libraries, it should be made explicit, with telecommunications service providers receiving support from the fund for the discounts they provide to the ISPs. The amount of the support would be calculated based on the payments the ISPs would have made if they paid access charges, minus what they are actually paying because of the ESP exemption (*i.e.*, rates for local business services). Competition should ensure that the ISPs pass the discounts on to schools and libraries.

USIPA states that ISPs should have equal opportunities "to provide advanced telecommunications services to the nation's schools and libraries."[93] So long as an ISP has received the proper approval from the appropriate regulatory agency to provide telecommunications services, the ISP has every opportunity to provide telecommunications services to schools and libraries, or to any other customer. The ISP, however, will be doing so as a telecommunications carrier and will be subject to appropriate regulations, including the obligation to support the universal service fund.

## X. ARGUMENTS THAT REMOVAL OF THE ESP EXEMPTION WOULD BENEFIT ILEC AFFILIATED ESPs TO THE DETRIMENT OF OTHER COMPETITORS ARE WITHOUT MERIT

A few parties incorrectly argue that removal of the ESP exemption would benefit ILEC-affiliated ESPs to the detriment of other competitors. For instance, MCI indicates that the ILEC-affiliated ESP would not have to pay the full price of access services.[94] Actually, the Commission has extensive rules ensuring that the largest ILECs, the BOCs, provide interconnection to third-party ESPs that is comparably

[93] USIPA at ii.
[94] *See* MCI at 17.

efficient, including identical prices, to the interconnection that they provide to their own enhanced service operations. Moreover, AOL's expression of concern about potential anticompetitive behavior, including cross subsidies,[95] is without merit. The Commission has extensive accounting rules and other safeguards to ensure against ILEC cross-subsidies to support their enhanced services operations.

## XI. THE COMMISSION SHOULD REJECT THE INTERNET ACCESS COALITION'S UNBUNDLING AND COLLOCATION PROPOSALS

As IAC acknowledges, Section 251 of the Telecommunications Act provides obligations and rights among telecommunications carriers and does not apply to ESPs.[96] IAC objects to that limitation solely in the context of physical collocation. The limitation applies equally, however, to access to unbundled elements and other interconnection issues. Congress intentionally left ESPs out of Title II regulation. For instance, ESPs do not have interconnection and Universal Service funding obligations, and it is essential that they not obtain the corresponding benefits. If they did, this would create yet more unreasonable discrimination in favor of ESPs. Of course, an ESP can also be a telecommunications carrier. In fact, if an ESP provides telecommunications service as defined in the Act, then to that extent it is regulated as a carrier and is subject to both the benefits and responsibilities of that status. We address IAC's proposals below in the context of telecommunications carriers, in order to inform the

[95] AOL at 6.
[96] IAC at 49.

Commission of serious network reliability and other technical concerns with such proposals.

### A. The Commission, Once Again, Should Reject The Proposed Requirements For ILEC Collocation Of Switches And Enhanced Services Equipment

CompuServe requests that the Commission require ILECs to collocate enhanced services equipment.[97] In addition to that equipment, IAC asserts that the collocation requirement should include switches.[98]

The Commission has considered these requests on several occasions, and nothing has changed that could affect the Commission's rejection of these requests. With regard to enhanced services equipment, the Commission has found that collocation is not needed for interconnection and that nondiscriminatory pricing is ensured by application of a "two-mile" rule, under which the BOC's ESP pays for interconnection as if it were located two miles from the central office.[99] With regard to collocation of switches, the Commission cited not only a lack of need with regard to interconnection but also technical impracticalities:

> We now affirm our tentative conclusion that physical collocation of switching equipment should not be required. Virtually every commenter that addressed this issue supported our tentative conclusion and the reasoning behind it. Thus, they agree that there is no competitive or technical benefit to locating switching equipment in LEC offices; that

---

[97] CompuServe at 11.

[98] IAC at 49-51.

[99] *See, e.g., Third Computer Inquiry, Report and Order*, 104 FCC 2nd 958, 1037-38 (1986); *Computer III Remand*, 6 FCC Rcd 7571 (1991); *Filing and Review of Open Network Architecture Plans*, CC Docket No. 88-2, 4 FCC Rcd 1 para. 318 (1988) ("*ONA Plans Order*").

