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DEPARTMENT OF COMMERCE

April 11, 1996

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APR 12 1996

FCC MAIL ROOM

Mr. William F. Caton, Acting Secretary  
Federal Communications Commission  
Room 222, 1919 M Street NW  
MS 1170  
Washington, DC 20554

RE: Federal-State Joint Board on Universal Service, CC Docket No. 96-45

Dear Mr. Caton:

Enclosed for filing in the above docket are an original and twelve copies of the "Comments of the Iowa Utilities Board." Two of the copies are annotated as "Extra Public Copy."

Please stamp one of the enclosed copies, and return it in the enclosed postage-paid envelope.

Sincerely,

William H. Smith, Jr.  
Chief  
Bureau of Rate & Safety Evaluation

Enclosures

cc: International Transcription Service  
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Elizabeth Ross, Attorney  
Telecommunication Reports News Office

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Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

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APR 12 1996

FCC MAIL ROOM

In the Matter of )  
)  
Federal-State joint Board on )  
Universal Service )  
)

CC Docket No. 96-45

COMMENTS OF THE IOWA UTILITIES BOARD

The Iowa Utilities Board (IUB) hereby submits the following comments in regard to universal service, Notice of Proposed Rulemaking (NPRM) released March 8, 1996.

SUMMARY

In the NPRM, the FCC seeks comment on the services that should be supported by the universal service fund, proper support mechanisms, and changes to regulations to implement the universal service directives of the Telecommunications Act of 1996. The IUB contends that the universal service fund should be narrowly targeted so only companies that truly need assistance receive it. The IUB is concerned that the universal service fund may grow to an unmanageable size while providing unnecessary levels of support.

The IUB asks recognition of Iowa's unique arrangement for bringing advanced services to schools, libraries, and rural health care providers. We offer experience concerning aid to individual low-income customers, and urge the broadening of NECA's membership to facilitate its administration of the universal service fund.

## ACCESS TO ADVANCED SERVICES

The Board wishes to address the issue of affordable advanced services including internet access. Advanced telecommunications and information services should include internet services. The Telecommunications Act of 1996, § 254(b), set up seven principles for the preservation and advancement of universal service. Two of these principles are access to advanced services and access in rural and high cost areas.

Rural Iowa consumers have brought it the Board's attention that they must use a long distance number to gain access to the internet. Thus, the additional toll charge makes internet services less affordable. One alternative is subscription to an access provider that offers an 800 number, but this alternative also entails an additional cost. At the same time urban consumers are able to gain access to internet services through a local call. This is in conflict with the principle of comparable or affordable access in rural and high cost areas. This principle requires the access to "advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and are available at rates that are reasonably comparable to rates charged for similar services in urban areas."<sup>1</sup> Rural customers do not have access to internet services without having to make a toll call and thus do not have similar services at comparable rates.

## SCHOOLS, LIBRARIES, AND RURAL HEALTH CARE PROVIDERS

The major point the Board wishes to impress upon the Commission as it considers rules to implement the universal service fund portion of the Act is that Iowa has been the

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<sup>1</sup> Telecommunications Act of 1996, § 254(b)(3).

leader in bringing advanced telecommunications to education and health care in a rural state. It would be a waste not to build upon the gains already made in providing these services in our state. The best way to continue and expand the progress in these areas in Iowa is for the Commission to draft the rules broadly enough to allow the state-run Iowa Communications Network (ICN), described below, to be considered a telecommunications carrier eligible to receive reimbursement under § 254(h)(B)(ii). In that way, ICN will be treated like all other telecommunications carriers that provide discounted rates to schools, health care providers, and libraries. Such reimbursement is permitted under (ii) because reimbursement for services to those end users is available, “notwithstanding the provisions of subsection (e)...” and, therefore, is not limited to “eligible telecommunications carriers.”

As telecommunications regulators in Iowa, we bring a unique perspective to the universal service principle stated in the Act at § 254(b)(6) that schools, health care providers, and libraries should have access to advanced telecommunications services. Iowa has actively pursued that principle in its public policy, perhaps more aggressively than any other state, throughout this decade. In 1989, the Iowa Legislature initiated a program to construct and operate a state-of-the-art fiber optic network to provide distance learning in classrooms throughout the state. (Iowa Code, chapter 8D). Called the ICN, state-owned Parts I and II were completed in 1994 and provide a point of presence in each of Iowa’s 99 counties. State-leased Part III was begun in 1995 and is scheduled to be completed in 1999. It will connect all high schools in the state, 100 libraries, and all 16 Area Education Agencies to the ICN. Following completion of Part III, 719 sites will

be directly connected to the ICN. (“Iowa Communications Network Impact Study,” Economics and Technology, Inc., pp. 10-11 [1995]). In 1994, the legislature expanded the list of authorized users to include hospitals and physician clinics for the purpose of developing a statewide telemedicine network. (Iowa Code § 8D.13(16) [1995]).

