IMPACT OF THE ICN

CELEBRATING 30 YEARS OF PROVIDING SERVICES TO IOWA

It started with the vision to equalize learning opportunities…30 years later the Network continues to be state-of-the-art, providing mission-critical broadband services to Iowa's public safety, healthcare, government, and education users.

Impact Overview

Technology changes quickly, and what has been consistent, reliable, and stable, and maybe a little discreet, is the fiber optics that launched Iowa in the spotlight; which also began Iowa's conversations about the Internet and its accessibility. As Iowans are more connected than ever before, broadband (or the Internet) has been a consistent topic for 30 years when universal access to the Internet began. In fact, the statewide fiber optic network is the reason Iowa gained the recognition of being ahead of its time. The vision has been clear for the ICN, as described in 1995 by Governor Branstad when answering why is the Iowa approach so innovative, "*It will give our rural areas a leg up because, through the Internet and the World Wide Web, they can connect to other locations."*

Technology Timeline: Fine Tuning the Technology of the Network

In the last 30 years, ICN has fine-tuned the technology and provided dedicated service and support to our customers. The approximate 3,400 miles of state-owned fiber optic cable continues to light the path for Iowa's public safety, healthcare, government, and education users. Take a look at the history of our progress over the last 30 years.

1989	Legislation providing for the construction of a shared, statewide telecommunications network was passed & signed by the Governor.
1991, 1993	Part l & Part ll state-owned construction began in 1991. In 1993, 104 sites became operational. • Installed 1 fiber optic endpoint per county (99), an endpoint at each of the 3 state universities, IPTV, and Capitol Complex.
1996	Capitol Complex Voice and Data services moved from Department of General Services (DGS) to ICN.
1998	ICN began operating and maintaining the State Firewall for the Executive Branch.
1999	Part lll construction completed. This consisted of connections leased to the State by the private sector and connects Part l and Part ll to schools, libraries, and area education agencies. Changed the Network from star-on-star topology to ring topology (featuring two-way uninterrupted signal transmission). • The first ring of the upgrade, located in the southwestern portion of the State, became operational.
2001	ICN's deliverable Internet bandwidth jumped to 400 Mbps.
2004	Danville High School makes history as the final site installed under Part III legislation. First VoIP Rollout with Iowa Disability Determination Services.
2007	ICN's deliverable Internet bandwidth jumped to 1150 Mbps.

2009	Finalized the move from ATM to Multi-Protocol Label Switching by deploying core 10 Gbps switches and a core router network.
2012	Iowa City CSD was the first school district to subscribe to a full 1Gbps of bandwidth for Internet through the ICN.
2013	Completed Network upgrade to a 10GB backbone. Expedited migration for transport to move from ATM to MPLS.
2015	Broadband Information Center established with the Virtual Presence Monitoring System which can show instant updates as needed.
2017	Managed Firewall service launched. Launched our DDoS Mitigation service. Carrier-Grade Lab established for testing network stability, integration of new services, and development of emerging technologies.
2019	Completed VoIP platform migration with a private sector partner. The project consolidated 6 legacy Voice systems and moved over 8,000 phones for 168 customers.
2019	Completed a statewide power upgrade for 21 Core sites consisting of updating batteries, rectifiers, generators, and HVAC.
2020	Sunset the Video classroom service.
2021	Added new network core infrastructure in eastern Iowa that enhanced network redundancy, and improved disaster recovery operations for all Network users.
2022	Completed IP Core Network infrastructure upgrade for 100GB capacity with upgrade path to 200GB. Added direct Cloud routes to Microsoft (Azure), Amazon (AWS), and Google Cloud and an additional 250 plus cloud providers.
2022	Launched our Next Generation Firewall service.

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Today our focus is listening to our customers and hearing their needs. We continue to hear about bandwidth demands, cloud connections, and security concerns.

Randy Goddard
ICN Executive Director

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Celebrating 30 YEARS ICN 1993-2023

Customer Statistics

Through the years, many Iowans have asked if they can subscribe to our services. As a State of Iowa government agency, ICN is a closed Network only available for our authorized users. We understand that high-speed Internet and bandwidth capacity are valuable, as more users are integrating virtual applications, moving data to the cloud, or requiring security solutions. As provided by Iowa Code chapter 8D, our customers include public and private K-12 schools, area education agencies, community colleges, private colleges, Regents Institutions, libraries, hospitals and clinics, state and federal government agencies, Iowa National Guard, public safety, and Iowa's Judicial and Legislative branches. The ICN provides services to more than 1,600 locations in Iowa, which is described below.

