Why Broadband Infrastructure is Essential for a Strong Rural Economy

Ag Outlook Forum

Russell Tucker, NRECA
The Rural Electric Program Begins

• The Great Depression
• 10% of farms had electric service
• Rural Electrification Administration (REA), now Rural Utilities Service (RUS), established by Exec. Order in 1935
• Act of Congress the following year
The REA Challenge

• Made low-interest loans for rural electrification

• However – the existing utilities serving higher density areas were not interested
The Solution

- Help rural residents form electric cooperatives
- Farmers very comfortable with business model
- Successful public/private partnership
Unlocking the Value of Broadband For Electric Cooperative Communities

6.3 Million Households in Co-op Areas Lack Access to 25/3 Mbps Service

Lack of broadband in areas served by electric co-ops results in ≈ $68 billion of lost consumer value over 20 years

Broadband Market – Metropolitan America

Consumer Surplus $1950/household Nevo, et al. (2016)

Additional Benefits Received

Benefits Received in Exchange for Payment

Nevo, et al. (2016)
Broadband Access Provides Value

Lost Value to Electric Co-op Households: $68 Billion (over 20 years)
Broadband Enables the Smart Grid

Digital Applications Enhance Controllability of Costs

<table>
<thead>
<tr>
<th>Application</th>
<th>Annual Valuation per Meter (2018)</th>
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<tbody>
<tr>
<td>Distribution Automation</td>
<td>$20-$30</td>
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<tr>
<td>Advanced Metering Infrastructure (AMI)</td>
<td>$12-$18</td>
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<tr>
<td>Volt/Var Optimization</td>
<td>$14-$29</td>
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<tr>
<td>Demand Management</td>
<td>$88-$140</td>
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<tr>
<td>Outage Reduction</td>
<td>$1-$3</td>
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<tr>
<td>Asset Management</td>
<td>$45-$85</td>
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<tr>
<td>Distributed Energy Resources (DER)</td>
<td>$1-$3</td>
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• 14,500 members in northeastern N.C.
• Build backbone to connect 12 substations to offices across 200 miles
• Planned to lease dark fiber to 3rd party internet service providers (ISPs)
• Little interest from ISPs
• Conducted successful retail pilot; formed subsidiary – Roanoke Connect
• Plans to fully deploy retail broadband and enable smart thermostats and smart water heaters
• Millions of electric co-op consumer-members lack adequate broadband service
• Lack of service limits value for consumer-members
• Electric co-ops are part of the solution
• Public/private partnerships can enable consumer-members, community, and network benefits
Questions?

Russell Tucker
Chief Economist
America’s Electric Cooperatives (NRECA)
russell.tucker@nreca.coop
Ph: 703.907.5823