

A REVIEW OF THE CURRENT STATUS OF THE
REGULATION OF SHARED TENANT SERVICES

Vivian Witkind Davis
Senior Research Associate

Michael D. Wong
Senior Research Associate

Bryan K. Clark
Graduate Research Associate

THE NATIONAL REGULATORY RESEARCH INSTITUTE
2130 Neil Avenue
Columbus, Ohio 43210

August 1985

This paper was prepared by The National Regulatory Research Institute (NRRI) with funding provided by participating member commissions of the National Association of Regulatory Utility Commissioners (NARUC). The views and opinions of the authors do not necessarily state or reflect the views, opinions, or policies of the NRRI, the NARUC, or NARUC member commissions.

TABLE OF CONTENTS

Section	Page
I. Introduction	1
II. The Development of Shared Tenant Services (STS).	2
III. Some Issues in the Regulatory Treatment of STS	5
Regulation of STS As Separate Entities.	6
Regulation of the Relationship with the Local Telephone Company.	12
IV. Status of Commission Regulation of STS	20
Action At the Federal Level	21
States Where No Formal Action Is in Progress on STS .	26
Generic Proceedings Underway in Two States.	28
New Legislation May Affect STS in Some States	29
Several States Addressing Issue in Resale Dockets . .	29
Southwestern Bell Actions	30
V. Tariff Elements in STS Proceedings	31
VI. Summary.	36
Appendices	
A. Technical Features of Smart Buildings	39
B. Locations and Features of Some Existing and Planned Smart Buildings.	44

LIST OF TABLES

Table		Page
1	Status of State Commission Action on STS	22
2	Elements of STS Tariffs.	32
3	Common PABX Systems Used in Smart Buildings.	41
4	Common Station Telephone Features.	42
5	Locations and Features of Some Existing and Planned Smart Buildings	45

I. Introduction

Multi-tenant buildings offering advanced communications services are being built or proposed from Alaska to Florida. These buildings are often called "smart buildings" and the advanced communications services they provide are referred to as "multi-tenant services" or "shared tenant services (STS)."

"Smart" buildings are individual buildings or groups of buildings equipped with advanced telecommunications systems. The systems may include such services as data processing, environmental control services, and pooled local telephone services. They are linked to each user's communications equipment by a local area network using coaxial or fiber optic cable. The systems may also be integrated with microwave and satellite networks to supply long-haul and wide-band communications.

The prototypical smart building is a multi-tenant office facility offering STS through a private automatic branch exchange (PABX) and mainframe computer system. Hotels, hospitals, campuses, industrial parks, and airports are other examples of facilities that may use the smart building concept. High income residential communities also are candidates for advanced telecommunications services and information management. Appendix A discusses the technical features of smart buildings.

Like other emerging forms of competition in telecommunications, smart buildings pose difficult questions for state regulators. Many state commissions have now begun to reach policy decisions on smart buildings. Unless the FCC preempts state regulation in this area, as called for in a petition by IBM for a declaratory ruling,¹ other states may need to take action.

¹International Business Machines Corporation, "In the Matter of State Regulation of Shared Telecommunications Services Systems," Request for Declaratory Ruling, before the FCC, May 16, 1985.

This NRRI paper explores what smart buildings are, the reasons for their diffusion, the status of commission action in this area, and some of the policy issues facing regulators.

II. The Development of Shared Tenant Services (STS)

Smart buildings exist or are planned in at least twenty-one states. Appendix B contains a table listing locations of eighty-two such buildings or groups of buildings as of the fall of 1984. The list was culled from newspaper and magazine clippings contained in Ameritech's request for a waiver from the prohibition in the Modified Final Judgement of participating in certain aspects of STS arrangements.² Since the table is not the result of a formal survey it is suggestive but certainly not exhaustive. Although each of the projects listed in Appendix B has been singled out as "smart," not all of them offer pooled local telephone service. In many cases such service is prohibited under existing commission rules.

According to the Ameritech document, Illinois and Texas had the most STS endeavors in operation or planned. Each had thirteen such projects. In Illinois, all thirteen were in Chicago, while Texas projects were distributed across the state with the majority in Dallas. New York had ten (all in New York City), and California had seven multi-tenant facilities. Maryland was the location for five smart buildings in the Washington metropolitan area. Florida and Massachusetts had four smart building facilities built or proposed. The District of Columbia, Connecticut, New Jersey, Oklahoma and Oregon had three, and Georgia and Virginia each had two. Seven other states had one each.

Of the fifty-three buildings where the type of customer could be identified from the newspaper and magazine articles, forty served exclusively commercial users; one, residential users; and twelve both

²"Ameritech's Motion for Clarification of the Decree Precluding the Provision of Shared Telecommunications Services", United States v. Western Electric Co. and American Telephone and Telegraph Co., Civil Action No. 82-0192, U.S. District Court for the District of Columbia, January 22, 1985.

residential and business users. Of those serving both business and residential customers, one was a hotel and three were combined commercial and hotel developments. Among the planned developments were whole communities in Harbor Bay Isle, near San Francisco, and Tampa Bay. Developers include United Technologies, Olympia & York and Landmarks Group.³ Ameritech, through its subsidiary SBS Realcom, is responsible for smart buildings in Chicago and Washington, D.C.

TeleStrategies, Inc., a telecommunications consulting firm, has reported that of seventy smart buildings operating in October of 1984, all used a shared PABX to provide basic services.⁴ Other services offered, from most to least available, were long distance telephone resale, shared message centers, shared data processing, shared word processing, shared local facilities, and a shared voice mail system. None provided shared earth station facilities.

TeleStrategies has projected an explosion in the number of smart buildings to about 15,000 nationwide.⁵ The firm estimated an increase in revenues for STS system operators to \$10 billion in 1994 from \$70 million at present, and revenues for equipment vendors to \$2.6 billion from \$182 million. The report predicts that most STS ventures will be implemented for new construction of office buildings in the range of 100,000 to 600,000 square feet. Such buildings comprise 74 percent of total office space, says the report.

The growth of STS is a result of technological advances and the opening up of telecommunications markets to competition. Tenants who otherwise could not afford advanced communications and data services can pool their resources and benefit from economies of scale, using compact PABXs. Not only do they cut costs but they gain access to many more services than would otherwise be accessible. Further, customers whose telecommunications traffic volumes are too low to justify

³Mention of particular manufacturers or suppliers in this study does not imply endorsement by NRRI.

⁴"New Study Details 1984 Shared Tenant Services Marketplace," STS News, Vol. 2, No. 10, Oct. 1984, p. 3.

⁵Ibid.

installing their own communications systems, can benefit from the pooling of traffic of several customers with shared services. Shared services also offer tenants a coordinated approach to meeting their telecommunications needs. Divestiture, more sophisticated technology, and the proliferation of vendors have presented consumers with many more telecommunications alternatives, but small customers may lack the time and experience to plan and realize their communications systems. STS providers take on those responsibilities.⁶

Since customers now often have the option of providing their own inside wiring, developers of large office buildings are faced with the decision of how to provide telecommunications services and what degree of intelligence to wire into their buildings. One observer has divided developers into three groups: "One group is taking a wait-and-see attitude. A second wants it done but doesn't want to manage it. The third group wants to do it and wants as big a piece of the action as they can get."⁷ For those in the third group one motive is likely to be to increase building profits. For those in the second group, building intelligence may be a low-risk way to improve the marketability of their space. They can grant an STS provider the right to provide services in their building and lease them space in the building. Actual contracts for service are then negotiated between each tenant and the STS provider.⁸ For large firms, providers are proving willing to supply services on such a basis. For smaller complexes (under 300,000 square feet) building owners are finding they must assume the risk, but even then a third party will manage the facility.⁹

⁶"Ameritech's Motion for Clarification of the Decree Regarding the Provision of Shared Telecommunications Services", U.S. v. Western Electric Company, Inc. and American Telephone and Telegraph Company, Civil Action No. 82-0193, January 22, 1985.

⁷Gerhard J. Hanneman, president of ELRA Group, Inc., quoted in Kitty Dawson and Andrew Feinberg, "Building Intelligent Offices", Venture, Oct. 1984, p. 91.

⁸David Leininger, Testimony before Kansas CC, Docket No. 141, 975-U, p. 8.

⁹Ibid., p. 9.

Among telephone companies, many are actively pursuing the concept of shared tenant services. GTE and United Telecommunications are both involved in STS ventures. Several of the Bell regional holding companies are moving into STS. U.S. District Judge Harold H. Greene has approved the requests of several regional holding companies to participate in the provision of shared tenant services through their real estate subsidiaries. NYNEX has established NYNEX Business Information Systems. Ameritech is teaming up with SBS Real Estate Communications Corporation, a subsidiary of Satellite Business Systems.¹⁰ Bell South, Bell Atlantic, and Southwestern Bell (SWB) have been given permission by Judge Greene to participate in shared tenant projects through real estate subsidiaries.¹¹ Bell Atlanticom Systems, Inc., a Bell Atlantic subsidiary, has contracted with TDX Systems to supply, install, and maintain communications equipment for shared tenant services.¹²

III. Some Issues in the Regulatory Treatment of STS

Although the interests and relationships affected by STS are very complex, the commission that finds the time is ripe to take on the issue of regulation of smart buildings may conceptualize the issue as divisible into problems concerning the interests of two different groups of end users of local telephone service. The first is tenants in the shared services facility; the second, is users of local service outside the building or buildings and, primarily, the users of telephone company services provided in markets that are monopoly markets. In assessing the interests of tenants, a commission is looking at the issue of whether smart buildings should be treated as independent "public utilities", or as resellers. Whether or not the

¹⁰Henry D. Levine, "Smart Buildings Come of Age," Telematics, Vol. 1, No. 2, June 1984, p. 9.

¹¹"B.O.C. Monitor," Communications Week, March 11, 1985, p. 12.

¹²"Bell Atlanticom Signs \$25M Contract for Shared Tenant Services with TDX," Communications Week, Feb. 25, 1985, p. 44.

commission decides that shared tenant services are subject to regulation in their own right, the commission must also assess the impact, if any, of STS on prices and services for users outside the building and also on the financial well-being of the regulated telephone company, with its carrier of last resort obligations. Many of the issues involved both in the landlord/tenant relationship and the shared tenant services/telephone company relationship have been articulated in cases in Southwestern Bell's service area.

In this section of this NRRI paper we will look first at the landlord/tenant relationship and the issue of regulation of smart buildings as public utilities or as resellers. Rates, service quality, practical considerations and legal precedent are discussed. Next we turn to the relationship of the STS operation and the local telephone company. Problems considered here are the potential for the local telephone company to suffer lost revenues and stranded plant due to STS arrangements, difficulties in local facilities planning that may result, and the use of partitioned switches to avoid STS pooling of local telephone service and the problems raised by the pooling of local service. The discussion does not purport to be either exhaustive or definitive, merely suggestive of some avenues of research that individual commissions may wish to consider. The discussion does not lead to recommendations for any particular course of action, nor the endorsement of any particular point of view. It merely represents a cursory, selective review of some of the many issues in developing a policy towards STS, and presents some of the many opinions on this problem area.

