

White Paper on Telecommunications Legislation

Approaches to Resolving Telecommunications Issues in Florida

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¹The views expressed here do not necessarily represent those of organizations sponsoring the Public Utility Research Center or the Telecommunications Industries Analysis Project. Both organizations are described in attachments to this statement.

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1. Introduction

The most important issue for the Select Committee to consider is the *process* whereby competition is introduced into telecommunications markets. We know that local telephony, long distance, information services, television, and mobile services will be organized very differently in the future due to technological innovations and changes in public policy. The precise steps whereby incumbent firms in one industry become entrants into another will be determined by laws drawn up and passed by the Legislature and by rules established by the Florida Public Service Commission. The rules will depend on the priorities set in state law.

Competition and Regulation

I emphasize the process of introducing competition into these markets because new laws and rules will affect the ultimate configuration of firms in these industries. All the industry stakeholders recognize this fact. However, they will tend to outline their preferences for particular rules (and associated reductions of entry barriers) in terms of impacts on consumers. Such altruism is not totally absent, but corporate strategies are driven more by impacts on the bottom line than on how various consumer groups are benefitted.

The problem facing the Select Committee can be defined as follows: *How can policy-makers ensure that the benefits of competition flow to those who successfully commercialize new services and to consumers who desire those services?* We want innovative suppliers to benefit, because they will then have an incentive to continue to take the risks associated with telecommunications investments. We want consumers to benefit because that is the purpose of market systems--getting the right mix of goods and services to consumers at the lowest possible prices using the most efficient production techniques. An associated problem facing the Select Committee is the following: *How can the introduction of greater competition in telecommunications markets be accomplished without jeopardizing universal service?*

Status quo regulation would impose huge costs on the economy in terms of lost opportunities. On the other hand, "flash" total deregulation of all telecommunications

markets is neither politically feasible nor economically desirable. Some consumers would face residual market power for a period of time--and the existence of bottleneck facilities would require some oversight from regulators regarding terms and conditions of access during the transitional period ahead. However, an approach which opened one market to entry (without reciprocity) would favor potential suppliers over incumbent firms in that market. The sequence whereby one market is opened first, and then another is opened up at a later date has enormous consequences for the potential market participants. Asymmetric regulation may not have as its stated objective the choreographing of a particular set of market outcomes, but that is indeed the consequence.

So what can the Legislature do to prepare for competitive markets without unduly handicapping one or another set of participants? The Select Committee represents an important step in the development of public policy in this complex area. Symbolically, it signals to all the stakeholders (the most important of whom are Florida citizens) that the issues raised by telecommunications need to be given serious attention. Thus, the information collection effort is to be applauded. Whether six months provides adequate time to identify and resolve the issues is questionable. However, it might be enough time to establish procedures for resolving the issues--which then can be brought back to the Legislature if the benefits of increased competition are not being passed on to consumers. In addition, adopting a specific mechanism for maintaining universal service needs to be a top priority of legislators and regulators.

Developing Policies Which Achieve Our Objectives

No one can predict with certainty what configuration of telecommunications firms and services will best meet the needs of Floridians. We do know that some stakeholders will be more vocal than others in expressing their visions regarding which technologies have the greatest potential and which services best match the desires of consumer groups. Legislators and regulators should read the information and listen to special pleadings with some degree of skepticism, since they are being asked to set the rules for a game in which the information-providers are key players. Furthermore, the stakes are high and the outcomes, in terms of innovation, production efficiency, and prices, are very important to the citizens of Florida.

As an academic, I want to see economic principles applied in a consistent way. I propose some simple steps which will allow timely development of public policy. Universities are capable of conducting research in support of policy development--so I am not a completely disinterested bystander in this process. On the other hand, policy-makers justifiably want to avoid "paralysis of analysis". Yet, policies chosen without adequate supporting analysis are likely to add to our problems, rather than resolve them.

I want policies grounded in reality (not rhetoric). And I want the policy-making process to be transparent enough so that special interests are not able to capture that process. Those special interests include particular consumer groups who may be benefitting from present regulatory arrangements, but stand to lose when competition forces prices to

be cost-based. Similarly, incumbents and entrants have different visions of what constitutes "fair" competition. If policy-makers wish to place a substantial weight on how particular groups of consumers or suppliers might benefit from particular policies, those priorities should be identified and clearly articulated--so others who might be affected in a negative way understand how those policy alternatives were evaluated.

