Question 21: Infrastructure projects related to dams and reservoirs are generally not eligible under the CWSRF and DWSRF categories. Should Treasury consider expanding eligible infrastructure under the Interim Final Rule to include dam and reservoir projects? Discuss public health, environmental, climate, or equity benefits and costs in expanding the eligibility to include these types of projects.

2. Broadband Infrastructure.

The COVID-19 public health emergency has underscored the importance of universally available, high-speed, reliable, and affordable broadband coverage as millions of Americans rely on the internet to participate in, among critical activities, remote school, healthcare, and work. Recognizing the need for such connectivity, the ARPA provides funds to State, territorial, local, and Tribal governments to make necessary investments in broadband infrastructure.

The National Telecommunications and Information Administration (NTIA) highlighted the growing necessity of broadband in daily lives through its analysis of NTIA Internet Use Survey data, noting that Americans turn to broadband Internet access service for every facet of daily life including work, study, and healthcare.[139] With increased use of technology for daily activities and the movement by many businesses and schools to operating remotely during the pandemic, broadband has become even more critical for people across the country to carry out their daily lives.

[139] *See, e.g.,* https://www.ntia.gov/blog/2020/more-half-american-households-used-internet-health-related-activities-2019-ntia-data-show; https://www.ntia.gov/blog/2020/nearly-third-american-employees-worked-remotely-2019-ntia-data-show; and generally, https://www.ntia.gov/data/digital-nation-data-explorer.

By at least one measure, however, tens of millions of Americans live in areas where there is no broadband infrastructure that provides download speeds greater than 25 Mbps and upload speeds of 3 Mbps.[140] By contrast, as noted below, many households use upload and download speeds of 100 Mbps to meet their daily needs. Even in areas where broadband infrastructure exists, broadband access may be out of reach for millions of Americans because it is unaffordable, as the United States has some of the highest broadband prices in the Organisation for Economic Co-operation and Development (OECD).[141] There are disparities in availability as well; historically, Americans living in territories and Tribal lands as well as rural areas have disproportionately lacked sufficient broadband infrastructure.[142] Moreover, rapidly growing demand has, and will likely continue to, quickly outpace infrastructure capacity, a phenomenon acknowledged by various states around the country that have set scalability requirements to account for this anticipated growth in demand.[143]

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[140] As an example, data from the Federal Communications Commission shows that as of June 2020, 9.07 percent of the U.S. population had no available cable or fiber broadband providers providing greater than 25 Mbps download speeds and 3 Mbps upload speeds. Availability was significantly less for rural versus urban populations, with 35.57 percent of the rural population lacking such access, compared with 2.57 percent of the urban population. Availability was also significantly less for tribal versus non-tribal populations, with 35.93 percent of the tribal population lacking such access, compared with 8.74 of the non-tribal population. Federal Communications Commission, Fixed Broadband Deployment, https://broadbandmap.fcc.gov/#/ (last visited May 9, 2021).

[141] How Do U.S. Internet Costs Compare To The Rest Of The World?, BroadbandSearch Blog Post, *available at* https://www.broadbandsearch.net/blog/internet-costs-compared-worldwide.

[142] *See, e.g.,* Federal Communications Commission, Fourteenth Broadband Deployment Report, *available at* https://docs.fcc.gov/public/attachments/FCC-21-18A1.pdf.

[143] *See, e.g.,* Illinois Department of Commerce & Economic Opportunity, Broadband Grants, h (last visited May 9, 2021), https://www2.illinois.gov/dceo/ConnectIllinois/Pages/BroadbandGrants.aspx; Kansas Office of Broadband Development, Broadband Acceleration Grant, https://www.kansascommerce.gov/wp-content/uploads/2020/11/Broadband-Acceleration-Grant.pdf (last visited May 9, 2021); New York State Association of Counties, Universal Broadband: Deploying High Speed Internet Access in NYS (Jul. 2017), https://www.nysac.org/files/BroadbandUpdateReport2017(1).pdf.

