corp. The plant is much altered from its original character with some windows replaced, other windows boarded, and a large addition constructed, the location and character of which adversely impacts the primary façade and the historic integrity of the property as a whole.[169] In addition, there is no evidence of auxiliary equipment remaining on the site.

Central Electric Federal Power Cooperative Power Plant – Pocahontas, Iowa

The fourth REA plant to be energized was at Pocahontas, Iowa, (Iowa 48G) which received authorization for a REA loan on December 30, 1936, along with the Reeve Plant. Located on a three-acre parcel just south of Pocahontas and adjacent to the Rock Island Railroad line, the Pocahontas Plant would serve approximately 4,500 farms of the Humboldt, Calhoun, Pocahontas, Sac, and Buena Vista County electric cooperatives.[170] Like the Reeve Plant, the plant at Pocahontas was designed by Young & Stanley, its visual character from the exterior being a formed concrete structure with restrained Art Moderne influences. The Pocahontas Plant borrowed energy from Reeve beginning on March 27, 1938, before going online May 5, 1938. The plant is extant and in use by the Iowa Lakes Electric Cooperative, but alterations, including window infill, roof modifications, and site alteration, result in a significant loss of historic integrity. In addition, there is no evidence of original, auxiliary equipment remaining on the site. The plant is not listed in the National Register of Historic Places.

Conclusion

Of the country's first four REA power generating plants funded and energized, the Reeve Plant is the most well-preserved, retaining an exceptional degree of historic integrity. As a result, the Reeve Plant is the best representative of the REA's role in the electrification of rural America. The Reeve Plant was the object of one of the nation's first two REA power generating loans (December 30, 1936), was the third REA power generating plant in the country to be energized (March 23, 1938), and was the first REA power generating plant west of the Mississippi River to be energized. Along with the three comparable plants, the Reeve Plant represents the critical shift in REA tactics to the provision of loans for construction of power generation and transmission facilities that enabled rural cooperatives to by-pass private utility companies to offer affordable electric service to rural residents.

[166] 2009 Presentation, Slide 75, Young & Stanley, Project Records.
[167] "New Power Company Largest in the World," *LaCrosse Tribune and Leader-Press* (Lacrosse, WI), December 24, 1941.
[168] Historical Marker Database, "Nation's First Cooperative Generating Station," Historical Marker, Wisconsin Historical Society (1976), accessed 02/09/2024, https://www.hmdb.org/m.asp?m=13798.
[169] Greg Gryskiewicz, General Manager, Alliance Plastics Corp., Chippewa Falls, Wisconsin, interview by Alexa McDowell, Des Moines, IA, May 17, 2021.
[170] "Contracts Approved for Power Plants," *Carroll Daily Herald* (Carroll, IA), July 10, 1937; Severson, 34.

Comparable Properties: National Historic Landmarks

Existing National Historic Landmarks illustrate several important themes and trends in the history of generating and distributing electricity in the United States. The landmarks represent eras of early power generation by private utilities and recognize particularly significant contributions to the story of developing technology for power generation and the harnessing of hydroelectric power and steam-generated power. Other landmarks illustrate the federal government's involvement in the construction of dams that generated hydroelectric power, particularly through the Bureau of Reclamation, the U.S. Army Corps of Engineers, and the Tennessee Valley Authority. However, no existing NHLs document the role and impact of the REA in the electrification of rural America, nor the use of diesel generators. In this way, as a National Historic Landmark, the Reeve Plant fills a gap in the history of the development and distribution of the electricity in this country as well as contributes our understanding of the role of the diesel engine in the history of power generation.

Power Generation by Private Utilities

Adams Power Plant Transformer House – Niagara Falls, New York (NHL, 1983)
The Adams Power Plant Transformer House (1895/1899) at Niagara Falls, New York, is the only surviving structure of the Edward Dean Adams Power Plant. The limestone transformer house, which is a significant representative of the work of the nationally recognized architecture firm of McKim, Mead and White, is associated with the evolution of the production and distribution of electrical power between 1895 and 1961.

Once the largest facility of its kind in the world, the Edward Dean Adams Power Plant represents an epoch in the development of electrical power. Referred to as "the greatest single step in advance that was ever taken in the electrical field," years of scattered technological developments converged and were synthesized at the Adams Power Plant, allowing for the transmission of long-distance commercial electricity. This huge technological advance opened the door to the full utilization of the power of Niagara Falls in a manner that provided low-cost power needed by the industries associated with twentieth-century American growth.[171]

The Adams Power Plant and the Reeve Plant are similar in that both represent a specific and enormously significant moment in the development of electrical power generation upon which the country relied in order to grow and advance. Both resources are the best representatives of their respective moments in time and contributions to that development.

In comparison to the Adams Power Plant, the Reeve Plant's significance is tied not to the early advancement of electrical technology and the distribution of power to support American industry, but the extension of electrical technology to broad rural markets by the establishment of the REA's loan program for generating plants.

Seattle Electric Company, Georgetown Steam Plant – Seattle, Washington (NHL, 1984)
The Seattle Electric Company's Georgetown Steam Plant in Seattle, Washington, is a 1906 reinforced concrete structure housing operational examples of the world's first large-scale steam turbine. The resource is nationally significant as a transitional marker in the development of steam turbine generators. With generators manufactured by General Electric, the resource represents a specific era in the development of electrical power generation and distribution that impacted both the Seattle area and, because General Electric went on to play a

[171] Paul M. Lincoln, Cornell University's School of Engineering, quoted in Edward Dean Adams, *Niagara Power: History of the Niagara Falls Power Company, 1886-1918*, Vol. II (Niagara Falls, NY, 1927) 355; Ralph J. Christian and James Gardner, "Adams Power Plant Transformer House," Niagara Falls, Niagara County, New York, National Historic Landmark Nomination, 1978.

significant role in electric distribution and appliance manufacture across the country, the entire nation.[172]

The Georgetown Steam Plant represents a significant technological advancement specific to steam-generated electricity in an era that preceded the REA program that resulted in construction of the Reeve Plant and so many others in the nation. The Georgetown Steam Plant bears particular significance as a property that retains the ability to fully illustrate the equipment and process required to generate electricity from a steam-powered turbine. In contrast with the Georgetown Steam Plant, the Reeve Plant was a diesel power plant. With retention of the original diesel Nordberg engine retained, the Reeve Plant is significant as a representative of a type of internal combustion engine that is no longer in general use for power generation. As a result, the Reeve Plant provides an important piece of the history of rural electrification that is not told by the Georgetown Steam Plant.

Folsom Powerhouse – Folsom, California (NHL, 1981)

The 1895 Folsom Powerhouse in Folsom, California, is a nationally significant representation of "a momentous advance in the science of generating and transmitting electricity."[173] Like the Georgetown Steam Plant, the Folsom Powerhouse is directly tied to the technological developments made by the General Electric Company. The granite and brick structure was completed in 1895 and energized on July 13 of that year, marking what was noted as "the age of long-distance electrical transmission."[174]

The Folsom Powerhouse represents an early advancement in the generation of electricity over long distances, specific to hydroelectric power. The 1938 Reeve Plant undoubtedly benefitted from the technological hurdles made by the Folsom Powerhouse despite the variation of power sources. Relative to the Folsom Powerhouse, the Reeve Plant represents a later period of the production and distribution of electricity for the purpose of electrifying rural areas. Further, the Reeve Plant fills the gap in the story of the development of electricity as the best remaining example of one of the first power generating plants financed by the REA.

Federal Dams for Hydroelectric Power

Four federally constructed dams that produce hydroelectric power have been designated National Historic Landmarks: Wilson Dam in Alabama, Roosevelt Dam in Arizona (designation withdrawn in 1999), Hoover Dam (also known as Boulder Dam) in Arizona and Nevada, and the Bonneville Dam Historic District in Oregon and Washington. These NHLs represent hydroelectric dams constructed by the U.S. Army Corps of Engineers (Wilson Dam and Bonneville Dam) and the Bureau of Reclamation (Roosevelt Dam and Hoover Dam), as well as two federal programs for river control and power generation: the Tennessee Valley Authority (Wilson Dam) and the Bonneville Power Administration (Bonneville Dam). Although all of these federal agencies and programs engaged in providing electricity to rural customers, the REA is distinctive for being primarily dedicated to rural electrification nationwide and for focusing on rural areas where hydroelectric power was not viable.[175]

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[172] T. Allan Comp, Ph.D., "Seattle Electric Company Georgetown Steam Plant," Seattle, King County, Washington, National Historic Landmark Nomination, 1984.

[173] George R. Adams, "Folsom Powerhouse," Folsom, Sacramento County, California, National Historic Landmark Nomination, 1981, 8:1.

[174] Allen W. Welts, "Folsom Powerhouse," Folsom, Sacramento County, California, National Register of Historic Places Nomination, 1973, 8:1–2.

[175] Likewise, none of the six dams identified in the 2005 study, *Large Federal Dams*, as having the potential for National Historic Landmark designation under NHL Criterion 1 were primarily dedicated to nationwide rural electrification. Five were built by the Bureau of Reclamation, and like the Hoover Dam NHL and Roosevelt Dam, were part of multi-purpose river development projects that included flood control, irrigation, or navigation improvements. Constructed by the U.S. Army Corps of Engineers, Troy Dam #1 in New York was primarily intended to facilitate navigation. Billington et al., 458-465.

Bureau of Reclamation dams such as Hoover Dam and Roosevelt Dam were primarily intended to provide flood control and water for irrigation, and the areas powered by the hydroelectric generation at these dams included both rural areas and cities such as Los Angeles (Hoover Dam) and Phoenix (Roosevelt Dam). Electrical power from Roosevelt Dam was not extended to rural customers until the 1920s, more than ten years after it began supplying Phoenix with power.[176] Wilson Dam at Muscle Shoals on the Tennessee River was built by the U.S. Army Corps of Engineers between 1918 and 1925 to generate power for facilities to produce nitrate used in the manufacture of explosives during World War I. In 1933, it became the first dam operated by the newly established Tennessee Valley Authority (TVA), whose mission included rural electrification, as well as flood control, navigation improvement, and power generation for industrial development.[177] Producing hydroelectric power for rural areas was a major goal of the Bonneville Dam on the lower Columbia River. The Bonneville Power Project (later renamed the Bonneville Power Administration (BPA)), established by Congress in 1937 to distribute the power generated by the dam, served not just rural residents, but also urban areas and industries.[178] Both the TVA and the BPA were also regional in scope, whereas the REA served rural households throughout the United States who had not benefited from power generation provided by private utilities or federal agencies. Designating the Reeve REA Power Generating Plant as an NHL enables the collection of National Historic Landmarks to tell a more complete history of the federal government's role in rural electrification.

Conclusion

From its creation in 1935 through 1954, the Rural Electrification Administration worked along a variety of avenues to bring electricity to the American countryside. Among the various strategies employed, it was the decision to provide loans to rural cooperatives for construction of generating plants that broke the stalemate with private utilities that had prevented expansion of electric service in many areas of the country, setting a course toward rural electrification. On December 30, 1936, the first REA loans to fund construction of cooperative power generating plants were signed for the Federated Cooperative Power Association (Iowa 47G) and the Central Electric Cooperative Power Association (Iowa 48G), making the Iowa plants the first in the nation to receive REA loans. As the first official project of those two, Iowa 47G is the first in the country to receive an REA loan for construction of its power generating plant at Reeve. As such, the Reeve Plant represents the official act taken by the REA that established the means by which electrification would be supplied to large swathes of rural America. Additionally, the Reeve Plant was the third REA project in the country to go "on the line," following the first-in-the-nation plant at Dayton, Virginia, by three months and the Chippewa Falls, Wisconsin, plant by less than two weeks. Today, the Reeve Plant is the most well-preserved power generating plant of the first four that were funded and energized in the country. The property retains an exceptional level of historic integrity with multiple resources retained (including the original Nordberg diesel engine) that contribute to our understanding of the significance of its historic function and support the plant's

[176] Billington et al., 98–107, 129–182; Joan Middleton and Laura Feller, "Hoover Dam," Mohave County, Arizona, and Clark County, Nevada, National Historic Landmark Nomination, 1985; National Historic Landmarks Program, "Roosevelt Dam, Gila and Maricopa Counties, AZ," National Park Service, last updated 08/29/2018, https://www.nps.gov/subjects/nationalhistoriclandmarks/roosevelt-dam.htm; Andrew Needham, *Power Lines: Phoenix and the Making of the Modern Southwest,* Core Textbook ed. (Princeton, NJ: Princeton University Press, 2014), 23, 39.

[177] Billington et al., 89–92, 111–114, 117–119; Polly M. Rettig and Horace J. Sheely, "Wilson Dam," Colbert and Lauderdale Counties, Alabama, National Historic Landmark Documentation, 1976. Wilson Dam was designated a National Historic Landmark in 1966, but the documentation was not prepared until years later, as was typical for NHLs designated in the 1960s.

[178] Billington et al., 191–203, 222–228; Stephen Dow Beckham and Donald C. Jackson (Heritage Research Associates), "Bonneville Dam Historic District," Multnomah County, Oregon and Skamania County, Washington, National Historic Landmark Nomination, 1987.

ability to tell the critical story of the contribution made by the REA to rural electrification. Additionally, the Reeve Plant fills a highly significant gap in the national story around the development and distribution of electricity currently represented by existing National Historic Landmarks. Together with the existing NHLs, the Reeve Plant expands our understanding and is a physical representation of the impact of electricity on the development of the nation and in the daily lives of its citizens.

6. PROPERTY DESCRIPTION AND STATEMENT OF INTEGRITY

Ownership of Property	Category of Property
Private: X	Building(s): X
Public-Local:	District:
Public-State:	Site:
Public-Federal:	Structure:
	Object:

Number of Resources within Boundary of Property:

Contributing	Noncontributing
Buildings: 1	Buildings: 0
Sites: 3	Sites: 0
Structures: 9	Structures: 0
Objects: 0	Objects: 1
Total: 13	Total: 1

PROVIDE PRESENT AND PAST PHYSICAL DESCRIPTIONS OF PROPERTY

(Please see specific guidance for type of resource[s] being nominated.)

Summary Description

The Reeve REA Power Generating Plant is comprised of multiple resources. Classified as a building due to the plant's physical and functional prominence amongst the auxiliary structures, the nominated area is comprised of one building (power plant), three sites (fuel tank foundation, water cooling tower foundation, and transformer foundations), and nine structures (four air intake houses, transformers, septic tank, oil storage tank, well, and sump tank) that are related to the historic function and/or historical context of the property during the period of significance. There is one non-contributing object on the site—a five-foot-tall, poured concrete, historical marker that was added after the period of significance and is located southwest of the plant, near the roadway. All existing historic resources contribute to the national significance of the property and retain sufficient integrity to convey the historic operation of the plant and the historic association from which the property derives significance.

Site Description

The Reeve Plant is situated in north central Iowa, roughly fifty-eight miles south of the Iowa-Minnesota state line and eighty miles northeast of the state capital of Des Moines. The Reeve Plant gets its name from Reeve Township in which it is located in rural Franklin County, less than five miles south of the county seat at Hampton. The resource is located on the north side of 110th Street (a gravel road), just one and a half miles west of Iowa Highway 65 (historically known as the Jefferson Highway) and within 300 feet of the Union Pacific Railroad line.

The resource is located on a trapezoidal-shaped parcel, the form largely dictated by the diagonally running rail line on the west. The current parcel represents the west portion of the original parcel, a large section of ground on the east having been subdivided from the original in 1975 by the Corn Belt Power Cooperative, where they continue to operate contemporary electrical sub-station.

