

**BEFORE THE TENNESSEE REGULATORY AUTHORITY  
NASHVILLE, TENNESSEE**

filed electronically in docket office on  
10/01/12

Petition of Laurel Hills Condominiums	)	
Property Owners Association for a	)	DOCKET NO. 12-00030
Certificate of Public Convenience and	)	
Necessity	)	

**PRE-FILED DIRECT TESTIMONY OF**

**CHRISTOPHER C. KLEIN, PH.D.**

**ON BEHALF OF THE TENNESSEE ATTORNEY GENERAL  
CONSUMER ADVOCATE AND PROTECTION DIVISION**

**OCTOBER 1, 2012**

IN THE TENNESSEE REGULATORY AUTHORITY  
AT NASHVILLE, TENNESSEE

IN RE: )  
PETITION OF LAUREL HILLS )  
CONDOMINIUMS PROPERTY OWNERS )  
ASSOCIATION FOR A CERTIFICATE )  
OF PUBLIC CONVENIENCE AND )  
NECESSITY )

DOCKET NO. 12-00030

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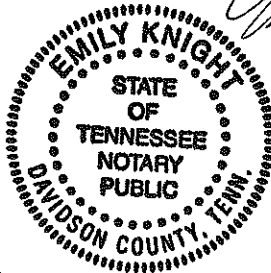
AFFIDAVIT

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I, Christopher C. Klein, Regulatory Economist, on behalf of the Consumer Advocate  
Division of the Attorney General's Office, hereby certify that the attached Direct Testimony  
represents my opinion in the above-referenced case and the opinion of the Consumer Advocate  
Division.

  
CHRISTOPHER C. KLEIN

Sworn to and subscribed before me  
this the 1<sup>st</sup> day of October, 2012.



  
NOTARY PUBLIC

My Commission Expires JULY 6, 2015

My commission expires: July 6, 2015

**BEFORE THE TENNESSEE REGULATORY AUTHORITY  
NASHVILLE, TENNESSEE**

**October 1, 2012**

**DOCKET NO. 12-00030**

**PRE-FILED DIRECT TESTIMONY AND EXHIBIT OF  
DR. CHRISTOPHER C. KLEIN**

1   **Q.   Please state your name and your current position.**

2   **A.**My name is Christopher C. Klein. I am an Associate Professor in the Economics and  
3       Finance Department at Middle Tennessee State University (MTSU) in Murfreesboro,  
4       Tennessee.

5   **Q.   What is your educational background?**

6   **A.**I received a B. A. in Economics from the University of Alabama in 1976 and I received a  
7       Ph. D. in Economics from the University of North Carolina at Chapel Hill in 1980.

8   **Q.   What is your professional experience involving regulated industries?**

9   **A.**I was employed as an Economist in the Antitrust Division of the Bureau of Economics at  
10       the Federal Trade Commission (FTC) in Washington, D.C., for six years starting in 1980.  
11       In 1986, I was hired as the first Economist for the Tennessee Public Service Commission  
12       (TPSC). Although my title changed over the years, I functioned as the Chief Economist  
13       for the TPSC and, after 1996, the Tennessee Regulatory Authority (TRA), until August of  
14       2002, when I assumed my current position with MTSU.

15   **Q.   What were your duties at the FTC?**

16   **A.**I performed the economic analysis in antitrust investigations involving more than 20  
17       industries and contributed to staff reports on mergers in the petroleum industry,  
18       competition in grocery retailing, and the economics of predatory or sham litigation.

1 **Q. What was your primary responsibility at the TPSC?**

2 A. I was an expert witness for the staff of the TPSC in rate cases and other similar  
3 proceedings involving telecommunications, natural gas, electric and water utilities, as  
4 well as motor carriers. I testified in 36 dockets before the TPSC on the issues of cost of  
5 capital, rate design, and competitive effects. I also filed testimony before the Federal  
6 Communications Commission (FCC).

7 **Q. How did your responsibilities change when the TRA supplanted the TPSC?**

8 A. I oversaw the Utility Rate Division and then the Economic Analysis Division. The TRA  
9 staff no longer testified in proceedings before the agency, but provided analysis and  
10 advice to the TRA Directors. I was responsible for all such advice and analysis provided  
11 to the Directors by these Divisions, either individually or in concert with other TRA staff,  
12 in all proceedings that came before the agency for resolution. These proceedings  
13 included rate cases and tariff filings by public utilities, as well as those associated with  
14 the implementation of the federal Telecommunications Act of 1996.

15 **Q. Were you a member of any regulatory committees or boards while you worked for**  
16 **the TPSC and the TRA?**

17 A. Yes. I was a member of the National Association of Regulatory Utility Commissioners  
18 (NARUC) Staff Subcommittee on Gas. I was a member of, and Chaired, the Research  
19 Advisory Committee to the Board of Directors of the National Regulatory Research  
20 Institute (NRRI). I also served on the State Staff of the FCC's Federal-State Joint Board  
21 in CC Docket No.80-286 (the "Separations" Joint Board) and as a Group Leader on the  
22 NARUC Staff Subcommittee on Accounts Multi-state Audit Team that produced the  
23 1988 Report on Bell Communications Research.

1    **Q.    What is your primary responsibility at MTSU?**

2    **A.**    I teach classes in the general area of applied microeconomics, including Principles of  
3           Microeconomics, Intermediate Microeconomic Theory, Managerial Economics,  
4           Economics of Antitrust and Regulation, and Econometrics, as well as undertaking  
5           scholarly research, participating in various university committees, and serving on  
6           dissertation committees.