The Interim Final Rule provides that eligible investments in broadband are those that are designed to provide services meeting adequate speeds and are provided to unserved and underserved households and businesses. Understanding that States, territories, localities, and Tribal governments have a wide range of varied broadband infrastructure needs, the Interim Final Rule provides award recipients with flexibility to identify the specific locations within their communities to be served and to otherwise design the project.

Under the Interim Final Rule, eligible projects are expected to be designed to deliver, upon project completion, service that reliably meets or exceeds symmetrical upload and download speeds of 100 Mbps. There may be instances in which it would not be practicable for a project to deliver such service speeds because of the geography, topography, or excessive costs associated with such a project. In these instances, the affected project would be expected to be designed to deliver, upon project completion, service that reliably meets or exceeds 100 Mbps download and between at least 20 Mbps and 100 Mbps upload speeds and be scalable to a minimum of 100 Mbps symmetrical for download and upload speeds.[144] In setting these standards, Treasury identified speeds necessary to ensure that broadband infrastructure is sufficient to enable users to generally meet household needs, including the ability to support the simultaneous use of work, education, and health applications, and also sufficiently robust to meet increasing household demands for bandwidth. Treasury also recognizes that different communities and their members may have a broad range of internet needs and that those needs may change over time.

[144] This scalability threshold is consistent with scalability requirements used in other jurisdictions. *Id.*

In considering the appropriate speed requirements for eligible projects, Treasury considered estimates of typical households demands during the pandemic. Using the Federal Communication Commission's (FCC) Broadband Speed Guide, for example, a household with two telecommuters and two to three remote learners today are estimated to need 100 Mbps download to work simultaneously.[145] In households with more members, the demands may be greater, and in households with fewer members, the demands may be less.

In considering the appropriate speed requirements for eligible projects, Treasury also considered data usage patterns and how bandwidth needs have changed over time for U.S. households and businesses as people's use of technology in their daily lives has evolved. In the few years preceding the pandemic, market research data showed that average upload speeds in the United States surpassed over 10 Mbps in 2017[146] and continued to increase significantly, with the average upload speed as of November, 2019 increasing to 48.41 Mbps,[147] attributable, in part to a shift to using broadband and the internet by individuals and businesses to create and share content using video sharing, video conferencing, and other applications.[148]

The increasing use of data accelerated markedly during the pandemic as households across the country became increasingly reliant on tools and applications that require greater

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[145] Federal Communications Commission, Broadband Speed Guide, https://www.fcc.gov/consumers/guides/broadband-speed-guide (last visited Apr. 30, 2021).

[146] Letter from Lisa R. Youngers, President and CEO of Fiber Broadband Association to FCC, WC Docket No. 19-126 (filed Jan. 3, 2020), including an Appendix with research from RVA LLC, *Data Review Of The Importance of Upload Speeds* (Jan. 2020), and Ookla speed test data, *available at https://ecfsapi.fcc.gov/file/101030085118517/FCC%20RDOF%20Jan%203%20Ex%20Parte.pdf.*

Additional information on historic growth in data usage is provided in Schools, Health & Libraries Broadband Coalition, *Common Sense Solutions for Closing the Digital Divide,* Apr. 29, 2021.

[147] *Id. See also* United States's Mobile and Broadband Internet Speeds - Speedtest Global Index, *available at* https://www.speedtest.net/global-index/united-states#fixed.

[148] *Id.*

internet capacity, both to download data but also to upload data. Sending information became as important as receiving it. A video consultation with a healthcare provider or participation by a child in a live classroom with a teacher and fellow students requires video to be sent and received simultaneously.[149] As an example, some video conferencing technology platforms indicate that download and upload speeds should be roughly equal to support two-way, interactive video meetings.[150] For both work and school, client materials or completed school assignments, which may be in the form of PDF files, videos, or graphic files, also need to be shared with others. This is often done by uploading materials to a collaboration site, and the upload speed available to a user can have a significant impact on the time it takes for the content to be shared with others. [151] These activities require significant capacity from home internet connections to both download and upload data, especially when there are multiple individuals in one household engaging in these activities simultaneously.

