Leveraging Smart Grid Investments for Rural Infrastructure Deployment
Rural Development Program Areas

**Rural Utilities Service**
- Electric Program
- Water & Environmental Programs
- Telecommunications and Broadband Programs

**Rural Housing & Community Facilities**
- Homeownership Loans
- Home Repair Loans & Grants
- Mutual Self-Help Technical Assistance Grants
- Multi-Family Housing Loans
- Farm Labor Housing Loans & Grants
- Housing Preservation Grants
- Community Facilities Loans & Grants

**Rural Business & Cooperative Service**
- Business and Industry Guaranteed Loans
- Intermediary Relending Program
- Rural Business Development Grants
- Rural Energy for America Program
- Value Added Producer Grants
- Cooperative Development Assistance
Utilities Programs

- Equal Access to Essential Services
- A Cleaner Environment
- Infrastructure for Growth

Electric Program (1935)
Telecommunications Program (1949)
Water and Environmental Programs (1937)
A “New Deal” – the REA

The USDA Rural Utilities Service evolved from the Rural Electrification Administration (REA) formed as part of the Federal Government’s “New Deal” programs during the Great Depression, designed to help the neediest in America.
Rural America Before Electrification

Labor intensive way of life
Health and financial concerns were major issues in Rural America before electrification.
The Electric Program

Principles

✓ Low interest funding;
  ✓ Treasury rate plus 1/8%
✓ Loans for up to 35 years
✓ Area coverage;
✓ Cooperative principles – “owned by those we serve”;
✓ Standardized “rural” engineering; and
✓ Environmental Assessment and review requirements
In the United States, Electric Cooperatives:

- Provide retail electric power to 42 million nationwide
- Service over 13% of the nation’s meters
- Own 42% of total distribution miles
- Deliver 11% of the total kWh sold in the U.S. each year
- Generate nearly 5% of total electricity produced
- Sales - 57% residential and 43% commercial and industrial
- According to the National Academy of Engineering, Electrification had the Number 1 engineering impact of the 20th Century

Source: www.nreca.coop
The RUS Electric Program has a $5.5 billion annual loan budget for financing electrical infrastructure in rural areas, including smart grid initiatives.

• The Electric Program, thru the funding of:
  • Smart grid initiatives;
  • Communications facilities for energy management; and
  • Fiber to the meter for increased energy efficiency initiatives ...

• ...can aid in the support and deployment of broadband through the use of those facilities implemented for smart grid purposes.
It is the policy of the RUS to encourage partnerships and cooperation between borrowers to meet a host of rural needs. The Electric Program (EP) and Telecommunications Program (TP) will work together to find innovative ways to facilitate joint efforts between EP and TP borrowers to provide smart grid and broadband capabilities in shared service areas.

Smart grid and broadband services are separate and distinct loan purposes. It is the responsibility of the RUS to exercise due care to ensure that statutory boundaries between programs are respected and unnecessary duplication of federal funding avoided, in cases where a converged fiber infrastructure can be used for multiple purposes.

It is also the policy of the USDA to promote the deployment of broadband services in rural areas.
The Electric Program (EP) makes loans to borrowers for fully integrated “smart grid” purposes, including fiber connections directly to the meters of electric service consumers.

It is the policy of the RUS to promote smart grid deployment among all electric utilities serving rural consumers.

Smart Grid capabilities can improve reliability, promote energy efficiency, enhance grid security, advance safety, provide security, reduce pollution and restrain consumer electricity costs.
RUS Electric Program – Smart Grid Investment

• The EP has financed infrastructure needed to connect electric infrastructure with communications and intelligent network capabilities and to facilitate the internal communications of the electric utility.

• Over time, those connections have grown more robust, useful and extensive. This growing level of communications and network intelligence is essential to modern electric utility management.

• EP borrowers have sought and continue to seek to enhance the use of fiber in smart grid deployments (or proposed deployments) to offer their customers additional services such as high speed consumer “broadband” services.

• RUS views this trend as a positive development.
• While the EP can fully fund smart grid infrastructure, it cannot finance the delivery of consumer broadband services.

• If an EP borrower (or applicant) were to seek EP funding solely for the purpose of providing broadband services (with no smart grid elements); the application would be rejected by the EP because the application seeks to use EP funds to finance an ineligible purpose. The borrower should be referred to the TP for further consultation.

• Similarly, in cases where EP borrowers seek to provide consumer broadband services in addition to smart grid capabilities, the borrower cannot use EP funding for the enhancements to the smart grid infrastructure necessary to deliver consumer broadband services. The borrower can self-fund, or use non-EP financing for the enhancements necessary to provide consumer broadband services but not necessary for smart grid capabilities.
For Example:

- If the EP borrower intends to enhance a smart grid fiber infrastructure to use fiber connections to the meter (or premises) for the provision of broadband services, EP loan funds will not be used to finance the direct fiber connection from the connected electric infrastructure to the consumer meter (or premises) unless the TP borrower expressly consents.

- EP borrowers will, however, be able to use RUS loan funds for connections to all electric utility facilities within the previously funded TP borrower service territory necessary for fully operational smart grid functionality throughout the EP borrower’s service area (i.e., connections to substations, connections to monitor open/close positions of re-closers, etc.).
• EP and TP borrowers are strongly encouraged to collaborate and cooperate in efforts to deliver smart grid and high speed broadband services to rural consumers within the territories served by both borrowers.

• Constraints on EP smart grid funding may be necessary for fiber to the meter (premises) smart grid projects that contemplate broadband services in areas where there are existing RUS TP borrowers.
REC can “self-finance” the additional facilities, etc. to connect to the premises if they are also providing broadband service.
The Business Plan – after the successful deployment of the borrowers smart grid network, how can facilities be leveraged to provide additional broadband services:

• Cooperative provided services,
  • Cooperative deployed, owned and operated smart grid/broadband system (in states where allowed)
  • Subsidiary provided services, leasing fiber backbone from cooperative and/or management and operations agreement

• Partnerships...with incumbent service providers,
  • Cable companies, telecommunications companies or cooperatives, others
The Financing Plan – Borrowers may seek a variety of financing options to assist in rural broadband deployment.

- The smart grid facilities, including related fiber networks and electronics, can be funded with RUS Electric Program funds through the regular application process.
- For assets and facilities related directly to and used solely in the provision of non-smart grid related broadband services, borrowers should consider other funding sources, such as:
  - Internally generated funding or equity;
  - RUS Broadband Program (part of the RUS Telecommunications Program);
  - Private sources such as CoBank, the National Rural Utilities Cooperative Finance Corporation., etc...
Benefits:

- Future proof energy efficiency/smart grid communications and control services necessary for “smart communities and homes”
- Electric funding available for fully operational smart grid infrastructure, including fiber to the premises for load management and other smart grid tools and benefits
- Additional revenue source from leasing fiber assets as provider of backbone services to potential last mile providers
- Large footprint in traditionally underserved and unserved areas
- Competition proof
- FCC taking notice of rural electric cooperative’s role and is encouraging deployment through funding opportunities
http://www.rd.usda.gov/programs-services/all-programs/electric-programs
Contact Information

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USDA Rural Development is committed to the future of rural communities.