Understanding the Role of Broadband in Regional Economic Development

NTIA Webinar Series

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October 18, 2017
Participants

Moderator
• Don Williams, Senior Specialist for Broadband Development, BroadbandUSA, NTIA, Department of Commerce

Presenters
• Lionel “Bo” Beaulieu, Director, Purdue Center for Regional Development
• Sue Suleski, Director of Strategic Initiatives, Pennsylvania Department of Community and Economy Development, Technology & Innovation Office
• Frank Smith, President and CEO, Roanoke Valley Broadband Authority
Presentations

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- Frank Smith, President & CEO, Roanoke Valley Broadband Authority
The Role of Broadband in Rural/Regional Economic Development

The Perspective of a University Practitioner

Bo Beaulieu
Director & Professor

PURDUE UNIVERSITY
Center for Regional Development
Advancing Collaboration: Energizing Regions
A Brief Review of Research: International & National

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
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</thead>
<tbody>
<tr>
<td>Kolbo (2012); Hold &amp; Jamison (2009)</td>
<td>Positive connection between broadband access and economic growth</td>
</tr>
<tr>
<td>Molnar, Savage and Sicker (2015)</td>
<td>Positive link between broadband availability and higher housing prices</td>
</tr>
<tr>
<td>But several other studies have found . . .</td>
<td>No significant impact associated with having faster broadband deployment and household income, or on employment rates</td>
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**Important Caveat:** None of these studies gave specific attention to rural or regions
### What We Know About Rural (so far)

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steinberg (2009)</td>
<td>Economic growth</td>
</tr>
<tr>
<td>Kim and Orazem (2017)</td>
<td>Attraction of new firms</td>
</tr>
<tr>
<td>Shideler and Badasyan (2012)</td>
<td>Retention and growth of existing small businesses</td>
</tr>
<tr>
<td>Canzian, Poy and Schuller (2015)</td>
<td>Increase in annual and value-added sales</td>
</tr>
<tr>
<td>Whitacre, Gallardo and Stover (2014)</td>
<td>Higher individual incomes</td>
</tr>
<tr>
<td>Conley and Whitacre (2016)</td>
<td>Higher number of entrepreneurs</td>
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Positive relationship between rural broadband adoption and . . .
USDA Broadband Loan Program Targeted to Agriculture Sector = Positive Impact on Farm Sales, Expenditures and Profits

CAVEAT: In rural counties located adjacent to metro counties

* Kandilov, Kandilov, Liu and Renkow (2017)
Effect of Rural Broadband Expansion on Economic Development (The OSU Study)*

1. Adoption is more critical than availability

2. The skill composition of a rural area is important

3. Effects of broadband vary across different types of rural areas

Purdue’s Broadband-Related Activities

THE DIGITAL DIVIDE

PURDUE EXTENSION DIGITAL READY
Expanding Your Community’s Online Presence
The digital divide index score (DDI) ranges between 0 and 100, where a lower score indicates a lower divide. The infrastructure adoption score and the socioeconomic score each have a 0 to 100 range, as well, and both contribute to the overall DDI.

pcrd.purdue.edu/ddi
Digital Divide Index: Two Key Elements

**Infrastructure/Adoption Score**

- Percent of 2010 population w/o access to fixed broadband of 25 Mbps/3 Mbps;
- Number of residential broadband connections with at least 10 Mbps download and 1 Mbps upload;
- Average maximum advertised download speeds; and
- Average maximum advertised upload speeds.

**Socioeconomic Score**

- Percent population ages 65 and over;
- Percent population 25 and over with less than high school;
- Individual poverty rate;
- Percent of noninstitutionalized civilian population with a disability.
Percent Population in Rural Areas by DDI Quartile

- U.S.: 17.5
- Lowest: 3.1
- 2nd Lowest: 7.6
- 2nd Highest: 18.8
- Highest: 46.3
Percent 25-54 Years Old Not in the Labor Force by DDI Quartile

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>18.4</td>
</tr>
<tr>
<td>Lowest</td>
<td>13.9</td>
</tr>
<tr>
<td>2nd Lowest</td>
<td>15.9</td>
</tr>
<tr>
<td>2nd Highest</td>
<td>20.0</td>
</tr>
<tr>
<td>Highest</td>
<td>27.1</td>
</tr>
</tbody>
</table>
2015 Digital Divide Profile

Hamilton County, Indiana

11.14
Digital Divide Index Score

The digital divide index score (DDI) ranges between 0 and 199, where a lower score indicates a lower divide. The infrastructure adoption score and the socioeconomic score both fall in a 0 to 100 range as well contribute to the overall DDI. Listed below each score are the indicators used.

