

## **ANNEXE 2**

### **SOMMAIRE ÉXÉCUTIF DU RAPPORT DE COPE**

### **VOLET DISTRIBUTION**



# **Committee on Corporate Performance and Productivity Evaluation (COPE)**

**2001**

**Industry Evaluation**

**Distribution**

**Business Unit**

**EXECUTIVE SUMMARY**



*Canadian Electricity Association  
Association canadienne de l'électricité*

**September 2002**



## ACKNOWLEDGEMENTS

We wish to thank the COPE utilities that have contributed data for this report. They are:

Aquila Networks (AB)  
Aquila Networks (BC)  
B.C. Hydro  
City of Saskatoon  
Enersource Hydro Mississauga  
ENMAX  
Hydro One  
Hydro-Québec

London Hydro  
Manitoba Hydro  
New Brunswick Power  
Nova Scotia Power  
Hydro Ottawa  
SaskPower  
Toronto Hydro  
Winnipeg Hydro

*NB: Previously UtiliCorp Networks Canada*

### **PLEASE NOTE:**

#### COPE versus CEA Composite

The graphs in this report refer to a COPE or CEA composite. Some Key Performance Indicators used in the COPE program are derived from other CEA programs. The COPE Composite values for the Key Performance Indicators represent the composite of those utilities participating in the COPE program. The CEA Composite represents the composite of those utilities participating in the CEA program.

#### Trending Data versus Present Year's Data

Companies providing data to a given indicator may vary from year to year, typically this is the result of new members joining the program. Due to this, trend line Composite calculations may be impacted by participation and not represent accurately an industry trend.

To address this, some indicators show two different results for the data. The first result, for sake of consistency, uses the same calculation baseline from year to year, and provides a better understanding of the indicator's historical trend and is represented graphically as a trend line. The second result shows the Composite Index achieved when all participants (both old and new) are included in the 2001 program and represented graphically as one point in year 2001. In some cases, these two results are significantly different.

For more information:

Peter Gelineau  
Canadian Electricity Association  
Tel: 514-866-5375  
Email: [gelineau@canelect.ca](mailto:gelineau@canelect.ca)

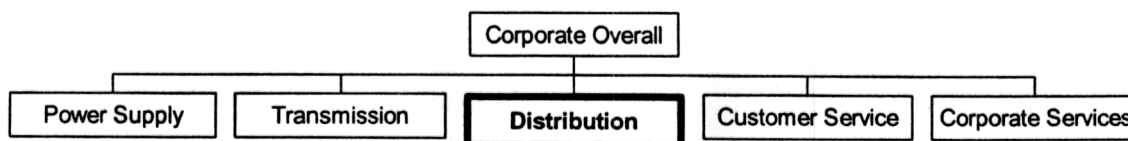
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## INTRODUCTION

This report provides information on the Canadian Utility Composite Performance and Productivity results. The information is based on data received from the participating utilities for the year ended December 31, 2001 (March 31, 2002 for utilities with March year ends).

In 1995, the Committee on Corporate Performance and Productivity Evaluation (COPE) undertook an extensive strategic review. The database designed in the early 1980s was driven out of regulatory structure and reporting to regulatory bodies. The industry focus in the 1990s had shifted to “business performance.” The result was a new vision, mission, and a redesigned database. The “unbundled” database allows for participation in any combination of business units. The new database provides a “balanced scorecard approach” of key performance measures for each of its business units.



The objectives of COPE are

- ⇒ To establish a common basis for inter-utility performance measurement.
- ⇒ To maintain and update common definitions and terms used in performance measurement consistent with Canadian and USA utility practices
- ⇒ To establish a framework for the integration of performance information collection and measurement to minimize costs for CEA and Utilities.
- ⇒ To provide guidance in the collection, use and application of the information for the benefit of individual utilities' performance achievement

This report provides a summarized version of the Distribution Business Unit Key Performance Measures. It contains performance measures from the perspectives of customer, employee, and stakeholder. (Note: measures for the perspectives of environment and regulator are still under development).



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## DISTRIBUTION BALANCED SCORECARD

