

Principles that apply to lease or sale options

- *Communications carriers installing or leasing fiber optic cable capacity are utilizing very high quantities of fiber; cables in excess of 100 fibers are common. The minimum useable quantity for a carrier to serve a customer, or to link small facilities would be one pair of fibers, with a full pair of fibers as spare (four fibers total). Exceptions would include business customers or very specific carrier situations, but the requirement for spare would still exist. (Principle C)*

The fiber cable that connects each Part I and Part II ICN site includes four fibers, 2 pairs of 2 fibers each. A pair of fibers is required for a full communications channel between two ICN sites. Normally a second channel (pair of fibers) is used as a spare in case of failure of another fiber. This design is fully sufficient to meet ICN users' needs, but it likely would be of little interest for potential lease or sale customers. Carriers, in general, need far larger amounts of fiber to serve the public needs between any two points (ICN sites); there may be exceptions in which one pair of fibers could be used by a carrier. Whether a carrier or a business customer would wish to buy or lease a full (dark) fiber or partial capacity of an ICN fiber, the carrier or business would need to have access equipment located in the ICN sites in order to use that fiber. This would be an administrative, technical, security matter of some magnitude; this can be justified for companies in the business of selling or leasing fiber because of large volumes. For ICN the capacity to be leased/sold does not seem to match the market.

- *All users benefit from competition in the provision of communications services. Government should encourage competition in all areas of communications services. Particular challenges exist in rural areas. (Principle E)*

All users benefit from competition in communications services markets. If the ICN is leased or sold, in whole or in part, the potential for impact on competition is significant; a thorough evaluation of this impact would be necessary before a sale or lease. Any lease of a full fiber or partial capacity on a fiber would be, in essence, the provision of service to a business customer or to a carrier; this would represent direct competition with existing carriers in the geographic areas they serve.

Principles that apply to the issue of expanding the authorized users of ICN

- *It is consistent with the evolution of technology and competitive telecommunications services markets for government to directly serve taxpayer-funded operations of education, libraries and government. (Principle H)*
- *It is not consistent with the evolution of competitive telecommunications services markets for government to directly serve consumers, business or any users other than education, libraries and government. (Principle I)*

It is appropriate for any user, including government, to provide communications services to itself; this is not competition with the communications service private sector unless the government offers services to other parties. It is consistent with the evolution of technology and competitive markets for government to directly provide communications services to itself, but it is not consistent with that evolution for government to directly serve others.

SECURITY CONSIDERATIONS

Confidentiality of information is important to ICN users. The RFP requested a review of the impacts on the state's security and future security costs related to each option identified.⁸ The following discussion and the evaluation of each option, set forth below, responds to this request.

The subject of network security falls generally into three categories: 1) the hands-on management of the network; 2) whether users can transmit data and documents between sites with confidence that the information will be kept private; and 3) the burgeoning field of e-commerce applications.

In terms of hands-on management, under the current ICN arrangement in which a contractor operates the Network Service Center (NSC), a state employee oversees the NSC to ensure that privacy procedures are enforced. Similar procedures could be utilized if another private company were operating the network. In fact, all telecommunications firms operating today have these same security issues to address. Many established telecommunications firms that provide service for banks and sensitive government applications such as police, military operations, and civilian administrative agencies deal with these issues every day. Privacy of customer information is a top priority with commercial telecommunications companies, many of which employ their own security departments to help implement their procedures regarding protection of customer information. All are aware of their obligations under State and Federal law to protect the privacy of the information that traverses their networks. These legal obligations apply regardless of the option selected.

Users on any network want to be assured that their transmissions are private. Current ICN network management software has security tools embedded. Commercially, the explosive growth of the Internet is driving the market for privacy options to enable secure data

⁸ See ICN Ownership and Administrative Issues RFP, July 27, 1998, page 18.

connections. A number of commercially available products already exist, and are relatively inexpensive – one is even built into Windows '98.

Another security issue relates to electronic commerce on the network in support of state agencies. Authentication, integrity, and confidentiality are the obvious concerns here. The costs of security on the network depend on the level of security required. ICN staff indicates that electronic commerce security needs have not yet been specified, so the additional costs to meet these needs, if any, cannot be estimated precisely at this point. A review of ICN's needs for increased authentication, integrity, and confidentiality for electronic commerce on the network in support of state agencies will be necessary regardless of who owns and operates the network. To the extent that the level of security needs to be increased beyond current capabilities, that should be viewed as common to all options.

Although ICN security is a real concern to be dealt with, the issue of whether increased future security needs will dictate new solutions – with new costs – is a question that would be common to all options under review. The fair question to be reviewed here is: To what extent would a particular option increase or decrease costs to maintain the current level of security?

In the individual option evaluations described below, options that result in a single entity's ownership or management of the network are expected to result in essentially no change in cost to maintain today's level of security. On the other hand, options resulting in a mixed operations staff are expected to increase costs of maintaining security, because additional operational safeguards would be necessary. Specific comments for each option are included in the option evaluations that follow.

EVALUATION METHODOLOGY

For a discussion of how the Principles enumerated in Section VII apply to the options, refer to the beginning of this Section.

In the following evaluations of options, comparisons are made to the current mode of operation: State ownership and management of ICN for the provision of services to authorized users. An evaluation is made as to whether the costs pertaining to the option under consideration would be higher, lower, or unchanged from the current situation. The analysis addresses the following areas:

- Cost to State to operate the ICN
- Rates paid by authorized users

- Relative level of legislative funding required to maintain affordable rates
- Relative level of legislative funding for ICN capital expenditures
- Whether schools and libraries taking services from ICN would qualify for the “E-Rate” subsidies
- Security considerations and relative levels of cost under the various options.

EVALUATION OF OPTIONS

Option 1 – Sale of the Network (no assurances) – *The ICN would be sold to a private owner, but authorized users would not be assured affordable access to the network. Under this option, the State would not continue to provide funding for telecommunications services for authorized users and the network could be open to the general public. This is the only option that does not meet the HF 461 Premise.*

Application of Principles:

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- State costs (and revenues) of operating ICN would be reduced to zero because the state would not be operating the network.
- The lack of assurances would almost certainly lead to the authorized users paying higher rates.
- Direct legislative funding of both capital and expense would be reduced to zero because the state would not own the ICN and, under this option, the state would not continue to subsidize authorized users.
- School and library users would be eligible for USF/E-Rate federal subsidies if the ICN were purchased by a common carrier.
- The purchasing company’s direct costs of operating the network would likely be lower than current operations, but as a result of tax implications and capital costs which would be higher than those of the state, rates to users would likely be higher.

Security of Information: Impact, Costs and Consequences

Security of information and costs of providing similar levels of security should be comparable to the current environment because of private industry’s experience with the legal requirements for protecting information.

General Considerations

As was noted by the 461 Task Force in the description of Option 1, this option is at odds with the HF 461 premise. HF 461 specifically directed the ITTC to consider options that would preserve the State’s commitment to authorized users: “... all options studied, unless noted otherwise, must contain provisions to assure affordable access to authorized users”.⁹ In addition, the RFP

⁹ The 461 Report Appendix clarifies that “affordable access” means current rates for service.



that led to this evaluation and report states: “The Consultant, in preparing the proposal, shall assume under all options that the Iowa General Assembly will maintain its commitment to subsidize the use of the network by educational users.”¹⁰

Sale of the network raises difficult issues such as valuation of the network. Unsuccessful bidders (or even private participants who do not bid) are likely to make consummation of the sale a protracted and difficult process. In addition, sale of the network raises issues noted in the 461 report, relating to federal use of ICN; lease; right-of-way and access considerations; as well as legal and IRS concerns.

Option 2 – Sale of the Network (with assurances) – ICN would be sold to a private owner, but authorized users would be assured affordable access as outlined in the HF 461 Premise. This sale could be either state-subsidized or buyer-subsidized, and the network could be open to the general public.

Application of Principles

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- State costs (and revenues) of operating ICN would be reduced to zero because the state would not be operating the network.
- Including the HF461 Premise as a requirement of this option would result in no change in rates to authorized users.
- Legislative funding of the expense subsidy would increase to maintain affordable access assurance.
- Direct legislative funding of capital requirements would be reduced to zero because the State of Iowa would no longer own the ICN.
- School and library users would be eligible for USF/E-Rate federal subsidies if the ICN were purchased by a common carrier.
- The purchasing company’s direct costs of operating the network would likely be lower than current operations, but other costs such as taxes and capital costs would be higher than those of the state. It is unlikely that a private enterprise buyer would provide the subsidy to maintain today’s rate levels. Accordingly, legislative funding should be expected to increase to maintain current rates in the face of what would otherwise be higher charges from the new provider.