Infrastructure/Adoption Score

38.87

31.086
average maximum advertised download speed in Mbps

80% or more
of households with a 24/7 broadband connection

Socioeconomic Score

4.01

9.5%
population ages 65 and older

3.9%
age 25 and older with less than a high school degree

Missed Economic Benefits

$23,049,531
amount over 13 years at 20% of unemployment rate

Crawford County, Indiana

71.78
Digital Divide Index Score

92.54
Infrastructure/Adoption Score

6.4%
of people without access to fixed broadband of at least 25 Mbps down and a 3 Mbps up

0.1 - 19.9%
of households with a 24/7 broadband connection

53.56
Socioeconomic Score

16.7%
population ages 65 and older

17.6%
age 25 and older with less than a high school degree

$15,089,255
Missed Economic Benefits

amount over 13 years at 20% of unemployment rate

Helping Small Businesses Expand Online

88% of U.S adults are online — will they find your business?*

Let Purdue Extension help get your business noticed! We are offering free introductory courses on how to expand your business' online presence.

www.purdue.edu/DigitalReady

These programs are taught in a mixed format of in-person workshops and online instruction. Additional programs will be offered next year.

Available Programs:

Claiming Your Bubble - What do people find when they search for your business? Does your business have a bubble on the map? If so, is the information accurate? In this course, find out how to increase your business presence on the map and correct any errors you may find.

Social Media for Your Business - Discover why social media is important and effective ways to use social media to promote your business.

Email Marketing - Find out how to use email marketing by establishing a business email, sending newsletters, and creating advertisements to build loyalty, trust, or brand awareness.

Planning Your Website: Some Basics - In this course you will learn how to plan and develop your website, ownership and hosting, design, content, construction and search engine optimization.
Presentations

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Sue Suleski | Director of Strategic Initiatives

UNDERSTANDING THE ROLE OF BROADBAND IN REGIONAL ECONOMIC DEVELOPMENT

U.S. Department of Commerce
National Telecommunications & Information Administration

webinar | 10.18.2017
Pennsylvania Profile

- 19th largest economy in the world
- Within a day’s drive of nearly 40% of the U.S. population, 60% of Canada’s population, and nearly 40% of U.S. manufacturers.
- One of the nation’s fastest growing exporters
  $36.5 billion in goods and services exported in 2016
- 15 foreign trade offices covering 52 countries

Key Industries
agribusiness, food manufacturing, tourism, energy, advanced manufacturing, and life sciences

Source: Pennsylvania Department of Community & Economic Development; www.dced.pa.gov
RURAL VS. URBAN

- 27% of the state’s total population (3.4 million people) live in 48 rural counties

POLITICAL

- 67 counties
- 2,562 municipalities

TERRAIN

Socio-Economic

Source: Center for Rural Pennsylvania and U.S. Census Bureau data (2015); [www.rural.palegislature.us/demographics_about_rural_pa.html](http://www.rural.palegislature.us/demographics_about_rural_pa.html)
Home Broadband Adoption Rate
70% of households (2015)

PENNSYLVANIA’S GROUNDBREAKING STATE LAW

- **MANDATED 100% DEPLOYMENT** - all Incumbent Local Exchange Carriers (ILECs) required to upgrade networks to enable broadband service to all Pennsylvania customers no later than 2015
- **CREATED TWO DEDICATED FUNDING STREAMS** totaling nearly $75 million for broadband infrastructure deployment and implementation projects at schools ($60 million) and community outreach and demand aggregate projects ($13 million). Funded by ILECs and managed by state
- **INCENTIVIZED COMMUNITIES TO ORGANIZE** utilizing a petitioning process whereby communities that aggregated sufficient demand could have service activated within one year
- **DEFINED BROADBAND** as bandwidth of at least 1.544 Mbps downstream and 128 Kbps upstream
- **LAUNCHED ONE OF THE VERY FIRST STATE BROADBAND MAPS** in 2006

Source: Chapter 30 of Pennsylvania’s Public Utility Code, as most recently amended via Act 183 of 2004; http://www.legis.state.pa.us/cfdocs/legis/li/consCheck.cfm?txtType=HTM&ttl=66&div=0&chpt=30
EXPANDING SERVICE IN UNSERVED/UNDERSERVED AREAS

150Mbps UPGRADE ARRA/BTOP $
Broadband Technical Assistance Program

Network of 20 economic, community, and workforce development partners statewide working one-on-one with businesses and community anchor institutions to help them adopt or expand their use of broadband.

THE RESULTS

- 600 businesses/community anchors, 300 libraries, and 5,900 individuals assisted
- $103.2 million in economic benefits generated
- 1,483 jobs created or retained
- 119 micro-grants awarded in 40 counties
- $2.5 million in local investment stimulated
- 6:1 leverage ratio
- 134 library enhancement projects completed
- 44 PSU undergrad IT students placed as interns within client organizations
- 10 permanent job offers received by IT interns

Together these combine to favor localization of manufacturing rather than today’s more centralized, economies-of-scale production models. A fourth trend – a rise in the number of hobbyists who become producers of one-off and small lot products – will change the definition of a ‘manufacturer’ and may, in fact return manufacturing to the garage. An information technology driven transformation in the manufacturing sector is inevitable.”

