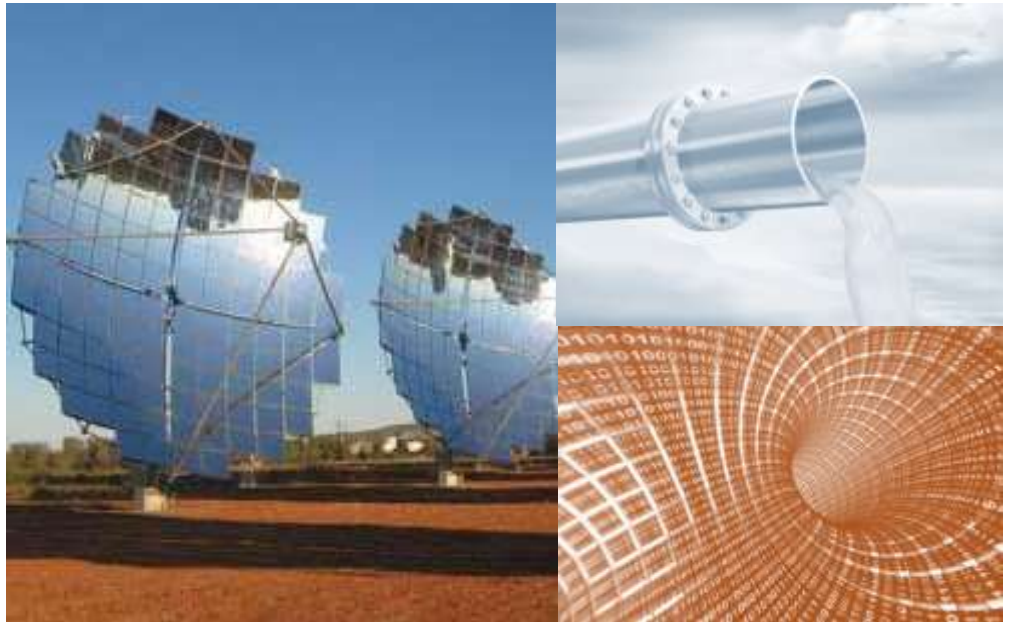


Public Utility Research Center 2017 Annual Report to the PURC Executive Committee



2017

Update on PURC Research and Outreach

This update on PURC research and outreach is intended to serve as an overview for PURC Executive Committee Members. Below are highlights of an active year. At the end of this summary is a list of recent research papers that are also available through the research papers search engine on the PURC website at www.purc.ufl.edu.

Public Utility Research Center 2017 Annual Report to the PURC Executive Committee

UPDATE ON PURC RESEARCH AND OUTREACH

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Public Utility Research Center 2017 Annual Report to the PURC Executive Committee

UPDATE ON PURC RESEARCH AND OUTREACH

HIGHLIGHTS

45th Annual PURC Conference

The 45th Annual PURC Conference, “Securing the Future of Florida’s Utility Infrastructure” will examine what customers value and how they are being served.

Courses on Executive Leadership, Electricity Pricing, and Regulatory Principles

PURC provided courses in multiple countries. Topics included developing an effective leadership culture, key principles for effective regulation, and developing practical, yet economically meaningful prices in electricity.

Online Course: Regulatory Impact Analysis

PURC continues to offer its Comprehensive Regulatory Impact Analysis Online Course. In 2017, 24 professionals participated in the course in an effort to learn how to avoid the pitfalls that stifle utility regulatory decisions and gain support for difficult issues.

Research Initiatives on Distributed Energy Resources, Incentive Regulation, and Competition

PURC faculty and affiliates are engaged in research on behavioral changes of solar customers, demand charges, price cap regulation in energy, demand response, deregulation, anticompetitive conduct, and mergers.

PURC/World Bank International Training Program on Utility Regulation and Strategy

One hundred three people attended this two week program in 2017. Since its inception in 1997, this program has educated more than 3300 professionals representing 154 nations. Former commissioner Ronald Brisé was a featured speaker in June.

PURC Advanced International Practices Program

Twenty-four infrastructure professionals from around the world participated in this year's courses on energy pricing, benchmarking, and telecommunications.