Regulation of STS As Separate Entities

In many states existing statutes may suggest that suppliers of shared tenant services are entities to be regulated in their own right. The full panoply of rate regulation of common carriers may require certificates of convenience and necessity, tariff filings, cost support

filings, annual reports, rate case applications and access charges. In some states it may also require a contribution to support the commission. A commission often has some leeway on statutory interpretation, and statutes can also be changed if that appears to be desirable or necessary. The decision on whether and to what extent to regulate smart buildings as common carriers depends on both theoretical and practical considerations, as well as the language of particular state laws.

In determining how to approach regulation of smart buildings, one option a commission has is to consider making a distinction between resale and sharing. Thus, if an STS provider resold local exchange service for profit, he might be considered a reseller subject to direct commission regulation. But if he merely passed through the costs of local service, he would be a sharer, or in essence merely a provider of customer premises equipment, and not subject to commission regulation. This distinction between resale and sharing is currently in effect in both New York and California, among other states.

Rate Regulation of STS

Regardless of the implications of existing law, a commission will want to decide whether from a philosophical point of view, smart buildings should be regulated. One issue is whether tenants in smart buildings need the protection of rate base/rate of return regulation to assure fair prices and good service or whether a competitive market is developing such that it is in the public interest to foster this competition.

Price regulation with the sole object of protecting tenants may be difficult to justify under the usual rubric of public utility regulation. Although the power of landlords vis a vis tenants has often been a source of bitter controversy, it is difficult to make a case for the regulation of the prices of telecommunications services provided by landlords as they affect tenants. Tenants shop for space, buy what seems to be the best bargain, and sign leases in which

landlords agree to provide space and services at a price. Heat, light, and water, essential services regulated by state commissions, are frequently among the services provided under a lease. Sometimes the landlord agrees to pass through utility costs and rates for such situations under tariffs approved by the commissions. Typical office building leases are effective for three to ten years; residential leases for one or two years or less. When a lease is up the lessor can shop again. A distinction is frequently made between office buildings and residential users, since the latter purportedly have less individual bargaining power. Thus residential rent control is much more common than control of commercial rents.

A commission might have great difficulty determining a fair price for telecommunications services even if it wants to. In an era of rapidly changing technology, prices are no more crystallized than the features of the equipment and services being sold. The goal of economic efficiency might suggest standing back from intervention in the development of what might be a workably competitive market. Thus, insofar as the rate regulation is concerned, an argument could be made that STS should be regulated neither as a public utility nor as a reseller.

Quality of Service Regulation

More of a case can be made for regulation of service quality than of price, particularly for residential tenants, since they have less individual ability to force maintenance and repairs than business tenants. Telecommunications is a new, complicated building service with which developers have had little experience. It is one thing to assure that a stuck elevator will be fixed and may be quite another to guarantee that resources are available to maintain the PABX. On the other hand, there was a time when a building with an elevator was considered a "smart" one. That a service is new and complex may argue for additions and modifications to building codes, but does not, alone, justify regulation by public utility commissions. However, given the importance of well-functioning communications systems to society, there may be a role for commissions regarding quality of service issues.

A tenant is not without legal recourse if a landlord or STS provider does not meet the terms of a lease or contract. In most states a tenant can withhold rent payments and, if necessary, take legal action. However, more serious problems than routine maintenance may come up. Interruption of local exchange service, whether because of an STS provider's non-payment of telephone bills, a transfer of ownership of a building, or bankruptcy of a building owner, may be a justification for commission involvement to the extent that provision of an essential utility service to a group of ratepayers is at stake.

One solution to the problem of assuring adequate service would be to maintain a role for the commission as arbiter or mediator in such cases, although this would put the commission in the position of arbitrating or mediating in a contractual dispute.

The need to assure continuous, reliable local service argues for making provision of shared tenant services contingent on assured access of the local telephone company. This is an issue that may, however, be a bone of contention for the telephone company. SWB has argued that building owners assume that service will be available through the local telephone company if an STS provider ceases to provide it. Thus the telephone company, through its obligation to serve all customers in its certificated area, assumes the burden of assuring adequate service should the STS operation fail to do so.

Practical Considerations

Besides the theoretical considerations, how much a commission chooses to regulate STS may depend on such practical matters as how many smart buildings exist in the state and how fast they are spreading. The proliferation of what could be considered mini-telephone companies might suggest that at most a commission would want to impose simplified procedures with limited reporting requirements. A commission that followed the letter of the law and issued certificates, required tariff filings, and required other reports from STS providers might be able to handle the workload as long

as there were few or no smart buildings in the state. But it would have to think twice about taking on the regulation of a multitude of small entities. For some commissions, limitations on manpower argue for doing nothing for the time being but monitoring the spread of smart buildings. A commission that finds that existing statutes suggest that smart buildings are entities to be regulated may wish to limit the extent of regulation, but still use its regulatory authority as a tool for monitoring the development of this new form of telecommunications service.

Legal Precedent

Whether a smart building is a public utility depends very much on the statutes and case law in the particular state. A 1965 Pennsylvania case provides an argument for the contention that utility services to tenants are not subject to commission regulation. The Pennsylvania Supreme Court ruled that the state PUC could not deny the transfer of electric and water utility equipment to an apartment complex. The Commission argued that transfer of distributing and metering equipment would result in loss of its jurisdiction and thus would be contrary to public policy. The Court ruled that the service was not "to or for the public" under state law, and reversed and remanded the decision. The Court said "Those to be serviced consist only of a special class of persons--those to be selected as tenants--and not a class open to the indefinite public. Such persons clearly constitute a defined, privileged and limited group and the proposed service to them would be private in nature."¹³

On the other hand, the North Carolina commission has found that existing law and precedent in that state forbid it to authorize resale of local exchange service. The Commission remarked that the state supreme court had ruled that the Commission may not grant a certificate

¹³Drexelbrook Assoc. v. Pennsylvania Public Utility Commission
(418 Pa. 430).

of convenience and necessity to a competitor where the existing utility is providing adequate service.¹⁴ The Commission noted that any business engaged in resale of local service to the public is a "public utility" in North Carolina. The Commission said it believed that prudent business practice would dictate the use of metering by a smart building owner to account for usage among the tenants. Any such metering arrangement, said the commission, would bring the service within the definition of a "public utility." Responding to the contention that service to a small number of persons sharing a common interest would not constitute service to the public, the Commission cited another North Carolina case.¹⁵ In that case the state supreme court held that a two-way radio service provided to a group of ten physicians for compensation was a public utility subject to commission regulation.

In deciding whether to initiate price regulation of smart buildings the Texas PUC has ruled that it has no jurisdiction over shared tenant services because they are not public utilities under Texas law. In a decision that Southwestern Bell has challenged in district court, the commission ruled that shared tenant services using new technologies are not local exchange services and thus not subject to commission regulation. The commission said imposing regulation on smart buildings could retard development of new services, to the possible detriment of Texas telephone users:

The Commission is of the opinion that where new technologies arise which can thrive only in an unregulated environment, then regulation should give way to technology, rather than vice-versa. If the new service is not a true utility service and if its provision by an unregulated entity is not prohibited by PURA then the Commission should refrain from attempting to bring it under the regulatory umbrella simply because it has utility-like characteristics--simply put, the

¹⁴Utilities Commission v. Carolina Telephone and Telegraph Company, 267 N.C. 237, at 271, 1966; cited in Docket No. P-100, Sub. 73, North Carolina UC, 3/27/85, p. 4.

¹⁵Utilities Commission v. Simpson, 295 N.C. 519 (1978); cited in North Carolina UC, Docket No. P-100, Sub. 73, 3/27/85, p. 6.

age of technology and competition is upon us and regulation should acknowledge this fact.¹⁶

Regulation of the Relationship with the Local Telephone Company

Whether or not a commission decides that a smart building is an entity which requires regulation in its own right, the commission will have to consider the impact of smart buildings on local exchange users outside the buildings. The fundamental issue here is universal service. Despite the development of new, competitive telecommunications technologies, it seems likely that ubiquitous local service will remain a monopoly. Regulators may be concerned that substantial revenues would be lost through the operations of smart buildings, thus leading to stranded investment and higher rates for ratepayers using monopoly services. Related issues include the impact of smart buildings on facilities planning for an area and the impact of smart buildings on the certificated local carrier's obligation to serve all customers in its service area. How smart buildings would or would not affect telephone companies has been articulated in detail in Southwestern Bell's service area. Some of the contending arguments will be presented here.

Lost Revenues

In downtown business areas, it is common for five percent of the customers to provide 50 percent of the revenues to the local telephone company.¹⁷ In rural areas, one or two customers may provide a

¹⁶Texas PUC, Docket 5827, Final order, 11/21/84.

¹⁷Henry D. Levine, "Smart Buildings Come of Age," Telematics, Vol. 1, No. 2, June 1984, p. 10.

substantial proportion of telephone company revenues. Southwestern Bell has argued that the loss of one or two customers in their rural service areas would "have a devastating effect on the rates of their remaining subscribers."¹⁸ Widespread use of STS would be "cream skimming," said one SWB spokesman to the Missouri Commission: "There is no question in my mind that those who desire to provide local service only want to serve selected sites and customers. We will be left to serve those locations and customers whose telecommunications revenue/cost relationships are much less favorable from the standpoint of the supplier."¹⁹ Intertenant communications would also result in erosion of local telephone company revenues, it is argued. There has been, however, no empirical evidence presented as to how much revenue a telephone company could potentially lose from shared tenant service ventures.

United Technologies Corporation, a smart building developer, and the Multi-Tenant Telecommunications Association (MTTA) disagree with SWB's projections of lost revenues. Andrew Lipman, a United Technologies representative, argued before the Texas commission that no evidence had demonstrated the loss of revenues because of bypass, nor that bypass had caused the rates of remaining customers to increase more sharply than they otherwise would have. The spokesman remarked, "If bypass has not resulted in lost revenues, then shared tenant services will certainly not result in any such revenue loss."²⁰ Further, he claimed that shared tenant services could actually reduce network costs for non-participating users as well as participating

¹⁸Arkansas PSC, In the Matter of the Petition of Southwestern Bell Telephone Company for Investigations, Hearing, and Declaratory Relief Regarding Local Exchange Resale, Interim Order, Docket No. 84-213-U, 12/20/84, p. 6.

¹⁹Royce S. Caldwell, Affidavit, Missouri PSC, Investigation of Local Exchange Telephone Service by Entities Other than Certificated Telephone Corporations, Case No. TC 84-233, 8/10/84.