> switching equipment is too large and heavy to be collocated in LEC space; and that interconnectors would prefer to place their switching equipment on their own premises for monitoring purposes. The arguments offered in support of mandatory collocation are not convincing. No one has shown why the line-drawing process between switching and transmission equipment would be unmanageable or that collocation is necessary to ensure fair and nondiscriminatory treatment of interconnectors by LECs. Indeed, our tariffing and general nondiscrimination requirements should provide sufficient protection against unfair or unreasonably discriminatory LEC rates and practices.[100]

The Commission affirmed these decisions last year in the *Interconnection Proceeding*,[101] in which the Commission implemented collocation requirements authorized by Congress. Decisions concerning ILEC collocation of equipment beyond that which Congress authorized must be left up to ILECs. Any additional collocation requirements would constitute unauthorized takings of ILEC property.

The competitive market will determine what types of collocation may be economically and technically feasible and of benefit to customers. The whole notion of collocation may change as carriers of all types create competitive "data central offices," which are separate from the PSTN.[102] Competitors will have the choice of building their own data central offices or attempting to lease space from another provider as a real estate transaction. Telecommunications regulation is neither authorized nor needed in this area and would simply interfere with the competitive process.

---

[100] *Expanded Interconnection With Local Telephone Company Facilities*, CC Docket No. 91-141, *Third Report and Order*, FCC 94-118 (1994), para. 35.

[101] *First Interconnection Order* at para. 581.

[102] *See* Pacific Telesis Group's March 1997 Internet White Paper at 22, figure 14.

## B. The Commission Should Reject IAC's Other Collocation And Unbundling Proposals

IAC is proposing:

1. Collocation at unspecified locations in the loop network;[103]

2. Disaggregation of loop access into sub-elements including feeder, distribution and the feeder/distribution interface (FDI);[104] and

3. The ability to use technologies that would allow them to share the same local loop with the ILEC so that high speed access could be provided on the existing local loop;[105]

The Commission stated in the *Interconnection Proceeding*:

> We also conclude, however, that legitimate threats to network reliability and security must be considered in evaluating the technical feasibility of interconnection or access to incumbent LEC networks. Negative network reliability effects are necessarily contrary to a finding of technical feasibility. Each carrier must be able to retain responsibility for the management, control, and performance of its own network. Thus, with regard to network reliability and security, to justify a refusal to provide interconnection or access at a point requested by another carrier, incumbent LECs must prove to the state commission, with clear and convincing evidence, that specific and significant adverse impacts would result from the requested interconnection or access.[106]

IAC does not mention the ILECs' obligations to maintain network reliability and security for their existing and future customers. We of course take this obligation seriously. For instance, SWBT and Pacific Bell are working with the industry, including ESPs, to introduce new technologies such as ADSL. However, we will not introduce

---

[103] IAC at iii.
[104] *Id.* at iv.
[105] *Id.* at iii.
[106] *First Interconnection Order* at para. 203, emphasis added.

new technologies simply because they are available without ensuring the negative effects on our existing and future customers have been eliminated.

### 1. The Commission Should Reject IAC's Proposal For Collocation At Unspecified Points In The Loop Network

Existing agreements for collocation provide for physical separation between companies' equipment. This separation is needed for security reasons and for network reliability. The separation keeps the ILEC's employees from inadvertently interfering with the collocator's equipment and vice versa. It also keeps collocators from interfering with the equipment of other collocators. The Commission has agreed that there are legitimate security and network reliability concerns.

Allowing employees of competitors to work on the equipment that serves one's own customers is not reasonable. Given that this access would need to be nondiscriminatory to all collocators, any particular location might be entered by many different companies. We doubt that any carrier would allow its numerous competitors access to equipment where a simple mistake might disrupt service to hundreds of customers.

In addition to the potential security issues, merely keeping track of which carriers are allowed access to the numerous points of interface, which are neither understood nor defined, what work functions should be performed, and what activity actually took place would be an onerous, if not impossible, task. As an example, Pacific Bell has thousands of feeder/distribution interfaces ("FDIs") where both the feeder and distribution cables are terminated on hardened lugs. This is done to allow

limited rearrangements without damaging the more delicate feeder and distribution wires. Pacific Bell is responsible for the security of these points that are often located on the public right of way. Locks are placed on them so that the only access is by trained technicians. If nondiscriminatory access were allowed to all collocators, there would be no way of knowing what work functions were performed or who performed the work. There are no industry accepted standards for the interconnection of multiple providers that would be required.

The only way to resolve the security issue would be to build multiple interfaces, one for each collocator. That idea is clearly impractical because the cost of building interfaces at thousands of sites would easily run into the hundreds of millions of dollars in California alone.

