



Testimony  
Before the Committee on Indian Affairs,  
U.S. Senate

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# TRIBAL BROADBAND

## FCC Should Take Efforts to Promote Tribal Access to Spectrum

### Accessible Version

Statement of Andrew Von Ah, Director,  
Physical Infrastructure Issues

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## TRIBAL BROADBAND

### FCC Should Take Efforts to Promote Tribal Access to Spectrum

#### Why GAO Did This Study

Broadband service on tribal lands continues to lag behind the rest of the country, especially on rural tribal lands. Broadband service can be delivered through wireless technologies using radio frequency spectrum. According to FCC, increasing tribal access to spectrum would help expand broadband service on tribal lands.

This statement is based on GAO's November 2018 report ([GAO-19-75](#)) related to spectrum use for broadband services by tribal entities and selected updates. Specifically, it discusses (1) tribal entities' ability to obtain and access spectrum to provide broadband services and the reported barriers that may exist, and (2) the extent to which FCC promotes and supports tribal efforts to obtain and access spectrum. For that report, GAO interviewed 16 tribal entities that were using wireless technologies. Selected entities varied geographically, among other characteristics. GAO analyzed FCC's license and auction data as of September 6, 2018, reviewed FCC's rulemakings on spectrum for broadband services, and interviewed other tribal and industry stakeholders and FCC officials. The information obtained was not generalizable to all tribes or industry participants. As an update, GAO reviewed FCC's June 2019 draft order related to spectrum in the 2.5 GHz band.

#### What GAO Recommends

In the November 2018 report, GAO made three recommendations to FCC, including that FCC should collect data on tribal access to spectrum and analyze unused licensed spectrum over tribal lands. FCC agreed with the recommendations and described actions to address them.

View [GAO-19-668T](#). For more information, contact Andrew Von Ah at (202) 512-2834 or [vonaha@gao.gov](mailto:vonaha@gao.gov).

#### What GAO Found

The tribal entities—tribal governments and tribally owned telecommunications providers—GAO contacted for its November 2018 report cited various barriers to obtaining spectrum licenses in bands that can be used to provide broadband services. Based on data from the Federal Communications Commission (FCC) as of September 2018, GAO identified 18 tribal entities that held active spectrum licenses in such bands. For example, of these 18 tribal entities, 4 obtained licenses through secondary market transactions—that is, they bought or leased the license from another provider, and 2 obtained a license through an FCC spectrum auction. The barriers tribal officials identified to obtaining licensed spectrum include high costs at auctions and, in the case of secondary market transactions, a lack of information on who holds licenses over tribal lands. Because most spectrum allocated for commercial use has already been assigned, the secondary market is one of the few avenues available to tribal entities that would like to access licensed spectrum.

At the time of GAO's November 2018 report, FCC had taken some actions to increase tribal access to spectrum. For example, FCC issued proposed rulemakings in 2011 and 2018 that sought comment on tribal-specific proposals, such as establishing tribal-licensing priorities and initiating processes to transfer unused spectrum licenses to tribal entities. FCC had not finalized these rules at the time of GAO's report, but FCC published a draft order in June 2019 that would create a tribal-licensing priority window, whereby tribal entities would have an opportunity to obtain spectrum in the 2.5 gigahertz (GHz) band prior to the spectrum being auctioned. FCC adopted the order on July 10, 2019. FCC stated that it will implement spectrum initiatives and that it recognizes the importance of promoting a robust secondary market to improve communications throughout the United States, including tribal lands. However, GAO found that FCC had not consistently collected data related to tribal access to spectrum. For example:

- FCC did not collect data on whether spectrum auction applicants are tribal entities and therefore did not have a comprehensive understanding of the extent that tribal entities are attempting to obtain licensed spectrum.
- FCC did not analyze the extent that unused licensed spectrum exists over tribal lands. Although FCC officials said evaluating the effectiveness of FCC's secondary market policies is a way to increase the use of unused spectrum, FCC's approach did not include an analysis of unused spectrum licenses on tribal lands. As a result, FCC's evaluations of the secondary market may not accurately reflect how its policies affect tribal entities.