²⁰Andrew D. Lipman, "Comments of United Technologies Corporation," Petition of Southwestern Bell Telephone Company for Rulemaking, Public Utility Commission of Texas, Docket No. 5821, 8/22/84, p. 50.

users because of more efficient plant utilization that would permit users to concentrate some traffic on exchange lines. He said that under STS arrangements, aggregation of traffic by small and medium-sized users should not result in a reduction of traffic, simply a change in designation as customer to the STS provider rather than the end users. He suggested that availability of STS would actually stimulate demand for telecommunications services and facilities, thus generating greater revenues for local telephone companies.

Victor Toth, representing the MTTA, cites several factors that the association claims reduce the impact on revenues because of STS arrangements: (1) If an STS venture involves new construction, it may attract new net growth to a service exchange area; (2) although trunking efficiencies achieved through smart buildings are attractive enough to ensure savings to the sharing tenants, they fall short of savings that can be attained by a single customer with a comparably sized PBX; (3) many STS participants would have been "key system users" and thus would be paying lower business line rates rather than trunk rates for local service were they taking service directly from the local telephone company; and (4) as a result of interfacing with an STS provider, a telephone company achieves cost savings in such areas as billing, collection, order taking, installation and maintenance.²¹

As to intertenant communications, Toth of the MTTA claims that communications between tenants are infrequent, and not a threat to local telephone company revenues. Toth claims that where intertenant communications are most likely to occur, such as in hotels and airports, "intercommunication over a common PBX or centralized attendant service arrangement has been permitted for years without serious objection or at least without any perceivable adverse impact on the telco." Toth calls for "intercommunications capability...permitted to fulfill the potential technical capabilities of STS systems and

²¹Victor J. Toth, "Shared Tenant Services Face Tough Regulatory Issues," Business Communications Review, November/December 1984, pp. 32-3.

products, whether or not basic voice intercommunication is to be restricted."²²

While agreeing that it is possible that STS arrangements could result in savings for the local telephone company, Samuel Goldammer of the Missouri Public Service Commission reached the conclusion in the SWB case in his state that smart buildings could result in a significant loss of revenues to the telephone company.²³ A regulatory framework for STS should, he said, at a minimum ensure that revenues received by the local exchange company would be maintained, with a credit for any cost savings the company might receive as a result of not providing service. He recommended that the commission affirm SWB's right to be the sole provider of local service.

Stranded Plant

Whether a telephone company would experience stranded investment as a result of proliferation of smart buildings is of concern to regulators, since the burden of paying for stranded plant could be borne by the remaining ratepayers.

The rationale behind the regulators' and telephone companies' concerns over stranded investment is well understood and has been articulated often, especially in recent filings and writings related to the bypass issue. The following paragraph summarizes this position. However, the viewpoints of those parties who contend that stranded plant as a result of STS is unlikely to be a serious problem are less well known. Therefore, a lengthier presentation of those views is given.

Goldammer of the Missouri Commission and SWB agree that extensive use of smart buildings would result in stranded investment for the telephone company, thus driving up local exchange rates and

²²Ibid.

²³Samuel F. Goldammer, "Prepared Direct Testimony," Missouri Public Service Commission, Southwestern Bell Telephone Company, Case No. TC-84-233, November 1984, p. 9.

jeopardizing the goal of universal service. Goldammer maintains that even in a new development, customers will be drawn from locations where they are already receiving service from the telephone company. When those customers leave there may be stranded investment, and the telephone company may not be able to use it again.²⁴

In contrast, Toth claims that any such plant "stands a reasonable chance of being placed back into service as a result of new and normal local growth."²⁵ He remarks that displaced plant may not always be stranded, but sometimes can be reused or relocated, and in other cases may serve to defer future capital investment and construction.

Toth argues that facilities actually used by a smart building would be used more efficiently than those of individual subscribers, and that the resulting savings could result in stimulation of demand. He suggests that telephone companies focus on developing new services or more attractive rate structures, rather than on resisting STS systems.

In terms of magnitude of stranded plant, Toth voices a belief that the category of plant most likely to be unused would be the outside cabling or local loop. The loss would be insignificant, he claims. (This is an assertion with which many regulators would disagree, if, in fact, there is stranded investment in the local loop.)

If, indeed, stranded plant did result from decreased usage of the local network by STS users, some commissions may have the option of allocating at least some of the burden to stockholders, rather than ratepayers, argues Toth.

To Lipman, the United Technologies spokesman, the concern for stranded investment is "highly illusory."²⁶ He claims that telephone company plant in the past has been installed without specific anticipation of demand and thus with some risk. Lipman points out

²⁴Ibid., p. 3.

²⁵Toth, op. cit.

²⁶Lipman, op. cit., pp. 44-46.

that many variables that affect the need for plant are outside the telephone company's control, citing factory closings and expansion and shifts in user services from Centrex to PBXs and vice versa. He suggests that carrier network facilities will rarely be abandoned. The plant might be used for a different purpose than originally intended or relocated for a more economic use. In some cases future (and more expensive) construction might be deferred.

The issue of stranded investment, says Lipman, is irrelevant in the case of STS because most such arrangements are applicable to new buildings. He claims that if the telephone company, in conjunction with developers, employs reasonable facilities planning, there is no excuse for stranded investment in the case of new buildings.

But Lipman predicts stranded investment will not be a problem where shared tenant services are installed in existing structures either. In those cases, network switching and transmission equipment can frequently be retrofitted or relocated or the STS might merely defer the need for additional investment. Finally he says that even if smart buildings result in some stranded investment, it may be worth it. The enhanced productivity and reduction in other costs from smart buildings may be less costly than the abandoned plant attributable to them.

Facilities Planning

Some observers doubt the ability of developers and the telephone company to cooperate in facilities planning and believe smart buildings would have a deleterious effect on the planning for telecommunications facilities in a service area. Goldammer, for example, remarks that although coordinated planning might be a solution to the problem, a local exchange company would have no protection against overestimation of facilities requirements by an STS provider to ensure that if extra

STS access lines are needed they will be available.²⁷ To the arguments on facilities planning, the MTTA counters that: (1) telephone companies do not always do a good job of planning for new projects, particularly at the project site level; (2) the telephone company's planning process "probably does not take into consideration the likely tenant mix" at office complexes; (3) facilities planning is already, since divestiture, in effect being conducted somewhat independently of the telephone company through the Building Industries Consulting Services (BICS) organization.²⁸ BICS, he says, offers its services on a contractual basis to outside developers and information acquired by BICS through its contacts with commercial developers is fed back into the telephone company's facility planning process.

SWB's position, as articulated by Caldwell before the Missouri commission, is that:

We have the responsibility of being ready to provide local service upon demand. Only if we continue to be the sole provider of local service will we be able to continue to forecast the service requirements of our Missouri customers and to design and construct the telecommunications plant needed to provide service when and where it is needed. Any other arrangement will prove to be less efficient, more costly and will produce results contrary to the public interest.²⁹

Lipman of United Technologies, on the other hand, points out that SWB has been dealing for years with the uncertainty of whether potential large business customers would install private PBX systems rather than using SWB equipment.³⁰ He said it would be in the interest of all SWB ratepayers if SWB did not overbuild its network. United Technologies argues that demand forecasting should, if anything, be easier for a shared arrangement since the STS provider would deal directly with the STS users, be in close contact with them, and

²⁷Goldammer, op. cit., p. 5.

²⁸Toth, op. cit., p. 31.

²⁹Caldwell, op. cit., p. 5.

³⁰Lipman, op. cit., p. 47-8.

provide better demand information to the telephone company than the company could generate itself. If an STS customer became dissatisfied and requested service from the local exchange carrier, Lipman suggests that the increased capacity be provided through relatively inexpensive concentrators and multiplexers rather than through additional feeder lines.

Partitioning

A commission that finds that smart buildings would have a negative impact on affordable service by leading to significant amounts of stranded investment can impose constraints on STS arrangements designed to ameliorate those effects.

Use of a partitioned switch has been recommended by SWB as a way for tenants to achieve some of the benefits of advanced telecommunications features while reducing their risks. This approach has been supported by the Missouri commission staff. Under a partitioning arrangement, each tenant would be assigned his own local exchange access lines and would be served directly by the local telephone company for local exchange service. SWB claims that a user would have full access to advanced PBX services but would not be subject to blockage with traffic from other tenants and would be much less susceptible to inadvertent or intentional access to the user's system. Such an arrangement would not be a deterrent to the use of a shared PBX in a commercial complex, claims SWB.³¹

The MTTA position on partitioning is that it not only eliminates the economies achieved through trunk sharing but actually adds to total system costs. Further, it is argued that trunk partitioning may not be practical, even when it is technically feasible. Finally, the MTTA remarks that shared trunk groups impose "no more of a burden on the central office than any trunk group of comparable size used by a large tenant or serving a single occupant building."³²

³¹Testimony of David Leininger, Southwestern Bell Telephone Company, Kansas CC, Docket No. 141, 975-U, pp. 20-21.

³²Toth, op. cit., p. 32.

To the extent that pooled facilities do provide more efficient telecommunications services, a decision to allow only partitioned switches results in unnecessary costs to tenants. The commission attempting to avoid substantial revenue erosion for the local telephone company may wish to consider rate design alternatives rather than conditions on the physical provision of the shared tenant services. Measured rates, for example, may make up for revenues lost by the telephone company to STS ventures. Several commissions and telephone companies have taken this approach. Tariff provisions that define the telephone company/STS provider relationship are reviewed below in Section V, "Tariff Elements in STS Proceedings."

IV. Status of Commission Regulation of STS

At the federal level IBM has asked the FCC to preempt state regulation of shared tenant services, saying state approaches are widely divergent and that many severely impede the use of STS systems. Meanwhile, action is underway or completed in more than half the states to address issues related to the regulation of shared tenant services, with approximately one-fourth of the states having come to a formal decision on their regulatory treatment.

In the Southwest, Southwestern Bell has, in each of the states that it serves, petitioned the commission to assure that its status as sole certificated provider will be maintained. Other telephone companies have taken the position that adjustments in tariffs, such as a requirement for measured service rates for smart buildings, can provide sufficient safeguards to prevent erosion of telephone company revenues. In many states the commission's position is that no special action is necessary on STS ventures, and that a "hands-off" stance is appropriate in the area of developing competition, particularly if there are no or few smart buildings in the state at this time. For several state commissions, as long as a smart building owner is providing local exchange service at cost, on a pass-through basis, the STS equipment is considered merely customer premises equipment (CPE)

and thus not subject to commission regulation. If, however, the owner chooses to resell service for a profit, the commission would consider the entity a telephone company subject to commission jurisdiction.