The Reeve Plant is situated in an agricultural setting, surrounded by large-scale farm fields threaded by roadways (commonly gravel surfaced) laid out in the highly structured grid system that typifies much of the state's countryside. The area has a slightly rolling topography, with some variation found on the plant site. A field of wind turbines is sited approximately one-half mile south of the site, extending south for some distance.

A chain-link fence surmounted by barbed wire runs along the south and west property lines, and east-west through the northern third of the property. The fence was installed in 1942 around the perimeter of the original parcel in an effort to increase protection against potential sabotage related to the attack at Pearl Harbor and subsequent entry of the U.S. into World War II. The eastern section of this fence is slightly outside of the NHL boundary and owned by the Corn Belt Power Cooperative and helps to protect its contemporary power station. The fence is a contributing landscape feature, enhancing the plant's integrity of feeling and setting. A separate section of chain-link fence is east of the plant, surrounding the transformers.

The foundation of the grain elevator that was historically located adjacent to the railroad at the west parcel boundary was counted as a non-contributing resource in the National Register nomination. However, because the foundation is no longer visible, it is not included in the NHL nomination count.

Basic Mechanics of Power Generation and Distribution

Electrical power systems begin with the generation of power in the power plant, where electricity is produced by the spinning of a generator. The power sources that initiate the spinning can be water (i.e., hydroelectric power); hot steam fueled by coal, natural gas, oil, or nuclear; or internal combustion engine such as those used in REA power generating plants from 1938 to 1941.[179] Electrical power systems are real-time energy delivery systems, meaning that the power is generated, transported, and supplied on demand.[180]

Once produced, generated power was then transmitted to a system of transformers located on the plant site, where it was converted for transmission over a system of power lines to farms. At the farms, transformers were mounted to poles located in close proximity to the farm buildings that would utilize the electricity. At the transformers, the high voltage power was converted to a voltage suitable for use in the farmhouse powering household appliances such as electric irons, refrigerators, and radios, and for powering machinery such as feed grinders, and milking machines in the barn.[181] As the demand for electricity grew, systems were modified to meet that demand. In addition to the shift from diesel to steam- and (in areas where water resources support its use) hydro-powered service, transmission lines were added that could handle higher voltages.[182]

The diesel engine, developed by Rudolph Diesel and refined by others, has been attributed as a primary element of the post-1945 era of "rising independence and integration that has made the extent and the intensity of today's global economy possible."[183] While others had experimented in the field of power generation, there was

[179] Severson, 25.
[180] Steven W. Blume, *Electric Power System Basics for the Nonelectrical Professional* (Hoboken, NJ: John Wiley & Sons, 2017), 2.
[181] Blume, 3.
[182] REA, *Report of the Administrator of the Rural Electrification Administration, 1948*, 13.
[183] Vaclav Smil, *Prime Movers of Globalization. The History and Impact of Diesel Engines and Gas Turbines* (Cambridge, MA: The MIT Press, 2013), 17.

no precedent for the totality of Diesel's design of an internal combustion engine that combined excess air intake, high compression, and compression ignition; the incorporation of a high level of compressed air separated his design from others that came before. Because high compression created high temperatures, its use required incorporation of a cooling mechanism in the system. Once perfected, the engine was a machine of unprecedented efficiency.[184]

The diesel engines installed at the Reeve Plant were manufactured by Nordberg Manufacturing, which held a license to produce in the United States with Diesel's American patents. Nordberg became a leader in the manufacture of diesel engines in the U.S. The company is credited as the manufacturer of the country's largest diesel engine ever built in 1944. Nordberg's manufacture of diesel engines continued into the 1950s. By 1961 Nordberg had diversified their engine manufacturing to include steam engines.[185]

Resource Descriptions

The following resources are those original elements of the property as identified on the original site map. As numbered below and on Map 5, the resources (both existing and non-extant) correspond to the original site map.

Power Generating Plant – 1938 (Resource #1)

The power plant is a fifty-four-by-ninety-two-foot, freestanding, reinforced, poured concrete building with a flat roof. The structure is comprised of a two-story volume with one-story volumes attached on the east and north. The power plant has a partial basement that extends the full length and width of the main, two-story interior space and under the north, one-story wing, but not under the east one-story wing. All sides of the plant are defined by the visible arrangement of the pours that built them: the first pour having constructed the bottom ten feet of the wall; the second pour the next ten feet; and, on the two-story volume, the third pour, the upper ten feet of the wall. Each of the pours is marked by a horizontal seam. All sides are penetrated by rectangular window openings with original steel-frame, sixteen-light windows retained. Ground-floor windows include an operable, four-light hopper in the center; upper-story windows are fixed. Though utilitarian in nature and situated in a rural area, decorative elements grace the third level of the west, south, and east sides in the form of encircled lightning bolts. This gives the Reeve Plant a distinctive presence amongst the open fields and the built environment area farms, symbolizing the REA's commitment to rural America. The power plant retains an exceptional level of historic integrity with no alteration of the original form. Historic materials remain, and the concrete walls stand as testimony to the skill and workmanship of those who constructed the building in the dead of an Iowa winter.

The primary (south) façade is arranged into five bays defined by vertically ribbed panels that extend from the foundation through the height of the first and second pours, the seam of each pour being aligned with the top of the window openings. Windows are located between the ribbed panels and in alignment. Together, the windows and the ribbed panels create a subtly rhythmic and highly symmetrical wall. As noted, windows are steel-framed and multi-light, a form that is typical of industrial properties. Those located in the first pour have four-light hoppers with the upper windows being non-operable. The third pour constitutes the upper wall. The entire pour is smooth-finished (no ribbed panels) with a logo symbolizing electricity—an incised ring encircling a lightning bolt—aligned with the three vertical panels at the middle of the wall. In all cases the incised ring is painted green, and the lightning bolt is painted red.[186]

[184] Smil, 54, 65.
[185] Belovsky.
[186] Although original photographs are in black and white, the change in tone between the incised areas and the wall plane suggested

The west side has four bays, defined by the placement of openings. While the ribbed panels are not used on this side, two logos are evenly spaced in the third pour. The windows are located in the middle two bays of the first pour and in the south three bays of the second pour; those in the first pour have a center hopper, and the upper panes are non-operable. The west side also features a large, vehicular opening that fills the width of the north bay from grade to near the middle of the second pour. The original vehicular door has been replaced by a steel sectional door with mechanical operation. Original drawings indicate that while the opening is original, it originally housed a pair of multi-light doors (undoubtedly steel), surmounted by a multi-light transom. The replacement of the vehicular entrance door is the only significant alteration made to the plant exterior.

The north side is largely defined by the form, which is comprised of a one-story volume attached to the two-story volume. The side lacks both the ribbed panels and the logo found on the primary façade. Steel-frame windows penetrate the west wall of the one-story volume and the north wall of the two-story volume, but where those elsewhere on the structure are four-by-four lights, those on the north wall of the one-story volume are four-by-three lights. Typical of windows in the first pour, those of the one-story volume have operable hoppers, centered from side-to-side and aligned at the top of the opening. The windows are evenly spaced along the length of the wall with a single-leaf, steel door with six-by-two-light glazing located off-center between the second and the third bay from the east. One of three original boiler stacks remains.

The east side is also defined by the form, which is comprised of a one-story volume attached to the two-story volume. Note that the east one-story volume intersects with the north one-story volume to create an L-shaped wrap-around. The east side of the two-story volume lacks the ribbed panels, but two logos are evenly spaced in the third pour. Four steel-frame windows are evenly located in the second pour of the two-story volume, with five steel-frame windows evenly located in the one-story volume; true of all sides, the upper windows are non-operable, and the lower windows (all four-by-four lights) have hoppers located in their centers. A single-leaf, steel pedestrian door is centered on the south side of the one-story volume. The door has three-by-two-light glazing. Two poured concrete steps provide access to the slightly raised entrance. Historic images document this door as the primary entrance to the plant, with a gravel parking area located on the east until circa 1942.

The interior of the power plant is comprised of a large, open, two-story space with one-story spaces adjoining on the north and the east. The abundance of large-scale windows on all sides enhances the general character of a light and open space. Electrical and mechanical systems are exposed throughout.

The primary space (located in the two-story volume) is without interior sub-division, having housed four Nordberg diesel-powered generating units and the equipment (switchgear, etc.) associated with power generation. Today, Nordberg No. 1 is retained at the east end of the space but is not currently operational. In addition to Nordberg No. 1, the primary space retains reinforced, poured concrete walls (now painted), poured concrete floor (unpainted), a steel truss roof structure with steel roof deck, a heavy equipment crane, and industrial-type light fixtures suspended from the roof truss.

The perimeter walls, although now painted, retain the character of the method of construction with joints between concrete pours and structural columns remaining visible. The poured concrete floor is in its natural state with pour seams visible. It has been altered by infill of the openings where the three generating units were removed in 1975. The floor remains otherwise true to the original and is in good condition.

The steel roof truss is a flat, N-design Pratt truss. A commonly used truss, this design is characterized by the combined use of vertical chords and diagonal chords that together create a pattern of interconnected Ns. The

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they may have always been painted. The character of the paint today is faded.

original drawings call for a slight, front-to-rear sloping roof with the truss dimensions decreasing by a full foot from south (front) to north (rear). Each truss section measures four feet, eight inches, together spanning forty-six feet, ten inches.

A five-ton, steel, traveling crane assembly extends the full width of the structure. The primary crane rail runs the length of the plant (passing in front of the upper windows) along rails bolted to column brackets located at fifteen feet, six inches from the floor. The crane comprises a trolley holding a pulley system that travels north-south along the primary crane rail. Capable of lifting great weights, the traveling crane was used to service the four Nordberg generating units.

The switchgear was monitored by plant operators when starting the diesel engines and bringing generators online. It was also used to monitor the distribution grid and generator performance during plant operation. The switchgear on display is from the Dinsdale Plant and is essentially the front panels of the full switchgear system. The original Reeve switchgear, which was 15,000 volts, was comprised of two large sections of four cabinets each; it was removed circa 1979. Each of the cabinet's front panels had a series of gauges and other monitoring devices, which varied by panel. The Dinsdale switchgear is one large section of five cabinets, each with a front panel with gauges and other devices, similar to those of the Reeve switchgear.

The primary space is open to the one-story volume on the east; a single-span opening connects the two spaces with a narrow, arched opening on the south providing passage to a small hall inside the pedestrian entrance at the southeast corner. The space is characterized by a lower roof height, painted concrete walls, unpainted concrete floor, steel beam ceiling, and large multi-light windows along the east.

The north one-story volume is divided into a series of spaces that originally housed a washroom, storeroom, conference room, office, oil storage, and tool room. Stairs to the basement are located at either end of the volume. The individual spaces remain unaltered, with steel and multi-light doors retained. Like the interior as a whole, the concrete walls are painted, though the construction pour seams remain visible; the concrete floor is largely unpainted with some rooms retaining traces of earlier paint; and the steel roof structure, including the truss and deck, is exposed. Additionally, an exterior door is retained, its steel and multi-light form intact.

Both the east and the west basement stairs are accessed through an arched opening. The stairs are L-shaped, steel structure with textured steel plate treads, steel risers, and steel pipe railings.

The basement is a single, open space with stairs on either end. The basement extends the full length and width of the main two-story interior space and under the north one-story wing, but does not extend under the east one-story wing. The basement is characterized by the concrete structure, limited natural light, and mass created by both structural elements and generator pits for the four generating units. Electrical and mechanical systems are exposed throughout the basement.

The concrete structure of the basement includes perimeter walls, beams supported by a series of square columns running the length of the space, a poured concrete floor, and transverse steel I-beams supported on the south by steel posts and intersecting the concrete beam on the north. The steel structure is designed to provide additional support for the generating units. All structural elements are painted.

The generator pits are concrete boxes housing the lower section of the generating unit. Each of the four pits is retained, with only the Nordberg No. 1 pit still housing a generating unit. The engine is slated for repair to make

it operational.[187] The centrifuge meter is located on the east wall, and the raw water storage tank is retained adjacent to the west staircase.

Fuel Tank Foundation – 1938 (Resource #2)

The fuel tank was located at the rear (north) of the plant and oriented perpendicular to the north side. Documented in historic images, the steel, cylindrical tank was set on a pair of concrete bases; the bases/foundation are retained.

Water Cooling Towers Foundation – ca. 1942 (Resource #3)

Although the two wood, louvered towers have been removed, the base of the cooling towers structure is retained. The foundation is constructed of reinforced, poured concrete and located west of the plant's northwest corner. The original site plan and early historic images document that the cooling towers were located directly west of the plant's southwest corner; the reason and date of the relocation of the towers is undetermined, but historic images document that the relocation occurred by 1942.

The foundation is approximately twenty-one feet long and fifteen feet wide, the length being oriented perpendicular to the plant. It is comprised of two adjoining, rectangular vaults with an integrated concrete cap running the perimeter of the upper wall. The foundation is located on a slight rise, leaving the south side approximately three feet above grade and the north approximately six feet above grade. The interiors of each vault extend somewhat below grade. The interiors are currently overgrown.

The cooling towers were wood slat structures that sat atop of the concrete base. The towers were used counteract the extreme heat resulting from the high compression used in the engines. Exposure to the elements and heavy use clearly impacted the length of use for the wood structures. As noted in 1943 correspondence between the plant manager and Young & Stanley (by then known as Stanley Engineering), at six years old, the cooling towers had "probably passed a third of their useful life."[188]

The cooling towers foundation remains in generally good condition with some deterioration of the concrete. Even without the wood, louvered cooling towers, the base remains an important element that contributes to understanding the plant operation.

Transformer Foundation – 1938 (Resource #4)

The original site plan and historic photographs document the original transformers located near the northeast corner of the plant. The transformer foundation consists of a concrete pad at grade, with a total of eight raised pads, one for each of the original transformers. Running north-south in two rows of four, with an ample pathway between rows, the foundation extends roughly thirty-five feet north of the plant at a width of roughly eighteen feet. The transformers manipulated the level of voltage that flowed along the power grid to a level suitable for residential use. Since the invention of the first constant-power transformer in 1885, transformers have been essential for the transmission, distribution, and utilization of alternating current electrical power.

Transformers – ca. 1942 (Resource #5)

[187] Located within the contributing power plant, the Nordberg No.1 engine is not counted as a contributing resource; however, similar to other interior equipment, it does strengthen the integrity of the plant and help convey its significance.

[188] Correspondence, November 22, 1943, Young & Stanley, Project Records.

By 1942 the transformers had been relocated to the east side where the remnants of that system are retained. An approximately twenty-by-twenty-foot area immediately east of the plant is fenced by a 1942 chain-link fence topped by barbed wire surrounding three circa 1942 transformers. The existing transformers represent a small portion of the relocated system of transformers. Although no photographs focused directly on the transformers exist to fully document them, the 1942 photograph of the plant includes them at the edge of the view. As a critical element in the transmission of electricity from the plant to the consumer, the transformers, even in their reduced state, contribute significantly to the historic integrity of the property.