By collecting data on the extent that tribal entities are obtaining and accessing spectrum, FCC could better understand tribal spectrum issues and use this information as it implements ongoing spectrum initiatives. Further, given that the secondary market is one of few ways for tribal entities to access licensed spectrum to provide Internet service, FCC could promote a more robust secondary market by analyzing unused licensed spectrum over tribal lands and using that information to inform FCC's oversight responsibilities.

Chairman Hoeven, Vice Chairman Udall, and Members of the Committee:

Thank you for the opportunity to discuss our November 2018 report on tribal access to and use of spectrum for broadband services.<sup>1</sup> Broadband service on tribal lands continues to lag behind the rest of the country, especially on rural tribal lands.<sup>2</sup> According to the Federal Communications Commission (FCC), this gap could hinder tribal efforts to promote self-governance, economic opportunity, education, public safety, and cultural preservation. In prior work, we found that one barrier to increasing broadband access on tribal lands is the cost of deploying infrastructure in areas with challenging terrain.<sup>3</sup> However, broadband service can be delivered through wireless technologies using radio frequency spectrum, and according to FCC, such wireless technologies are more cost-effective for some remote and sparsely populated areas, such as tribal lands.<sup>4</sup> In 2010, FCC reported that increasing tribal access to and use of spectrum would create additional opportunities to expand broadband service on tribal lands.<sup>5</sup>

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<sup>1</sup>GAO, *Tribal Broadband: FCC Should Undertake Efforts to Better Promote Tribal Access to Spectrum*, [GAO-19-75](#) (Washington, D.C.: Nov. 14, 2018).

<sup>2</sup>In this testimony, the term “tribal lands” refers to any federally recognized Indian tribe’s reservation, off-reservation trust lands, pueblo, or colony; land held in trust by the federal government for Indian(s); and Alaska Native regions established pursuant to the Alaska Native Claims Settlement Act, but do not include Oklahoma Tribal Statistical Areas.

<sup>3</sup>GAO, *Telecommunications: Challenges to Assessing and Improving Telecommunications for Native Americans on Tribal Lands*, [GAO-06-189](#) (Washington, D.C.: Jan. 11, 2006) and GAO, *Telecommunications: Additional Coordination and Performance Measurement Needed for High-Speed Internet Access Programs on Tribal Lands*, [GAO-16-222](#) (Washington, D.C.: Jan. 29, 2016).

<sup>4</sup>Congress has delegated responsibility for regulating commercial and other nonfederal spectrum use to FCC, and as part of its responsibilities, FCC assigns spectrum licenses, such as through auctions; oversees secondary market transactions; and promulgates regulations for the use of licensed and unlicensed spectrum. Regarding the secondary market, FCC’s rules permit licensees to lease portions of their licensed spectrum rights to others.

<sup>5</sup>In March 2010, an FCC task force issued the *National Broadband Plan* that included a centralized vision for achieving affordability and maximizing use of high-speed Internet. See FCC, *Connecting America: The National Broadband Plan* (Washington, D.C.: 2010).

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My remarks today are based on the November 2018 report and selected updates and address (1) the ability of tribal governments and telecommunications providers, which we refer to as “tribal entities,” to obtain and access spectrum to provide broadband services on tribal lands and the reported barriers that may exist, and (2) the extent to which FCC promotes and supports tribal efforts to obtain and access spectrum for broadband services. For our report, we reviewed relevant statutes and regulations, FCC documents,<sup>6</sup> and academic and government publications on spectrum-related issues on tribal lands. We analyzed FCC data on spectrum auction applicants and license holders as of September 6, 2018 and reviewed the list of federally recognized tribes published in the *Federal Register*. To obtain stakeholder views, we interviewed stakeholders, such as tribal associations, regional consortiums, private providers that deliver Internet services to tribal lands, industry associations, and companies that work with tribal entities. In addition, we interviewed 24 tribal entities—16 of which were using wireless technologies to provide Internet services—that we selected to include variation in terms of geographic location, level of broadband deployment, population size and density, and urban or rural distinction. Stakeholders were selected to represent a range of views and experience working with tribes and broadband service; their views are not generalizable. To assess FCC’s efforts, we interviewed FCC officials and reviewed relevant FCC-rulemaking proceedings and related public comments, and compared FCC’s actions against recommendations made in FCC’s *National Broadband Plan*,<sup>7</sup> FCC’s current strategic plan,<sup>8</sup> and federal internal control standards related to using quality information.<sup>9</sup> For this testimony, we reviewed the status of related FCC rulemakings and contacted FCC about action FCC has taken in response to our recommendations. Further details on our scope and methodology are included in our report.