Body of Knowledge on Infrastructure Regulation (BoKIR) web site

PURC, in collaboration with the Public-Private Infrastructure Advisory Facility at the World Bank, expanded the BoKIR content to include fragile states in 2016. This new section includes an overview of how regulatory systems can be built in fragile situation, self-diagnostic tools, review of the best literature on the topic, FAQs, and an annotated reading list. In 2018, PURC will collaborate with the Governance team at the World Bank to create learning modules and training materials from a toolkit developed by the World Bank team.

PRIMARY RESEARCH PROJECTS

ENERGY

Designing Compensation for Distributed Solar Generation: Is Net Metering Ever Optimal?

Electricity customers who install solar panels often are paid the prevailing retail price for the electricity they generate. This paper demonstrates that this rate of compensation typically is not optimal. A payment for distributed generation that is below the retail price of electricity often will induce the efficient level of distributed generation when the fixed costs of centralized electricity production and the network management costs of accommodating intermittent solar are large, and when centralized generation and distributed generation produce similar (pollution) externalities. The payment for distributed generation can optimally exceed the retail price under alternative conditions. The optimal compensation policy varies considerably as industry conditions change.

Solar Impacts: Does Distributed Production affect Consumption Choices?

As the role of distributed generation grows in the electricity industry, this growth is accompanied by questions regarding its impact on the rest of the system, chiefly the impact on finances, environmental footprint and reliability. Unfortunately, analyses of these impacts assume, a priori, that generation from distributed resources displaces generation from “somewhere else”, usually centralized resources and a 1:1 basis. We examine the behavior of customers who install solar arrays on their homes and find that these customers increase consumption by 8-14%. That is, every 100 kWh generated by residential distributed solar displaces only 86-92 kWh from other sources. This result has profound impacts on the financial compensation of these resources, their role in reducing emissions, and their impact on system reliability.

Creditworthiness of US Electric Utilities

This paper examined how credit rating agencies evaluate risk from evolving utility business model and regulation. Each of the three major credit rating agencies -- Standard & Poor's, Moody's, and Fitch -- place major importance on regulation, in particular how regulation affects a utility's prospects for recovering its costs. For example regulation makes up 25% of Moody's formula. The agencies generally consider regulated services to be less risky than unregulated services, such as competitive generation. It remains to be seen how the major agencies will view other changes to the utility business model, although Barclays Bank downgraded the bond market for US electric utilities based on the belief that the regulatory compact is hampering utilities' to adapt to changing technologies. This paper was presented at a state regulator workshop on utility finance in New York.

The Effect of Renewable Portfolio Standards on State-Level Employment: An Ex Post Analysis

Renewable Portfolio Standards (RPSs) programs which propose target levels of energy production or consumption that must come from renewable sources, have become a popular policy in state capitals across the

United States. As of 2010, 29 states and the District of Columbia had adopted programs which fall under the RPS umbrella. RPS are often times seen as a tool to foster economic development through job growth. This paper analyzes the effects of RPSs on state level employment in the whole economy. The paper finds RPS adoption does not lead to a statistically significant effect on overall employment.

The Economic and Political Realities of Regulation: Lessons for the Future

As competition emerges for electricity utilities, it is important to keep in mind lessons from the past. One lesson is that actual data, rather than conjecture, is needed for anchoring decisions in reality. Another lesson is that economic incentives are powerful. For example, electric utilities in the UK revealed that they were able to make significant improvements in efficiency once they were allowed to profit from the improvements. Finally successful transitions require that regulators carefully pace the changes so that the system does not derail. Because so many stakeholders have to give up something during times of change, the work of regulation is often about disappointing people at a rate that they can endure.

Renewable Energy Incentives in Kenya: Feed-in-tariffs and Rural Expansion

This paper examines efforts to expand electricity access through the use of renewable energy sources. It discusses the regulatory environment, policies, and tariffs used by the government of Kenya for this effort, focusing on two important programs: the feed in tariff scheme and the creation of the Rural Electrification Authority. These policies and the use of clear targets have increased access and the use of renewable energy. Current challenges, including access to financing and expansion to the rural poor, are also discussed.

TELECOM

Regulating Regulators in Transitionally Competitive Markets

Over the past 30 years of transformations in telecommunications, the US has gained considerable insights about how to design regulatory policy in the presence of developing competition. The insight to date has focused on how to harness competitive forces to motivate incumbent suppliers to serve the best interests of consumers. This paper stresses the importance of considering the incentives of regulators and explores the associated changes in standard recommendations for regulatory policy design in the presence of developing competition.