	KPI
<b>Customers</b>	CAIDI (Hours) <b>SAIDI (Hours)</b> <b>SAIFI</b> SAIFI Momentary New Service Connections greater than 750Volts - Average time to connect (days) New Service Connections less than 750Volts - Average time to connect (days) Appointments met (afternoon or morning appointment) (%) Average number of days to perform underground cable locates (days) Customer Satisfaction with Frequency of Outages Customer Satisfaction with Duration of Outages <b><i>New Service Connections Residential Customers - Average time to connect (days)</i></b>
<b>Employees</b>	FTE per Million (Energy Distributed x Circuit km) (FTE / GWh x km) <b>FTE per 100 Circuit km (FTE / 100 km)</b> FTE per 1000 Square km of Service Area (FTE / 100 km) Labour Cost per Energy Distributed (\$ / MWh) Labour Cost per (Energy Distributed x Circuit km) (\$000 / MWh x km) Labour Cost per Customer (\$000 / Customer) Labour Cost per Circuit km (\$000 / km) Labour Cost per Square km of service area ( \$ / square km) Accident Severity Rate (Days lost / 200 000 hours worked) <b>All injury frequency rate (Total injuries / 200 000 hours worked)</b> Disabling injury frequency rate (Disabling injuries / 200 000 hours worked) FTE per Energy Distributed (FTE / 100 000 MWh) Training Hours per FTE <b>Number of Customers per FTE</b>
<b>Shareholders</b>	Cost per Circuit km (\$000 / km) Unit Cost (\$ / MWh) Cost per Million GWh x km <b>Cost per Customer (\$000 / Customer)</b> Cost per Square km of Service Area ( \$ / square km) Capital Cost per Circuit km (\$000 / km) <b>OM&amp;A Cost per Circuit km (\$000 / km)</b> Income per Million (Energy Distributed x Circuit km) (\$000 / MWh x km) Debt Equity Ratio Interest Coverage Ratio Return on Average Common Equity (%) EBIT Growth Rate (%) Energy Distributed Growth Rate (%) <b>Return on Assets (%)</b> Income per circuit km (\$ / km)
<b>Environment</b>	See CEA Environmental Commitment & Responsibility Program (ECR)
<b>Regulators</b>	CAIDI (Excluding Loss of Supply) (Hours) SAIDI (Excluding Loss of Supply) (Hours) SAIFI (Excluding Loss of Supply) Emergency Response - average time qualified service person on site (minutes)

Although the COPE database (*Distribution Business Unit*) provides information on all the balanced scorecard measures above, this report only provides analysis on the selected **Performance Measures** in bold. These measures are deemed to be significant industry measures by the participants of COPE.

***New in 2001***



## **DISTRIBUTION BUSINESS UNIT**

### **MISSION**

This business unit manages the operation, maintenance and modification of the distribution system from the point of delineation from the transmission system to the end user. This business unit is responsible for the transportation of the power as well as for the reliability and availability of the distribution system including the meters. It may also perform specific marketing activities in addition to the marketing support provided by Customer Service.

### **MAJOR FUNCTIONS**

The functions which comprise this business unit include

- management of the distribution system including the simulation of system operation scenarios;
- operation of the distribution systems;
- maintenance of the distribution systems including preventive, scheduled maintenance and corrective maintenance;
- construction and modification of the distribution systems including design and engineering activities; and
- management of power acquisition and sale.

### **DELINEATION POINT BETWEEN TRANSMISSION AND DISTRIBUTION**

The assets and related costs in this business unit include the following:

- all direct assets (including end-use meter) related to the distribution of electricity received from the transmission system at the distribution step-down transformer low voltage side
- all substations prior to delivery of energy to the end user; and
- distribution lines 60kV and below.



## SAIDI (Hours) CEA Composite

Year	Annual Data	Including '98 Ice Storm
1992	3.34	
1993	3.36	
1994	3.39	
1995	3.06	
1996	2.86	
1997	3.70	
1998	3.32	30.31
1999	4.31	
2000	3.23	
2001	3.67	

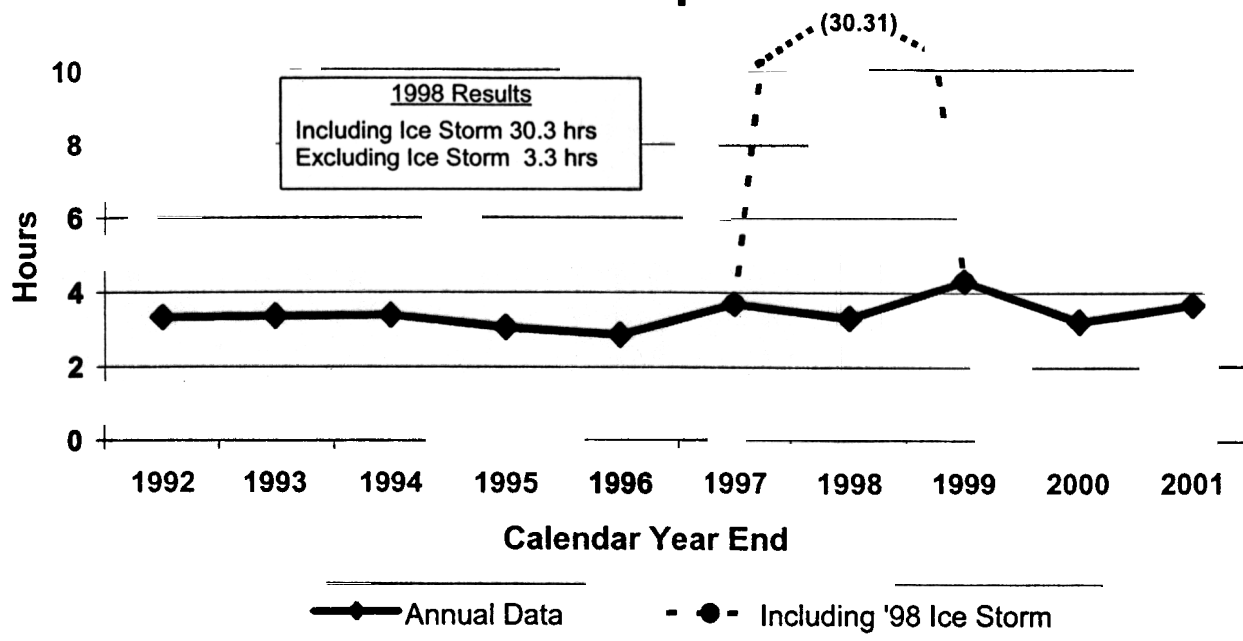
DB\_CU02R

This indicator has been sourced from the CEA 2001 Service Continuity Report on Distribution System Performance in Electrical Utilities (2001 participation included 39 Canadian utilities representing over 11 million customers).

