



RATE ADJUSTMENT MECHANISM

RATE ADJUSTMENT MECHANISM

- **Overview**
- **The Input Price Index**
- **The Productivity Factor & Sharing**
- **The Z Factor**
- **Pricing Flexibility**

RATE ADJUSTMENT MECHANISM -- OVERVIEW

$$\% \Delta P_j^t = \% \Delta IPI_{LDC}^t - \% \Delta PF_K + \% \Delta Z_j^t$$

where:

$\% \Delta P_j^t$ = the percentage change in a distributor's (say the j^{th} 's) price ceiling in year t ;

$\% \Delta IPI_{LDC}^t$ = the percentage change in Ontario distributors' input prices from year $t-1$ to year t ;

$\% \Delta PF_K$ = the productivity factor or index expressed as a constant percent change each year for any given utility selecting the K^{th} combination of productivity factor and ROE ceiling; and

$\% \Delta Z_j^t$ = the extraordinary event adjustment factor expressed as a percent change from prices in year $t-1$ to prices in year t for the j^{th} utility.

RATE ADJUSTMENT MECHANISM -- INPUT PRICE INDEX

The Input Price Index (IPI) is defined as:

$$IPI_t = (100) \cdot \frac{\sum_{i=1}^n P_{it} e_i}{\sum_{i=1}^n P_{io} e_i}$$

where the index i includes: Capital, Labor and Materials.

RATE ADJUSTMENT MECHANISM -- INPUT PRICE INDEX

Table 4.1

Average Total Cost Per Customer and Range from Minimum to Maximum by Size Class*

	Sample Size	Mean	Range
Large	12	504	731
Medium	15	484	312
Small	13	385	291

* Small utilities have less than 10,000 customers, medium between 10,000 and 50,000, and large more than 50,000.

RATE ADJUSTMENT MECHANISM -- INPUT PRICE INDEX

Table 4.3

Input Price Index Results – 1988 -1997

		Four Factor					
		1993 Weights		Mean for Alternative Weights			Three
Size Class	Sample Size	Mean	Min – Max	1988	1997	Interval Average	Factor Mean
Large	12	1.45	1.07 – 1.84	1.29	1.41	1.32	1.02
Medium	15	1.30	0.78 – 2.16	1.10	1.29	1.19	0.87
Small	13	1.54	0.65 – 2.59	1.27	1.46	1.37	1.03
		1.42					0.96

**RATE ADJUSTMENT MECHANISM --
INPUT PRICE INDEX**

Table 4.4

1993 Average Weights for Cost Shares									
Simple Average	Four Factor					Three Factor			
	Capital	Line Loss	Labor	Materials	Total	Capital	Labor	Materials	Total
Large	0.45	0.12	0.30	0.13	1.00	0.51	0.34	0.14	1.00
Mid	0.49	0.12	0.28	0.12	1.00	0.55	0.31	0.13	1.00
Small	0.40	0.16	0.30	0.14	1.00	0.48	0.35	0.17	1.00
All Utilities	0.45	0.13	0.29	0.13	1.00	0.52	0.34	0.15	1.00