This issues paper has four parts. First, I identify areas of consensus, around which policies might be developed. Second, I describe the five steps of policy decision-making. Third, I explain why the final policy choice will depend on how the burden of proof is assigned to those supporting various policy positions. The paper closes with some observations about the resolution of telecommunications issues.

2. Areas of Consensus

Most observers would agree on four general points:

- (1) Competition is increasing in telecommunications markets due to technological change and new regulatory initiatives.
- (2) This development is likely to be beneficial to many consumer groups, but not all.
- (3) It will not be easy to regulate portions of the market place so that least-cost suppliers emerge during this transitional period.
- (4) Finally, because segments of the industry are likely to remain natural monopolies in the near future, some regulatory constraints will be needed (a) to protect those customers with no competitive alternatives, and (b) to ensure that entrants have equal, non-discriminatory access to remaining bottleneck facilities.

Consider each point in turn. With regards to the first point, it should not be necessary to go through the entire litany of technological developments which are transforming telecommunications. The convergence of the communications and computer industries via digitalization, the expansion of spectrum-using technologies (cellular, personal communications systems, satellite), and developments in fiber optics (and associated electronics) represent only a few of the production alternatives which promise new services and lower costs in the future. Beyond technology, the FCC and state regulatory commissions are providing greater flexibility to incumbents and are allowing new entry into various telecommunications markets.

The second point, that many customer groups are likely to benefit from such developments, has substantial empirical support. Historically, cost of service regulation could ensure that neither monopoly profits nor the savings associated with new technologies were captured by suppliers of telephony. Local rates were held down (to promote universal service) and long distance rates declined (though more slowly than costs were falling). However, innovations disrupted traditional industry structures even as costs fell. The AT&T

divestiture and entry in markets that had once been regulated signalled the beginning of a new era for consumers. Competition is recognized as a powerful factor pushing some prices down, forcing formerly subsidized prices up, and encouraging innovation.

The fundamental tension between regulation and competition, the third point noted above, is widely recognized by economists. Reliance on the competitive marketplace to set prices and determine new service introductions is inconsistent with having an agency set prices for an incumbent. Continued command and control regulation creates opportunities for corporate gaming of the political system. When government intervention, rather than actual performance in the marketplace, determines which firms are winners and which are losers, corporate executives have an incentive to devote resources to lawyers and consultants rather than to scientists and engineers. Similarly, when regulators have substantial discretion (without clearly defined objectives articulated in the law), cohesive customer and supplier groups are encouraged to plead for special treatment. The hearing room rather than the industrial laboratory becomes the focus of attention. This tendency is most unfortunate (though nearly irresistible--since such stakeholders have political power). Elected officials will be tempted to continue to micromanage the industry.

The fourth point identifies the key issue facing legislators and regulators today--how to ensure that the benefits of competition flow to those who successfully commercialize new services and to consumers who desire those services. If government has a broad mandate to "regulate in the public interest," then the regulatory process becomes a relentless source of controversy. The term "public interest" is vague, leaving the prioritization of worthy economic and social objectives up to the chaotic political process. "Politics as usual" drives the evolution of the industry--at least until the configuration of firms (and artificial partitioning of markets) is so inefficient that stakeholders re-open the process. Thus, we find ourselves with a unique opportunity to structure the rules of the game to increase reliance on basic market forces--recognizing that competition can also be chaotic and unpredictable.

3. Steps for Legislative and Regulatory Decision-Making

Complicated issues seldom have simple solutions. To propose detailed solutions to the telecommunications issues facing Florida would be premature. However, I wish to underscore the importance of having a sound process which enables policy options to be evaluated thoroughly. My message is that there are five steps that must be taken in order to make sound policy decisions:

- 1) Definition of the problem;
- 2) Identification of organizing principles, policy options, and group objectives;
- 3) Analysis of each policy option;
- 4) Evaluation of each option in terms of impacts on group objectives; and
- 5) Choice of the option that best meets the group objectives, given the weights assigned to each objective.