Economic Scholars' Summary of Economic Literature Regarding Title II Regulation of the Internet

Much has been claimed about the economics of the FCC's 2014 decision to classify internet service as a Title II common carrier service, but little of what is said seems to relate to actual economic research. A group of scholars, led by PURC, summarized the economic research and provided this summary to the FCC in its Restoring Internet Freedom proceeding. In general the research shows that some of the activities prohibited by the FCC's decisions can actually be beneficial to customers, but not always.

Three Things Economists Wish the FCC Knew about Broadband Markets

Three well-known lessons from economics are largely missing from recent FCC decisions. One is that technology competition drives the deployment of high-speed broadband more than any other incentive. The second lesson is that a high market share is generally not a market failure, but an indicator that the company is satisfying customers more than are its competitors. Lastly subsidies created to improve universal service rarely do so.

Beyond Net Neutrality: Policies for Leadership in the Information, Computing, and Network Industries

This paper analyzes the FCC's struggles in developing coherent policies for net neutrality and concludes that the current regulations are counterproductive. It explains a multistakeholder approach that can be used to resolve intra-industry conflicts, which largely drive net neutrality issues, without imposing explicit regulatory constraints on a rapidly evolving technology ecosystem.

Identifying Market Power in Times of Constant Change

This paper explains that traditional approaches to defining markets to investigate market power fail in times of constant change because demand and supply are in constant flux. The analyses rely upon historical data, the value of which degrades over time, possibly resulting in harmful regulatory decisions. This points to a need for a different approach to determining when regulation is an appropriate response to market power. The paper presents an approach that relies upon essential factors leading to monopoly (EFMs), such as control of essential facilities, which persist across generations of products. Market power analyses should be a search for EFMs and policy responses should focus on diffusing the market power without destroying value.

Adding Dimension to Merger Analysis

Traditional merger analysis in the U.S. focuses on a single dimension, namely the combination of two or more firms that supply substitutable products. As such, merger analysis misses the fact that there are various types of mergers – e.g., hostile takeovers, friendly acquisitions, and mergers of equals – and that the differences among these types affect outcomes. Similarly missing is explicit consideration of merger-created synergies for future markets. We illustrate the effects of painting all mergers with the same brush on the propensity for firms to form beneficial mergers and we suggest means of changing merger analysis to reflect diversity in the natures of mergers and their future markets.

Technology Blogs

Dr. Jamison blogs on technology issues for the American Enterprise Institute. He addresses issues of net neutrality, universal service, privacy, innovation, competition, and regulatory institutions. His blogs are available on the PURC website at <http://warrington.ufl.edu/centers/purc/research/directorsTake.asp> or at the American Enterprise Institute website at <http://www.aei.org/scholar/mark-jamison-2/>.

WATER

Data Transparency as a Key Tool for Regulating Government-Owned Water Utilities

Data collection and information incentives are key for regulating the water sector where government ownership and operation is often the case. The problems are compounded for fragile, conflict-affected, and low income states. Issues, potential actions, and supporting examples that arise when monitoring and evaluating infrastructure utility performance are offered by this paper.

Technical Inefficiency Effects in a Stochastic Production Function for Managerial Incentives in Public Water Utilities

Performance of state-owned water utilities in developing countries is often weak. This study estimates the impact of managerial incentives upon efficiency using a stochastic frontier production function with revenue water as the output. The empirical analysis utilizes an unbalanced paneled data consisting of revenue water, connections, operating expenditure, water delivered and staff, from Uganda's nineteen NWSC sub-utilities for a nine-year period, 2002-2010. The inefficiency effects are modelled as a function of utility-specific variables: service coverage, level of financial incentives, target difficulty, and year of observation. While financial incentives and increased service coverage improve efficiency, targets (such as the reduction of non-revenue water) that are perceived as excessive by employees may reduce it. The findings suggest some policy implications: utility managers in the public water sector need to incorporate monetary incentives and increase service coverage to reduce non-revenue water. However, targets need to be set with great care and with transparency.