Security of Information: Impact, Costs and Consequences

Security of information and costs of providing similar levels of security should be comparable to the current environment because of private industry’s experience with the legal requirements for protecting information.

¹⁰ Iowa Communications Network Ownership and Management Review and Evaluation Request for Proposals, July 27, 1998, para. 3.1.D.

General Considerations

Sale of the network raises difficult issues such as valuation of the network. Unsuccessful bidders (or even private participants who do not bid) are likely to make consummation of the sale a protracted and difficult process. In addition, sale of the network raises issues noted in the 461 report, relating to federal use of ICN; lease; right-of-way and access considerations; as well as legal and IRS concerns.

Option 3 – Sale of Excess Capacity – *The State would sell excess capacity (or dark fiber) for private ownership and operation. The State would retain control of its portion of the network and continue to provide the assurances outlined in the HF 461 Premise to authorized users. The sold portion of the network could be open for public use.*¹¹

Application of Principles

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- No change in ICN expenses to operate the network for existing users, or in end user rates, compared with current ICN operations (except for security considerations, see below) because the state “would retain control of its portion of the network and continue to provide the assurances outlined in the HF 461 Premise to authorized users.” Additional costs would be incurred if shared network space and new administrative costs were necessary to effectuate the sale of excess capacity. Net increase or reduction effects would depend on amount of revenue generated by the sale.
- Legislative funding for the operating subsidy could be decreased to some extent if net additional funds became available as a result of from these sales.
- Legislative funding for capital requirements would not be expected to change from current projections because the state would continue to own the network and would only sell excess capacity that is forecast to remain spare.
- USF/E-Rate would not apply to state users because the state would continue to be the service provider to schools and libraries.

Security of Information: Impact, Costs and Consequences

Mixed operational access to facilities would likely increase the risk of security violations. As a result, there would be increased costs to maintain the current level of security.

General Considerations

Sale of excess capacity, instead of the whole network, decreases the difficulty of the valuation issue. However, it is still possible that unsuccessful bidders (or private participants who do not bid) might make such sales a controversial process. As noted in Section VII of this report,

¹¹ This option is similar to options 7 and 8, which offer to Lease Excess Capacity. Outright “sale” of a portion of the network would be difficult (and could be costly to administer) because of the problems with passing the ownership of portions of ICN transmission facilities. An analogy exists in overseas cables, when cable owners sell Infeasible Rights of Use” (IRU) in the facility.

the ICN does not have a significant amount of marketable spare capacity, and it would defeat the purpose of this option to build extra capacity just so it would be available to sell. In addition, sale of network capacity raises issues noted in the 461 report, relating to federal use of ICN; lease; right-of-way and access considerations; as well as legal and IRS concerns.

Option 4 – Private-Public Ownership – *ICN would be owned and operated by a new public-private entity. This new entity could be a partnership, association, or corporation. While majority ownership of this entity is not addressed, the HF 461 Premise would be upheld and the general public could gain access to the network.*

Application of Principles

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- Shift to a partial private enterprise and an expanded customer body would likely lead to an increase in operational expense.
- Rates to users would not change because the HF 461 premise would be upheld.
- Legislative funding of the expense subsidy would increase to maintain affordable access assurance with expected higher non-subsidized rates.
- The level of legislative funding of capital expenditures for current authorized users would be lower than current levels, because the state's percent ownership would be less than the current 100% (assumes the non-State portion of the new entity funds any new capital requirements for expanded business of new users).
- USF/E-Rate would not apply to state users if the FCC determines that the state remains the service provider to schools and libraries.
- The new partner's operating expense would likely be lower, but the cost of capital would be higher than current ICN costs. If the new entity is in business for profit, legislative funding should be expected to increase to maintain current rates to authorized users in the face of what would otherwise be higher charges from the new partnership.

Security of Information: Impact, Costs and Consequences

Security of information and costs of providing similar levels of security should be comparable to the current environment because of private industry's experience with the legal requirements for protecting information.

General Considerations

The issue of ICN competing with private providers has been one of the most controversial issues surrounding the State-built network up to this point. Expanding use of these facilities, with the State as a partner, to uses that compete with current telecommunications providers for general business and consumer customers would likely be a controversial step. In addition, this option raises issues noted in the 461 report, relating to federal use of ICN; lease; right-of-way and access considerations; as well as legal and IRS concerns.

In all events, as noted in Section VII of this report, the ICN does not have a significant amount

of marketable spare capacity, and a construction program would be necessary if additional traffic from new users were to exceed the capacity that has been built to support the needs of current authorized users.

Option 5 – State Ownership, Private Operations – *The State would retain ownership of the ICN, but would lease the entire network to a private operator, who could open the network up for public use. Under this option, the private operator would assume operating risk and would pay the State for the opportunity to run the network. The State would include in the operations contract a provision which assures the HF 461 Premise.*

Application of Principles

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- Shift to private enterprise would reduce ICN operational expense to zero, if the private operator assumes total operational responsibility.
- Rates to authorized users would not change because the contract would include a provision assuring the HF 461 premise.
- Legislative funding of capital expenditures would not change for the same authorized users.
- School and library users would be eligible for USF/E-Rate federal subsidies if ICN services were provided by a common carrier.
- The leasing company's costs of operating the network would likely be lower than current operations, but other costs such as taxes would be higher than those of the state. During interviews conducted by Ultrapro, government and private industry representatives alike generally agreed that today's ICN rates are lower than those charged by common carriers. It is highly unlikely that a private enterprise buyer would provide the subsidy to maintain today's rate levels. If the new operator is in business for profit, legislative funding should be expected to increase to maintain current rates in the face of what would otherwise be higher charges from the new operator. This would be offset to some extent by savings in current operating expense and by revenues the state would receive from leasing to the private operator. It is not possible at this time to predict with certainty whether the offset would be sufficient to keep the state whole, but it seems unlikely. As a result, legislative funding to subsidize affordable rates would be expected to increase.

Security of Information: Impact, Costs and Consequences

Security of information and costs of providing similar levels of security should be comparable to the current environment because of private industry's experience with the legal requirements for protecting information.

General Considerations

The issue of ICN competing with private providers has been one of the most controversial issues surrounding the State-built network up to this point. Expanding use of these facilities to uses that compete with current telecommunications providers for general business and

consumer customers would likely be a controversial step. The company to whom capacity is leased can affect the competitiveness of the market for better or worse. This must be considered carefully prior to any lease contract. In addition, this option raises issues noted in the 461 report, relating to federal use of ICN; lease; right-of-way and access considerations; as well as legal and IRS concerns.

In all events, as noted in Section VII of this report, the ICN does not have a significant amount of marketable spare capacity, and a construction program would be necessary if additional traffic from new users were to exceed the capacity that has been built to support the needs of current authorized users.

Option 6 – State Ownership, Private Management – *The State would retain ownership of the ICN, but would contract with a private company to manage the network. The ICN would pay the private contractor for management duties, and would require that the HF 461 Premise be met. This option would not expand the authorized user base.*

Application of Principles

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- If, as expected, the new operator's costs of operating the network were lower than ICN's current operations, the shift to private management would reduce operational expense because the contractor would assume total operational responsibility.
- Rates to authorized users would not change because of the HF 461 premise.
- Legislative funding of the subsidy to maintain affordable rates to authorized users would decrease if the new operator were more efficient.
- Legislative funding of capital requirements would not change because the state would still own and be responsible for the network.
- USF/E-Rate would not apply to state users if the FCC determines that the state remains the service provider to schools and libraries.

Security of Information: Impact, Costs and Consequences

With proper oversight and contract management, this arrangement should not increase the risk of security violations. Security of information and costs of providing security should be comparable to the current environment because of private industry's experience with the legal requirements for protecting information.

General Considerations

This option would not expand use of these facilities to compete with current telecommunications providers for general business and consumer customers, and to that extent would not be as controversial as other options. In addition, there are a few issues noted in the 461 report, relating to access and legal considerations.

Option 7 -- Lease of Excess Capacity (No Restrictions) -- *The State would retain ownership and operations of the ICN, but would lease excess capacity to private operators anywhere in the state. The State would continue to meet the HF 461 Premise by operating the network separately from the leased excess capacity portion. This option could expand the user base to the general public.*

Application of Principles

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- No change in ICN expenses to operate the network for existing users, or in end user rates, compared with current ICN operations (except for security considerations, see below) because the state would continue to operate the network separately from the leased excess capacity portion and would continue to provide the assurances outlined in the HF 461 Premise to authorized users. Additional costs would be incurred if shared network space and new administrative costs would be incurred to effectuate the lease of excess capacity. Net increase or reduction effects would depend on amount of revenue generated by the sale.
- Legislative funding for the operating subsidy could be decreased to some extent if net funds became available as a result leasing activities.
- Legislative funding for capital expenditures would not change from current projections because the state would continue to own the network (assumes private operator funds any new capital requirements for expanded business of new users).
- USF/E-Rate would not apply to state users because the state would continue to be the service provider to schools and libraries.