7    **Q.    Have you taught at any other universities?**

8    **A.**    I taught classes in the Economics of Regulation and in Antitrust Economics in the  
9           Economics Department at Vanderbilt University for several years while I was employed  
10          at the TRA.

11   **Q.    Are you a member of any professional organizations?**

12   **A.**    I am a member of the American Economic Association, the Southern Economic  
13          Association, the Industrial Organization Society, and Alpha Pi Mu: the National  
14          Industrial Engineering Honor Society, as well as Beta Gamma Sigma: the International  
15          Honor Society for Collegiate Schools of Business.

16   **Q.    Have you published articles in professional or academic journals and presented**  
17   **papers at professional meetings?**

18   **A.**    More than 30 of my articles have appeared in professional or academic journals such as  
19          *Energy Economics*, *Utilities Policy*, *The Electricity Journal*, *The Journal of Applied*  
20          *Regulation* and many others. I have made more than 50 presentations at professional  
21          meetings.

22   **Q.    Have you testified before any other governmental bodies in Tennessee?**

A. Yes. I have testified before various committees of the Tennessee General Assembly on regulatory issues, especially telecommunications issues and competition in the telecommunications industry, as well as before the Tennessee Advisory Commission on Intergovernmental Relations and the Tennessee Regulatory Authority. A complete list is found in my Vita which is provided here as my Exhibit.

## PURPOSE OF TESTIMONY

**Q. What is the purpose of your testimony?**

A. I will address the calculation of the appropriate return on rate base for the water utility operations of Laurel Hills Condominium Property Owners Association (Laurel Hills) for ratemaking purposes.

**Q. Can you summarize your testimony?**

A. Yes. Since Laurel Hills a nonprofit corporation, its return on rate base need only cover the interest on its debt. I recommend that the TRA calculate that return as the relevant interest rate on all appropriately acquired debt.

**Q. Do you recommend a specific rate of return number?**

A. No. At this point, the prudently acquired debt of Laurel Hills is in dispute, so the rate of return cannot be calculated. Unlike the rate of return for a traditional investor owned utility, however, the allowed rate of return does not derive from an analysis of stock market data for similar companies. Since Laurel Hills is a non-profit corporation that cannot attract new capital by issuing stock, the rate of return need only cover the interest on Laurel Hills' loans.

1   **Q.   How is your testimony organized?**

2   A.   First, I will address the typical procedure for determining the cost of capital for an  
3       investor-owned utility. Next, I will discuss the operation of a non-profit corporation and  
4       the reasons that the investor-owned cost of capital approach is inappropriate for such an  
5       entity. Finally, I will analyze Laurel Hills' situation and explain my recommendation in  
6       this docket.

7

8                   **COST OF CAPITAL FOR AN INVESTOR OWNED UTILITY**

9

10   **Q.   What do you mean by cost of capital?**

11   A.   I mean the rate of return necessary to induce investors to hold the debt and stock of a  
12       company. This rate of return should be equal to that available to investors on alternative  
13       investments of similar risk.

14   **Q.   How is the cost of capital related to the legal principles of determining the allowed**  
15       **rate of return for regulated utilities?**

16   A.   The cost of capital concept embodies the economic principles for determining the  
17       allowed rate of return set out by the U.S. Supreme Court in *Bluefield Water Works v.*  
18       *P.S.C.* (262 U.S. 679, 1923) and *F. P. C. v. Hope Natural Gas Co.* (320 U. S. 591, 1944).  
19       For instance, the Court stated in *Hope* that, "...the return to the equity owner should be  
20       commensurate with returns on investments in other enterprises having corresponding  
21       risks. That return, moreover, should be sufficient to assure confidence in the financial  
22       integrity of the enterprise, so as to maintain its credit and to attract capital." (320 U.S.

603) In my opinion, the allowed rate of return on the capital employed by an investor owned utility should be set equal to its cost of capital.

**Q. What are the consequences of not setting the allowed rate of return equal to the cost of capital?**

A. If the allowed rate of return is set below the cost of capital, then the company's credit rating will fall and its cost of debt will rise. The price of its stock will decline to reflect the lower expected return. Eventually, the company may face difficulties in financing investments in new plant and equipment, causing the quality of its products and services to decline.

If the allowed rate of return is set above the cost of capital, then the firm's stockholders realize a capital gain as the price of the firm's stock rises to reflect the higher return. Moreover, the capital gain is paid for by the firm's customers in the form of excessively high prices.

Clearly, failure to set the allowed rate of return equal to the firm's cost of capital is detrimental to the firm's customers as well as its stockholders.

**Q. What is the first step in estimating the cost of capital for an investor-owned utility?**

A. The first step is to determine the appropriate capital structure for the company. This usually consists of short-term and long-term debt, common equity, and preferred stock, if any. This is often determined by examining the company's balance sheet.

**Q. What is the next step after the capital structure is determined?**

A. The next step is to determine the cost rates for each of the components of the capital structure. For debt and preferred stock, this merely involves expressing the required payments on these loans and instruments as a percentage of the total dollar amount



1 accounted for by each component. For common equity, however, stock market data are  
2 examined to determine the firm's cost of common equity. The allowed return on  
3 common equity should equal investors' expected return on common stock of comparable  
4 firms. This satisfies the requirements of *Bluefield* and *Hope*, as well as insuring that the  
5 company can attract capital by selling common stock as required in the future.

## 7 NONPROFIT CORPORATIONS

9 **Q. How does a nonprofit corporation differ from an investor-owned corporation?**

10 A. A nonprofit corporation does not have owners or stockholders, it does not issue stock in  
11 any form, and has no common equity in its capital structure. It may take out loans or debt  
12 to acquire physical assets. A non-profit's operations may be supported by fees, but  
13 usually grants and contributions from the public support much of its activities. It does  
14 not earn profit as such, but may retain a surplus when its income exceeds its costs. Any  
15 surplus so earned is used to support the ongoing operations of the corporation and is not  
16 paid out in dividends or in any other form to investors.

