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Appendix G: Reading Level Improvements & Consolidated Questions

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Reading Level: 11.3

Word Count: 2197

Estimated Reading Time: 8 minutes

Module 06: Broadband & Mobile Access

This section of the assessment explores four themes:
- **Broadband & Mobile Access**: What wired broadband services are available in your area? What mobile service is available in your area?
- **Provider Engagement**: Are there opportunities to strengthen partnerships with service providers?
- **Public Assets**: How do policies support the public interest and the use of public assets?
- **Policy Environment**: Are there regulations that impact local planning and investment?

Understanding FCC Form 477 Data

While some communities have in-depth knowledge of the broadband services offered in their area, many don't know the specific details. One source for baseline data are the filings that Internet Service Providers make to the Federal Communications Commission (FCC).

All facilities-based broadband providers are required to file data with the FCC twice a year (Form 477) about where they offer Internet access service at speeds exceeding 200 kbps.   Fixed providers

(wireline and fixed wireless carriers) file lists of census blocks in which they can or do offer service to at least one location, with additional information about the services offered. These filings include the names of the providers, the number of census blocks that each provider serves, technologies used, and advertised upload and download speeds. You can explore the data yourself.

• Review the most recent Broadband Progress Report which includes state level summaries. https://www.fcc.gov/reports-research/reports/broadband-progress-reports

• Download the latest data for your state and community here. https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477

• Learn more about 477 data resources here. https://www.fcc.gov/general/form-477-resources-filers

Q.	What is a census block, a block group, or a census tract?
A.	A census block is the smallest geographic unit used by the United States Census Bureau for what is called 100 percent data. 100 percent data is data that is collected from all houses, rather than from a sample of houses. Census blocks are combined into block groups and groups are aggregated into census tracts. A census block group typically has between 600 and 3,000 people. The geographical size of the blocks varies across the country. Blocks in rural areas can cover many miles. In urban areas, a census block may correspond to a single city block.

The FCC provides interactive maps of broadband availability based on the Form 477 filings. Explore these maps to see provider data on broadband services offered in your area.

• Number of Fixed Providers of Residential Internet Access Service at least 10/1 Mbps by Census Block
https://www.fcc.gov/reports-research/maps/number-providers-residential-fixed-connections-10-1mbps-dec-2015/

• Number of Residential Fixed Broadband Providers at 25 Mbps/3 Mbps
https://www.fcc.gov/reportsresearch/maps/bpr-2016-fixed-25mbps-3mbps-providers/

• Residential Fixed Broadband Technology at 25 Mbps/3 Mbps
https://www.fcc.gov/reports-research/maps/bpr-2016-fixed-25mbps-3mbps-deployment/

• Residential Fixed Broadband by Speed
https://www.fcc.gov/reports-research/maps/bpr-2016-fixedspeed/

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Q.	Is the Form 477 data accurate?
A.	For residential services, providers report advertised service speeds in census blocks where they can or do offer services. Because of this, the Form 477 data can over-state coverage. A block marked as 'served' may only be partially served. Actual speeds may differ from advertised speeds. Service may be offered at a price that businesses or residents feel is unaffordable, might be bundled into packages, or offered with data caps. If your experience of service availability is different from what is filed with the FCC, you can talk with providers to better understand what they offer.

Deployment Fixed Broadband (25 Mbps/3 Mbps)
https://www.fcc.gov/reports-research/maps/fixedbroadband-deployment-data/

Residential Broadband Data Rates and Speed Tiers

Units of broadband capacity (bandwidth)	
Bit	Smallest unit of digital information
Byte	Equal to 8 bits
Bps	Bits per second
Kbps	Kilobits per second (1000 bits per second)
Mbps	Megabits per second (1 million bits per second)
Gbps	Gigabits per second (1 billion bits per second)
Tbps	Terabits per second (1 trillion bits per second)

The term broadband commonly refers to a high-capacity transmission technique which enables a large number of messages to be communicated simultaneously. Broadband includes several high-speed transmission technologies, such as fiber, wireless, satellite, digital subscriber line and cable.