Similar problems would occur with providing physical access to loop concentrators/multiplexers or fiber, except that the number of customers that could be affected by mistake or sabotage could be thousands instead of hundreds. There are literally tens of thousands of circuits passing through some of these nodes and underground vaults, transmitting both voice and data. These circuits include traffic of law enforcement agencies, public safety agencies, and the military.

Unbundling of subloop elements should not be allowed unless these problems are eliminated. Direct physical access to these critical facilities obviously needs to be tightly controlled.

### 2. The Commission Should Reject IAC's Proposal For Disaggregation Of Loop Access Into Sub-Elements, Including Feeder, Distribution, And The Feeder/Distribution Interface

The first problem with this request is that it assumes that the three sub-elements exist in the network. They do not exist in many cases, and in other cases there may be more than one of the sub-elements in the loop serving a particular customer. As an example, Pacific Bell has approximately 8,000,000 loops terminated directly at or near a customer's location with no FDI to differentiate feeder and distribution.

In addition to the existing network not being neatly subdivided, there are problems even attempting to define the terms "feeder" and "distribution" for new plant. Pacific Bell took part in CPUC hearings to identify these specific sub-elements. Even with these public hearings, we were unable to identify specific network components that separated feeder and distribution for the placement of fiber cables.[107] As discussed in those hearings, the existing network contains many different architectures and will certainly contain more in the future. The California PUC, in Decision 91-11-018, was forced to rely upon the size of the building being served in order to determine if the plant to the building contained just feeder or feeder and distribution. The decision did not reflect the components of the plant itself, rather it reflected the size and type of building being served because no common sub-elements could be identified in each of the loop architectures.

---

[107] *Re: Alternative Regulatory Frameworks for Local Exchange Carriers*, CPUC Case No. 87-07-024, *Opinion*, Decision No. 91-11-018 (November 6, 1991).

Aside from defining sub-elements that have no commonly agreed upon meaning, there is the practical matter of having to create physical or electrical access to sub-elements in order for them to be offered as separate products. This would present a host of currently insurmountable problems, including:

1. Degradation of Service
2. Hardware Unavailability; and
3. Additional Harm to the Public

When these issues are evaluated, it is plain to see that subloop unbundling is not technically feasible.

**Degradation of Service**

With sub-loop unbundling, service to our customers would be adversely affected in two ways. First, provisioning service for our customers would take longer and cost more. Second, network reliability for our customers would be adversely affected by an increase in repair time and more expensive maintenance cost.

During the last 30 years, one consistent goal of the industry has been to provision service quickly without the need for manual network rearrangements. This is accomplished by leaving the primary facility connected, from the central office to the customer location. A disconnect of service is done at the central office only. As a result, the new service can often be activated with no need for field work. In fact, today

85% of these services require no field work on the loop facility. Prompt, efficient service is provided using this strategy.[108]

If these field connections are broken as proposed, the time and cost needed to provision basic service will increase because of the need to dispatch personnel to separate the loop sub-elements and then put them back together again if the next customer requests service from the ILEC or another carrier. In today's environment this will add at least one day to the time required to provide service to a customer. Pacific Bell, for instance, processes over two and one half million of these orders annually. Clearly, this could easily delay service to millions of customers. This obviously would increase the cost and time needed to provision the loop product as well as the ILEC's other services. The ILEC would be continually "unbundling and rebundling" the loop network.

Two major factors would make it significantly more difficult, if not impossible, to maintain quality service for customers. The first factor is simply the added manual intervention in the loop network. The industry has found over the years that a major cause of customer trouble is "hands in the plant." There is additional risk of trouble anytime the plant must be exposed and manually rearranged. There would be a marked increase in the number of technician field visits if the loop is subdivided, because: 1) an increased number of interfaces will be required, 2) an increase in the number of the ILEC's technicians breaking up and then reconnecting facilities will occur, and 3) there will be a variety of collocators' technicians working in the loop plant.

---

[108] *See* Testimony of J. M. Swenson, May 30, 1986, CPUC A. 85-01-034.

With more manual intervention by a more diverse group of people (*i.e.*, third-party and ILEC technicians), there will be a much greater probability of adversely affecting service quality. A recent study by Bellcore estimates that maintenance cost will increase by a factor of about 56%, if subloops are unbundled.[109] This recent study updates previous findings that increased churn, or "hands in the plant," increases trouble.

