# PRICE REGULATION & ACCOUNTING I: Rate Design Examples

NARUC Energy Regulatory Partnership Program The Public Services Regulatory Commission of Armenia and The Iowa Utilities Board



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## OVERVIEW

- Allocating Costs to Classes
- Basic Design of Rates
- Examples from Recent Electric Case:
  - <u>Residential</u>: kWh Energy Rate Design
  - <u>Large General Service</u>: 2-Part Rate Design (kWh Energy and kW Demand)



## ALLOCATING COSTS TO CLASSES

#### A. Introduction

- Customer classes are established on the basis of reasonably similar usage patterns.
- Classes are established through load research typically involving statistical sampling of customer groups and the use of load research meters that record hourly demand and usage.
- Costs are allocated to customer classes through a <u>Class Cost-of-Service Study</u> based on class kW demand, kWh usage, and number of customers.



Allocating Costs to Classes cont ...

- B. Class Cost-of-Service Study
  - <u>Functionalization of Costs</u>: Utility costs are organized into four basic functional categories:
    - 1. Generation
    - 2. Transmission
    - 3. Distribution
    - 4. Customer Service



Allocating Costs to Classes cont ...

- B. Class Cost-of-Service Study
  - <u>Classification of Costs</u>: Functional costs are also divided into three cost classifications:
    - <u>Demand Costs</u> Fixed costs based on maximum kW demands placed on the system.
    - 2. <u>Energy Costs</u> Costs that vary with kWh energy usage.
    - 3. <u>Customer Costs</u> The costs of providing basic service to a customer, independent of the customer's demand and energy usage levels.



## BASIC DESIGN OF RATES

Designing Class Rates to Recover Costs:

- <u>Customer Costs</u> Recovered through fixed monthly charges, based on number of customers in the class
- <u>Demand Costs</u> Recovered through kW demand rates (larger customers) or kWh usage rates (smaller customers)
- Energy Related Costs
  - <u>Non-fuel energy costs</u> recovered through kWh usage rates
  - <u>Fuel costs</u> recovered through a monthly-adjusted kWh Energy Adjustment Clause (EAC)



# EXAMPLES FROM RECENT ELECTRIC CASE

A. <u>Residential</u> – kWh Energy Rate Design:

Customer Charge:

\$10.50 / Month

Energy Usage Rates:	Summer	Winter
1 <sup>st</sup> 500 kWh	\$0.08 / kWh	\$0.07 / kWh
Next 700 kWh	\$0.08 / kWh	\$0.05 / kWh
Over 1,200 kWh	\$0.08 / kWh	\$0.03 / kWh
Variable EAC:	\$0.0x / kWh	\$0.0x / kWh



A. Residential

Customer Charge: \$10.50 / Month

 Calculated by dividing allocated customer costs by the number of residential customers, and dividing again by 12 months.



## A. Residential

Energy Usage Rates:	Summer	Winter
1 <sup>st</sup> 500 kWh	\$0.08 / kWh	\$0.07 / kWh
Next 700 kWh	\$0.08 / kWh	\$0.05 / kWh
Over 1,200 kWh	\$0.08 / kWh	\$0.03 / kWh

- Seasonal summer/winter rate differentials are based on the differences in seasonal demand and the resulting difference in allocated production demand costs.
- Break points for block rates (at 500 and 1,200 kWh) are based on usage levels where significant changes in load factor occur.
- Declining winter block rates are based on increasing load factors (i.e., increasing kWh usage per kW demand) at higher usage levels.



## A. Residential

- Declining block rates was an issue in the case:
  - Consumer Advocate argued that offering discounts for high summer usage worked against energy efficiency goal of reducing summer peak demand.
  - The Board agreed with Consumer Advocate and required utility to adopt a uniform summer kWh energy rate (\$0.08 / kWh).



#### A. Residential

SummerWinterVariable EAC:\$0.0x / kWh\$0.0x / kWh\$0.0x / kWh

- The variable Energy Adjustment Clause (EAC) recovers fuel and power purchase costs through a uniform kWh rate adjusted month-to-month.
- Based on monthly filings apart from the rate case.



#### B. Large General Service – 2 Part Rate Design (kWh Energy and kW Demand):

Customer Charge:	None	
Demand Rates:	Summer	Winter
1 <sup>st</sup> 200 kW (50 kW Min.)	\$15.69 / kW	\$9.99 / kW
Next 800 kW	\$15.67 / kW	\$9.42 / kW
Next 9,000 kW	\$15.41 / kW	\$8.93 / kW
Next 20,000 kW	\$15.31 / kW	\$8.95 / kW
Over 30,000 kW	\$13.15 / kW	\$7.42 / kW
Energy Usage Rates:	Summer	Winter
Peak Period kWh	\$0.020 / kWh	\$0.010 / kWh
Off-Peak kWh	\$0.010 / kWh	\$0.005 / kWh
Variable EAC:	\$0.0xx / kWh	\$0.0xx / kWh



#### B. Large General Service

Customer Charge: None

- Customer costs are recovered through kW demand rates for demand levels of 1,000 kW and less (i.e., in the first two demand rate blocks).
- First kW demand rate block has a minimum monthly demand level of 50 kW.



#### B. Large General Service

Demand Rates:	Summer	Winter
1 <sup>st</sup> 200 kW (50 kW Min.)	\$15.69 / kW	\$9.99 / kW
Next 800 kW	\$15.67 / kW	\$9.42 / kW
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Over 30,000 kW	\$13.15 / kW	\$7.42 / kW

- Seasonal summer/winter rate differentials are based on the differences in seasonal demand and the resulting difference in allocated production demand costs (up to \$6 per kW).
- Declining block rates and break points are based on:
  - Recovering customer costs in the first 2 blocks.
  - Line loss differences at different service voltage levels.



## B. Large General Service

Energy Usage Rates:	Summer	Winter
Peak Period kWh	\$0.020 / kWh	\$0.010 / kWh
Off-Peak kWh	\$0.010 / kWh	\$0.005 / kWh

- Seasonal summer/winter rate differentials are based on the remaining difference in seasonal demand costs (after subtracting the \$6 seasonal rate differential for kW demand).
- Peak/off-peak rate differentials are based on the differences in peak and off-peak demand and the resulting difference in allocated demand costs.



### B. Large General Service

SummerWinterVariable EAC:\$0.0xx / kWh\$0.0xx / kWh

- The variable Energy Adjustment Clause (EAC) recovers fuel and power purchase costs through a uniform kWh rate adjusted month-to-month.
- Based on monthly filings apart from the rate case.



## QUESTIONS?



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