The ICN provides the type of advanced service in Iowa to the exact user group contemplated in the Act at § 254(h). Advanced services are already being provided to schools, health care providers, and libraries at substantial discounts below the cost of providing the services. Under Iowa Code § 8D.11, fees charged for the use of the network shall be based on the “ongoing operational costs of the network only.” Costs calculated in that way include no capital costs and depreciation expense. An example of the result is full-motion video transmission provided to health care providers at \$40.00 per hour, which is the ICN calculation of its operational costs. This is far below the amounts charged for this service by other telecommunications carriers. Schools receive an even deeper discounted rate of \$5.00 per hour for full-motion video transmission. (ETI Study at 11-12, 45). The Commission’s rules should allow for reimbursement through the universal service mechanisms to the ICN for these and other discounted rates to schools, health care providers, and libraries.

Attached to these comments as Appendix A are portions of a study prepared in late 1995 for the Utilities Board by Economics and Technology, Inc. The included portions provide an overview of the ICN and discussion of the utilization of the ICN by secondary schools, libraries, and telemedicine users. The Board will be glad to supply a copy of the entire report if that would be helpful.

## SUPPORT FOR LOW-INCOME CONSUMERS

**Services to Support:** The Board also wishes to discuss the proposed services for low-income consumers. The list of core services includes “access to operator services.” While this is a valid core service, its inclusion should be meshed with the availability of toll blocking as an alternative for low-income consumers. As implemented by telephone companies, toll blocking often restricts access to operator assistance, as well as 800 calling. The Board believes that the rules should be drafted in such a way that toll blocking, a valuable option to many low-income customers, not be precluded by mandatory access to operator service.

**Determination of low-income eligibility:** In any system where support is directed to individual subscribers, it is important that the determination of eligibility be a relatively smooth administrative procedure. However, we would discourage the use of a single review source, unless funding is within the industry’s control. The Board has learned from administering low-income support programs in the natural gas and electricity industry that eligibility tied to any single federal program creates great vulnerability. Iowa’s wintertime energy disconnection procedure hinges on customer eligibility for the Low-Income Home Energy Assistance Program, which offers assistance to those whose incomes are at or below 150% of the federal poverty guidelines. As Congress now threatens to discontinue the program, we have found it necessary to establish contingencies that will serve if the program disappears. As an example, for Link-up eligibility, we allow qualification through any of several assistance programs.

Under Iowa Administrative Code § 22.18(3), to be eligible for assistance, an applicant must:

- a.* Not be a dependent for federal income tax purposes as defined in 26 U.S.C. 152 (1986) unless the applicant is more than 60 years of age;
- b.* The applicant must be currently eligible (though it is not necessary that they be participating) for public assistance under one of the following programs:
  - (1) Aid to families with dependent children;
  - (2) Food stamps;
  - (3) Supplemental Security income;
  - (4) Title XIX/Medical;
  - (5) Low-income energy assistance program;
  - (6) State supplementary assistance.

In addition, an applicant may still qualify for assistance based on evidence of household income and household size. This income-based self-certification has been helpful in extending eligibility to the elderly. We recommend allowing multiple eligibility for any individually targeted support program.

#### ADMINISTRATION OF THE FEDERAL UNIVERSAL SERVICE FUND

Universal Service Fund (USF) administration on the national level should be performed by a non-governmental organization in an efficient, fair, and competitively neutral manner.

National Exchange Carrier Association (NECA) has developed, managed and administered the current USF funding mechanism since its inception in 1984. During NECA's administration of the current program, the organization has developed extensive internal systems, procedures and controls to insure the integrity of data collections, calculations, and the collection and distribution of funds.

It is very apparent that NECA has a proven track record in the management of data collections, fund and/or pooling administration in an environment containing specific rules and responsibilities. NECA has also demonstrated its ability to develop and manage large-scale information and data base systems.

NECA's current membership is limited to only Local Exchange Carriers (LECs) and is governed by directors elected by the membership. In light of the 1996 Telecommunications Act it is very apparent that a national fund will involve organizations beyond the current scope of local and interexchange carriers. Should NECA continue to administer USF funds, the structure of the organization would need to transform to a membership that involves a representation of all telecommunications providers.

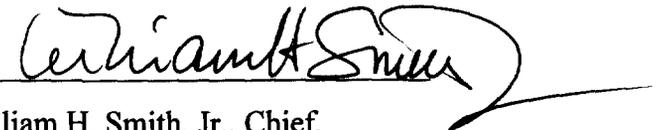
NECA's USF administration costs are assigned to the current fund using ratios developed through relationships of total funds or revenues managed to the individual categories of various funds or revenues. The ratios or factors are applied to total operating costs to determine an applicable assessment. These administrative fees may not be representative of actual costs. Administration costs should be based on the actual costs of the administration process rather than on a percentage of funds managed to expenses incurred basis.