Security of Information: Impact, Costs and Consequences

Mixed operational access to facilities would likely increase the risk of security violations. As a result, there would be increased costs to maintain the current level of security.

General Considerations

The issue of ICN competing with private providers has been one of the most controversial issues surrounding the State-built network up to this point. Expanding use of these facilities, even on a leased basis, to uses that compete with current telecommunications providers for general business and consumer customers would likely be a more controversial step. Any new operator would have to be evaluated a priori to determine if such a transaction would aid or hurt competition. In addition, lease of network capacity raises issues noted in the 461 report, relating to federal use of ICN; lease and access considerations; as well as legal and IRS concerns.

In all events, as noted in Section VII of this report, the ICN does not have a significant amount of marketable spare capacity, and it would defeat the purpose of this option to build extra capacity just for the purpose of having it available to lease.



Option 8 -- Lease of Excess Capacity (Restricted) – *The State would retain ownership and operations of the ICN, but would lease excess capacity to private operators in areas where service is not currently available. Once service becomes available in an area, the ICN would be unable to continue the lease. This option would enforce the HF 461 Premise and could expand the authorized user base on a limited basis.*

Application of Principles

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- No change in ICN expenses to operate the network for existing users, or in end user rates, compared with current ICN operations (except for security considerations, see below) because the state would retain ownership and operations of the ICN, and would continue to provide the affordable rates assurances outlined in the HF 461 Premise. Additional costs would be incurred if shared network space and new administrative costs would be incurred to effectuate the lease of excess capacity. Net increase or reduction effects would depend on amount of revenue generated by the sale.
- Legislative funding for the operating subsidy could be decreased to some extent if net funds became available as a result of leasing activities.
- Legislative funding for capital expenditures would not change from current projections because the state would continue to own the network (assumes private operator funds any new capital requirements for expanded business of new users).
- USF/E-Rate would not apply to state users because the state would continue to be the service provider to schools and libraries.

Security of Information: Impact, Costs and Consequences

Mixed operational access to facilities would likely increase the risk of security violations. As a result, there would be increased costs to maintain the current level of security.

General Considerations

The issue of ICN competing with private providers has been one of the most controversial issues surrounding the State-built network up to this point. Expanding use of these facilities to serve general business and consumer customers would appear to be a useful contribution in locations where service is not currently available. However, the Legislature should make a policy determination as to whether it intends to go beyond serving the telecommunications needs of its own user group. Leasing of facilities to the private sector would constitute competition with parties who are in that business. Any new operator would have to be evaluated a priori to determine if such a transaction would aid or hurt competition.

In addition, lease of network capacity raises issues noted in the 461 report, relating to federal use of ICN; lease and access considerations; as well as legal and IRS concerns.

In all events, as noted in Section VII of this report, the ICN does not have a significant amount of marketable spare capacity, and it would defeat the purpose of this option to build extra capacity only for the purpose of having it available to lease.

Option 9 -- State Ownership and Operations -- *The State would continue to own and operate the ICN in its current structure. This option would continue the State's commitment to authorized users, as outlined in the HF 461 Premise, and the authorized user base would remain unchanged.*

Application of Principles

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- No change from current plan.
- USF/E-Rate would not apply to state users because the state would continue to be the service provider to schools and libraries.

Security of Information: Impact, Costs and Consequences

No change from current plan.

General Considerations

This option represents the current state, to which all other options are compared in this analysis. Although the issue of ICN competing with private providers has been one of the most controversial issues surrounding the State-built network, at this point the status quo seemed acceptable to most industry and government representatives interviewed during this study.

Option 10 -- State-Owned Public Utility¹²-- *The State would continue to own and operate the ICN, but would open the user base up to the general public. This option would continue to provide the HF 461 Premise, but could make the ICN subject to regulation.*

Application of Principles

See discussion of Principles at the beginning of this Section.

Implications for Costs and Savings:

- Expanding the authorized user base would likely lead to an increase in operational expense. In addition, regulatory costs would add to the current set of costs because the state would become a common carrier. These costs would be offset to some extent by increased

¹² The Iowa Utilities Board staff prepared a definition of *public utility* for the 461 Task Force, using Iowa Code § 476.1 as a basis. For the purposes of the 461 study, a public utility is any public or private entity, which furnishes an extensive range of two-way communications services to the general public for compensation.

- revenues from new users.
- Rates to currently authorized users would not change because the HF 461 premise would be upheld. Section 8D.13(18) of the Iowa code exempts the ICN from rate discrimination prohibitions, so special rates to ICN users could be maintained.
 - Unless new revenues were sufficient to defray additional operational costs, Legislative funding of the operating subsidy would increase to maintain affordable access assurance.
 - The level of legislative funding of capital costs would increase because the state would continue to own the network and expansion would be required to handle increased volumes of traffic from new users.
 - USF/E-Rate would apply if the FCC determined that under this scenario the common carrier status of ICN would enable Iowa schools and libraries taking service under ICN to qualify for the discounts.

Security of Information: Impact, Costs and Consequences

Although under this option the authorized user base would be expanded, essentially the same operating staff would manage the network. Accordingly, there should not be significant change from the current level of expense to manage the current level of security for an equivalent number of users. To the extent the number of users increases, security costs would increase to some extent, but revenues would increase accordingly.

General Considerations

The issue of ICN competing with private providers has been one of the most controversial issues surrounding the State-built network up to this point. Expanding use of these facilities, with the state as owner/operator, to uses that compete with current telecommunications providers for general business and consumer customers would seem to be an extremely controversial step.

The addition of a competitive alternative would appear to be in agreement with the principle that, in general, users benefit from increased competition. However, the Legislature should make a policy determination as to whether it intends to go beyond serving the telecommunications needs of its own user group and expand into the general market for telecommunications. Existing industry competitors would view this with alarm, and would argue that the state has unfair competitive advantages because of the government's cost structure and funding resources (tax-based).

In addition, this option raises issues noted in the 461 report, relating to federal use of ICN, legal and IRS concerns.

In all events, as noted in Section VII of this report, the ICN does not have a significant amount of marketable spare capacity, and a construction program would be necessary if additional traffic from new users were to exceed the capacity that has been built to support the needs of current authorized users.

IX. Option Evaluation Summary

The previous section provided evaluations of the ten ICN options from the 461 report. The following matrix provides a summary of these comments for ease of comparison among the options.

Costs and Savings for each Option

Option	Cost Impact on State of Iowa & Authorized Users (compared with existing operations)				USF/ E-Rate Apply?	Security costs	Remarks
	ICN	Authorized Users	Legislative Funding				
	Expense	Expense	Expense	Capital			
1. Sale/No Assurances	Reduce To zero	↑	Reduce To zero	Reduce To zero	Yes	No change	Opens ICN to common carrier use. Higher user rates; does not meet HF461 Premise
2. Sale w/Assurances	Reduce To zero	No change	↑	Reduce To zero	Yes	No change	Opens ICN to common carrier use. Higher subsidies required to maintain current rates.
3. Sale of Excess Capacity	No change	No change	↓	No chg. *	No	↑	Opens ICN to common carrier use. Marginal amount of spare capacity would yield low revenues
4. Private/Public Ownership	↑	No change	↑	* ↓	Yes	No change	Establishes gov't as a partner in common carrier business, competing with private industry. Higher subsidies required to maintain current rates.
5. State Ownership, Private Operations	Reduce To zero	No change	↑	No chg. *	Yes	No change	Opens ICN to common carrier use.
6. State Ownership, Private Management	↓	No change	↓	No chg. *	No	No change	Assumes private operator more efficient than state operation
7. Lease of Excess Capacity, No Restrictions	No change	No change	↓	No chg. *	No	↑	May open ICN to common carrier use. Marginal amount of spare capacity would yield low revenues
8. Lease of Excess Capacity, w/ Restrictions	No change	No change	↓	No chg. *	No	↑	May open ICN to common carrier use. Marginal amount of spare capacity would yield low revenues
9. State Ownership and Operations	No change	No change	No change	No change	No	No change	This is the current method of operations. Results in no change from current projections.
10. State Owned Public Utility	↑	No change	↑	↑	No	No change	Establishes gov't in common carrier business, competing with private industry

