

Capital Expenditures and California Telecom Reform

By Arthur B. Laffer, Ph.D., Sonia Arrison, Andrew Coors, Gregory A. Stein, Vince Vasquez, and Wayne H. Winegarden, Ph.D.

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Introduction

The dawn of a new technological revolution has created limitless potential for growth and competition in the telecommunications industry. Industry breakthroughs such as Internet telephony (VoIP) and fiber-to-the-home (FTTH) networks promise a vibrant marketplace for voice, video, and data services, benefiting consumers with increased choice and lower prices. With the development of new industry ventures, and the growing demand of businesses and consumers for next-generation technologies, robust telecommunications investment is more important than ever before.

Unfortunately for Californians, rules and legislation at the state level stymie investment needed to deploy advanced services locally. Though lawmakers claim that their policy objectives are in the best interests of consumers, the danger of diverting sector capital to more industry-friendly states is real, as telecom businesses are in high demand for their positive contributions to the economy.

Telecommunications growth has created a wide array of job opportunities for the United States – nearly one million Americans are now employed by the industry.¹ However, the state of California has seen an exodus of telecom-related employment, which in December 2005 had dropped to nearly 25 percent of the figures from 2001.² For an industry that provides the services that 80 percent of non-farm state jobs depend on, the need to create a forward-thinking regulatory environment is clear.

The purpose of this paper is to examine the relationship between government regulations and growth in the telecommunications industry, providing theoretical and anecdotal evidence that inhibiting capital expenditures to achieve shortsighted public goals will severely damage California's ability to attract entrepreneurs and new investment in the future.

Capital Expenditures

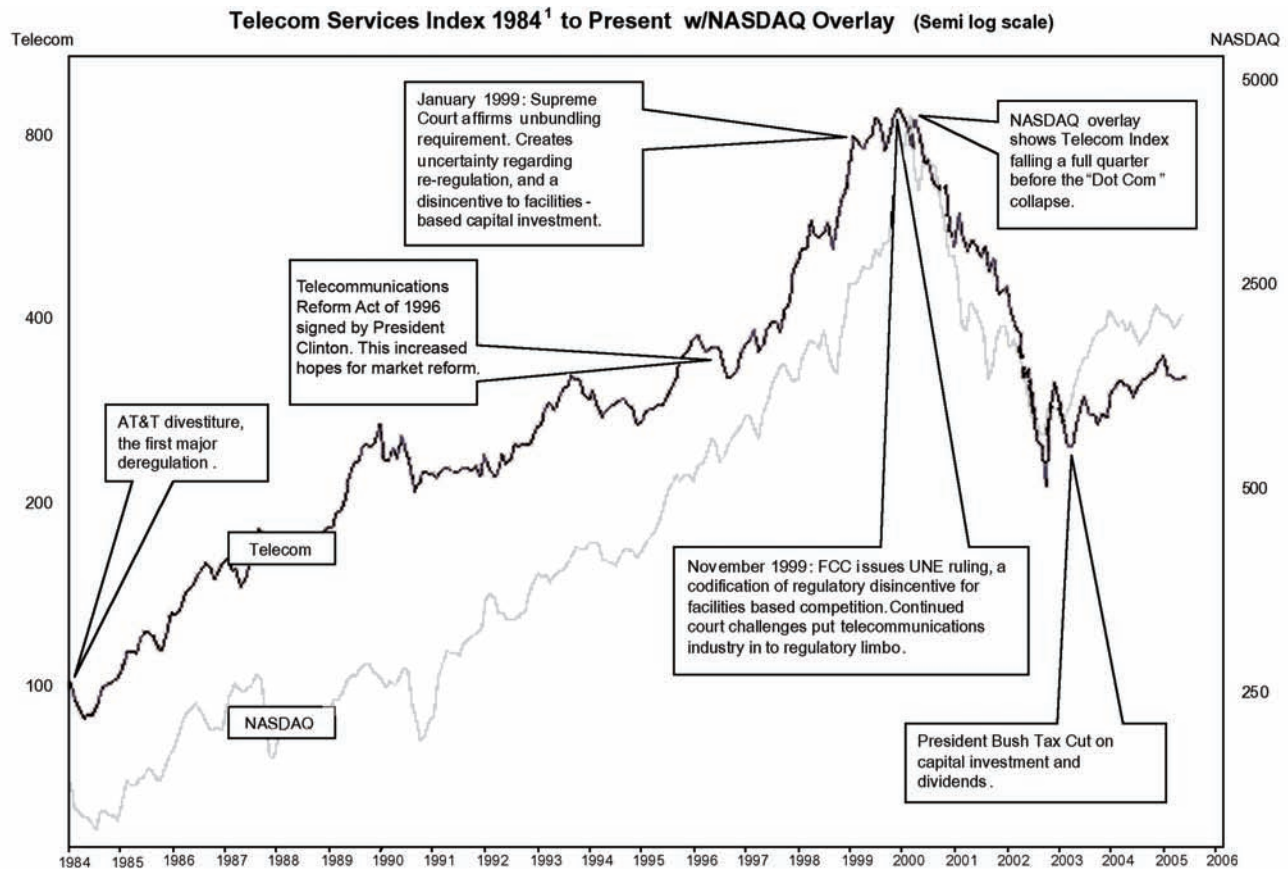
California has long prided itself as a state on the cutting edge of technology and innovative public-policy ideas, claiming the nickname “The Golden State.” In truth, the state’s public policies have created economic disincentives by inhibiting capital investments from telecom companies for platform upgrades, infrastructure improvements, and maintenance needs.