Air Intake Houses (4) – 1938–1942 (Resource #6)

Four air intake houses are located roughly fifteen feet south of the generating plant, evenly spaced parallel to the plant's south wall. The air intake houses are poured concrete, rectangular boxes housing an air intake pipe. The units drew in fresh air through a louvered opening on the north side. The fresh air was fed through filter cells to an air intake pipe that extended from the air intake house, underground to openings in the foundation wall of the power plant. The east three air intake houses are eight feet wide and four feet, four inches deep, and stand nearly eight feet tall. The west air intake house is slightly wider, likely sized relative to the fourth generating unit. The edges of the units are beveled.[189]

Each side of the intake houses has an inset. On the north side of each unit, a metal panel fills the inset over the original, metal weather louvers. The panels were installed by the current owner to protect the units from deterioration. On the south side of the western-most intake house, "Power Plant Museum" is painted within the inset. Each of the other three units contain one letter spelling out R-E-A within their respective insets. Historic images document that the R-E-A lettering on the east units was in place by 1939, timed with installation of the third generating unit. In 1942, by which time the fourth generating unit had been installed, the west air intake unit was in place, but without painted signage. The current paint on each of the four air intake houses dates to after the Franklin County Historical Society assumed ownership of the property. Although the historic photographs are black and white, they suggest that the current palette is a tonal match to the historic with a closely matched font used.

Although no longer operable, the air intake houses retain a high level of historic integrity. As prominent features adjacent to the plant's primary facade, their presence and character contribute significantly to the overall high level of integrity retained by the property.

Sump Tank – 1938 (Resource #7)

The soft water sump tank is located at the northwest corner of the plant, a few feet from the north side. The twenty-one-foot by eleven-foot structure stands approximately eight feet above grade. The sump tank is reinforced, poured concrete with a steel manhole in the southwest corner. A roof drain attached to the sump tank through a four-inch vitrified drain and two twelve-inch openings near the tank floor provided for soft water outlet.[190]

The soft water sump tank appears to be in good condition. Its structure is intact, though showing signs of concrete deterioration, as is the manhole cover. Having been non-operational for decades, the mechanisms for operation are undoubtedly deteriorated.

[189] "Original Construction Drawings," Young & Stanley, Project Records.
[190] "Original Construction Drawings," Young & Stanley, Project Records.

Oil Storage Tank – 1938 (Resource #8)

The oil storage tank is located at its original location northwest of the plant. The structure is a cylindrical, steel tank of soldered sections located on a concrete pad; the tank is painted. The tank retains a steel ladder providing access to the flat roof, the roof access panel, and miscellaneous pipe and mechanisms supporting its original operation. The tank remains in good condition with loss of exterior paint.

Septic Tank (sub-grade) – 1938 (Resource #9)

According to the original drawing set, a septic tank was located due north of the plant's northwest corner. Because the tank is sub-grade, its condition has not been examined. However, given that the entirety of the site and its various resources remain largely unaltered, it is reasonable to assert that the tank remains in place at its original location and is thus included in the resource count.

Well – 1938 (Resource #10)

A well and pumphouse were located west of the plant, south of the cooling towers foundation. Today, the location of the underground well and surface pumphouse is marked by a long and narrow concrete pad with the point of access to the underground well marked by a round, steel cover; the pumphouse has been removed. Historic images show the pumphouse, which was similar in visual character to the air intake houses. According to the original drawings, the pumphouse measured six feet square and was eight feet tall and housed an American deep well turbine.[191]

Loss of the pumphouse negatively impacts integrity. However, the underground well remains an important element that contributes to understanding the plant operation.

Period of Significance Alterations

Site

- Slight change of grade along south side from pedestrian door to the west and from the door to the east where the parking lot was located.
- Relocation of the cooling towers.
- Removal of original parking lot and relocation of transformers, ca. 1942.
- Removal of the 1942 guard tower.
- Removal of the flagpole.

Alterations after the Period of Significance

Plant - Exterior

- West vehicular door and transom replaced (original opening retained), ca. 1975.
- Roofs replaced.
- Isolated replacement of glass panes, 1988-1989.
- Rooftop access ladders added on north side near the northwest corner.

Plant – Interior

[191] "Original Construction Drawings," Young & Stanley, Project Records.

- Walls painted, 1988-1989.
- Removal of Nordbergs No. 2, No. 3, and No. 4, ca. 1975.
- Removal of original equipment (full scope undetermined), ca. 1975.
- Large switchgear panel removed, ca. 1979; existing from Dinsdale plant installed ca. 1988.
- Infill of floor openings where generator units were removed, ca. 1975.
- Removal of original equipment in basement, including starting air tanks and boiler (full scope undetermined), ca. 1975.

Site

- Removal of fuel oil tank (ca. 1939 image).
- Removal of wood cooling towers (base retained), ca. 1975.
- Removal of the well pumphouse, ca. 1975.

Assessment of Historic Integrity

The Reeve Plant is the most well-preserved of the REA's initial power generating plants with an exceptional level of historic integrity retained. As a result, the Reeve Plant is the best representative of the REA's role in the electrification of rural America, specifically the establishment of a loan system for the construction of power generating plants by rural electric cooperatives.

The Reeve Plant remains at its original location in rural Franklin County, Iowa, resulting in a high level of historic integrity of location. As a resource constructed specifically to serve the rural consumer, retention of the original rural location is critical to historical significance.

The property retains a high level of historic integrity of setting and association. Sited in the Iowa countryside with a gravel road on the south and farmland spreading out in all directions, the Reeve Plant remains within the rural setting from which it derives its historic significance. Additionally, the plant remains adjacent to the railroad line, the presence of which played an important role in the choice of the site as the location for the generating plant.

The Reeve Plant's design retains a high level of historic integrity. The property's primary resource, the power plant, retains all exterior and interior design and structural elements without alteration except the replacement of the vehicular door on the west and painting of the interior walls. The plant exterior continues to fully express the restrained character of the 1938 poured concrete structure complete with three-part form, industrial-type windows, and electricity logos along the upper wall. The plant interior retains the original floor plan, the two-story volume of the primary space and one-story volumes of the wings, and the industrial character of the finishes.

The retention of much of the historic equipment enhances the high level of integrity of association and feeling of the Reeve Plant. Within the plant, the first generating unit (Nordberg No. 1) is retained in its original location on the first floor and extending into the basement level. The engine is not currently operational, but plans are underway to have it made functional for the purposes of demonstration. The traveling crane is also retained intact as are generator pits, centrifuge meter, and raw water storage tank in the basement. The site retains nine resources that contribute to our understanding of the plant operation.

The Reeve Plant retains a high level of historic integrity of materials and workmanship. Retention of the poured concrete structure and floors, the exposed roof structure, and industrial-type windows contribute to integrity of materials. The 1938 construction of a poured concrete building in the middle of an Iowa winter speaks to the high level of workmanship related to construction of the plant. The building remains sound without any obvious degradation of materials.

Located on its original site within a rural setting, with its historic association with the REA and the farms the plant was constructed to serve, with the plant structure and materials intact, and with much of the auxiliary equipment retained, the Reeve Plant retains an exceptional level of integrity of feeling. Marvin O. Kruse, project supervisor, and Arthur T. Oliphant, plant supervisor, would experience the Reeve Plant today in much the same manner as they would have at the time the plant was completed. Most importantly, the high level of historic integrity of feeling allows today's visitors to gain an understanding of the work required to construct the plant, the operation of the plant, and the significant role the REA played in the electrification of rural America.

Relative to its comparable properties, the Reeve Plant is far-and-away the most well-preserved example of an REA generating plant completed at the moment in which the REA shifted to providing loans to rural electric cooperatives for construction of generating plants for the purpose of circumventing the private utility providers that had represented a roadblock to rural electrification. As the first such plants in the nation, the Reeve Plant, the Pocahontas Plant, the Chippewa Falls Plant, and the Shenandoah Plant all represent the REA's significance in rural electrification. In contrast to the high integrity retained at the Reeve Plant, each of the other three plants has been significantly altered with both interior equipment and exterior auxiliary equipment removed, leaving the Reeve Plant as the singular representative of the REA's role in rural electrification of this country.

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Previous documentation on file (NPS):

_X_ Previously listed in the National Register (fill in 1 through 6 below)

__ Not previously listed in the National Register (fill in **only** 4, 5, and 6 below)

1. NR #:	89002307
2. Date of listing:	4/6/1990
3. Level of significance:	National
4. Applicable National Register Criteria:	A_X_ B__ C__ D__
5. Criteria Considerations (Exceptions):	A__ B__ C__ D__ E__ F__ G__
6. Areas of Significance:	INDUSTRY

__ Previously Determined Eligible for the National Register:	Date of determination:
__ Designated a National Historic Landmark:	Date of designation:
__ Recorded by Historic American Buildings Survey:	HABS No.
__ Recorded by Historic American Engineering Record:	HAER No.
__ Recorded by Historic American Landscapes Survey:	HALS No.

Location of additional data:

State Historic Preservation Office: 600 E. Locust Street, Des Moines, Iowa 50319

Other State Agency:

Federal Agency:

Local Government:

University:

Other (Specify Repository): Franklin County Historical Museum, Hampton, Iowa

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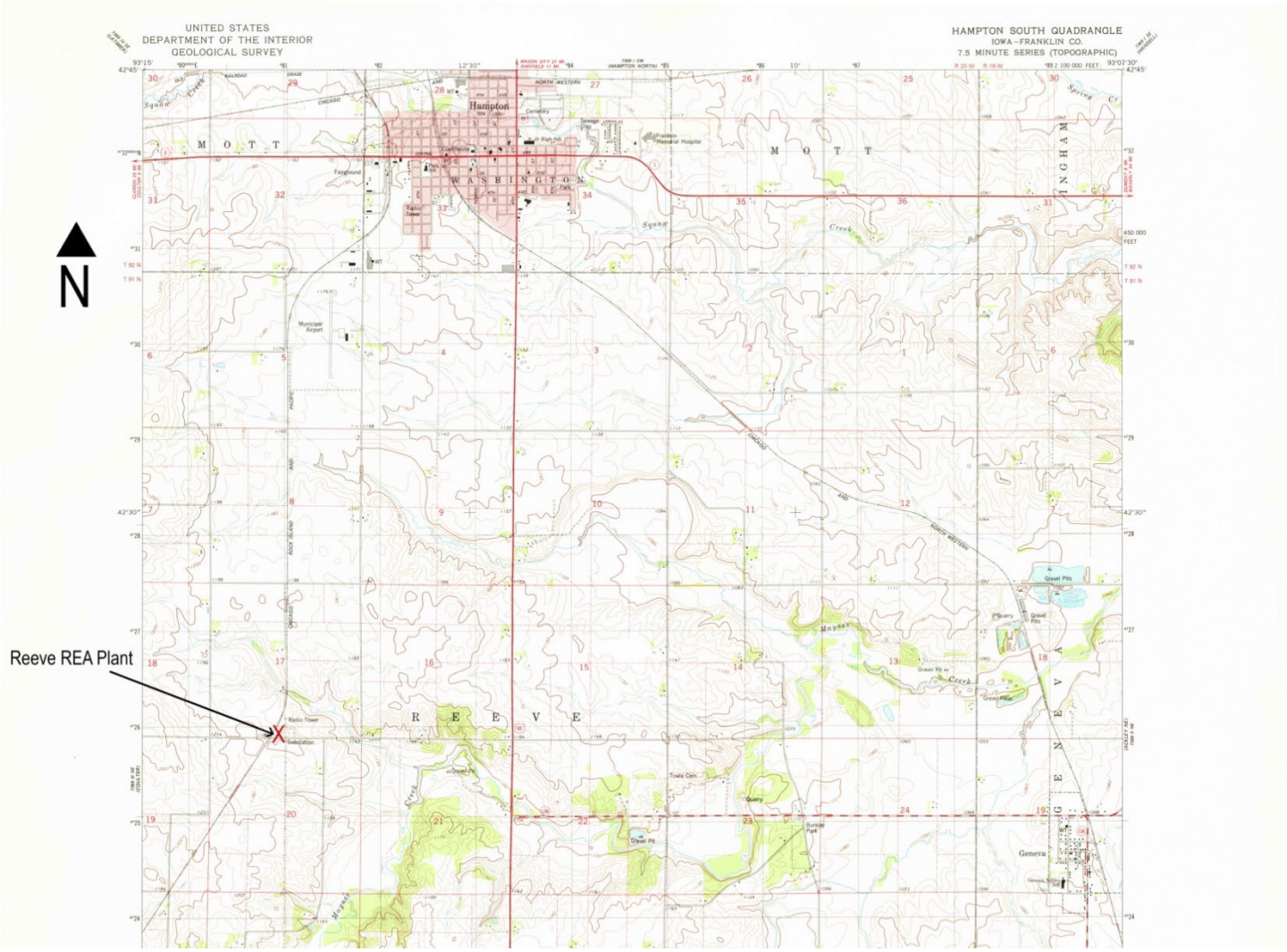
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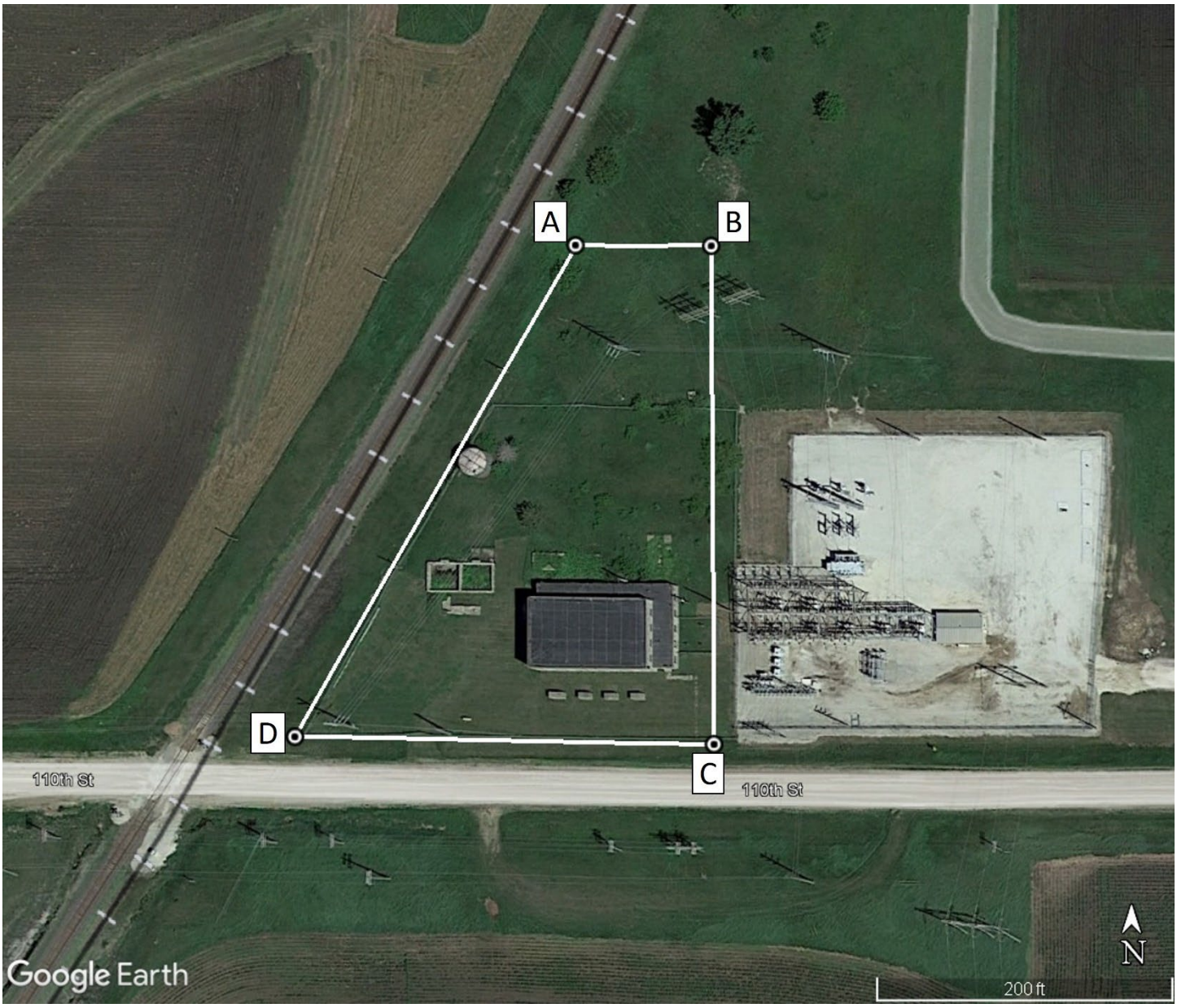
Maps



(Source: Google maps/US Geological Survey. https://store.usgs.gov/filter-products?country=US&region=IA&sort=relevance&lq=Hampton%20south.)