* Does not reflect new capital for additional usage resulting from new business

X. Appendices

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Appendix A. Listing of Documents Reviewed by Ultrapro for ICN

date	Title/Remarks	Source/Subject
various	State Audits from prior years	Auditor Reports
12/1/92	Arthur D. Little "Study of the Role of Telecommunications Industry in Iowa's Economic Development"	Auditor Report
7/9/93	Timeline	ICN History
10/27/93	Written Comments by Parties: ITA, Sully Tel Assn., USW, Minerva Valley Telco, Area Educa Agencies, Wellman tel. Coop, West Bend School Dist., IA Community college trustees, Cedar Falls Utilities, GTE, League of IA municipalities, IHA, AT&T, IA institute for Coops, Star Schools Project.	Authorized User definition proceeding
11/30/93	Special audit by State auditor	Auditor Report
5/17/95	Private Sector Fiber Map -HunTel Engrg.	ICN Layout
9/95	461 Matrix Evaluation Detail	Evans Associates
9/95	ICN Network Survey Final Report	Selzer Boddy, Inc.
9/15/95	ICN Study Report	Williams & Co. Consulting, Inc.
10/13/95	461 Task Force Report	461 Task Force
10/13/95	461 Task Force Report volume II	461 Task Force
12/3/96	Written Comments by Parties: ITA, IA State U., IA State Education Assn., IA research net., IA PTV, USW, State Library, Bd. of Regents, RIITA, Clear Lake Tel Co., Green Valley Education Agency	Authorized User definition proceeding
1/1/97	Annual Report for 1996	Iowa Utilities Board
3/5/97	"Efficiency Study of the Operations and Management of ICN" by Strategic Policy Research	Auditor Report
9/1/97	"Network use by certain Authorized Users" Section 8D.9 of Iowa Code	Authorized User definition
10/29/97	Oral/written Comments by parties on ITTC rules:Northwest internet svcs, Internet providers ass'n, Midwest communica., Telecom advisory committee, IA PTV, Bd. of Regents, West IA Telco, Internet providers Ass'n, ITA, Internet provider Assn., RIITA	Authorized User definition proceeding
1/1/98	1997 Fiscal Year annual report	Budget- Annual Report
4/13/98	Listing of lobbyists registered in Iowa	Lobbyists registry
7/31/98	One month actual results	Budget
8/26/98	Part III construction Schedule	ICN Layout
9/1/98	13 pages from ICN website; includes history	ICN history and overview
9/1/98	Video Classroom List	ICN Layout
9/23/98	ICN budget request for year 2000	Budget request

date	Title/Remarks	Source/Subject
	ARTICLES	
11/29/93	\$179 Million and Climbing	Des Moines Register
10/17/94	Who will regulate telemedicine?	Des Moines Business Record
2/1/95	A 'pivotal year' for fiber optic network	Des Moines Register
2/16/95	Fiber optic net's chief offers plan to finish it	Des Moines Register
2/28/95	Auditor urges slowdown on finishing fiber optic net	Des Moines Register
4/1/95	Potential sites balk at information highway	Raleigh, NC News and Observer
4/1/95	Superhighway toll too high for state	Wilmington, NC Morning Star
4/4/95	Branstad defends network, Baur	Des Moines Register
4/4/95	Corbett: sell fiber network	Des Moines Register
4/6/95	House: open network to local governments	Des Moines Register
4/12/95	Horn holds up deal of finish fiber network	Des Moines Register
4/13/95	Plan to finish fiber-optic network faces trouble	Des Moines Register
4/14/95	ICN: How will it help Iowa's future?	Des Moines Register
4/14/95	Siegrist backs state selling fiber network	Des Moines Register
4/16/95	A 200-mile-wide classroom	Des Moines Register
4/16/95	Iowa's 'black hole' can glow	Des Moines Register
4/18/95	Branstad puts conditions on fiber net sale	Des Moines Register
4/18/95	Fiber net spending OK'd	Des Moines Register
4/20/95	Plan offered for finishing fiber net	Des Moines Register
4/28/95	House OK's completion of net	Des Moines Register
4/29/95	Lawmakers OK \$95 million fiber optic plan	Des Moines Register
6/1/95	Coming soon to a school near you	ISEA Communiqué
6/1/95	Visually impaired go high tech	University of IA Spectator
6/5/95	Study of ICN sale tainted	Des Moines Register
6/12/95	ICN study launches competition debate	Des Moines Business Record
6/27/95	Register's readers say state competing with telephone firms	Des Moines Register
7/12/95	Let consumers decide communications debate	Des Moines Register
7/15/95	The winning of Iowa	The Economist
7/26/95	Area agencies get \$350,000 grant for distance learning	Sioux City Journal
8/12/95	Fiber optics link is planned	Quad City Times
8/16/95	Decorah school OK's technology leap	Waterloo Courier
8/18/95	Telecom Act helps Nebraska	Omaha World Herald
8/19/95	Eight hospitals hook up to state fiber optic system	Des Moines Register
8/20/95	Fiber optic system used to connect patient, doctor	Sioux City Journal
8/27/95	New choices for utility customers	Des Moines Register
9/1/95	Brave new interactive world: US West gets OK for tests	Omaha World Herald
9/4/95	UNMC computer links assist rural caregivers	Omaha World Herald
9/5/95	Network helps rural doctors	Sioux City Journal
9/7/95	ISP hooking up to fiber optic network	Burlington Hawk Eye
9/14/95	Branstad introduces state's spot on Internet	Waterloo Courier
9/26/95	Upper Iowa U. turns to private fiber optics	Des Moines Register
10/8/95	Costly network 'is heavily used'	Des Moines Register
10/8/95	Fiber optic system's fate up in the air	Des Moines Register

date	Title/Remarks	Source/Subject
10/9/95	Panel mulls fate of fiber optics	
10/10/95	Problems arise over telemedicine insurance	Des Moines Business Record
10/11/95	Task force won't evaluate fiber optic system options	Des Moines Register
10/12/95	[editorial]: Don't sell the network -- yet	Des Moines Register
9/1/98	Increase in Students attending via ICN	ICN Web Page article
9/1/98	Savings and Benefits	ICN Web Page article
9/1/98	Wired but not Inspired	Des Moines Register
10/9/98	Entrepreneurship program an "up-and-comer"	From Web site
12/17/98	The Webster Report on Information Assurance	From Web site (csis cybercrime)
12/24/98	Wire it and They Will Come	New York Times



Appendix B. Side-by-Side Analysis of Interviews

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
General			
Look around and you will see others trying to imitate what Iowa has done.	Iowa is the envy of the world; it is still not being done elsewhere. Civil and military leaders from around the world have come to see ICN.		Iowa is the only state that does it this way. If this is such a great idea, why don't more states follow the example?
ICN was built because Iowa needed it. It is a good thing.	A lot of the confusion over ICN's role is caused by annual (or at least regular) legislative activity.		Our basic objection is that the state built ICN too large initially then had to expand its user base to utilize the capacity. The result was that now they are nearly full, and have to expand again to keep pace.
Philosophically - not sure the State should be competing with private providers. Also, we are not in a position to afford investment it takes or to have knowledge it takes to upgrade technology. Biggest question is what level of State involvement should be.			If need more services, go to private sector. Because: Cheaper for state. Our company, for example, is constantly upgrading technology to make it better. State should not have to do that. State can/should prime the market pump, not dampen it by competing. For example, state could be a major customer of ATM provider, and help motivate them to deploy the new technology.
Biggest issues are money and our commitment to ICN. It's taken a long time to get it done, and it's just barely done now. With the addition of libraries to schools on the network, it will be a wonderful system. People expected too much before it was complete, and we haven't had a chance yet to see its potential. Biggest fear is that we will not provide resources to see it through.			We don't think it makes sense for the state not to preserve and protect the existing businesses in our communities. "Give me one good reason there should be a state-owned and operated public utility."

