



Canadian Electricity Association  
**ENVIRONMENTAL  
COMMITMENT &  
RESPONSIBILITY (ECR)  
PROGRAM**



**ENMAX CORPORATION  
2004 REPORT**



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# 1 GENERAL UTILITY INFORMATION

## OPERATIONAL OVERVIEW

100 years ago, ENMAX Corporation began providing power to the newly formed City of Calgary. Today, our services reflect how we have grown with all of our vibrant and diverse communities. Our accomplishments in 2004 demonstrate our ongoing focus on providing innovative and exemplary services, while remaining committed to the future. ENMAX Corporation’s vision is:

**Exceptional people reinventing the Canadian energy and services industry:  
the choice of customers and investors, every day.**

We strive towards this vision through two primary wholly-owned subsidiaries – ENMAX Energy Corporation (the retail company), and ENMAX Power Corporation (the distribution and transmission company).

The current organizational structure of ENMAX Corporation and its subsidiary companies is as follows:

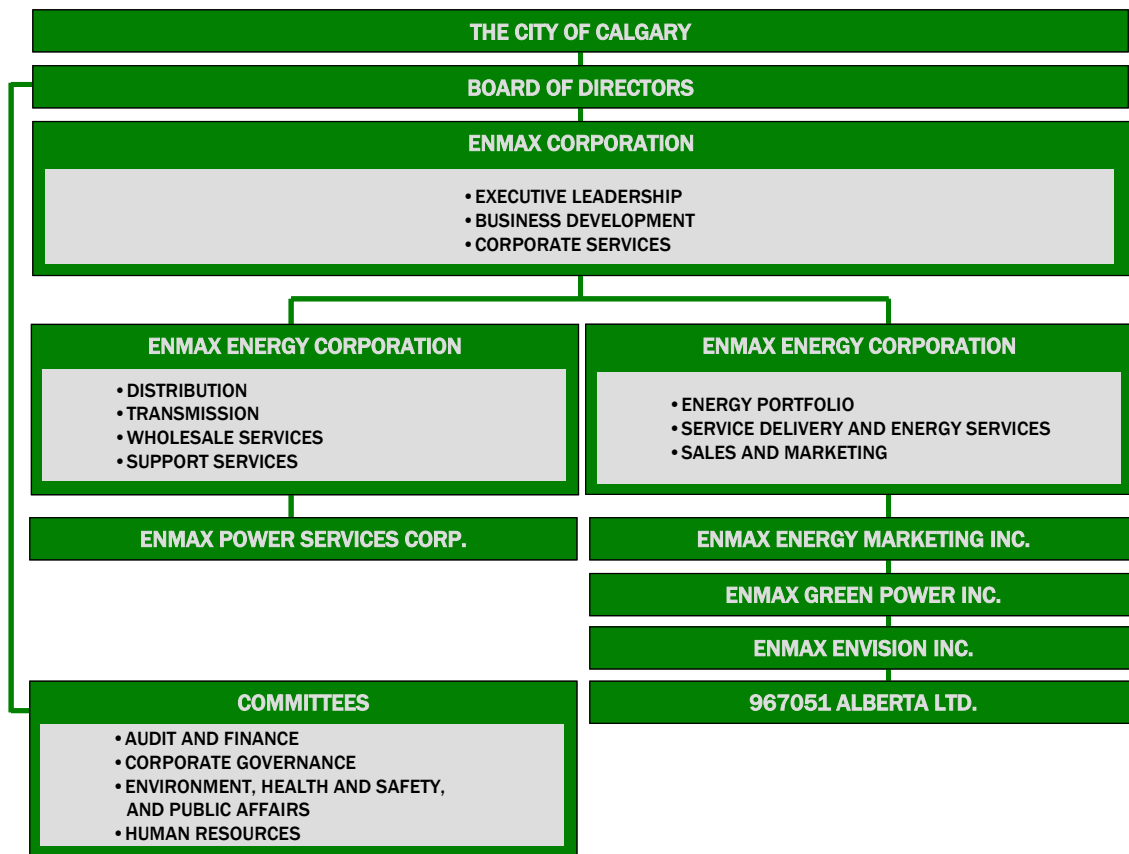


Figure 1-1: ENMAX Organizational Structure

## **ENMAX Energy**

Building on our history, ENMAX Energy provides energy supply and services to residential and business customers across Alberta. Intense competition in the large commercial and industrial customer market segment has called for new marketing strategies. These include blending contract rates and extending contract terms to be more competitive, and adding valuable options like renewable energy and sponsorship programs.

During 2004, our overall revenue declined from \$845M to \$826M, mainly due to loss of some business from members of the Alberta Urban Municipalities Association (AUMA) and billing issues. At the same time, ENMAX Energy continued to actively retail to residential and small commercial customers. A steady stream of competitive offers such as fixed-price contracts, bundled electricity and natural gas, and an innovative price protection plan were launched. A 10% renewable energy component was included in all residential contracts.