MULTISECTOR

Stakeholders and Power Relations in Regulation

Stakeholders play at least two roles in utility regulation: Some receive benefits, such as customers protected from monopoly power. Stakeholders also influence regulation by, for instance, commenting in proceedings. Most studies on stakeholder relations focus on engagement, such as through advisory groups and public hearings. Largely missing are analyses of power relationships. Some stakeholders, such as lawmakers, have formal authority over regulatory bodies. Others have little formal authority. Stakeholders also vary in how and the degrees to which regulators affect them. This paper examines these relationships and illustrates them with a survey of regulatory agencies in the Caribbean

OUTREACH

Plans for the 45th Annual PURC Conference, Securing the Future of Florida's Utility Infrastructure

Our U.S. energy and water supply systems are not ready for the future, according to some experts. The American Society of Civil Engineers (ASCE) graded the U.S. energy infrastructure as a D+ and our drinking water systems as a D in 2017, exactly the same as in 2001. Florida fared somewhat better but not well in 2017, with a C+ for drinking water infrastructure and a C- for energy. New technologies are changing wireless communications, energy production and storage options, and customers' expectations for service. Cyber threats are evolving and it is hard for state regulators to review the costs of preventative measures. The 2017 storm season brought renewed calls for new solutions and approaches to storm hardening, recovery, and customer relations. We have faced these challenges before so what holds us back from making significant progress?

Conference details are available online at <http://www.purc.ufl.edu>.

Safe, Reliable Service at Just and Reasonable Rates: The Economics of Storm Hardening

In the wake of the devastation left by Hurricane Harvey in Texas and Louisiana, and Hurricane Irma in Florida, and mindful of the winter storms that will soon bring wind and snow to much of the country, anxious people everywhere worry about the impact these storms might have on their safety, comfort, and convenience. When it comes to their electricity service, people turn their attention to the power lines overhead and ask their utilities and regulators if their electricity service might be more secure if those lines were buried underground. But the answer is not that straightforward. Some of the issues that formulate decision-making were discussed by Ted Kury, Director of Energy Studies, during this webinar hosted by the National Regulatory Research Institute (NRRI).

Three Lessons for Improving Infrastructure Performance

Drawing from forty-six years of teaching, research, and outreach, Dr. Sanford Berg shared in the keynote address at the 15th Annual OOCUR Conference, three themes that regularly emerge from his work. These relate to politics, information, and conflict-resolution. PURC has hosted over 3,500 regulators and managers from 153 nations over the past two decades in the PURC/World Bank International Training Program on Utility Regulation and Strategy. During the concluding session of each program, participants have shared their reactions to formal presentations and informal networking. Three key lessons they identify can be consolidated into three areas: drivers of regulatory decisions, the importance of quantification, and approaches to the resolution of stakeholder conflicts. In addition, these lessons build upon seven elements affecting the performance of the energy, water, and telecommunications sectors. These elements all begin with the letter "I", making it easy to remember themes that permeate regulatory systems.

When Regulators Lead: Resolving Your Toughest Challenges

At PURC, we often refer to the job of a regulator as "disappointing people at a rate they can endure." The ability of a regulator to distribute losses among the stakeholders can be the difference between making progress in difficult issues and failure to move forward. "When Regulators Lead: Resolving Your Toughest Challenges" was the title of the presentation that Ms. Araceli Castaneda, Director of Leadership Studies at

PURC gave at the 15th Annual OOCUR Conference: Balancing the Interests – Lessons from Caribbean Regulators, held in Trinidad and Tobago, November 8 – 10, 2017. In this interactive presentation, Ms. Castaneda described the differences between formal and informal authorities, and introduced the PURC Strength and Stability Model.

What Actions Should Governments Take to Promote Economic Success in the New Digital Economy?

That was the question discussed by a panel at the Jack Kemp Foundation Forum on Opportunity in the New Digital Economy. The panel examined how government can improve its efficiency and its effectiveness in serving citizens. One of the key takeaways is that government procurement practices are the biggest obstacle for improvement in the US. The panel also discussed competition issues for large tech firms. There was general agreement on the importance of liberal markets for technology development. Regarding developing entrepreneurship in the digital economy, the panel believed the main government role was to have as little regulation as possible to allow entrepreneurs to be profitable and nimble. PURC director Mark Jamison moderated the panel, which included Congressman Will Hurd of Texas, Commissioner Terrell McSweeney of the Federal Trade Commission, and Chris Liddell of the White House Office of American Innovation. The forum was held in Washington, DC on October 24, 2017.

