AEC Connectivity Working Group: Mandate

Introduction

The Arctic Economic Council (AEC) represents a wide range of business interests and aims to facilitate responsible economic development in Arctic communities and the pan-Arctic region. By working in collaboration with the Arctic Council and other Arctic stakeholders, the AEC can promote responsible economic development through the sharing of best practices, technological solutions, standards, and other information.

The work of the AEC is based on several overarching themes:

- Fostering strong market connections within the Arctic as a vital part of international value chains
- Encouraging public-private partnerships for infrastructure investments
- Promoting stable and predictable regulatory frameworks
- Facilitating knowledge and data exchange between industry and academia
- Embracing traditional indigenous knowledge, stewardship and small business

Background

Fixed and mobile connectivity are vital to the health, safety and vibrancy of Arctic communities, and essential to economic development. Broadband delivers telemedicine, enables distance learning, fosters economic growth, and cultivates strong indigenous communities through social connection and by creating economic opportunity in traditional homelands.

Network providers must overcome significant challenges to bring critical communications services to the Arctic. The Arctic is a vast and diverse region that spans multiple international boundaries. Many Arctic regions lack basic infrastructure like roads and power lines and are sparsely populated. These and other challenges, including harsh weather and permitting delays have meant that many Arctic regions remain in the early stages of economic development.

Network providers across the Arctic region continue to do a remarkable job overcoming obstacles to deploy advanced communications capabilities. Much more remains to be done however, especially in locations that are the most difficult to serve. Significant continued progress will require cooperative effort

and creative solutions to improve the business case for network infrastructure deployment.

The AEC has examined these and a number of related issues, identified in a report from the AEC's Telecommunications Infrastructure Working Group entitled *Arctic Broadband – Recommendations for an Interconnected Arctic* that was publicly released in February 2017, and in information presented during several "Top of the World" conferences held in Utqiaġvik, Alaska (known at the time as "Barrow"); the City of Oulu, Finland; and Sapporo, Hokkaido, Japan. This proposal continues the work of the former Telecommunications Infrastructure Working Group.

Proposal

The AEC's Connectivity Working Group will build on the foundation the AEC has laid in prior efforts, and through the scope of work outlined below will seek to facilitate improved connectivity and sustainable economic development for the people and businesses in the Arctic.

Scope of Work

Fundamentally, the Connectivity Working Group understands its mission to be one of collaboration. Arctic stakeholders are generally in agreement that there is a need for improved connectivity to meet user needs, and that a variety of Arctic conditions impose significant barriers to achieving that goal. The challenges network providers face in the Arctic will be easier to overcome through collaboration.

The AEC Connectivity Working Group seeks to be a resource for the Arctic Council and will be working collaboratively to advance connectivity and economic development in the Arctic region, and may from time to time solicit input and/or seek information to advance that goal.

The working group will coordinate with the Arctic Council to determine collaboratively what input the AEC Connectivity Working Group could provide to advance the goal of improved connectivity and economic development in the Arctic. Depending on the Arctic Council's need and desire for AEC support, the Connectivity Working Group may adopt priorities in addition to those specifically identified below. In that same spirit of open cooperation and transparency, the Chair of the AEC Connectivity Working Group may invite members of the Arctic Council to attend meetings and interact with the Connectivity Working Group.

The Connectivity Working Group will also seek to collaborate with other stakeholders in the Arctic to realize common aims.

The AEC's Connectivity Working Group will continue the work of the AEC by focusing on the following initiatives.

First, the working group will seek to foster a better understanding of how investment in communications infrastructure can connect the people of the Arctic to the world. There is a critical need, especially in the more sparsely populated areas of the Arctic, for more advanced communications capabilities, the dearth of which hampers sustainable economic development. In regions that lack adequate middle-mile transport networks, there is less incentive for providers to invest in modern last-mile infrastructure needed to support advanced broadband services for consumers and businesses. Similarly, middle mile networks that do not connect to local last-mile networks are failing to realize their potential to bring widespread improvements in connectivity to all communities throughout the Arctic region. Even in the more densely populated areas of the Arctic that have better connectivity options today, network providers must continue to invest in communications infrastructure to keep up with exponential growth in business and consumer demand.

For all communities and people in the Arctic to benefit from extensions or upgrades to communications networks, it will be necessary to link regional middle mile and long-haul networks with local networks. This will require providers working in concert to connect their regional transport and local access networks while preserving the vigorous competition between providers for customers, competition that is necessary for innovation, market-based prices, and to protect consumers.