17 **Q. Is this how Laurel Hills is organized?**

18 A. Yes.

19 **Q. What are the implications of this nonprofit status for Laurel Hills' cost of capital?**

20 A. First, a conventional approach to capital structure is not feasible, because Laurel Hills  
21 lacks common equity and has no stockholders for whom a return must be earned.  
22 Moreover, it cannot raise capital by selling stock. Consequently, its rate of return does  
23 not have to attract investors to buy its stock.

1           Second, its debt amounts and cost rates can be calculated by conventional means.  
2           In order to remain solvent, it must earn a sufficient return on rate base to make the  
3           interest payments on its prudently incurred debt in support of its water utility operation.  
4

#### 5                                   **LAUREL HILLS' RATE OF RETURN**

6

7   **Q.    What does Laurel Hills' non-profit status imply about a rate of return on rate base?**

8   A.    Given the unusual nature of a nonprofit corporation like Laurel Hills, much of the  
9           conventional procedure can be sidestepped. Since there are no stockholders or common  
10          equity, stock market data are unnecessary. The only use for the return on rate base is to  
11          make payments on debt. Consequently, the required rate of return can be calculated  
12          directly from the annual interest rates on Laurel Hills' debt.

13 **Q.    Have you done this calculation for Laurel Hills' debt?**

14 A.    No. Both the amount and the applicable interest rate on Laurel Hills' debt cannot be  
15          determined at this time. Based on its Response to TRA Staff Data Requests 1 and 2, and  
16          the first discovery request of the CAPD, as well as the testimony of Laurel Hills' witness  
17          Mr. McClung, Laurel Hills has incurred two loans. One is a promissory note for  
18          \$400,000 from Moy Toy, Inc., carrying an interest rate of 6.5%, for the purchase of the  
19          water system. This debt is questionable for several reasons. First, Michael McClung and  
20          Phillip Guettler, president and corporate secretary of Laurel Hills, are minority owners of  
21          Moy Toy. Moreover, Mr. Guettler is apparently the managing member of Renegade  
22          Florida Management, LLC, which in turn is the general partner in Renegade Florida  
23          Management, LTD, which is the managing member of Moy Toy. This suggests that the

1 loan, as well as Laurel Hills' purchase of the water operation from Moy Toy, may not  
2 have been an arms-length, market-based transaction.

3 The other is a loan from Renegade Mountain Timeshares, LLC, for operation of  
4 the water system. The amount and interest rate on the latter have not been specified,  
5 although the amount appears to be in the neighborhood of \$50,000. Further, the  
6 relationship between Renegade Mountain Timeshares and Moy Toy is not clear.  
7 Renegade Mountain Timeshares is described by Mr. McClung as "The developer and  
8 owner of the majority of the weekly timeshare units of the Laurel Hills Condominiums,"  
9 (McClung Testimony, p. 7). Moy Toy is described as "the real estate developer for the  
10 development on Renegade Mountain," which is served by Laurel Hills water utility  
11 operations (Response to CAPD First Discover Request #12). Moy Toy purchased the  
12 Renegade Mountain development, including the water system, in late 2010, subsequently  
13 selling the water operation to Laurel Hills in May, 2011.

14 Consequently, the loan from Renegade Mountain Timeshares also may not have  
15 been an arms-length, market-based transaction.

16 **Q. How should the rate of return on rate base for Laurel Hills' be calculated?**

17 A. The rate of return should be the rate applied to rate base that will yield the interest  
18 expense on the prudently incurred debt of Laurel Hills. For example, if this debt is just  
19 the \$400,000 promissory note at the 6.5% interest rate, then the rate of return is just  
20 6.5%. If the debt also includes, say, \$50,000 at 8% interest from Renegade Mountain  
21 Timeshares, then the rate of return is the weighted average interest rate. For this  
22 example, the rate of return is calculated as  $(6.5\%)(400,000/450,000) +$   
23  $(8\%)(50,000/450,000) = (6.5\%)(0.889) + (8\%)(0.111) = 5.78\% + 0.888\% = 6.668\%$ . I

1 offer this calculation only as an example and not to suggest the propriety of any specific  
2 rate of return.

3 **Q. Do you recommend any specific rate of return for Laurel Hills' water utility?**

4 A. No. The uncertainties surrounding Laurel Hills' debt makes the calculation of the  
5 appropriate rate of return impossible at this time.

6 **Q. Does this conclude your testimony at this time?**

7 A. Yes.

1

2

**VITA**

**CHRISTOPHER C. KLEIN**

**EDUCATION:**

Ph. D. (Economics), University of North Carolina - Chapel Hill (1980)  
B. A. (Economics), University of Alabama - Tuscaloosa (1976)

**EXPERIENCE:**

2002-Present	<b>Middle Tennessee State University</b> Associate Professor of Economics
2002-Present	<b>Consultant</b> Clients included: AGL Resources, Inc.; Reseller Coalition; Tennessee Advisory Commission on Intergovernmental Relations; Tennessee American Water Company, Inc.; Tennessee Department of Environment and Conservation; US LEC of Tennessee, Inc.; Verizon Wireless; West Virginia American Water Company, Inc.; Z-Tel Communications, Inc.
1996-2002	<b>Tennessee Regulatory Authority</b> Chief, Economic Analysis Division, 1997-2002 Chief, Utility Rate Division, 1996-97
1998-2001	<b>Vanderbilt University</b> Adjunct Associate Professor of Economics
1986-1996	<b>Tennessee Public Service Commission</b> Director, Utility Rate Division, 1994-96 Economist & Research Director, 1993-94 Commission Economist, 1986-1993
1990-1994	<b>Middle Tennessee State University</b> Adjunct Faculty, Department of Economics and Finance
1980-1986	<b>Federal Trade Commission</b> Economist, Bureau of Economics - Antitrust Division