A key to ENMAX Energy's success is its demonstrated skill at managing the supply risk to match customer demands. This is done through a diverse portfolio of electricity and natural gas contracts and short-term management of its position through forward power contracts and physical trading of energy in the Alberta and interconnected markets.

ENMAX Envision expanded its market for high-speed data services to Calgary businesses. In 2004, ENMAX Envision saw an increase in revenues of close to 50% and a doubling in the number of customers. Key customer segments responsible for the strong growth were Alberta's large enterprises as well as other telecommunications operators that sell Envision's service under their own brand, including Bell Canada, Sprint Canada, Allstream and Q9 Networks. ENMAX Envision was also involved in the construction of a large number of Alberta SuperNet sites, supporting the Government of Alberta's plan to enable the province-wide delivery of high-speed information and services.

## **ENMAX POWER**

ENMAX Power delivers safe, reliable and cost-effective electricity to Calgary and surrounding areas, adding to the city's standard of living and continually building on the company's foundation business. In 2004, ENMAX Power transported 8,044 GWh of electricity on its transmission and distribution system to about 382,000 metered customers of electricity retailers, representing a 1.4% increase in peak demand compared with 2003.

ENMAX Power successfully implemented the first phase of a five-year distribution automation project which involves the installation of automated switches where they are most needed, starting with the 25 kV system. The automated system identifies and isolates a faulted line section, allowing power to be restored to the rest of the line, and therefore to as many customers as possible, in less than a minute. In the first year of implementation, the project had saved over 850,000 customer outage minutes which represents 8% of the outage duration forecast for the year. The project will continue through to 2007. Upon the completion of this five-year project, ENMAX Power will be able to advance its position as a top reliability performer among peer utilities.

For further details on ENMAX Corporation's operations, please refer to our 2004 Annual Report.