Map 1: USGS 7.5 Minute Topographic Map – Hampton South Quad – 1979. North arrow has been added for reader clarification.

The location of the Reeve REA Plant is indicated. See the following locator map for locational coordinates.



(Source: Base map, Google Earth.)

Map 2: Boundary Map – 2024. The boundary of the nominated property is shown in a white polygon, with the four latitude-longitude coordinate points listed below are marked and labeled.

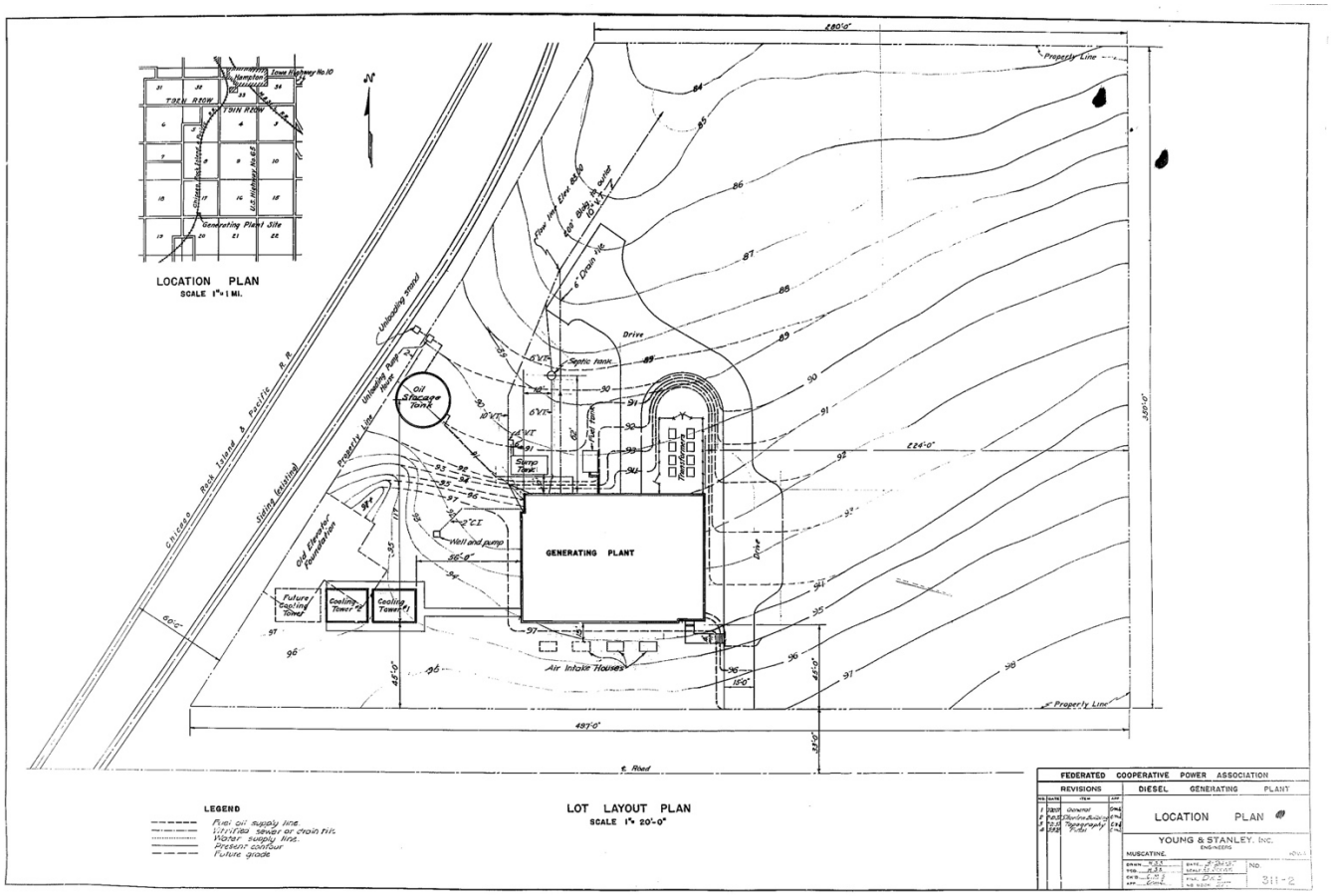
A: 42.688105, -93.233080
B: 42.688105, -93.232726
C: 42.687159, -93.232725
D: 42.687171, -93.233800



(Source: Beacon, Franklin County. https://beacon.schneidercorp.com/Application.aspx?AppID=150&LayerID=1872&PageTypeID=1&PageID=976& KeyValue=1123100003.)

Map 3: Assessor's Parcel Map – 2022. North arrow has been added for reader clarification.

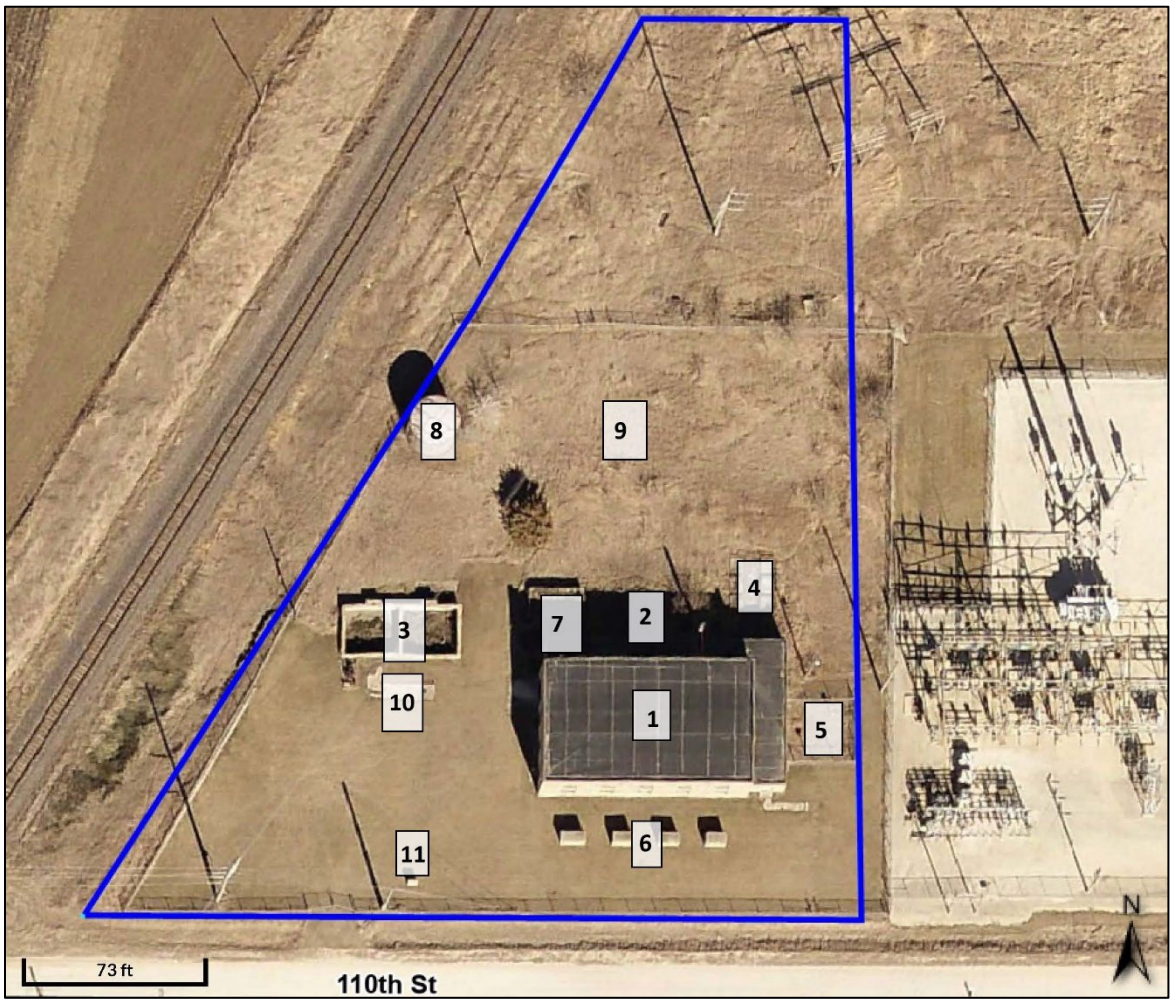
The current parcel boundaries are indicated with a dashed white line on blue. Note that the sub-station seen on the adjacent parcel is located on land split from the original parcel in 1975. The sub-station and land are owned by the Corn Belt Power Cooperative, successor to the Federated Cooperative Power Association.



(Source: Franklin County Historical Society Museum at Hampton, Iowa.)

Map 4: Site Plan – 1937

The original site plan, by the engineering firm of Young & Stanley, documents the original intent for the property site. Some alteration of the site, including relocation of cooling towers and the transformers were made by the time the plant was placed in service or shortly thereafter.



(Source: Base map, Google Earth.)

Map 5: Resource Map and Table of Resources. North arrow has been added for reader clarification. The aqua outline estimates the current parcel boundary. Note that some resources are not visible above ground.

Resource #	Resource Name	Type	Count	Categorization
1	Generating Plant	Building	1	C
2	Fuel Tank Foundation	Site	1	C
3	Water Cooling Towers Foundation	Site	1	C
4	1938 Transformer Foundation	Site	1	C
5	1942 Transformers	Structure	1	C
6	Air Intake Houses (4)	Structure	4	C
7	Sump Tank	Structure	1	C
8	Oil Storage Tank	Structure	1	C
9	Septic Tank	Structure	1	C
10	Well	Structure	1	C
11	Historical Marker	Object	1	NC

Total: 13 contributing, 1 non-contributing

Photo Log

Photographer: Alexa McDowell
Date: 2021
Location: Hampton (vicinity), Franklin County, Iowa

Photograph 1: Setting, looking northwest across 110th Street.

Photograph 2: Setting, looking northeast from 110th Street at a point just west of the Union Pacific Railroad crossing.

Photograph 3: Site view, looking northwest from near the east property line (the fence at far right is located outside the property boundary).

Photograph 4: Site view, looking northeast from near the southwest property line.

Photograph 5: Site view, looking northwest from near the southwest corner of the power plant.

Photograph 6: Site view, looking south from near the northwest property line, just north of (8) oil storage tank.

Photograph 7: Site view, looking southwest from near the northeast property line, with a view of (8) oil storage tank and the topography of the north portion of the site, which is more varied than on the south.

Photograph 8: Resource (1) Power Plant – view of the south and east exterior, looking northwest.

Photograph 9: Resource (1) Power Plant – view of the west and north exterior, looking southeast.

Photograph 10: Resource (1) Power Plant – detail of the south facade, upper wall ribbed detail and REA logo.

Photograph 11: Resource (6) air intake houses, looking northeast.

Photograph 12: Resource (5) transformers, looking east from the power plant.

Photograph 13: Resource (8) oil storage tank, looking north.

Photograph 14: Resource (3) cooling towers foundation, looking northwest.

Photograph 15: Resource (7) sump tank, looking northeast.

Photograph 16: Power Plant Interior – ground floor, looking northeast with a view of Nordberg No. 1 (the first of the original diesel-powered generating units) and the traveling crane, both at the rear (east) end of the space.

Photograph 17: Power Plant Interior – ground floor, looking southeast with a view of Nordberg No. 1 and the traveling crane, both at the rear (east) end of the space; the original, wall-mounted alarm and pyrometer panel is just in view at far left.

Photograph 18: Power Plant Interior – ground floor, looking northwest with a view of the north section of the plant, which originally housed an office, conference room, washroom, and storage spaces.

Photograph 19: Power Plant Interior – ground floor, looking north-northwest from a position just southeast of Nordberg No. 1 and beneath the traveling crane. In this view we see the one-story, east section of the building at right.

Photograph 20: Power Plant Interior – ground floor, looking northwest from a position just southeast of Nordberg No. 1.

Photograph 21: Power Plant Interior – ground floor, looking southwest from a position atop Nordberg No. 1.

Photograph 22: Power Plant Interior – ground floor, looking south through the one-story section on the east side of the plant.

Photograph 23: Power Plant Interior – ground floor, looking west in the former conference room of the one-story section on the north side of the plant.

Photograph 24: Power Plant Interior – Nordberg No. 1, looking southwest.

Photograph 25: Power Plant Interior – Nordberg No. 1, looking northeast.

Photograph 26: Power Plant Interior – view of Nordberg No. 1, which is a three cylinder, 750-horsepower, diesel powered unit (a unit being comprised of a diesel engine, a generator, and an exciter).

Photograph 27: Power Plant Interior – switchgear.

Photograph 28: Power Plant Interior – original alarm and pyrometer panel, mounted on the north wall near the conference room door.

Photograph 29: Power Plant Interior – basement, looking northwest toward the west staircase.

Photograph 30: Power Plant Interior – basement, looking southeast toward the east staircase.

Photograph 31: Power Plant Interior – basement, looking northeast.

Photograph 32: Power Plant Interior – basement. Nordberg No. 1 generator pit, looking south.

Photograph 33: Power Plant Interior – basement, looking west along the north exterior wall with a view of the boiler stack penetrations.

Photograph 34: Power Plant Interior – basement, original centrifuge meter mounted on the east wall.

Photograph 35: Power Plant Interior – basement, looking west at the raw water storage tank and west stairs.