Under the current USF program, rules related to fund administration lack safeguard provisions related to fund mismanagement by an administrator. Future administrative requirements should include performance safeguards with financial assurances to protect recipients and contributors in the event of fund mismanagement.

CONCLUSION

In conclusion the IUB supports (1) rural customers being able to access advanced services such as the internet in the same manner urban customers do; (2) allowing the state-run ICN to be considered a telecommunications carrier eligible to receive reimbursement under § 254(h)(B)(ii); (3) toll blocking not being precluded by mandatory access to operator service; (4) eligibility for low-income not be determined by using a single review source; and (5) NECA should administer the fund providing it is a neutral entity.

Respectfully submitted,

By: 

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*Iowa Communications Network Impact Study***C. Overview of the Iowa Communications Network****1. Background**

The genesis of the Iowa Communications Network stems from the early 1980s, when the economic crisis in the farming industry raised concerns that Iowa's rural communities were quite fragile. The idea of a statewide "distance learning" program was partly to provide equal educational opportunities, as well as economic development prospects, throughout the state, through the use of the most modern telecommunications technology.

Creation of the ICN began in 1989, when the state adopted legislation that created and funded the first state-owned and operated fiber optic network in the nation. As it has evolved, the ICN now serves four primary groups of Authorized Users:

- Educational users, considered the top priority, incorporating public and private kindergarten through twelfth grade schools, public and private colleges and universities, school administration buildings and libraries;
- State government users, consisting of state agencies, the National Guard, and community-based corrections facilities;
- Federal government users, including federal agencies, federal courthouses, and the U.S. Post Office; and
- Telemedicine users, encompassing hospitals and physician clinics.<sup>9</sup>

The building of the ICN was divided into three "Parts". Part I was begun in 1991, when Kiewit Construction Company was awarded a contract to expand the already-existing Iowa Lottery Network. Kiewit utilized Synchronous Optical Network (SONET) technology to connect the fifteen community colleges, the three regent universities, the State Capitol Complex in Des Moines and Iowa Public Television to the ICN hub, located at the STARC National Guard Armory at Camp Dodge, Johnston, Iowa. The total number of sites upon the completion of Part I was 21, all of which were owned outright by the state.

The objective of Part II was to link an additional 84 sites to the ICN in order to establish a County Point of Presence (CPOP) in each of the 99 counties in Iowa. The location

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<sup>9</sup> In 1994, Iowa Code Section 18.136, Code Supplement 1993, permitted the Federal government, the court system, the US Postal Service, hospitals, and physician clinics to access the network; however, telemedicine users were allowed to use it only for data and video transmissions, *not* voice. Telemedicine and Federal government users were required to finance their own leased connections to the ICN.

of the CPOP could be at a high school, elementary school, library or the Area Education Agency office, if one so existed, in the county. Part II was initiated in 1992 and completed in 1994, at which time there were a total of 105 state-owned sites. Following completion of Part II, every Iowan lived within 20 miles of an ICN endpoint.

Begun in 1995 and expected to be completed in 1999, Part III will connect all high schools, both public and private, 100 libraries, and all 16 Area Education Agencies to the ICN. Rather than purchase the links for Part III as they had for Parts I and II, the state decided to mandate that these segments would be privately constructed and owned, and leased to the state, through a competitive bidding process. The state now leases these connections from the owner for a seven-year period. Over 100 different companies received contracts for one or more of the 614 Part III connections. Following completion of Part III, 719 sites will be directly connected to the ICN.

The state legislature allotted \$94.7-million to connect Part III sites using these privately leased lines, but this funding is only to bring the fiber network to the site; it does not account for the facilities, equipment, and other expenses necessary for users to fully utilize the network's services. Schools which find themselves connected to the ICN still face expenses ranging from \$40,000 to \$50,000 for the required technological accouterments to equip an ICN video classroom for the ability to both send and receive programming. Classrooms can be equipped for receive-only functionality for about half this cost.

## 2. ICN services and pricing

The Iowa General Assembly, when setting the rate structure of the ICN, established three basic guidelines:

- Pricing would be uniform across all geographic locations;
- No minimum usage volume would be required of any user; and
- Users would receive service on a month-to-month basis, with no contracts required.

