TRANSFORMATIVE HISTORICAL INFRASTRUCTURES: THE CASE OF ELECTRIFICATION

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Overview

- Early Electrification
- Rural Electrification and the New Deal
- Economic Impact
- Social Impact
- Environmental Impact
- Current RUS
Early Electrification

- The first electrically powered businesses and homes in the 1880’s generated and maintained their own power.
- Investor-owned utilities (IOUs) improved generating technologies and achieved economies of scale.
- Regional power companies eventually linked the local systems into a national power grid.
Rural Electrification

- Early electrification was highly concentrated in the cities.
- IOUs determined rural electrification would be unprofitable:
  - Line extension costs of $1,500- $2,500 a mile
  - Low density areas
  - Low per capita demand
  - Consumers would not be able to afford wiring or rates
- Only 10% of farms electrified by 1935.

Figure 2: Farm in the early 20th century
(http://www.wilmingtonhistoricalsociety.org/Images/Old%20Pelkey%20farm,%20Fox%20farm%20Road,%20ca.%201900.jpg)
President Franklin D. Roosevelt established by Executive Order 7037 May, 11, 1935

$100,000,000 the first year for low-interest loans to public interests for rural electrification.

REA engineers designed new low cost lines suitable for rural extensions that lowered costs to below $1,000 a mile.

IOUs began to compete with the electric cooperatives significantly increasing the rate of rural electrification.

90.8% of farms were electrified by 1953.
Economic Impact

- Improved Production
  - Greater output per unit of capital by replacing capital intensive steam systems with electric power.
  - Assembly line
  - Electric Irrigation pumps for agriculture
- New Industries
- Increased Commerce
- REA as Work-Relief Program


Sources: Horsepower (HP), see Table 1; output (O) and capital (K), John W. Kendrick, Productivity Trends in the United States (Princeton: University Press, 1961), pp. 464–466.
Social Impacts

- New appliances eased domestic labor for housewives
  - Refrigerators, vacuum cleaners, washing machines, irons, mixers and fans, etc.
- Promoted education and increased literacy
- Improved hygiene and health
- Facilitated urban deconcentration
- Pattern of dispersed privacy
- Improved communication
Environmental Impacts

- Depends highly on the primary source of electricity
  - Natural Gas
  - Coal
  - Oil
  - Nuclear Energy
  - Municipal Solid Waste
  - Hydroelectricity
  - Non-Hydroelectric Renewable Energy
- Clearing for distribution lines
- USDA Rural Utilities Services (RUS)
  - NEPA

Figure 6 Above: Southern Co’s Plant Scherer; a coal fired plant

Figure 7 Below: Wind farm in South Australia
More Current RUS

- Telephone, drinking water, waste disposal loans and grants to communities under 10,000 people
- USDA Rural Development Broadband Program increased with stimulus money
- RUS decreasing environmental impact
  - March 2008 suspended new low-interest loans to build coal fired power plants
  - Increasing loans available for renewable energy