Photos



Photograph 1: Setting, looking northwest across 110th Street. Note the Union Pacific Railroad (originally, the Chicago, Rock Island, & Pacific Railroad) crossing at left and the Corn Belt Power Cooperative (successor to Federated Power Cooperative) high lines and substation at right. The Corn Belt equipment is located on the east portion of the original parcel, which was subdivided in 1975. (McDowell, 2021)



Photograph 2: Setting, looking northeast from 110th Street at a point just west of the Union Pacific Railroad crossing. From this perspective we perceive the proximity of both the roadway and the rail line to the property, both of which were important to site selection and subsequent construction. (McDowell, 2021)



Photograph 3: Site view, looking northwest from near the east property line (the fence at far right is located outside the property boundary). In this view we understand the depth of the setback from the roadway, the limit of the east boundary line, the relationship of Resource (6) air intake houses to the plant's south facade, and the relationship of Resource (5) transformers to the plant's east wall. (McDowell, 2021)



Photograph 4: Site view, looking northeast from near the southwest property line. In this view we perceive the depth of the setback from the roadway as well as get a view of the extant contributing resources including (6) air intake houses (adjacent to the south facade), (3) cooling towers foundation (mid-ground, left), and (8) oil storage tank (background, left). Note the fence at far right, which is not included in the resource count, but is considered a significant landscape feature; also, the non-contributing, historical marker in the foreground, Resource (11). (McDowell, 2021)



Photograph 5: Site view, looking northwest from near the southwest corner of the power plant. In this view we get a view of extant contributing resources including: (3) cooling towers foundation (mid-ground) and (8) oil storage tank (background). The concrete pad just south of the cooling towers foundation marks the location of Resource (10) well and pump. (McDowell, 2021)



Photograph 6: Site view, looking south from near the northwest property line, just north of (8) oil storage tank. In this view we perceive the depth of the parcel and have a view of the rear (north) side of the power plant. The Corn Belt Power Cooperative substation is at left. (McDowell, 2021)



Photograph 7: Site view, looking southwest from near the northeast property line, with a view of (8) oil storage tank and the topography of the north portion of the site, which is more varied than on the south. (McDowell, 2021)



Photograph 8: Resource (1) Power Plant – view of the south and east exterior, looking northwest. The plant is considered a contributing building. (McDowell, 2021)



Photograph 9: Resource (1) Power Plant – view of the west and north exterior, looking southeast. Note that Resource (7) sump tank in view adjacent to the plant's north wall. (McDowell, 2021)



Photograph 10: Resource (1) Power Plant – detail of the south facade, upper wall ribbed detail and REA logo. (McDowell, 2021)



Photograph 11: Resource (6) air intake houses, looking northeast. The air intake houses are counted as four contributing structures. (McDowell, 2021)



Photograph 12: Resource (5) transformers, looking east from the power plant. The transformers are counted as one contributing structure. (McDowell, 2021)



Photograph 13: Resource (8) oil storage tank, looking north. The tank is counted as one contributing structure. (McDowell, 2021)



Photograph 14: Resource (3) cooling towers foundation, looking northwest. The cooling towers foundation is counted as a contributing, site-associated resource. (McDowell, 2021)



Photograph 15: Resource (7) sump tank, looking northeast. The sump tank is considered a contributing structure. (McDowell, 2021)



Photograph 16: Power Plant Interior – ground floor, looking northeast with a view of Nordberg No. 1 (the first of the original diesel-powered generating units) and the traveling crane, both at the rear (east) end of the space. (McDowell, 2021)



Photograph 17: Power Plant Interior – ground floor, looking southeast with a view of Nordberg No. 1 and the traveling crane, both at the rear (east) end of the space; the original, wall-mounted alarm and pyrometer panel is just in view at far left. The items arranged in the middle of the space are part of the museum collection. (McDowell, 2021)



Photograph 18: Power Plant Interior – ground floor, looking northwest with a view of the north section of the plant, which originally housed an office, conference room, washroom, and storage spaces. Note the elevated crane rail mounted to pilaster brackets in the upper wall. Except for the wall-mounted alarm and pyrometer panel, the items arranged along the wall are part of the museum collection. (McDowell, 2021)



Photograph 19: Power Plant Interior – ground floor, looking north-northwest from a position just southeast of Nordberg No. 1 and beneath the traveling crane. In this view we see the one-story, east section of the building at right. The large piece of equipment located under the beam between the two sections is a switchgear salvaged from the generating plant at Dinsdale, Iowa (non-extant). The original switchgear was removed in 1975. (McDowell, 2021)



Photograph 20: Power Plant Interior – ground floor, looking northwest from a position just southeast of Nordberg No. 1. Of note, the three other Nordberg units were aligned with Nordberg No. 1, their footprints filling the entire floor now covered by the line of artifacts seen in this view. Retention of the generator pits in the basement document their original locations and illustrate the historic relationship between the four units. (McDowell, 2021)



Photograph 21: Power Plant Interior – ground floor, looking southwest from a position atop Nordberg No. 1. In this view we perceive the volume of the primary space and the impact of the fenestration. Note the elevated crane rail mounted to column brackets in the upper wall, as well as the steel roof truss. (McDowell, 2021)



Photograph 22: Power Plant Interior – ground floor, looking south through the one-story section on the east side of the plant. Nordberg No. 1. is in this view at right, as is the switchgear salvaged from the Dinsdale Plant. The artifacts are part of the museum collection. (McDowell, 2021)



Photograph 23: Power Plant Interior – ground floor, looking west in the former conference room of the one-story section on the north side of the plant. Note the original steel and glass interior door, the steel beam roof structure, and the concrete floor (floor and walls painted, 1989). The artifacts are part of the museum collection. (McDowell, 2021)



Photograph 24: Power Plant Interior – Nordberg No. 1, looking southwest. Only the upper portion of the generating unit is visible on the main floor; the remainder is housed in a generator pit in the basement. (McDowell, 2021)



Photograph 25: Power Plant Interior – Nordberg No. 1, looking northeast. Only the upper portion of the unit is visible on the main floor; the remainder is housed in a generator pit in the basement. (McDowell, 2021)

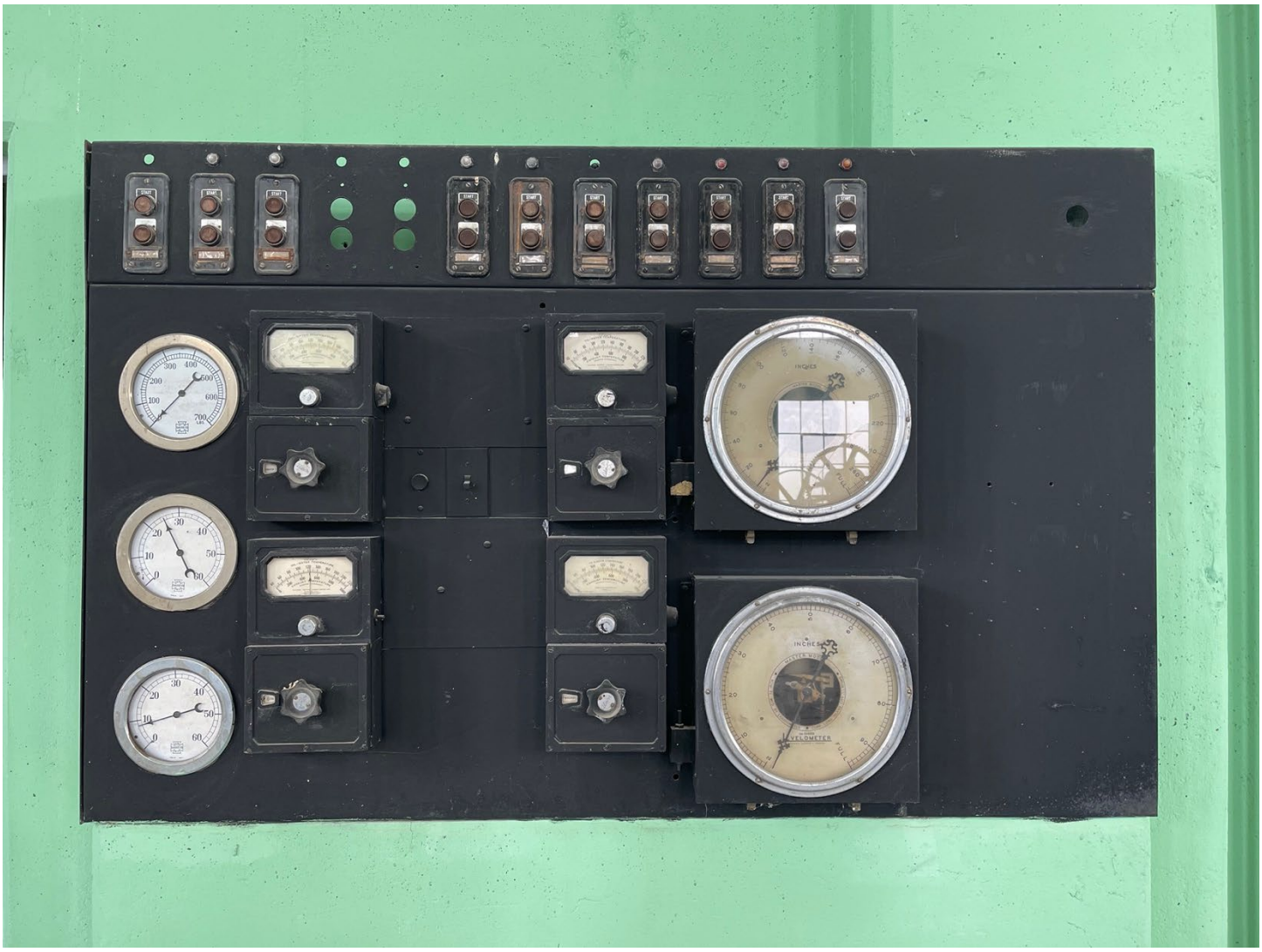


Photograph 26: Power Plant Interior – view of Nordberg No. 1, which is a three cylinder, 750-horsepower, diesel powered unit (a unit being comprised of a diesel engine, a generator, and an exciter). The unit is not currently operational, but plans are underway to restore function for demonstration purposes. Subsequent generating units were four cylinders with increased horsepower capable of generating more energy. (McDowell, 2021)



Photograph 27: Power Plant Interior – switchgear. The original switchgear was removed in 1975. This unit came from the Dinsdale Plant near Dinsdale, Iowa.[192] Manufactured by General Electric, the Dinsdale switchgear is a very good match for the original Reeve switchgear. For museum purposes, it serves to illustrate the operation of the Reeve Plant and the equipment in use at the time the plant came on the line. (McDowell, 2021)

[192] The Dinsdale Plant was constructed in 1949 as part of the Corn Belt Power Cooperative System. It was one of sixteen step-down plants that adjusted the high voltage coming from the Humboldt Plant to a level appropriate for consumer use. Dinsdale is located approximately sixty-five miles southeast of the Reeve Plant.



Photograph 28: Power Plant Interior – original alarm and pyrometer panel, mounted on the north wall near the conference room door. (McDowell, 2021)



Photograph 29: Power Plant Interior – basement, looking northwest toward the west staircase. The four generator pits are just out of view on the left. Note the concrete structural elements, and the concrete floor (painted, 1975). (McDowell, 2021)



Photograph 30: Power Plant Interior – basement, looking southeast toward the east staircase. The generator pits for the first two generating units are in view at right, Nordberg No. 1 being the far pit. (McDowell, 2021)



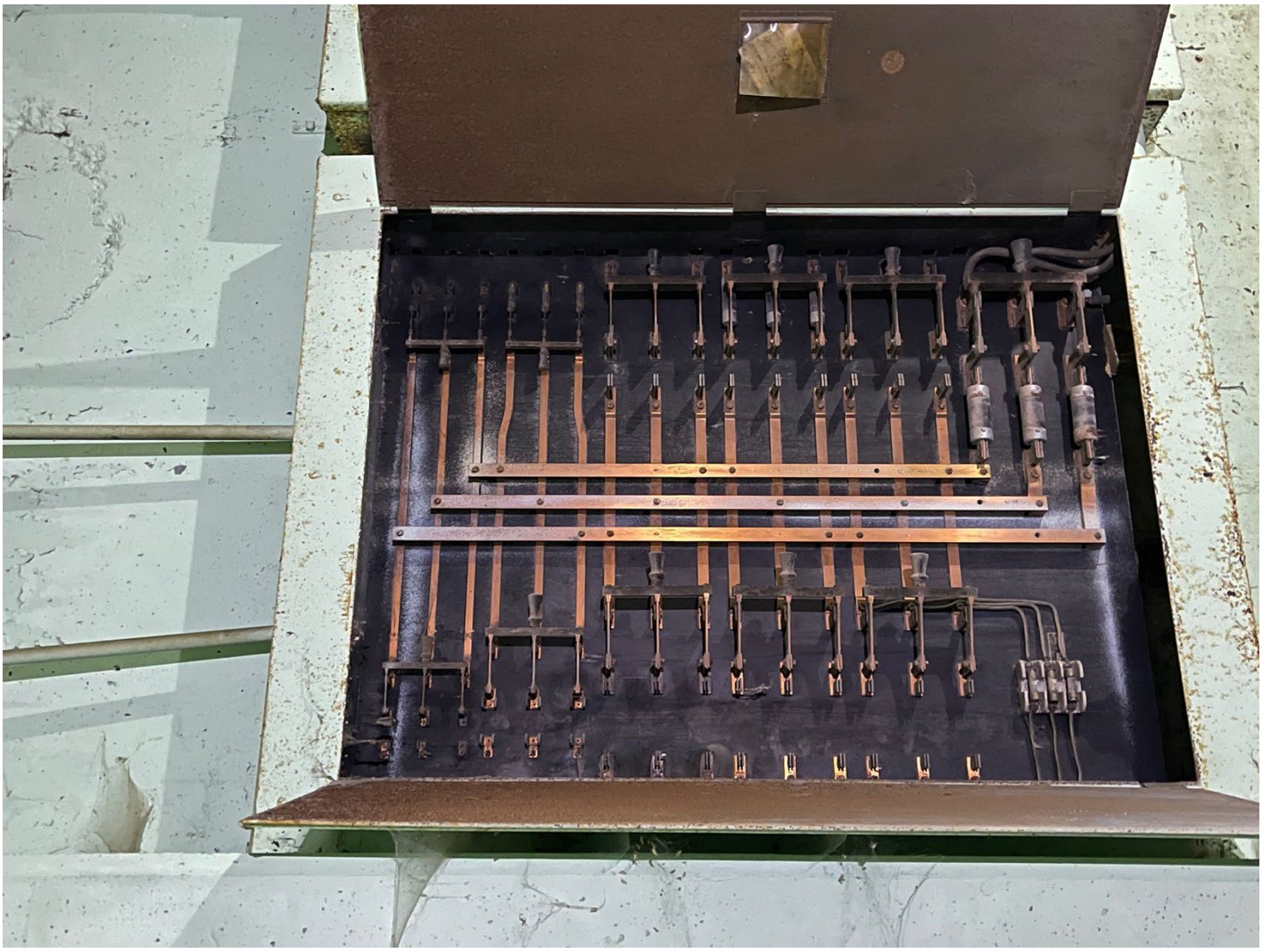
Photograph 31: Power Plant Interior – basement, looking northeast. The view documents retention of penetrations in the north wall used to exhaust high-temperature steam. The wall-mounted centrifuge meter is in view at the back of the space. (McDowell, 2021)



Photograph 32: Power Plant Interior – basement. Nordberg No. 1 generator pit, looking south. In this view, we can see how the Nordberg passes between floors (the light near the top is coming through a gap in the main floor). (McDowell, 2021)



Photograph 33: Power Plant Interior – basement, looking west along the north exterior wall with a view of the boiler stack penetrations. (McDowell, 2021)

