



# CIRF

**Converging Industries Research  
Foundation**

*Practical Solutions for Communications Policy*

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**Redefining Universal Service: The Cost of  
Mandating the Deployment of New  
Technology in Rural Areas**

*Executive Summary*

**July 18, 1994**

*Presentation at the July 1994 NARUC Meeting,  
San Diego, CA*

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# Redefining Universal Service: The Cost of Mandating the Deployment of New Technology in Rural Areas

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## **Background on the Telecommunications Industries Analysis Project**

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### **Informed Policy Debates**

The goal of the Telecommunications Industries Analysis Project is to provide information to support the development of alternative communications policies to meet the needs of stakeholders in an environment that includes competitive and non-competitive markets, federal and state regulatory jurisdictions, and a proliferation of new services made possible by technological advances. The purpose of the project is to produce research and analysis which will assist policy makers in making informed decisions.

### **Broad Representation on Project**

The project is a neutral forum of communications industry stakeholders exploring multiple viewpoints of selected issues. The current forum includes local exchange carriers, interexchange carriers, materials and equipment manufacturers, and regulators. The project actively seeks expansion of this forum to include other communications industry representatives such as competitive access providers, cable television companies, computer companies, electric power utilities, and publishers.

### **Development of Alternative Policies**

The project members have developed a database and computer software models to analyze issues. The existence of a database and computer software models may not resolve differences of opinion concerning what the data or the results of the modeling process mean. It does, however, allow one to concentrate on underlying issues rather than on data sources by providing a common language. All data, analysis methods, and results are public.

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# Redefining Universal Service: The Cost of Mandating the Deployment of New Technology in Rural Areas

## *Executive Summary*

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### **Public Debate over Universal Service**

If universal service is an acceptable policy, then how is it defined? For some people it's current telephone voice service; for others, it's interactive broadband services. It all boils down to this: What level of service is society willing to guarantee to all its members? How is society better off as a whole through its provision? Should it be mandated, what will it cost, and who will pay for it?

### **Mandating Technology for Universal Service**

Current government actions are accelerating pressure to examine mandating technology in rural areas and nationwide. Some of these are as follows:

- Legislation, such as *The Rural Electrification Loan Restructuring Act of 1993*, and proposed telephone legislation during 1994.
- The Clinton administration's National Information Infrastructure (NII) initiative to promote the physical deployment of an advanced communications network.
- Various state and local initiatives.

This paper focuses on the rural traditional telephone industry because legislation exists and public data are available for analysis. However, other telephone companies and industries (cable and broadcast television, electric power utilities, computer, etc.) are all affected by these same issues.

### **Structural Shifts Accelerate Debates**

Two major structural shifts occurring simultaneously have accelerated the debate about mandating technology for universal service:

- The transition from a monopolistic to a competitive environment.
- Technology is moving the telecommunications industry from the role of single telephone service provider to that of multi-service provider.

### **Traditional Viewpoints and New Technologies**

If the technologies were not changing, then policymakers would likely examine subsidies in terms of providers, but would not change what's offered. If markets were not changing, then policymakers would most likely wait until a technology was widely accepted before redefining universal service. The problem is that both markets and technology are changing at the same time. The result is confusion over what can be mandated and what should be market driven. There are arguments for each side. But a major point that cannot be ignored is who will pay if technology is mandated?

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# Redefining Universal Service: The Cost of Mandating the Deployment of New Technology in Rural Areas

## *Executive Summary, cont.*

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### **Who will Pay for Expanded Universal Service?**

**Figure 1** shows that providing broadband services to 100% of rural lines will increase the cost by \$63 per month per rural line, even if deployed over a 20-year period. The government could mandate deployment and subsidize the companies or individuals so that the services are affordable. However, mandating new technology deployment, while at the same time promoting competition, appears to be promoting contradictory policies. If subsidies are provided to companies, as is done today, so that over-all prices are kept low, competitors will be discouraged from entering the market. Allowing market demand to drive the deployment of new technology should reduce the cost of broadband services. **Figure 1** shows that mandating broadband technologies nationwide in rural areas will be costly.