The primary ICN telecommunications service is full motion video transmission for educational "distance learning" applications. The usage rate for one hour of video transmitting is benchmarked at \$40.00. This rate holds for all federal, telemedicine and most state agency users. This rate correlates to the expected network expenses (less those attributed to voice and data) for 1995, divided by the projected total usage in hours.<sup>10</sup>

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<sup>10</sup> Network expenses total \$5,078,547 and include Backbone Maintenance (\$2,473,000), Locate Fees (\$382,891), Relocate Fees (\$405,556), Operating Costs (\$507,500), Trustee Fees (\$24,800), ITTC Administrative Expenses (\$1,059,800) and Fiscal Year 1995 Infrastructure Buildout Growth (\$225,000). ICN projected usage at

## *Iowa Communications Network Impact Study*

Because the ICN was developed as a distance learning tool, educational and state administrative users pay a much lower rate for video transmission, currently \$5.00 and \$10.00 per hour, respectively. The ICN receives the remainder of the \$40.00 benchmark rate through the Iowa Telecommunications and Technology Commission video subsidization fund, which the General Assembly established to keep video usage rates affordable for educational users.

The usage rate for video service is billed to the transmitting, or originating, site. This site is billed on a per-hour, per-site basis. For example, Kirkwood Community College, the statewide leader in providing distance learning programming, would be billed \$5.00 per hour *for each site* to which it transmits a program. If eight high schools and two other community colleges throughout the state received that program, Kirkwood would be billed \$50.00. If only two sites received the program, Kirkwood would be billed just \$10.00.

In addition to video applications, the ICN is capable of providing voice and high-speed data services over the fiber optic network. The adopted rate structure encourages users to utilize the ICN for all of their telecommunications needs. Voice and data rates are set at a level that makes them competitive in urban areas, and far more economical in outlying areas.

The ICN offers numerous voice services, including:

- Equal Access Dial 1/Dial Up Intrastate and Interstate;
- Direct Connect Intrastate and Interstate;
- Dial Up Inbound 800 Service;
- Direct Connect Inbound 800 Service;
- Large Volume Direct Connect Inbound 800 Service; and
- Phone Card service.<sup>11</sup>

The voice rates available to authorized users were established by evaluating the rates available to the largest user in the state, the University of Iowa. These voice rates were then established as the benchmark ICN prices that would be available to all users. This prevents any users from being penalized on account of size or location.<sup>12</sup>

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120,000 hours. This number was derived from August and November 1994 data. These numbers were annualized by adding four months of August usage to eight months of November data in order to parallel the academic school year. Dividing total expenses by total usage hours equals \$42.32 per hour, which was rounded down to an even \$40 per hour. Letter from General Harold M. Thompson, Executive Director of the ICN to Mr. Robert Baur, Chairman, Iowa Telecommunications and Technology Commission, December 28, 1994.

<sup>11</sup> Iowa Communications Network rate booklet, May 1, 1995, revision #1.

<sup>12</sup> Reference letter from Tamara A. Fujinaka, Public Affairs Officer, Iowa Communications Network, to ETI, dated October 23, 1995.

The ICN also offers the following data services:

- 64K/56K subrates;
- Internet Access Services at the 56K or T1 level;
- Frame Relay Services at the 56K or T1 level;
- Switched Digital Services for DS-1 & Primary Rate ISDN, 64K/56K/DS0 Switched, and Basic Rate ISDN; and
- Dedicated Data Services, including DS3 full period, DS1/T1 full period and 64K/56K/DS0 full period.<sup>13</sup>

The high-speed data rates available to ICN users were developed in a similar manner. The ICN benchmark rates are approximately the same as those available through a US West 5-year contract.<sup>14</sup>

### 3. ICN Revenues

ICN telecommunications service revenues totaled over \$9-million for the fiscal year ending June 30, 1995. This was an increase of \$5.3-million over fiscal 1994, indicating that ICN is still in a "start-up" mode. Of the total, 43%, or \$3.9-million, came from voice services, 51%, or \$4.5-million, from data services, and 6%, or \$0.5-million, from video services. (See Appendix.)

Most of this revenue has been derived from a fairly small group among the total ICN user population. The regent universities and state agencies together generate about 75% of total ICN telecommunications. The smaller customers, such as high schools, libraries, and Area Education Agencies, make up the bulk of ICN's (expanding) subscriber base, but at present generate only about 25% of its total revenues.

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<sup>13</sup> ICN rate booklet, May 1, 1995, revision #1.

<sup>14</sup> ICN letter, 10/23/95, *op cit*.

### III. UTILIZATION OF THE ICN BY AUTHORIZED USER GROUPS

#### D. Secondary Schools

##### 1. Background

Only 58 of the public and private high schools in the state of Iowa have been connected to the ICN to date.<sup>40</sup> The vast majority of the state's secondary schools are scheduled to be connected to the ICN through Part III, which is set to be completed by 1999. Just 5 of those 58 schools were connected during Part II.<sup>41</sup> Approximately 94 of these schools do utilize the ICN for voice traffic, the majority through equal access arrangements.<sup>42</sup>

##### 2. Video service usage and demand

Initially, the ICN will be used by high schools primarily for originating and receiving video classes. Currently, use of the ICN varies from school to school, and seems restricted only by the imaginations of the teachers and their students. The following is a brief sample of how some schools are taking advantage of the ICN.