Table 1 shows the status of state commission action on smart buildings as of July 1985. The NRRI first contacted commission staff members in the winter of 1985 and later updated the survey results. By mid-July, nineteen of the staff respondents said action related to smart buildings was underway at their commissions or state legislatures. Nineteen commissions were not pursuing formal action at the time of the survey. Thirteen had completed action, seven more than during the winter. Types of decision-making modes included generic commission proceedings or state legislative proceedings having to do with various aspects of competition and deregulation, commission proceedings on general issues of resale, investigations specifically into regulation of shared tenant services, and tariff filings to codify telephone company relationships with shared tenant facilities.

Action At the Federal Level

Prior to the IBM case this year, the FCC allowed unlimited shared use of telecommunications services, deferring to the states in case of policy overlaps. The federal commission would assert jurisdiction only in cases of uneconomic or "unfair" practices.³³ The request by IBM for a ruling on state regulation of shared telecommunications service systems calls for the commission to declare that it has preempted state regulations that preclude offerings of STS systems.³⁴ In comments to the FCC on the IBM petition, state regulatory commissions have opposed FCC preemption in this area.

IBM argues that FCC preemption is required by the commission's procompetitive policies and by previous commission decisions expressly

³³Telephone interview with Thomas Sugrue, Chief, Policy Division, Federal Communications Commission, July 9, 1985.

³⁴International Business Machines Corporation, op. cit.

TABLE 1

STATUS OF STATE COMMISSION ACTION ON STS
(as of July 1985)

Commission	Status of Formal Action	Type of Action	Status of Proceedings
Alabama PSC	No action planned	--	--
Alaska PUC	No action planned	--	--
Arizona CC	Action completed	Tariff	Approved in 1984
Arkansas PSC	Action underway	Resale docket 84-213-U	Interim order 12/20/84
California PUC	No action planned	--	--
Colorado PUC	Action underway	Tariff filing INS 1678	Commission decision pending
Connecticut DPUC	Action completed	Tariff Legislation Public Act No. 85-187	Approved 9/84 Passed
Delaware PSC	Action underway	Resale docket: Regulation Docket No. 10	Docket open
District of Columbia PSC	No action planned	--	--
Florida PSC	Action underway	Rulemaking on shared tenant services 840429	Hearings scheduled for 8/7-9/85
Georgia PSC	Action underway	Tariff 3477-U and resale docket	Tariff approved, resale docket open
Hawaii PUC	No action planned	--	--
Idaho PUC	Action completed	Tariff Case No. V-1000-80, Order No. 19702	Final order 5/31/85
Illinois CC	Action underway	Resale docket 820292 Legislation	Interim order Introduced
Indiana PSC	Action underway	Docket 37595	Hearings completed 1/14/85

TABLE 1 (Continued)

Commission	Status of Formal Action	Type of Action	Status of Proceedings
Iowa SCC	Action underway	Generic proceedings INU-85-6 and INU-85-7	Docket open 5/21/85
Kansas SCC	Action underway	Resale docket 141,975-U	Final order expected
Kentucky PSC	Action underway	Administrative case	Hearings scheduled for 8/15/85
Louisiana PSC	No action planned	--	--
Maine PUC	No action planned	--	--
Maryland PSC	Action completed	Order	8/83
Massachusetts DPU	Action underway	Generic proceeding 1731	Order expected 8/85
Michigan PSC	No action planned	Informal decision	No formal action
Minnesota PUC	No action planned	--	--
Mississippi PSC	No action planned	--	--
Missouri PSC	Action underway	Resale docket TC-84-233	Hearings completed
Montana PSC	Action completed	Tariff Legislation HB577	Approved 11/21/83 Passed 4/19/85
Nebraska PSC	No action planned	--	--
Nevada PSC	Action underway	Tariff filing Docket No. 85-475	Docket opened 4/19/85
New Hampshire PUC	No action planned	--	--
New Jersey BPU	Action completed	Resale and sharing 8112-10-51, 823-242	Approved 12/27/82
New Mexico PSC	Action completed	Legislation Chapter 242	Effective 6/15/85
New York PSC	No action planned	--	--
North Carolina PUC	Action completed	Resale docket P-100, Sub. 73; Tariff filed	Final order 3/26/85; Tariff rejected

TABLE 1 (Continued)

Commission	Status of Formal Action	Type of Action	Status of Proceedings
North Dakota PSC	Action underway	Tariff suspended Resale docket 10673	Hearings scheduled 9/11 - 9/13
Ohio PUC	No action planned	--	--
Oklahoma CC	Action underway	Resale docket 28986	Recommendation made by referee
Oregon PUC	Action completed	Legislation HR2200	Passed
Pennsylvania PUC	Action underway	Resale docket	Final order expected 8/85
Rhode Island PUC	Action planned	Hearings	Not yet scheduled
South Carolina PSC	Action underway	Tariff filing 84-447-C	Hearings completed
South Dakota PUC	Action completed	Tariff	Effective 3/15/84
Tennessee PSC	No action planned	Tariff 84-104	Withdrawn
Texas PUC	Action completed	STS rulemaking Docket 5827	Final order 11/21/84
Utah PSC	Action underway	Case No. 84-049-T21 Case No. 84-049-T42	Hearings underway
Vermont PSB	No action planned	--	--
Virginia SCC	No action planned	--	--
Washington UTC	Action completed	Legislation Chapter 450 of 1985 law	Passed
West Virginia PSC	No action planned	--	--
Wisconsin PSC	Action completed	Resale proceeding 05-TV-7	Final order
Wyoming PSC	No action planned	--	--

Source: 1985 NRRI Survey of State Regulatory Commissions on the Regulation of Smart Buildings

preempting inconsistent state law in related areas. In its request, IBM remarks that large telecommunications users have for years been allowed to connect PBX systems to subscriber lines and claims that there are no technological reasons why smaller users in multitenant buildings or real estate developments should not benefit from the same competitive benefits. IBM said that many states are taking regulatory action that discriminates against STS providers, thus depriving users of efficiencies in meeting their telecommunications needs, skewing the direction of technological change, and decreasing consumer satisfaction. IBM comments that the FCC "has already removed CPE and intrasystem wiring from the exclusive sphere of the regulated monopolies, and it has repeatedly held that states may not limit the right of the telephone subscribers to connect CPE of their choice to the interstate network."³⁵ The company states that these decisions make clear that states may not regulate the core elements of an STS system. Arguments about reduced local exchange company revenues, stranded investments, and planning difficulties have not been supported by evidence, says IBM, and to the extent that they are valid should not stand in the way of efficient innovation.

In replies to the IBM petition, state commissions have argued that they, not the FCC, are responsible for setting intrastate rates. The Missouri commission argued that differences in regulatory treatment are to be expected from state to state because states regulate local exchange service differently. The state commissions argued that STS is similar to coin telephone services, regulation of which the FCC has decided to leave to the states.

In another development on STS at the federal level, the U.S. Department of Justice has been involved in STS issues through the AT&T divestiture case. Ameritech, a Bell regional holding company, has asked the Justice Department if it could act as a provider of shared services. The Justice Department ruled that Ameritech could provide

³⁵International Business Machines Corporation, op. cit.

service, including marketing, through a teaming arrangement where the partner was the sole STS provider. Ameritech has argued that it should be able to provide marketing services directly.³⁶ The request is before Judge Greene as an aspect of the AT&T divestiture.

States Where No Formal Action Is in Progress on STS

Among the states where no formal proceeding on STS is currently underway are commissions in California, New York, Michigan and the District of Columbia. They are dealing with STS under existing rules and policies. In many other states the issue simply has not yet arisen.

In California, Principal Utilities Engineer Paul Popenoe said the Commission is taking no formal action right now, but he has compiled the existing rules in effect in the state that would apply to STS developments.³⁷ In essence, Popenoe suggests that smart buildings are not subject to PUC regulation if they are merely passing through costs. He says that in that case they are best classified as CPE providers. If the landlord sold telephone service for a profit, however, the STS operation would be subject to commission regulation, albeit under simplified procedures.

Dennis Carratas of the New York PSC told the NRRI his commission is not involved in regulation of a shared tenant services arrangement unless services are sold for a profit.³⁸ Landlords are allowed to purchase services for tenants, but if they do it for profit they are considered a telephone company and must file tariffs. The STS facilities must allow the option of service from the local exchange

³⁶"Ameritech's Motion for Clarification of the Decree Regarding the Provision of Shared Telecommunications Services", op. cit.

³⁷Paul Popenoe, Jr., "Compilation of Rules Applicable to Multi-Tenant Communications Systems," California PUC, unpublished paper, undated; telephone interview 2/1/85.

³⁸Telephone interview with Dennis Carratas, New York PSC, 2/1/85.

carrier. Carratas said he did expect his commission to develop procedures for regulation of smart buildings in the next year.

In Michigan, another state where no formal proceedings are planned, according to staff member Ron Choura, an informal decision has been made not to regulate smart buildings.³⁹ The commission does not plan to get involved in resale of competitive service, he said. He commented that the commission does not have the manpower to keep track of STS buildings and oversee the service quality. He did say, however, that there was some concern at the staff level about service in smart buildings and that, in fact, some consumer complaints had been received.

Current state law would define smart buildings as common carriers in some states where no action is currently planned. Guy Twombly of Maine said the state statute appears to include smart buildings as common carriers subject to regulation. But he suggested it would be up to the commission to interpret the law. He said the commission currently allows radio common carriers to file tariffs but does not review them or impose economic regulation.⁴⁰ Two other states where staff members said smart buildings would be considered common carriers were New Hampshire and Wyoming.

Several respondents in states where no action is planned on smart buildings said smart buildings would be considered resellers in their states and that STS ventures would be prohibited. Alabama, the District of Columbia, Nebraska, and Rhode Island fell into this category. The District of Columbia staff member remarked that shared use at no profit would, however, be allowed under an existing tariff. In Minnesota, where some smart buildings are in operation, the staff respondent said they would most likely be considered resellers.

Alaska, Hawaii, Louisiana, Mississippi, Ohio, Tennessee, Vermont, Virginia, and West Virginia are other states where no action is planned

³⁹Telephone interview with Ron Choura, Michigan PSC, 2/4/85.

⁴⁰Telephone interview with Guy Twombly, Maine PUC, 2/8/85.

on smart buildings. The Kentucky staffer said current regulations prohibit smart building installation whether for profit or at cost.⁴¹ Mel Ishihara of Hawaii said Hawaii law defines a public utility as any individual who sells telecommunication services, but said the issue of smart buildings has not been addressed yet.⁴² In Ohio, an order was issued April 19 on various aspects of the regulatory framework for telecommunications, but STS was not included among them. There are no plans for action on smart buildings. In Tennessee, a local telephone company proposed a tariff, but later withdrew it. No further action is planned. The Vermont staffer suggested smart buildings should be treated as resellers.⁴³

Generic Proceedings Underway in Two States

In Iowa and Massachusetts generic dockets are open on a range of issues related to changes in the framework of telecommunications regulation. But intelligent buildings are tangential to the broad issues to be addressed in these dockets, and STS has not been addressed. In Iowa, the staff respondent said in all probability the commission would consider smart buildings common carriers. In Massachusetts, current proceedings will address the issue of whether any resale will be allowed. The staff has taken the position that resellers should be certified. John Nestor, Director of Telecommunications for the Massachusetts DPU at the time of the first NRRI survey, said the commission would consider whether to allow competition and then whether to allow resale. If it allowed competition and if it allowed resale, he said there would still have to be a separate

⁴¹Telephone interview with Constance Parrish, Kentucky PSC, 3/1/85.

