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Reinventing the ICN:
The Foundation for an Open Access Fiber Network

Could the ICN form a foundation for an open-access fiber network that would foster competition for retail telecommunications services in Iowa? Could an open access network serve as a stimulus to invigorate Iowa's floundering economy? Before the state considers abandoning a valuable and successful public infrastructure, these and similar questions must be answered.

Introduction

The Iowa Communications Network (ICN) has provided authorized users the highest quality and technologically advanced telecommunications services. It has saved taxpayers millions of dollars, delivering these services at a fraction of the cost that would have been paid to private sector providers. More importantly, it has modeled the use of advanced telecommunications services by educational, medical, judicial, and governmental users to the general public, increasing the demand for such services throughout the state. Without the ICN, schools and other authorized users would have been slow to adopt advanced telecommunications services, if they could have afforded them at all. A decision to sell off this valuable public infrastructure before its potential is realized should not be made without careful consideration of other ways that the network can be used to expand the economic opportunities for our state.

While the ICN has positioned Iowa to be a leader in the Information age, its capacity to maximize economic development benefits for rural areas goes untapped. The purpose of this paper is to suggest one approach for realizing that potential – the establishment of an open-access transmission network. It is a best a concept, not a blueprint. It draws on experience of the electricity industry and includes references to similar open-access systems under development in other states.

We strongly encourage the Task Force to explore operating the ICN as an open access network with cost-based pricing to maximize economic development benefits for the state.

Problem Statement

Advanced telecommunications services are critical to Iowa's economy. The federal policy for delivery of these services is based on development of competitive markets. It assumes that competition will force providers to work harder in bringing consumers state-

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of-the-art services at affordable prices. But competitive service providers are staying away in droves. Iowa's rural communities are too small and too dispersed to attract the head-to-head competition envisioned in federal policy. The result is that most Iowans fall into one of two categories: those that have access to broadband services at unregulated monopoly rates and those that have no access at all. A few exceptions exist, primarily where municipal broadband systems have been established.

There are substantial barriers to entry in serving low-density areas. Many of these barriers are at the last mile. A local distribution network that passes relatively few potential users is not attractive to most market participants, unless there are opportunities for monopoly pricing. Substantial barriers to entry also exist upstream from the delivery network, as the deployment of fiber transmission facilities is expensive and private owners, most of whom are also providers of retail services, are reluctant to sell capacity to potential competitors. It is at the network level that the ICN and other private and public fiber infrastructure can be utilized to expand access to truly competitive services and the economic potential that such services can engender.

Creating an Open-Access Wholesale Network

A robust fiber transmission network can reduce barriers to entry by allowing a single network operating center (NOC), digital telephone switch, or cable head-end to serve a number of rural communities. This is the key that will open competition and reconnect Iowa to the federal policy that remains an empty promise in most of the state.

The ICN has current and potential excess fiber transmission capacity on its backbone system. Other entities also have excess fiber capacity and could be enticed to turn over operational control of that capacity to form a broad transmission network. Operational control of the capacity for contract and scheduling purposes could remain with the ICN or be transferred to an independent system operator. Maintenance responsibilities could remain with the owner, with prudent costs recovered in the tariff rate. Alternatively, maintenance functions could be transferred to the system operator. Use of the network would be at tariff rates for network-wide or point-to-point service at tariff rates that provided a return on equity. The return should be based on the net book value of the facilities, but a higher imputed value may be required to attract critical facilities. The return on equity should be sufficient to attract the transfer of other network facilities. Premium returns could be applied, where necessary, to attract transfers of capacity or construction of new facilities in critical or constrained corridors. The Iowa Utilities Board might be given the authority to set returns and review the basis of cost, as is done with electric facilities.

The ICN's excess backbone capacity alone might provide a critical mass of network facilities to trigger development of competitive retail services. The network could grow with the development of competition, as vertically integrated service providers would likely unbundle network facilities to maximize returns on their own backbone facilities and on their NOCs, switches, and head-end facilities.

Lessons from Deregulation of Wholesale Electricity Market

The creation of a fiber transmission grid available through an open access tariff is essentially the same model being developed for transmission of electricity. As with telecommunications policy, the Energy Policy Act of 1992 was intended to substitute competition for regulation. The assumption was that competition would result in more efficient generation than regulation. To enable independent power producers to enter the wholesale electricity market, transmission facilities had to be opened up so that the power could reach the market. Initially, transmission owners were required to file open-access tariffs that allowed potential competitors to bid into the wholesale market with competitively neutral transmission prices. The resulting functional separation between a utility's generation and transmission businesses did not prove to be effective, as it continued to give vertically integrated utilities a competitive advantage. That policy has evolved toward the creation of regional transmission organizations that operate independently of the transmission owners.