- At the elementary school in Le Mars, young users of the system were able to meet face-to-face with their pen-pals (other students across the state) that they had been corresponding to for several months.<sup>43</sup>
- Students at Galva Holstein Middle School linked up with eight other sites and then connected via satellite to the Johnson Space Center in Houston, Texas, where engineers and scientists discussed the planet Mars and what it would be like for humans to live there. Students then got together to build model bases for life on Mars, and then reconvened on the ICN to present their projects.<sup>44</sup>
- The High School in Spirit Lake lost its sole Russian teacher. Rather than discontinue the class and force students who had already begun their mastery of Russian into

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<sup>40</sup> Iowa Communications Network list of connected full-motion, interactive video classrooms, current through November 15, 1995.

<sup>41</sup> *Ibid.*

<sup>42</sup> Iowa Communications Network Detail of Billed Entities, September, 1995.

<sup>43</sup> Videoconference Interview with Jim Petara, Principal, Le Mars High School, October 27, 1995.

<sup>44</sup> Interview with Jim Christianson, technical specialist, Galva Holstein Middle School, October 23, 1995.

## *Iowa Communications Network Impact Study*

another language, the high school began receiving Russian classes from Marshalltown High School, over 100 miles away.<sup>45</sup>

- A harp instructor in Des Moines provides instruction on the instrument to students in Cedar Falls who lost their sole harp instructor.<sup>46</sup>
- A space scientist from the University of Iowa, who is no longer able to travel around the state visiting students, is now transmitting his meetings over the ICN into more schools than he could ever reach before.<sup>47</sup>

Video classrooms in the school district benefit not only the young students, but the older, non-traditional students as well. Many of these classrooms receive programming in the evening hours from the state's community colleges, public universities and private institutions. For example, Jim Petara, the Principal at Le Mars High School, conveyed during a videoconference interview that he personally is able to continue progress on his doctorate over the ICN. With the continuation of Part III construction, area high schools are going to become an increasingly more visible receiving target for the transmissions being sent by the state's colleges and universities.

*Price Sensitivity.* The availability of low video service prices is extremely important to secondary school systems. In most cases, these schools have a limited budget already, and the implementation of the ICN classroom, for a cost of about \$50,000, is already a considerable expenditure, which cannot leave budget for usage fees throughout the year. Of those high schools that currently utilize the ICN for video programming, the average monthly billing for each school is \$291.11, which translates into an average of about 58 hours of usage per month (at \$5.00 per hour).<sup>48</sup> The schools tend to feel that the benefits are equal to the costs at \$5.00 per hour, but that higher rates would have a significant negative impact.

Schools that procure an ICN video classroom are typically not only interested in receiving programming. All ICN sites have the option of being "receive-only" classrooms, whereby no transmissions can be originated. Despite the fact that the school could save about half of the \$50,000 cost for a fully interactive classroom, there appears to be little interest in

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<sup>45</sup> Interview with Dr. Robert Hardman, Center for Staff Development for Technology and Telecommunications, University of Northern Iowa, October 18, 1995.

<sup>46</sup> *Ibid.*

<sup>47</sup> *Ibid.*

<sup>48</sup> Iowa Communications Network Detail of Billed Entities, September, 1995. Of the thirteen schools reporting video usage in that month, the lowest usage figure was \$9.85 by the Estherville Community School District, while the highest usage figure was generated by Mount Ayr Community Schools at \$611.72.

this option. Of the 58 schools currently connected to the ICN, all have constructed full-capability classrooms.

In order to originate transmissions, a school must have the ability to pay the \$5.00 per hour per site video usage fee. However, these schools have no way of recovering the expenses that are being generated by the ICN classroom. As a result, schools will likely be forced to implement a room charge to be levied upon the site which is transmitting the class or program to them. That would result in an increase in the per hour per site fee experienced by the transmitting school of as much as \$12.50. High schools, unlike the state's larger universities, lack the ability to recover this increased cost through tuition or budget re-allocation. The consequence of any fee increases could be that most high schools would be unable to originate programming.

### 3. Voice and data service usage and demand

High schools may utilize the ICN as an interexchange carrier for voice traffic, and in doing so, could realize substantial savings (in percentage terms), depending on the school's usage. However, the amount of traffic generated by a high school is typically minimal, and often times quite varied.<sup>49</sup> The actual amount of spending saved by utilizing ICN service, as opposed to public telephone services, might not amount to a great deal over the course of the year, but for a school system, any savings would justify the utilization of the ICN.