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
<p>When we became a government telephone company, it caused problems with the private industry people. Although I'm not sympathetic to them, because they didn't step in and help when we needed it. ICN was probably not a mistake to build, at least we have fiber to every school, which would probably never have happened by the private sector.</p>			<p>Since ICN is here, should draw a line and not expand: Users Capacity.</p>
			<p>Back it down to education, and get departments off it if need be to do that. Cost of the 100 people who maintain it is not counted in costs of ICN. What does it really cost?</p>
			<p>Think state should proceed in two phases take management private, to take it out of political arena Take ownership private, to get state out of the business of providing services and competing with private industry.</p>
Ownership			
<p>Think that if we privatize, prices would be higher.</p>	<p>Departments would dread to see ICN sold or privatized. Departments have "major, major" problems with the telephone companies.</p>	<p>If sell ICN, need a process to determine the "value" of ICN: Tangible and intangible assets, ability of debt to be sold, contributed capital, accounts receivable/payable, customer base, revenue stream.</p>	<p>ICN's assets are not worth what the state has in them. But if we could lock in the state's business for a fixed number of years, that might make it worth while to take over the network. The ICN facilities duplicate private facilities in many cases. It is not attractive as an investment.</p>

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
Not sure if it can be sold: No buyer; federal contracts present a barrier. There is precedent in other states for private company to own and operate.	Keep ICN in government. Can do a better job in government, if given the funding and freedom to do the job.		The asset was built with only the state's interests in mind. Purchaser would have to have only state as customer, not other business. State should maintain ownership, and the current set of authorized users. ICN is turning the corner, continuing with current arrangement is most logical for the future.
Concern that ICN is not done yet; let's see how it works when complete. We may not be able to sell it for what we have in it.			State should move towards a public/private partnership. For example, the state could invest up-front in service fees to encourage carriers to invest in facilities. They become an "anchor tenant" to justify the carriers' investment.
Right-of-way issues are a major problem in selling ICN.			Instead of expanding; concentrate on developing interactive video for kids. That has taken a back seat to other growth. This is a critical issue to our small companies. This network undermines our ability to serve, and has a potentially enormous impact on us. It is critical to our future ability to serve.
Re Sale: 2 way video facilities are getting old; cost to replace is high. Some say keep it but scale it back.			ICN goes places private network would not go. There is no practical way for state to get back what it has invested.
Separate ICN as an entity and fund it, or sell it all.			<p>An acceptable purchaser would be: If state paid same as now, for education, agencies, university.</p> <p>Doesn't make financial sense to purchaser. If they went after additional traffic, that would lead to fights with private industry.</p> <p>Private industry will rally against any one buyer, e.g., McLeod, USW. Will waste time on RFP and not be able to implement it.</p>
If sell, no guarantee that could keep services as is. Rural counties may drop off.			Future of ICN - there is no clear-cut answer. FEMA and National Guard have issues.

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
After 2002: Contract out voice and data.			If privatized, new owner would be under same rules as us. We don't object to competition on a fair playing field.
Too many complications, like bonds and right of way, to sell it. Parts will have to be state entity. Need middle course of action.			Important to review carefully the sale questions. Who gets to buy it, and at what price? Our members are not going to buy it, but if the new owner gets a sweetheart deal on all those facilities, we could be worse off than now.
Selling means lack of control. Need to protect Iowa's rural way of life.			When ICN was first brought up, we had no problem with the concept of Distance Learning to schools, libraries, and telemedicine. But we did have a problem with the state owning and operating it. Can't make money at it unless they expand their customer base, and that takes away our customers. Customers who are getting service at subsidized rates will never pay for the investment in the system. Have to expand to break even; that competes hard with us for business.
I agree that schools need the tool (video), and we have it now - how can we guarantee time for 550 sites if we sell it? Or sell 90% of capacity? If all schools fully utilized it, how much capacity would be left over?			If they decide to sell, they may not find a buyer at all, or may not be able to sell it for what they have into it. If sold at "fire sale" rate, that would give a potential competitor to us a cheap source of facilities and a built-in customer base. We would object to that. Upside of sale is that at least the new owner would be under same competitive rules as we are, which is not the case now.
I've always wanted to sell it. The subsidized network winds up competing with private industry. How does the state keep up with technical improvements? Do we have skills to do? Can we cover costs it takes to keep up?			Re: sale: nobody wants to buy it. Can't make it pay.



Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
Question sharing ownership with private providers Vs handling it ourselves. Concerned that state may not be qualified to do this.			
Too soon to sell it. But question is how to keep it? Do we make it an enterprise for all state services? Or just for schools? But we know it won't pay for itself with only the schools' business. Have state manage the educational part, and regulate it. If we sell, the commitment to education might be lost.			
Ownership - I think State ownership is OK. Not really in competition with private enterprise. After we make the upgrade to increase capacity, if there is spare capacity, OK to lease some out, but want to make sure we have enough capacity for schools.			
If privatize, need guarantees so private provider wouldn't "rip off" the schools and other special uses (education and state phone lines).			
Universities have their whole system built around ICN. Phone service, Internet. Hard to break it up.			

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
Management			
Think management should be privatized; take politics out of it. Would have a different trust level if manager didn't have a stake in the outcome	The ICN saves time and travel expense, but when the system crashes during a conference there is no one to turn to fix it. It is not easy to add sites at the last minute.		Privatization of network's management – get it out of political arena and professionalize.
Controversy between legis and ICN staff. Public own/private mgt. not solution to pricing issues, just to management issues.	ICN scheduling people do a really good job. They bend over backwards to make things work. The ICN scheduling process is now better than it was.		Bureaucracy feeds on itself, and is getting bigger. Legislators do not understand requests of ICN management.
People talk about public ownership with private management, but it's too political to decide who would get the contract. Could cut costs of management in other ways.	Different ICN user sites have different prices (for other uses), different guidelines on use, different hours of availability. Need consistent guidelines.		New management would still have to take direction from state legislature, based on whatever the important principles are. Not sure what difference it makes.
State management not a problem; they've done as good a job as anybody could. Not sure that private sector could do better; not sure that buys us anything. General Thompson has done an excellent job of trying to listen to all views. Good job of managing it.	The cost saving report is "paperwork" pure and simple. It would be great to drop it. ICN should review their processes and simplify.		
Committee needs technical advice re what they have; what upgrades are needed; what to do.	Customer service: a lot of steps in process, because it takes so long and is understaffed. Should be able to give "ballpark" cost estimates for services; make simple changes faster; improve billing and billing support.		
Not a big fan of State management of ICN, but what else to do, since we own it? Joint cooperative of Private management and Public investment has been suggested, but			

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
how to establish standards and testing of private management is of concern to me. Situation is similar to current management problems. Not comfortable with manager being political appointee.			
Problem: Access to hard numbers. Need more confidence in ICN management.			
Legislature willing to buy equipment, but not pay the people and expense to support the equipment.			
ICN management has been put into a position where they have to justify their existence.			
Technology Upgrade			
Technology outdated; ICN says need ATM. Should upgrade ICN to ATM technology.	Rapid evolution of technology causes a need for regular updates. This, in turn, causes a need for review, discussion, and funding.	Plan to move to ATM, using MPEG II video at 11 Mbps	Should upgrade the technology as part of running the business. Replace it if needed. Like other state infrastructure, e.g., roads, bridges.
Should "feed the kitty" reinvest to improve the network. Invested so much already, need to continue.	The view that "private industry should provide these services because they have the technology" does not reflect reality in all communities.	Now utilize the 45 Mbps as 39 Mbps video, 5 Mbps voice and data.	Not sure of costs to bring existing network up to a quality telecom network. For example, the fiber on ICN is aerial fiber. We don't use that anymore. Other technology is out of date. A good deal of investment is needed.
If we don't sell it; we'll have to continue to upgrade technology. It's like "pouring money down a rathole".		Bandwidth is what ICN brings; the value is in the fiber. Single mode fiber; 8 fibers in the backbone to each community college with 4 fibers to sites.	They need to upgrade the network or peel back some state government users, to avoid having further construction of new facilities.

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
Re upgrades - in 15 years will it have any value at all? Eventually buried network will be obsolete? How to continue then, when cost of replacing may be excessive.		The private sector has been very strong in lobbying against the creation of added value services.	Big question is how to make it come up with positive cash flow, and how to help legislators understand what they would need to know about technology to understand changes and upgrades needed. It's like having the hospitals ask them which MRI to buy, or which Biotech process to invest in.
Schools need to be kept up-to-date, even as technology is changing every 18 months. I hear from educators and industry that there are better ways to do what we're doing.		The ICN has 5 fiber rings, linked (2 or 3 links to each ring) by ATM switches.	Problem with state owning network is expansion and technology changes every few years. If expansion is necessary, should go to private sector to lease capacity.
On upgrade: has to be kept state of the art, or it will not work. Hard, in a political environment, to maintain that state of the art. Upgrade is needed - ridiculous not to.		The ATM platform will help by reducing video to 11 Mbps (MPEG II), and by generally moving from a circuit switched to packet environment.	
There was no value unless network was built out (phase 3)			
Should have done upgrade this year. Will be bottlenecks in switching, need ring technology to add capacity. People fear that additional investment in fiber may be a mistake if new technology makes it obsolete. But I think it is the right technology; MW and Satellite are not as good, and more expensive. Fiber is not going to become obsolete. Need to keep investing in the technology we have, and we need the huge pipeline that's been proposed.		All fiber is buried. State right-of-way for fiber was free.	