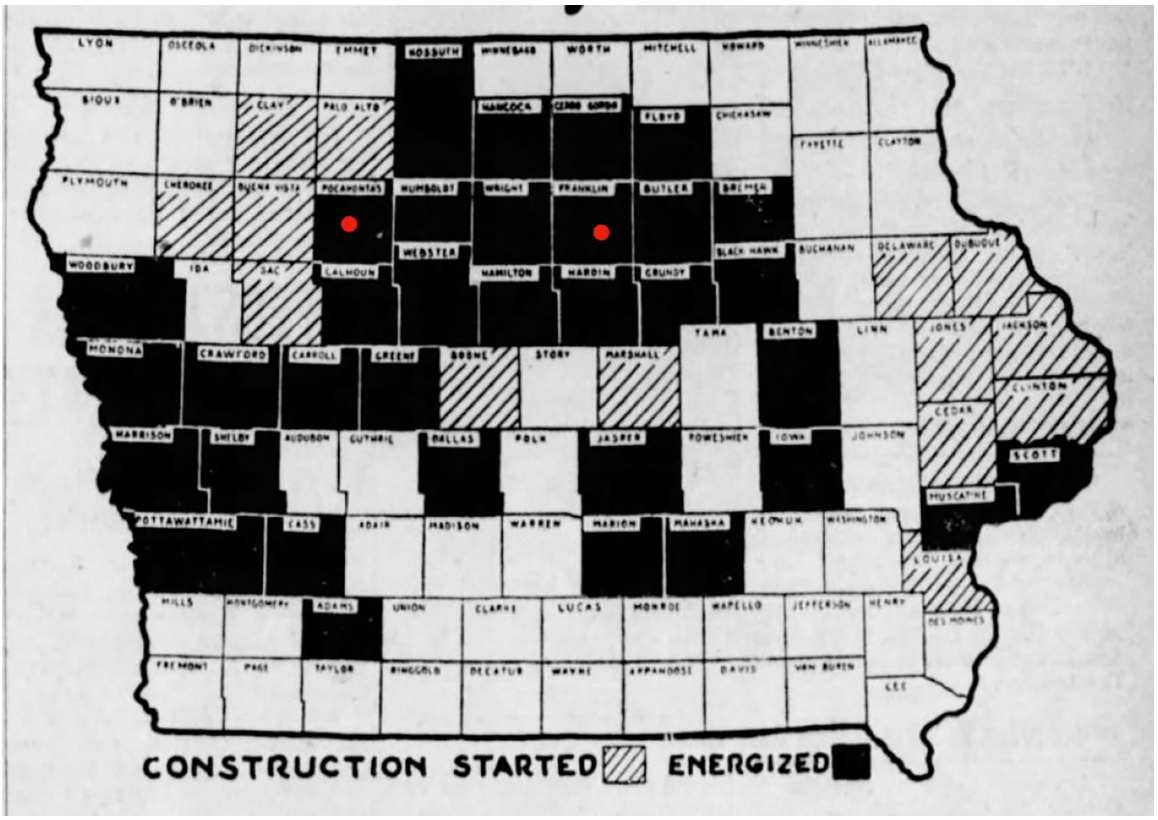


Photograph 34: Power Plant Interior – basement, original centrifuge meter mounted on the east wall. (McDowell, 2021)



Photograph 35: Power Plant Interior – basement, looking west at the raw water storage tank and west stairs. (McDowell, 2021)

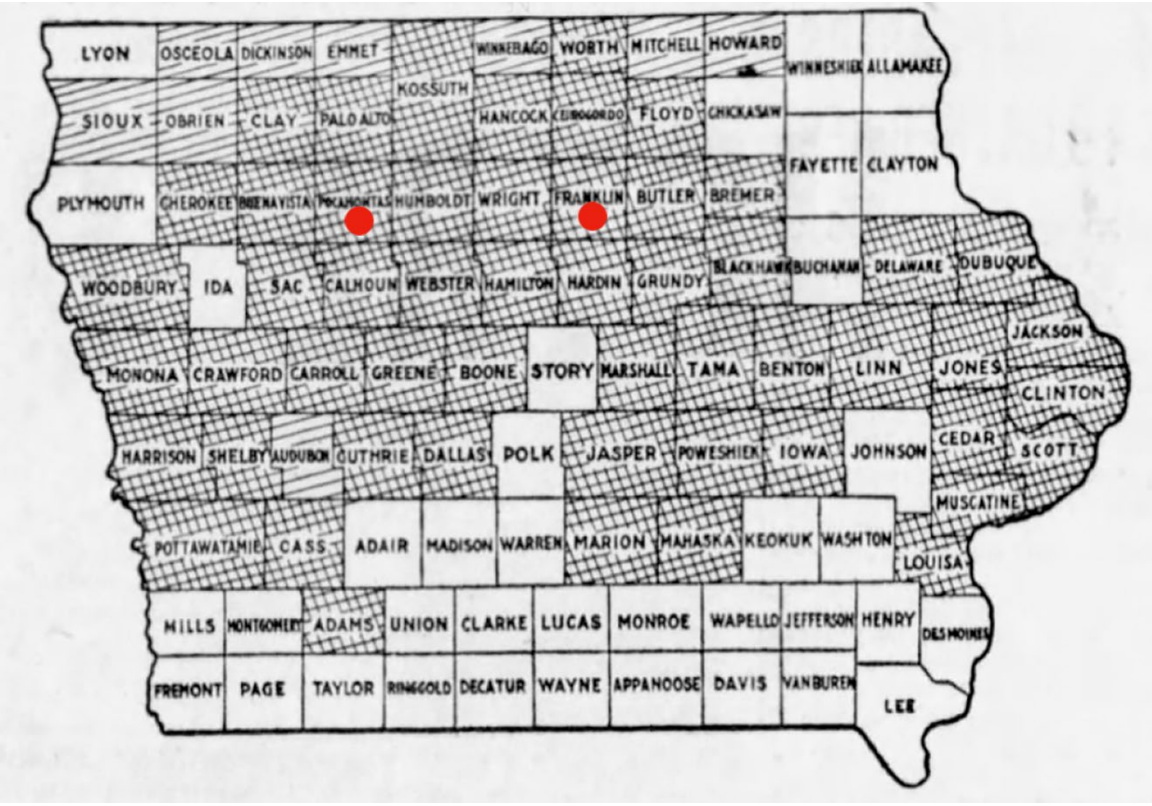
Figures



(Source: "Projects Approved Indicate Banner Year for Iowa REA," *The Des Moines Register*, June 01, 1938.)

Figure 1: Map of Iowa Showing Status of REA Power Transmission Line Projects in June 1938.

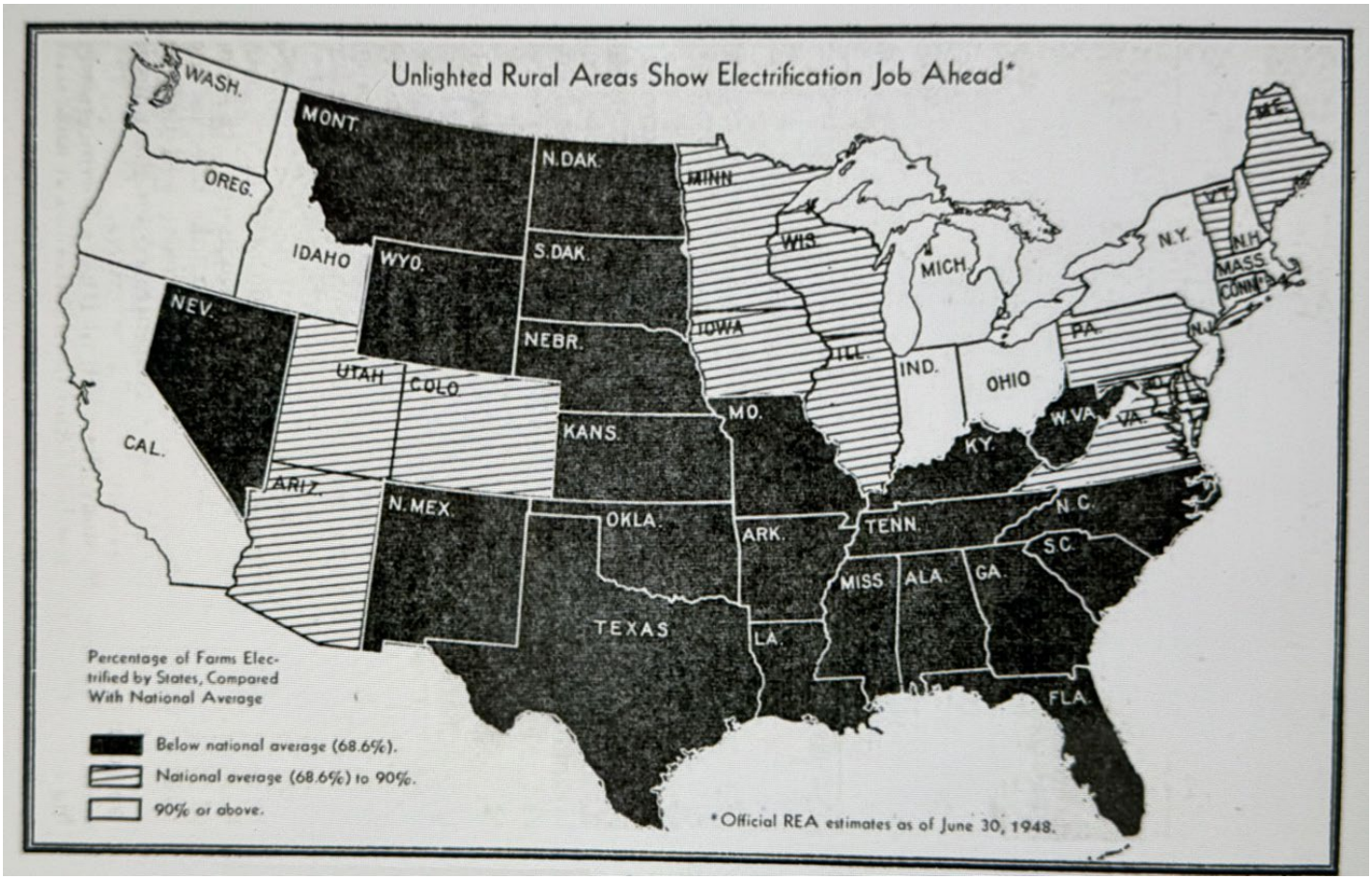
As the key notes, energized counties are indicated by black and those projects under construction are noted by hatching. The location of the two generating plants at Reeve (in Franklin County), and Pocahontas (in Pocahontas County), are noted by the red dots. Although great progress had been made in the months since the two plants had been energized in March and May, respectively, significant portions of the state remained without electricity.



(Source: "Projects Approved Indicate Banner Year for Iowa REA," *The Des Moines Register*, June 01, 1938.)

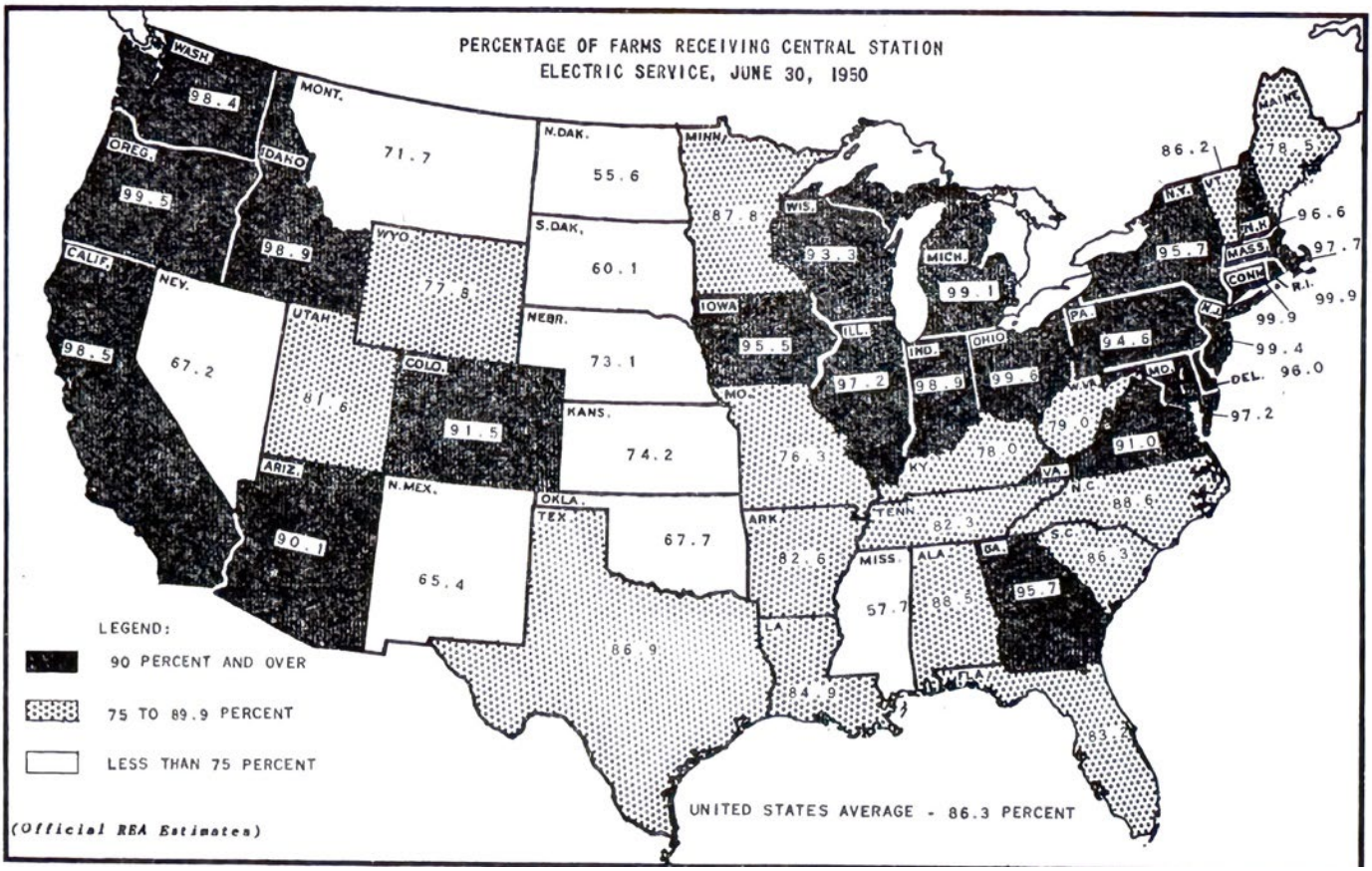
Figure 2: Map of Iowa Showing Status of REA Power Transmission Line Projects in December 1938.

By early December of 1938, the counties without Iowa-based, REA-supported electric service (indicated by no cross-hatching) were limited to the bottom two tiers of the state, the northeast corner, and a handful of isolated counties throughout; the northeast counties of Allamakee, Winneshiek, and Clayton are indicated as lacking service but received electricity through the Tri-State Power Cooperative based in Wisconsin. The location of the two generating plants at Reeve and Pocahontas are noted by the red dots. The 1947 consolidation of the Federated Cooperative Power Association with generating plant at Reeve and the Central Electric Federated Power Cooperative with generating plant at Pocahontas to establish the Corn Belt Power Cooperative enabled the growth of the existing system. A much larger generating plant at Humboldt, Humboldt County, and sixteen step-down plants were constructed in 1949. In addition, plants outside the Corn Belt system were constructed in Creston, Union County, and Cedar Rapids, Linn County, in 1948 to service those areas that lacked electricity in the above map. A similar evolution occurred in states across the country with the number and size of generating plants expanding to meet the ever-increasing demand for electricity.



(Source: *Report of the Administrator – Rural Electrification Administration*, 1948.)

Figure 3: Extent of Farm Electrification in the United States, 1948. As reported in the REA annual report for fiscal year 1948, the map illustrates the percentage of farms electrified in each state by June 30, 1948.



(Source: United States Department of Agriculture, *Report of the Administrator of the Rural Electrification Administration, 1950*(Washington, DC: Government Printing Office, 1950), 15, https://babel.hathitrust.org/cgi/pt?id=umn.31951d007086127&seq=1.)