We conducted the work on which this statement is based in accordance with generally accepted government auditing standards. Those standards

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<sup>6</sup>These documents included the *Statement of Policy on Establishing a Government-to-Government Relationships with Indian Tribes*, Policy Statement, 16 FCC Rcd 4078 (2000).

<sup>7</sup>FCC, *Connecting America: The National Broadband Plan* (Washington, D.C.: 2010).

<sup>8</sup>FCC, *Strategic Plan 2018-2022* (Washington, D.C.).

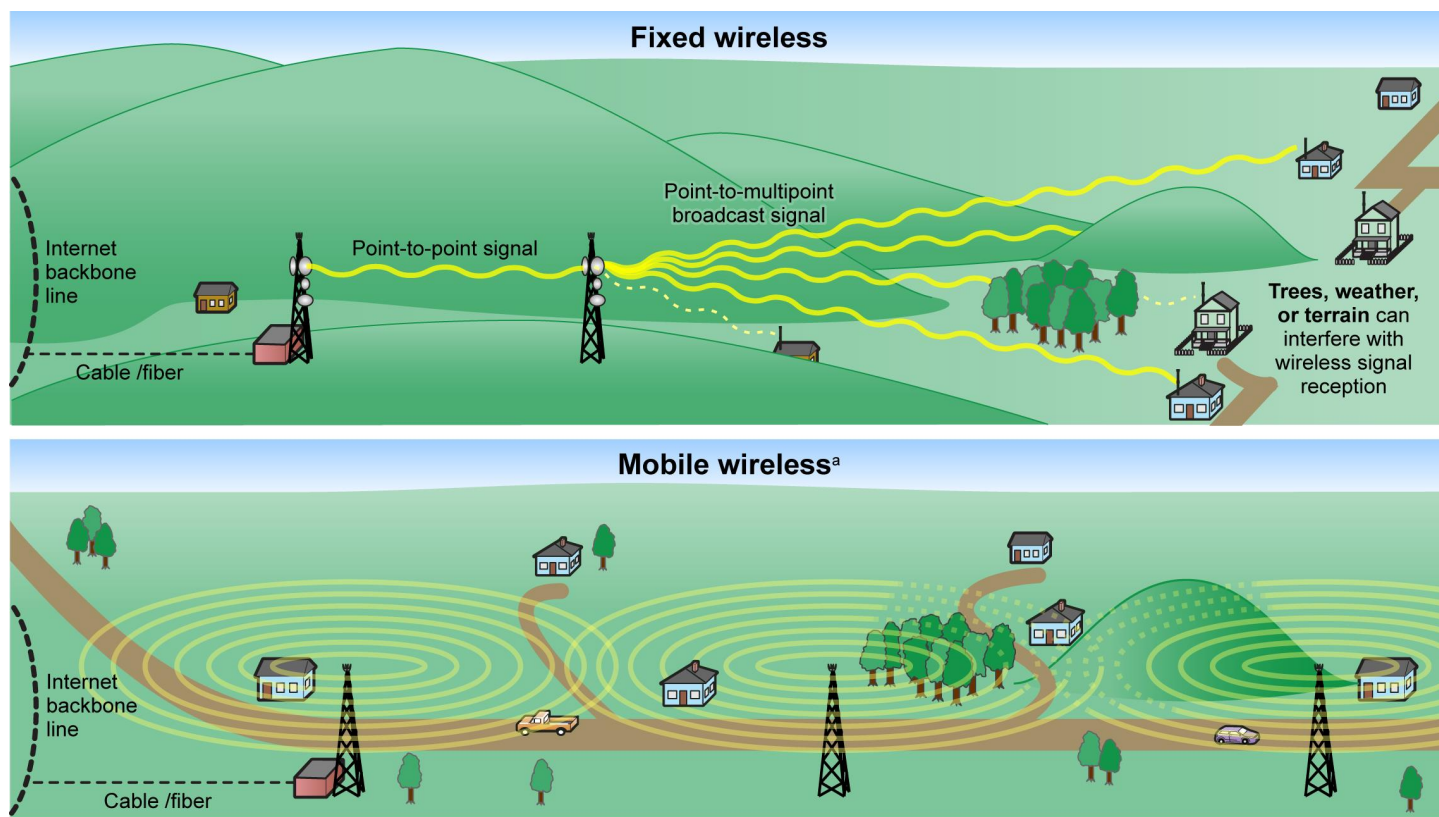
<sup>9</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## Background

