



ISSUES IN RATES: DISCUSSION OF RATE BASE PROCESS

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NARUC Delegation
UNMIK/Kosovo Presentation

Issues in Regulated Rates: Capital, Fuel, Depreciation, and
Consumer Groups
November 6, 2007

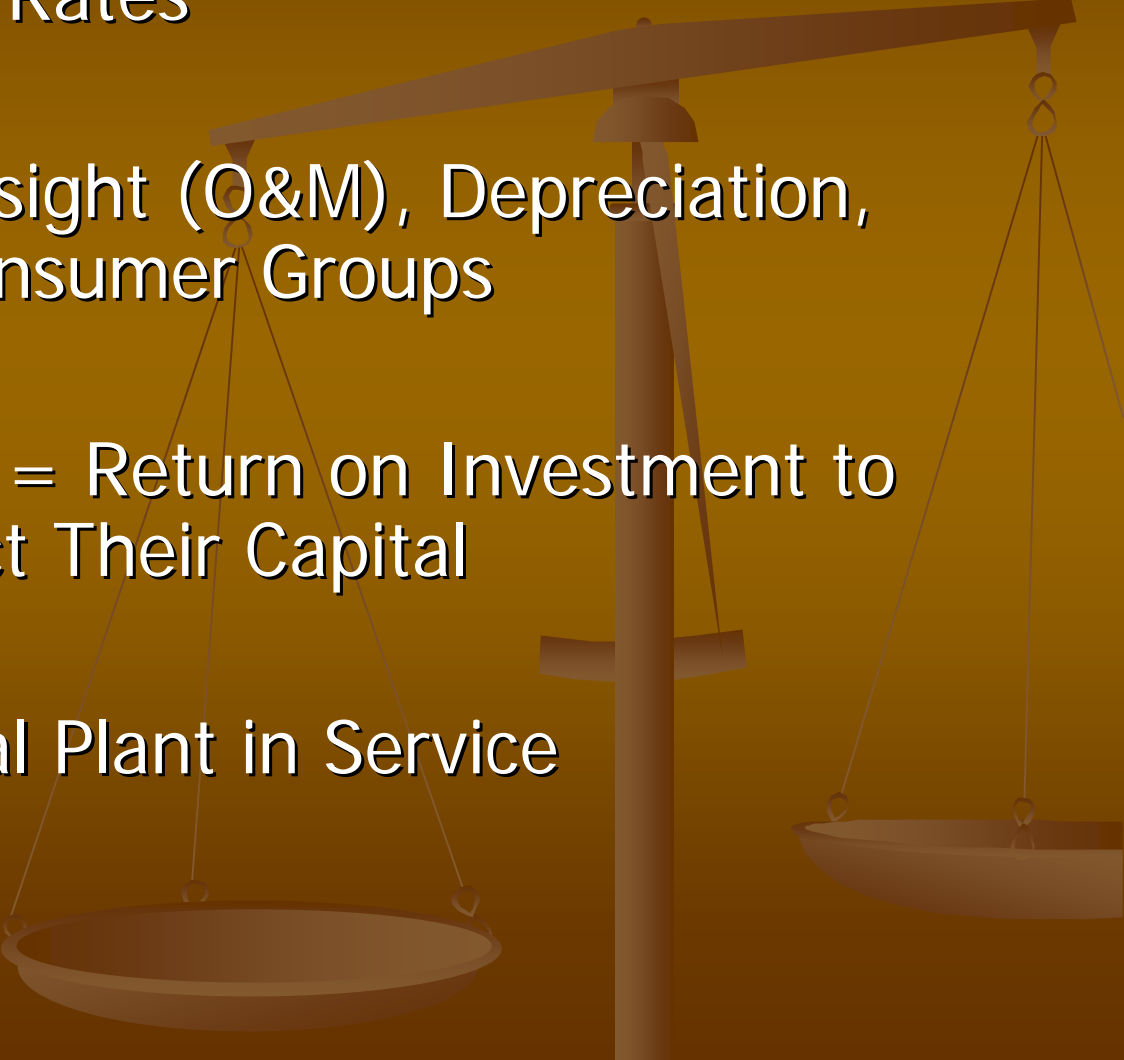
The Standard Pennsylvania Formula:

$$RR = E + ROR (RB)$$

Or

Revenue Requirement = Expenses +
(Rate of Return x Rate Base)

$$(RR) = E + ROR (RB)$$

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- REVENUE = ALL SALES (Regulated, Property, Unregulated, New Rates)
 - EXPENSES = Oversight (O&M), Depreciation, Fuel, Pricing to Consumer Groups
 - RATE OF RETURN = Return on Investment to Investors to Attract Their Capital
 - RATE BASE = Total Plant in Service

Example:

Historic Year (Most Recent)

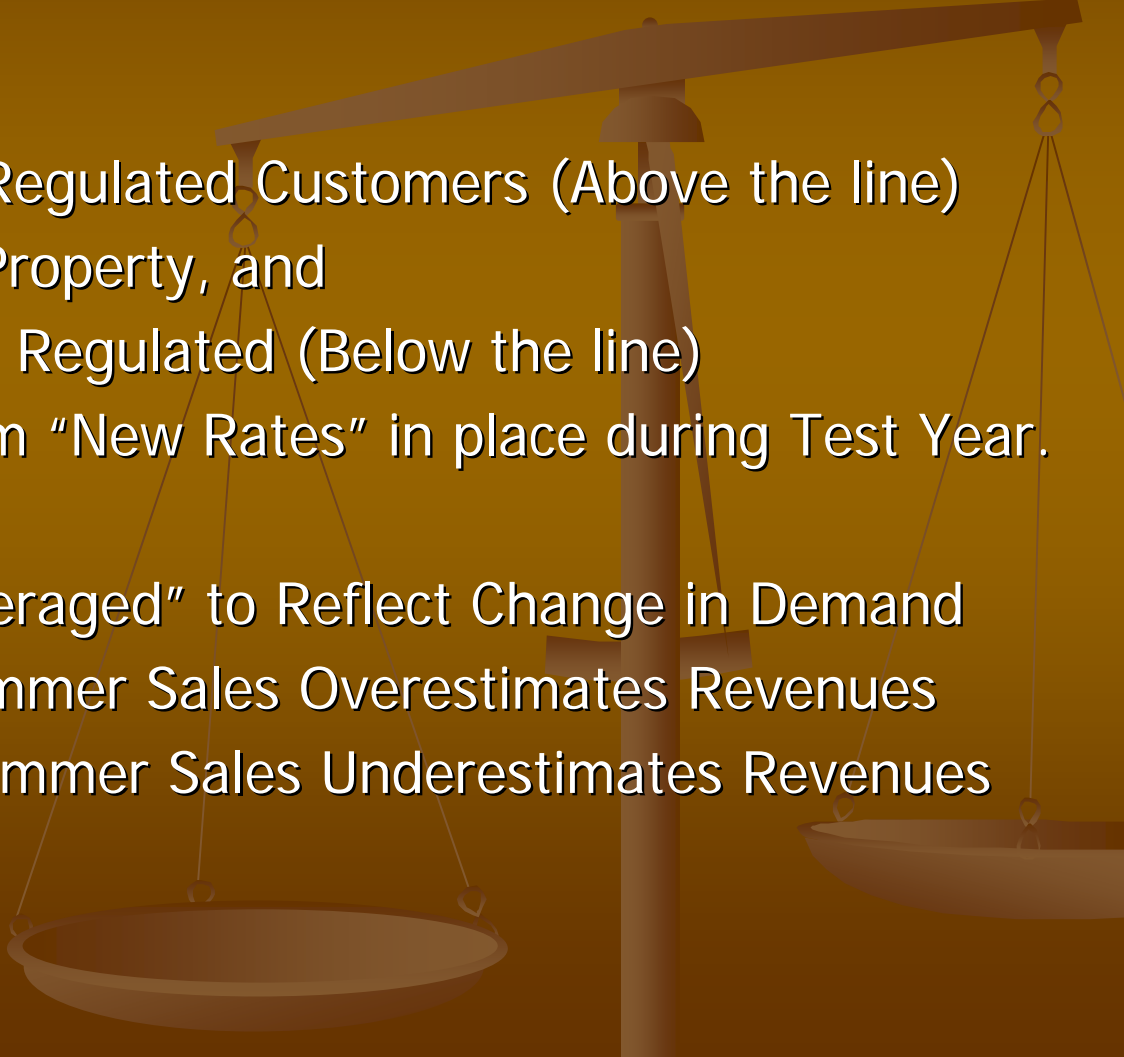
Plant in Service	\$100.00
Net Operating Income	\$ 8.00
Rate of Return:	8%
Needed Rate Increase:	\$000.00

