RAP | Energy solutions for a changing world

Challenges With Traditional Ratemaking

Jim Lazar
RAP Senior Advisor

March 6, 2011

The Regulatory Assistance Project
50 State Street, Suite 3
Montpelier, VT 05602
Phone: 802-223-8199
web: www.raponline.org

Introduction

- Nonprofit organization founded in 1992 by experienced energy regulators
- Advises policymakers on economically and environmentally sustainable policies in the regulated energy sectors
- Funded by U.S. DOE & EPA, the Energy Foundation, ClimateWorks and other foundations
- We have worked in 40+ states and 30+ nations

Richard Sedano

- RAP Principal and Director
- Commissioner of the Vermont Department of Public Service 1991-2001
- Chair of the National Association of State Energy Officials 1998-2000

Jim Lazar

- RAP Senior Advisor since 1997
- 34 years as consultant on utility rate studies and resource planning

Appreciation

We appreciate the opportunity to engage with the Pedernales community.

We will build on the presentation of Rod Crile of CFC to avoid redundancy and isolate ratemaking issues associated with an increased utility emphasis on energy efficiency.

Rate Design Has a Context

- In the competitive world, there are no “fixed” charges to be a customer.
  - Oil refineries cost billions, but sell by the gallon
  - Hotels cost millions, but sell by the room-night
- Utility pricing should reflect the strategy of the times. An emphasis on energy efficiency should flow through the organization to member customers with consistency to the extent possible.

Many Ways To Calculate "Cost of Service"

Categories of Studies

- Marginal Cost
- Embedded Cost

Approaches Within Each Category

- Production / Transmission
  - Peak Responsibility
  - Base – Intermediate – Peak
  - Peak Credit
- Distribution Costs
  - Minimum System
  - Basic Customer

All Of These Rates Are Based On The "Cost of Service"

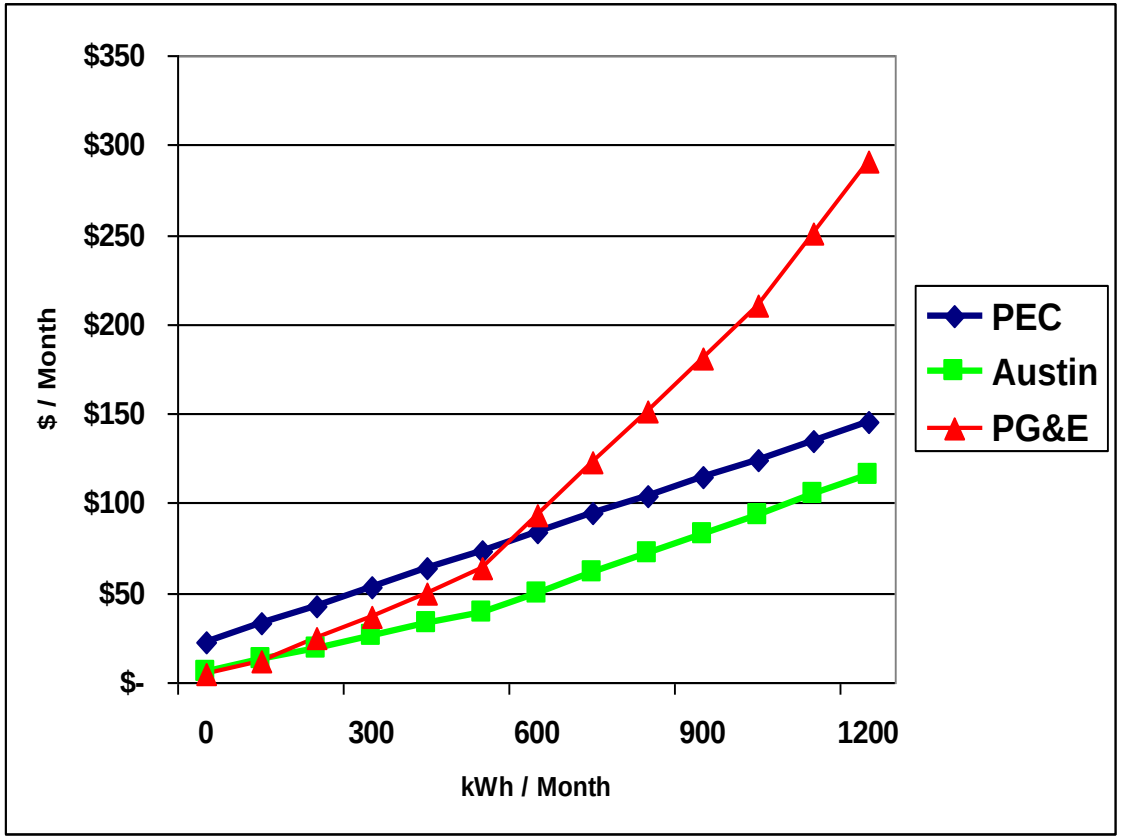
Pedernales			
Customer Charge			$ 22.50
Energy Charge		All kWh	$ 0.102