This need for increased broadband capacity during the pandemic was reflected in increased usage patterns seen over the last year. As OpenVault noted in recent advisories, the pandemic significantly increased the amount of data users consume. Among data users observed by OpenVault, per-subscriber average data usage for the fourth quarter of 2020 was 482.6 gigabytes per month, representing a 40 percent increase over the 344 gigabytes consumed in the fourth quarter of 2019 and a 26 percent increase over the third quarter 2020 average of

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[149] One high definition Zoom meeting or class requires approximately 3.8 Mbps/3.0 Mbps (up/down).

[150] *See, e.g.,* Zoom, System Requirements for Windows, macOS, and Linux, https://support.zoom.us/hc/en-us/articles/201362023-System-requirements-for-Windows-macOS-and-Linux#h_d278c327-e03d-4896-b19a-96a8f3c0c69c (last visited May 8, 2021).

[151] By one estimate, to upload a one gigabit video file to YouTube would take 15 minutes at an upload speed of 10 Mbps compared with 1 minute, 30 seconds at an upload speed of 100 Mbps, and 30 seconds at an upload speed of 300 Mbps. Reviews.org: What is Symmetrical Internet? (March 2020).

383.8 gigabytes.[152] OpenVault also noted significant increases in upstream usage among the data users it observed, with upstream data usage growing 63 percent – from 19 gigabytes to 31 gigabytes – between December, 2019 and December, 2020.[153] According to an OECD Broadband statistic from June 2020, the largest percentage of U.S. broadband subscribers have services providing speeds between 100 Mbps and 1 Gbps.[154]

Jurisdictions and Federal programs are increasingly responding to the growing demands of their communities for both heightened download and upload speeds. For example, Illinois now requires 100 Mbps symmetrical service as the construction standard for its state broadband grant programs. This standard is also consistent with speed levels, particularly download speed levels, prioritized by other Federal programs supporting broadband projects. Bids submitted as part of the FCC in its Rural Digital Opportunity Fund (RDOF), established to support the construction of broadband networks in rural communities across the country, are given priority if they offer faster service, with the service offerings of 100 Mbps download and

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[152] OVBI: Covid-19 Drove 15 percent Increase in Broadband Traffic in 2020, OpenVault, Quarterly Advisory, (Feb. 10, 2021), *available at* https://openvault.com/ovbi-covid-19-drove-51-increase-in-broadband-traffic-in-2020; *See* OpenVault's data set incorporates information on usage by subscribers across multiple continents, including North America and Europe. Additional data and detail on increases in the amount of data users consume and the broadband speeds they are using is provided in *OpenVault Broadband Insights Report Q4,* Quarterly Advisory (Feb. 10, 2021), *available at* https://openvault.com/complimentary-report-4q20/.

[153] OVBI Special Report: 202 Upstream Growth Nearly 4X of Pre-Pandemic Years, OpenVault, Quarterly Advisory, (April 1, 20201), *available at* https://openvault.com/ovbi-special-report-2020-upstream-growth-rate-nearly-4x-of-pre-pandemic-years/; Additional data is provided in *OpenVault Broadband Insights Pandemic Impact on Upstream Broadband Usage and Network Capacity*, *available at* https://openvault.com/upstream-whitepaper/.

[154] Organisation for Economic Co-operation and Development, Fixed broadband subscriptions per 100 inhabitants, per speed tiers (June 2020), https://www.oecd.org/sti/broadband/5.1-FixedBB-SpeedTiers-2020-06.xls www.oecd.org/sti/broadband/broadband-statistics.

20 Mbps upload being included in the "above baseline" performance tier set by the FCC.[155] The Broadband Infrastructure Program (BBIP)[156] of the Department of Commerce, which provides Federal funding to deploy broadband infrastructure to eligible service areas of the country also prioritizes projects designed to provide broadband service with a download speed of not less than 100 Mbps and an upload speed of not less than 20 Mbps.[157]

The 100 Mbps upload and download speeds will support the increased and growing needs of households and businesses. Recognizing that, in some instances, 100 Mbps upload speed may be impracticable due to geographical, topographical, or financial constraints, the Interim Final Rule permits upload speeds of between at least 20 Mbps and 100 Mbps in such instances. To provide for investments that will accommodate technologies requiring symmetry in download and upload speeds, as noted above, eligible projects that are not designed to deliver, upon project completion, service that reliably meets or exceeds symmetrical speeds of 100 Mbps because it would be impracticable to do so should be designed so that they can be scalable to such speeds. Recipients are also encouraged to prioritize investments in fiber optic infrastructure where feasible, as such advanced technology enables the next generation of application solutions for all communities.