**Note:** When referring to a Composite for comparison purposes, the annual data excludes the '98 Ice Storm. The '98 Ice Storm is represented with a dotted line in the graph on the opposite page.



## SAIDI (Hours) CEA Composite



**Definition:** 
$$\frac{\text{Total Customer Hours of Interruptions}}{\text{Total Customers Served}}$$

This is an index of the average cumulative duration of system service interruptions to customers served by the system per year. It has a direct impact on customer satisfaction and the balance between the cost to reduce this measure and customer satisfaction

**Results:** The 14% increase in SAIDI for 2001 is the result of increase in the number of hours of interruption related to adverse weather, tree contacts, and loss of supply. The top 5 causes contributing to a SAIDI of 3.67 hours of interruption per customer in 2001 were (% change from 2000 in brackets):

-Adverse Weather	0.81 hours	(56%)
-Defective Equipment	0.63 hours	(-6%)
-Tree Contact	0.56 hours	(30%)
-Loss of Supply	0.48 hours	(20%)
-Scheduled Outages	0.40 hours	(-15%)

Though the data over the 10-year period shows a slight increase, technological advances in data collection systems coupled with additional rigor in the data collection processes as a result of utilities' increased focus on customer service and outage management implies that there has been additional improvement in the average duration of outages experienced by customers that does not appear in the trend line data.



## SAIFI CEA Composite

Year	Annual Data	Including '98 Ice Storm
1992	3.07	
1993	2.97	
1994	2.55	
1995	2.81	
1996	2.39	
1997	2.35	
1998	2.40	3.58
1999	2.59	
2000	2.26	
2001	2.41	

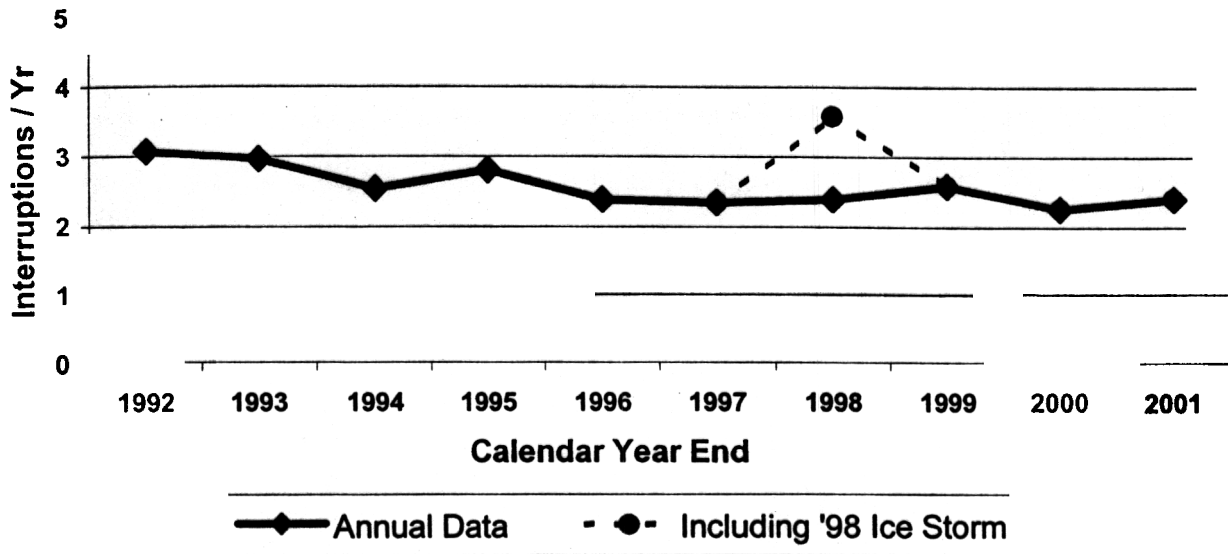
DB\_CU03R

This indicator has been sourced from the CEA 2001 Service Continuity Report on Distribution System Performance in Electrical Utilities (2001 participation included 39 Canadian utilities representing over 11 million customers).

**Note:** When referring to a Composite for comparison purposes, the annual data excludes the '98 Ice Storm. The '98 Ice Storm is represented with a dotted line in the graph on the opposite page.



## SAIFI CEA Composite



**Definition:** 
$$\frac{\text{Total Number of Customer Interruptions}}{\text{Total Customers Served}}$$

This is an index of the average cumulative system service interruptions to customers served by the system per year. It has a direct impact on customer satisfaction and the balance between the cost to reduce this measure and customer satisfaction.