Austin			
Customer Charge			$ 6.00
Winter		First 500 kWh	$ 0.067
		Over 500 kWh	$ 0.091
Summer		First 500 kWh	$ 0.067
		Over 500 kWh	$ 0.109

Pacific Gas and Electric			
Customer Charge		Minimum $5/month	
Energy Charge		First 350 kwh	$ 0.122
		Next 150 kWh	$ 0.139
		Next 500 kWh	$ 0.294
		Over 1,000 kWh	$ 0.404

The Method You Choose Affects Customers and the Utility

- Recovering fixed costs in fixed charges stabilizes utility revenues, makes lenders comfortable, but puts a heavy burden on small users and discourages energy efficiency investments.
- Putting the bulk of cost recovery on incremental usage encourages conservation, but leaves the utility finances vulnerable to weather and other factors.
- Both are “cost of service.”



Some of the Basic Theories and Principles for Cost Analysis

- There are as many ways to calculate “cost of service” as there are analysts doing studies.
- No method is “correct”
- Many regulators require multiple studies, and consider the results of multiple methods.
- Some are based on engineering principles, some on economic principles.

Production and Transmission

- Fixed costs relate to the size of the units, and are therefore demand-related. (Peak Responsibility Method)
- Fixed costs for baseload power plants are incurred to reduce fuel costs, and are therefore energy-related. Only peaker costs are demand-related (Base-Intermediate-Peak Method)
- Peakers are built near the loads, so transmission costs should mostly be assigned to baseload plant usage (Peak Credit Method)

Distribution Costs

Minimum System Method: The cost of a "minimum distribution infrastructure" is driven by the number of customers, and should be recovered in the customer charge. (Minimum system method)

Basic Customer Method: The minimum distribution infrastructure does not change if a house is divided into a duplex, or a rancher puts a second house on the property for his son, so these costs are NOT customer-related and should NOT be recovered in the customer charge.

Different Residential Uses Have Different Load Shapes

- **Basic lights and appliances:** relatively even usage all year; high load factor.
- **Water heat / Water pumping:** Some usage all year; medium load factor.
- **Space Heating and Cooling:** Sharply seasonal usage; very weather sensitive; very peak-oriented. Low load factor.