Telecommunications services are regulated at a variety of different levels, which often depend entirely on the platform that services are delivered from. Companies are forced to navigate through a growing patchwork of local, state, and federal demands, such as universal service charges, emergency 911 charges, local rights-of-way payments, franchise fees, intrastate and interstate charges, and corporate taxes, to name just a few. Every year, inexpert lawmakers propose new regulations and revenue-sharing ideas for the industry, acquiescing to the demands of cash-strapped city officials and activist organizations without consideration for the perversion of incentives such policies create.

For example, through a notorious California Public Utilities Commission (CPUC) program called “intervenor compensation,” telecom companies are forced to add surcharges to customer bills in order to subsidize the very lawyers and interest groups that oppose their business plans and publicly call for more industry red tape. The CPUC itself filed a legal opinion during federal proceedings to seize regulatory jurisdiction of the emerging VoIP market, threatening its local growth. The hostile environment created by state policymakers continues to scare off capital improvements from even the largest companies despite the desperate need to invest in upgrades to enhance services and remain competitive in the marketplace.

The cost to California in terms of lost tax revenue, jobs, and economic growth due to market-distorting regulation is enormous, as capital investment and asset valuations of corporations are highly sensitive to shifts in the regulatory environment. There is probably no clearer indicator of the industry/regulation relationship than the market valuation of publicly traded stocks in this sector. The following chart provides an index of the market valuation for publicly traded stocks of telecommunications companies, with several break points indicating significant changes in the regulatory environment.

If stock valuations are measured as the capitalization of the future flow of after-tax profits of a corporation, then the break point for the Telecommunications Act of 1996 indicates a significant increase in the market expectation for future industry profit flow. Since valuations across the tech sector were experiencing astronomical growth due to high liquidity, ready venture capital, and uncertain pricing for new Internet business models, it is clear that the market held expectations for future profit from the telecommunications sector exceeding historic levels. However, as soon as the Federal Communications Commission issued the



¹ From 1989 to present the S&P & MSCI GICS Telecom Services Sector index was used. The years 1984 to 1989 are a blended combination using the S&P Telecommunications (long distance) and S&P Telephone indexes

disastrous Unbundled Network Element regulations, the expected return on billions in capital expenditures all but evaporated. With limited prospects for an above average after-tax return, the telecom stock index tumbled. All of this is a direct result of the misguided attempt to artificially “create” competition.