**Results:** The 7% increase in SAIFI for 2001 is due primarily to an increase in the frequency of interruptions caused by adverse weather, loss of supply, and other/unknown causes. The top 5 causes contributing to a SAIFI of 2.41 interruptions per customer in 2001 were (% change from 2000 in brackets):

- Loss of Supply	0.55 Interruptions per customer	(12%)
- Defective Equipment	0.44 Interruptions per customer	(-6%)
- Adverse Weather	0.31 Interruptions per customer	(63%)
- Scheduled Outages	0.30 Interruptions per customer	(-14%)
- Other/Unknown	0.20 Interruptions per customer	(18%)

The trend line shows a significant improvement during the first 5 years followed by relatively stable performance. It is important to note that technological advances in data collection systems coupled with additional rigor in the data collection processes as a result of utilities' increased focus on customer service and outage management implies that there has been additional improvement in the average number of outages experienced by customers that does not appear in the trend line data.



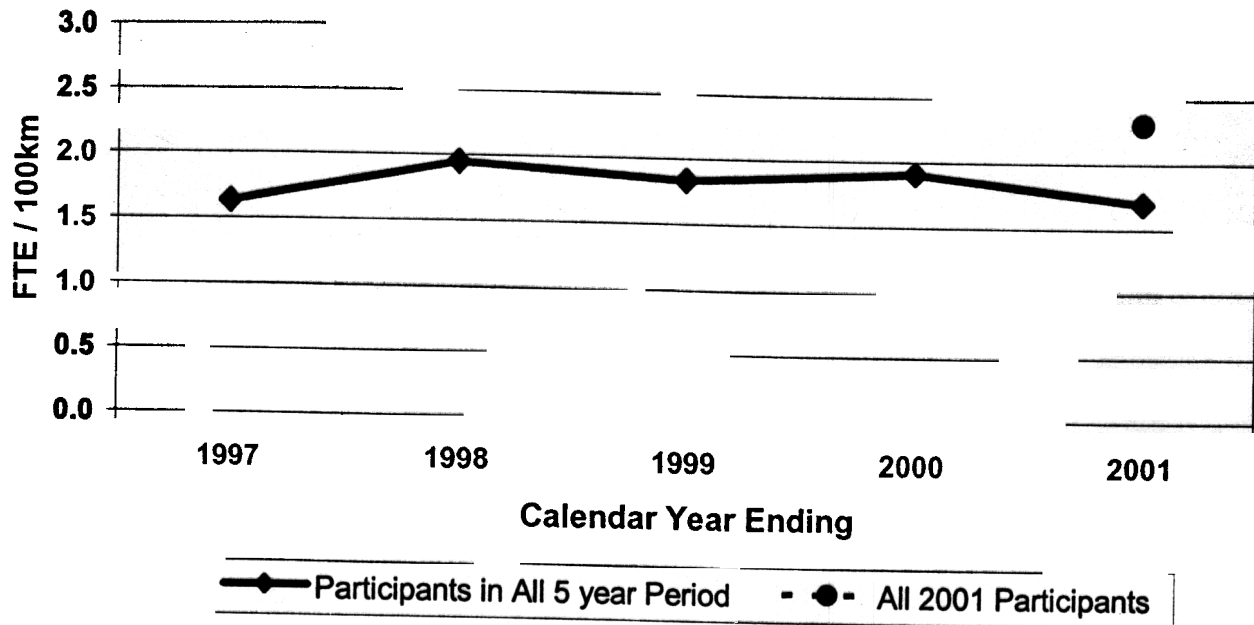
### FTE per 100 Circuit km COPE Composite

Year	(FTE / 100 km)	(FTE / 100 km) All 2001 Participants
1997	1.63	
1998	1.95	
1999	1.83	
2000	1.91	
2001	1.70	2.30

DB\_EM03R



## FTE per 100 Circuit km (FTE / 100 km) COPE Composite



**Definition:** 
$$\frac{\text{Distribution Total FTE} * 100}{\text{Distribution Circuit Length (km)}}$$

Total Full Time Equivalent Employees (FTE) includes contractors/contract equivalent employees. FTE per 100 Circuit km is a measure used to express the staffing levels as they relate to the size of the physical plant.

**Results:** For 2001 the number of FTE's has decreased 14% while the Circuit length has decreased by 3% resulting in a decrease in the overall metric of 11%. The proportion of urban and rural customers a company has will affect this indicator. The range of participant data in 2001 included a minimum of less than 0.5 and a maximum over 20 FTE per 100 km.