Definition of the Problem

Begin with the first step. I believe that the telecommunications problem can be broadly defined as follows: *How can policy-makers ensure that the benefits of competition flow to those who successfully commercialize new services and to consumers who desire those services?* Of course, there are numerous sub-issues, the most important of which is determining the appropriate mechanism for supporting universal service. The FPSC Work Groups have outlined the positions of incumbents, recent entrants, and potential suppliers on these sub-issues (described below). The irony is that depending on the market (local telephony, information services, inter-LATA toll, or cable television) a firm can find itself as an incumbent in one, entrant in another, and potential supplier in a third! Each stakeholder would like to protect its established position while gaining access to new markets. The positions are not necessarily inconsistent, since these participants perceive "special circumstances" in each firm's core market.

The complexity of the sub-issues is illustrated by the FPSC's three Work Groups: legal/regulatory, technical, and universal service. The first explored current barriers to competition, appropriate roles for regulators during transitional regulation, and interconnection. All three topics are contentious. For example, the appropriate level of unbundling and the pricing of network elements will affect the revenues of incumbents and costs of entrants. Too high a price will unduly dampen competition, too low a price will confer unjustified savings onto entrants in the local exchange market. Establishing prices which are efficient, fair, and nondiscriminatory will be a challenge. In addition, compensation for access to networks also raises important issues regarding value-based versus cost-based pricing.

The technical issues are probably less important politically, but their resolution will not be simple. The Second Work Group examined telecommunications infrastructure development, open network architecture, resale, and mechanisms for sharing technologies. The FPSC Report indicated that network interoperability and number portability raised the most serious issues.

The Third Work Group examined the potential impacts on universal service of competitive entry in the local exchange. Linked to this issue is the appropriate definition of basic service, the current level of subsidies (or contributions) from other services, possible future mechanisms for keeping local calling rates low, and costs (or benefits) of carrier of last resort obligations. Again, these issues must be addressed if we are to ensure that the benefits of competition are to be partly captured by consumers.

Identification of Principles, Options, and Objectives

These Work Groups and associated legislative hearings are part of the second stage of decision-making: identifying the conceptual frameworks, group objectives and policy alternatives. Such fact-finding activity is essential if telecommunications is to fulfill its potential in Florida. The movement towards competitive markets is both inevitable and

disruptive. However, the extent of the savings to customers will be determined by the particular path of deregulation selected by legislators and mediated by regulators.

The listing of topics examined by the Work Groups demonstrates how related issues complicate the development of public policy in the area of telecommunications. Repeating the word "competition" three times (or even enshrining the word in law) does not resolve these important issues. Policy-makers must structure the transitional regulations so that competition is introduced in such a way that benefits flow to efficient suppliers and to the purchasers of telecommunications services. Some of the savings made possible by new technologies may be diverted to other groups to meet other objectives (for example, to low income groups to meet the universal service objective). However, the second step of policy analysis requires recognition of resource constraints, careful characterization of valued outcomes, and a comprehensive listing of policy options.

One reason for poor decision-making is that this stage of the problem-solving process is often handled in haphazard ways. The old philosopher said it best: "If we don't know where we're going, it doesn't matter which road we take!" The FPSC Work Group process and legislative hearings are motivated by a desire to avoid making such a fundamental mistake. Knowledge of how highly citizens value the various social objectives is essential if the final choice is to best meet the needs of Florida. For example, if a low price for basic service is given a high priority and new services a low priority, the status quo might be the best policy option. If greater weight is given to reduced interLATA prices and to new service introductions, traditional regulation would be ranked lower than a pro-competition policy.

Economists have identified the concepts needed for an analysis of policy: the role of price signals in the short term and over the long term, the implications of market power, the incentives associated with competitive forces, the use and misuse of regulatory cost allocation rules, the importance of cost containment, and the role of innovation in expanding choices available to citizens. One important task facing the Legislature is determining the weights to be given various economic and social objectives: encouraging the least-cost provision of services, obtaining the right mix of telecommunications services (relative prices), promoting innovation, and ensuring universal service. For example, the policy options to achieve universal service could include (a) low prices to all, or (b) targeted subsidies to "deserving" groups. Each of these policy alternatives has a different price tag associated with it, and each has different consequences for the organization of the industry. If very low basic service price caps are applied to all residential customers, funds will be required from other customers and from residential customers who purchase other telecommunications services. Such indirect "taxes" will keep intrastate interLATA rates up and will slow the introduction of new services. Entry (which takes the form of by-pass) will be artificially encouraged unless some form of comprehensive surtax can be put into place. Targeted subsidies and higher price caps on basic service allow the achievement of the universal service objective without introducing artificial barriers to efficiency.