The Growing Role of Distributed Generation in the Caribbean Electricity Sector

The role of distributed generation is growing in the Caribbean electricity sector. However, this growth accompanies many assumptions about these resources, with impacts on system planning and reliability. At the 9th Caribbean Renewable Energy Forum in Miami, Florida, PURC Director of Energy Studies Ted Kury addressed the Utility Leaders Workshop regarding some research the PURC has conducted around some of these assumptions. The research suggests that consumer behavior might change when they install distributed generation, and this behavior has the potential to impact the way island nations plan their utility systems.

What's Missing from Discussions in the US about Broadband Deployment?

What's missing from discussions in the US about broadband deployment? Any assessment of the costs and benefits. That was the basic message that PURC director Mark Jamison conveyed to participants of the Technology Policy Institute's Aspen Forum in August 2017. He explained that broadband subsidies take resources from other parts of the economy, such as education and healthcare, and careful thought should be given to what is being given up for more broadband. He also called participants' attention to studies that have shown that telecommunications subsidies for the poor make very little impact on the poor's consumption of telecommunications. Instead low-income households treat the subsidy as extra income. This implies that an income subsidy would be more beneficial than today's complex Lifeline program that has been subject to considerable fraud by telecom companies.

What Grade Should US Broadband Infrastructure Receive?

What grade should US broadband infrastructure receive? None, or at least none from outsiders. This was the advice of PURC director Mark Jamison. Speaking on a panel at the July 2017 meetings of the National Association of Regulatory Utility Commissioners, Dr. Jamison explained that customers and broadband providers

are the only groups that can give valid grades for the infrastructure, and they do so on a daily basis. US customers seem pretty enthusiastic: Data traffic over mobile networks has increased over 300% over the past three years and employment in the app sector has increased at a compound annual growth rate of 30% over the past five years. Network providers seem enthusiastic, too: According to the Progressive Policy Institute, telecom and cable TV companies account for about 32% of all investment made by the top 25 US companies.

What Might Change with Net Neutrality in the US?

What might change with net neutrality in the US? That was the subject of a panel that featured PURC director Mark Jamison. Speaking before the National Association of Regulatory Utility Commissioners' (NARUC) Committee on Telecommunications, Dr. Jamison explained that events are overtaking net neutrality in the US. Even though customers think they are accessing content on the internet, they are actually using private networks much of the time. A growing number of content providers have their own networks and are bypassing the public internet because its equal treatment approach does not work well for a lot of content services. Also it is ultimately damaging to customers to lock a dynamic industry into regulator-induced business models. He also advised that the net neutrality debate is in many ways a battle between competing businesses and that regulators should avoid getting caught up in struggle. This NARUC meeting was held in San Diego in July 2017.

Leadership for Innovation

Innovation will be crucial to "Reimagine ICT as a Tool for National Growth and Development," which was the theme of the CANTO Conference held in Punta Cana, the Dominican Republic, July 16-19, 2017. During her presentation "Leadership for Innovation," Ms. Araceli Castaneda, PURC director of Leadership Studies described the three types of innovation to consider in the ICT world: innovation in what is known, innovation in what is knowable and innovation into the unknown. Ms. Castaneda also offered leadership tools to the industry representatives and regulators in the audience to promote an organizational culture that encourages innovation and is tolerant of potential failures.

How Should Regulators Address Network Security and Prepare Themselves for Future Regulatory Issues?

Those were the topics of remarks that PURC Director, Mark Jamison, offered at the International Telecommunications Union meeting in Nassau, Bahamas in July 2017. Participating in two panels, Dr. Jamison pointed out that these two topics dovetail nicely. Regulators are to be independent in terms of bias, but interdependent in terms of cooperating with others. Network security requires coordinated efforts of customers, network providers, regulators, and other government officials. Several other issues came up during the panels. Regarding Bitcoin and blockchain technology, Dr. Jamison explained that the success of Bitcoin and this security technology is an indicator that people are not getting sufficient value from traditional currencies and banking systems. On net neutrality, Dr. Jamison explained that ex ante regulations stop good things from happening as well as bad things. He preferred that regulators focus on ex post regulations.