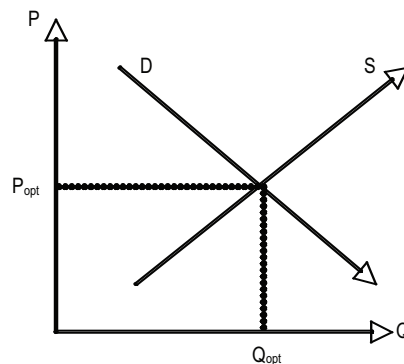
The Wedge

Regulation in the telecommunications industry introduces inefficiencies that result in sub-optimal asset allocation and impair the ability of suppliers to respond to market forces, negatively affecting the economy. From an economics standpoint, the telecommunications industry offers a textbook example of a “regulatory wedge.”

Generally, the regulatory wedge model demonstrates how a firm will engage in commerce in order to earn present and/or future after-tax returns on its investment. In the instance of taxation, the “wedge” is that slice of real resources the government obtains from the firm's production in order to serve public needs, including maintenance of the national economy and the marketplace in which the firm engages. Everything else being equal, an increase in the wedge through taxation and regulation reduces after-tax returns on investment.

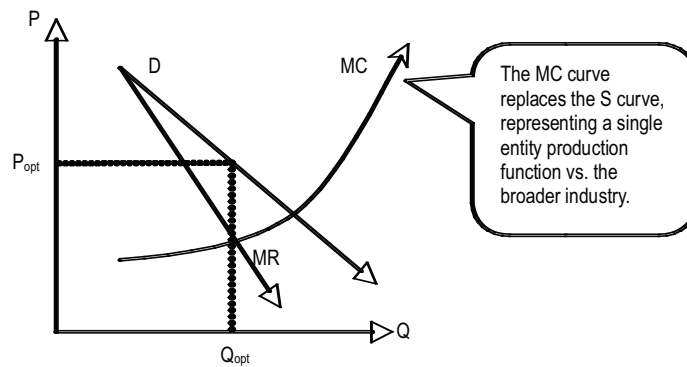
To illustrate, we turn to an economic graphical analysis of the wedge effect. In a perfectly optimized market for any good or service, where all things are held constant, the intersection of the supply curve and the demand curve yields the optimum quantity of a good or service to be produced and the optimum price to be charged for that good or service. This relationship is principally demonstrated in the graph below, where D is Demand, S is Supply, Q is Quantity, and P is Price.

If one were to go beyond the basic supply/demand curve, and examine a profit-maximizing corporation operating in a specific industry (and outside of the unrealistic construct of perfect competition), the model would be improved by understanding that supply is determined by the interaction of marginal costs of production (the cost of producing each additional unit of a good or service) and marginal revenue from production (the revenue earned by the production of each additional unit of a good or service). Thus, in the next graph, the supply curve is replaced by a marginal cost (MC) curve³ and the addition of a marginal revenue (MR) curve⁴.



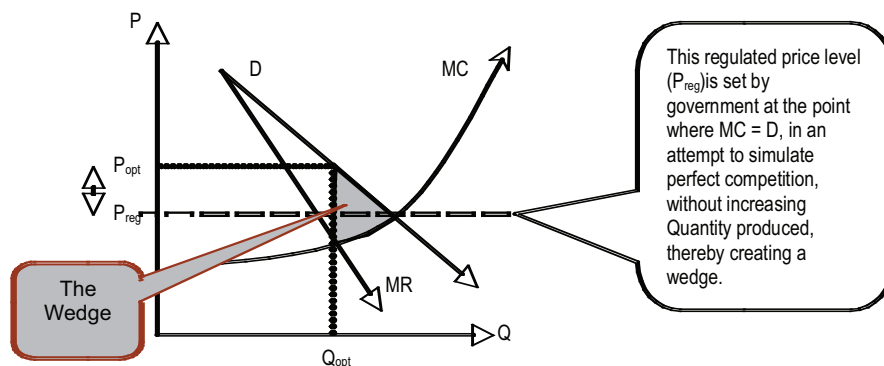
It is important to note that the MC curve has an increasing slope, which reflects the increasing costs in delivering the next level of good or service, assuming that the highest return customers are served first. This is the basic graph that individual companies use to determine their optimum quantity of production and the most profit producing price to charge. Companies increase their production until their marginal cost is equal to the marginal revenue. This is a fundamental principle of micro-economic theory. At that quantity of production, the price is then determined by drawing a line vertically from the intersection of the MC and MR curves up to the demand curve. At this point a firm's profit is maximized.