Education

425+
ICN Presence Locations

Locations

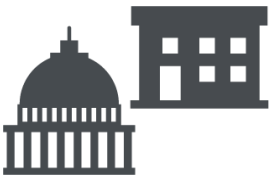
Public & Private K-12 Schools
Area Education Agencies & Satellite Sites
Community Colleges & Satellite Sites
Regent Institutions
Private Colleges
Libraries

Healthcare

250+
ICN Presence Locations

Hospitals, Clinics, and other healthcare providers

Government



550+
ICN Presence Locations

Judicial Branch
Dept. of Transportation
Dept. of Human Services
Workforce Development
Additional State, Federal, miscellaneous govt.

Public Safety

540+
ICN Presence Locations

9-1-1 Public Safety Answering Points (PSAPs)
Iowa HSEMD
Dept. of Public Safety
Iowa National Guard

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Customer Timeline: Benefiting the Network for the Users

The below timeline illustrates projects that enhanced the Network for customer-specific initiatives.

1995

- The first Part III site, Battle Creek - Ida Grove High School became operational.
- The Audubon Armory connected to the ICN.
- Use of ICN services also assists the National Guard in training and simulation technology.

1997

ICN and the Iowa National Guard reached an agreement to transfer ownership of ING owned fiber optic cable and equipment to the ICN

1999

The ICN and the Department of Corrections partnered to provide Inmate calling to all inmates and institutions.

2001

ICN received common carrier status and began participation in the Universal Service Fund (USF) program for education and healthcare users.

Over the years, ICN has saved Iowa's schools, libraries, hospitals, clinics, and healthcare providers over $125 million.

2007

The Iowa Rural Health Telecommunications Program (IRHTP) and ICN began the preparation and implementation of a secure, statewide, high-speed Healthcare Network.

2007

Began partnership with Iowa State University to sponsor the ICN's access to Internet2. The sponsorship provides the ability for all connected K-12 schools & libraries to also benefit from Internet2.

2011

ICN began delivering wireless Next Generation (NG) 911 calls to Iowa's public-safety answering points for Iowa Homeland Security & Emergency Management (HSEMD).

2012

Iowa City CSD was the first school district in the state to subscribe to a full 1Gbps of bandwidth for Internet through the ICN.

2015

Established Statewide Youth Broadband Advisory Council (SYBAC) for our high school initiative.

93 Iowa high school students have participated during the first 8 years of interaction.

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2018-2019
Completed merging HSEMD's wireless and wireline (landline) NG911 networks to create a dedicated and secure network for Iowa's HSEMD and emergency responders.

2019-2021
Deployed a healthcare network upgrade for IRHTP to replace legacy equipment for redundancy and increased bandwidth speeds.

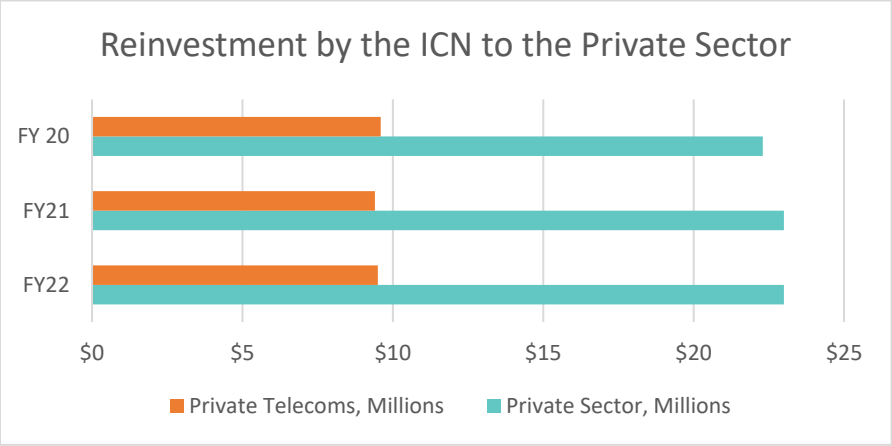
2021

- Partnered with HSEMD and FirstNet to provide backup connections for Iowa-based Public Safety Answering Points providing 9-1-1 services.
- Joined the Automated Transportation Council (ATC). The council is chaired by the Iowa DOT.
- Burlington CSD was the first ICN school district to subscribe to a full 10Gbps of bandwidth for Internet.

2021-Present
Rural Broadband Connectivity: Partnering with Iowa State University and others on a pilot project involving wireless technology.