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
Continual capital investment — never confident of value received.			
It is possible that 2-way TV might not be the wave of the future for education; maybe internet and computers will suffice. But can't tell that yet.			
I don't feel comfortable with the technology upgrade that has been proposed. Technology is changing so quickly. I'm not sure we need to upgrade, if ICN is not being fully utilized now.			
Rates			
Need to include in any sales contract a requirement for low rates to schools; lift rate caps for services to other users.	Network has been reliable, available, cost-effective. Every year we do a study of outside alternatives; can't beat ICN rates for video.	[rates] are paying for operating costs. <u>Not</u> paying for depreciation, debt service. Chapter 8D says to cover only operating costs.	ICN video rates are too low for us to compete with. Re: Internet: our company lost 20-30 customers (schools) to ICN in past 4 years. Difficult to compete.
ICN would have to raise rates to other users; very difficult without subsidies to community colleges.	Cross-charging between department, agencies for use of each other's video rooms is a bone of contention.		Big question is how rates are created. State does not use taxes and depreciation in setting rates, like we would; must only use operating costs. Makes it hard to compete.
ICN undercuts private rates for voice and data. Privates have lowered their rates now, but ICN has lower cost (tax issue).	The \$5 rate for video was set as a "guess", and a bad guess at that. Now we need to make up the difference with voice.		Expanding to voice and data services troubled us greatly; that is the nucleus of business to our customer base. We can't compete with a tax-subsidized state government competitor for voice and data services.

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
<p>Some legislators believe they could raise rates to cost quickly.</p> <p>My concern is that if the ICN moves to market based rates, schools will drop off.</p>	<p>Billing is a huge problem for all ICN services. Not enough billing staff in ICN.</p> <p>There is no good way to do special billing deals when cross-charging for use of a video room. It is only a few dollars. Also should have the ability to add a "listen-only" site at a lower price.</p>		<p>Similarly, we fought remote dial up access for Internet services. 98% of our members are Internet providers. Expansion of the Users said that all library users could dial up free Internet. That is potentially every citizen in Iowa. Our companies have spent money on building their networks, and if ICN takes away business through unfair competition, rates for other customers have to go up.</p>
<p>Rates – we will have K-12 subsidy no matter what. Voice and data users, and video for non-school use, should be priced properly. The issue of government competing with private industry bothers me.</p>	<p>Government users are "subsidizing" the education users.</p>		<p>Growth coming from State agencies' data applications. Rates are better and service is equally good.</p>
<p>Rates—I don't like to see any business not cover cost. Rates have to be based on value for service received, with a fair return for service provider.</p>			<p>For video, voice, data services, we can't compete with cheap rates of the current subsidized services. For example, a private company can hold conferences that include training as "education" and get cheap ICN rates. Taxpayers should not be subsidizing private companies like that. If the network is upgraded, put cost of that into the price. That by itself would go a long way to control who uses it and even out the competitive field.</p>
<p>If we want to encourage use, we have to keep rates for schools low. The irony is that the small schools were the ones we were trying to help, and those are the places where budgets are continually cut. If prices rise too much, they won't use it at all. However, could let voice/data/internet rates rise to market rates.</p>			<p>Cost of the 100 people who maintain it is not counted in costs of ICN. What does it really cost?</p>

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
The technology of private companies is better now than it was four years ago, while ICN is aging. So ICN is losing customers to them anyway.			We are prohibited from charging lower rates to the state users; we would need a change in state law to permit that type of discrimination.
Subsidy			
Get commitment from company that buys it to provide video service to schools at low rates.		Must charge flat fees across the state. ICN can do some cross-subsidization; e.g., 800 service, voice and data subsidize video	The state is subsidizing the educational uses now. That should continue. Although the \$5 per hour for video rate is somewhat ludicrous. If the network were privately administered and owned, Iowa could also take advantage of the Federal Schools and Libraries Fund.
Think Regents (Universities of Northern Iowa, Iowa State, Univ. of Iowa), which have 85% of students in state, are getting a free ride on ICN—subsidy of community colleges and Univ.			State should put the appropriations process in the educational appropriations bill. Identify subsidies for ICN Teachers Books, etc. Then legislature can compare this with other needs in education, and make choices about what to fund.
Subsidize all but telemedicine. Rather than subsidize ICN; price it at market levels, and provide subsidy directly to schools.			As to subsidies for schools, that is up to state, private industry should not decide. They decide how much to set aside for that purpose, and do it.
The overall subsidy money will stay the same. Moving this expense to the Educational Department is not the answer; need to keep it in the sunshine and have everybody know what is being spent.			No way this thing is going to have positive cash flow, not at \$5 per hour. Fund it as part of education budget in state. Find out: how much do you need for education? Then subsidize it.

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
Consider subsidy direct to schools, like Iowa School Technology Fund (to buy classroom computers). It has \$30 million per year with no expiration date. Take some of that money, or increase the level of funding there and use it for this.			
Need to take a look at subsidizing higher Ed. What is ability of universities to pay?			
Will continue to need appropriation from legislature, particularly for K-12.			
Must continue to support education. It is unrealistic to say we won't subsidize it, for school use, and to some extent, for higher ed.			
Primary Goal			
Need to keep original goal: distance learning to schools.	ICN is used for "mission critical" applications of departments. Departments need ICN to provide more, better access to the Internet.		Keep it for state and educational uses.
Started with Education, then moved to part 3 expansion.	Have regular department meetings using ICN services -- very useful.		In '97, the industry attempted to contain ICN to its original mission: K-12 education.
Educators feel more comfortable with ICN because it is secure, not like Internet. Was recently told that the Internet is not reliable and secure.	Use Internet from ICN a lot; it is used for Federal Government policy search, for grants search, for own web site and for email, for newsletters and bulletin boards for their own customers.		We are in favor of ICN for educational purposes. K-12, and higher education too, although the latter is business we would get otherwise, and normally do, in other states.
Government built this network to save Education. No one questions the rural area needs and applications for ICN.			We don't object to it providing interactive video to K-12 schools. Private industry had begun installing interactive video facilities, but that business has not grown because of ICN's presence in that market.

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
Need an incentive so that ICN provider would target schools.			Restrict it to educational uses – strictly educational. No further expansion of network, services or users.
ICN needs to focus on their mission: education. I get the impression they are operating a utility and education is one of the users. Education doesn't get as high priority as it should.			We've said, do telemedicine, Distance Learning, libraries, schools. State decides how much they should spend on that per year, if they decide that is good public policy. Leave it at that. Ok to own and operate for those purposes.
Original purpose K-12, then added Higher ed. Then it became clear how expensive it was going to be, and we added other gov't uses to help pay for it.			We have no problem with ICN for educational purposes. We don't think it should go beyond that.
Reason it was built was to help rural schools. I come from a rural district, and they will get a great benefit from ICN.			
Demand for Services			
Utilization is low on the distance learning. For example, in October of this year, my local school had no regular classes on the ICN, and only 2 special class periods during the month. As a result of low utilization, ICN has had to add voice and data applications to try and get the usage up. Do we increase utilization to improve return on our money, or sell it?	All ICN education and training is live (video). No web based training at present.	Public libraries are now coming on line. They are very excited about coming on line.	Definition of higher Ed is too broad. For example, a private company can do a training session, and that is called higher Ed.



Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
Problems: I'd like to see more people utilize the service. I'm an advocate of the system, and I think that with Phase 3 we will really see the benefit.	National Guard is not able to use ICN for much training at present because need to meet in person only one time per month, and at that time they are all in one location anyway. Would be a good candidate to lead ICN in web-based training.	Some communities are studying or implementing forms of community networks, based on such things as linking schools or adding to fiber-based traffic control systems.	Problems with expansion of users' list. Open free dial up access from home, for students. Professors and staff, and alumni get to dial in; hard to compete with that free service.
Teachers with 20 years experience find it hard to learn. Need to find a way to make it popular and get kids to try it.	Users are getting tired of justifying their needs. It is an annual event. It was a major effort with 461 study. Now it's one more rehash.	In schools, there is seldom, if ever, a technology coordinator as a stand-alone job. The function is done by a teacher, school librarian, or principal.	Need to build on helping schools use it. Administrators don't know how. Classrooms are not set up correctly. E.g., not like Minnesota, that has state law that requires full presence classrooms (multiple monitors; one for each site, and full-switched audio). K-12 average 1.5 hours per day.
Educators feel more comfortable with ICN because it is secure, not like Internet. Was recently told that the Internet is not reliable and secure.	Policy-makers do not seem to understand the importance of the Internet.		Refine definition of authorized users to make sure they are related to original purpose: education. If redefinition of users is done right, the result will be reduced traffic on the network and allow capacity for educational purposes. Expansion would not be necessary.
Two educators told me they did not like ICN video for teaching. Interested in hearing about Internet learning.	Not much work being done in Iowa on web-based training for teachers. Iowa is behind, probably because of the need for education leaders to politically defend where they stand on ICN.		Pare it down, take it back to original goals, fund it as part of education, set goals, and keep it at that. Get departments off it if need be to do that.
Rural schools should offer a full menu: video, Internet, data, voice.	Legislators do not see ICN as an integrated line of services -- video, data, Internet, and voice		
Classroom people have to be trained, but that is not the major problem. Getting students into the room on a regular basis is the problem. How to do that?			
Schools still in learning process. Need teacher resources.			