## 1.1 ENMAX- GENERAL LINES OF BUSINESS

<b>Generation</b>	ENMAX Green Power Inc. owns 50% of Canada's largest single-site wind farm, 114 turbines located in southern Alberta. We retail about 250,000 megawatt hours of electricity per year, or enough to power the equivalent of about 34,000 homes a year, from a total of 166 turbines.
<b>Transmission</b>	ENMAX Power owns, operates and maintains 279 kilometres of transmission lines and 34 substations in and around Calgary. The downtown Calgary network is one of the largest in North America, powering business growth and with its innovative design, has attracted attention as a model of efficiency and reliability.
<b>Distribution</b>	ENMAX Power links about 382,000 metered customer sites with about 6,500 kilometres of distribution lines that we own, operate and maintain. The company's service area covers 1,044 square kilometers.
<b>Wholesale Services</b>	ENMAX Power is responsible for revenue metering, meter data management, customer enrolment services, load settlement and wholesale billing in Calgary. ENMAX Power also provides some or all of these services in Red Deer, Lethbridge, Fort Mcleod, Cardston and the Municipality of Crowsnest Pass.
<b>Energy Supply</b>	ENMAX Energy and ENMAX Energy Marketing Inc. pursue electricity and natural gas sales to customers, balanced by the purchase of electricity and natural gas in the competitive Alberta market. Electricity is bought and sold daily through the Alberta Electric System Operator and other contracts to manage mismatches between supply and demand.
<b>Retail</b>	ENMAX Energy is the regulated rate provider in three of Alberta's four largest communities – Calgary, Red Deer and Lethbridge. We have earned the privilege to provide 18.4% of Alberta's total electricity demand. We serve 37% of Alberta's residential customers; 24% of small commercial customers and 22% of commercial and industrial customers. In addition to supplying electricity, customers are also offered the ease of purchasing their natural gas and renewable energy through ENMAX Energy. ENMAX contracts with Accenture Business Services for Utilities to provide retail customers with billing and customer care services.
<b>Power Services</b>	Power Services ENMAX Power Services Corporation provides non-regulated engineering, procurement, and construction and maintenance services. We design and construct underground utility infrastructure. We also install and maintain outdoor lighting and streetlights, and specialize in electrical communications, light rail transit and security systems.
<b>Fibre Optics</b>	ENMAX Envision Inc. owns and operates more than 300 route-kilometres of fibre optic network in Calgary. The company provides high-speed data and Internet services to many businesses in Calgary.

**Table 1.1 Quick Facts - ENMAX**

	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
Number of metered customers (in and around Calgary) <sup>1</sup>	351,000	362,000	373,000	382,494
System peak demands (megawatts, Calgary only)	1,323	1,334	1,382	1,401
Energy delivered (gigawatt hours) <sup>2</sup>	7,551	7,747	7,928	8,044
Number of retail customers	411,000	421,000	422,000	435,000
Electricity sold to customers (gigawatt hours) <sup>3</sup>	9,028	9,221	9,552	9,118
Peak load requirements (megawatt)	1,589	1,543	1,633	1,565
Number of employees	1,320	1,431	1,084	1,054
<b>Transmission system statistics</b>				
Overhead lines (kilometers)	262	262	263	264
Underground lines (kilometers)	16	16	16	16
Substations	33	33	34	34
<b>Distribution systems statistics<sup>4</sup></b>				
Overhead circuit lines (kilometers)	2,355	2,370	2,370	2,372
Underground circuit lines (kilometers)	3,850	4,040	4,185	4,352
Utility poles	64,080	64,700	64,780	65,000
Transformers	40,445	41,200	43,475	44,000

<sup>1</sup> Data from 2001 to 2004 includes number of metered sites, not number of customers, since a single customer may have more than one metered site.

<sup>2</sup> 2003 data is based on preliminary estimates only and will be finalized in 2004. The 2002 data, previously estimated, is here restated to final data.

<sup>3</sup> Electricity sold to customers does not include energy trading sales volumes.

<sup>4</sup> 2003, 2002 and 2001 data are lower than prior years because historical data included duplicate facilities and some abandoned, spared and de-energized facilities. Data corrections have been completed.

## 1.2 SCOPE OF OPERATIONS

### Generation

ENMAX does not own any coal-fired electricity generating facilities. However, the company does purchase coal-fired electrical energy through fixed term “quasi-contracts” known as Power Purchase Arrangements (PPAs) and is also a frequent participant in the spot purchase and sale market through the Alberta power pool, which normally includes a substantial portion of thermal generation, from both natural gas and coal. ENMAX Energy’s wholly owned subsidiary, ENMAX Green Power Inc., has a 50% equity stake in the McBride Lake wind farm. ENMAX Energy will report 50% of the output of McBride Lake as its own generation in 2004.