Test Year (Next Year)


Plant in Service:	\$100.00
Net Operating Income:	\$ 8.00
Need Rate of Return	10% (\$10)
Needed Rate Increase:	\$ 2.00

Net Operating Income = ALL Revenue!

What is “Revenue” or “Net Operating Income”?

- ALL =
 - Sales to Regulated Customers (Above the line)
 - Sales of Property, and
 - Sales Not Regulated (Below the line)
 - Sales from “New Rates” in place during Test Year.
 - NORMALIZED: Sales “Averaged” to Reflect Change in Demand
 - “Hot” Summer Sales Overestimates Revenues
 - “Cold” Summer Sales Underestimates Revenues
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Example:



\$04	Sales That Are Regulated
\$01	Sales of Property
\$02	Sales Not Regulated
\$01	Sales from New Rates in Test Year
<hr/>	
\$08	Total Sales Revenue

Unregulated Sales Not Added To 8% Return:	\$6 Income Not \$8 (Rate Increase)
Unregulated Sales Added to 8% Return:	\$8 Income Not \$6 (No Rate Increase)
Unregulated Sales Not Added to 10% Return:	\$6 Income but \$10 Needed (Increase)
Unregulated Sales Added to 10% Return:	\$8 Income but \$10 Needed (Increase)

CAPITAL

*(Property or Money Given From Investors
to Utility to Operate)*

The Law: Capital Loaned Cannot Be "Taken" for Public Use Without "Just Compensation."

Issue: What is "just" compensation?

Economics: Capital Will Not Be Loaned if the Return (Margin or Profit) Is Not Attractive Compared To Other Investments.

Issue: Capital is Limited, Demand is Unlimited.

Result: "Rate of Return" is Utility Regulation.

Example:

Historic Year (Most Recent)

Plant in Service	\$100.00
Net Operating Income	\$ 8.00
Rate of Return:	8% (\$08)
Needed Rate Increase:	\$00.00

Test Year (Next Year)

Plant in Service:	\$100.00
Net Operating Income:	\$ 8.00
Rate of Return	10% (\$10)
Needed Rate Increase:	\$ 2.00

RATE OF RETURN Calculation Solution:

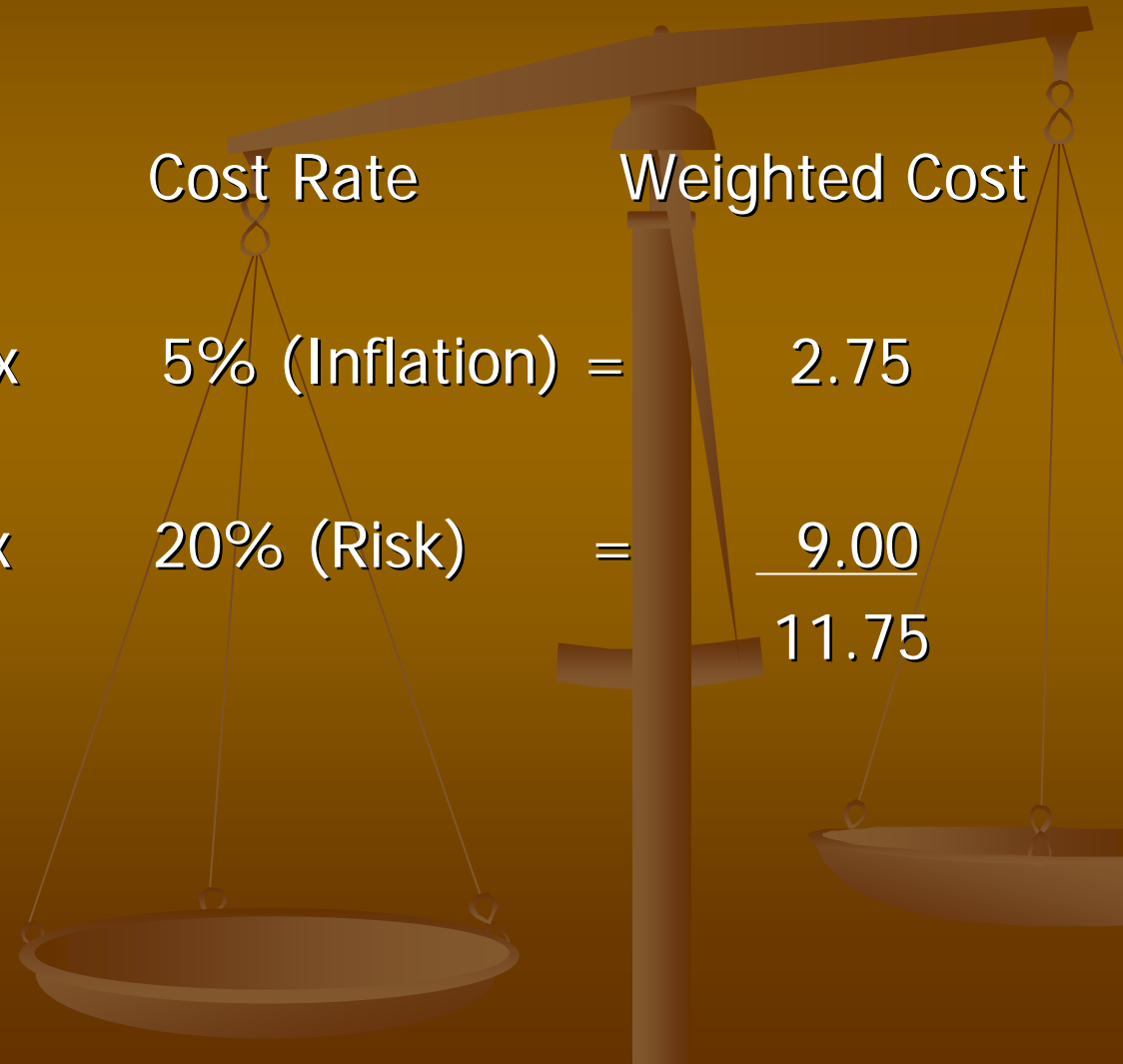
Capital Structure = Fixed Rate Capital (Debt) + Flexible
Rate Capital (Equity)

Debt/Equity Ratio = Ideal Blend of Debt and Equity
(55% Debt / 45% Equity)

Debt = Interest Paid at Fixed Rate Over Life of
the Loan (10 Years at 5%)

Equity = Return to Stock Purchaser From Utility
Earnings (Profit).

Pennsylvania Calculation Example



	Capitalization		Cost Rate		Weighted Cost
Debt	55%	x	5% (Inflation)	=	2.75
Equity	45%	x	20% (Risk)	=	<u>9.00</u>
					11.75

FUEL

(A Part of the "Expense" Calculation)

The Law: Capital Used for Expenses (Including Fuel) Cannot Be "Taken" and Put to Public Use Without "Just Compensation."

Issue: What is "prudent" fuel cost and "when" should it be paid?

Economics: Fuel Cost Can Be "Set" in Base Rate or "Float" in Surcharge.

Issue: What is Fuel? Does it Vary? Cost Must Be Recovered.