**RATE ADJUSTMENT MECHANISM --
INPUT PRICE INDEX**

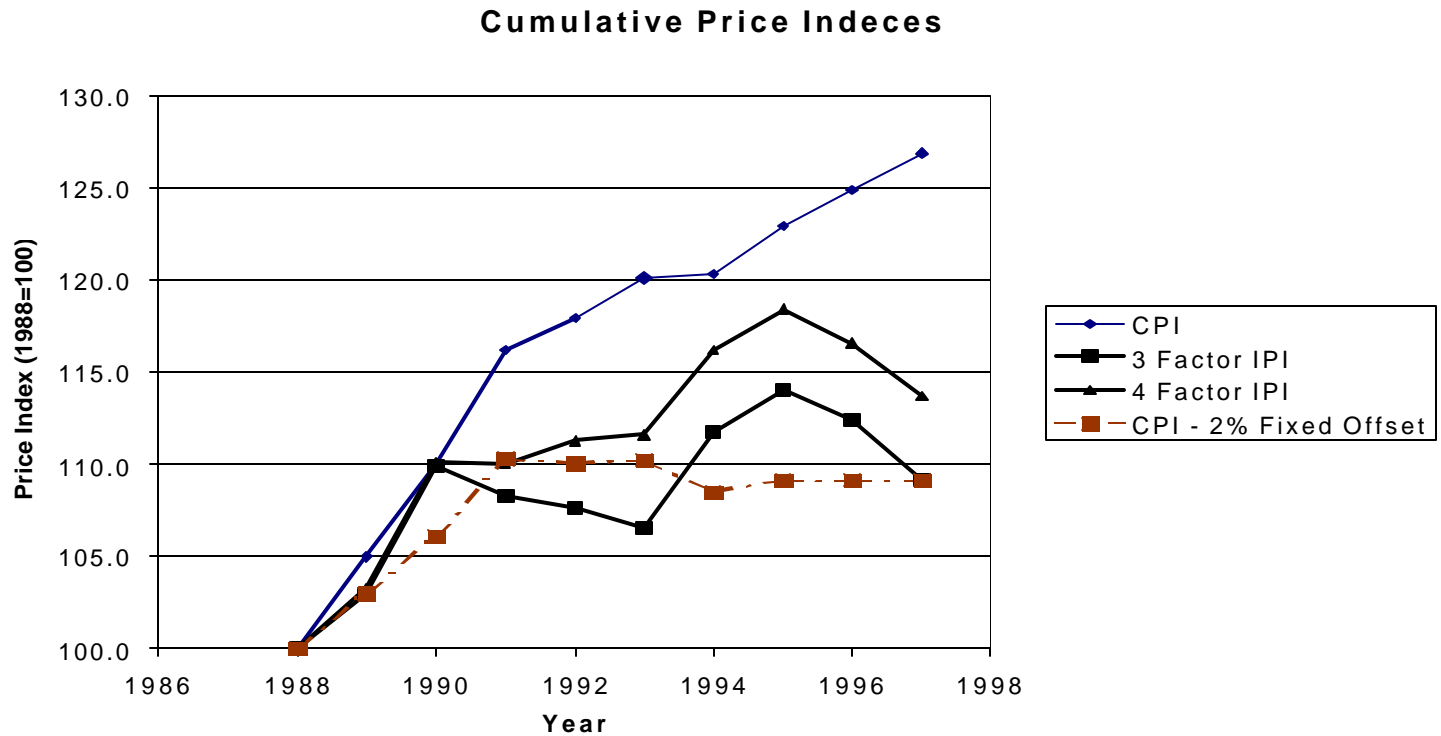
Table 4.5

Input Price Index and CPI: 1988 to 1997

	3-Factor Input Price Index			4-Factor Input Price Index			Consumer Price Index		
	Level	Logarithmic % Change	Simple % Change	Level	Logarithmic % Change	Simple % Change	Level	Logarithmic % change	Simple % change
1988	1.000			1.000			108.6		
1989	1.030	2.96%	2.91%	1.033	3.24%	3.19%	114	4.85%	4.74%
1990	1.099	6.53%	6.32%	1.101	6.36%	6.16%	119.5	4.71%	4.60%
1991	1.083	-1.54%	-1.56%	1.100	-0.04%	-0.04%	126.2	5.46%	5.31%
1992	1.076	-0.58%	-0.58%	1.113	1.11%	1.11%	128.1	1.49%	1.48%
1993	1.065	-1.03%	-1.03%	1.116	0.31%	0.31%	130.4	1.78%	1.76%
1994	1.117	4.75%	4.64%	1.162	4.04%	3.96%	130.7	0.23%	0.23%
1995	1.141	2.07%	2.05%	1.184	1.89%	1.87%	133.5	2.12%	2.10%
1996	1.124	-1.45%	-1.46%	1.166	-1.56%	-1.57%	135.6	1.56%	1.55%
1997	1.091	-2.96%	-3.00%	1.137	-2.51%	-2.54%	137.8	1.61%	1.60%
Average		0.97%	0.92%		1.43%	1.38%		2.65%	2.60%

RATE ADJUSTMENT MECHANISM -- INPUT PRICE INDEX

Figure 4.1



RATE ADJUSTMENT MECHANISM -- PRODUCTIVITY FACTOR & SHARING

The Productivity Factor (TFP)* is defined as:

$$\text{TFP} = (100) \bullet \frac{\sum_{j=1}^m q_j r_j}{\sum_{i=1}^n x_i e_i}$$

*TFP is total factor productivity.