Figure 1-2: McBride windmills

Table 1.2 Generation statistics

#### Other Generation Sources

Name of Facility	Gross Generation Capacity (MW)
McBride Lake wind farm	75.2

Table 1.3 Summary of 2004 – generation statistics

	Gross Generation (GWh)		Net Generation (GWh)		Station Use (GWh)	
	2003	2004	2003	2004	2003	2004
Alternative (wind)	64.8	112.5	64.8	112.5	N/A	N/A
TOTALS	64.8	112.5	64.8	112.5	N/A	N/A
Purchases of alternative energy (wind)	357	347.6	N/A	N/A	N/A	N/A

Table 1.4 Purchases of renewable alternative energy (GWh)

	2003	2004
Total Purchases	357.0	347.6
For utility use	.014	16.7

Note: All purchases of alternative energy are from wind generation

**Table 1.5 Transmission and distribution line length**

	<b>2004</b>	<b>2003</b>
Total length of distribution lines (km)	6,700	6,555
Total length of transmission lines (km)	280	280
Total area of transmission rights-of-way (ha)	199	Not available

## **2 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) IMPLEMENTATION**

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To ensure that our environmental focus remains sharp, ENMAX has developed and implemented an environmental management system (EMS) that conforms to the requirements of the ISO 14000 international EMS standard. Our Environmental Affairs department supports and maintains the overall functioning of the EMS – and every ENMAX employee, without exception, is responsible for ensuring that the principles and procedures of the EMS are effectively carried out across the whole spectrum of ENMAX's activities, products and services. Our EMS was reviewed in 2004 as part of the ECR program review process.

Our ENMAX EMS starts with our Environmental Policy, which sets out our core principles:

- compliance with all relevant legal requirements;
- prevention of pollution; and
- commitment to continual improvement.

### 3 ENERGY EFFICIENT, LIQUID-FILLED DISTRIBUTION TRANSFORMERS

Energy efficiency of electrical distribution equipment is a stated concern for both Natural Resources Canada (NRCan) and for the electrical industry. Demonstration of efficiency is important for reasons related to global warming and the wise use of resources. In a partnership agreement, the Canadian Electricity Association (CEA), transformer manufacturers in Canada and the United States, and NRCan, will document and publish the energy efficiency of distribution transformers purchased within the current year. This will be conducted through the Environmental Commitment & Responsibility Program (ECR). The transformer manufacturers and Canadian electrical utilities have also agreed to pursue energy efficiency using the values set in the recently published Canadian Standards Association (CSA) C802.1 **Minimum Efficiency Values for Liquid-Filled Distribution Transformers as the minimal standard for transformer efficiency.**

Table 3.1 Energy efficient distribution transformers

kVA Size	Transformer quantity	Total compliant kVA	Total Non-compliant kVA	Sum kVA (compliant & non-compliant)	Sum (kVA x Efficiency)	Average efficiency at 50% load, weighted kVA
25 & below (single phase)	556	13130		13130	1303171	99.3
37.5 To 75 (single phase)	1647	67201		67201	6660239	99.1
100 to 167 (single phase)	6	600		600	59470	99.1
250 to 833 (single phase)						
45 and below (three phase)						
75 to 300 (three phase)	160	40050		40050	3975735	99.3
500 to 750 (three phase)	180	105750		105750	10503075	99.3
1000 to 3000 (three phase)	86	116000		116000	11538800	99.5
<b>TOTAL</b>	<b>2635</b>	<b>342731</b>		<b>342731</b>		

## 4 INDICATORS AND PROTOCOLS

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### 4.1 PRINCIPLE 1 - TO BE MORE EFFICIENT IN OUR USE OF RESOURCES

#### P1.1 Energy conservation efficiency of fossil fuel generation stations

Currently, ENMAX Corporation does not generate fossil fuel energy.

#### P1.2 Internal energy efficiency

##### **Transmission:**

In Alberta, transmission losses are pooled and reported by the Independent System Operator (formerly known as the Transmission Administrator).