The definition of 'high capacity transmission' continues to evolve as our society invents new ways to use digital communications. In 2015, the FCC noted that "the 4 Mbps/1 Mbps standard set in 2010 is dated and inadequate for evaluating whether advanced broadband is being deployed to all Americans in a timely way… Reflecting advances in technology, market offerings by broadband providers and consumer demand, the FCC updated its broadband benchmark speeds to 25 megabits per second (Mbps) for downloads and 3 Mbps for uploads."[1]

While 25 Mpbs/3 Mbps is the FCC benchmark for basic residential broadband, some states and localities set different standards for broadband services: 10Mbps symmetrical; 100Mbps symmetrical; 50 Mbps/5 Mbps; 10 Mbps/3 Mpbs; 1 Gbps symmetrical. In NTIA's work with civic leaders, community anchor intuitions, and business leaders, the following speed tiers are helpful benchmarks for consideration:

Less than 4/1	Services with advertised maximum speeds of less than 4 Mbps download or 1 Mbps upload

4/1	Services with advertised maximum speeds of at least 4 Mbps download and 1 Mbps upload, but less than 10 Mbps download and 1 Mbps upload
10/3	Services with advertised maximum speeds of at least 10 Mbps download and 1 Mbps upload, but less than 25 Mbps download and 3 Mbps upload
25/3	Services with advertised maximum speeds of at least 25 Mbps upload and 3 Mbps download, but less than 100 Mbps download and 10 Mbps upload
10/10	Services with advertised speeds of at least 10 Mbps download and upload symmetrical, but less than 100 Mbps download and 10 Mbps upload
100/10	Services with advertised speed of at least 100 Mbps download and 10 Mbps upload
100/100	Services with advertised speeds of at least 100 Mbps up and down (symmetrical)
1G/1G	Services capable of gigabit transmission speeds (1000 Mbps)

Note: Providers submit data for residential services based on census blocks served, technology type, and advertised upload and download speeds. Based on FCC reporting requirements, a block is considered 'served' if the provider offers service to at least one household in that block.

Residential ISPs by speed tier

Consider creating a list of the Internet Service Providers that serve your region. This can serve as the foundation for conversations to understand current and planned services. [See Provider Engagement module.]

Provider Name	Advertised Speed (up/down)
	Under 4/1
	10/1

	25/3
	25/3
	100/10
	100/100
	1G/1G

Residential ISPs serving your area by technology

Consider creating a list of the Internet Service Providers that serve your region. Understanding their technology footprint and deployment constraints and opportunities could provide a foundation for enhanced public-private partnerships. [See Use of Public of Assets and Provider Engagement modules.]

Provider	Technology	Blocks served
	aDSL	##
	Cable	##
	Cable	##
	Fixed Wireless	##
	Fixed Wireless	##
	Fiber	##

	Fiber	##
	Satellite	##
	Satellite	##

Since broadband pricing information is not filed with the FCC, sometimes the number of providers serving a census block acts as a proxy for pricing, assuming that prices tend to fall in more competitive markets. When considering the number of providers serving any census block, note that most areas of the country have one or two satellite providers that serve nearly all census blocks.

Committed Information Rates for Business Broadband

While residential services are reported to the FCC based on advertised speed, business services are reported based on contracted speeds or Committed Information Rates (CIR). The CIR refers to the guaranteed minimum bandwidth that a business or institution can expect to receive. Contracted services usually include other measures of service quality. Quality of Service parameters include measures of latency (transmission delay) and jitter (variability in the timing of packets' arrival). Business services are more likely to offer symmetrical bandwidth, which refers to the ability to upload and download data at the same rate.

Business ISPs by speed tier

Consider creating a list of the companies that provide business services in your region. This can serve as the foundation for conversations to understand current and planned services. [See Community Priorities and Provider Engagement modules.]

Provider Name	Contracted Speed (up/down)
	Under 4/1
	10/1
	25/3

	25/3
	100/10
	100/10
	100/100
	500/100
	1G/1G

Business ISPs serving your area by technology

Consider creating a list of the companies that offer business services in your region. Understanding their technology footprint and deployment constraints and opportunities could provide a foundation for enhanced public-private partnerships. [See Use of Public of Assets and Provider Engagement modules.]