Under the Interim Final Rule, eligible projects are expected to focus on locations that are unserved or underserved. The Interim Final Rule treats users as being unserved or underserved if they lack access to a wireline connection capable of reliably delivering at least minimum speeds

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[155] *Rural Digital Opportunity Fund*, Report and Order, 35 FCC Rcd 686, 690, para. 9 (2020), *available at* https://www.fcc.gov/document/fcc-launches-20-billion-rural-digital-opportunity-fund-0.

[156] The BIPP was authorized by the Consolidated Appropriations Act, 2021, Section 905, Public Law 116-260, 134 Stat. 1182 (Dec. 27, 2020).

[157] Section 905(d)(4) of the Consolidated Appropriations Act, 2021.

of 25 Mbps download and 3 Mbps upload as households and businesses lacking this level of access are generally not viewed as being able to originate and receive high-quality voice, data, graphics, and video telecommunications. This threshold is consistent with the FCC's benchmark for an "advanced telecommunications capability."[158] This threshold is also consistent with thresholds used in other Federal programs to identify eligible areas to be served by programs to improve broadband services. For example, in the FCC's RDOF program, eligible areas include those without current (or already funded) access to terrestrial broadband service providing 25 Mbps download and 3 Mbps upload speeds.[159] The Department of Commerce's BBIP also considers households to be "unserved" generally if they lack access to broadband service with a download speed of not less than 25 Mbps download and 3 Mbps upload, among other conditions. In selecting an area to be served by a project, recipients are encouraged to avoid investing in locations that have existing agreements to build reliable wireline service with minimum speeds of 100 Mbps download and 20 Mbps upload by December 31, 2024, in order to avoid duplication of efforts and resources.

Recipients are also encouraged to consider ways to integrate affordability options into their program design. To meet the immediate needs of unserved and underserved households and businesses, recipients are encouraged to focus on projects that deliver a physical broadband connection by prioritizing projects that achieve last mile-connections. Treasury also encourages recipients to prioritize support for broadband networks owned, operated by, or affiliated with

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[158] *Deployment Report*, *supra* note 142.

[159] *Rural Digital Opportunity Fund*, *supra* note 156.

local governments, non-profits, and co-operatives—providers with less pressure to turn profits and with a commitment to serving entire communities.

Under sections 602(c)(1)(A) and 603(c)(1)(A), assistance to households facing negative economic impacts due to COVID-19 is also an eligible use, including internet access or digital literacy assistance. As discussed above, in considering whether a potential use is eligible under this category, a recipient must consider whether, and the extent to which, the household has experienced a negative economic impact from the pandemic.

Question 22: What are the advantages and disadvantages of setting minimum symmetrical download and upload speeds of 100 Mbps? What other minimum standards would be appropriate and why?

Question 23: Would setting such a minimum be impractical for particular types of projects? If so, where and on what basis should those projects be identified? How could such a standard be set while also taking into account the practicality of using this standard in particular types of projects? In addition to topography, geography, and financial factors, what other constraints, if any, are relevant to considering whether an investment is impracticable?

Question 24: What are the advantages and disadvantages of setting a minimum level of service at 100 Mbps download and 20 Mbps upload in projects where it is impracticable to set minimum symmetrical download and upload speeds of 100 Mbps? What are the advantages and disadvantages of setting a scalability requirement in these cases? What other minimum standards would be appropriate and why?

Question 25: What are the advantages and disadvantages of focusing these investments on those without access to a wireline connection that reliably delivers 25 Mbps download by 3 Mbps upload? Would another threshold be appropriate and why?