Analysis of Each Policy Option

The third step, analysis, is currently being undertaken by FPSC and legislative staff. Good analysis requires empirical estimates of key cost and demand parameters, as well as

the careful establishment of bounds on likely outcomes, given that uncertainties are substantial. Staff recommendations can then be subject to review and further discussion within the policy arena. In the case of universal service, the policy options described above have very different implications for other objectives, including efficiency and new service introductions. For example, the price of local service can be lower if additional revenue sources are available via LEC provision of information services or LEC entry into the interLATA market. Note that competition is not necessarily an objective; it is a process that may allow the achievement of valued outcomes at lower cost than traditional regulation.

Furthermore, continuation of traditional regulation is not the only option involving continued oversight activities by the FPSC. There are a number of models being adopted in other states which are worthy of investigation: price caps, sharing rules, infrastructure modernization plans--each with (or without) increased reliance on competition. It may not be reasonable to "leap" to full competition. The chasm could be too wide. On the other hand, a series of half-built, disconnected bridges would waste resources. Until the likely consequences of each policy option are understood, dramatic regulatory changes should be avoided.

Evaluation of Each Option in Terms of Objectives

The fourth step, evaluation, focuses on how the different policy options affect the achievement of stated goals. Once these outcomes are enumerated, technical staff should step back from the rate-policy process. The weights appropriate for each objective are then applied, so that each outcome can be compared on the basis of an overall evaluation. The weights ought to reflect the preferences of citizens who desire multiple objectives, but recognize that each objective is not equally important. The fifth step is choosing the policy which yields the greatest benefits for Floridians. When weights for each objective are made explicit, or the objectives are at least prioritized, we are more likely to see a beneficial policy adopted.

Ultimately, the Florida Legislature will select the regulatory regime for the state. It will identify the objectives that should be given the greatest weight, and it will establish regulatory processes which are designed to meet those objectives. Since the full impacts of each option are unlikely to be completely known in advance, decisions need to be made regarding how regulatory rules are to be developed.

4. Making Choices: Policy Mistakes and the Burden of Proof

The cautious note in the description of Step 3 does not mean that policy initiatives should wait until all uncertainties are resolved regarding the consequences of that policy. Technologies and demand patterns do not stand still. In telecommunications, industry performance will be affected by how regulators adapt to changes in basic conditions facing private decision-makers. We do know that regulatory rules from previous eras are unlikely to ensure that emerging industry structures will provide services at least cost. The real debate surrounds the types of transitional regulation suitable for this period of disruptive

changes. Traditionally, U.S. regulators have served as buffers--delaying structural adjustments but protecting some consumer groups and some suppliers from market dislocations. The operative term is *some*, since protectionism for some means that other customers and suppliers are unable to take advantage of new commercial and technological opportunities.

The tendency towards protectionism arises not only because the stakeholders who benefit from the status quo understand (and communicate) their interest. There is another factor: no one likes to make mistakes (outcomes that, in retrospect, are regretted). Yet mistakes are inevitable in a world of uncertainty; for example, an investment might have a high payoff during a business expansion, but would be regretted in a downturn. Making what turns out to be a mistake (investing and then discovering that a downturn is occurring) is not a "bad" decision if the firm is not unduly risk averse and if the probabilities of failure were correctly calculated at the project analysis stage.

Each of us (analysts, regulators, politicians, and business executives) will try to make our mistakes difficult to detect. Since a clear and decisive act may turn out, in retrospect, to have unintended consequences (or be inconsistent with future economic developments), policy-makers will tend to avoid the explicit prioritization of outcomes. Most decisions to change a policy have multiple impacts, so detection of a mistake is less likely if policy-makers can point to whatever the outcome is and identify the positive features as reflecting their intended objectives!