Providers have a variety of available technologies to connect communities and networks, including fiber optic, fixed microwave, and satellite technologies, with continued advancement of on-premise technologies. Developing a pan-Arctic solution for connecting the people of the Arctic to the world will require providers to follow an "all of the above" approach, picking the best technology for each situation, based on a variety of local factors including land ownership, permitting requirements, economic and demographic conditions, operational factors, and terrain characteristics..

Many network providers that do not regularly work in the Arctic region do not understand the challenges of operating in this harsh environment, yet still may have valuable insights. As part of a broader education effort to facilitate a more fulsome collaboration, the Connectivity Working Group will summarize the transmission technology options available to Arctic broadband providers and the circumstances where one technology might be better suited than another

given the particularities of the Arctic environment. The goal will be to build on the abbreviated summary of considerations and benefits of available technologies on pages 17-18 of the AEC's 2017 Arctic Broadband Report, adding depth and a focus on specific Arctic challenges, while not providing so much detail that the document becomes inaccessible to the general public.

Second, the Connectivity Working Group will build on prior AEC efforts to understand the extent to which the Arctic can serve the world's increased need for data and datacenters. To deepen this analysis, the working group will create a brief document that summarizes existing research and market analysis regarding: (a) what is the projected need for additional data centers in the immediate and near future, including potential next generation technologies that might disrupt the existing model for storing and delivering data; (b) what factors are important to siting a data center; (c) to what extent do the characteristics of the Arctic region or sub-regions fit the factors used for siting data centers.

Third, recognizing that data centers are part of the larger effort to find sustainable economic development opportunities for the Arctic region, the Connectivity Working Group will discuss and explore what tangible contributions it could make to this broader effort. Among other things, the working group will consider whether coordinating the activities of potential investors across different market segments could create game-changing synergies given that proposed Arctic development projects that lack a suitable business case in isolation may be sustainable if paired with other projects. A cluster of jointly developed projects could reduce costs by sharing in the construction of necessary multi-use infrastructure that in turn can be leveraged by other investors. For instance, a new mine and a new energy resource development project could share in the cost of a new road that could also serve as a utility corridor for fiber optic cable and electric distribution facilities. The mining and energy companies would gain operational efficiencies and improved worker morale from access to high-quality broadband service while being the anchor tenants that support the business case for deploying new broadband infrastructure. After broadband has been deployed to anchor tenants, it is much easier to support a business case to extend advanced connectivity to surrounding communities. Collaboration efforts that include governments could further accelerate economic development through streamlined regulation and public-private partnerships.

Fourth, because a long-term strategy to improve the competitiveness and economic opportunity of the Arctic region will require more cross-sector collaboration, the Connectivity Working Group will examine possible means to strengthen the foundation for this effort by creating structures that facilitate more effective communication among a diverse set of Arctic stakeholders. Currently, information often remains mostly in silos and does not flow freely among diverse

Arctic business segments, governments, academia, and social groups. The Connectivity Working Group will coordinate with other AEC working groups to identify how the AEC could facilitate coordinated economic development initiatives, including what information or actions would be most useful for such an endeavor.

Fifth, the Connectivity Working Group will explore communications industry models of cooperation, which if implemented could result in cross-border collaboration on regional networks, joint effort at regulatory reform, various issues related to standardization, and potentially other efforts to find efficiencies through cooperation that might lower the barriers of network infrastructure deployment.

Because cooperation is not possible without communication, as a necessary first step the Connectivity Working Group would construct a comprehensive list of network providers in the pan-Arctic region by working through AEC members, trade groups, and other established entities. Once identified, each network provider would be asked to designate one or more liaisons as the AEC point of contact for connectivity issues. The Connectivity Working Group would then find an appropriate platform through which to foster better communication among these providers and initiate an introductory discussion.

Membership, Timeline and Practicalities

Members

The work of the Connectivity Working Group will be led by Dr. Pam Lloyd (United States). Membership in the Connectivity Working Group will consist of experts nominated by the members of the AEC and potentially also of invited subject matter experts as relevant. All members are expected to be in possession of relevant expertise related to the Connectivity Working Group scope of work.

Timeline

The work plan and timetable will be set by the Chair of the Connectivity Working Group prior to the start of the work. Work is planned to commence Q3/2018 with results reported to the AEC Annual Meeting Q2/2019. Subsequent work toward the long term goals articulated above will be subject to level of interest and committed resources from AEC members and stakeholders.

Budget

Each nominated member will cover his/her own costs for participating in the Working Group and for executing agreed delivery responsibilities. The work will be undertaken using connectivity to the extent possible.