Despite the initial emphasis on educational video services, Internet access may well emerge as one of the primary and most beneficial uses by K-12 schools of the ICN in the very near future.<sup>50</sup> The present Internet service development project that ICN is pursuing would create incentives for all schools to connect, through regional Area Education Agencies, to ICN's Internet hub. To take full advantage of this new technology, however, schools will require additional expenditures for computer hardware and software, among other things, and these types of purchases may ultimately compete with video classroom equipment purchasing. It is unclear how far school systems will be able to accommodate both types of technologies in the long run.

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<sup>49</sup> Ted Klopp, Media/Technical Supervisor, Le Mars High School, maintained that the schools complete long distance bill (intrastate and interstate) totaled \$166.14 in October, 1994 and \$225.00 in October, 1995. Le Mars High School did not begin using the ICN for voice traffic until 1995. The Iowa Communications Network's Detail of Billed Entities for September, 1995, shows that of the 94 schools that used the ICN for voice traffic, the largest amount billed was \$1,413.68 and the smallest amount billed was \$0.22.

<sup>50</sup> See "A Wired Education," *Internet World*, October 1995, p. 70.

## **E. Public Libraries**

Most of Iowa's public libraries are not utilizing the ICN at this time, as they are not yet connected to the ICN backbone through Part III. Many libraries are exhibiting some usage of the ICN in the form of voice traffic, wherein the ICN is being used as the interexchange carrier through the use of an access code. According to the Iowa Communications Network's Detail of Billed Entities for September, 1995, 103 public libraries across the state utilized the ICN in carrying some amount of voice traffic. The average monthly usage billed was \$36.91, which translates into approximately \$443 in annual charges.<sup>51</sup> Aside from this minimal usage, there appear to be only two other significant uses of the ICN by public libraries at the present time.

The first Part III ICN video classroom is being constructed at Davenport Public Library, and it is expected to be completed by the end of 1995. The library, in maintaining its image as a public resource, will allow the classroom to be open for use by the general public. Primary use of the classroom, though not yet fully defined, is expected to be for service group meetings, such as the Jaycees or the Cub Scouts, and for some continuing education classes and workshops.

Although the ICN was mandated by the Iowa General Assembly to be limited in providing services only to authorized users, it has yet to establish how (or whether) to prevent non-authorized users (such as private businesses) from using the service at the site of an authorized user, such as a library, which by nature is a publicly accessible facility. There is therefore a potential for incidental diversion of usage from the private sector to ICN by means of library facilities, although this would appear to be a minor prospect.

Data use by libraries at present is limited to Cedar Rapids Public Library. The library has leased a T-1 connection from the ICN to an Internet provider, and is currently offering dial-up Internet access to residents of Cedar Rapids. At this time, Internet access is being provided to approximately 450 people, and twelve of those are actually businesses. Access to the Internet via public libraries is also likely to become a much more prominent activity in the near future.

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<sup>51</sup> Iowa Communications Network's Detail of Billed Entities for September, 1995.

## I. Telemedicine Users

### 1. Background

Telemedicine users are a small, but potentially growing revenue source for the ICN. For the two months ended August 31, 1995, hospitals and physician clinics accounted for 4.28% of the ICN's revenues for data transmission, and 2.15% of the ICN's revenues for video transmission.<sup>59</sup> This accounts for a total of 1.87% of the ICN's gross revenues.<sup>60</sup> Due to statutory requirements, hospitals are prohibited from utilizing voice services through the ICN.

Telemedicine users utilize primarily two different ICN technologies. The most advanced technology, and consequently the most expensive, is DS-3 "full-motion" video. A lesser technology, but nevertheless effective, is "compressed video" which is accomplished via dialable wideband services using ISDN technology. Currently, there are three medical facilities utilizing full-motion video: Green County Medical Center in Jefferson, Iowa Methodist Medical Center in Des Moines, and Trinity Regional Hospital in Fort Dodge. However, predominately, hospitals are using compressed video services. These hospitals include:

- St. Joseph Mercy Hospital in Centerville
- Audubon County Memorial Hospital in Audubon
- North Iowa Mercy Health Center in Mason City
- Mason City Clinic in Mason City
- St. Joseph Community Hospital in New Hampton
- Franklin General Hospital in Hampton
- Hamilton County Public Hospital in Webster City
- Kossuth County Hospital in Algona
- Mercy Hospital Medical Center in Des Moines
- Mercy West Medical Clinic in Clive

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<sup>59</sup> Iowa Communications Network, Revenue and Billable Entry Statistics for the Two Months Ended August 31, 1995.