**PROFESSIONAL ACTIVITIES:**

Editor, *Journal for Economic Educators*, 2007 to present.  
Member 1994-96, State Staff, Federal-State Joint Board, Federal Communications Commission  
CC Docket No.80-286 ("Separations" Joint Board).  
Chair 1993-95, member 1990-95, Research Advisory Committee to the Board of Directors of the  
National Regulatory Research Institute at Ohio State University.  
Member 1990-95, Staff Subcommittee on Gas, National Association of Regulatory Utility  
Commissioners.

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Group Leader: Economics, Contracts, and Non-affiliate Revenue; NARUC\* Staff Subcommittee on Accounts Multi-state Audit Team, 1988 Report on Bell Communications Research.

Referee: *Contemporary Economic Policy*, *Eastern Economic Journal*, *Land Economics*, *Management and Decision Economics*, *Review of Industrial Organization*, *Social Science Quarterly*, *Southern Economic Journal*.

Memberships: American Economic Association (AEA, since 1981), Southern Economic Association (1982), Industrial Organization Society (1986), Western Economic Association (2003).

#### **HONORS:**

Beta Gamma Sigma, International Honor Society for Collegiate Schools of Business, 2008

Top 30 Score, 2003-2004 Student Evaluation of Faculty Performance, Jones College of Business, Middle Tennessee State University.

Resolution of Recognition, National Regulatory Research Institute, 1995

Listed in various Who's Who publications, 1990-

Certificate of Commendation, Federal Trade Commission, 1985

First in my class to complete the Ph. D., 1980

Alpha Pi Mu, National Industrial Engineering Honorary, 1973

#### **GRANTS RECEIVED:**

MTSU Jones College Summer Research Grant: 2004, 2005, 2007.

MTSU Faculty Research and Creative Activity Academic Year Grant: 2004-2005 (with Reuben Kyle)

MTSU Faculty Research and Creative Projects Committee Summer Salary Grant: 2006, 2009.

#### **TEACHING**

##### ***At MTSU***

ECON 2420, Principles of Economics – Microeconomics

ECON 3520, Intermediate Microeconomic Theory

ECON 4400, Economics of Antitrust and Regulation

ECON 4570, Managerial Economics

ECON 4620/5620, Econometrics and Forecasting

ECON 7121, Seminar in Applied Microeconomic Theory (Ph.D. Program)

ECON 7250, Methods of Outcome Assessment (Ph.D. Program)

Student Internships (ECON/FIN 4890, ECON/FIN 5890, ECON/FIN 6440)

##### ***At Vanderbilt University***

ECON 252, Antitrust Economics

ECON 283, Economics of Regulation

##### **MTSU Dissertation Committees**

Shea W. Slonaker, Chair, *Three Essays on the Recorded Music Industry*, Ph. D. 2009.

Hua Liu, *U.S. Trade Deficit, Productivity Growth and Offshore Outsourcing*, Ph. D.

2006.

Jennifer Wilgus, *A Life-Cycle Approach to Human Capital Investment and Skill-Biased Technological Change*, Ph. D. 2005.

Anealia Sasser, *A Theoretical Examination of Title IV Financial Aid for Higher Education*, D.A. 2004.

**Vanderbilt University Dissertation Committees:**

Aster Adams, *The Impact of Deregulation and Competition on Efficiency, Financial Performance, and Shareholder Wealth of Electric Utilities in the United States*, Ph. D. 2009.

David B. Sapper, *Trial Selection and the Effects of Sentencing Reform in Criminal Antitrust Cases: A Theoretical and Empirical Analysis*, Ph. D. 2006.

T. Randolph Beard, *Bankruptcy, Safety Expenditure, and Safety Regulation in the Motor Carrier Industry*, Ph. D. 1988

**PUBLICATIONS AND WORKING PAPERS**

"Identifying the Best Buys in U.S. Higher Education," with E. Anthon Eff and Reuben Kyle, forthcoming, *Research in Higher Education*, 2012.

"Do State Funded Merit Scholarships Reduce High School Dropout Rates?" with Elizabeth A. Perry-Sizemore, submitted to the *Southern Economic Journal*, 2012.

"The Price of Quality: Hedonic Estimation of Implicit Market Models for Higher Education," with Reuben Kyle, submitted to *Applied Economics*, 2011.

"Chart Turnover and Sales in the Recorded Music Industry: 1990-2005," with Shea W. Slonaker, *Review of Industrial Organization*, 36:351-372, 2010.

"What Can We Learn from Education Production Studies?" with E. Anthon Eff, *Eastern Economic Journal*, 36:450-479, 2010.

"Public Transportation Ridership Levels," with Christopher R. Swimmer, *Journal for Economic Educators*, 10(1): 40-46, Summer 2010.

"Analysis of U.S. Foreign Aid Determinants for 2003," with Joshua M. Hill, *Journal for Economic Educators*, 9(1): 48-52, Summer 2009.

"Intra-district Public School Funding Equity and Performance in Nashville, Tennessee," *Journal of Education Finance*, Summer 2008.

"A Tale of Three Inputs: Cost and Production Duality with Time Utilization of Capital," *Applied Economics Research Bulletin*, 1(1) 2008.