Policy Officials and Policy Staff	Users	ICN Staff	Private Industry
Faculty not using it. Lack initiative -- Why? What it would take to generate interest? Scheduling problem (40 mins Vs 50 min classes). What is normal standard?			
Utilization is a slow process. It takes a year or so to get a school up to speed on using it more.			
K-12 beginning to "get it" now.			
But lots of schools apparently are not making much use of it. That gives me concern, re the original proposition that we needed it so badly. Can Internet suffice? Do we really need our own network? Why is it underutilized?			
Line of authorized use stops at school building, not at the home of teachers and students.			
Other Issues			
Stop bickering; get industry experts on board the ITTC, to offset management opinion.	ICN is brought to one building in a school district. It is up to the school district to address the access from the other schools in the district.	Each year, agencies submit a savings report to government, but agencies are reluctant to show full savings because afraid will cut department budgets.	Privatize, and get out of competition with us.
Make colleges stay on network; no cherry picking!	Legislators don't understand. They didn't grow up using [technology and the Internet] in school.	The legislature of Iowa should be thinking of how to use ICN for economic development.	
	Users don't have the time or the money to compete with paid lobbyists (on ICN funding, deployment and use issues)		

Appendix C. E-Rate Discussion

The Universal Service Fund, originally developed to ensure affordable consumer access to basic telephone service, was expanded under TCA96 to subsidize a special discounted rate for educational and rural health care purposes (subsequently nicknamed the "E-Rate"). As a result, service providers will be eligible for subsidy payments when they offer discounted rates to elementary and secondary schools, public libraries and rural health care providers for telecommunications services, Internet access and internal connections.

The Act left the size of the discount as well as the minimum level of telecommunications service for schools and libraries to be decided by the Federal Communications Commission (FCC) after a recommendation by the Federal-State Joint Board, a group comprised of three FCC commissioners, four state public utility commissioners, and one state consumer advocate.

Telecommunications providers serving schools and libraries are to be reimbursed for these discounts through the USF, which will be made larger than its current size.

Telecommunications carriers' assessments paid to the Fund were to be increased by up to \$2.25 billion per year to support the discounts to schools and libraries.¹³ Special application and auditing processes, including self-certification and third party review, were established.

In November 1996, the Joint Board issued its implementation recommendations to the FCC. The recommendations included provisions for discounts to schools and libraries ranging from 20 percent to 90 percent, based on ability to pay. The highest discounts are to be provided to schools with a high proportion of students either served by or eligible for the federal school lunch program, as well as schools and libraries located in rural areas.¹⁴ The schools and libraries' discounts apply to any available telecommunications service, including transmission of voice and data; inside wiring (or wireless connections) of school classrooms; and Internet services.

On May 7, 1997, the FCC implemented Section 254 of TCA96 described above by establishing administrative rules to govern Universal Service. The discounts were to become available to

¹³ This number was later reduced to \$1.3 billion. As of December 22, 1998, the Schools and Libraries Corporation (SLC) had sent out three waves of commitment letters to more than 3,300 institutions, totaling \$174 million in discounts. (*Communications Daily*, December 9 and December 28, 1998)

¹⁴ As of December 1998, 33% of the funds committed by the SLC were to schools and libraries in rural areas, which is higher than the figure of 22% of funding that normally goes to rural areas under existing programs. (*Communications Daily*, December 9, 1998).

schools and libraries on January 1, 1998. The FCC rules adopted the Joint Board recommendations, with some additional features. For example, the FCC created incentives for each state public utility commission to establish a similar discount program within its state. In the same order, the FCC set out methodology for certifying an entity for the discounts. Each institution applying must draft a technology plan covering a period of three years. After institutions have satisfied the technology plan and inventory requirements, they must complete and submit a discount program application to the School and Libraries Corporation.

Following submission of the application, each institution must prepare a request for proposal (RFP) for any services that it wishes to purchase from a supplier. Discounts are established as a percentage reduction to the telecommunications service provider's price to the institution. The discount rate for schools is based on the percentage of students eligible for participation in the national school lunch program, and whether the school is classified as rural or urban. The discount for libraries is based on the percentage of students eligible for participation in the national school lunch program in the public school district in which the library is located. Schools and libraries located in metropolitan counties, as measured by the Office of Management and Budget's Metropolitan Statistical Area (MSA) method, will be designated as urban.

Discount Matrix for Schools & Libraries

Percent of Students eligible for national school lunch program	Urban Discount (%)	Rural Discount (%)
0 - .99	20	25
1 - 19	40	50
20 - 34	50	60
35 - 49	60	70
50 - 74	80	80
75 - 100	90	90

On July 18, 1997, the FCC issued an order in which it agreed to a proposal by the National Exchange Carriers Association (NECA) for interim administration of the universal service fund under three separate corporations:

- The Universal Service Administrative Company (USAC), to collect funds from service providers and to reimburse them for discounts;
- The School and Library Corporation (SLC), to manage applications for school and library discounts; and

- The Rural Health Care Corporation (RHCC), to operate the rural health care discount program.

Following are excerpts from the FCC's Summary of Section X of its Report and Order in the Matter of Federal-State Joint Board on Universal Service, CC Docket No. 96-45, released May 8, 1997, and subsequent orders:

Eligible Service Acquirers

Schools

Elementary and secondary schools as defined in the Elementary and Secondary Education Act of 1965, whether public or private, but non-profit and with no more than \$50 million endowment (§552, 554); includes individual schools, school districts and consortia of schools and/or school districts (§425 n.1087).

Libraries and Library Consortia

Eligible for assistance from State library administrative agency under the Library Services and Technology Act; non-profit, funded as independent entities (completely separate budget from any institution of learning) and not international cooperative associations (§552, 558, 560); includes individual library branches, library facilities, library systems and library consortia (§425 n.1087).

Eligible health care providers

Defined under TCA96 as providers furnishing health care to persons who reside in rural areas within a State. The law says that "health care providers" means: post-secondary educational institutions offering health care instruction; teaching hospitals and medical schools; community health (including mental health) centers, local health departments or agencies, not-for-profit hospitals; rural health clinics; and consortia of health care providers consisting of one or more of the entities described above.

Eligible Services

Telecommunications Services

All telecommunications services for voice or data commercially available to schools and libraries (for example, ordinary telephone lines for calls to teachers in classrooms, Integrated Services Digital Networks lines (ISDN) to connect to information services, private lines between eligible acquirers and paging services for security officials) (§431-32 & n.1117, 434; Errata); maximum flexibility to choose among types and levels of service (§431-33, 457).

Internet Access

Basic access, including telecommunications (data links) and additional (associated) services, such as information services needed for classroom access to Internet (§436, 439-41 & n.1145, 589); eligible associated information services include (1) protocol conversion, (2) information storage, (3) information transmission as common carrier, (4) information transmission as part of gateway to information service (not involving



generation or alteration of content but possibly including data transmission, address translation, protocol conversion, billing information, introductory information content and navigational systems not affecting presentation to users), and (5) e-mail (§439, 444); other information content or information services, such as voice mail, are not eligible (§441, 444-45).

Internal Connections

Installation and maintenance (§439, 450-53, 460, 589; §54.500(a)(2)); must be necessary to transport information within school (all the way to individual classrooms) or library, including routers, hubs, network file servers, wireless local area networks (LANs) and software needed for operation of file servers (§459-60); no specific restrictions on size (type) of internal connections network (§460); personal computers (unless used solely as switches or file servers), storage functions on file servers to supplement personal computers on network, fax machines, modems and asbestos removal not eligible (§459-61).

