The Role of Community Networks in Advancing Universal Access to the Internet

Approved by the IEEE Board of Directors on 18 November 2018

Revised and renewed by the IEEE Board of Directors on 21 November 2021 as an Addendum to the IEEE Position Statement entitled ***"Universal Access to the Internet"***

Revised and renewed by the IEEE Board of Directors on 19 January 2026

IEEE endorses the goal of universal access to the internet and supports national initiatives and international collaborations designed to expand access to the billions of people in both developed and developing countries around the world who do not have access to the internet.[1]

Community networks have been an important element of expanding internet infrastructure[2] and allowing individuals and communities to reap the benefits of internet access. While definitions of community networks can be simple[3] or more complex[4], community networks based on open internet standards are technically no different than other networks for providing internet access. IEEE recognizes the impact they can have in addressing current internet universal access challenges when they are built and operated lawfully and ethically, with due regard to security and privacy, and with the willingness of the local community.

- **Community networks can provide access in areas where commercial internet service is not available.** Community networks can provide affordable connectivity in rural and other underserved areas because they can be built and operated by the members of the communities they serve using locally available hardware and software.

- **Community networks can provide alternatives to commercial internet access.** Community networks are often built by volunteers using donated hardware and open-source software. By competing with commercial providers, community networks in concentrated communications markets can offer their members more affordable connectivity and greater control over technology, content, and data. Deployment of community networks can also provide incentives for commercial providers to improve their service offerings so as to attract customers who might otherwise choose community networks.

- **Community networks can encourage the creation of local content.**[5] Community networks can serve as a means for community members to create, exchange and discuss information that is of interest to them. Content in local languages dealing with local issues can support and strengthen community ties and serve as a gateway to the broader internet ecosystem.

- **Community networks can use a variety of organizational and operating models to reflect the wishes and needs of their participants.** By allowing network participants to determine the operating rules for their network, community networks can be open or closed, can have various governance models, can incorporate different technologies, and can support themselves through a variety of funding sources and compensation schemes.

- **Community networks can provide education and training in information and communications technologies (ICTs).** Community networks can provide participatory education and training opportunities for those who wish to learn more about technology and be a part of the local technology community, and for those who wish to use technology to meet the needs of their group or community organization.

IEEE supports community networks because they can play an important part in expanding the internet infrastructure, particularly for unserved and underserved communities.

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[1] According to Internet World Stats, in April 2025 there were 5.56 billion active internet users worldwide (accessed 29 September 2025). See https://www.statista.com/topics/1145/internet-usage-worldwide/

According to the International Telecommunications Union *Measuring Digital Development: Facts and Figures 2024* report, globally, about 83 per cent of households in urban areas had access to the internet at home in 2024, while less than half (48 per cent) had access in rural

areas. The urban-rural gap was small in high-income countries (a ratio of 1.1) but large in low-income countries where the level of internet use in rural areas is barely a third of that for urban dwellers. See https://www.itu.int/itu-d/reports/statistics/2024/11/10/ff24-internet-use-in-urban-and-rural-areas/

[2] See, for example, National Capital FreeNet in Canada, established in 1992, at https://www.ncf.ca; FreeNet in Germany, established in 1999, at https://freenet.de; and Guifi in Spain, established in 2004, at https://guifi.net.

[3] "Community networks are IP-based computer networks that are operated by a community as a common good."

(Christian Fuchs, "Sustainability and Community Networks", *Telematics and Informatics* 34 (2): 628-639, 2017, available at https://www.sciencedirect.com/science/article/pii/S0736585316303203).

[4] "Community networks are networks built by citizens and organizations who pool their resources ... and coordinate their efforts to build network infrastructures. They are characterized as being open (everyone has the right to know how they are built), free (access to them is driven by the non-discriminatory principle), and neutral (any technical solution available may be used to extend the network, and the network can be used to transmit data of any kind by any participant, including for commercial purposes)." (Roger Baig, et. al, "Making Community Networks Sustainable: The Guifi.net Experience," 2016, available at https://dx.doi.org/10.1145/2940157.2940163).

[5] Internet Society, Policy Brief: Spectrum Approaches for Community Networks, October 2017, available at https://www.internetsociety.org/policybriefs/spectrum