"Telephone Penetration in Tennessee: Are Intrastate Universal Service Policies Effective?" with Aster R. Adams and David B. Sapper, *Journal of Applied Regulation*, 2, November 2004, pp. 87-108.

"A Switching Regime Approach to Measuring the Effects of Technological Change in Ocean Shipping," with J. David Bass and Reuben Kyle, *Journal of Productivity Analysis*, 22:1-2, July-September, 2004, pp. 29-49..



- "The Financial Implications of Unbundling on Bell Company Profits: A Review of the Evidence," with T. Randolph Beard and George S. Ford, *CommLaw Conspectus: The Journal of Communications Law and Policy*, v. 12 n.1, Fall/Winter 2003.
- "Bell Companies as Profitable Wholesale Firms: The Financial Implications of UNE-P," with T. Randolph Beard, *Phoenix Center Policy Paper No. 17*, November 2002, [www.phoenix-center.org](http://www.phoenix-center.org).
- "Connecting Tennessee: Bridging the Digital Divide," with Rose M. Gregory, *NRRI Quarterly Bulletin*, vol. 21 no. 3, Spring 2001.
- "Regulation vs. Deregulation: It's All in the Externalities," *Tennessee's Business*, Middle Tennessee State University, v. 11, n. 3 (November), 2001.
- "The Role of Public Power in a Restructured Electric Power Industry," with David Sapper, *The Electricity Journal*, August/September 2001.
- "Regulator Preferences and Utility Prices: Evidence from Natural Gas Distribution Utilities," with George Sweeney, *Energy Economics*, vol. 21, n. 1, 1999.
- "Competition in Telecommunications: A Progress Report for Tennessee," *Tennessee's Business*, Middle Tennessee State University, Murfreesboro, TN; vol. 9, n. 1, 1999.
- "Technological Change and the Production of Ocean Shipping Services," with Reuben Kyle, *Review of Industrial Organization*, December 1997.
- "The Haunting of Universal Service: Open Markets, Efficient Funding and the Ghost of the Fair Rate of Return," *Proceedings of Tenth NARUC Biennial Regulatory Information Conference*, National Regulatory Research Institute, Columbus, OH, 1996.
- "Productivity Growth in Telecommunications: The Case of Tennessee," *Proceedings of Tenth NARUC Biennial Regulatory Information Conference*, National Regulatory Research Institute, Columbus, OH, 1996.
- "Capture vs. Compromise: Entry Regulation of Intrastate Trucking," with Reuben Kyle and Jennifer Wilgus, *Logistics and Transportation Review*, v. 32 n. 3, September 1996.
- "Price Discrimination: What is 'Undue' for a U.S. Utility?" *Utilities Policy*, vol. 4 no. 4, October 1994.
- "Single Service Price Variations and 'Subsidies' in the Pricing of Telecommunications Services," *Proceedings of Ninth NARUC Biennial Regulatory Information Conference*, National Regulatory Research Institute, Columbus, OH, 1994.
- "What Is Undue Price Discrimination by a Regulated Utility?" *NRRI Quarterly Bulletin*, March 1994.
- "A Comparison of Cost-Based Pricing Rules for Natural Gas Distribution Utilities," *Energy Economics*, July 1993.
- "Negotiating a Transportation Rate Under Threat of Bypass: A Case Study," *Proceedings of the Eighth Biennial Regulatory Information Conference*, National Regulatory Research Institute, Columbus, OH, 1992.
- "A Multinomial Logit Model of Intrastate Trucking Regulation in Tennessee," with Jennifer Jose and Reuben Kyle, *Papers and Proceedings of the Nineteenth Annual Meeting of the Midsouth Academy of Economics and Finance*, v. 16, 1992.

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"Ramsey Prices for Natural Gas Distribution Utilities," *Proceedings of the Seventh NARUC Biennial Regulatory Information Conference*, National Regulatory Research Institute, Columbus, OH, 1990.

"Intervention as Entry Deterrence: Evidence from Sham Litigation Cases," *Proceedings of the Seventh NARUC Biennial Regulatory Information Conference*, National Regulatory Research Institute, Columbus, OH, 1990.

Book Review, *Changing the Rules: Technological Change, International Competition, and Regulation in Communications*, Edited by Robert W. Crandall and Kenneth Flamm, Brookings 1989; *Review of Industrial Organization*, Fall 1990.

"Double Leverage and Strategic Financing Decisions," *NRRI Quarterly Bulletin*, v. 11, n. 3, September 1990.

"Predation in the Courts: Legal Versus Economic Analysis in Sham Litigation Cases," *International Review of Law & Economics*, June 1990.

"Rate Design for Natural Gas Utilities: A Comparison of Ramsey and Cost of Service Pricing," *NRRI Quarterly Bulletin*, December 1989.

"Dissecting Divestiture: A Telecommunications Book Review Article," *Review of Industrial Organization*, October 1989.

*The Economics of Sham Litigation: Theory, Cases, and Policy*, Bureau of Economics Staff Report, Federal Trade Commission, April 1989.

"New Agreements, Non-affiliate Revenues, and Economic Issues," with Mike Amato and Francis Fok, in *Report on Bell Communications Research*, National Association of Regulatory Utility Commissioners, 1988.

"Merger Incentives and Cost of Capital Regulation of Subsidiaries," *Midsouth Journal of Economics and Finance*, March 1988.

"Strategic Sham Litigation: Economic Incentives in the Context of the Case Law," *International Review of Law & Economics*, December 1986.

"Is There a Principle for Defining Industries? Comment," *Southern Economic Journal*, October 1985.

"A Note on Defining Geographic Markets," with Ed Rifkin and Noel Uri, *Regional Science and Urban Economics*, February 1985.