The elevation of the status quo is understandable, if misguided, for another reason. Maintaining the status quo is relatively safe. If the decision to continue current policies is incorrect, the costs are not readily visible. An example of placing different weights on sins of commission versus sins of omission is the FDA rejecting a good drug. It is far more costly to the bureaucracy to accept (what turns out to be) a harmful drug than to reject a very beneficial one. The political penalties for the two types of errors differ. In the case of regulatory agencies, this results in a greater burden of proof required for a policy modification in the face of technological changes, making it more likely that the status quo will be maintained. For example, regulators might consider permitting greater downward price flexibility by an incumbent firm and allowing it to make some new service offerings. Since recent entrants will oppose such policies, regulators may delay a decision allowing greater flexibility until uncertainties are reduced regarding the impacts of the policy change. The costs of deciding to maintain the status quo are difficult to detect unless a firm's financial viability is threatened.

One development that increases the likelihood that errors of omission will be noted is the rapid diffusion of new technologies in other states or other nations. If state policies reduce innovation and delay the introduction of valued services while other states (or nations) pursue policies more conducive to rapid technological advance, that can be observed. Thus, we find that international and cross-state comparisons begin to take on greater significance in the evaluation of policy alternatives. Adherence to the status quo via protectionism has not shown itself to be a sound way to encourage entrepreneurial activity.

Such risk-taking investment activity is essential for the creation of telecommunications infrastructure and for the development of ancillary services.

What happens if policy-makers reject a new policy initiative when the change would represent an improvement over the status quo? Some policy-makers may be willing to accept this outcome. They are more willing to tolerate these types of errors given their risk aversion and their concern that some negative outcomes might occur. For example, telecommunications regulators might be afraid of approving new technologies or services that might boost corporate profits because of negative public reaction. But the end result for consumers also can be better telecommunications systems and easier access to new services. Often, policy-makers treat the policy choice as a zero-sum game instead of a win-win situation. Many industry analysts argue that taking a more comprehensive approach toward deregulation, despite the risk of mistakes, would lead to greater innovation. Consumers as a whole would be better off. Part of the art of policy is identifying these win-win policy options.

The art of policy development also involves placing the burden of proof on the appropriate party. If it is placed on those who challenge the status quo, change is less likely to occur. If the benefits of traditional rate of return regulation and its attendant entry restrictions are less than in the past, then the presumption ought to be that competition is the preferred process. Thus, the burden would be on the incumbent LEC to establish why entry into the local exchange ought to be limited. Similarly, the burden of proof would be on the cable industry to show that limitations on LEC retail pricing flexibility is in the best interests of Floridians. If the burdens are different (and residual regulation is asymmetrical), protectionist policies are more likely to be adopted--to the detriment of consumers.

In telecommunications markets, voice, data, information, and video seem to be coming together--as firms discover new economies of scope and sequence. The former involve resources savings from producing multiple products together, reducing the costs of producing new products. Economies of sequence arise when vertical integration leads to efficiencies and improved information regarding consumer preferences. Similarly, network planning may be improved if marketing plans are well integrated into engineering requirements. Erecting regulatory barriers between markets dampens incentives to innovate and to discover new ways to meet consumer demands.

Nevertheless, artificial barriers are likely to fall, just as the Berlin Wall ultimately failed the test of time. Technological change is bringing telecommunications markets together. The delivery technologies are diverse: traditional wireline via twisted copper pair, coaxial cable, fiber optics, and new uses of the radio spectrum (especially Personal Communications Systems). The formats can be analog or digital. No single firm is likely to be the least-cost supplier for all these services, using all these technologies, in all possible formats. The fundamental issues facing the FCC and state regulators revolve around the transition from what were once viewed as natural monopolies to clusters of interconnected

delivery systems which are becoming competitive with one another. The transition is clearly affected by where the burden of proof is placed when considering policy initiatives.

The irony is that the transition to greater competition involves new types of regulation rather than less regulation during the evolution to new industry structures. Numerous contentious issues have been identified: universal service, network interoperability, service quality, number portability, supplier of last resort obligations, the appropriate extent of unbundling, and the efficient pricing of network components. The politics of regulation are such that regulators dare not withdraw from the field before they are confident that politically powerful consumer groups are, indeed, protected from the exercise of residual market power. Similarly, to the extent that policy-makers can operate as honest brokers in the development of complex contracts in vertical markets, they may be able to make the transition to competitive markets less disruptive. However, involvement in these negotiations (or dictating new supply arrangements) requires different types of regulation than in the past. To some extent, hearing rooms will continue to serve as the arbiters of outcomes--limiting the role of the marketplace in rewarding good performance.