⁴²Telephone interview with Mel Ishihara, Hawaii PUC, 2/15/85.

⁴³Telephone interview with Charles Larkin, Vermont PSB, 2/8/85.

proceeding to see if it would allow smart buildings.⁴⁴ A final order was expected in Massachusetts in August.

New Legislation May Affect STS in Some States

Under new, broad legislation on telecommunications regulation, Connecticut, Montana, Oregon, and New Mexico will not be regulating STS. Similar legislation is being considered in Illinois. Legislation has been passed in Washington that would require registration of every telecommunications utility. The commission will need to decide whether STS arrangements are public utilities under the law. In addition to generic legislation, Connecticut and Montana have tariffs governing STS. In Illinois the commission has already ruled on STS in a resale docket, as discussed below.

Several States Addressing Issue in Resale Dockets

Several states are electing to deal with smart buildings in the context of dockets devoted to consideration of issues of resale. In New Jersey a 1982 order permits resale for a profit. Other vendors must have access to the buildings and the landlord must let tenants know that other vendors can serve them. Resellers can also "share" their services by selling them at cost plus a reasonable fee.

The Wisconsin commission has ruled that STS is permissible as sharing. Sharers do not have to file anything with the commission. In Illinois, Joseph Gillan reported the commission's third interim order on the subject allows private resale. The commission's only involvement will be to take names for reference and possible future investigation.⁴⁵ Maryland and North Carolina have taken the opposite tack. STS is considered resale and is prohibited in both those states.

⁴⁴Telephone interview with John Nestor, Massachusetts DPU, 2/20/85.

⁴⁵Telephone interview with Joseph Gillan, Illinois CC, 2/8/85.

In Delaware, Florida, Kentucky, North Dakota, Pennsylvania and Indiana dockets were open on resale. The Florida commission has warned that existing state law prohibits STS and that any possible violations will be scrutinized during the commission's STS proceedings.

Southwestern Bell Actions

One of the first telephone companies to aggressively pursue state commission action on STS is Southwestern Bell (SWB). SWB has taken a firm stand calling for reaffirmation of its status as sole certificated provider of telephone service. In Arkansas the commission agreed with the company and has issued an interim decision reaffirming the exclusive right of the certificated carrier to provide local exchange service in its service area. The commission prohibited the resale of local exchange service, although it did not prohibit "sharing" arrangements where the telephone company customer relationship is not affected. In Oklahoma a commission referee has recommended a similar ruling. In Kansas, Southwestern Bell has objected to alleged resale of telecommunications services to tenants by the Wichita Airport Authority. The Commission held hearings on resale in general, and according to a staff member, was planning to issue an order allowing resale in a contiguous area to subscribers with a shared interest, such as tenancy in a building.⁴⁶ In Missouri hearings have been completed on SWB's complaint asking for clarification of the definition of local exchange service. The staff position, like the company's, has been that resale should not be allowed. In Texas, however, the commission ruled that it has no jurisdiction over shared tenant services because they are not public utilities under Texas law. The Texas decision is being appealed in district court by Southwestern Bell.

⁴⁶Telephone interview with David Brevitz, Kansas SCC, 7/15/85.

V. Tariff Elements in STS Proceedings

A number of commissions have approved or are considering tariffs that define the STS/telephone company relationship. Telephone company tariffs dealing with smart buildings have been approved or are being considered in states served by Mountain Bell, Northwestern Bell, Southern Bell, and the Southern New England Telephone Company (SNETCO). Table 2 shows some types of tariff elements that have been adopted or are being considered by some state commissions. Montana, Arizona, and Idaho have approved new shared use tariffs for Mountain Bell. Mountain Bell has also filed for tariff changes related to intelligent buildings in Colorado and Utah. In Utah hearings are underway. In Colorado a stipulated agreement has been reached subject to commission approval.

In Northwestern Bell's service territory, the South Dakota commission has approved a tariff permitting shared use of customer service. Shared use is permitted for individuals, firms, and corporations. Northwestern Bell has also filed a tariff in North Dakota, but it was suspended pending a decision in that state's resale docket. In Nevada hearings are planned in response to a tariff filing. Southern Bell has proposed tariffs on sharing and resale in Georgia, North Carolina, and South Carolina. In Georgia a tariff was approved; in South Carolina a decision is pending; and in North Carolina the tariff request was dismissed. The North Carolina Utilities Commission has ruled that it lacks the authority under statutory and case law to authorize resale of local exchange service. Under a Connecticut tariff, SNETCO has to have access to individual subscribers in a smart building.

The attitude of management of Mountain Bell contrasts sharply with that of Southwestern Bell. Mountain Bell's position has been that resale of telecommunications services is a strong national trend that cannot be stopped and that it is both possible and appropriate to design tariffs that protect the company's ratepayers and stockholders. In submitting tariff materials to the Idaho commission, one Mountain Bell executive stated:

TABLE 2
ELEMENTS OF STS TARIFFS

Name of Company	Name of State	Type of Rate	Pass Through or Resale	STS Provider Obligations Specified?	Size/boundary Limits on STS Operation?	Tenant Access to Telephone Company Required?	Status of Tariff
Mountain Bell	Colorado	Measured or flat	Pass through	Yes	No	Yes	Proposed
	Idaho	Measured	Resale	Yes	No	Yes	Approved
	Montana	Measured	Resale	No	No	Yes	Approved
	Utah	Measured	Resale	Yes	Yes	Yes	Proposed
Southern Bell	Georgia	Measured	Resale	Yes	Yes	Yes	Approved
	South Carolina	Measured	Resale	Yes	Yes	Yes	Proposed
Northwestern Bell	South Dakota	Measured service	Pass through	Yes	--	Yes	Approved
Pacific Bell	California	Business service rates	Pass through	Yes	Yes	Yes	Existing

Source: 1985 NRRI Survey of State Regulatory Commissions on the Regulation of Smart Buildings

Mountain Bell feels strongly that resale of local exchange services should be allowed, but only pursuant to very specific requirements. In other words, while Mountain Bell is willing to propose the resale of local exchange services (and, indeed feel that is [sic.] inevitable that it will occur), we believe we owe it to both the general ratepayers and our shareholders to assure that resale occurs only in circumstances where neither are adversely affected. We believe that the proposed tariffs are consistent with these goals.⁴⁷

Southern Bell and Northwestern Bell have also recently chosen to propose tariffs in states in their service areas rather than to oppose smart buildings altogether. In other states there may be tariffs on the books that delineate STS obligations and responsibilities in relation to the telephone company. In the District of Columbia for example, an existing tariff allows sharing of telephone service if it is not for a profit.

Resale at a profit is permitted in several of the states with tariffs applicable to STS. In Colorado, South Dakota, and California, however, the STS provider must merely pass through local telephone company charges. For example, Paul Popenoe of the California PUC has suggested that existing rules in his state require that "all charges for service from the telephone utility or from a long-distance carrier shall be directly rebilled to tenants on a flow-through or prorated [sic.] basis and shall be separately stated on the bill." Resale for profit of long distance service would require a certificate of convenience and necessity, and resale of intraLATA service other than through the local telephone utility is prohibited entirely. The service provider may, however, "charge for its management and billing services and for use of its facilities in any manner it deems appropriate including flat or measured charges."⁴⁸

⁴⁷C. E. Gene Hill, Idaho Vice President, Mountain Bell, letter to Idaho PUC, Sept. 26, 1984.

⁴⁸Popenoe, op. cit.

Measured service is a condition of almost all the STS tariffs. This solution to assuring adequate telephone company revenues is not opposed by the MTTA as long as measured service also applies to other similarly situated telephone subscribers.

A tariff may contain provisions specifying the STS provider as the sole contact for the telephone company. Existing California rules, according to Popenoe, suggest that the multi-tenant service provider must "be responsible for collection of moneys from tenants and payment of all amounts billed for service, including joint user service furnished to the building or complex." Tenants with billing disputes must take them up with the STS provider, not the utility or the commission. Only the STS provider has standing to file billing complaints with the commission.

The South Carolina tariff specifies that the reseller is the single point of contact and that all rates and charges, repairs and rearrangements are his responsibility.

Two of the tariffs--Idaho's and South Carolina's--state the boundary at which company responsibilities end and the multi-tenant service provider's begin. In Idaho the network interface is "the point at which the exchange services terminate and tariff rates and charges stop." In South Carolina, the STS provider's responsibilities commence "behind and including the reseller's communications switch."

Four of the tariffs prohibit STS beyond a specifically delineated resale service area. California's rules limit service "only to tenants within a specific building or building complex under common management or ownership." The South Carolina tariff would prohibit private interconnection of resale service areas within an exchange local calling area and LATA. Further, the Company reserves the right to deny any resale application on the basis of geographic size and scope of development and sets an upper limit of 500 PBX trunks on any particular reseller. Utah's proposed tariff allows resale of local exchange service within specific geographical areas.

Southern Bell's tariff in Georgia limits STS provision in several ways. Resale and sharing must be limited to the confines of an exchange boundary and a wire service boundary. The number of trunks is limited to 950. Intertenant calling is prohibited without the express permission of the Commission. The Georgia tariff has been singled out by IBM in its case before the FCC as one that is particularly discriminatory against STS services (see "Action at the Federal Level" above).

Almost all the tariffs require that the company maintain access to customers in a smart building and that the customers have the right to request and receive telephone company service. In California, for example, the property owner or manager may neither place impediments on the telephone company nor tenants where the telephone company furnishes service directly to a tenant. Mountain Bell in its Idaho tariff and proposed Colorado tariff seeks assurance, further, that the costs of hooking up to an individual tenant will be borne by the STS provider. The Idaho tariff would require the STS provider to provide "at no cost to the company, conduit, cabling, trench and/or support structures to enable the Company initially and/or subsequently, to directly serve individual customers who request service from the Company." Explaining the proposed tariff, Mountain Bell said:

Customers in the resale area who do not wish to subscribe to service from the reseller may subscribe to service directly from Mountain Bell at tariff rates. In order for this to be feasible it is essential that the reseller cable the resale area and allow Mountain Bell the free use of those facilities in order to serve customers who desire service from Mountain Bell. If this is not part of the tariff, Mountain Bell would have the burden of guessing how many customers would subscribe to its service as opposed to that of the reseller. The result would inevitably be cases of held orders (should our forecast underestimate demand for Mountain Bell service) or unused capacity (should our forecast overestimate the demand). The tariff provision to require the reseller to provide cable will thus avoid unnecessary duplication of facilities. We feel that it is a reasonable responsibility for the reseller to carry in return for the opportunity the

tariff affords it to resell service that otherwise cannot be resold.⁴⁹

Other tariff provisions that have been proposed or used and that other commissions may want to consider include (1) a requirement that wiring conform to company standards (Mountain Bell, Colorado), and/or (2) a statement that the telephone company is not responsible for confidentiality of telephone service in the resale area (Northwestern Bell, North Dakota).