A second major factor deals with the potential for incompatible equipment and service to be used in the network. We agree with IAC that there are many new technologies available that could increase the data carrying capability of the loop network. However, transmission quality will certainly decline if there are no standards on the types of equipment or services that may be placed on the network. Today, services are designed for the entire loop, from the central office main distribution frame ("MDF") to the customer. If the loop is subdivided, there may be services, old and new, placed on the network at various points (*e.g.*, distribution only). If this is allowed, Pacific Bell, for instance, will not be able to fulfill its obligation to maintain the facilities, as required by both the CPUC and FCC. While the FCC states that ILECs must not prohibit a telecommunication carrier from providing any telecommunications services over unbundled elements,[110] it also states that ILECs are responsible for network reliability and that they need not combine elements that are not normally combined

---

[109] *Implementation of the Local Competitive Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, Bellcore, Issues Concerning the Providing of Unbundled Subloop Elements by Ameritech, pg. 4, May 16, 1969, attached to *Comments of Ameritech.*, filed May 16, 1996.

[110] *First Interconnection Order* at para. 292

unless doing so is technically feasible and would not undermine the ability of other carriers to access unbundled elements or to interconnect. [111]

Some types of circuits need to be physically and electrically isolated from other types of service in order to maintain the quality of service. This concept is commonly referred to as spectrum management and is well known and documented in the industry. Spectrum management requires that the circuit designers and engineers be aware of, and design for, particular types of services being installed as well as the types of existing services in the cable. Today this is done on the entire loop, from central office to the customer premise. Services that require spectrum management include ADSL, Hi Cap (*e.g.*, T-1), Data Over Voice ("DOV"), analog carrier circuits, ISDN,[112] and Digital Data System ("DDS").[113] All these services can create interference when located in the same cable group as other services with different transmission characteristics. ILECs must be able to validate that new services and equipment being placed in the network will not interfere with existing services or equipment. If ILECs are not allowed prior validation of these services, as would be the case if they were forced to offer distribution as a network element, network reliability would be jeopardized.

These spectrum management issues were a major reason for the delayed introduction of ISDN. IAC has grossly over simplified the issues involved in introducing

---

[111] *Id.* at para. 296.

[112] Bellcore, IL-89/11-057, November 30, 1989, Spectrum Management Plan for Deploying Data/Voice, Pre-Standard ISDN and Standard ISDN DSL Transmission Systems In The Loop Plant.

[113] AT&T Western Electric Practices Standard, Section 880-601-115, Issue 4, January 1984, 4-Wire Local Loop Engineering Guidelines Digital Data System, pg. 7.

a new technology. As with ISDN, there are no industry standards on xDSL, and some of the transmission schemes being offered by the xDSL technologies actually interfere with each other.

**Hardware Availability**

Suitable FDIs for types of plant other than twisted copper pairs do not exist (*e.g.,* fiber-coax, fiber, and concentrator/multiplexer). Where electrically and physically possible, new devices would need to be developed for fiber based networks. Manufacturers would require up-front investment and/or volume commitments before they would begin designing and manufacturing such devices, assuming they could be developed.

To some extent, even where technology exists, such as with copper twisted pairs, there are significant hardware issues. As an example, today's accessible terminals are typically manufactured in increments of 25 pair (*i.e.,* 25, 50, 100, 200 and so on). These increments are used because the cables are manufactured in 25 groups to facilitate splicing, engineering, and administration. If a carrier were to request 1 or 2 pair of "feeder," there would be no suitable equipment available. It would need to be manufactured unless the carrier wanted to pay for a 25 pair cable and terminal. Combine this example with 50 or more carriers each requesting a few pair, and the hardware considerations become insurmountable.

Some state-of-the-art designs for outside plant only work when there is an uninterrupted transmission path from the customer location to the central office. As an example, Pacific Bell's hybrid fiber-coax network uses a dynamic time slot interchange

process to assign the telecommunications signals to ever-changing channels. The electronic equipment in the central office and at the customer's location continually communicate so that the appropriate channel is used at both ends of the seamless transmission path. Developing a suitable FDI to provide access is not feasible in this case, as breaking the inter-equipment communications ties will disable the service.