If the regulatory burden, or wedge, is related directly to the price of a good, then it is equivalent to an *ad valorem*, or value-assessed, tax. Regulatory burdens which are an absolute amount per unit also can be expressed as an *ad valorem* tax given the unit price. Similarly, if the regulatory burden is fixed without regard to output, it may be expressed as an *ad valorem* tax given the unit volume and price. The loss of output resulting from excessive regulatory requirements is determined by the thickness of this wedge — the difference between the price paid and the price received — and the slopes of the demand and supply curves. The thicker the wedge, the larger the disincentive to enhance economic activity.



Whenever an economic disincentive is imposed on the system, the price paid by the consumer is no longer equal to the price received by the supplier, and a "wedge" between demand and supply occurs. Such disincentives arise from the imposition of taxes or government mandates that yield fewer benefits for the private sector than the costs they incurred to provide them. For the telecommunications industry, such outlays would include; unbundling of network elements for resale below cost, universal service subsidies, and rate-of-return/price cap price regulation.

These expenditures increase the firm's long run *marginal* cost at every level of output, just as investments to enhance productive capacity are a portion of the marginal cost of production in



the long run. Hence, the excess component of a regulatory standard represents a wedge. In this case, the proceeds flowing from the higher price may be viewed as the cost to the buyer of regulatory compliance, rather than as compensation to the telecommunications industry for supplying value-added in the marketplace. The price paid by the consumer is no longer equal to the price received by the service provider. The price to the buyer is raised while the net amount received by the supplier is lowered.

In cases where government regulates product and service pricing, the consumer may achieve short-run price decreases, but trades long-term service benefits, marketplace efficiency, and product quality for the privilege. A modern example of this phenomenon can be found in the fallout from federally mandated competition in the wireline telephony business, following the passage of the Telecommunications Act of 1996.

Telecommunications Act of 1996

By 1996, Congress had come to the conclusion that a build-out of cable facilities reaching more than 90 percent of eligible telephone service customers, as well as the advent of new technologies such as fixed wireless and cellular telephone service provided significant enough facilities-based competition that monopoly protection of the local loop was no longer necessary.⁵ In fact, the primary element of the telecommunications reform legislation was the proposal to revoke the monopoly for local exchange carriers and open the market for the “last mile” to competition.

To ensure that competition would take root, the legislation required incumbent local exchange carriers (ILECs, primarily the Regional Bell Operating Companies) to “resell” their existing infrastructure to new market entrants at a government-controlled price, resulting in a 15-25 percent wholesale price reduction. Additionally, Congress believed that it was important to encourage new market entrants to develop alternative facilities based services – and as such, required incumbents to “unbundle” their network elements and then allow new market entrants called competitive local exchange carriers (CLECs) to pick the pieces of service that might complement their own facility-based technology.

Each unbundled element was also to be provided at a regulated wholesale price. The unintended consequence of this action was due to regulations set by the Federal Communications Commission. Companies could purchase a group of unbundled elements comprising end to end service for the purposes of resale at a price discount of approximately 50 percent⁶.

This discounted unbundled network element platform (or UNE-P) created a massive incentive for developing competitive local exchange carrier services, as the below cost wholesale price to use industry infrastructure significantly reduced costs to enter the telephone market. However, it eliminated any incentive for those carriers to develop their own competing

facilities-based telephone services. Economists view this situation through the lens of the “Make vs. Buy” decision.