Figure 4: U.S. Department of Agriculture map illustrating percentage of the nation's farms receiving central station electric service as of June 30, 1950.

Figures: Historic Images



(Source: Young & Stanley, Inc., Construction Archive, available at the Franklin County Historical Museum at Hampton, Iowa.)

Historic Image 1 (1938): This photograph documents the Reeve REA plant during the winter of 1938. Like the following image, the photograph appears to have been taken before windows were installed. Note original location of the transformers on the north side of the plant.



(Source: Loomis Archives, Safford Lock Collection, Mason City Public Library at Mason City, Iowa.)

Historic Image 2 (1938): In this view looking north, we see two of the four air intake houses in place on the south side of the building; the original location of the two cooling towers (left); and what appear to be the well and pump and an oil storage tank.



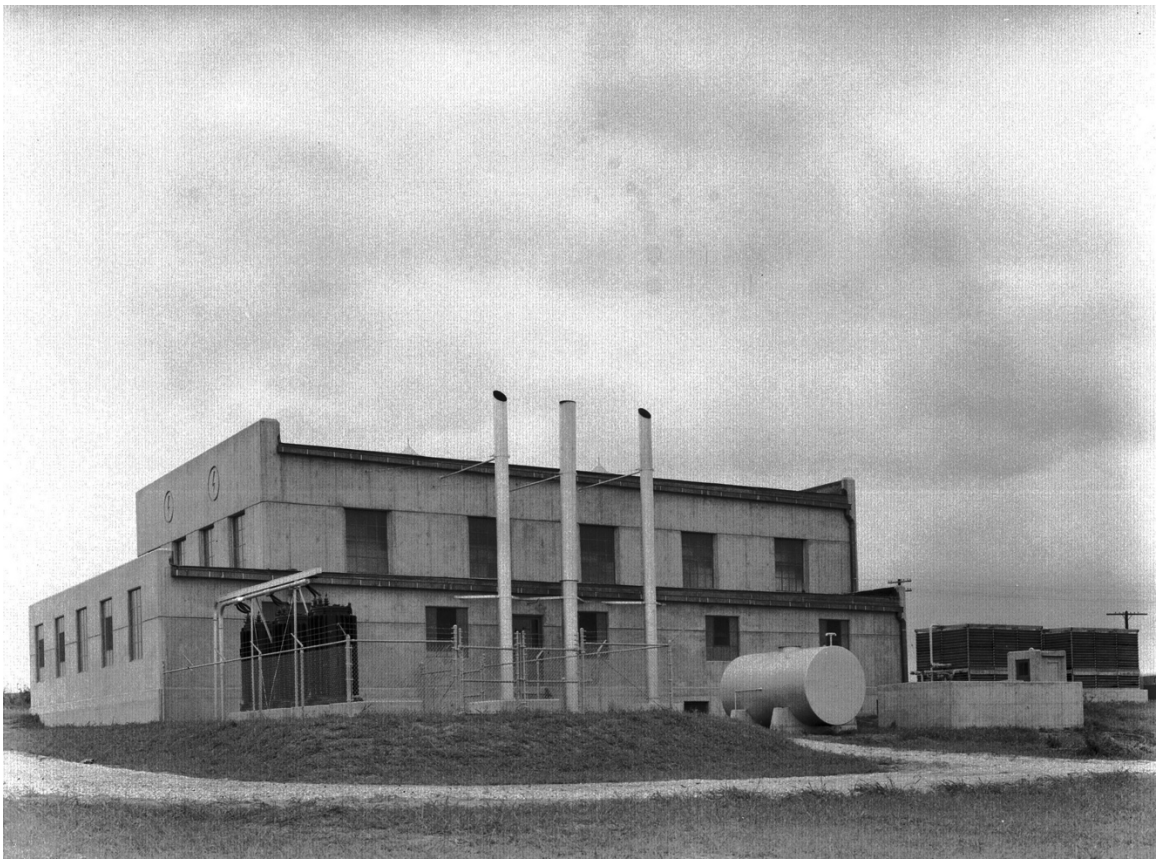
(Source: Franklin County Historical Society Museum at Hampton, Iowa.)

Historic Image 3 (April 1938): In this view looking northwest from 110th Street, we see the original location of the transformers near the northeast corner of the plant; two of the four air intake houses in place on the south side of the plant; the original orientation of steps and walkway to the east end of the plant; and what appears to be a graded walkway from the steps, then curving west along the roadway.



(Source: SL_5720 - Loomis Archives, Safford Lock Collection, Mason City Public Library at Mason City, Iowa.)

Historic Image 4 (October, 1939): In this view looking northwest from across 110th Street we see the third air intake house was in place by 1939, coinciding with installation of the third engine; the letters R-E-A have been added, one on each of the air intake houses; a tall flag pole has been erected on the south; some construction was still underway on the west; and what appears to be the cooling towers are in their original location at far left. The use of the east yard for a parking area and the open door on the east indicates that doorway functioned as primary pedestrian access to the plant.



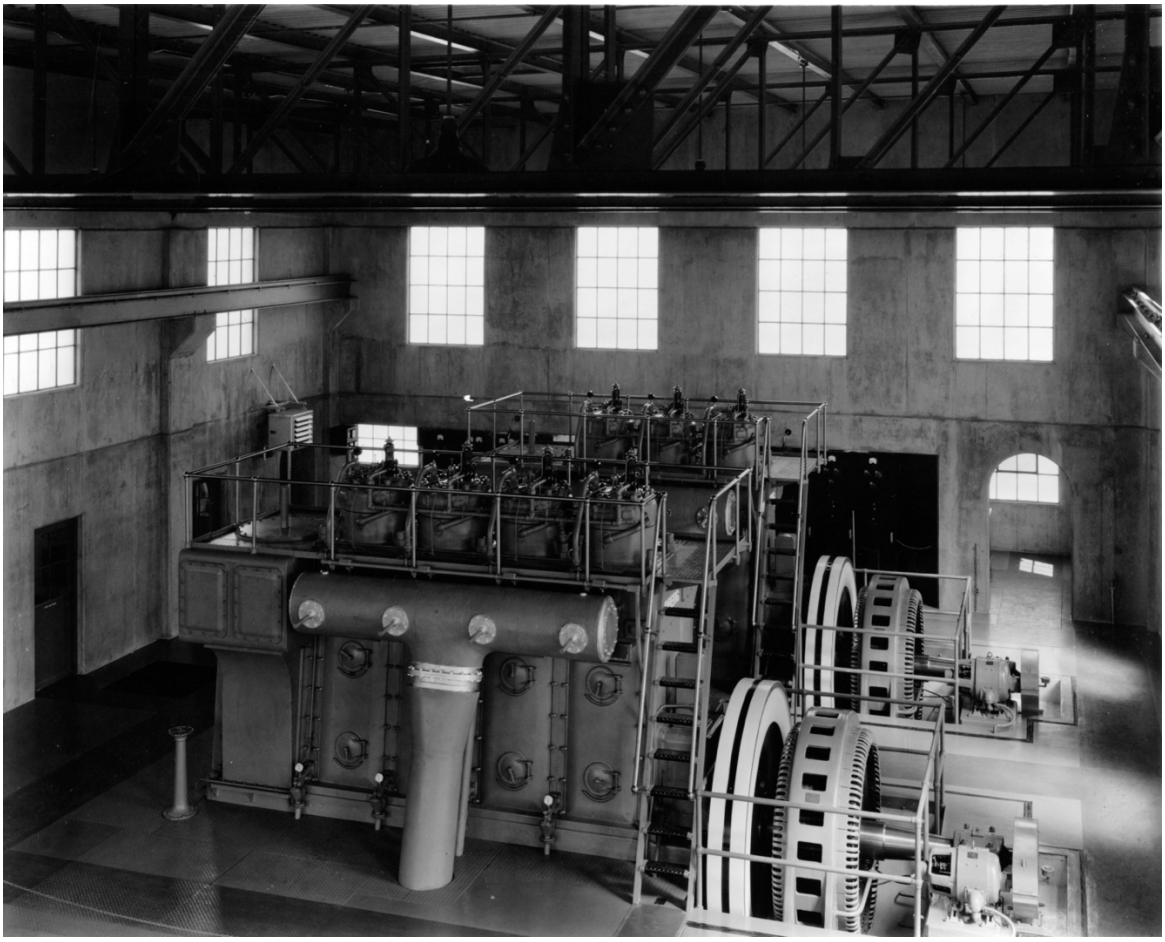
(Source: Loomis Archives, Safford Lock Collection, Mason City Public Library at Mason City, Iowa.)

Historic Image 5 (ca. 1939): In this image looking southwest, we have a view of the east and north sides with the transformers located north of the plant, the fuel tank (non-extant) on a concrete foundation (extant), (8) sump tank, (7) well and pump, and the cooling towers when at their original location (back, right).



(Source: Franklin County Historical Society Museum at Hampton, Iowa.)

Historic Image 6 (1942): In this view looking northwest across 110th Street, we see that the transformers had been relocated from the rear of the building (north) to the east (former parking area). The relocation of the transformers coincided with installation of the fourth engine, which resulted in expansion of the transformers, requiring more ground to accommodate them. By 1942 the site was fenced and the fourth air intake house had been constructed, coinciding with installation of the fourth engine. Of particular note is the rooftop guard tower which was installed shortly after the attack on Pearl Harbor in December 1941; the year of its removal is unknown.



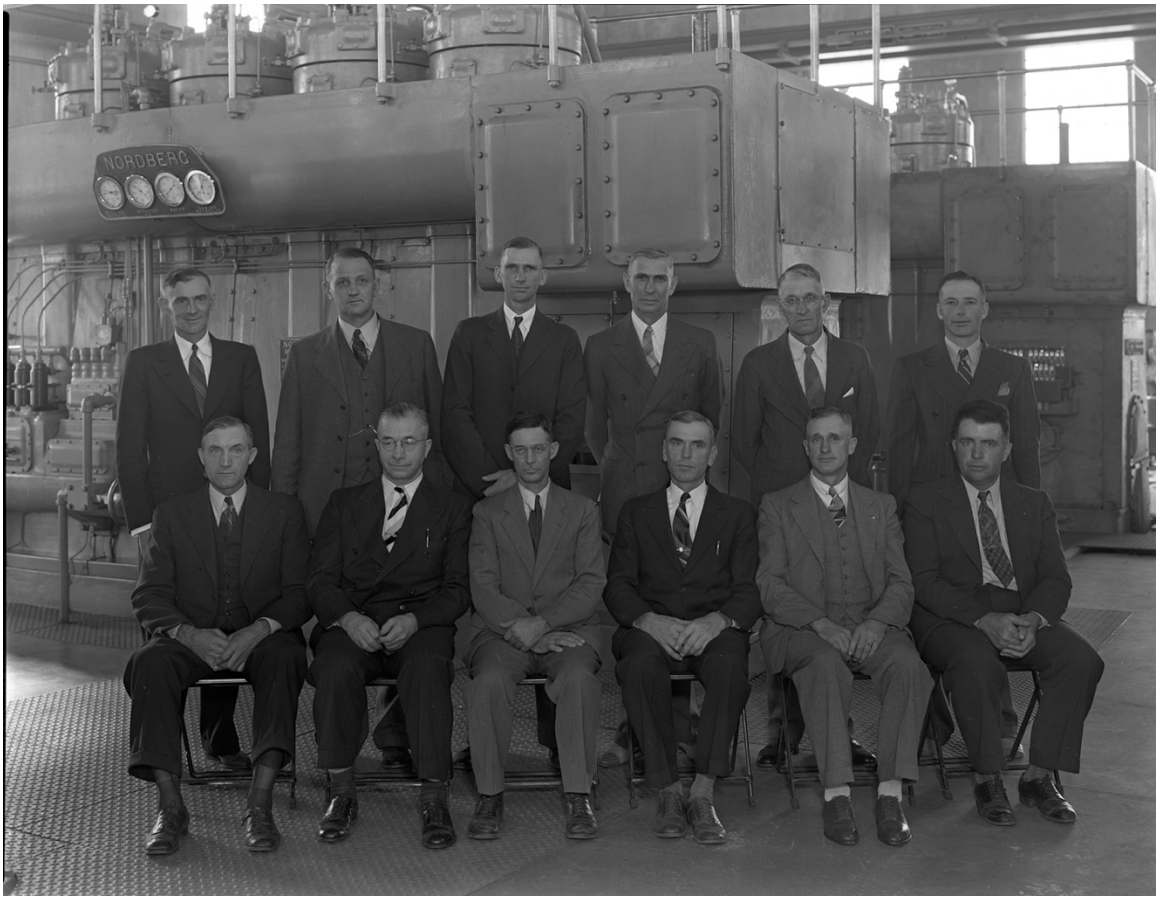
(Source: Franklin County Historical Society Museum at Hampton, Iowa.)

Historic Image 7 (1938): This view of the plant interior looks northeast from the roof truss catwalk. The image documents the first two of the eventual four Nordberg engines. Nordberg No. 1 was the first engine installed (furthest east), it remains in situ.



(Source: SL_386 - Loomis Archives, Safford Lock Collection, Mason City Public Library at Mason City, Iowa.)

Historic Image 8 (March 1940): This view of the plant interior looks west along the south exterior wall. The image documents three of the four Nordberg generating units. The first unit installed (seen here at right) is retained, the others were removed by the property owner prior to transfer of the plant to the Franklin County Historical Society in 1988.



(Source: Franklin County Historical Society Museum at Hampton, Iowa.)

Historic Image 9 (1938): The Federated Cooperative Power Association board sits for the historical record in front of the Nordberg engines. Two men represented each of the six county electric cooperatives (Wright, Franklin, Hardin, Grundy, Hancock, and Butler counties) that comprised the Federated Cooperative. The identities of the board members is undetermined.

Figures: Comparative Images



(Source: SL_254 - Loomis Archives, Safford Lock Collection, Mason City Public Library at Mason City, Iowa.)