Wireless broadband connects users to the Internet using spectrum to transmit data between the customer's location and the service provider's facility, and can be transmitted using fixed wireless and mobile technologies, as shown in figure 1.

**Figure 1: Fixed and Mobile Wireless Broadband**

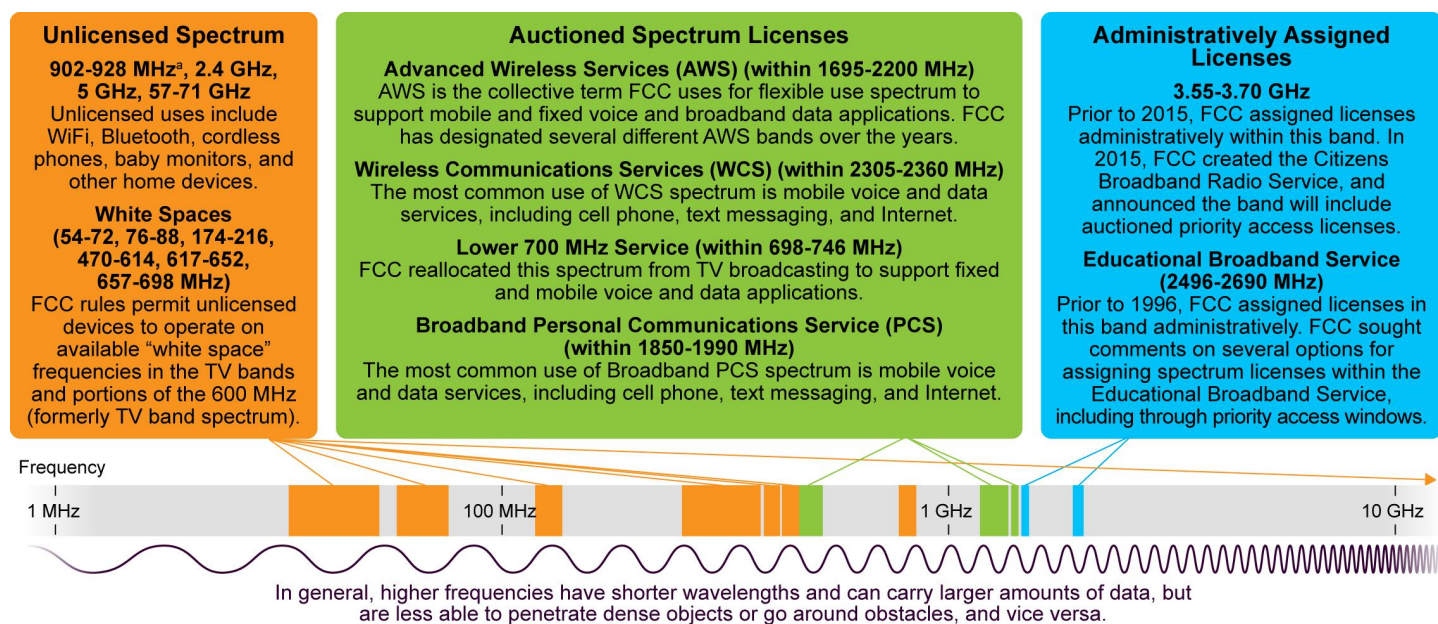


Source: GAO. | GAO-19-668T

<sup>a</sup>Satellite communication is also a wireless technology that exchanges data using a satellite in the sky and a dish on earth.