There are a number of differences between electric transmission and a fiber transmission network, significantly including the federal authority for regulating electric transmission. However, there are also many similarities. As noted, current federal policy is focused on providing a combination of incentives and regulatory pressure sufficient to get transmission owners to give up operational control of their facilities to independent regional transmission operators (RTOs). Within the RTO that serves our region, Wisconsin has created a subordinate independent system operator by legislative fiat. MidAmerican Energy, Alliant Energy and most of the public and private transmission owners in Iowa, Minnesota, Nebraska and parts of neighboring states have created another independent transmission company (TRANSLink) whose organization is mirrored in the open-access fiber system described above.

Among the lessons learned from open access transmission of electricity is that opportunities for the exercise of market power abound. It would take a careful balancing of incentives and regulation to ensure that the promises of an open access fiber grid were realized. Still, the potential benefits to consumers and to the Iowa economy are enormous. If the ICN is sold to the highest bidder, the result likely will be that competition will develop slowly, if at all. If it is restructured so that its excess potential capacity becomes the cornerstone of an open access network, it could move the state toward parity with more densely populated areas – places that are benefiting from the competitive model on which national telecommunications policy is based.

Potential Users

An open-access fiber grid would attract many kinds of users. First among these would be competitive service providers who would use the grid to connect local distribution networks to NOCs, switches, and head-end facilities. Municipal utilities and independent telephone utilities would likely be among these users, as they are already sharing such facilities under a variety of public-private, public-public, and private-private agreements. With a few notable exceptions, the problem has been to extend the agreements beyond closely proximate entities, because fiber capacity for the primary link and backhaul has been unavailable or unaffordable. Other potential users include telecommunications dependent businesses and industry. Insurance, banking, marketing, and product

distribution firms are among the industries that would benefit from the availability of open access fiber infrastructure.

Iowa is Disjoined from Federal Policy

An understanding of the extent to which Iowa is disjoined from the realities of federal telecommunications policy must inform the political and policy debate over the disposition of the ICN. If the ICN is privatized in a way that creates a further deterrent to the development of head-to-head competition, consumers will be the losers and economic development opportunities will be squandered.

Federal policy attempts to replace regulation of telecommunications services with competition. It is a pro-competition policy, based on encouraging deployment of many kinds of broadband delivery platforms[1] by many kinds of entities. Federal Communications Commission (FCC) Chairman Richard Powell has delineated the Commission's goals in implementing the Telecom Act. He told Congress: "broadband deployment is *the central communications policy objective* in America today."[2] The Chairman broke down that objective into specific goals:

> First, get [broadband] built – everywhere. . . . Second, [adopt] a minimally regulated environment. Third, promote multiple platforms for the delivery of broadband Internet. The biggest obstacle to so many policy goals in the phone context is the last mile problem. Our goal is to encourage multiple pipes to the home in the future broadband world.[3]

Chairman Powell put the need for multiple broadband platforms this way: "We should try to avoid the 'one wire' problem that has precipitated heavy regulation and confounded competitive objectives in telephony. Broadband is a functionality, not a particular platform."[4]

The potential of multiple platforms and multiple connections to the home or business "will bring valuable new services to consumers, stimulate economic activity, improve national productivity, and advance economic opportunity for the American public."[5] "By promoting development and deployment of multiple platforms," the Commission has stated, "we promote competition in the provision of broadband capabilities, ensuring that public demands and needs can be met."[6] Multiple platforms also foster competition among providers.[7]

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[1] These platforms include, but are not limited to cable television systems that may be upgraded to provide broadband capability, fiber/coax system of the type Iowa municipal utilities have installed for high speed two-way signal transmission, copper-based telephone networks using digital compression technology, wireless broadband, satellite services, and power line carrier. Power line carrier is an emerging technology that hold potential to make every outlet an access port to the Internet.

[2] *Competition Issues in the Telecommunications Industry, Hearings Before the Senate Committee on Commerce, Science, and Transportation*, 108th Cong, 1st Sess. (Jan. 14, 2003) (statement of FCC Chairman Michael K. Powell)

[3] *Ibid.* (emphasis added).