MANUFACTURING’S DIGITAL INTENSITY CONTINUUM

- SIMPLE
  - Remote CAD
  - 3D Manufacturing
  - E-Marketing
  - Resource Planning
  - Materials Planning
  - Supply Chain Management
  - Customer Relationship Management

- Product Development Innovation
- Business Process Development Innovation

- COMPLEX
  - Modeling
  - Analytics
  - Simulation
  - High Performance Computing
  - VME
  - Service Oriented

- MATURE
  - Establish Best Practices

- TECHNOLOGICAL TOOLS
  - Radical Innovation

- EVOLVING

ENSURING ADEQUATE PUBLIC ACCESS

Pennsylvania Public Libraries

I have been homeless, in every sense of the word, for the last month. I have been living out of my truck. The Humane Society agreed to take my dog for the weekend, because it was too cold for him to stay in the truck with me. Thank you for the warm use of your computers and internet. By using them, I was able to find a rental and coordinate my move. I got the keys to my new place tonight. The other services that are in the community that I work have been available to me.

Sincerely,
[Signature]

8,397,724 uses

7,865

80.5% provide job database and other job resources

67% help patrons complete online applications
“Broadband is not a technical issue. It is an equity and opportunity issue!”

~Sue Suleski, White House Rural Forum, Pennsylvania (2016)

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Office of Technology & Innovation
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400 North Street, 4th Floor | Harrisburg, PA 17120-0225
717.214.5329 | ssuleski@pa.gov
www.dced.pa.gov | www.visitPA.com

PENNSYLVANIA BROADBAND INFORMATION/RESOURCES:

www.dced.pa.gov/broadband-resources
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Broadband as an Economic Stimulator in The Roanoke Valley
The Small Urban and Suburban Donut Hole Problem

High-quality, high-speed Internet service requires an expensive infrastructure and for many markets the business case for the private sector to invest just isn’t there. While urban areas attract private vendors seeking profit and rural areas receive government subsides and grants to compete, small cities and suburban populations are left without viable solutions.
Community Driven Demand + Proven Need

- Only 8% of the region could access fiber (compared to a 24% national average at the time)

- Only 11% of the region could choose from more than two ISP options (compared to a national average of 55%)

- Only 4.5% of the region could access speeds of 1GBPS or faster (compared to the 50% standard in more fiber-rich communities like Chattanooga, TN which was just beginning its rise to fame as America’s “gig city”)

All options on the table

- Business Leaders wanted action
- Incumbents were hesitant to change their local investment models
- Virginia law granted local communities the right to form a Broadband Authority and treat it as a local utility
- A public private working group formed to study the issue and recommended a new regional authority (made up of two counties and two cities) to build an open access network that could incent new, lower cost broadband infrastructure investment and increased innovation across the region
Open access network capable of speeds over 10 gig+

High Speed ethernet and multiple location connectivity capable of speeds over 200 gigs with the right equipment

Custom configurations with full and partial ring leases and 10+ year IRU contracts

Internet Service Providers
Enterprise Businesses
Local Government

Customers

Services

Dark Fiber
Transport
Internet

Customers
Goals

1. Be an effective catalyst for Economic Development

2. Serve the underserved with a focus on education

3. Support competitive commerce across the Roanoke Valley

4. Be a strong partner for both existing and future telecommunications companies
Achievements

✓ ~ 80 miles core fiber optic network now connects two cities and one county, plans for another extension into fourth partner territory now in development

✓ Several new large businesses have competitively selected the region in part because of the RVBA’s strategy and performance track record

✓ Several of the largest and most prominent local businesses and non-profit enterprises have become early adopter customers

✓ In September of 2017, RVBA announced their first net-new residential ISP partner in the region expanding network access beyond business and government customers for the first time

✓ RVBA has become the first local provider to commit to Golden Shovel Standards

✓ RVBA is being held up as a state and national example of how communities can take ownership of their own digital destiny
Advancing community objectives with Technology infrastructure

COMMUNITY DRIVEN TECHNOLOGY
Understanding the Role of Broadband in Regional Economic Development

Questions and Comments

• Please type your questions in the chat or Q&A box.

• Slides, transcript, and recording will be posted on the BroadbandUSA website within 7 days after the webinar.

http://www2.ntia.doc.gov/
Thank you for attending.
Tune in for the next Practical Conversations Webinar

Electric Co-ops Bringing Fiber to Rural America
November 15, 2017
2:00 pm EST

Registration is required for each webinar:
http://www2.ntia.doc.gov under Events
Additional Resources
BroadbandUSA is available to help communities with their broadband efforts

BBUSA Resources:

- Public-Private Partnerships Guide
- Community Broadband Roadmap Toolkit
- Introduction to Stakeholder Outreach
- Using Partnerships to Power Smart Cities

For General Information:

- 202-482-2048
- broadbandusa@ntia.doc.gov
- http://www.ntia.doc.gov/broadbandusa

To Request Technical Assistance:

Submit Intake Form