<sup>60</sup> Iowa Communications Network, Revenue and Billable Entry Statistics for the Two Months Ended August 31, 1995. Note: These telemedicine statistics are for entities not determined to be a "State Agency" or a "Regent University." Therefore, overall industry telemedicine use may be much higher.

2. ICN services usage and demand

The operational structure that is emerging in the telemedicine industry in Iowa hinges on three "hub" hospitals which provide the expert physicians and facilities, and also coordinate telemedicine projects with more rural, smaller affiliated hospitals. The three main "hub" hospitals that will be the leaders in telemedicine in Iowa are the Iowa Methodist Medical Center in Des Moines, the Mercy Hospital Medical Center in Des Moines, and the University of Iowa Medical Center in Iowa City.

Iowa Methodist Medical Center is the tertiary care component of a network that includes Green County Hospital (primary care) and Trinity Regional Hospital (secondary care). This consortium is unique in that it utilizes "full-motion" video services via the ICN for telemedicine usage. Iowa Methodist has "used" telemedicine over 600 times including utilization for cardiology consults, ultrasound, neo-natal intensive care consultation, teleradiology, and telepathology among others.

Iowa Methodist also utilizes video services for educational use and administrative uses. However, unlike the other two tertiary care hospitals, Iowa Methodist's primary utilization of video services is for video consultations. Iowa Methodist is beginning to utilize data services, specifically, the development of a database for poison treatment. Furthermore, Iowa Methodist can perform some vascular imaging consultation using a data transmission.

Iowa Methodist received a Health Care Financing Administration (HCFA) grant, which also benefitted Green County Hospital and Trinity Regional Hospital. The premise for the grant's funding included the ICN rate of \$5 an hour, and thus was "grandfathered" by the state legislature when the telemedicine rate was changed to \$40 an hour. This grant has recently expired, but the preliminary impact of the rate increase on this network's usage appears marginal. However, Iowa Methodist's growth of video utilization will probably moderate in the near future.

A spokesman for Iowa Methodist stated that growth in telemedicine may be limited for other reasons than the rate increase. These problems include the lack of perceived "user-friendliness", the system was originally designed for distance learning not telemedicine, and finally compensation issues for participating physicians.

Mercy Hospital Medical Center is connected to eight sites, with a total of over 20 sites planned. The rural sites are primarily local government hospitals, although Mercy is connected to a few non-profit hospitals. Mercy leases T-1 lines (compressed video) from the local exchange companies and terminates them at the ICN Points of Presence (POPs). Because Mercy Hospital uses compressed video (instead of DS-3 full motion video), no build-out is

required. Mercy has only been operating video services for three months, the users, both physicians and patients, have expressed a favorable view of the services.<sup>61</sup>

Mercy Hospital primarily engages in three different applications of video services. These include video consultation between physician and patient, administrative conferencing, and distance learning. The administration estimates that roughly 75% of Mercy's video usage is for video consultation. Mercy has also negotiated an institutional sharing arrangement with its affiliated hospitals, in which Mercy generally pays 75% of the total cost to provide video services, with the affiliated hospitals paying the balance.<sup>62</sup>

Mercy does not utilize traditional data transmission services, but is considering services such as electronic mail and scheduling in the future. Because of complexities with the issue of exchanging medical records Mercy is not considering this application at this time.

Mercy's ICN usage is funded mostly through a \$7.3 million grant from the HCFA, which will expire after July 1997. The ICN may have been a contributing factor in HCFA's award of the grant to Mercy Hospital. This award is officially to the Mercy Foundation to fund the Midwest Rural Telemedicine Consortium (MRTC). This funding is for a demonstration project to evaluate application of telemedicine through interactive video consultations.

The University of Iowa Medical Center has been utilizing the ICN video services for educational purposes for nearly 18 months. The classroom is fully utilized, and is often booked well in advance. As one example, through its College of Nursing, the University of Iowa makes it possible for a student to obtain a full B.A./B.S. degree in nursing without the need to ever visit Iowa City. The University of Iowa has also received a \$7.3 million grant from the National Library of Medicine to develop a National Center for Rural Telemedicine. In conjunction with this program, the UI Medical Center is connecting six hospitals in southeast Iowa using a T-1 (data) network.

UI Medical Center's primary uses of the ICN are for data services, specifically, large database sharing, video graphics, and continuing medical education, but only minimally in video services. Moreover, they do not use the ICN for video programming.

*Telemedicine Costs.* Telemedicine users are considered private entities, therefore, these users have rate and construction costs that are unique. (This does not pertain to University of Iowa Hospitals and the federal Veteran's Administration Hospitals.) In practical terms, by law private telemedicine users can only utilize the ICN for telemedicine purposes, and are prohibited from utilizing voice services through the ICN. Consequently, Telemedicine users'

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<sup>61</sup> Interview with Paul Maakested, Mercy Medical Center.