Telestrategies

What can people expect from the new Federal Communications Commission? This was the topic of PURC Director Dr. Mark Jamison's presentation at the TeleStrategies' Communications Taxation Conference in Miami, Florida in May 2017. Dr. Jamison explained that the two Republican commissioners had written extensive and well-documented dissents during their times in the minority and that these dissents form a roadmap for their actions now that they will be in the majority.

Other Research Conferences

At the International Industrial Organization Society Conference, PURC awarded its annual "Best Paper in Regulatory Economics" award. PURC researchers participated in several other international conferences, including the International Industrial Organization Society, the Telecommunications Policy Research Conference, and the Organisation of Caribbean Utility Regulators.

Results of the 44th Annual PURC Conference

More than 90 key leaders in industry and government attended the 44th Annual PURC Conference, "Florida Utilities: Who's Driving the Future" in February. Speakers included Jerry Parrish of the Florida Chamber Foundation and former FERC Commissioner, Tony Clark of Wilkinson Barker Knauer, LLP. Speakers examined what customers value and how they are being served. Conference details are available online at <http://www.purc.ufl.edu>.

Body of Knowledge on Infrastructure Regulation (BoKIR) Web site

PURC continues to update this valuable online resource to include more recent information in its sections. Currently, the web site provides tutorials, literature surveys, self-paced tests, and more than 500 downloadable references on utility regulation, as well as a regulatory glossary translated into several different languages. As of 2017, the glossary of terms is available in 11 languages including Bulgarian and Arabic.

TRAINING AND DEVELOPMENT

41st and 42nd PURC/World Bank International Training Programs on Utility Regulation and Strategy

One hundred and three infrastructure managers learned from each other and from leading experts during the January and June deliveries of this biannual, two-week program in Gainesville. The program is designed to enhance the economic, technical, and policy skills required to design and manage sustainable regulatory systems for infrastructure sectors. The participants studied ongoing infrastructure reform programs, networked with international speakers, and offered their own insights into regulatory policies.

2017 PURC Advanced International Practices Program

PURC delivered three courses under its Advanced International Practices Program: Energy Pricing, Benchmarking Infrastructure Operations, and Advanced Topics in Telecom Policy and Regulation. In attendance were 24 participants from 14 nations. Participants of the energy course performed price reviews and analyzed financial statements for rate setting. Benchmarking participants assessed how information on trends in key performance indicators helps decision-makers. Telecom participants examined new technologies and services, customer demand, international trends and business challenges in ICT. Dr. Jamison, Dr. Berg, Dr. Kury, and Ms. Castaneda designed and delivered the courses during the 10-day program.

Practicing Leadership in a Political Environment: A One-Day Intensive Training Workshop for Emerging Leaders in Utility Policy

In January and June, Dr. Jamison and Ms. Castaneda delivered leadership workshops for regulatory professionals, who examined the activities, behaviors, mindsets, and skills of a successful leader during this training workshop designed by PURC for emerging leaders in utility policy.

Comprehensive Regulation Impact Analysis

PURC's online course provides tools and approaches for regulatory impact analysis (RIA), a systematic appraisal of the potential impacts of a regulatory decision to assess whether the decision is likely to achieve the desired objectives and at what cost. Through case studies, exercises, and lectures, course participants learn how to identify key questions, identify stakeholders and engage them in the analysis, use appropriate analytical techniques, and communicate their findings. In the spring and fall of 2017, this online course was led by PURC director of energy studies, Ted Kury, and PURC director of water studies, Sanford Berg.

Aqualectra Leadership Training and Coaching

How can an executive team create a leadership culture? When Aqualectra CEO Darick Jonis posed this question to PURC, Mark Jamison and Araceli Castaneda designed a three-phase executive and leadership program for the utility. During Phase I of this program, these PURC faculty worked with the executive team to create an

innovative and business-mind leadership culture to help them thrive in their difficult context. This was achieved through a set of leadership workshops and executive coaching that melded three leadership frameworks: Servant leadership, adaptive leadership, and situational leadership. Phase I was delivered over a five-month period earlier this year. Phase I also included a seminar for the utility's board of directors. Phase II of this program is scheduled for 2017. Phase II embedded this type of leadership among the executives through experiences to deepen leadership habits, and extended this leadership style among the unit directors and company's upper management.