VI. Summary

At a time when regulators are faced with a vast array of opportunities for rethinking the role of regulation for the telecommunications industry, smart buildings are only one of many innovations challenging traditional concepts and approaches. Yet many of the questions raised by what seems to be an impending proliferation of intelligent buildings in many major cities are generic ones. To the extent that regulators are able to craft creative approaches in this area of new technology, assuring protection of the monopoly ratepayers while allowing room for the development of competition, adjustment to the impact of other technological changes may be easier.

The fundamental policy issue, as with other forms of bypass of local telephone company services, is the effect of smart buildings on universal service. Others have to do with the extent and conditions of regulation.

The goal of universal service has traditionally been met through a regulatory approach that made telephone service affordable to as many people as possible. Some regulators are concerned that smart buildings may raise the price of local exchange service. If proliferation of smart buildings resulted in a significant loss of revenues to local

⁴⁹Hill, op. cit., p. 2.

telephone companies along with stranded investment, rates might have to be increased, thus driving ratepayers off the local system. Some regulators in areas where smart buildings are being constructed may be faced with the competing goals of allowing development of competition in telecommunications markets and assuring that affordable local service is maintained.

In the absence of federal preemption the alternatives available to state commissions in dealing with shared tenant services range from non-intervention to prohibition, with a variety of regulatory strategies in between. A decision not to regulate may be justified in some states by the conclusions that, first, regulation would inhibit competition and innovation in telecommunications and, second, that smart buildings are not public utilities subject to commission regulation. In other states existing law and a concern for service quality may dictate treatment as common carriers. Or, if existing state law suggests that STS arrangements have common carrier status, a commission may wish to impose limited regulation which allows monitoring of STS growth and impact without stretching commission manpower.

In still other states, a distinction between reselling and sharing has served as the basis of a regulatory decision. The reasoning in these cases is that if the smart building owner merely passes through the costs of local telephone service, the STS hardware is customer premises equipment not subject to commission jurisdiction; if local telephone service is resold for a profit, the smart building must be considered a common carrier. Use of this regulatory strategy allows the development of STS while limiting the impact on local rates.

In some states, what amounts to prohibition of full use of STS by requiring partitioned lines has been advocated. When a partitioned switch is used, each tenant is directly wired to the local telephone company for local exchange service. A commission that decides to

require use of partitioned lines is choosing to sacrifice possible engineering efficiencies to ensure that the local telephone company does not lose revenues, have stranded plant, and suffer complications in its facilities planning.

For some commissions and local telephone companies this approach has been found unnecessary. Carefully designed tariffs in these instances have been prepared, so that through measured rates and other conditions an excessive negative impact on the established telephone companies is considered unlikely.

Finally, in some states where there are no smart buildings or only one or two in operation or planned, the chosen alternative has been simply to postpone a formal decision. These commissions consider a decision unnecessary in the light of existing demands on commission resources and, given the newness nationwide of the STS phenomenon, the lack of a clear universally acceptable solution.

APPENDIX A

TECHNICAL FEATURES OF SMART BUILDINGS

Smart buildings generally are those with a computerized private branch exchange (PABX), a mainframe computer systems, and an environmental control system. The PABX contains one or more microprocessors operating under a stored program. It processes dialed instructions, performs maintenance routines, and monitors system status. The mainframe computer system provides time-sharing capabilities to tenants. The computer supplies data processing capabilities to link personal computers, to provide word processing and property management functions, and to allow access to nationwide networks such as CompuServe, Source, and LEXIS.¹

A PABX is the heart of a communications network within a smart building. It provides data communications capabilities to all tenants in addition to a wide range of voice switching and management features. These PBXs are third generation systems which use a non-blocking architecture and are capable of creating a completely digital system. A total digital system allows easy interfacing with digital and analog facilities, T-1 carrier, packet-switched networks, local area networks, and other data processing equipment. The entire system is designed to integrate voice and data communications with a distributed control system to manage better the unbalanced call processing. To interface between a computer system and a PABX, many PABX manufacturers are accepting the computer-to-PBX Interface (CPI) specification as an

¹Much of the information about specific current systems is based on notes taken at a seminar given by Jerome Lucas, and from information in the accompanying seminar notebook, Telephone Bypass Technologies and Economics (McLean, Virginia: Telestrategies, Inc., 1983).

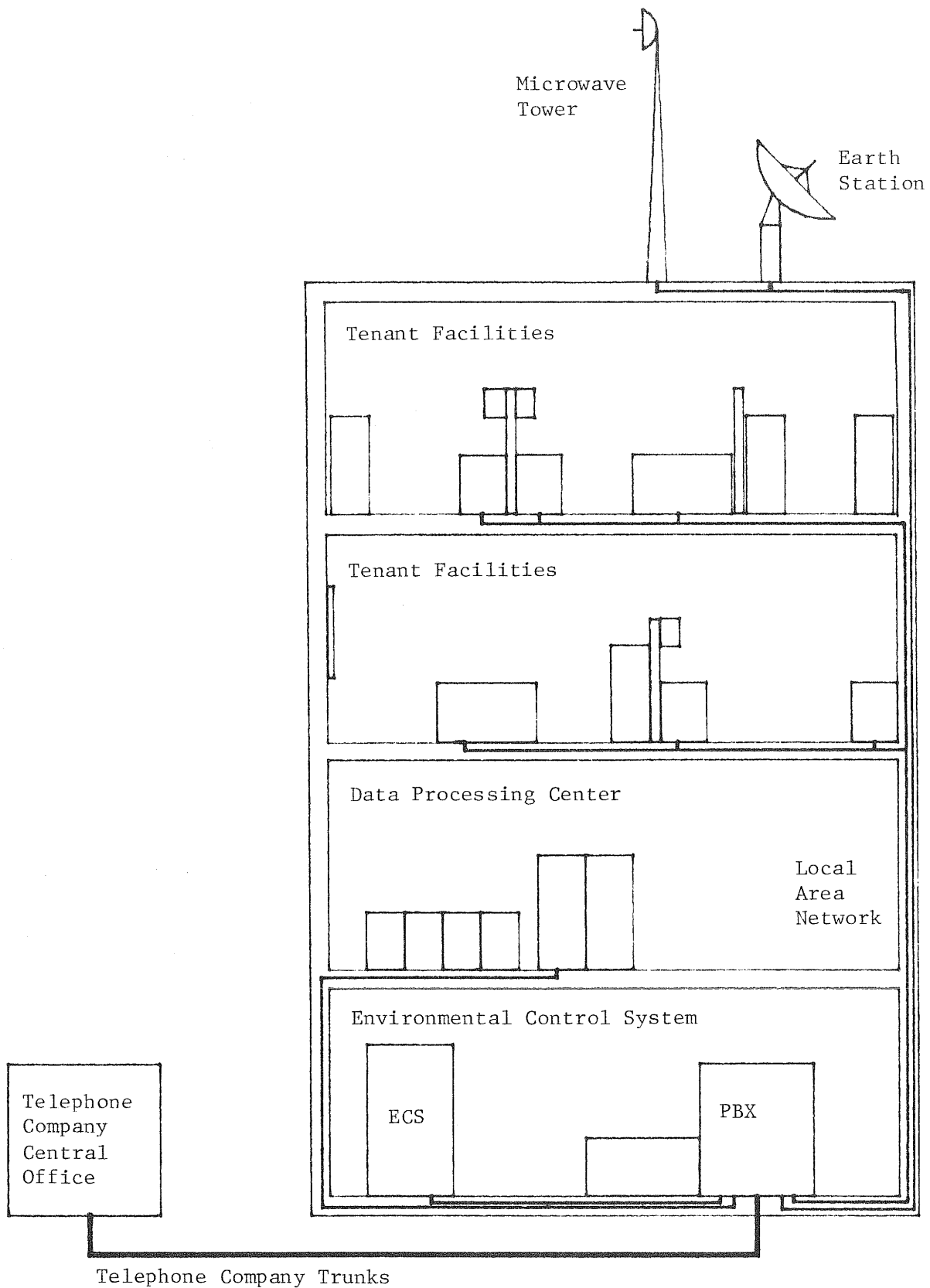


Figure 1 Multi-tenant Office Building With Shared Telecommunications And Data Processing Services

industry-standard interface. PABXs currently have many system-control redundancy features to ensure continued system operation in the event of processor failure that automatically switch over to a secondary system. Some of the most common PABX systems used in multi-tenant applications are listed in table 3.

TABLE 3

COMMON PABX SYSTEMS USED IN SMART BUILDINGS

PABX System	Maximum Number of Lines
AT&T System/85	7,000
Rolm CBX II	10,000
Northern Telecom SL-1	5,000
InteCom IBX Series 80	8,192
NEC 2400 IMX	12,000
United Technologies/Lexar UTX	5,376

Source: Authors' construct

The PABX controls all voice and data communications and can provide least-cost routing for long-distance calls, directory services, a message center, modem pooling, electronic and voice mail, facsimile, and In-WATS service.

Each tenant can select from among over 100 different features of the advanced systems. Many of the telephone answering and switching facilities listed in table 4 are considered standard. At a tenant location, most operations can be accessed from the Standard Terminal Equipment (STE) or the Integrated Terminal Equipment (ITE). The STE is the Standard 12-button set using a switchhook flash to select various features. The ITE permits simultaneous voice and full-duplex data communications over standard 2-pair telephone wire. It can be used as a single-line or multi-line key set with a number of function selection buttons.

TABLE 4

COMMON STATION TELEPHONE FEATURES

account codes	call park	call forwarding
call hold	message waiting	do not disturb
last number redial	call waiting	speed dialing
consultation hold	call back	call transfer
three-way calling	paging	station-to-station calling
code calling	line lockout	priority calling
call control	hold	abbreviated dialing
busy recall		

Source: Authors' construct

A centralized computer system for time-sharing application provides tenants with word processing, electronic mail, and data base management facilities. Some multi-tenant installations are tailoring their data processing centers to accommodate a specific class of professionals. For a law firm, for example, a shared tenant system would provide computerized research facilities, document control, and information processing services. Some typical computer systems that can be used in smart buildings are the Hewlett-Packard System 3000, Digital Equipment VAX/780, IBM 4300 Series, and the Data General MV Series Computer Systems.