A Make vs. Buy decision is simply a firm’s effort to optimize the relationship in their production function to maximize profit by utilizing the most efficient combination of labor and capital – of which capital may be made or acquired. Make vs. Buy decisions are typically optimized for short-run decision purposes. This means that a firm will execute a strategy today that results in a production function that equates marginal cost (the cost of producing the next unit of a good or service) and marginal revenue (the revenue a firm will earn by selling the next unit of a good or service). The firm will continue to make this choice as long as the price (and therefore quantity) is set by government regulation.

This is what occurred in the telephone service market, where the marginal cost of providing telephone service as a resale of UNE-P was lower than the marginal cost of providing either a straight resale or the implementation of facilities based service. The only time a firm will act in the short run to utilize a production function that does not equate marginal cost with marginal revenue is if they have reasonable expectation that the medium and long-run marginal cost curve will shift down through their investment such that they will realize a greater maximized profit at a later date. In effect, this set of regulations has resulted in a substantially reduced allocation of investment capital, a situation that has accelerated in the post-2000 period.

It is primarily this regulatory distortion that incentivized the ILECs to reduce investment for upgrading their facilities based infrastructure for telephone service, and why CLECs focused primarily on purchasing UNE-P for resale rather than investing the capital necessary to introduce their own competitive facilities based networks. This played no small role in the sudden market realization that expected returns on capital investment leading up to the Telecom Index valuation peak, were no longer valid.

It is also critical to understand that ILECs have more recently spent billions in upgrading their existing infrastructure, not because they wished to continue to subsidize their competition, but rather because their competition from other companies with their own facilities, such as cable and satellite, began to offer broadband data services at attractive enough prices that the ILECs began to lose market share as people switched from traditional dial-up modem service.

The loss of these dial-up customers, as well as the growing ubiquity of cellular service in America, contributed significantly to the deterioration of the ILECs position in the telecom marketplace. Indeed, federal data shows that cable companies more than doubled their telephone lines from 2001 to 2004, and the number of wireless telephone subscribers surpassed the number of household landlines by December 2004.⁷

When proceeding with the issues of telecom deregulation and capital expenditures, one must consider that the structure of the industry itself is changing dramatically.

Reduce the Regulatory Burden

A preliminary review of publicly traded stocks in this sector demonstrated that as regulation has decreased over time, the number of participants in the market exploded. A case could once be made regarding overwhelming market power by a small number of companies, but today it is difficult to keep track of which company is providing which service via which platform. Even today, as traditional telecom companies steal news headlines with merger and acquisition deals, the number of platforms available to the consumer, and the list of new companies willing to offer industry services continue to expand.

This briefing paper demonstrated how changes in the regulatory environment have a dramatic affect on the ability of the industry to attract capital, which must be taken into consideration by the CPUC as they draft a new regulatory framework and review public policy goals in the telecom sphere.

Economic laws do not change. Companies are driven by shareholders and other stakeholders to invest their resources in business ventures that have the highest rate of return. Consumers win as the forces of competition drive down prices and improve services. Government wins as important public-policy goals are redrafted to facilitate greater investment, not to mention the increasing tax receipts from prosperous businesses and the high-paying jobs those businesses create. Going forward, it is important for governments at all levels to reduce regulatory burdens in order to increase the investment that creates innovation and new jobs.

Endnotes

- ¹ The United States Department of Labor, Bureau of Labor Statistics. The Employment Situation: February 2006. Table B-1: Employees on nonfarm payrolls by industry sector and selected industry detail. March 10, 2006. <<http://www.bls.gov/news.release/empsit.t14.htm>>.
- ² State of California. California Employment Development Department. California LaborMarketInfo, Data Library. Industry Employment - Official Monthly Estimates. Telecommunications, 2001-2005. Customized data report. March 2006. <<http://www.labormarketinfo.edd.ca.gov/cgi/dataanalysis/?PAGEID=94>>.
- ³ Marginal Cost: The cost of producing the next unit of a good or service. Marginal Cost ignores the fixed costs of property, plant, and equipment and focuses only on the variable cost of each unit produced.
- ⁴ Marginal Revenue: The revenue a firm will earn by selling the next unit of a good or service.
- ⁵ *Sending the Right Signals: Promoting Competition Through Telecommunications Reform*, September 22, 2004, Thomas Hazlett, Coleman Bazelon, John Rutledge, and Deborah Allen Hewitt., p.6.
- ⁶ *The Far-Reaching Impact of UNE-P Regulation*, Moody's Investors Service (Oct. 2003), p.5. Source: U.S. Chamber of Commerce Study.
- ⁷ Federal Communications Commission. *Local Telephone Competition*. GPO: Washington, D.C., July 2005.