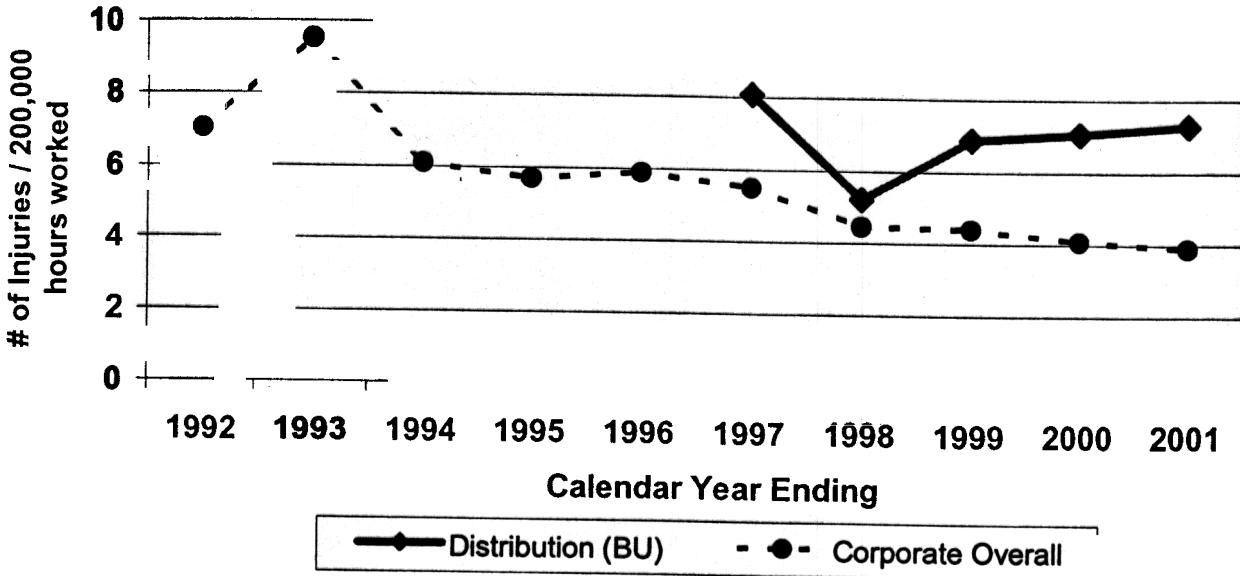
**All Injury Frequency Rate**  
(Total injuries / 200 000 hours worked)  
**CEA Composite**

Year	Corporate Overall Rate	Distribution Rate
1992	7.04	
1993	9.54	
1994	6.1	
1995	5.7	
1996	5.9	
1997	5.51	8.09
1998	4.47	5.23
1999	4.41	6.89
2000	4.09	7.07
2001	3.91	7.30

DB\_EM11R



## All Injury Frequency Rate (Total injuries / 200 000 hours worked) CEA Composite



**Definition:** 
$$\frac{(\text{Disabling Injuries} + \text{Medical Aid Injuries}) \times 200,000}{\text{Exposure Hours (Hours Worked)}}$$

This graph demonstrates the frequency of medical aid injuries, disabling injuries and fatalities compared to the number of employee exposure hours in a calendar year. As well as providing the annual Business Unit (BU) CEA Composite, the Corporate Overall CEA Composite is included for comparison purposes. This indicator is sourced from the CEA 2001 Annual Accident Statistics Report (43 electric utilities, 30 of which reported Distribution BU data).

**Results:** The 2001 All Injury Frequency Rate for Distribution rose slightly (3.3%) over the previous year. It is recognized that this indicator is directly impacted by the relative risk of accidents associated with the hours that employees work. This relative risk differs depending on the type of tasks an employee undertakes. (line personnel vs. office worker) The Distribution BU will usually have a higher proportion of employees on the operations side of the business. As a result the higher rate compared to the Corporate Overall category is not unexpected, however, not conclusive. The seriousness of the accidents (severity) also needs to be investigated in order to assess the performance. The Distribution BU Severity Rate rose 33% over last year.



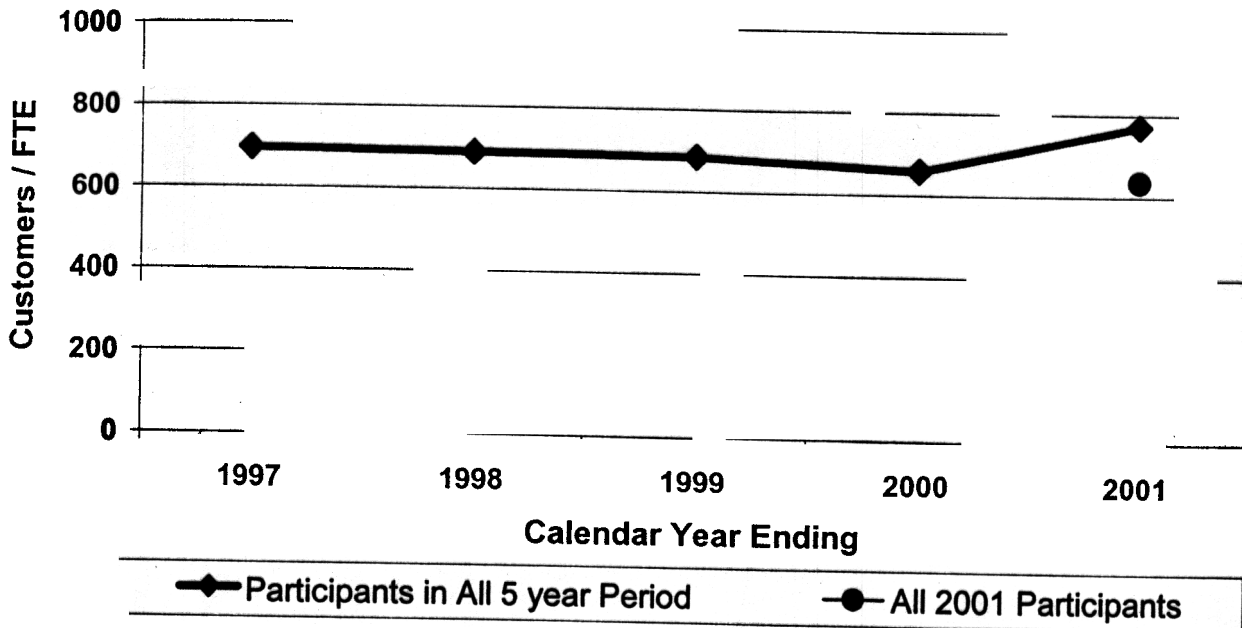
## Number of Customers per FTE COPE Composite