"Process Analysis, Capital Utilization, and the Existence of Dual Cost and Production Functions," FTC Bureau of Economics Working Paper No. 116, May 1984.

"A General Theory of Hedonic Pricing of Capital as a Factor of Production," FTC Bureau of Economics Working Paper No. 105, December 1983.

"The International Market for Crude Oil," with Fred Lipson and Harvey Blumenthal, in *Mergers in the Petroleum Industry*, Federal Trade Commission, 1982.

## PRESENTATIONS

"Econometrics as a Capstone Course in Economics," American Economic Association National Conference on Teaching Economics, Boston, MA, May 2012.

- "Music Supply, Chart Turnover, and the Random Copying Hypothesis in the Digital Age," with Shea Slonaker, International Industrial Organization Conference, Arlington, VA, March 2012.
- "Econometrics as a Capstone Course in Economics," Southern Economic Association Annual Conference, Washington, DC, November 2011.
- "Do State Funded Merit Scholarships for Higher Education Reduce High School Dropout Rates for All Students?" with Elizabeth A. Perry-Sizemore, Southern Economic Association Annual Conference, Washington, DC, November 2011.
- "Do State Funded Merit Scholarships for Higher Education Improve Pre-College Academic Performance?" with Elizabeth A. Perry-Sizemore, Southern Economic Association Annual Conference, Atlanta, GA, November 2010.
- "The Effect of State Funded Merit Scholarships for Higher Education on Pre-College Academic Performance," with Elizabeth A. Perry-Sizemore, Southern Economic Association Annual Conference, San Antonio, TX, November 2009.
- "The Effect of State Funded Merit Scholarships for Higher Education on High School Graduation Rates," with Elizabeth A. Perry-Sizemore, Southern Economic Association Annual Conference, Washington, DC, November 2008.
- "Identifying the Best Buys in U.S. Higher Education," with E. Anthon Eff and Reuben Kyle, Southern Economic Association Annual Conference, Washington, DC, November 2008.
- "Product Variety and Sales in the Recorded Music Industry: 1990-2005," with Shea Slonaker, International Industrial Organization Conference, Arlington, VA, May 2008.
- "Identifying the Best Buys in U.S. Higher Education," with E. Anthon Eff and Reuben Kyle, Academy of Economics and Finance Annual Meeting, Nashville, TN, February 2008.
- "Product Variety and Sales in the Recorded Music Industry: 1990-2005," with Shea Slonaker, Academy of Economics and Finance Annual Meeting, Nashville, TN, February 2008.
- "Do State Funded Merit Scholarships Induce Students to Learn more in High school?" with Elizabeth A. Perry-Sizemore, Southern Economic Association Annual Conference, New Orleans, LA, November 2007.
- "The Price of Quality: Hedonic Estimation of Implicit Market Models for Higher Education," with Reuben Kyle, Southern Economic Association Annual Conference, New Orleans, LA, November 2007.
- "The Shifting Appeal of Sham Litigation: Evidence from Appellate Decisions 1971-2006," International Industrial Organization Conference, Savannah, GA, April 2007.
- "The Shifting Appeal of Sham Litigation: Evidence from Appellate Decisions 1980-2006," Scholar's Week Poster Fair, MTSU, April 2007
- "Causality Tests for Public School Funding and Performance," Southern Economic Association Meeting, Charleston, SC, November 2006.
- "The Price of Quality: Hedonic Estimation of Implicit Market Models for Higher Education," with Reuben Kyle, Southern Economic Association Meeting, Washington, November 2005.

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11-00198

- "The Price of Quality: Hedonic Estimation of Implicit Market Models for Higher Education," with Reuben Kyle, International Industrial Organization Conference, Atlanta, April 2005.
- "Anticompetitive Litigation and the "Baselessness" Standard for Antitrust Liability," Southern Economic Association Meeting, New Orleans, November 2004.
- "The Price of Quality: Hedonic Estimation of Implicit Market Models for Higher Education," with Reuben Kyle, Southern Economic Association Meeting, New Orleans, November 2004.
- "VoIP: Let's Ask the Right Questions," Tennessee Regulatory Authority Forum on VoIP, Nashville Public Library, April 30, 2004.
- "Telephone Penetration in Tennessee: Are Intrastate Universal Service Policies Effective?" with Aster Rutibablira and David B. Sapper, Southern Economic Association Meeting, San Antonio, TX, November 2003.
- "Telephone Penetration in Tennessee: Are Intrastate Universal Service Policies Effective?" with Aster Rutibablira and David B. Sapper, International Industrial Organization Conference, Boston MA, April 4-5, 2003.
- "A Critique of Educational Production Functions," Southern Economic Association meeting, New Orleans, LA, November 2002.
- "Connecting Tennessee: Bridging the Digital Divide," with Rose M. Gregory, American Economic Association meeting, joint session with the Transportation and Public Utilities Group, Atlanta, GA, January 2002.
- "Long Term Contracts as Anticompetitive Devices in Telecommunications," Southern Economic Association Annual Meeting, Tampa, FL, November 2001.
- "The Role of Public Power in a Restructured Electric Power Industry," American Economic Association meeting, joint session with the Transportation and Public Utilities Group, Boston, MA, January 2000.
- "Universal Telephone Service in Tennessee: A Pre-Competition Assessment," with David Sapper, Southern Economic Association meeting, New Orleans, LA, November 1999.
- "Trucks, Planes, Trains, and Wires? Short-haul vs. Long-haul Long Distance Rates in Telecommunications," with Reuben Kyle, Southern Economic Association meeting, Baltimore, MD, November 1998.
- "The Economics of Time as a Resource," Southern Economic Association meeting, Atlanta, GA, November 1997.
- "Cost and Production Duality with Capital Utilization," Department of Economics Seminar Series, Vanderbilt University, February 1997.
- "Maximum Impropriety: The 'Baselessness' Standard for Improper Litigation," Southern Economic Association meeting, Washington, November 1996.
- "Cost and Production Duality with Capital Utilization," Southern Economic Association meeting, Washington, November 1996.
- "The Haunting of Universal Service: Open Markets, Efficient Pricing, and the Ghost of the Fair Rate of Return," Tenth NARUC Biennial Regulatory Information Conference, Columbus, OH, September 1996.
- "Productivity Growth in Telecommunications: The Case of Tennessee," Tenth NARUC Biennial Regulatory Information Conference, Columbus, OH, September 1996.