About The Authors

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Dr. Laffer is the founder and chairman of Laffer Associates. Dr. Laffer's economic acumen and influence in triggering a world-wide tax-cutting movement in the 1980s have earned him the distinction in many publications as "The Father of Supply-Side Economics." One of his earliest successes in shaping public policy was his involvement in Proposition 13, the groundbreaking California initiative that drastically cut property taxes in the state in 1978.

Dr. Laffer was a member of President Reagan's Economic Policy Advisory Board for both of his two terms (1981-1989). He was formerly the Distinguished University Professor at Pepperdine University and a member of the Pepperdine Board of Directors. He also held the status as the Charles B. Thornton Professor of Business Economics at the University of Southern California from 1976 to 1984. He was an Associate Professor of Business Economics at the University of Chicago from 1970 to 1976 and a member of the Chicago faculty from 1967 through 1976. During the years 1972 to 1977, Dr. Laffer was a consultant to Secretary of the Treasury William Simon, Secretary of Defense Don Rumsfeld and Secretary of the Treasury George Shultz. He was the first to hold the title of Chief Economist at the Office of Management and Budget (OMB) under Mr. Shultz from October 1970 to July 1972.

Dr. Laffer currently sits on the board of directors of a number of public and private companies including Viola Environment (NYSE: VE) – *formerly Vivendi Environment*, Petco Animal Supplies Inc. (NASDAQ: PETC), MPS Group Inc. (NYSE: MPS), Oxigene Inc. (NASDAQ: OXGN) and Nicholas-Applegate Growth Equity Fund. He also sits on the board of directors or board of advisors of a number of private companies including: ProFlowers, HNTB, Affinia Hospitality, Retirement Capital Group, Pillar, The Mayfair Group, Olympius Capital, ValuBond, U.S. Script and Castle Creek Capital.

Dr. Laffer received a B.A. in economics from Yale University in 1963. He received a MBA and a Ph.D. in economics from Stanford University in 1965 and 1971 respectively.

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Sonia Arrison is director of Technology Studies at the California-based Pacific Research Institute (PRI) where she researches and writes on the intersection of new technologies and public policy. Specific areas of interest include privacy policy, e-government, intellectual property, nanotechnology, longevity issues, and telecommunications.

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Often asked for advice on technology issues, Arrison has given testimony and served as an expert witness for various government committees such as the Congressional Advisory Commission on Electronic Commerce and the California Commission on Internet Political Practices. She is an instructor for California's Command College and serves on the advisory boards for the Acceleration Studies Foundation, the California Women's Leadership Association, and Lead21.

Prior to joining PRI, Arrison focused on Canadian-U.S. regulatory and political issues at the Donner Canadian Foundation. She also worked at the Fraser Institute in Vancouver, B.C., where she specialized in regulatory policy and privatization. She received her BA from the University of Calgary and an MA from the University of British Columbia.

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Mr. Coors, Director of Economic Research, Laffer Associates, is an economist and a quantitative analyst responsible for creating, testing and implementing quantitative models as well as authoring published investment research reports. Prior to joining the firm Mr. Coors taught and assisted in teaching econometrics classes in the Economics Department at the University of California, San Diego. Before that he worked as a consultant to the budget department of the City of Fort Collins, CO, where he analyzed and subsequently enhanced the accuracy of the city's tax revenue forecasting models. Mr. Coors received a B.A. in economics from Colorado State University and an M.A. in economics, econometrics concentration, from the University of California, San Diego.