P3 Certification Program

Delivered by PURC Senior Fellow, David Richardson, the two-day PPP Certification Program is an innovation of the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), the Inter-American Development Bank (IDB), the Islamic Development Bank (IsDB), the Multilateral Investment Fund (MIF), the World Bank Group (WBG) and part funded by the Public-Private Infrastructure Advisory Facility (PPIAF) with a shared vision of enhancing PPP performance globally. CP3P is the definitive credential to demonstrate to your peers that your abilities are aligned with international PPP good practice.

Follow-up Part I Regulatory Training Course for the Members of the Office and Senior Managers

How can regulators adapt to changes in policy and technology on island systems? That was the subject of a recent PURC course held in Kingston, Jamaica for the Office of Utilities Regulation. PURC Director of Energy Studies Ted Kury and Senior Fellow Raj Barua conducted a two day program for the Members of the Office and key staff. The program addressed the changing role of the OUR in light of new legislation and a change in regulatory regime from a price cap to a revenue cap. The course built on an earlier program to incorporate the challenges faced by island systems, independent power producers, risk control and mitigation, and the regulatory process.

How Can a Regulator Prepare Itself for New Responsibility?

This was the situation faced by the Egyptian water regulator, EWRA. PURC Director, Dr. Mark Jamison, and PURC Senior Fellows, Dr. Sanford Berg and Dr. Raj Baura, studied the regulator's context and laws and developed a training plan. Because the agency personnel had received extensive training in the past, the primary need was to refresh the knowledge and develop new professional habits. Drs. Jamison, Berg, and Baura recommended online approaches to sharpen a few skills, but emphasized partnering with educational institutions that could provide guided learning and development of new practices. The World Bank funded this effort.

FACULTY RESEARCH FOCUS



Mark A. Jamison, Director

Dr. Jamison conducts studies on leadership in regulation, regulation and strategy in telecommunications, and regulatory institutions. In recent years, his research has been presented at meetings of the American Economic Association, Industrial Organization Society, Western Economic Association, Australian Competition and Consumer Commission, Telecommunications Policy Research Conference, the Caribbean Electric Utility Services Corporation, the Organisation of Caribbean Utility Regulators, and the National Association of Regulatory Utility Commissioners. He is the principal investigator on a National Science Foundation grant to examine barriers to adoption of solar technologies in developing countries. His current research examines market competition, adaptive regulation, and institutional change. He has conducted training programs for regulatory organizations in Africa, Asia, Australia, the Caribbean, Central America, Europe, North America, and South America.



Ted Kury, Director of Energy Studies

Dr. Ted Kury's research has focused on three current issues confronting energy markets: the efficacy of relocating power lines, the complexity in determining optimal levels of carbon dioxide abatement, and the effects of restructured electricity markets. The relocation of power lines is a complicated question because relocation is very expensive and does not necessarily reduce the damage associated with storm events. In areas more susceptible to storm surge and flooding, the relocation may even increase damages, leading to a waste of valuable consumer and utility resources. Understanding how the efficacy of undergrounding changes with location is critical to ensuring that customers are receiving safe, reliable electricity service at just and reasonable rates. In addition to his academic work, Dr. Kury has published a number of essays in the popular press on the topic. His work on carbon abatement includes insight into the marginal cost curves for abatement. Theoretically, we can equate the marginal cost with the marginal benefits of abatement to determine optimal levels of emissions. Economic theory provides clear guidelines on what constitutes optimal levels of production for any good – the point at which the marginal cost is equal to the marginal benefit. However, in practice, these curves are not always well-behaved, and this can lead to different characterizations of the optimum. So while an understanding of these costs and benefits is necessary to determine optimal levels, it is not sufficient, and public policy should take this into account. In addition, the sensitivity of these marginal abatement curves to the price of natural gas means that consumers suffer twice as natural gas prices increase. This question is critical as states decide how to comply with the EPA's Clean Power Plant Rule. Restructured electricity markets have led to more opportunities, but it is not clear how these opportunities are distributed. Dr. Kury's research has shown that the benefits of increased trade in transparent wholesale markets are not uniformly distributed, with larger and privately-owned utilities more apt to participate. He is also studying whether growth in distributed generation resources have an effect on consumption for consumers, impacting system planning and reliability.



Lynne Holt, Policy Analyst

Dr. Holt's research agenda for 2017 included publishing a paper on utility-led community solar and producing a PURC working paper on state public utility commissions' role in cybersecurity and physical security issues.