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11-00198

- "Productivity Growth in Telecommunications: The Case of Tennessee," Advanced Workshop in Regulation and Public Utility Economics, 15th Annual Conference, Lake George, NY, May 1996.
- "A Switching Regime Approach to Measuring the Effects of Technological Change in Ocean Shipping," with Reuben Kyle, Southern Economic Association meeting, New Orleans, November 1995.
- "Productivity Growth in Telecommunications: The Case of Tennessee," Southern Economic Association meeting, New Orleans, November 1995.
- "Local Service Price Variations and 'Subsidies' in Telecommunications," Southern Economic Association meeting, Orlando, November 1994.
- "Dynamic Effects of Regulatory Policy on Intrastate Long Distance Telephone Rates," Southern Economic Association meeting, Orlando, November 1994.
- "Single Service Price Variations and 'Subsidies' in the Pricing of Telecommunications Services," Ninth NARUC Biennial Regulatory Information Conference, Columbus, OH, September 1994.
- "Suit, Countersuit, and Settlement in Sham Litigation," Annual Meeting of the Midsouth Academy of Economics and Finance, Nashville, February 1994.
- "New Evidence on the Effect of Regulation on Intrastate Long Distance Telephone Rates," Annual Meeting of the Midsouth Academy of Economics and Finance, Nashville, February 1994.
- "What is Undue Price Discrimination for a Public Utility?" Southern Economic Association meeting, New Orleans, November 1993.
- "Regulated Utility Prices and the Preferences of Regulators," with George Sweeney, Southern Economic Association meeting, New Orleans, November 1993.
- "A Test for Strategic Behavior Under Rate of Return Regulation," Southern Economic Association meeting, Washington, November 1992.
- "New Evidence on the Effect of Regulatory Policy on Intrastate Long Distance Telephone Rates," Southern Economic Association meeting, Washington, November 1992.
- "Technological Change and the Production of Ocean Shipping Services," with Reuben Kyle, Atlantic Economic Association meeting, Plymouth, MA, October 1992.
- "Negotiating a Transportation Rate Under Threat of Bypass: A Case Study," Eighth Biennial Regulatory Information Conference, Columbus, OH, September 1992.
- "A Multinomial Logit Model of Intrastate Trucking Regulation in Tennessee," with Jennifer W. Jose and Reuben Kyle, Midsouth Academy of Economics and Finance annual meeting, Mobile, February 1992.
- "Technological Change and the Production of Ocean Shipping Services," with Reuben Kyle, Southern Economic Association meeting, Nashville, November 1991.
- "Suit, Countersuit, and Settlement in Sham Litigation Cases," Southern Economic Association meeting, Nashville, November 1991.
- "Implementing Third Best Pricing Rules for Natural Gas Distribution Utilities," Southern Economic Association meeting, Nashville, November 1991.

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11-00198

"Trucking Regulation in Tennessee," with Jennifer Jose and Reuben Kyle, Southern Economic Association meeting, Nashville, November 1991.

"Research and Development in Regulated Markets: The Case of Bell Communications Research," Southern Economic Association meeting, New Orleans, November 1990.

"Incentives for Trial and Settlement in Sham Litigation," Southern Economic Association meeting, New Orleans, November 1990.

"Ramsey Prices for Natural Gas Distribution Utilities," Seventh NARUC Biennial Regulatory Information Conference, Columbus, OH, September 1990.

"Intervention as Entry Deterrence: Evidence from Sham Litigation Cases," Seventh NARUC Biennial Regulatory Information Conference, Columbus, OH, September 1990.

"Funding Research and Development in Regulated Industries: The Case of Bell Communications Research," Ninth Annual Conference of the Advanced Workshop in Regulation and Public Utility Economics, New Paltz, NY, May 30 - June 1, 1990.

"Incentives for Trial and Settlement in Sham Litigation," Bureau of Economics Seminar, Federal Trade Commission, February 1990.

"Estimating Ramsey Prices for Natural Gas Utilities," Southern Economic Association meeting, Orlando, November 1989.

"Incentives for Trial and Settlement in Sham Litigation," Department of Economics Seminar Series, Auburn University, November 1989.

"Natural Gas Rate-Making: Now and In the Future," Associated Valley Industries Natural Gas Seminar, Nashville, October 1989.

"Estimating Ramsey Prices for Natural Gas Utilities," Advanced Workshop in Regulation and Public Utility Economics, Eighth Annual Conference, Newport, RI, May 29-31, 1989.

"The Role of Bell Communications Research in the Telecommunications Markets," Midsouth Academy of Economics and Finance Annual Conference, Nashville, February 1989.

"The Organizational Structures of Public Utilities Under Different Regulatory Regimes," Southern Economic Association meeting, San Antonio, November 1988.