Calculation: Base Rate Expense; or Fuel Adjustment Surcharge (Not in Base Rate)

Example

Historic Year (Most Recent)

Plant in Service	\$100.00
Net Operating Income	\$ 8.00
Rate of Return:	8%
Needed Rate Increase:	\$0.00

Test Year (Next Year)

Plant in Service:	\$100.00
Net Operating Income:	\$ 8.00
Need Rate of Return	10% (\$10)
Needed Rate Increase:	\$ 2.00

Pennsylvania Solution

Fuel Cost Varies Because of Weather or Year to Year (Gas) or Not Regulated (Electric).

Rate Case/Plant in Service Approach

Plant in Service Cost In Rate Base

Total Cost to 10 Customers:

$\$100$ Plant Cost + $.5/\text{Plant Fuel}$
 $\$150$ (Cost) $\times .1175$ (Return) = $\$17.62$
 $\$17.62/10 = \1.762 per customer

Fuel Surcharge Approach

Fuel Charge (Projected)

Fuel Charge (Actual)

Total cost to 10 Customers:

$\$100$ Plant Cost/ $10 = \$11.75$
 $\$50 \times .1175 = \05.875 BUT
 $\$50 \times .1 = \05.00 (more certain, less cost)
 $\$15.00$ ($\$10$ Plant = $\$05.00$) (Up or Down)

Surcharge Recovers Fuel Cost Apart From Plant Cost;
Faster Response To Change & Capital Market Cost.

This reduces the overall cost (less risk) unless the utility makes mistakes.

Depreciation

Returns the Capital Loaned to the Utility Back To Investor Accounts
For Wear and Replacing of Fixed Utility Assets (Plants & Lines)

Method: Straight-line method takes cost of capital (plant) divided by useful life of the plant in equal increments over the time.

Example 1: Electric Line costs \$500 million to build and will last 50 years. The depreciation of that Electric Line is \$10 million dollars per year for each year of the 50 years after the line is built to serve customers.

Example 2: Generation Plant facilities cost \$100 million and last 50 years. The depreciation is \$2 million dollars per year for 50 years.

Depreciation Expense and Depreciation Reserve

Depreciation Expense: Expense Per Year and Is Annual Cost in Rate Base

Depreciation Reserve: Cumulative Depreciation Taken Out of Rate Base Value. Customers Returned Capital to Lender.

Example of Depreciation Expense and Depreciation Reserve

Total Cost: \$100

	Year 1	Year 2	Year 3	Year 4	Year 5
Expense	\$20	\$20	\$20	\$20	\$20
Reserve	\$20	\$40	\$60	\$80	\$100

Year 5: No Depreciation Expense

Depreciation Reserve is Removed From the Rate Base

Consumer Group Pricing



The Law: Private Costs must be recovered or the property is property "taken" for Public Use by the State. The State cannot take property for Public Use without "Just Compensation."

Economics: All costs related to service must be recovered somewhere to attract capital. There is no service without cost. This is true regardless of public or private ownership.

Result: Major Customer Classes:
Commercial, Industrial, Residential
Price Allocation may/may not track cost.

Issue: Who pays how much for What?

Pricing To Consumer Groups

Historic Year (Most Recent)