Araceli Castaneda, Director of Leadership Studies

Ms. Araceli Castaneda's leadership work in 2017 has mostly focused on the continued work with a utility company that started over two years ago. This work was carried out jointly with Mark Jamison. The focus of "Phase II" of this leadership program has been two-fold: (a) to embed and deepen the innovative and business-mind leadership culture among the executives of the company through shadowing sessions, facilitated peer consulting activities, one-on-one coaching and self-assessments, and (b) the extension of the leadership training through three sets of two-day workshops customized for the directors of the different units and company's

upper management.

Ms. Castaneda presented "When Regulators Lead: Resolving Your Toughest Challenges" at the 15th Annual OOCUR Conference: *Balancing the Interests – Lessons from Caribbean Regulators*, held in Trinidad and Tobago, November 8 – 10, 2017. In this interactive presentation, Ms. Castaneda described the differences between formal and informal authorities, and introduced the PURC Strength and Stability Model.



Sanford V. Berg, Senior Fellow

Dr. Sanford (Sandy) Berg, PURC Senior Fellow, has been investigating internal and external governance mechanisms in the context of infrastructure reform. *Utilities Policy* published his paper, co-authored with Michelle Phillips, "Data Transparency as a Key Tool for Regulating Government-Owned Water Utilities" (December 2017, pp. 30-37). This article examines factors that are important for data collection and information initiatives in the water sector, where government ownership and

operation is usually the case. Examples from developing countries are presented to illustrate the impacts of data availability on sector performance. His co-authored a paper on "Adaptive Leadership in Water Utility Operations: The Case of Uganda," which builds on the work by Castaneda and Jamison, was published in the journal, *Sustainable Water Resources Management*. Berg was invited to deliver the Keynote speech at the 15th Annual Organization of Caribbean Regulators (OOCUR) Conference (in Trinidad and Tobago). His presentation, "Three Lessons for Improving Infrastructure Performance," was published in the November OOCUR Newsletter. He continues to assist in the delivery of PURC eLearning and training programs for international participants.



David Sappington, Lanzillotti-McKethan Eminent Scholar

Professor Sappington's ongoing research focuses on the design of regulatory policies to: (i) limit peak electricity consumption by providing incentives for demand response; and (ii) promote efficient distributed generation of electricity via net metering and related policies.

APPENDIX

Public Utility Research Center

Recent Publications and Working Papers

Belt, Juan A.B., Nicolas Allien, Jay Mackinnon, and Bahman Kashi. 2017. "Cost Benefit Analysis of Power Sector Reform in Haiti" University of Florida, Warrington College of Business Administration, PURC Working Paper.

Berg, Sanford V. 2017. "Three Lessons for Improving Infrastructure Performance" University of Florida, Warrington College of Business, PURC Working Paper.

Berg, Sanford V. 2016. "Seven Elements Affecting Governance and Performance in the Water Sector" University of Florida, Warrington College of Business Administration, PURC Working Paper.

Berg, Sanford V., and Michelle Phillips. 2017. "Data Availability as a Key Tool for Regulating Government-Owned Water Utilities" University of Florida, Warrington College of Business Administration, PURC Working Paper.

Berg, Sanford V., and Michelle Phillips. 2016. "Data Transparency as a Key Tool for Regulating Government-Owned Water Utilities" University of Florida, Warrington College of Business Administration, PURC Working Paper.

Berg, Sanford V., and Robert N. Gakubia. 2016. "Performance Based Contracts (PBC) and Regulatory issues" University of Florida, Warrington College of Business Administration, PURC Working Paper.

Boampong, Richard. 2016. "Residential Energy Consumers Response to Energy Efficiency Rebates, Incentives, and Prices" University of Florida, Warrington College of Business Administration, PURC Working Paper.

Boampong, Richard, and Michelle Phillips. 2016. "Renewable energy incentives in Kenya: Feed-in-tariffs and Rural Expansion" University of Florida, Warrington College of Business Administration, PURC Working Paper.

Boampong, Richard, Colin A. Knapp, and Michelle Phillips. 2016. "The Effect of Renewable Portfolio Standards on State-Level Employment: An Ex Post Analysis" University of Florida, Warrington College of Business Administration, PURC Working Paper.

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