Year	(Customers / FTE)	(Customers / FTE) All 2001 Participants
1995		
1996		
1997	695.97	
1998	689.58	
1999	685.46	
2000	658.53	
2001	771.91	637.18

DB\_EM15R



## Number of Customers per FTE COPE Composite



**Definition:** 
$$\frac{\text{Distribution Customers (<60 kV)}}{\text{Distribution Total FTE}}$$

*Note: Distribution Total Full Time Equivalent Employees (FTE) includes contractors/contract equivalent employees*

This performance measure is used to relate customers served to staffing levels.

**Results:** The increase in the performance of this measure (17%) is the net result of an increase in the number of customers of only 1% coupled with a decrease in the number of FTE's of 14%. Participant data in 2001 included a wide range of approximately 400 to 1,600 Customers per FTE.



### Cost per Customer (\$000) COPE Composite

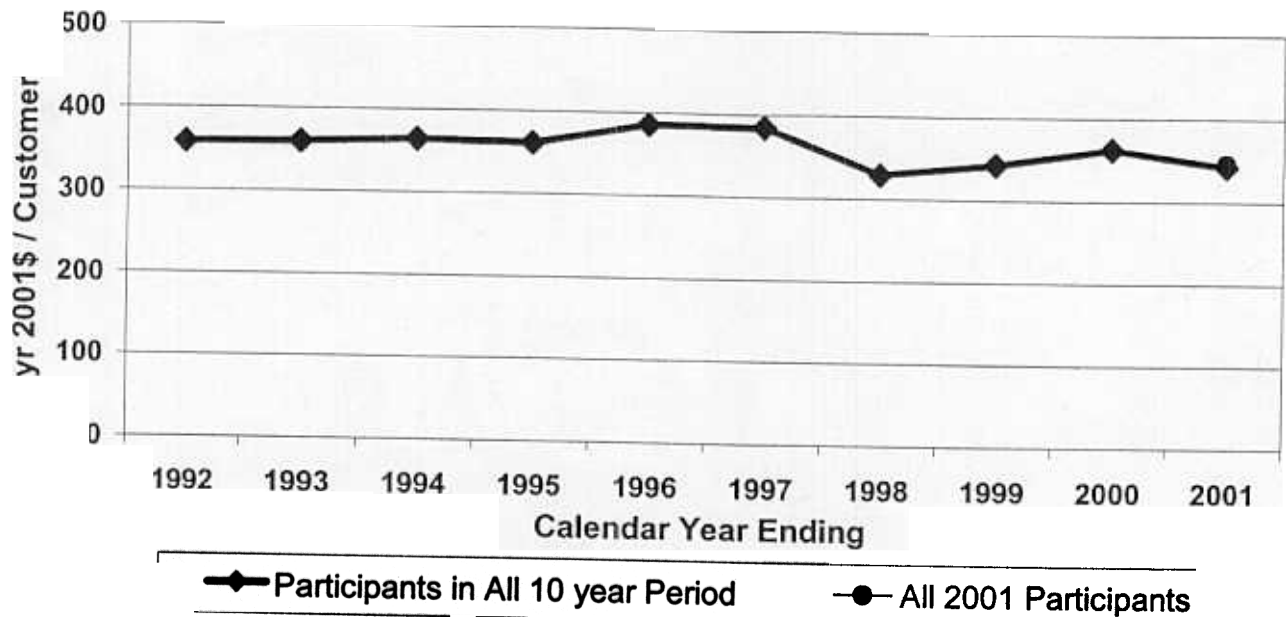
Year	(\$000 / Customer)	(\$000 / Customer) All 2001 Participants
1992	0.359	
1993	0.360	
1994	0.364	
1995	0.362	
1996	0.386	
1997	0.384	
1998	0.329	
1999	0.343	
2000	0.363	
2001	0.343	0.346

DB\_SH04R

**Note: The COPE standard for financial data is in thousand dollars (\$000), however, the graph on the opposite page has been adjusted to fit the scale.**



## Cost per Customer (\$) COPE Composite



**Definition:** Distribution Total Cost (Excluding Taxes)  
Distribution Customers (less than 60kV)

This performance indicator relates total distribution costs including OM&A and capital to the number of customers served.