"New Agreements, Non-affiliate Revenues, and Economic Issues," Report on Bell Communications Research, NARUC Multi-state Audit Team, presented to NARUC Staff Sub-committee on Accounts, Kalispell, Montana, September 1988.

"Predation in the Courts: Empirical Analysis of Sham Litigation Cases," Joint Session of the Industrial Organization Society and the American Economic Association, Chicago, December 1987.

"Rate of Return on Equity," National Conference on Unit Valuation Standards, Nashville, December 1987.

"Merger Incentives and Organizational Structures Under Cost of Capital Regulation," Southern Economic Association meeting, Washington, November 1987.

Klein Direct  
Exhibit  
11-00198

"Merger Incentives and Cost of Capital Regulation of Subsidiaries," Midsouth Academy of Economics and Finance Annual Conference, Mobile, February 1987.

"The Incidence of Predatory Sham Litigation," Southern Economic Association meeting, New Orleans, November 1986.

"A Welfare Analysis of the Department of Justice Merger Guidelines," Southern Economic Association meeting, Dallas, November 1985.

"A Duality Approach to Labor Costs and Shiftwork," Southern Economic Association meeting, Atlanta, November 1984.

"Strategic Sham Litigation: Economic Incentives in the Context of the Case Law," Southern Economic Association meeting, Atlanta, November 1984.

"A General Theory of Hedonic Pricing of Capital as a Factor of Production," Southern Economic Association meeting, Washington, November 1983.

#### **ECONOMIC TESTIMONY**

Testimony before the Public Service Commissions of Alabama, Louisiana, North Carolina, and South Carolina on behalf of the Reseller Coalition, various docket numbers, August 2010-May 2011.

In the United States District Court for the Middle District of Tennessee: Owner-Operator Independent Drivers Association Inc. v. Keith Bissell, No. 3-90-0251, March 1992, (Affidavit).

Before the Federal Communications Commission: Represcribing the Authorized Rate of Return for Interstate Services of Local Exchange Companies, CC Docket No. 89-624, March 1990.

Before the Tennessee General Assembly: various Committees, 1994 - present.

Before the Tennessee Advisory Commission on Intergovernmental relations:  
"Report on Pole Attachment Rate Study," with Reuben Kyle, January 18, 2007.

Before the Tennessee Regulatory Authority (docket numbers in parentheses):

Petition of Piedmont Natural Gas, Inc. for an Adjustment to Its Rates, Approval of Changes to Its Rate Design, Amortization of Certain Deferred Assets, Approval of New Depreciation Rates, Approval of Revised Tariffs and Service Regulations, and Approval of a New Energy Efficiency Program and GTI Funding, (11-00144), December 2011.

Petition of Tennessee American Water Company to Change and Increase Certain Rates and Charges so as To Permit It to Earn a Fair and Adequate Rate of Return on Its Property Used and Useful in Furnishing Water Service to Its Customers, (11-00189), April 2011.

Petition of Chattanooga Gas Company for General Rate Increase, Implementation of the EnergySmart Conservation Programs, and Implementation of a Revenue Decoupling Mechanism, (09-00183), April 2010.

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Tennessee Rural Coalition Petition for Suspension and Modification Pursuant to 47 U.S.C. 1251(f)(2), (06-00228), May 2007.

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Before the Tennessee Public Service Commission\* (docket numbers in parentheses):

BellSouth D/B/A South Central Bell (95-02614) October 1995.\*\*

United Telephone - Southeast (95-02615) September 1995.

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Chattanooga Gas Company (93-06946) December 1993.

South Central Bell Tariff 93-039 (93-03038) May 1993.\*\*

South Central Bell (92-13527, et al) April 1993.\*\*

Kingsport Power Co. (92-04425) October 1992.

United Cities Gas Co. (92-02987) Sept. 1992.

L & L Trucking, Inc. (91-06786) February 1992.\*\*

Chattanooga Gas Company (91-03765) October 1991.

GTE South (91-05738) August 1991.\*\*

Nashville Gas Company (91-02636) August 1991.

Intra-LATA "Competition" (89-11065, et al) Feb. 1991.

United Intermountain Tel. Co. (90-07832) Dec. 1990.\*\*

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AT&T - South Central States (90-07460) Oct. 1990.\*\*

L & L Trucking (90-03514; 90-04786) August 1990.\*\*

South Central Bell Tel. Co. (90-05953) August 1990.\*\*

GTE South (90-01273) June 1990.

Radio Common Carriers (89-11234) Nov. 1989.\*\*

Nashville Gas Co. (89-10491) Oct. 1989.

United Cities Gas Co. (89-10017) Sept. 1989.

Crockett Telephone Co. (89-02325) May 1989.

ALLTEL Tennessee (89-02324) May 1989.

West Tennessee Telephone Co. (89-02323) May 1989.

Peoples Telephone Co. (89-02322) May 1989.

Ooltewah-Collegedale Telephone Co. (89-02321) May 1989.

Kingsport Power Co. (89-02126) March 1989.\*\*

Chattanooga Gas Co. (88-01363) February 1989.\*\*

Tennessee-American Water Co. (U-87-7534) March 1988.

Tellico Telephone Co. (U-87-7532) February 1988.

Claiborne Telephone Co. (U-87-7508) November 1987.\*\*

Nashville Gas Co. (U-87-7499) October 1987.\*\*

Kingsport Power Co. (U-86-7472) May 1987.\*\*

United Cities Gas Co. (U-86-7442) February 1987.\*\*

General Telephone of the South (U-86-7437) Nov. 1986.\*\*

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\* Written (prefiled) testimony on cost of capital, rate design, competitive effects, and/or other issues.

\*\* Oral testimony as well as written.