Bundled services

Eligible Internet access may be acquired as part of a combined procurement (bundled) with (1) content otherwise available free of charge, (2) content separately available (but only supported at difference between bundled price and price for content alone) and (3) minimal content (if not offered separately and affirmatively shown that is more cost-effective means of securing basic conduit access, but only non-content portion supported) (§445-47); eligible internal-connections services must be priced separately, with charge for eligible services reduced by proportional amount of price reduction for joint acquisition (§462 & n.1206); provider of internal connections may not force selection of particular provider for other services, even if internal connections previously provided free of charge (§463)

Some telecommunications services are not eligible for discounts, for example, content services, training and Software. In addition, certain internal connections or products/services are not eligible, such as personal computers, fax machines, voice mail, modems electrical wiring, and cable modems.

Issues relating to state telecommunications networks

Under the USF rules, a state telecommunications network refers to a state government entity that takes telecommunications offerings from multiple service providers and makes packages of offerings available to schools and libraries that are eligible for universal service support, or a state government entity that provides, using its own facilities, telecommunications offerings to such schools, libraries and rural health care providers.

With respect to telecommunications services, under the FCC's rules a state telecommunications network can be a service provider or an applicant, but not both. If a state network furnishes telecommunications service to eligible entities it will not be eligible to receive direct reimbursement from the Schools and Libraries Universal Service Program, because a state network is not a telecommunications carrier as defined by the Commission's rules. Only common carriers can receive reimbursements for providing telecommunications services to eligible entities.¹⁵

This FCC rule is under review. On May 8, 1997, the FCC released an order stating that the definition of "telecommunications service" is intended to encompass only telecommunications provided on a common carrier basis. On December 30, 1997, the FCC released an order on reconsideration in which it concluded that state telecommunications networks do not meet the definition of "telecommunications carrier" because they do not offer telecommunications services on a common carrier basis. State networks may not, therefore, receive direct reimbursement for the provision of telecommunications services to eligible schools and libraries.

On February 4, 1998, the ITTC filed a letter asking the FCC to determine that ICN is eligible to receive reimbursement from the universal service administrator as a provider of telecommunications services to schools, libraries, and rural health care providers. Comments were filed March 4, 1998, and reply comments on March 16, 1998. It is believed that a decision on this item is imminent, although the relocation of the FCC and the commissioners' offices to a new facility in early 1999 may delay decisions on an array of matters, including this one.

If the FCC's current position holds, under State ownership the ICN would not qualify for reimbursement from the USF for discounts provided to schools and libraries. The ICN staff estimates that if it were eligible, ICN would receive reimbursement totaling \$1.2 million for discounts to schools and libraries. Even though ICN is not be eligible under FCC rules for reimbursement of that amount for discounts it provides, Iowa schools and libraries could still apply for discounts from access providers, who would then receive reimbursement from the USF for services they provide. Based on estimates from the ICN staff, these reimbursements would total over \$700,000 annually on a statewide basis.

¹⁵ Internet services are an exception and state networks may apply for funding. However, this remains an area of controversy among FCC Commissioners and members of Congress.

Changes to the procedures

During the time the FCC has been attempting to implement the new Universal Service Fund provisions, the item has been quite controversial. Senate Commerce Committee Chairman McCain (R-Ariz.) and others have been critical of the FCC's efforts. On June 12, 1998, in response to pressure from Congress, the FCC revised the funding year for E-Rate, froze funding at current levels, revised disbursement rules so the most disadvantaged schools and libraries get priority, and made other administrative changes. With these changes, the funding year was modified to a July 1-June 30 schedule. The first funding year will be extended, and will run from January 1, 1998 through June 30, 1999. In addition, the annual funding of E-Rate will be reduced from 2.25 billion to 1.3 billion.

In August of 1998, House Telecom Subcommittee Chairman Tauzin (R-La.) and Senate Communications Subcommittee Chairman Burns (R-Mont.) said they planned to introduce legislation to abolish E-Rate discounts of Telecom Act. Their bill would have replaced the E-Rate with an NTIA-administered grant program financed by 1% of funds collected from current 3% federal telephone excise tax, while repealing the other 2%.

Representative Tauzin has been critical of the FCC for its handling of fees for universal service and schools and libraries since such fees began to appear on customers' bills. He is concerned that the Commission has usurped the taxing and appropriation authority of Congress, raising money for schools and libraries and spending it without appropriate and timely congressional oversight. The Commission, he said, has "done a lot of backpedaling" on the issue, encouraging carriers to hide the "tax" and setting up a program to determine which schools are funded.¹⁶ Some education groups have had serious questions about the Tauzin/Burns approach; and there are constitutional questions as to whether money generated from taxes can be spent to support private or parochial schools, which are covered under the E-Rate plan. Congress adjourned without enacting any new E-Rate legislation. The process begins anew in January with the new Congress.

Slow E-Rate disbursements criticized

In mid-September of 1998, House Commerce Committee Chairman Bliley (R-Va.) indicated he felt that the FCC, working in conjunction with Vice President Gore, got the congressional intent on E-Rate wrong. "As a result, all that the FCC has given us is higher phone rates, new

¹⁶ *Communications Daily*, August 3, 1998.

bureaucracies and court challenges. After 2-1/2 years of attempting to implement this program, the FCC has failed to give a single school or library a discount on telecommunications services as Congress intended.”¹⁷ Education Committee Chairman Goodling (R-Pa.) made the same point, saying that 2-1/2 years after Telecom Act, “not a single school has received one dime from the E-Rate. Fortunately, even without the E-Rate, access to the Internet has quadrupled between 1994 and 1996 and now roughly 80% of schools have access to the Internet.”¹⁸

As the US Congress adjourned in 1998, the subject of E-Rate continued to provoke controversy in Washington. The criticism, especially from Chairman Bliley, is expected to escalate further in the new Congress. Speaker-designate Hastert (R-IL) will be vacating his seat on the House Commerce Committee, and the loss of his activist role on telecommunications issues may well change the dynamics of the committee.

¹⁷ *Communications Daily*, September 17, 1998.

¹⁸ *Ibid.*



Appendix D. Issues Beyond The Scope of This Project

The primary objective of this project was to review and evaluate various options for the ownership and management of the Iowa Communications Network (ICN). During the course of Ultrapro's work, several items were identified in the previous sections that are outside the scope of this project, but which are documented here in the interest of improving service to ICN users or to improve the overall ICN operation. These items are as follows:

Develop and Implement Quality Measures That Track the Performance of ICN's Services.

Quality measures (such as mean time to repair, or billing errors per cycle) are used on a regular basis in private industry. The Ultrapro team was unable to obtain any similar reports for ICN services. To improve its operation, ICN should have comparable reports for all major operational areas (ordering, provisioning, billing, customer care, payments processing, network maintenance, and network planning).

Develop and Implement a Regular System of Customer Satisfaction Measures

These measures are similar to those mentioned above in item A, except that they are focused on ICN's customers and their overall level of satisfaction with ICN's services. Again, such measures are readily available in private industry, and should become a regular ICN practice.

Develop and Implement a Series of Regular Operational Audits of ICN

While financial and cost audits have been done on ICN, Ultrapro was unable to find current operational audits. There should be an annual series of ICN operational audits to look at items such as ICN ordering, provisioning, billing, trouble receipt and clearance, the handling of payments, the effectiveness of all types of training, and the implementation of the ICN's capital program.

Develop and Implement Measures and Incentives to Encourage Efficient and Effective Use of the Network By ICN Users

In a competitive environment, business customers, through the profit motive, are motivated to become more efficient and effective in the use of communications services. Ultrapro believes that ICN should develop and implement measures and incentives to encourage efficient and effective use of its network by ICN users. For example, ICN users who implement video services using compression technology instead of full motion (39Mbps or 11Mbps) facilities, thereby saving ICN bandwidth, could be rewarded via an expanded budget to support their implementation of premises – based compression technology.

Appendix E. Process for Determining the Number of ICN Classrooms per Capita

The use of video conferencing in Iowa schools for distance education was a significant part of the original intent of the ICN. The plans to deploy these capabilities in the schools as the ICN is extended to a given area are an important element in achieving the educational goals of ICN.

Video classrooms in the schools are comparable to the computer laboratory model for schools in the way that individual classes share use of the rooms. The issue is one of how to get started in a school district and each school. The typical approach, consistent with availability of funds, is to deploy one such specialized classroom in each school building. As usage grows, an additional specialized room may be added in a particular building; this typically depends on the number of students in the building.

A reasonable estimate for statewide purposes would be to add a second specialized classroom (video classroom) in buildings above 500 students. For the state, the formula would then be:

$$\text{Video Classrooms Per Capita} = \frac{\text{Number of Schools} + \text{Number of Schools over 500}}{\text{State Population}}$$

1