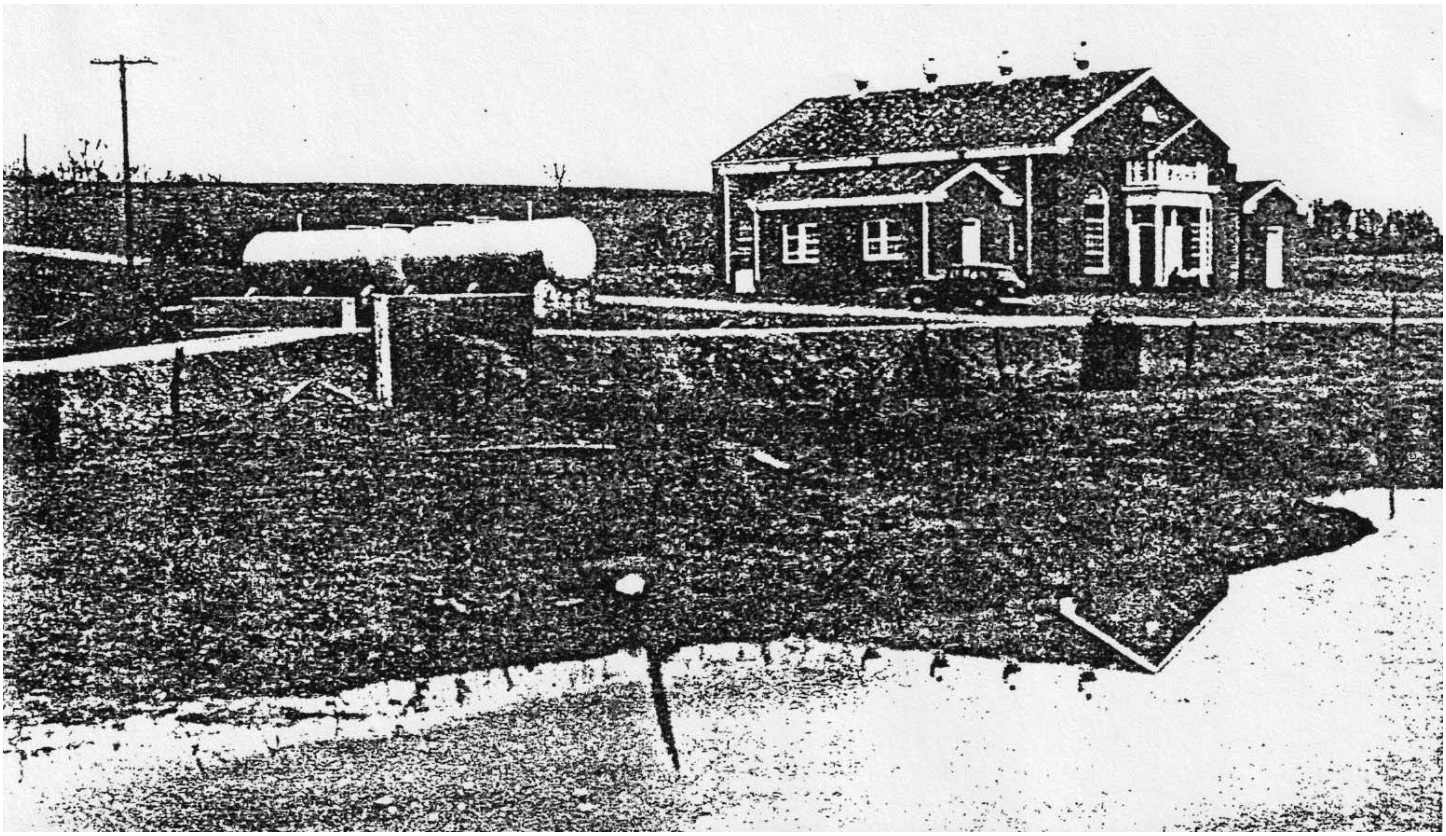
Comparative Image 1 - Central Electric Federated Cooperative Association Generating Plant at Pocahontas (1938): Along with the Federated Cooperative Power Association (Reeve), the Central Electric Federated Cooperative Association received the first REA general loans in the country. The plant, which was constructed one mile south of Pocahontas, Iowa, was fed by the Reeve plant until being energized on May 5, 1938, making it the fourth REA cooperative generating plant to be energized in the country. As the image documents, the design character of the Pocahontas plant was a close match to that of the Reeve plant, both of which were designed by Young & Stanley. The Pocahontas plant remains extant, but altered.



Comparative Image 2 - Central Electric Cooperative Association Generating Plant at Pocahontas (2022): The REA plant at Pocahontas is owned by the Iowa Lakes Electric Cooperative. As the photograph illustrates, the historic integrity of the plant is adversely impacted by the addition of a pent roof on the one-story section, the boarding over of all window openings, and the replacement of the original vehicular door. No information is currently known about retention of contributing resources or generating equipment. (McDowell, 2022)



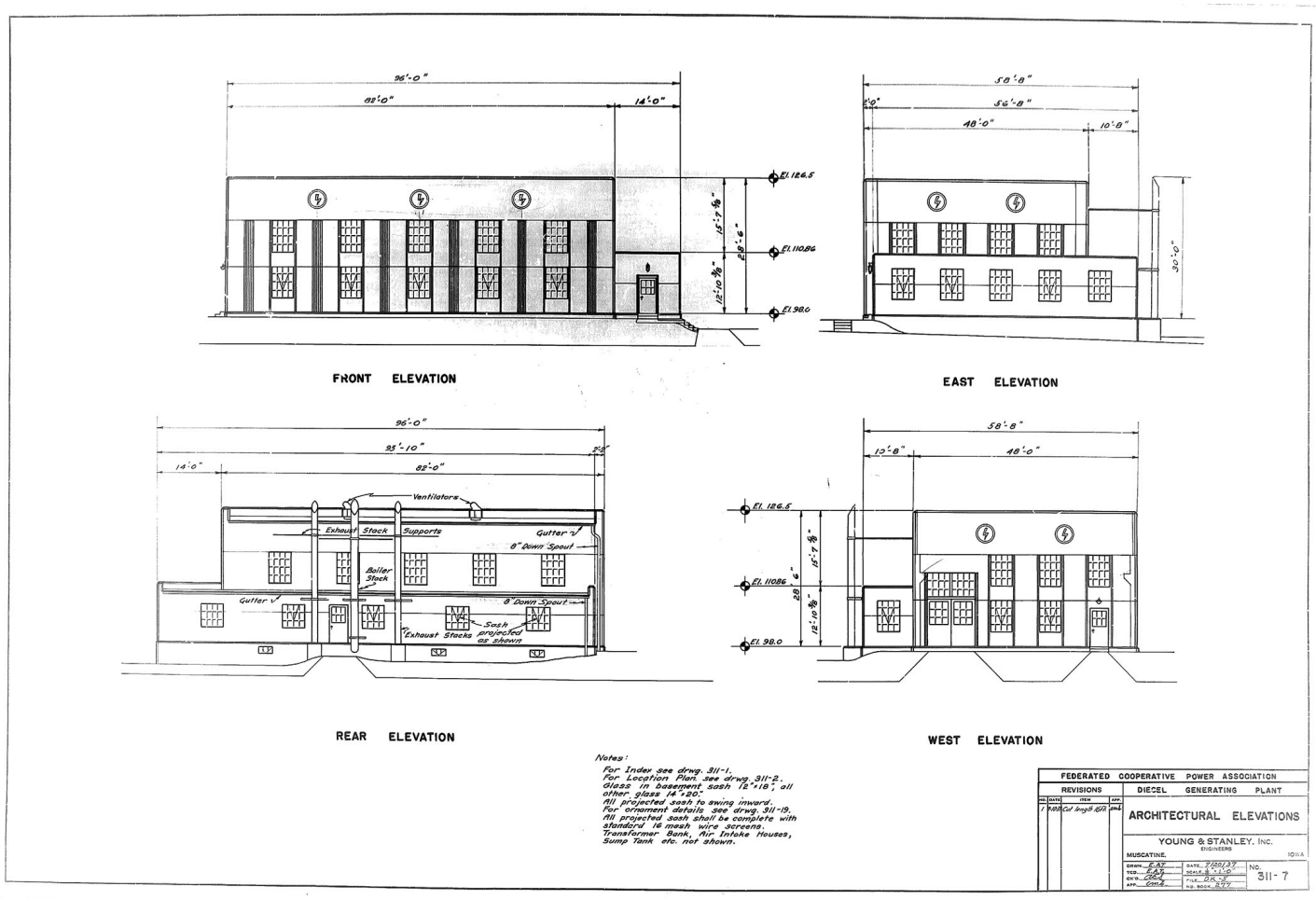
Comparative Image 3 – Wisconsin Power Cooperative Generating Plant at Chippewa Falls (2021): As the photograph illustrates, the historic integrity of the plant is adversely impacted by a large addition, the alteration of the primary entrance to the one-story section, and closure and/or replacement of windows on the one-story section along the front of the building. The building is currently in use as a manufacturing facility with, reportedly, no equipment or other elements of the 1938 REA generating plant retained. (McDowell, 2021)



(Source: *Rural Electrification News* 3, no. 8, April 1938.)

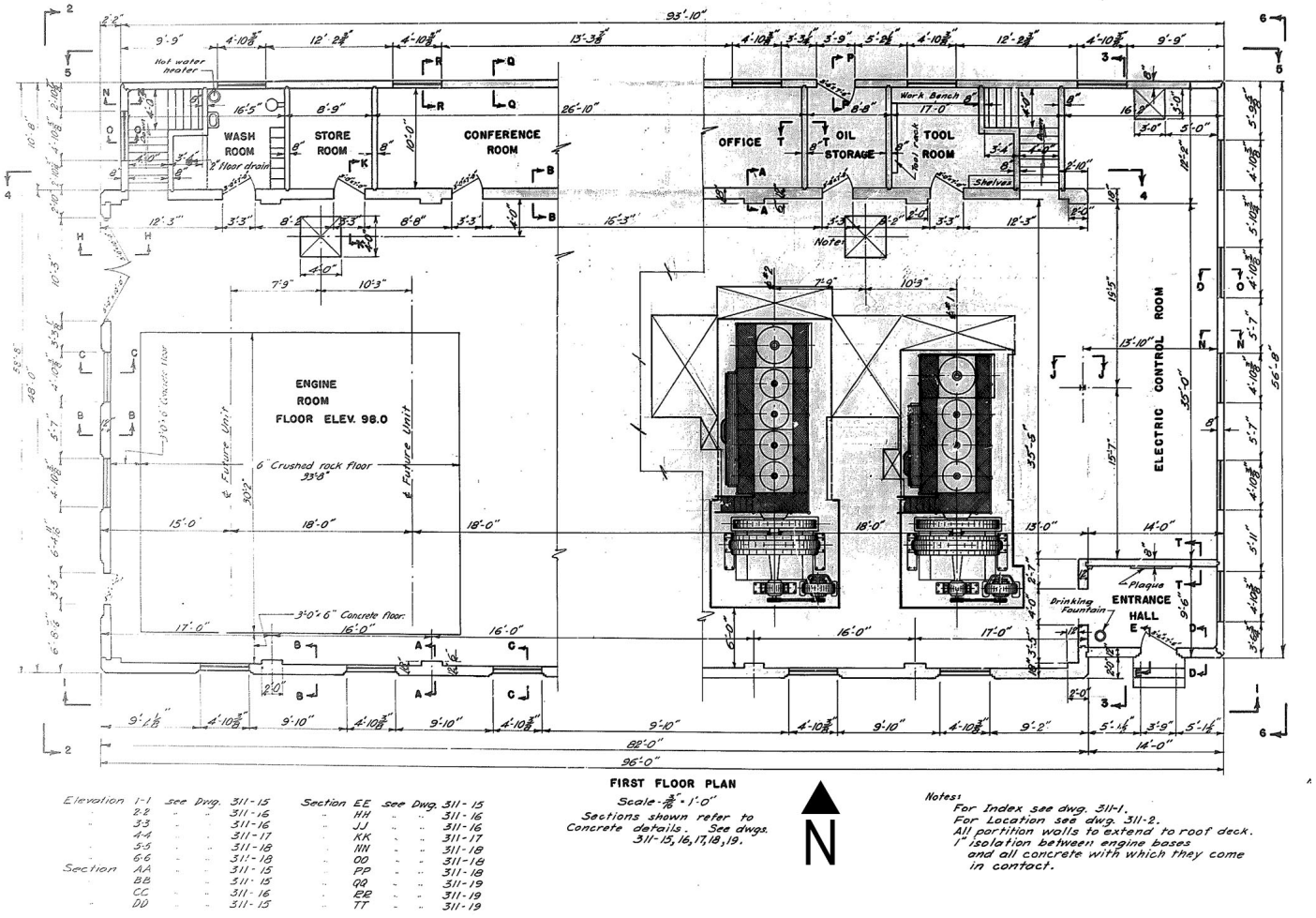
Comparative Image 4 – Shenandoah Valley Electric Cooperative Power Plant (1938): The REA-financed diesel generating plant of the Shenandoah Valley Electric Cooperative at Dayton, Virginia, was energized January 29, 1938. In this view, oil tanks are at left and the water supply in the foreground.

Figures: Original Drawings



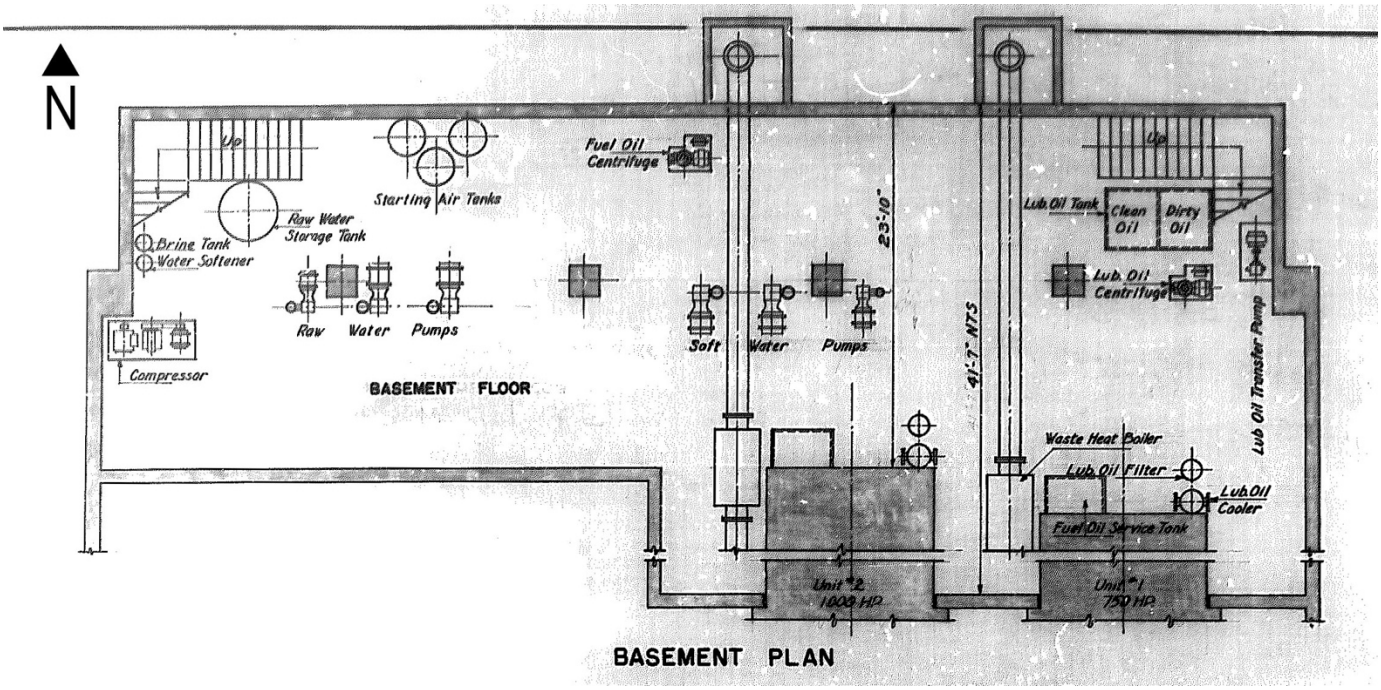
(Source: Young & Stanley, Inc., Construction Archive, available at the Franklin County Historical Museum at Hampton, Iowa.)

Original Drawings - 1: Original Construction Drawings – Exterior Elevations – 1937.



(Source: Young & Stanley, Inc., Construction Archive, available at the Franklin County Historical Museum at Hampton, Iowa.)

Original Drawings - 2: Original Construction Drawings – First-Floor Plan – 1937.



(Source: Young & Stanley, Inc., Construction Archive, available at the Franklin County Historical Museum at Hampton, Iowa.)

Original Drawings - 3: Original Construction Drawings – Basement Plan – 1937.