Many smart buildings incorporate environmental control systems to manage energy costs. These systems include features for fire safety, security, and controls for lighting and heating ventilation air conditions (HVAC) control. A sophisticated computer control system is required such as Johnsons Controls/Automated Building Management System, United Technologies/Fire and Safety system, or Honeywell Inc.'s Integrated System. They are usually integrated with the PABX system for better reporting and administration.

To interconnect communication devices within the smart building, a local area network (LAN) is installed which physically connects all devices with a continuous medium such as fiber optic, coaxial cable, or copper wire. Communications over the network are provided so every

user is able to communicate with all other users. One of the main features of a LAN is its high speed. Communications range from 500,000 bits per second over copper wire to one billion bits per second over fiber optic cable. The most commonly used LAN is based on Xerox's ETHERNET.

Fiber optic cable has the greatest potential in the LAN market. It can carry many times the bandwidth of coaxial cable. The advantages of optical fiber are its high immunity to noise, its resistance to unauthorized or surreptitious interception of the transmission, and its wide bandwidth of up to 50 Mbps at a 10-kilometer distance. Fiber is, however, expensive and difficult to install compared to other cable systems. Currently, fiber optics can provide the best technical solution to supporting voice, data, and video application simultaneously. The capability to process video signals would allow applications for local cable TV networks, teleconferencing applications, and high speed data services.

Outside access from the smart building can be through an earth station, enabling tenants to use satellites for intracity, regional and worldwide communications. The type of satellite communications governs the size of the antenna. Satellite transmissions in the KU band would require an antenna 15 meters in diameter that would be installed on the ground at most facilities. The transmission band is dependent on the type of information transmitted and the available spectrum.

Other access methods can be in the form of microwave, direct trunk, or cable networks. Microwave can be used to connect directly to a long-haul carrier. Trunks can be used to connect to the public telephone network. And finally, coaxial cable can be used to connect into the local business or institutional cable network.

APPENDIX B

LOCATIONS AND FEATURES OF SOME EXISTING AND PLANNED SMART BUILDINGS

This appendix provides information on the location and features of smart buildings. The source of the table is newspaper and magazine clippings in Ameritech's request for a waiver from the prohibition against participating in certain aspects of STS arrangements. Since the table is not the result of a formal survey and dates from the fall of 1984, it is suggestive but certainly not exhaustive. It should also be noted that although each of the projects has been singled out as "smart," not all of them offer pooled local telephone service. In some states with smart buildings such service is prohibited under existing commission rules.

TABLE 5

LOCATIONS AND FEATURES OF SOME EXISTING AND PLANNED SMART BUILDINGS

State	City	Name of Building	Type of Customer	Owner/ Developer	Comments	Source
Alaska	Anchorage	Hunt Building	--	Nelson Bunker Hunt Trust	Northwestern SLI PBX 350,000 sq. ft.	<u>Shared Tenant Services News, May 1984</u>
Arkansas	Little Rock	Baptist Medical Systems	Residential/ Business	Baptist Medical System	Shared private Services; Northern Telecon SLI retirement village with shared communications systems, may be expanded to extend shared services to medical and other business user in the future.	<u>Shared Tenant Services News, May 1984</u>
Arizona	Tempe	University Research City	Business	University of Arizona Mountain Bell	Tenant communication Services; May become a teleport	<u>Tenant Communications August, 1974</u>
California	Alameda	Harbor Bay Business Park	Business	Pacific Telecom, Inc. and Doric Development, Inc.	Complete communications services, teleport; InteCom IBX Complex includes Bay Area Teleport	
	Los Angeles	California Plaza	Business	Bunker Hill Associates (Metropolitan Structures)(Managing Partners), Cadillac Fairview/California, Shapell Industries, Goldrich, Kest, & Associates)	42 story, 1 million sq. ft. office tower to be open Oct. 1, 1985. Will include retail space and a theater. A three-tower, \$1.2 billion complex is projected, with a total of 3.5 million sq. ft.	<u>The New York Times, May 12, 1985</u>
	Los Angeles	400 S. Hope Street	--	Olympia & York Developments, Ltd.	OlympiaNet	<u>Tenant Communications, August, 1984</u>
	Los Angeles	11601 Wilshire Blvd.	--	Olympia & York Developments, Ltd.	OlympiaNet	<u>Tenant Communications, August, 1984</u>
	San Francisco	Harbor Bay Isle	Business/ Residential	TransHabor, Ltd. Doric Development Inc.	7.5 million sq. ft. "intelligent" town on 1000 acres of infill. \$4 billion project, with 750 one-family residential units, office buildings, and teleport	<u>Venture, October, 1984</u>
	San Francisco	Yerba Buena Gardens	--	Olympia & York Developments, Ltd.	OlympiaNet	<u>Tenant Communications, August, 1984</u>
	San Francisco	Montgomery Washington Towers	Business	American Network Trammel Crow	InteCom Switch	<u>Tenant Communications, August, 1984</u>

TABLE 5--Continued

State	City	Name of Building	Type of Customer	Owner/ Developer	Comments	Source
Colorado	Denver	Tabor Center	Business/ Residential (Hotel)	Williams Realty Developments United Technologies Building System Co.	Environmental control, security, electronic office automation; 3.1 million sq. ft. of office space, Westin Hotel	<u>Management Information Systems Week</u> , June 27, 1984
Connecticut	Hartford	One Commercial Plaza	--	Olympia & York Developments, Ltd.	OlympiaNet	<u>Tenant Communications</u> , August, 1984
	Hartford	City Plaza	--	Urban Investment and Development, Bronson & Hutensky	Integrated office complex by United Technologies	<u>USA Today</u> , August 1, 1984
	Norwalk	Merritt 7 Corporate Park	Business	A.D. Phelps, Inc.	7 story building with computerized system managing security, climate control, lighting, elevators, and telecommunications. On completion, the park will have 14 buildings, a 300 room hotel, and 3.9 million sq. ft. of office space.	<u>The New York Times</u> , May 12, 1985
District of Washington Columbia		National Press Building	Business	Ameritech, SBS RealCom	--	<u>Tele-Scope</u> , March 30, 1984
	Washington	National Place Building	Business	Ameritech, SBS RealCom	--	<u>Tele-Scope</u> , March 30, 1984
	Washington	Crystal City - [Gateway I, II, III]	Business	United Technologies, AT&T	Gateway I: Retariffed for shared communica- tions Gateway II: Constructed for shared telecommuni- cations Gateway III: Integrated building system	<u>Tenant Communicatons</u> , August, 1984
Florida	Tampa Bay	--	Business/ Residential	LinCom Corporation	Video conferencing, data processing, LAN, call accounting, lower cost long-distance calling, access to data bases planned; "Planned community" on an island with office buildings, hotels, and other facilities. Under development	<u>Business Communica- tions Review</u> , January- February 1984

TABLE 5--Continued

State	City	Name of Building	Type of Customer	Owner/ Developer	Comments	Source
	Tampa Bay	--	Business/ Residential	Landmarks Group (Landmarks and MCC Powers)	--	<u>The New York Times</u> , May 13, 1984
	Orlando	--	Business/ Residential	Landmarks Group (Landmarks and MCC Powers)	--	<u>The New York Times</u> , May 13, 1984
	Ft. Lauderdale	--	Business/ Residential	Landmarks Group (Landmarks and MCC Powers)	--	<u>The New York Times</u> , May 13, 1984
Georgia	Atlanta	Concourse	Business/ Residential	Landmarks Group (Landmarks and MCC Powers)	InteCom IBX 2.2 million sq. ft. \$250 million wired by MCC Powers, 5 office complexes, hotel, residential housing	<u>Interconnection</u> , May 2, 1984
	Atlanta	Galleria	--	Trammel Crow Co.	2.5 million sq. ft. telecommunications by Intelligent Communica- tions Control Group	<u>Venture</u> , October, 1984
Indiana	Indianapolis	Landmark Center	--	--	Long-distance least- cost routing, shared computer services, Centrex; 400,000 sq. ft. complex Centrex network by Indiana Bell, with Office Networks, Inc.	<u>Tenant Communications</u> , November, 1984
Illinois	Chicago	Chicago Board of Trade	Business	--	--	<u>Business Communications Review</u> , January-February, 1984
	Chicago	One Financial Place	Business	Developer: Financial Place Corp. Manager: Financial Place Communications (Financial Place Corp, Midwest Stock Exchange, Johnson Controls), U.S. Equities	Houses Midwest Stock Exchange and 40 story, 1 million sq. ft. office tower. Integrated voice and data communications, mainframe computer, security, energy man- agement; InteCom IBX S/80, Johnson Controls fire safety, security, lighting, energy man- agement, Digital mainframe computer, Total Cost: \$5-7 million	<u>Chicago Tribune</u> , September 4, 1984
	Chicago	Madison Plaza	Business (offices)	United Technologies Integrated Office Services	45 story, 1 million sq. ft. office complex	<u>Chicago Tribune</u> , September 4, 1984

TABLE 5--Continued

State	City	Name of Building	Type of Customer	Owner/ Developer	Comments	Source
Illinois	Chicago	Chicago Board of Trade	Business	--	--	<u>Business Communications Review</u> , January-February, 1984
	Chicago	One Financial Place	Business	Developer: Financial Place Corp. Manager: Financial Place Communications (Financial Place Corp, Midwest Stock Exchange, Johnson Controls), U.S. Equities	Houses Midwest Stock Exchange and 40 story, 1 million sq. ft. office tower. Integrated voice and data communications, mainframe computer, security, energy management; InteCom IBX S/80, Johnson Controls fire safety, security, lighting, energy management, Digital mainframe computer, Total Cost: \$5-7 million	<u>Chicago Tribune</u> , September 4, 1984
	Chicago	Madison Plaza	Business (offices)	United Technologies Integrated Office Services	45 story, 1 million sq. ft. office complex	<u>Chicago Tribune</u> , September 4, 1984
	Chicago	1 Pierce Place	Business (offices)	United Technologies Integrated Office Services	16 story, 525,000 sq. ft. building, Cost: \$2 million	<u>Chicago Tribune</u> , September 4, 1984
	Chicago	President's Plaza III	Business (offices)	United Technologies Integrated Office Services	Two 14-story office towers, 700,000 sq. ft. Total cost: \$2 million	<u>Chicago Tribune</u> , September 4, 1984
	Chicago	Olympia Center	Business/ Residential	Olympia & York Developments, Ltd.	Least-cost routing, data transmission, video teleconferencing, modern pooling, electronic and voice mail. Tie-in with a nine-city "OlympiaNet"; 375,000 sq. ft. of office space, 200 condominiums, Nieman-Marcus department store	<u>Chicago Tribune</u> , September 4, 1984
	Chicago	Gateway IV	Business	Tishman	Centrex plus fiber-optic LAN for enhanced data services 1.1 million sq. ft. office complex. Centrex through Illinois Bell by Alpha Communications	<u>Tenant Communications</u> , August, 1984
	Chicago	333 W. Wacker Dr.	--	Ameritech/SBS Realcom	--	<u>Chicago Tribune</u> , September 4, 1984
	Chicago	900 N. Michigan Ave.	--	Urban Investment and Development Company with Ameritech and SBS RealCom	--	<u>Tele-Scope</u> , March 30, 1984