Reinvestment

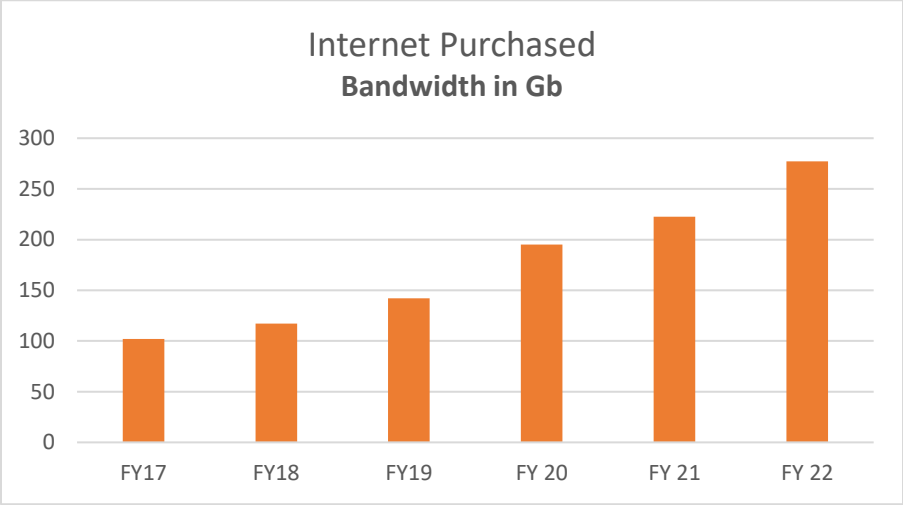
Over the years, we have reinvested millions of dollars back into the private sector. Across the State, we partner with private sector companies and private telecom providers, which includes the 270 Part III sites for last-mile leased connections. Over the last three years, we have reinvested $68.3M to the private sector and 28.5M to private telecoms.



Internet Connectivity Today

Broadband

Greater Broadband Demands: The ICN has matured as a network services provider, and greater bandwidth demands have been requested by our users as their needs have changed over the years. Those changing needs continue to increase the demand for greater levels of broadband. Year after year we continue to see increased levels of Internet service purchased.



FCC's Universal Service Programs: E-rate and Rural Health Care

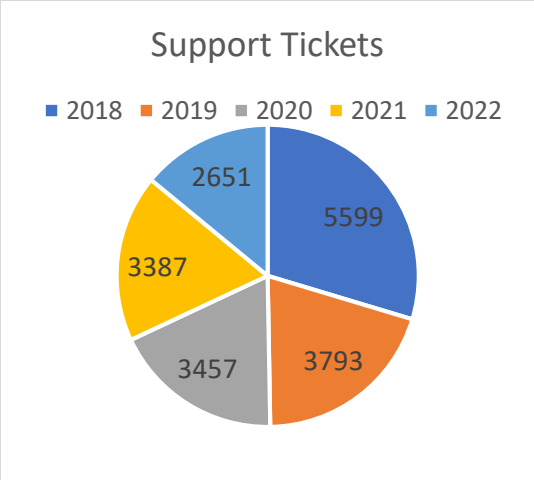
Since 2001, we have been able to participate in the FCC's Universal Service Fund (USF) programs for E-rate and Rural Health Care. Federal discounts with these programs are received through competitive bidding and awards are based upon best value (primarily cost). We participate in these programs to help our eligible users lower their broadband costs.

Five-year USF Reimbursement	
K-12 & Library (E-rate)	$22,712,792
Healthcare (Rural Health Care)	$6,861,130

Network Operations Center

Iowa-based 24/7 Support

Our Iowa-based expert technicians are available 24 hours a day, 7 days a week for support. We know our customers need on-demand services and our technicians are available immediately for emergencies. Over the last five years, we have completed over 18,800 incident support tickets. This dedicated support is included in every ICN service, and is an added benefit that our customers have come to trust and appreciate.



Whenever I phone in to the NOC, it never feels like a large, complex network that serves an entire state. Instead it feels like maybe I've called the courthouse in Marengo, where names and voices are familiar and if I never worked with them, always friendly, controlled, and helpful.

My issue is always handled like that. I like that about the ICN.

Customer Impact Statement

One of the most important pieces of celebrating our anniversary is thanking our customers, partners, and others that can describe the impact the Network has provided. ICN would not be successful without the support of our customers.

ICN has been our primary Internet connection for over 20+ years. We have been using the [ICN's] security service DDoS Mitigation for almost four years. This service is invaluable as learning online has become more prevalent. ICN absolutely benefits Iowans.

The ICN provides us with wide area networking, primary Internet service, long distance calling and audio conferencing. They have stability and capacity to do so many critical functions for the public.

As I say to many of my peers in other states or other speaking engagements, other States struggle to develop and build out their Emergency Services IP Network. Ours was built in the 90's through the ICN, we just didn't know it yet. The availability of the ICN has helped us in our transition to Next Generation 911 in the State.