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resume includes more than 12 years of public policy and campaign experience at the local, state, and federal level, and most recently he managed a trade association in San Diego. He served two members of the House of Representatives with responsibility for issues ranging from the economy and taxes to foreign affairs, trade, and defense, including work as the key staffer responsible for the Telecommunications Act of 1996. Mr. Stein earned his undergraduate degree in Political Science from the University of California at San Diego, and is a 2006 MBA Candidate at the UCLA Anderson School of Management.

Vince Vasquez

Vince Vasquez is a public policy fellow in technology studies at the Pacific Research Institute (PRI). He works on a wide variety of current high-tech policy issues, including universal service, telecommunications, municipal broadband, the digital divide, biotechnology, e-government, and privacy.

Mr. Vasquez's opinion pieces have been published in the *Wall Street Journal*, *San Jose Mercury News*, *San Francisco Examiner*, *San Francisco Business Times*, *the Houston Chronicle* and *Red Herring*. He is the author of *Digital Welfare: the Failure of the Universal Service System*, as well as co-author of other PRI publications, including *Upgrading America's Ballot Box: the Rise of E-Voting*, as well as *Crossed Lines: Regulatory Missteps in California Telecom Policy*. Mr. Vasquez is also the author of *Financing Freedom*, a fundraising manual for grassroots politics which he wrote before joining PRI.

Also prior to coming to PRI, Mr. Vasquez worked at the Leadership Institute, a non-profit educational foundation in Arlington, Virginia. Mr. Vasquez earned a B.A. in political science at the University of California - San Diego, where he was also editor-in-chief of the *California Review*, a conservative journal.

Wayne H. Winegarden, Ph.D.

Dr. Winegarden, founder and Chief Economist, Economic Solutions LLC, established and manages the industry-based macroeconomics that the firm utilizes to understand current economic events and trends. Prior thereto, Wayne worked as an economist for Altria Companies Inc. in Hong Kong and New York City. In these roles he analyzed the impact of the economic environment in East- and Southeast-Asia on the company's operations, and integrated these insights into the company's strategic planning process. Additionally, Dr. Winegarden examined the impact of tax and regulatory polices on the company's operations and supported its government affairs objectives. Dr. Winegarden also has experience analyzing the budget, regulatory and financial sectors for policy and trade associations in Washington D.C. Dr. Winegarden is economics faculty at Marymount University and has been interviewed and quoted in such media as Bloomberg Radio and CNN/fn. Dr. Winegarden received his B.A., M.A. and Ph.D. in Economics from George Mason University.

About the Pacific Research Institute

The Pacific Research Institute champions freedom, opportunity, and personal responsibility for all individuals by advancing free-market policy solutions that impact the daily lives of all Americans. It demonstrates why the free market is more effective than the government at providing the important results we all seek — good schools, quality health care, a clean environment, and economic growth.

Founded in 1979 and based in San Francisco, PRI is a non-profit, non-partisan organization supported by private contributions. Its activities include publications, public events, media commentary, community leadership, legislative testimony, and academic outreach.

Education Studies

PRI works to restore to all parents the basic right to choose the best educational opportunities for their children. Through research and grassroots outreach, PRI promotes parental choice in education, high academic standards, teacher quality, and school finance reform.

Business and Economic Studies

PRI shows how the entrepreneurial spirit — the engine of economic growth and opportunity — is stifled by onerous taxes and regulations. It advances policy reforms that promote a robust economy, consumer choice, and innovation.

Health Care Studies

PRI demonstrates why a single-payer, Canadian model would be detrimental to the health care of all Americans. It proposes market-based reforms that would improve affordability, access, quality, and consumer choice.

Technology Studies

PRI advances policies to defend individual liberty, foster high-tech growth and innovation, and limit regulation.

Environmental Studies

PRI reveals the dramatic and long-term trend towards a cleaner, healthier environment. It also examines and promotes the essential ingredients for abundant resources and environmental quality property rights, markets, local action, and private initiative.