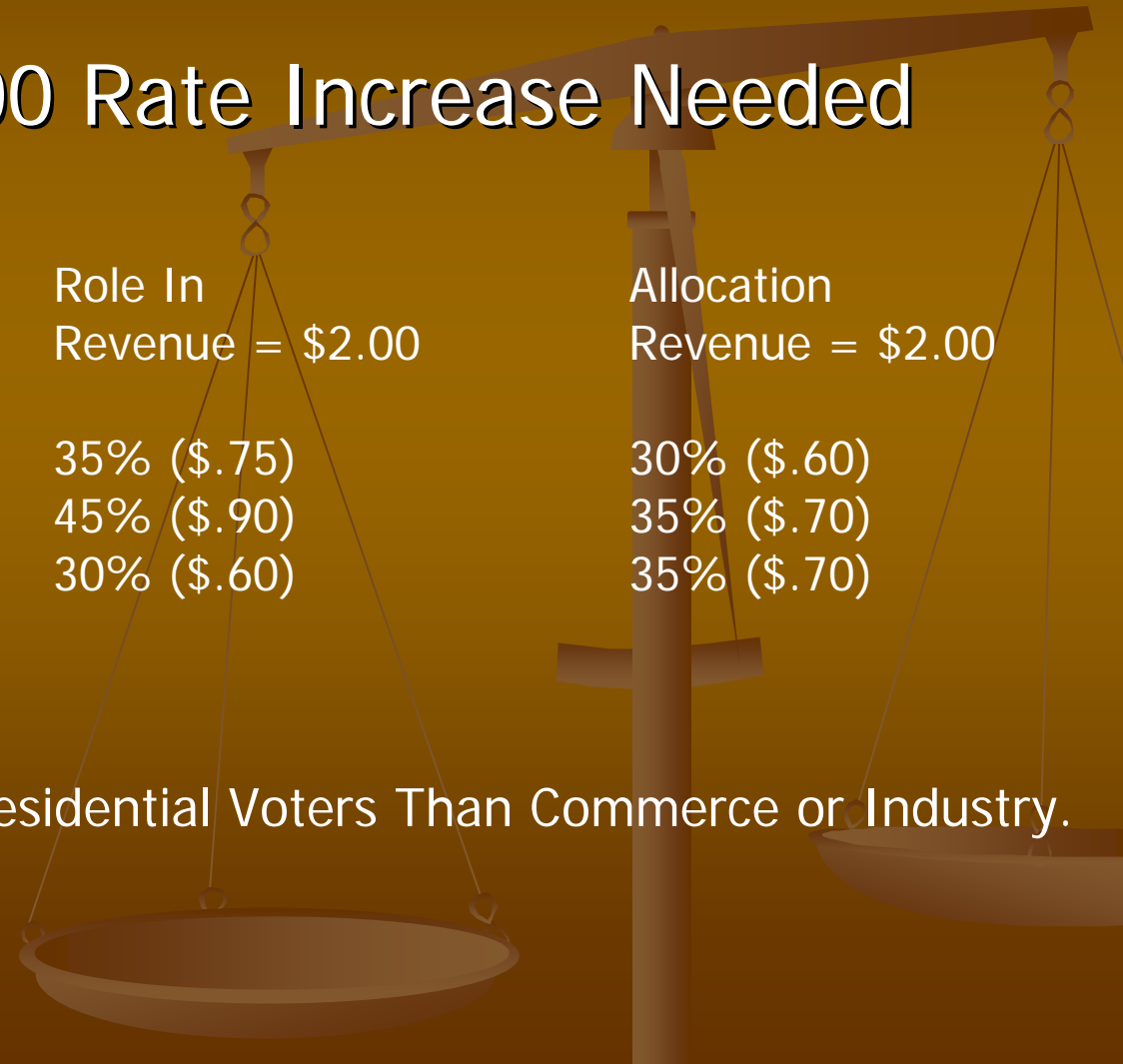
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Pricing To Consumer Groups

Result On \$2.00 Rate Increase Needed



Class	Service Cost = \$2.00	Role In Revenue = \$2.00	Allocation Revenue = \$2.00
Commercial	25% (\$.50)	35% (\$.75)	30% (\$.60)
Industrial	10% (\$.20)	45% (\$.90)	35% (\$.70)
Residential	65% (\$1.30)	30% (\$.60)	35% (\$.70)

An Art, Not A Science, More Residential Voters Than Commerce or Industry.

WHAT! How Could you reach THAT Result ????

Decision-Making is a democratic Pennsylvania Process

Company Files Rate Case; All Consumer Told in Their Bill.

Notice Is Published In Pennsylvania Bulletin for the World!

Formal Protests Filed By People Opposed to the Rate Increase

Administrative Proceeding: Hearings, Evidence, Questions

Judge Issues Recommended Decision (RD)

Exceptions Filed (Why the Judge was Wrong/Right)

Reply Exceptions Filed (Why the Critics/Supporters are Wrong/Right)

Staff Prepares Recommendation (Internal Document; Private)

Commissioners Vote on Recommendation (Public Meeting)

Company Files Compliance Tariff; Examined, Corrected, Approved.



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Process and Analysis of a Rate Case
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