Fixed wireless broadband technologies establish an Internet connection between fixed points—such as from a radio or antenna that may be mounted on a tower, to a stationary wireless device located at a home—and generally requires a direct line of sight. Mobile wireless broadband technologies also establish an Internet connection that requires the installation of antennas, but this technology provides connectivity to customers wherever they are covered by service, including while on the move, such as with a cell phone. Spectrum is the resource that makes wireless broadband connections possible. Spectrum frequency bands each have different characteristics that result in different levels of ability to cover distances, penetrate physical objects, and carry large amounts of information. Examples of some of the frequency bands that can be used by commercial and nonfederal entities for broadband services are shown in figure 2.

**Figure 2: Examples of Frequency Bands Available for Commercial and Nonfederal Broadband Services**



Source: GAO analysis of Federal Communications Commission (FCC) data. | GAO-19-668T

<sup>a</sup>Radio frequencies are grouped into bands and are measured in units of Hertz, or cycles per second. The term megahertz (MHz) refers to millions of Hertz and gigahertz (GHz) to billions of Hertz.

The frequency bands that can be used for broadband services are either licensed or unlicensed. For licensed spectrum, FCC can assign licenses through auctions, in which prospective users bid for the exclusive rights to transmit on a specific frequency band within geographic areas. Having exclusive rights ensures there will be no interference from other spectrum

users in that band. License holders may sell or lease their license, in whole or in part, to another provider, a process that is known as a secondary market transaction, with FCC's approval. FCC has assigned licenses administratively in two frequency bands that can be used for broadband services.<sup>10</sup>

FCC also authorizes the use of unlicensed spectrum, where an unlimited number of users can share frequencies without a license, such as wireless microphones, baby monitors, and garage door openers. In contrast to users of licensed spectrum, unlicensed users have no regulatory protection from interference by other licensed or unlicensed users in the bands.<sup>11</sup>

In March 2010, FCC issued the *National Broadband Plan* that included a centralized vision for achieving affordability and maximizing use of high-speed Internet.<sup>12</sup> The plan made recommendations to FCC, including that FCC should take into account the unique spectrum needs of tribal communities when implementing spectrum policies and evaluate its policies and rules to address obstacles to spectrum access by tribal communities. With regard to tribal lands, the plan recommended that FCC increase its commitment to government-to-government consultation with tribal leaders and consider increasing tribal representation in telecommunications planning. FCC established the Office of Native Affairs and Policy in July 2010 to promote the deployment and adoption of communication services and technologies to all native communities, by, among other things, ensuring consultation with tribal governments pursuant to FCC policy.

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<sup>10</sup>Prior to 1996, FCC assigned licenses for exclusive use in the Educational Broadband Service (2496-2690 MHz), which FCC allocated to qualifying educational institutions and government organizations for the transmission of educational materials. In addition, from 2005 to 2015, FCC assigned non-exclusive nationwide licenses in the 3650-3700 MHz band, where use of the band may be shared by other license holders.

<sup>11</sup>While there are no regulatory protections against interference for users of unlicensed spectrum, FCC has certification rules and standardized protocols that help to mitigate interference, and users must accept any interference caused by all compliant devices in these bands.

<sup>12</sup>FCC, *Connecting America: The National Broadband Plan* (Washington, D.C.: 2010).