By having the ICN available to rural areas allows hospitals to connect to specialists all over the state and country for support, which in turn helps patients in Iowa get the care they need in their local community when they need it most! Having these resources available to rural hospitals definitely saves lives of Iowans!

Looking Towards the Future

Technology changes and equipment enhancements are needed for the benefit of the Network and our customers. Below are a few projects on the horizon.

Aggregation Equipment Upgrade

Our aggregation equipment and design improvements include implementation of the 10Gb converged aggregation network, which is the segment that operates between the Core and edge.

- This upgrade allows Ethernet and IP services to pass through the network on a redundant and more resilient infrastructure.
- The aggregation layer plays an important role in addressing the challenges of our customers by providing an efficient, diverse network with greater capacity.

State Firewall Decentralization

The second phase of the State Firewall decentralization includes taking 17 government agencies and giving them their own Palo Alto security solution.

- We will provide capabilities that current firewalls provide like intrusion prevention, content filtering, anti-malware and more.
- The security solution will also explore enhanced reporting for agencies of security events as well as the possibility of multi-tenanting.

SIP Migration *Session Initiation Protocol*

The ICN recognizes the need to migrate from the legacy Public Switched Telephone Network (PSTN) infrastructure to a SIP trunking architecture.

- This allows the ability to plan and design new services that provide our customers access to additional unified communications (UC) applications.
- This is the pathway forward for voice services, which would allow the ability to retire the legacy platform.

Cloud Services

Our goal is to develop services that meet the needs of our customers.

- We will continue to peer to local, regional, and national peering providers.
- We will expand connectivity for our customers to reach cloud services by using our direct express routes to Microsoft (Azure), Amazon (AWS), Google Cloud, and 250+ additional cloud providers.

Navigating the COVID-19 Pandemic

Supporting our Customers During Those First Days

COVID-19 forced many of our customers to reevaluate their network connectivity to support remote users. ICN immediately stood up to the test and had the capability to meet our customer needs.

Continuity of Government

New 10Gb Internet Connection	ICN installed a new 10Gb Internet connection for the additional VPN bandwidth needed for government teleworkers to connect back to their network resources from remote locations.
Ethernet Connection	ICN supplied the Ethernet connection between Iowa Public Broadcasting Service (PBS) and Joint Forces Headquarters (JFHQ). This connection was used for the Governor's many regular press conferences updating Iowans on the pandemic.

Service Support by Sector

Healthcare	**Bandwidth Increases:** Thirteen (13) hospitals received bandwidth increases at no charge. Orders were completed within 48 hours of being submitted. Some hospitals have kept the increased bandwidth service levels.
Government	**Bandwidth Increases:** Provided 16 government agencies requested bandwidth increases. **Voice Mobility:** Our VoIP application enables flexibility to support teleworking State employees. Government employees working remotely have been able to continue answering their phones and providing services to Iowans as if they never left the office. ICN moved three DHS call center offices to MVS quickly to allow staff to work remotely.
Education	**Bandwidth Increases:** Twenty-four (24) K-12 school districts requested increases in bandwidth during a special funding session through the FCC's E-rate Schools and Libraries program in October 2020. **Public Wi-Fi:** ICN assisted Eastern Iowa Community College to enable public Wi-Fi connections at their Bettendorf and Clinton campuses by setting up Wi-Fi connections in parking lots for students to access online assignments.
County Services	**Emergency Connectivity:** ICN provided services to three county emergency management agencies per the Governor's State of Public Health Disaster Emergency Proclamation and Iowa Code section 8D.9.

Key Contacts

The Iowa Telecommunications and Technology Commission (ITTC) was established, in 1994 by statute, with the sole authority to supervise the management, development, and operation of the Iowa Communications Network.

The Commission provides for the centralized, coordinated use, and control of the Network. The Commission's duty is to ensure that the Network operates in an efficient and responsible manner and provides the best economic service attainable to its authorized users consistent with the state's financial capacity.

There are five (5) members that make up the Commission, and two (2) ex-officio members. Commission members are appointed by the Governor of Iowa and confirmed by the Iowa Senate.

The ICN Executive Director is appointed by the Commission.

ICN Executive Team

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Technology has fundamentally changed from the era when the ICN was envisioned, but the investment in fiber optic cable has proven as important in today's world as roads and bridges were in the past.

Although the network has been technologically transformed a number of times over the years, [it continues to] silently serve hundreds of thousands of Iowans every day. One of the greatest forms of flattery is being copied, and today over 35 states have similar networks dedicated to serving a similar groups of users as the ICN.

John P. Gillispie
ICN Executive Director 2003 - 2010

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