5. Concluding Observations

Those who advocate "level playing fields" tend to want legislators to dig up the opponents' side of the field, and use the material to fill in holes, benefitting their side. Competition lets firms establish competitive advantage based on inherent technological capabilities and successful recognition of commercial opportunities. Decisions are made by those willing to make risky investments in research and development, marketing, and new capacity. Looking to the future, mistakes will be made--both by private decision-makers and public policy-makers. However, a world of no (visible) mistakes is a world of stagnation (and lost opportunities). The citizens of Florida cannot afford to miss out on the new services made possible by the convergence of computers and communication technologies.

While regulatory micromanagement of this rapidly changing sector is inappropriate, regulators cannot avoid taking on two tasks: (1) serving as umpires who ensure that the game of competition is played according to well-defined rules, and (2) protecting those customers who continue to face residual market power. Completing these tasks will require great discipline on the part of legislators and regulators. It will require substantial analysis and the beginning of an educational process informing stakeholders (large and small) of the rationale behind the new initiatives. In addition, the approach requires all suppliers to exercise self-restraint--trying negotiation and economic compromise rather than seeking political victory in the hearing room. The "league office" (the legislature) can ease the burden on "umpires" (regulators) by clearly articulating the desired objectives and establishing a mechanism for maintaining universal service. The impacts of transitional regulation can then be evaluated and policies re-calibrated. Well-crafted legislation today means that less bickering is likely to arise in the future.

The laundry list of issues noted earlier can be addressed in a systematic way or we can become fixated on eliminating all uncertainties. The ultimate price tag of the latter

approach will be borne by Florida's citizens. I hope that major suppliers, incumbents and entrants alike, have enough confidence in their own capabilities to move away from confrontation within the political process towards competition in the economic marketplace. I believe that it would be a mistake to leave the configuration of firms up solely to politics--with the skewed incentives that excessive intervention introduces. With greater reliance on competition, we will obtain the experimentation and innovation that markets are designed to promote. Residual regulation can be targeted to achieve specific objectives.

We need a better understanding of specific constraints and general oversight procedures which will let us take advantage of the innovative capabilities of market processes. In addition, we must learn how to simultaneously constrain the exercise of market power and limit regulatory discretion--so that potential benefits from innovation and economies of scope are not dissipated through corporate gaming or political opportunism. Enhancing policy commitment capabilities reduces the likelihood that rules will be changed in ways that run counter to original regulatory agreements. Keeping commitments is important because it promotes efficiency and fairness during the period of transitional regulation.

This plug for greater analysis is, of course, self-serving. As the Director of a University-based research center, I realize that greater emphasis on retrospective evaluation (and prospective analysis) adds to the resources available to research organizations. However, I am convinced that the social benefits of such studies far outweigh the associated costs--especially in terms of insights gained from cross-state analyses and international comparisons. The laws of economics cannot be broken, any more than the law of gravity can be broken. Airplanes do not break the law of gravity; their existence demonstrates that it is costly to overcome gravity. Similarly, economic laws describe how fundamental conditions determine efficient industry structures. The political process (hardly immune from economic forces) mediates the evolution of industries. An improved understanding of the strengths and limitations of different types of government intervention is needed during the years of transitional regulation ahead.

ATTACHMENT A

Biographical Sketch of Author

Sanford V. Berg, Ph.D.

Sanford V. Berg, Ph.D., is a Florida Public Utilities Professor in the Department of Economics at the University of Florida. He is also Executive Director of the Public Utility Research Center where he organizes regular conferences and workshops on regulatory issues. In addition, he has served as a consultant to various private and public organizations including the Florida Public Service Commission, the Florida State Energy Office, the New York Public Service Commission, the National Bureau of Standards, the Mexican Ministry of Energy, the Congressional Office of Technology Assessment, the World Bank, the Tampa Electric Company Citizen's Advisory Task Force for Siting New Generation Capacity (1989-90), and the Florida Power Plant Licensing Task Force, Technical Advisory Group (1993). For 1989-92, he organized a series of eight workshops on New Technologies and Telecommunications Costing and Pricing for the Florida PSC. Presently, he is a project co-director of the Telecommunications Industry Analysis Project (TIAP). He teaches introductory microeconomics, public policies towards business, and undergraduate and graduate courses on public utility economics. He received the University of Florida Outstanding Teacher of the Year Award, 1993.