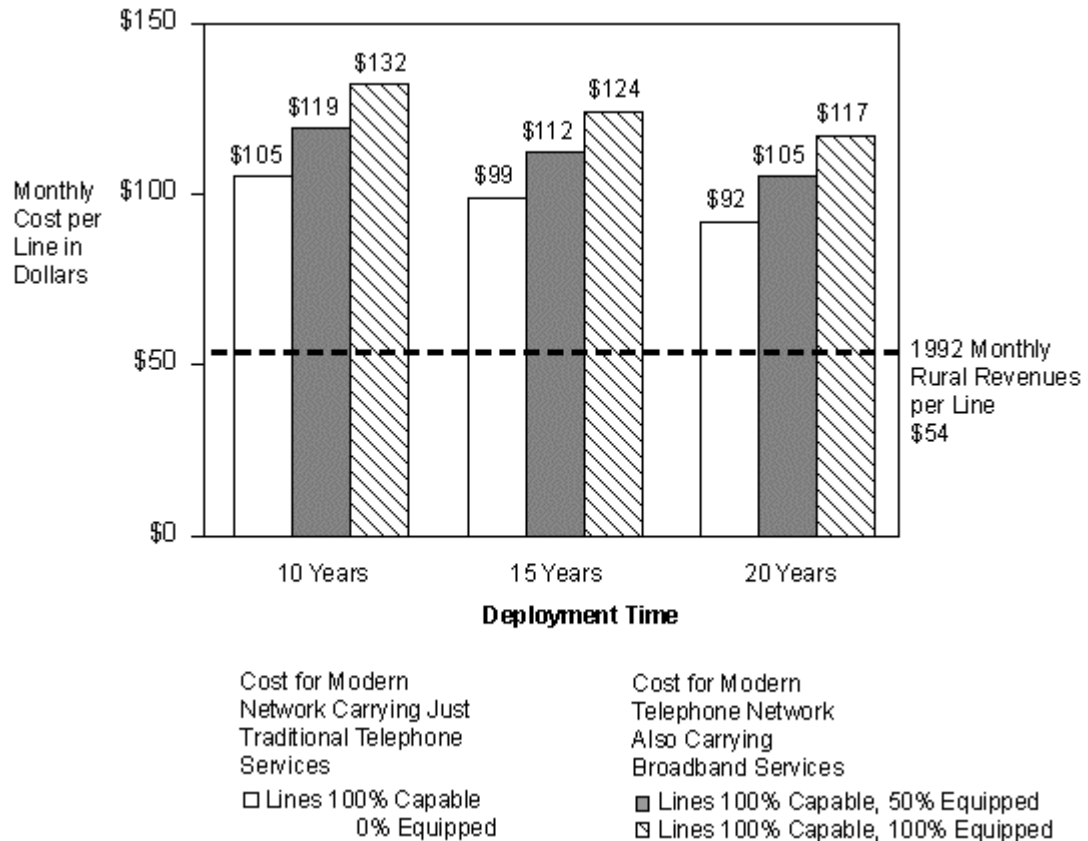
### **What About the Information Have-Nots?**

Generally, when new technology is introduced (e.g., home computers, compact disk players, VCRs), prices for products using that new technology are high. Thus, in the early years of the developing broadband market, there may be information have-nots based on the income and education characteristics of a household.

One approach to defining universal service is as follows: When a service becomes part of what's required to conduct daily business or personal activities, this indicates that it's time to include this service in the universal service definition. In the past, basic service definitions changed after the technology or the services have been widely accepted (i.e., Touch-tone service is now basic in some areas).

# Redefining Universal Service: The Cost of Mandating the Deployment of New Technology in Rural Areas

## Executive Summary, cont.



Note: Assumes a 2.35% annual growth in nationwide access lines. Each year the total number of lines equipped to provide broadband services increases by 5% of the total lines. Cost per line includes overheads and other costs. 1992 rural telephone revenues derived from local exchange carrier operating revenues (including basic service, state toll, and access). Nationwide, rural costs per line are higher than urban costs.

Another way to look at the cost of broadband deployment is to examine the cumulative investment for the entire network – including loop, switching, and interoffice transport not just for rural but for urban as well. The urban investment costs are significantly below the rural costs, and the urban network modernization costs (100% capable, 0% equipped) fall below current national telephone revenue streams after a few years.

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**Figure 1:**  
**1992 Rural Business and Residential Customers: Costs and Payments**

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## *Executive Summary, cont.*

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### **Government Mandated or Market Driven?**

Should the cost of publicly mandated services be recovered from the telecommunications industry, or should the cost of public services continue to be recovered from the general public through taxes?

#### *Government mandates:*

- Require assignment of risk to consumers and/or to taxpayers.
- Allowing the market to drive this process may take more time.
- The emerging competitive market for broadband services makes a mandate too risky for one company to undertake in a multi-provider environment.

#### *Market-driven process:*

- Non-traditional approaches: potential for niche markets, joint-ventures, and innovative solutions.
- Places the burden of risk on the party that stands to receive the benefit, and consumers demand for feature and functionality drives market.
- Deployment of new services is in line with the overall revenues generated by the market.