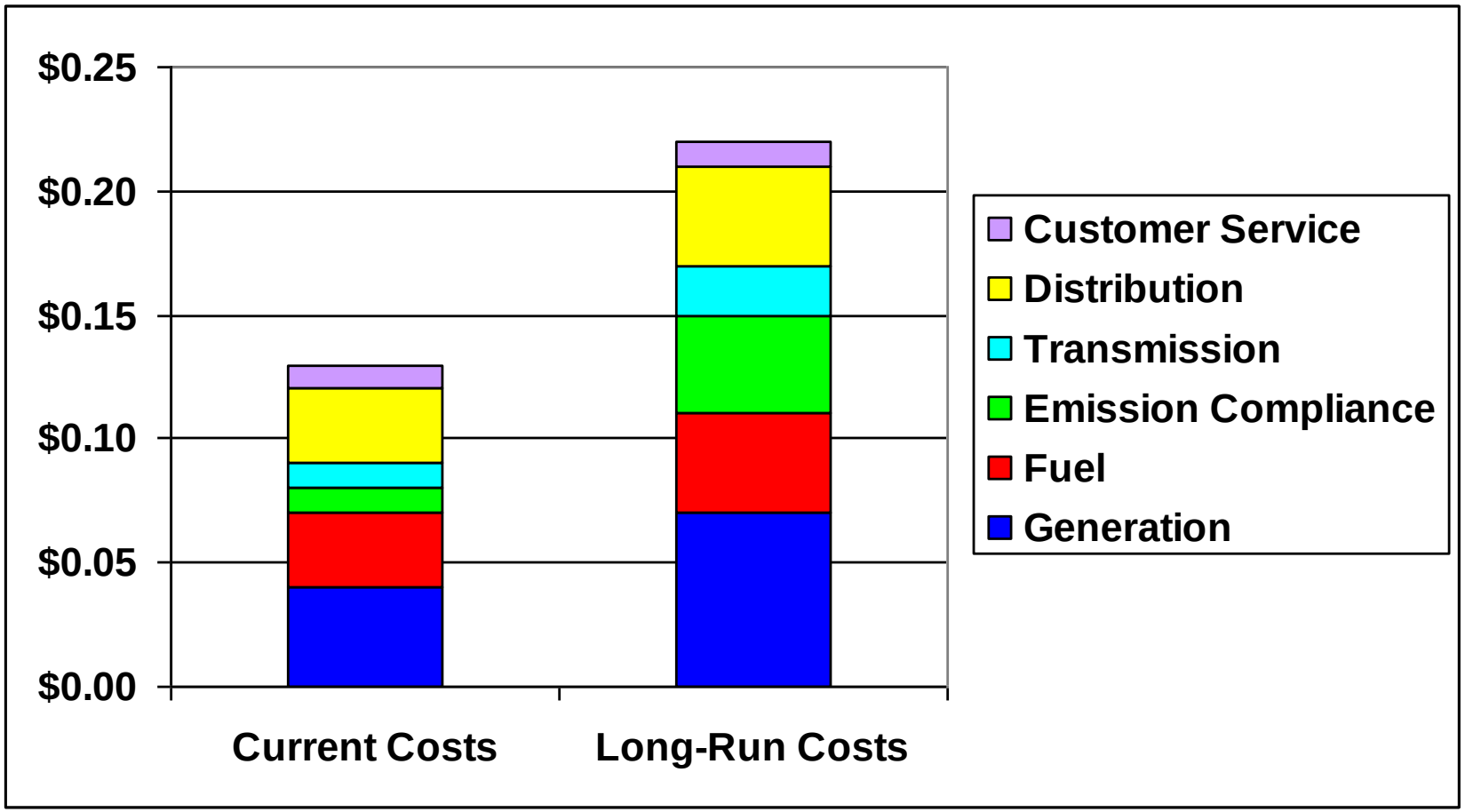
What if We Make a Residential Rate Out of Demand/Energy Costs?

Demand Cost		**$ 12.50**	**Slide 19, CFC**	
Energy Cost		**$ 0.03**		
Usage		Lights / Appliances	Water Heat	Heating / Cooling
kWh/Month		**First 500**	**Next 500**	**Over 1,000**
Load Factor		**70%**	**40%**	**20%**
Demand Cost		**$ 0.025**	**$ 0.043**	**$ 0.087**
Energy Cost		**$ 0.030**	**$ 0.030**	**$ 0.030**
Total:		**$ 0.055**	**$ 0.073**	**$ 0.117**

When demand costs are assigned to energy blocks based on load factor, you get a rate design that looks a lot like that in Austin or San Francisco.

Very much “cost of service” rates.