He has published widely, with more than sixty articles on business and economics topics; recent work focuses on public utility pricing policies and technological change. He is the co-author of several books, including *Innovative Electric Rates: Issues in Cost-Benefit Analysis* (Lexington, 1983). That book emerged from a project funded by DOE/FPSC as part of the state's response to PURPA. He is also co-author of *Natural Monopoly Regulation: Principles and Practice* (Cambridge University Press, 1989). Dr. Berg graduated from the University of Washington with honors in Economics, and received his Ph.D. degree from Yale University in 1970.

ATTACHMENT B**Statement of Purpose and List of Sponsors for the
Public Utility Research Center**

The Public Utility Research Center (PURC) at the University of Florida, established in 1972, is funded by nine energy and telecommunications groups in the state of Florida and the Southeast, and by the Florida Public Service Commission. Representatives of the sponsors, the Florida Public Counsel, and the University serve on the Executive Committee. PURC strives to be on the forefront of issues which confront the energy and telecommunications industries, and to perform a constructive role in developing methodologies that improve decision-making in the regulatory process. Specifically, the goals of PURC are:

- (1) to undertake public policy research that addresses current topics in the energy and telecommunications industries;
- (2) to provide a neutral forum in which participants from state agencies and regulated firms may exchange ideas and interact in a productive manner;
- (3) to promote improved relationships between the University and outside communities; and
- (4) to offer a quality program which enhances student knowledge of and interest in public utilities and regulatory agencies.

Annual conferences have been held since 1972; recent ones include:

- "Regulation: The Changing Rules of the Game" (1994)
- "Regulation and Planning in a Market Economy" (1993)
- "Regulatory and Managerial Strategies for Promoting Innovation" (1992)
- "Changes in Technologies and Public Perceptions: Evaluating Utility Performance" (1991)
- "Regulatory Initiatives and Competitive Responses in the New Decade" (1990)
- "Beyond Traditional Regulation: Implications for Regulators & Managers" (1989)

Seminars, workshops, and presentations have been organized for:

- Florida Public Service Commission
- Florida Legislative Committees
- National Association of Regulatory Utility Commissioners
- PURC Sponsors

PURC Sponsors and Representatives on the PURC Executive Committee

- Florida Power & Light Co.
- Florida Power Corp.
- Florida Public Counsel's Office
- Florida Public Service Commission
- GTE Florida
- Gulf Power Co.
- Peoples Gas System, Inc.
- Seminole Electric Cooperative, Inc.
- Southern Bell Telephone Co.
- Tampa Electric Co.
- United Telephone of Florida
- University of Florida

ATTACHMENT C

**Statement of Purpose and List of Participants for the
Telecommunications Industries Analysis Project**

The Telecommunications Industries Analysis Project (TIAP) is a consortium consisting of regional holding companies, large and small independent telephone companies, interexchange carriers, materials and equipment manufacturers, a foreign domestic telephone company, and regulators. The project is based at the University of Florida, with Carol Weinhaus and Sanford Berg serving as Co-Directors.

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

The project is a neutral forum of communications industry stakeholders exploring multiple viewpoints of selected issues. The current forum includes local exchange carriers (LECs), interexchange carriers (IXCs), equipment manufacturers, and federal and state regulators. In the next phase, this forum would be expanded to include other communications industry representatives, such as competitive access providers, cable television companies, computer companies, or publishers.

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

List of Participants & Sponsors

State Regulators: NARUC Representatives from Iowa Utilities Board, New York Public Service Commission, and the Washington Utilities and Transportation Commission

Regional Holding Companies: Ameritech; Bell Atlantic; BellSouth; NYNEX; Pacific Telesis; Southwestern Bell Telephone; and US West

Large Independents: GTE; Sprint Local Telecom Division; Anchorage Telephone Utility

Interexchange Carriers: AT&T; Sprint

Foreign Domestic: NTT America

Local, National, and International Services: BT

Materials Manufacturers: Corning, Northern Telecom

Sponsors: Corporation for Public Broadcasting

Assisting with *public* data: Federal Communications Commission; National Exchange Carrier Association