##### **Distribution:**

**Table 4.1 Distribution energy efficiency**

	2003	2004
Distribution system energy input (GWh)	8139.3	8321.4
Distribution system energy output (GWh)	7927.7	8044.4
Distribution energy efficiency (%)	97.40%	96.68%

Note: Since deregulation and “unbundling” in the Alberta market, ENMAX is only able to report on areas where it owns the distribution wires and metering services.

Generally, ENMAX’s distribution energy efficiency has been very stable over the past three years. The 10-year average is 97%. This year is no different. Rounded up, the internal energy efficiency is 97%. The 0.72% decrease in efficiency compared to last year does not have a systems explanation. One possible explanation involves the way ENMAX settles the load, (the difference between energy coming into the distribution system vs. the energy metered for customers), which has changed slightly. ENMAX changed the methodology for load settlement this year.

### P1.3 Reuse of electrical insulating oil

Table 4.2 Reuse of electric insulating oil

Item	Note	Data (litres)			
		2002	2003	2004	
A.	Volume of insulating oil reused (litres) following processing or cleaning at utilities centre facility.	68,000	35,632	79,394	
B.	Volume of insulating oil reused (litres) following processing or cleaning during field operations.	0	0	0	
C.	Volume of insulating oil reused (litres) following processing or cleaning by a third-party contractor, either in the field or through a central facility.	0	202,740 <sup>5</sup>	27,276.5	
<b>Volume of Insulating oil reused</b>		<b>= A + B + C</b>	<b>68,000</b>	<b>238,372</b>	<b>106,671</b>
D.	Volume of insulating oil recycled (litres) by a third party for use other than electrical equipment.	75,245	121,518	157,911	
E.	Volume of insulating oil recovered for energy recovery.	0	0	0	
F.	Volume of insulating oil disposed of as waste	875	3,469	1,020	
Volume of insulating oil recycled, recovered, and disposed of as waste.		<b>= D + E + F</b>	<b>76,120</b>	<b>124,987</b>	<b>158,931</b>
G.	Volume of new oil purchased.	47,000	80,000	51,000	
<b>Percent reuse of insulating oil</b>		<b>= <math>\frac{(A + B + C)}{(A + B + C + D + E + F)} \times 100\%</math></b>	<b>47.2%</b>	<b>65.6%</b>	<b>40.2%</b>
<b>Percent of insulating oil recycled</b>		<b>= <math>\frac{D}{A + B + C + D + E + F} \times 100\%</math></b>	<b>52.2%</b>	<b>33.4%</b>	<b>59.4%</b>

Once again, ENMAX recycled and reused the majority of its insulating oil in 2004. ENMAX sends its PCB contaminated oil to a decontamination plant and the decontaminated oil is reused in the electric system. Non-PCB oil is recycled and then used in variety of products, such as hydraulic oil. An extremely small amount went for destruction.

<sup>5</sup> Includes 48,000 litres of oil containing PCB's that was decontaminated and available for re-use within the electricity industry.

#### **P1.4 Utilization of solid combustion by-products**

This does not apply as ENMAX is not a generator of fossil fuels. (Please see comments under paragraph 1.2 – Generation)

### **4.2 PRINCIPLE 2 – TO REDUCE THE ADVERSE ENVIRONMENTAL IMPACT OF OUR BUSINESS**

#### **P2.1 Atmospheric emissions**

Currently, ENMAX Corporation does not generate fossil fuel energy. However, ENMAX is concerned about atmospheric emissions and does calculate its greenhouse gas equivalents, primarily from fleet and buildings. Last year we featured ENMAX Place as an example of our commitment to reducing atmospheric emissions. This year we have gone a step further and purchased Renewable Energy Credits (RECs) from our McBride Lake wind farm to totally offset our greenhouse gas emissions from our operations (mainly buildings, fleet, and SF<sub>6</sub> loss). The following success story highlights this achievement.