[4] *"Digital Broadband Migration" Part II*, Michael K. Powell, Chairman, FCC, press conference (Oct. 23, 2001) <http://www.fcc.gov/Speeches/Powell/2001/spmkp109.html>.

[5] *Ibid.* at ¶ 1.

[6] 5 *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, 17 FCC Rcd

While the ICN cannot directly address the disconnection between a federal policy that assumes multiple players and delivery platforms, its use as an open-access transmission grid can encourage others to provide competitive choices at the retail level.

Competition for Retail Services

Technological advances are reducing barriers to entry at the retail or distribution level. These developments include a variety of wireless broadband technologies, power line carrier, and signal compression over twisted-pair. Overbuilding of land-based facilities is also occurring in some communities. Typically, overbuilds consist of hybrid fiber-coax facilities, but deployment of fiber to the home or business is already taking place in other states and will undoubtedly follow in Iowa. Access to transmission facilities and potentially to wholesale routing, switching, and head-end services, will enable the deployment of these delivery technologies.

A Summary of Potential Benefits

- Increased Revenues for the ICN that will enable the network to continue to serve its core constituencies with state-of-the-art service
- The fostering of real competition and innovation in telecommunications services across Iowa
- Job growth and economic development associated with the wide availability of advanced telecommunications services at affordable, competitive rates and direct access to a fiber transmission network at wholesale rates by businesses and industries that are driven by telecommunications technologies
- Increased tax base for communities

Other Models of Open Access Networks

While Iowa was the first state to deploy a fiber network for schools, medicine, and limited governmental uses, other states have developed other models to achieve similar goals. Among them are several variations of open-access networks that may hold answers for reformulating the mission of the ICN. Brief descriptions of the Northwest Open Access Network (NoaNet) and an open access network in upstate New York are included below. Materials describing an open access network in Utah known as Utopia were provided by IAMU at an earlier meeting. Other initiatives may be instructive as Iowa considers how to leverage economic growth through the ICN, these include *LinkMichigan* and various initiatives undertaken through the governors office of Appalachia

Northwest Open Access Network (NoaNet Oregon & NoaNet Washington)

NoaNet Oregon: A member-owned Electric Cooperative transport infrastructure. Open access that connects rural communities – the network is intended to maximize economic

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4798, at ¶ 6 (released March 15, 2002).

[7] *Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, 16 FCC Rcd 22745, at ¶ 30 (2001).

development benefits for rural areas. A Board of Directors governs the network. Communities are responsible for "last mile" connectivity.

NoaNet Washington: A nonprofit corporation that has licensed fiber optic cables from the Bonneville Power Administration and other sources to create a carrier-class data and TDM network for the utilities and rural communities. The network carries advanced telecommunications services including IP television, video on demand, and IP telephony to anyone connected to the backbone. It also carries mission critical TDM services. The members are nonprofit, community-owned electric and water utilities. They use the network for utility purposes such as real-time metering, energy management, load control and networking among remote utility facilities. NoaNet provides excess capacity to others on a cost-based, nondiscriminatory basis. Communities use the system to interconnect schools, hospitals, judicial systems, libraries, and emergency services. It also serves as rural community's on-ramp to the Internet, offering access through Tier 1 providers. Utility members and wholesale customers of NoaNet operate communication systems within their own service areas and connect to the NoaNet backbone.

Development Authority of the North Country (New York State)

The Development Authority of the North Country has initiated development of a publicly owned fiber optic network. The project will provide community fiber optic infrastructure across the Authority's service area, with connections to major transmission facilities to the south and north. The first section of fiber, connecting the City of Watertown to existing private fiber infrastructure in the Town of Watertown, is complete.

The Authority's network of dark fiber will be leased to private sector carriers, who will provide commercial services, and to institutions for internal use. The Authority is creating this community network to promote competitive access for telecommunications services for existing businesses in the region, and to enable additional economic development by providing infrastructure that will help attract and sustain technology-based businesses.

The North Country will benefit from a publicly owned fiber system in the following ways:

- The system will allow additional telecommunication carriers access to this market, without the burden of installing their own fiber network. This will create a competitive market for telecommunications services, which will benefit industrial, commercial, and residential customers.
- The system will provide redundant fiber paths out of the region. Currently, disruption of a fiber cable in southern Jefferson County can interrupt service across a wide area of the North Country. Businesses that depend on telecom service demand alternative routes, and system reliability, something that does not exist in the region today.