A Forward-Looking Rate Design Prepares Customers For the Future



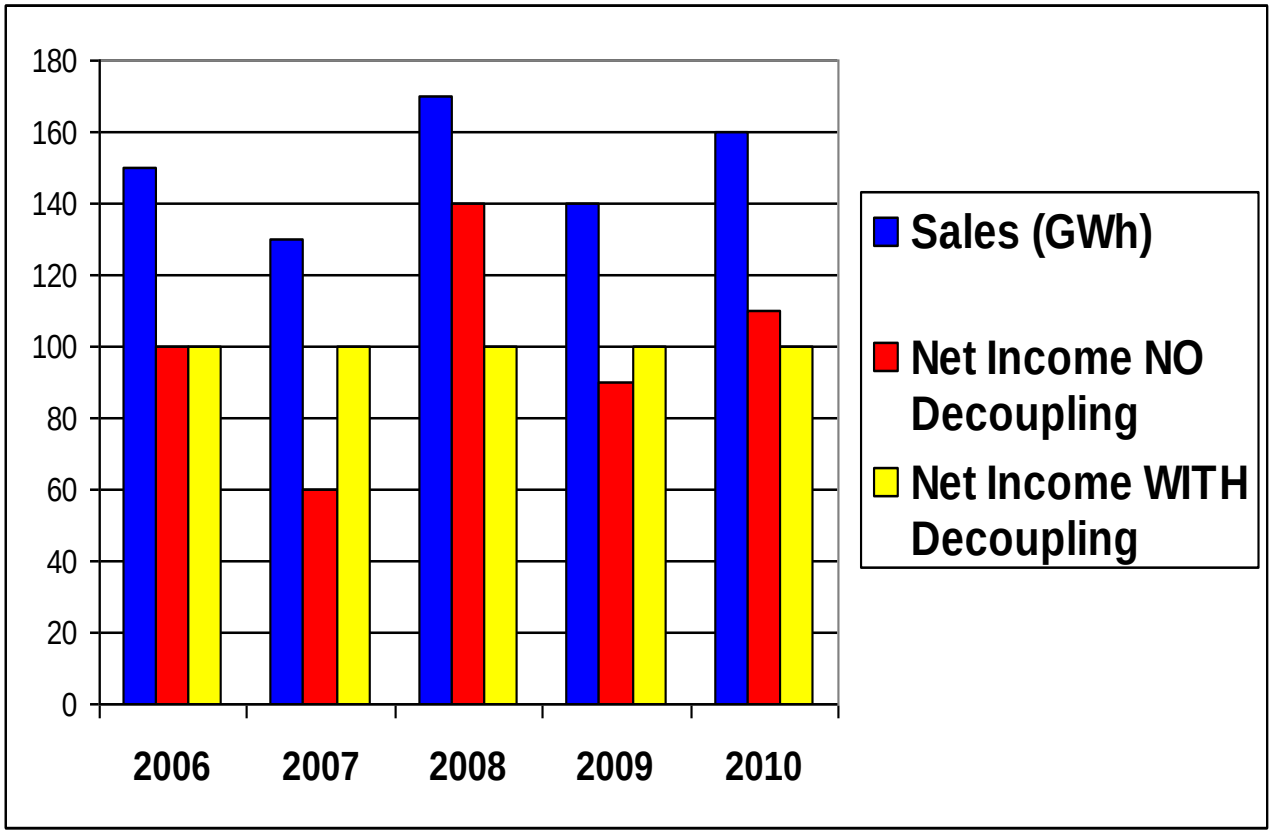
BUT: In a mild summer, we still have to pay the debt service…

- If rates are designed to recover demand costs to serve cooling loads in prices for usage over 1,000 kWh, what happens in a mild summer?
- Sales in that block are lower, and revenues don't meet expenses.
- Should the family that does without cooling have to help pay for the idle power plant?
- Should the family that invests in insulation and an Energy Star A/C unit have to help pay for the idle power plant?

A Revenue Stabilization Mechanism Can Solve This

Many Types of Mechanisms

- High fixed monthly charges;
- Draw on reserves;
- Weather Normalization
- Decoupling



Both Of These Rates Generate The Same Average Revenue / kWh

High Fixed Charge			
Customer Charge		Per Month	$ 30.00
Energy Charge		All kWh	$ 0.100

Marginal Cost Based Endblock			
Customer Charge		Per Month	$ 5.00
Energy Charge		First 500 kWh	$ 0.100
		Next 500 kWh	$ 0.150
		Over 1,000 kWh	$ 0.180

Which rate makes it more likely a customer will invest in an Energy Star A/C Unit?

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

Jim Lazar: jlazar@raponline.org
Richard Sedano: rsedano@raponline.org

Global
US
China
EU

The Regulatory Assistance Project

50 State Street, Suite 3
Montpelier, Vermont 05602

phone: 802-223-8199
fax: 802-223-8172

www.raponline.org