Marilyn A. Brown *is an endowed Professor in the Georgia Institute of Technology's School of Public Policy. Previously, she held leadership positions at Oak Ridge National Laboratory. She has authored more than 250 publications and four books including* Climate Change and Global Energy Security *(MIT Press, 2011). Her research focuses on the design and impact of policies aimed at accelerating the development and deployment of sustainable energy technologies, with an emphasis on the electric utility industry, climate adaptation, and the integration of energy efficiency, demand response, and solar resources. She was co-recipient of the 2007 Nobel Peace Prize for co-authorship of the report on Mitigation of Climate Change. Dr. Brown has served on six committees of the National Academies of Sciences and currently serves on the TVA Board of Directors and the Department of Energy's Electricity Advisory Committee.*

Benjamin Staver *completed his Masters in Public Policy at Georgia Tech and is continuing to obtain his Ph.D. as an IGERT fellow in the Climate and Energy Policy Laboratory. He studied System Dynamics at Worcester Polytechnic Institute, where he completed his undergraduate work. His research focuses on state-level energy policy.*

Alexander M. Smith *studies energy policy as a doctoral candidate at Georgia Institute of Technology's School of Public Policy. His work focuses upon electric power policies and policies toward science, technology, and innovation. Smith has worked with NEMS-based models to forecast impacts of growth in demand response and other energy futures and has worked with Oak Ridge National Laboratory assessing demand response potentials. He is currently working on an evaluation of a new energy-focused academic research center in the Southeast. He is co-developer of an open-license tool called ''GT_DSM'' that is useful for assessing the impacts of utility energy efficiency programs in the Southeast U.S. Mr. Smith anticipates graduating in 2016.*

John Sibley, *a graduate of Yale Law School, has worked on public policy in Georgia and the Southeast throughout his career, with a focus on energy issues since 2005. He has held public positions that include counsel to committees of the state Senate, director of the Governor's Growth Strategies Commission, and board member of the Georgia Regional Transportation Authority. He has served as president of the Georgia Conservancy, an environmental advocacy organization. After retiring from the Conservancy in 2005, he joined the Southeast Energy Efficiency Alliance as program director and is currently senior policy fellow at Southface Energy Institute.*

Alternative Business Models for Energy Efficiency: Emerging Trends in the Southeast

An analysis of approaches to allocating the costs and benefits of ratepayer-funded energy-efficiency programs in the Southeast – a region that generally lags in energy-efficiency programs – indicates that these programs would have only modest impacts on average electricity bills and rates, while significantly reducing electricity costs to participants. Utility earnings are reduced by energy-efficiency programs, but they can be restored by various business model features.

Marilyn A. Brown, Benjamin Staver, Alexander M. Smith and John Sibley

I. Introduction

Electric utilities in the Southeast today face an array of challenges. The economic downturn, investments in energy efficiency, and the growth of distributed generation are posing problems for traditional cost-of-service regulation by producing sluggish demand growth. At the same time, the digital economy is placing greater value on power quality, and growing cyber threats are requiring increased attention to grid security. Finally, concerns over environmental quality and global climate disruption mean that the traditional supply-side options for power generation that have dominated the past several

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decades of power planning may need to be transformed, and demand-side resources merit greater attention because of their increased social value (EPRI, 2014; Kind, 2013).

This confluence of factors is difficult to comport with traditional utility business models. ''Demand destruction'' imposes upward pressure on utility rates, which can precipitate a downward spiral of utility revenues (Kind, 2013), as consumers react to higher rates by using more energy-efficiency measures and distributed resources like solar and combined heat and power. Demand for utility services declines further, imposing even greater pressure for utilities to increase their rates to compensate for the loss in sales, further eroding demand.

The profits of utility companies are typically a function of how much energy they sell. Under traditional rate-of-return regulation, electric utility profits are based on the total amount of capital invested in selected asset categories (such as transmission and distribution systems and power plants) and the amount of electricity sold. Accordingly, a utility company's rates are traditionally set on the basis of an estimation of costs of providing service over some period of time (including an allowed rate of return) divided by assumed sales of electricity over that period. If actual sales are less than projected sales, the utility will earn a smaller return on investment and could fail to recover all of its fixed costs.

As a result, traditional ratemaking procedures encourage utilities to increase electricity sales – that is, to increase ''throughput'' – and discourage utilities from promoting energy efficiency and distributed generation because they reduce throughput (Lesh, 2009; York and Kushler, 2011). For several years, industry groups and think tanks have been challenging these ratemaking practices. In a joint statement in 2014, the Natural Resources Defense Council (NRDC) and Edison Electric Institute (EEI) concluded: ''The retail electricity distribution business should not be viewed or regulated as if it were a commodity business dependent on growth in electricity use to keep its owners financially whole.''[1]

This confluence of factors is difficult to comport with traditional utility business models.

The range of approaches used by utility companies across the country has engendered a lively debate about the ''best practice'' business model. We contribute to this debate by quantitatively evaluating the strengths and weaknesses of a range of different business models. Specifically, we examine alternative ways of compensating and incentivizing utilities to operate and expand energy-efficiency programs. While we focus exclusively on energy efficiency, much of the business model architecture that is examined may also be applicable to the broader range of factors including distributed resources that are simultaneously challenging utilities.

We begin by describing a framework for the business model options building on the ''three-legged stool'' concept developed over the past decade (NAPEE, 2007).[2] This framework focuses on the recovery of program costs, the recovery of lost contribution to fixed costs, and the provision of utility incentives. We then examine the design of these dimensions in four Southeastern States (Arkansas, Georgia, North Carolina, and Virginia) and by one national leader, Massachusetts. After describing our research methodology, we present the results of our calibration of the impact of eight business model features: two ways of recovering direct program costs, three approaches to recovering lost contribution to fixed costs, and three methods for incentivizing utility programs.

Different business model features will be more or less attractive to different stakeholder groups depending on their

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