**Additional Public Harm**

Existing plant (*e.g.*, FDIs, manholes, loop electronics enclosures, controlled environmental vaults) was designed and sized for specific needs, and much of it has no additional capacity. If additional plant is needed, permits and/or rights of way will be required. In the case of FDIs and loop electronics enclosures, they are typically above ground or pole mounted. The public's response to having more above ground equipment in their neighborhood is usually negative. If we are forced to place an additional FDI for each interconnector there will be a public outcry. For below ground equipment, the public would have to endure substantial inconvenience caused by the excavation of the streets, sidewalks and landscaping located in public easements.

These issues were recently presented to the California PUC during arbitration hearings with major ILECs. Pacific Bell's position against unbundling the loop into feeder and distribution was upheld in these hearings.[114]

---

[114] *Petition of AT&T Communications of California, Inc. for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with Pacific Bell*, Application 96-08-040, *Arbitrator's Report*, p. 25 (October

### 3. SWBT And Pacific Bell Are Investigating The Ability To Use Technologies That Would Allow High Speed Access To Be Offered On Existing Loop Facilities

IAC requests that ILECs allow technologies such as HDSL, ADSL, SDSL, and VDSL to be placed on customer loops so that both POTS and high speed data can be offered over the same loop facility.[115] There are currently no generally accepted industry standards for ADSL. SWBT and Pacific Bell are currently working with the industry to develop standards and methods for introducing ADSL into our network. However, SWBT and Pacific Bell will not introduce ADSL until we have verified that it can be installed and maintained without adversely affecting our existing and future customers.

At this time, SWBT and Pacific Bell do not see any feasible method to offer xDSL-type services that will share a loop facility with more than one provider (e.g., one provider offering POTs and another provider offering xDSL on the same loop). The provisioning, billing, and maintenance of such a product is not possible with today's equipment and systems. Serious problems exist, including:

1. Many loops require equipment called load coils that allow POTS services to function properly. None of the xDSL types of technology will operate with the load coils in the loop. Removal of the load coils will degrade the POTS service.

2. Sharing the loop facility with another company may require that SWBT's and Pacific Bell's customers be placed on another company's equipment. Not having access to equipment on our own customers' lines would severely hamper our ability to maintain our customers' service if problems arise.

---

31, 1996) as approved by the CPUC in its *Opinion*, Decision 96-12-034 (December 9, 1996).

[115] IAC at 28.

We, of course, cannot introduce a technology or service that degrades existing service or that will not allow the services of our existing and future customers to be properly maintained.

## XII. CONCLUSION

The Commission should reject the arguments of those parties that seek to retain price controls that benefit them at the expense of others in the industry and consumers. The Commission should take the following steps:

- Recognize ESPs as users of access services, and remove the ESP exemption from access charges in the pending access reform order.
- If subsidies remain for a time in access generally, waive ESP payments of the charges for CCCL, TIC, and reserve deficiency amortization, so that ESPs pay only the costs of the LEC carrying the call.
- Make it clear that reciprocal compensation does not apply to calls terminated to ESPs since those calls involve interstate and international access, not local service interconnection.
- List ESPs' numbers that are used for access in a data base in order to ensure that ESPs pay access charges, that those charges are appropriately shared when more than one carrier provides access for the ESP, and that reciprocal compensation does not apply.

These steps will remove price controls and, thus, will avoid the uneconomic arbitrage incentives that threaten the Commission's goals and will unleash the investment needed to build new data services and networks. This, in turn, will allow the next wave of information services growth and the realization of the Internet promise

to bring ubiquitous, high-speed access to information for all members of society and increased economic growth for our nation.

Respectfully submitted,


DURWARD D. DUPRE
MARY W. MARKS
THOMAS A. PAJDA

One Bell Center
Room 3536
St. Louis, Missouri 63101
(314) 331-1610

ATTORNEYS FOR
SOUTHWESTERN BELL
TELEPHONE COMPANY

MARLIN D. ARD
JEFFREY B. THOMAS

140 New Montgomery Street
Room 1529
San Francisco California 94105
(415) 542-7661

ATTORNEYS FOR PACIFIC BELL
AND NEVADA BELL


Date: April 23, 1997

0161363.01

**EXHIBIT A**

# Pacific Bell ESP Impact Study

## Introduction

To develop information on the size of the ESP market, number of business lines used for end-user access, and the impact on the network Pacific employed a "case study" approach. From study data on a sample set of ESPs, estimates of the size and scope of the ESP market within Pacific's regions were developed. The study design included the measurements of traffic continuously over a 24 hour period for 7 days a week, for a period of two weeks ( May 13 - May 26, 1996). The study encompassed 29 ESPs in 29 Central Offices and over 2000 lines. Initial results are presented below.