<sup>62</sup> *Ibid.*

video rates are not subsidized, and hospitals must lease (or buy) their connection to the ICN, and assume all costs associated with video classroom construction, and buildout expenses. ICN estimates buildout expenses for telemedicine-related projects at \$15,000 for Iowa Methodist Medical Center, \$50,000 for Trinity Hospital, and \$50,000 for Green County Hospital.<sup>63</sup>

In terms of overall ownership, hospitals now jointly own \$552,567 of "equipment" and \$565,000 in "classroom equipment" for a total of \$1.118 million which is less than 1% of the overall ownership of the ICN.<sup>64</sup> Currently, the costs for full-motion video are \$40 an hour. However, until recently, telemedicine had been utilized at subsidized rates due to an agreement between HCFA and the ICN administration, specifically, the \$5 an hour rate normally charged to educational users. However, despite the new rate adjustment, it appears that hospitals will continue to utilize ICN services in the near future.

*Potential Telemedicine Uses.* Although Iowa appears already to be on the "cutting-edge" of telemedicine utilization, total usage remains small. To fully assess the potential impact of the ICN, it is important to examine future uses that could be enabled by the technology that Iowa's hospitals employ through the ICN.<sup>65</sup> These applications include:

- *Prison Video Consultations:* Through the Georgia Center for Advanced Telecommunications Technology, the State of Georgia has connected the Medical College of Georgia with the Augusta Correctional Medical Institute and the Milledgeville Correctional Institute to allow physician video consultation for prisoners. Currently, the University of Iowa Medical Center is in the process of setting up a link with its facilities and prison sites throughout the state.
- *Electronic Households for Chronically Ill Patients:* The State of Georgia has also hooked 25 homes in Augusta as "electronic households." Persons served by this system are "revolving door" patients or who have chronic illnesses. This system allows physicians to examine patients in remote locations without the necessity of ill patients traveling to meet the expert physician.
- *Medical Records Transfers, and Medication Orders to Pharmacies:* The State of Hawaii utilizes a hospital fax network in assisting with, among other applications, patient transfers, instant medical records transfer, and sending inpatient medication orders to pharmacies.

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<sup>63</sup> Task Force 461 Meeting Schedules and Minutes, July 20-21, 1995, at 4.

<sup>64</sup> Iowa Communications Network, 461 Task Force, Facility Ownership Summary.

<sup>65</sup> The information from this section was compiled from Task Force 461, materials provided at the July 20-21, 1995 meeting, pages 2-18.

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- *Extending Care to Mental Health Patients:* The State of Oregon, through its Rural Operations for Development and Educational Opportunities (RODEONET), supplies project links to 13 rural counties in an effort to improve care for mental health patients. Hospitals in the state of Iowa appear to be focusing primarily on distance learning or "traditional" illnesses, but could quite clearly expand into other disciplines such as mental health.

*Impediments to the Expansion of Telemedicine Usage.* Despite the popular notion that Telemedicine (specifically remote diagnosis and treatment) is the purpose of the State of Iowa offering ICN usage to hospitals, there may be significant impediments to widespread expansion of ICN utilization for these purposes. There are two main reasons this is the case: (i) the industry has not resolved compensation issues for hospitals and physicians, and (ii) there are important unresolved questions regarding legal liability and malpractice.

The difficulty in resolving the compensation issue is not confined to the physicians and hospitals. To the contrary, the primary issue is reimbursement from the United States government (Medicare and Medicaid), and the private insurance industry. Apparently, because telemedicine is a new innovation, it is not normally covered by medical insurance.<sup>66</sup> Therefore, telemedicine is typically being utilized only for emergency cases, or on a trial basis, without physicians being appropriately compensated. In fact, many physicians have offered their services for free in telemedicine applications.

The uncertainty surrounding legal liability could be even more inhibiting. Since telemedicine is a new phenomenon, there may not be clear legal precedent to indicate who is liable if there is a misdiagnosis or other malpractice in conjunction with utilization of the ICN. This uncertainty may be reflected in malpractice insurance rates paid by hospitals and physicians. In addition, the ICN itself may face legal exposure to medical malpractice lawsuits. Although the ICN may view its utilization purely as a communications tool, it is conceivable that courts and juries could construe ICN as medical equipment in a telemedicine application. If the ICN transmission is found to be "defective," for example, the colorization is poor, the image is blurry, or the scheduling is such that the physician examines the patient belatedly, it is conceivable this could be considered a contributing factor to misdiagnosis or a flawed treatment. Even if this concern is ultimately dismissed, ICN could be harmed through so-called "nuisance" lawsuits, which could tax the network's legal and financial resources, and create a chilling environment for further development of Telemedicine.

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<sup>66</sup> Teleradiology is an exception.