Development District Association of Appalachia

Smart Grids and the Emerging Internet of Things

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The RUS of today 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...
Private utilities were unwilling to serve rural areas

No industry or large loads for electric, telephone, or sanitary water service in rural areas.

Low return on investment due to low population density.
The REA Program provided:

Low interest funding

Area coverage

Cooperative principles - “owned by those we serve”

Standardized “rural” engineering and materials

Emphasis on system-wide planning
RUS Partners with Local Leaders - Community involvement was a key to implementation then, and is still key for all RUS programs.
• Rural Utilities Service (RUS) administers programs that provide much-needed infrastructure or infrastructure improvements to rural communities. These include water and waste treatment, electric power and telecommunications services.

• Broadband programs are funded through both the Telecommunications Program and the Electric Program.
### RUS Telecommunications Programs

Since 2009, RUS TP has funded over $7.1 billion in projects serving rural residents:

<table>
<thead>
<tr>
<th>Program</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Telecom Infrastructure</td>
<td>$2.99 billion</td>
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<tr>
<td>Broadband Initiatives Program (BIP)</td>
<td>$3.5 billion</td>
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<td>Farm Bill Broadband</td>
<td>$251.1 million</td>
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<td>Community Connect</td>
<td>$85 million</td>
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<tr>
<td>Distance Learning and Telemedicine (DLT)</td>
<td>$240.3 million</td>
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<tr>
<td>Total</td>
<td>$7.1 billion</td>
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The Recovery Act provided RUS with $2.5 billion to fund access to broadband services in rural America.

RUS leveraged its budget authority appropriated by the Recovery Act to make grants, loans and loan/grant combination awards. In total for the broadband program, over $2.33 billion in grants and $1.19 billion in loans were made to 320 projects, totaling over $3.5 billion. Of those original 320 projects, 297 were for infrastructure, 4 for satellite broadband service support, and 19 for technical assistance.

Key Performance Metrics:
Miles of fiber deployed: 66,521
Number of wireless access points placed: 5,468
Broadband subscribers receiving new or improved broadband:
  Households: 310,539
  Businesses: 21,936
  Educational Providers: 648
  Libraries: 203
  Healthcare Providers: 656
  Public Safety Providers: 848
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, through 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.
• 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.
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.
Over the past four years RUS EP has financed, or is currently working on loan applications for Fiber to the home projects from rural electric cooperatives in the following States:

Michigan, Missouri, Iowa, Virginia, Arkansas, and Tennessee

Fiber broadband is being built in rural communities by electric cooperatives, municipalities, and through public-private partnerships