**Results:** The decrease in the total cost per customer (5.5%) is due to a slight 1% decrease in costs and a 4% increase in the number of customers served. The trend has been relatively constant over the 10-year period with a minimum of \$286 to a maximum of \$376 per customer during that period. The range of participant values in 2001 varied from approximately \$120 to \$550 per customer.



### OM&A Cost per Circuit km (\$000 / km) COPE Composite

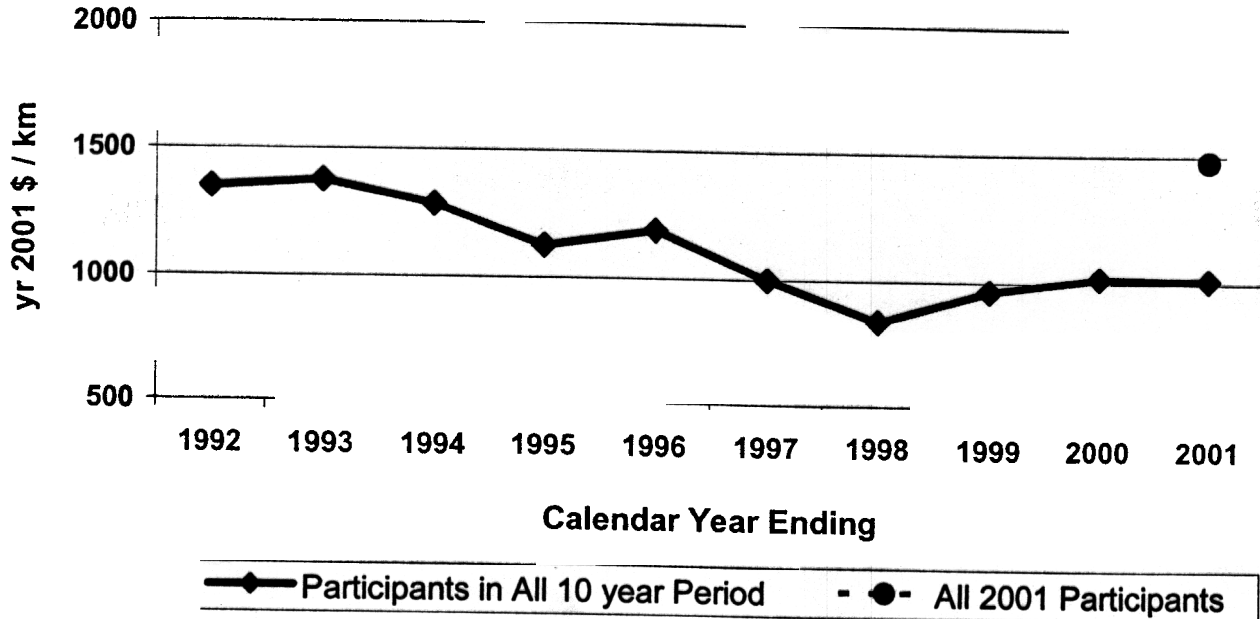
Year	(\$000 / km)	(\$000 / km) All 2001 Participants
1992	1.35	
1993	1.38	
1994	1.29	
1995	1.13	
1996	1.19	
1997	1.00	
1998	0.84	
1999	0.96	
2000	1.02	
2001	1.01	1.48

DB\_SH07R

**Note: The COPE standard for financial data is in thousand dollars (\$000), however, the graph on the opposite page has been adjusted to fit the scale.**



## OM&A Cost per Circuit km (\$ / km) COPE Composite



**Definition:** 
$$\frac{\text{Distribution Operations and Maintenance Cost (\$)}}{\text{Distribution Circuit Length (km)}}$$

This performance measure relates the maintenance cost to the size of the distribution system.

**Results:** The change in this performance measure of 1% since last year is the result of a slight change in O&M expenses of 0.3% and a change in Circuit km of less than 2%. Between 1992 and 2001 distribution OM&A expense decreased by 1.3% and distribution circuit length increased by 15%. Overall the composite decreased by 24.9% since 1992.