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## Few Tribal Entities Had Obtained Licensed Spectrum and Face Barriers Doing So

For our November 2018 report, we identified 18 tribal entities from FCC's license data that held active spectrum licenses in bands that can be used to provide broadband services as of September 2018.<sup>13</sup> Of those 18, 4 obtained the spectrum through a secondary market transaction and 2 from an FCC spectrum auction.<sup>14</sup>

We interviewed 16 tribal entities that were using wireless technologies at the time to provide service, and 14 told us that they were accessing unlicensed spectrum to do so. While representatives from most of the 16 tribal entities reported some advantages of unlicensed spectrum, such as the spectrum is available at no cost, they also discussed their experiences with the limitations of unlicensed spectrum, including issues with interference and speed or capacity. Some of the stakeholders we contacted and FCC have highlighted the importance of exclusive-use licensed spectrum for tribal entities. For example, FCC's Office of Native Affairs and Policy reported in 2012 that unlicensed spectrum is not an option across all tribal lands and that tribal access to robust licensed spectrum is a critical need.<sup>15</sup> In addition, representatives from the stakeholders we interviewed told us that there are non-technological benefits for tribal entities to obtain greater access to licensed spectrum, including:

- enhanced ability to deliver additional Internet services,
- enhanced ability to sell or lease spectrum for profit, and

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<sup>13</sup>To identify tribal entities, we reviewed the list of federally recognized tribes published in the *Federal Register*, identified search terms related to these tribes, and manually matched these search terms and FCC data on license holders. Because tribal entities may hold spectrum licenses under names that did not include the search terms we identified, there may be additional tribal entities that we did not include in our analysis. As of September 2018, there were over 27,000 active spectrum licenses held by over 4,400 licensees.

<sup>14</sup>We found 13 tribal entities had obtained a license through FCC administrative assignment, which, as described above, FCC also has the authority to do. One of these 13 tribal entities also held a license obtained through a secondary market transaction.

<sup>15</sup>FCC's Office of Native Affairs and Policy, *2012 Annual Report*, (Washington, D.C.).

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- additional opportunities to obtain federal funding that requires entities to hold or have access to licensed spectrum.

Furthermore, two tribal stakeholders and representatives from several tribal entities told us that having access to licensed spectrum would enable tribes to exercise their rights to sovereignty and self-determination. For example, representatives from four of the tribal entities told us that having access to licensed spectrum would ensure that spectrum is being used in a way that aligns with tribal goals and community needs, further supporting their rights to self-determination.

In our November 2018 report, we described barriers tribal entities reported facing in accessing licensed spectrum. First, representatives from tribal entities we contacted said that obtaining a spectrum license through an auction was too expensive for many tribal entities. Indeed, over 60 percent (983 of 1,611) of the winning bids from a 2015 spectrum auction were more than \$1 million. Representatives from some tribal entities told us they were unable to obtain financing to participate in auctions because tribal governments cannot use tribal lands as collateral to obtain loans and that participating in spectrum auctions requires auction-specific expertise that tribal entities may not have.

Second, tribal entities reported facing barriers obtaining spectrum through secondary market transactions. Most of the spectrum allocated for commercial use has already been assigned through spectrum auctions and other mechanisms to private providers that may not be providing service on tribal lands. As such, there may be tribal areas where providers hold licenses for bands but are not using the spectrum to provide Internet service. All three of the tribal associations we contacted confirmed that there were unused spectrum licenses over tribal lands, and representatives from a nationwide provider indicated that they only deploy services if there is a business case to support doing so. Accordingly, the secondary market is one of few avenues available to tribal entities that would like to access licensed spectrum. However, representatives from tribal entities we contacted told us it could be challenging to participate in the secondary market because there is a lack of willing sellers, license holders are not easily identified, and tribal entities may not be aware of how to pursue secondary market transactions. For example, representatives from a tribal entity that had been successful in obtaining a license through the secondary market told us that an Indian-owned telecommunications consulting company was pivotal in identifying the license holder and facilitating the transaction, and without such assistance, the transaction would not have occurred.






## FCC Had Taken Some Actions to Increase Access, but Does Not Collect or Communicate Key Spectrum-Related Information to Tribal Entities

At the time of our November 2018 report, we found that FCC had taken some actions to increase tribal access to spectrum. In particular:

- FCC issued a proposed rulemaking in March 2011 that sought comments on three proposals to create new spectrum access opportunities for tribal entities (see fig. 3).<sup>16</sup> As of July 12, 2019, FCC had not adopted new rules or taken further action on the 2011 rulemaking.