## ESP Access Network Topology

The ESP exemption has enabled the ESPs to build access networks using state tariffed business lines. This architecture requires that ESPs establish business lines within the local calling area of their end-users. For example, for an on-line service or Internet access provider to reach 80 to 90% of the end-users in California, they need to establish approximately 50 different business line hunt groups (e.g. local access nodes). Local access nodes vary in size from a few lines up to a 1000 lines in a hunt group associated with a single telephone number. The number of lines, types of service (basic business line, Direct Inward Dialing Trunks, Centrex, and ISDN PRI) vary by type of ESP and the number of end-users in a local calling area.

## ESP Access Network Demographics

Pacific Bell has conducted case studies on a sample of ESPs and has developed the following estimate of the size of ESP access networks in Pacific Bell's market area:

| ESP Segment | Entities | Lines in use |
|---|---|---|
| Telemessaging | 200-250 | 17,000 |
| On-line/VANS | 10-15 | 50,000 |
| Bulletin Boards | 200+ | 3,000 |
| Internet Access | 150+ | 40,000 |
| Total | 560+ | 110,000 |

Based on measured call volumes from a sample of ESP lines, the average ESP line handles approximately 125,000 minutes of calls per year. ESPs pay an average of about $20 per month per access line (including EUCL). Based on 110,000 lines, approximate annual revenues to Pacific Bell paid by ESPs for access is $26 million. This results in an effective per minute rate for ESPs of just over $0.002 per minute, or about 12% of what interexchange carriers pay for interstate switched access (an average of $0.018 per minute).

The On-Line/VAN and Internet segments are growing rapidly, with orders pending for several thousand additional lines. In the past year these segments have grown by up to 20,000 lines. Annualized traffic on Pacific's network from all of the ESP segments is in excess of 13.8 billion minutes.

## Impact of ESP Traffic on Pacific Bell's Network

Lines used by ESPs are priced and engineered based on average traffic levels. Average busy hour traffic levels across all lines at Pacific Bell is 3 to 5 CCS (1 CCS = one-hundred call seconds, or 1.67 minutes of talk time). Central office switches are engineered to handle, on average, the 3 to 5 CCS busy hour load for each line in an office. When busy hour loads exceed the traffic load averages on which switches and trunks are engineered, Pacific Bell has to re-engineer its switches and deploy additional office equipment and trunking. Modularized switches, such as the 5ESS, have switch groups with specific CCS capacities. We typically serve 32 lines from a single switch group in the 5E. However, when an ESP establishes a large multi-line hunt group in an office, we are unable to provision the standard 32 lines on the switch group serving the ESP. We are finding that with some ESP hunt groups we can provisions only 4 or 5 lines per switch group. In addition to the impact on switch groups, intraswitch trunking between line and trunk modules must often be increased to handle above average call loads. Plus, in many cases interswitch trunking must be augmented.

Studies of ESP business line hunt groups indicate that ESP busy hours are significantly above those for business lines, with the average busy hour ranging from 13 to 21 CCS. For some individual hunt groups, we observed busy hour approaching 30 CCS. In addition, we identified one office in Silicon Valley where because of a large ESP's presence, 2.5% of the lines contributed to 20-36% of the office's traffic.

| ESP Segment | Average Peak Hour CCS | Peak Hour for Segment | Average Call Duration (Min.) |
|---|---|---|---|
| Telemessaging | 14 | 7:00PM | 0.6 |
| On Line / VANS | 13 | 10:00PM | 10.2 |
| Bulletin Boards | 21 | 11:00PM | 28.3 |
| Internet Access * | 19 | 10:00PM | 20.8 |
| Average Pacific Bell (for offices sampled) | 4 | 4:00PM | 3.8 |

* *Note: Sample size adjusted for statistical validity*

In several instances business and residence customers have experienced slow dial tone and call blocking where ESPs have caused congestion in an office. To alleviate the congestion, office re-engineering jobs must be performed. In the first quarter of this year Pacific expended $2.6M in incremental capital expense to address ESP network impacts. This requirement is from offices where ESP hunt groups were large enough to be easily identified and linked to congestion problems.

Expenses planned for the remainder of the year include another $11 million to meet the forecasted ESP demand for ISDN Primary Rate. Thus, 1996 costs identified to date are $13.6 million. However, we believe this estimate to be consevative in that many network augments are caused by, but not necessarily linked to, ESP traffic loads.