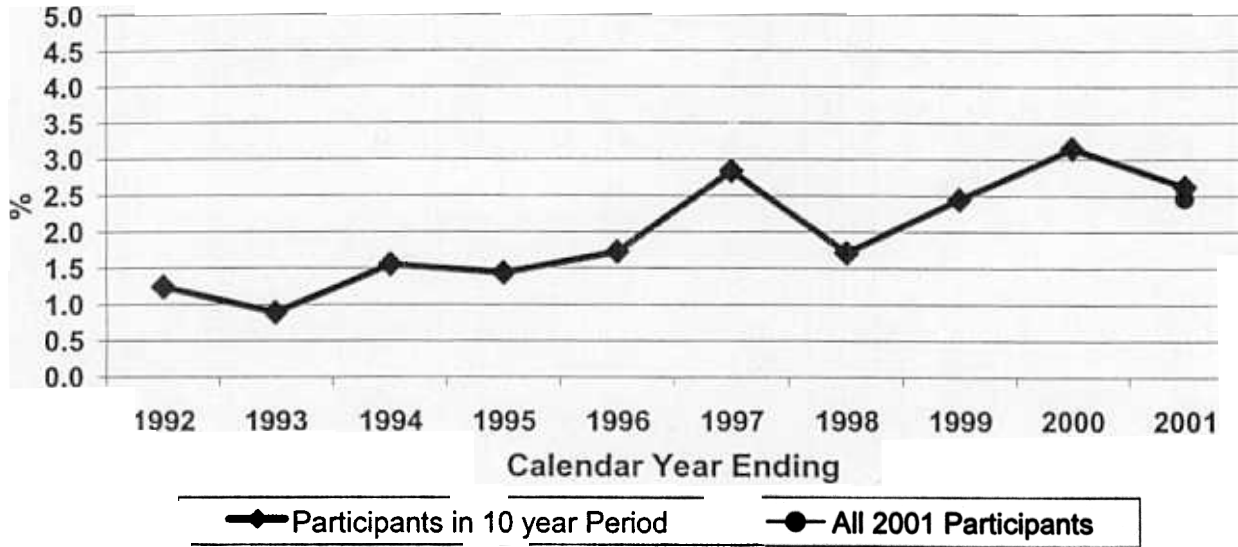
### Return on Assets (%) COPE Composite

Year	Percentage %	Percentage % All 2001 Participants
1992	1.24	
1993	0.89	
1994	1.55	
1995	1.44	
1996	1.73	
1997	2.84	
1998	1.71	
1999	2.45	
2000	3.15	
2001	2.63	2.46

DB\_SH15R



## Return on Assets (%) COPE Composite



**Definition:** 
$$\frac{\text{Distribution Net Income} * 100}{(\text{Previous Dist Gross Fixed Assets} + \text{Current Dist Gross Fixed Assets})/2}$$

This performance measure is an indicator of financial performance as it relates to the return on the average investment in Fixed Assets.

**Results:** The decrease in the performance of this metric (16%) is the result of a decrease in the Distribution Income of 10% combined with an increase in average gross fixed assets of 7%. The performance of the participants in 2001 ranged from a zero to just over 6%.



# APPENDIX A





## 2001 OVERALL COMPANY PROFILE MATRIX

	BC	EHM	ENX	HQ	LH	MH	NB	NLH	NSP	HO	OTT	SK	SP	TH	TU	UNA	UNBC	WH
Ownership	Public	Public	Public	Public	Public	Public	Public	Public	Private	Public	Public	Public	Public	Public	Private	Private	Private	Public
Revenues (\$000,000)	6,311	1,118	1,433	12,578	30	1,379	1,319	337	839	3,466	558	89	1,126	2,062	4,927	216	142	129
Employees	5,968	308	1,274	20,655	264	5,024	2,620	1,047	1,800	4,815	469	115	2,286	1,603	2,656	705	371	561
Gross Fixed Assets (\$000,000)	14,348	624	877	67,369	269	8,671	5,400	1,633	3,649	13,335	649	133	5,158	2,819	7,878	1,277	474	290
<b>Business Unit Operations:</b>																		
Power Supply	X			X		X	X	X	X				X		X		X	X
Transmission	X		X	X		X	X	X	X	X		X	X		X		X	X
Distribution	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Customer Service	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Other Utility				X		X							X					
% Generation Split: H/F/N	92/8/0	0	0	96/1/3	0	98/2/0	23/60/17	70/30/0/0	17/83/0	0	0	0	19/81/0	0	6/94/0	0	100/0/0	100/0/0
Installed Capacity (MW)	11,048	0	0	31,172	0	5,175	3,769	1,486	2,183	0	0	0	3,030	0	4,476	0	205	145
Transmission Circuit Length (km)	18,025	0	279	38,819	0	17,976	6,665	3,649	5,171	28,387	0	37	12,941	0	11,546	0	1,731	826
Distribution Circuit Length (km)	54,451	4,919	6,022	106,300	2,463	76,352	26,316	3,554	24,393	118,450	4,780	735	139,460	16,564	Not Applicable	93,135	5,081	1,206
Urban/Rural	Both	Urban	Urban	Both	Urban	Both	Both	Rural	Both	Both	Both	Urban	Both	Urban	Not Applicable	Both	Both	Urban
Customers Served	1,616,715	163,582	344,782	3,557,291	131,832	405,599	356,440	35,088	449,692	1,090,264	258,755	57,002	432,064	660,946	Not Applicable	371,500	88,221	93,200

Data Sources: COPE database, company annual reports and various CEA programs (i.e. Service Continuity Report, and Forced Outage Performance of Transmission Equipment)

BC: BC Hydro  
 EHM: Enersource Hydro Mississauga  
 ENX: ENMAX  
 HQ: Hydro-Québec  
 LH: London Hydro  
 MH: Manitoba Hydro  
 NB: New Brunswick Power

NLH: Newfoundland & Labrador Hydro  
 NSP: Nova Scotia Power  
 HO: Hydro One  
 OTT: Hydro Ottawa  
 SK: City of Saskatoon Electric System  
 SP: SaskPower  
 TH: Toronto Hydro

TU: TransAlta Utilities  
 UNA: Aquila Networks (AB) (previously UtiliCorp)  
 UNBC: Aquila Networks (BC) (previously UtiliCorp)  
 WH: Winnipeg Hydro