**Figure 3: Proposals Made in the Federal Communication Commission’s (FCC) 2011 Notice of Proposed Rulemaking (NPRM) to Promote Tribal Access to Spectrum**

Proposal	Description
<b>Tribal licensing priority</b> 	Establish a licensing priority for tribal entities to obtain not-yet-assigned licenses, such as at future auctions for fixed and mobile wireless services, for unserved or underserved tribal lands. The NPRM proposed two ways to provide tribal entities with priority access, including (1) provide a tribal priority application window after FCC has announced a spectrum auction but before the window for filling auction applications opens or (2) provide a tribal priority application window before FCC has announced a spectrum auction.
<b>Good faith negotiations</b> 	Establish a process to help tribal entities secure access to spectrum over tribal lands through secondary market opportunities. The NPRM proposed creating a formal negotiation process that would enable a tribal entity to require a license holder to enter into good faith negotiations regarding a secondary market transaction for any geographic portion of the license that is covered by unserved or underserved tribal lands.
<b>Build-or-divest process</b> 	Establish a process where a tribal entity could require a licensee to build or divest a geographic area covering unserved or underserved tribal lands within its license area. The NPRM proposed initiating such a process where an existing licensee has satisfied the applicable construction requirements for the license yet tribal land areas remain unserved or underserved.

Source: GAO analysis of FCC information. | GAO-19-668T

<sup>16</sup>*In the Matter of Improving Communications Services for Native Nations by Promoting Greater Utilization of Spectrum over Tribal Lands*, Notice of Proposed Rulemaking 26 FCC Rcd 2623 (2011). The 2011 proposed rulemaking included other proposals not related to enhancing tribal access to spectrum but rather to incentivize build-out in tribal areas by license holders, such as making modifications to the Tribal Lands Bidding Credit Program and creating Construction Safe Harbor provisions.

- FCC issued a proposed rulemaking in May 2018<sup>17</sup> that sought comment on establishing a priority window for tribal nations located in rural areas to obtain a license in the Educational Broadband Service spectrum band (also known as the 2.5 GHz band).<sup>18</sup> In the proposed rulemaking, FCC had found that significant portions of this band were not being used, primarily in rural areas. FCC had not finalized this rule at the time of our November 2018 report, but published a draft order in June 2019 that would establish a priority filing window so that tribal entities could get access to unassigned spectrum in the 2.5 GHz band on rural tribal lands prior to an FCC auction. FCC adopted this order on July 10, 2019.<sup>19</sup>
- FCC's Office of Native Affairs and Policy conducts training, consultation, and outreach to tribal entities on spectrum-related issues, such as communicating with tribal entities prior to FCC auctions or when FCC regulatory actions or policies would affect tribal governments and spectrum over their lands.

FCC's 2010 *National Broadband Plan* stated that ongoing measurement of spectrum utilization should be developed to better understand how spectrum resources are being used because some studies indicated that spectrum goes unused in many places much of the time. The plan stated that any spectrum utilization studies that FCC conducts should identify tribal lands as distinct entities. The plan also stated that FCC should make data available that would promote a robust secondary market for spectrum licenses, such as information on how and to whom spectrum is allocated on tribal lands.<sup>20</sup> In FCC's 2018 strategic plan, FCC stated that it will implement ongoing initiatives that will assist in spectrum policy planning and decision making, promote a robust secondary market in spectrum, and improve communications services in all areas of the United States, including tribal areas.<sup>21</sup> Additionally, federal internal control

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<sup>17</sup>*In the Matter of Transforming the 2.5 GHz Band*, Notice of Proposed Rulemaking, WT Docket No. 18-120 (2018).

<sup>18</sup>According to FCC, the tribal priority window will enable tribal entities an opportunity to obtain unassigned 2.5 GHz licenses to provide service on rural tribal lands; this window will be followed immediately by a system of competitive bidding. As described above, FCC previously assigned licenses for exclusive use in the Educational Broadband Service band (2496-2690 MHz).