**RATE ADJUSTMENT MECHANISM --
PRODUCTIVITY FACTOR & SHARING**

**Table 4.2
Productivity Analysis by Customer Size Class
10-year percent Change**

Size Class	Average Number of Customers	Inputs		Outputs		Productivity	
		4-Factor Input Index, 1993 Weights	4-Factor Input Index, 1997 Weights	Output Index, 1993 Customer Weights	Output Index, 1997 Customer Weights	<i>4-Factor Productivity 1993 Weights</i>	<i>4-Factor Productivity 1997 Weights</i>
Large	110,751	0.39%	0.54%	0.81%	0.85%	0.42%	0.31%
Medium	31,909	0.95%	1.04%	2.28%	2.26%	1.33%	1.22%
Small	4,463	0.44%	0.61%	1.21%	1.35%	0.77%	0.74%
All Utilities	46,642	0.62%	0.75%	1.49%	1.54%	0.87%	0.79%

**RATE ADJUSTMENT MECHANISM --
PRODUCTIVITY FACTOR & SHARING**

**Table 4-1
THE RELATION BETWEEN PF AND ROE CEILING**

Selection	Productivity Factor (percent change per year)	ROE Ceiling (percent)
A	1.25	10
B	1.50	11
C	1.75	12
D	2.00	13
E	2.25	14
F	2.50	15

**RATE ADJUSTMENT MECHANISM --
PRODUCTIVITY & FACTOR SHARING**

**Table 4.2
ROE IMPACTS OF VARYING
PRODUCTIVITY PERFORMANCE**

	1.25	1.5	1.75	2.0
Year 1	9.5	9.5	9.5	9.5
Year 2	10.2 [*] /10.0	10.0	9.9	9.8
Year 3	10.9 [*] /10.0	10.6	10.3	10.1

* Utility's return before ROE constraint.

RATE ADJUSTMENT MECHANISM -- THE Z FACTOR

- Eligibility
- Board Review
- Balancing Account
- Disposition

RATE ADJUSTMENT MECHANISM -- THE Z FACTOR: ELIGIBILITY

- ◆ Causation – the expense must be clearly outside of the base upon which rates were derived.
- ◆ Materiality – the cost must have a significant influence on the operation of the utility.
- ◆ Inability of Management to Control – to qualify for Z factor treatment, the cost must be attributable to some event outside of management’s ability to control.
- ◆ Prudence – the expense must have been prudently incurred. This means that the option selected must represent the most cost-effective option (not necessarily least initial cost) for ratepayers.

**RATE ADJUSTMENT MECHANISM --
THE Z FACTOR: PROCESS**

- **Board Authority**
- **Balancing Account**
- **Disposition**

RATE ADJUSTMENT MECHANISM -- PRICING FLEXIBILITY

- **Baskets**
- **Amalgamations**
- **Contestable Services**

RATE ADJUSTMENT MECHANISM -- PRICING FLEXIBILITY & BASKETS

**Table 4-3
Illustration of Pricing Flexibility Among Rate Baskets**

	Residential Class	General Service Class	Utility Overall Rate Adjustment of
Existing Rates	\$10.00	\$35	(\$3.00)
Step 1			
Class Revenue Weighting	30%	70%	
Adjusted Rate	\$9.10	\$32.90	(\$3.00)
Step 2			
Flexibility Range	\$9.10 ± 5%	\$32.90 ± 5%	
Min Adjusted Rate	\$9.56	\$34.55	(\$0.89)
Max Adjusted Rate	\$8.65	\$31.21	(\$5.09)
Step 3			
Flexibility Option Taken	+4.5%	-1.2%	
	\$9.50	\$32.50	(\$3.00)

**RATE ADJUSTMENT MECHANISM --
PRICING FLEXIBILITY AND AMALGAMATION**

**Table 4-4
Illustration Of Pricing Flexibility For Amalgamations**

	Utility A	Utility B
Initial Rate	\$30.00	\$40.00
Year 1	\$31.50	\$38.10
Year 2	\$33.08	\$36.28
Year 3	\$34.64	\$34.64

RATE ADJUSTMENT MECHANISM

APPENDIX B - UTILITIES INCLUDED IN ANALYSIS

Large >50,000	Mid-Size 10,000><50,000	Small <10,000
Toronto	Thunder Bay	Port Colborne
North York	Burlington	Dundas
Mississauga	Oakville	Niagara on the Lake
Ottawa	Nepean	Grimsby
Hamilton	Sudbury	Tecumsek
London	Gloucester	Strathroy
Etobicoke	Waterloo North	Ingersoll
Windsor	Guelph	Renfrew
Brampton	Barrie	Deep River
Kitcher-Wilmot	Pickering	Lakefield
Markham	Whitby	Embrun
St. Catharines	North Bay	Madoc
	Stoney Creek	Lucan
	Orillia Water	
	Milton	