TABLE 5--Continued

State	City	Name of Building	Type of Customer	Owner/ Developer	Comments	Source
	Chicago	Merchandise Mart/ Apparel Center	--	Electronic Office Centers	Computerized voice, data, and message services, low-cost long distance service, teleconferencing, data processing	<u>Real Estate Forum</u> , April, 1984
Massachusetts	Boston	53 State St.	--	Olympia & York Developments, Inc.	Second building in OlympiaNet network	<u>Tenant Communications</u> , August, 1984
	Boston	One Liberty Plaza	--	Olympia & York Developments, Inc.	OlympiaNet	<u>Tenant Communications</u> , August, 1984
	Springfield	One Financial Plaza	--	Olympia & York Developments, Inc.	OlympiaNet	<u>Tenant Communications</u> , August, 1984
	Boston	Longwood Medical Business Area Exchange		Medical Area Services Corporation (MASCO)	Complete voice and data services, centralized attendant, billing, network, consulting, and directory services. Projected for mid-1986. MASCO include 12 Boston area medical institutions	<u>Shared Tenant Services News</u> , May 1984
Maryland	Bethesda	Eisinger-Kilbane Air Rights Building	Business	Eisinger-Kilbane & Associates/iBiS (40/60)	Integrated shared communications network. Retrolit & existing office tower. 730,000 sq. ft. one of twelve buildings under \$10 million iBiS-NYNEX contract.	<u>Shared Tenant Services News</u> , May 1984
	Rockville	Metro-Centre	Business	Eisinger-Kilbane & Associates/iBiS (40/60)	Existing retail and office mall	<u>Venture</u> , October, 1984
	Bethesda/ Rockville	--	Business (Hotel)	Eisinger-Kilbane & Associates/iBiS (40/60)	New construction	<u>Venture</u> , October, 1984
	Bethesda/ Rockville	--	Residential	Eisinger-Kilbane & Associates/iBiS (40/60)	High income retirement complex	<u>Venture</u> , October, 1984
	Bethesda/ Rockville	--	Business/ Residential	Eisinger-Kilbane & Associates/iBiS (40/60)	Microwave link between Bethesda and Rockville	<u>Venture</u> , October, 1984
Missouri	Kansas City	--	Business	Executive Hills, Inc., Republic Telecom, AT&T-IS	"Sophisticated office features aimed at white-collar productivity"; voice, electronic mail; AT&T-IS System 85	<u>The Report on AT&T</u> , June 11, 1984

TABLE 5--Continued

State	City	Name of Building	Type of Customer	Name of Developer	Comments	Source
New Jersey	Fort Lee	Parker Plaza	Business	--	18 story, 300,000 sq. ft. office complex in northern New Jersey. Computer, telecommunications, Security and Mechanical Support.	<u>The New York Times</u> , May 12, 1985
	Hackensack	Three University Plaza	Business	--	RCA Network Services electronic services, including telecommunications	<u>The New York Times</u> , May 12, 1985
	Newark	Newark Legal and Communications Center	Business	Port Authority of New York and New Jersey	Fully shared internal communications system, including long-distance telephone resale, least-cost routing, computerized detailed billing, automatic message retrieval, voice mailbox, centralized word processing, discounted computer time-sharing, shared data bases. Fiber optic link to Staten Island teleport. Conference center.	<u>Tenant Communications</u> , August, 1984
New York	New York	375 Hudson Street	Business	Tishman-Speps Properties	18 story, 900,000 sq. ft. has own electrical cogeneration system. Telecommunications interconnect center provides a variety of telephone services and a fiber optic link to the Teleport.	<u>The New York Times</u> , May 12, 1985
	New York	75 Park Place	Business	Jack Resnick & Sons, Inc.	14 story, 520,000 sq. ft. Security, hold safety, and a variety of telecommunications services provided. Can install advanced features such as microwave or fiber optic lines, emergency power service, and underfloor wiring or equivalent.	<u>The New York Times</u> , May 12, 1985
	New York	7 World Trade Center	Business	Silverstein Properties	47 story, 1,800,000 sq. ft. office tower. Direct fiber optic connection to Teleport with advanced communications, security and environmental systems. Projected Spring 1986 occupancy.	<u>The New York Times</u> , May 12, 1985
	New York	Park Avenue Tower at 55th Street	Business	Park Tower/IBM (Joint Venture)	36 story tower located on 55th street off Park Avenue. 550,000 sq. ft. with sophisticated communications, mechanical, climate, security, and fire control. High ceilings to allow underfloor wiring.	<u>The New York Times</u> , May 12, 1985

TABLE 5--Continued

State	City	Building	Customer	Developer	Comments	Source
	New York	OlympiaNet Fiber Optic Network	--	Olympia & York Developments, Ltd.	OlympiaNet (Buildings in [at least] eleven locations in NYC)	<u>Tenant Communications,</u> August, 1984
	New York	Equitable Towers East	--	United Technologies AT&T	Retrofit & existing building	<u>Tenant Communications,</u> August, 1984
	New York	Equitable Towers West	--	United Technologies AT&T	--	<u>Tenant Communications,</u> August, 1984
	New York	Grand Central Tower	Business	MCC Powers	--	<u>New York Times,</u> May 13, 1984
	New York	Trump Tower	--	--	--	<u>New York Times,</u> May 13, 1984
	New York	Tabor Center	--	--	--	<u>New York Times,</u> May 13, 1984
Oklahoma	Tulsa	Galleria	Business/ Residential (Hotel)	Jack Zilliox, operator	Least cost routing, long distance resale, call detail recording, back-up power system for hotel room control Includes Kensington office tower, 400-room Sheraton Kensington Hotel, and the 40-store Sheraton Galleria shopping mall. Telecommuni- cations services by Central Business Systems. Two Rolm PBX's.	<u>Tenant Communications,</u> August, 1984
	Edmond	Waterwood Development	--	Shared Tenant Services, Inc.	Long distance resale, electronic mail, other non-local service features. Four building, mixed use facility	
	--	--	Business/ Residential	University of Oklahoma	--	<u>Tenant Communications,</u> August, 1984
Oregon	Portland	Fountain Plaza		Olympia & York Developments, Ltd.	OlympiaNet	<u>Tenant Communications,</u> August, 1984
	Portland	PacWest Center	Business	American Network	30 story building, InteCom switch. Financed and coordinated by Morgan Stanley Investment firm	<u>Tenant Communications,</u> August, 1984
	Portland	Good Samaritan Hospital	Business	Good Samaritan Hospital	Direct Inward Dialing, Least-cost routing, call forwarding, long distance resale; InteCom IBX switch	<u>Shared Service Tenant News,</u> May 1984
Tennessee	Knoxville	East Towne Mall	Business		Discounted long-distance services, itemized monthly billing, call forward, waiting, hold and conferencing, direct inward dialing and data access 1 million sq. ft. shopping mall, 170 tenants. Northern Telecom SLIN switch.	<u>Shared Service Tenant News,</u> August, 1984

TABLE 5--Continued

State	City	Name of Building	Type of Customer	Owner/ Developer	Comments	Source
Texas	Austin	First City Centre	Business		Voice and data communications; distributed data processing and video teleconferencing planned. IBM 5520 mainframe, Rolm VLCBX digital voice and data switch	<u>Data Communications</u> , April, 1984
	Dallas	Park Central	--	--	10 Buildings, 1,000,000 square feet total. 9 of 10 buildings to be serviced by AT&T-IS	<u>The Report on AT&T</u> , June 11, 1984
	Dallas	San Jacinto Center	--	--	Integrated office system retrofitted by United Technologies	<u>USA Today</u> , August 1, 1984
	Dallas	Stanford Corp. Centre	--	Developer: Bill C. Walters Cos.	Tenant telecommunications by SBS RealCom; when completed will total over 1 million sq. ft.	<u>Tenant Communications</u> , August, 1984
	Dallas	1999 Bryan St.	--	Olympia & York Developments, Ltd.	OlympiaNet	<u>Tenant Communications</u> , August, 1984
	Dallas	Galleria	Business	TEL-Management	Discount on toll charges, least-cost routing, detailed call accounting; InteCom switch shopping mall, office tower	<u>Business Communications Review</u> , January-February, 1984
	Dallas	Baylor University Medical Center	Business	Baylor University	Call transfer, conference calling, call forward, intercom, least-cost routing; Two Northern Telecom SLI PBX's	<u>Shared Tenant Services News</u> , May, 1984
	Dallas	St. Paul Medical Center	Business	St. Paul Medical Center	Voice and data communication; Northern Telecom SLI PBX 225,000 sq. ft. professional building	<u>Shared Tenant Services News</u> , May, 1984
	Dallas	LTV Center	Business	Trammel Crow Company United Technologies Building Systems Co. Otis Elevator Carrier	Customized mechanical and communications systems	<u>Buildings</u> , August, 1984
	Dallas	Valley Ranch	--	Multinet/Triland Development Corp.	Fully enhanced telecommunications enclave; NEC NEAX 2400 PBX	<u>Shared Tenant Services News</u> , May, 1984
	Houston	United Bank Plaza	Business	TEL-Management	Rolm switch	<u>Tenant Communications</u> , November, 1984
	Los Colinas	Williams Square	--	Owner: Triland International Inc. Manager: SBS RealCom	1.6 million sq. ft. NEC 2400 IMX switch	<u>Tenant Communications</u> , November, 1984
	Midland	Play Desta Plaza	--	--	400,000 square feet	<u>The Report on AT&T</u> , June 11, 1984

TABLE 5--Continued

State	City	Name of Building	Type of Customer	Owner/ Developer	Comments	Source
Virginia	--	Renaissance Centre	Business	--	Multi-use complex near Dulles International airport. \$2.0 million Honeywell "building management system," integrating heating, lighting, maintenance scheduling, security, and fire management through the central computer. Accounting, word-processing, and database management features available through work stations linked to the computer, as well as "high-tech" telephone features.	<u>The New York Times</u> , May 12, 1985, Commercial Real Estate Report
	McLean	Tyson-McLean Office Park	Business	Planning Research Corporation	461,000 sq. ft. Allows tenant sharing in purchasing publications, computer, food, maintenance, and telecommunications services; Northern Telecom SLI-VLE1500 digital switch.	<u>Telephony</u> , June 4, 1984

Source: "Ameritech's Motion for Clarification of the Decree Regarding the Provision of Shared Telecommunications Services," United States v. Western Electric Co. and American Telephone and Telegraph Co., Civil Action No. 82-0192, U.S. District Court for the District of Columbia, Attachment 1.