<sup>19</sup>*In the Matter of Transforming the 2.5 GHz Band*, Report and Order, FCC 19-62 (2019).

<sup>20</sup>FCC, *Connecting America: The National Broadband Plan* (Washington, D.C.: 2010).

<sup>21</sup>FCC, *Strategic Plan 2018–2022* (Washington, D.C.).

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standards state that agencies should use quality information, including information that is complete, to inform the decision-making processes and communicate with external entities.<sup>22</sup> Tribal governments are an example of such external entities.

However, in our 2018 report, we found that FCC had not consistently collected data related to tribal access to spectrum or communicated important information to tribes. In particular:

- FCC did not collect data on whether spectrum license-holders or auction applicants are tribal entities. Without this information, FCC did not have a comprehensive understanding of the extent that tribal entities are attempting to obtain or access licensed spectrum or have been successful at obtaining and accessing it.
- FCC did not analyze the extent that unused licensed spectrum exists over tribal lands, even though FCC had the information—broadband availability data from providers and information on geographic areas covered by spectrum licenses—needed for such an analysis. Although FCC officials told us evaluating the effectiveness of FCC’s secondary market policies is a way to increase the use of unused spectrum, FCC’s approach did not include an analysis of unused spectrum licenses on tribal lands. As a result, FCC’s evaluations of the secondary market may not have accurately reflected how its policies affect tribal entities. Because the secondary market is one of few ways for tribal entities to access licensed spectrum, such an assessment would enable FCC to better promote a robust secondary market that provides opportunities for tribes to access spectrum.
- FCC did not communicate information to tribes that could benefit them in their efforts to obtain spectrum in the secondary market. As described earlier, the secondary market is a significant mechanism for tribal entities to obtain spectrum licenses, but representatives from the tribal entities we interviewed reported challenges related to participating in the secondary market, such as not knowing whom to contact should they wish to engage in a secondary market transaction to obtain a spectrum license.

We concluded that FCC’s efforts to promote and support tribal entities’ access to spectrum had done little to increase tribal use of spectrum. In particular, FCC lacked information that could help inform its decision-

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<sup>22</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

making processes related to spectrum policy planning, which is intended to improve communications services in all areas of the United States, including tribal lands. By collecting data on the extent that tribal entities are obtaining and accessing spectrum, FCC could better understand tribal spectrum issues and use this information as it implements ongoing spectrum initiatives. Furthermore, the ability of tribal governments to make informed spectrum planning decisions and to participate in secondary market transactions is diminished without information from FCC on the spectrum transactions that occur over tribal lands. Providing this information directly to tribal entities could enable them to enter into leasing, partnership, or other arrangements to obtain spectrum. In our November 2018 report, we recommended that FCC (1) collect data on the extent that tribal entities are obtaining and accessing spectrum and use this information as FCC implements ongoing spectrum initiatives; (2) analyze data to better understand the extent that unused spectrum licenses exist over tribal lands, such as by analyzing the data for a sample of tribal lands, and as appropriate use this information to inform its oversight of the secondary market; and (3) make information on spectrum-license holders more accessible and easy to understand for interested parties, including tribal entities, to promote their ability to purchase or lease spectrum licenses from other providers. FCC agreed with these recommendations and described the actions it plans to take to implement them. For example, according to FCC, it will consider ways to collect data on the extent to which tribal entities are obtaining and accessing spectrum; analyze data from a sample of spectrum licenses on tribal lands to inform FCC's spectrum policies; and transition to a more user-friendly system for its licensing data.

Chairman Hoeven, Vice Chairman Udall, and Members of the Committee, this concludes my prepared statement. I would be pleased to respond to any questions that you may have.

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## GAO Contact and Staff Acknowledgments

If you or your staff have any questions about this testimony, please contact Andrew Von Ah, Director, Physical Infrastructure Issues at (202) 512-2834 or [vonaha@gao.gov](mailto:vonaha@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. GAO staff who made key contributions to this testimony are Sally Moino and Anne Doré. Other staff who made contributions to the report cited in this testimony are identified in the source product.

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