Provider	Technology	Blocks served
	aDSL	##
	Cable	##
	Satellite	##
	Satellite	##

	Fixed Wireless	##
	Fixed Wireless	##
	Fiber	##
	Fiber	##
	Other	##

Local assessment of national data

Do you feel that the FCC 477 data accurately reflects the real-life broadband access in your community?
1 = Not at all   5 = To a large extent   N/A or Don't Know

1   2   3   4   5   N/A

Local commentary on national data

If your experience of broadband availability differs from the reported data, please note the differences.
Please describe:

Local data on broadband availability

If you have other data on broadband availability, please provide your local data.

Resource name and URL

Consumer considerations for home broadband

This table includes results from the 2015 Digital Nation Computer and Internet Survey for Internet use among people ages 15 and older. The dataset includes internet use for people ages 3 and older. For this analysis we have included people ages 15 and older and state-specific data.

Use the NTIA Digital Nation Data Explorer to look at data on Internet considerations by age, gender, locality, or race and ethnicity, to get state data, or to explore trends over time. Digital Nation data is statistically valid at the state and national level.

Most Important Aspect for Home Internet Service	US	ST
Internet service speed	28.8%	%
Reliability of Internet service	37.6%	%
Affordability	26.2%	%
Customer service or technical support	1.8%	%
Mobility or ability to use service outside the home	1.8%	%
Monthly data limits	1.5%	%
Some other factor	2.3%	%

Source: U.S. Census Digital Nation Supplement to Current Population Survey with additional Internet questions – July 2015.

Local consumer broadband priorities

While the Digital Nation data represents consumer priorities for broadband access at the state and national levels, these trends may or may not be relevant to your community. What are the greatest concerns from residents where you live?
Please describe:

Business broadband priorities

The Digital Nation survey does not include businesses. What are the broadband access priorities or areas for concern for the businesses in your community?
Please describe:

Local data on broadband pricing

If you have conducted your own research on broadband pricing, please note that information here.
Please describe:

Local insights on broadband price & value

Please note insights or concerns about broadband pricing and value in your community
Please describe:

Local assessment of broadband availability

How would you describe the availability of broadband services where you live?
1 = Poor   5 = Excellent   N/A or Don't Know

1   2   3   4   5   N/A

Aspirations for changes in broadband availability

What changes would you like to see in the next one to two years in the broadband services that are available where you live?
Please describe:

Mobile coverage in your area

Like broadband providers that offer fixed-place service, mobile coverage (cell service) providers are also are required to file data with the FCC twice a year (Form 477) about where they offer Internet access service at speeds exceeding 200 kbps. Mobile providers file maps of their coverage areas for each broadband technology e.g., 2G, 3G, 4G Non-LTE, 4G LTE.

- Learn more about 477 data resources
- Nation map for LTE Coverage by Number of Providers
- National map for Mobile Wireless 3G or Better Coverage by Number of Providers
- National map for LTE Coverage
- National map for Mobile Wireless Coverage

- Download the [latest data for your state](#)

The FCC's [Mobile Wireless Competition Report](#) provides an annual snapshot of the mobile wireless coverage and technology.

[Nationwide coverage maps](#) are available at the FCC.

Mobile coverage information is not available in the beta release.

[Nationwide coverage maps](#) are available at the FCC.

Local assessment of national data

Does the FCC 477 data accurately reflect the real-life cellular broadband coverage (cell signal) in your community?

1 = Not at all   5 = To a large extent   N/A or Don't Know

1   2   3   4   5   N/A

Local commentary on national data

If your experience of cell phone coverage differs from the reported data, please explain.

Please describe:

Local data on cell phone coverage

If you have local data about cell phone data coverage, please provide it here.

Please describe:

Commentary on cell service price/value

Please comment on the affordability and value of wireless services available in your community.

Please describe:

Local data on cell service price/value

If you conducted your own research on cell service pricing, bundles, and data caps, please record that information here.

Please describe:

Assessment of mobile broadband availability

How would you describe the availability of cell phone coverage in your community?

1 = Poor   5 = Excellent   N/A or Don't Know

1   2   3   4   5   N/A

Aspirations for mobile broadband availability

Is mobile coverage available in the places where you need it? How do any gaps in service impact your community? What changes would you like to see over the next one to two years?

Please describe:

Links to local resources

Links to resources that you'd like to record in your plan.

Resource name and URL