#### **SUCCESS STORY: INTERNAL EMISSIONS REDUCTIONS**

ENMAX does not own any thermal electricity generation facilities, and is therefore not a large emitter of greenhouse gases (GHGs) and pollutants. We do, however, purchase electricity from such facilities. While these emissions are not currently allocated to ENMAX, in the event that environmental laws change, the various costs associated with such emissions could become our responsibility.

ENMAX does release GHGs through its use of fossil fuels to operate vehicles and buildings, and its use of an electrical insulating gas known as sulphur hexafluoride (SF<sub>6</sub>) which is a GHG that is 24,000 times more potent than carbon dioxide. ENMAX is committed to reducing its direct and indirect emissions for GHGs and air pollutants, consistent with its core mandate to provide a secure, reliable, electricity supply at a reasonable cost. In 2004, ENMAX took some important steps to mitigate its GHG impact on the global environment:

- 2004 was the first full year of operation of the McBride Lake wind farm near Pincher Creek, of which ENMAX owns 50%. The output of the facility in 2004 was 225,000 MWh, which allowed us to raise the proportion of clean, renewable generation in our supply portfolio to its highest level ever. More than 5% of our energy comes from renewable sources, compared to a 1% Alberta average of electrical power generated by renewable energy.
- In 2004, we became Canada's first net GHG emissions-free electric utility by offsetting all of our GHG emissions by purchasing Renewable Energy Certificates (RECs) through our own McBride Lake wind generation facility.

- We further improved our procedures for minimizing releases of SF<sub>6</sub> in the course of electrical equipment replacement and repair – an operational area in which ENMAX has consistently been among the top performers in the Canadian electric utility industry.

ENMAX has also been able to maintain its GHG emissions intensity at a steady rate over the last three years. Coupled with the purchase of RECs, Figure 4-1 shows how we have achieved our stabilization of GHG intensity per GWh delivered to customers and our net zero GHG emissions for our operations.

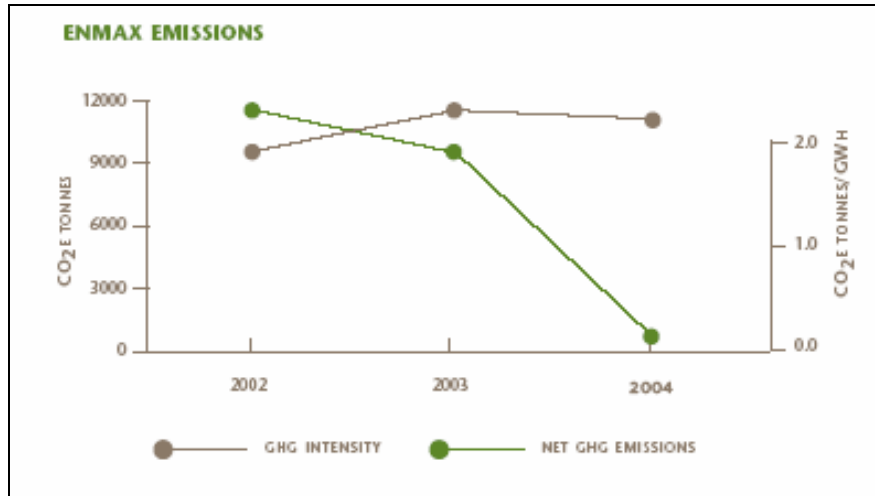


Figure 4-1: ENMAX GHG Intensity vs. Net GHG Emissions

In 2005 and beyond, ENMAX will identify and implement further operational measures to reduce GHG and other air pollutant emissions from our daily activities, and increase our investment in more environmentally sustainable power generation.

This shows our commitment to ECR principles 1 and 2:

**To be more efficient in our use of resources, and to reduce the adverse environmental impact of our business.**

## P2.2 Spills and Unintended Releases

**Table 4.3 Spills and Releases**

	<b>2003</b>	<b>2004</b>
Number of reportable spills	19	12
Number of priority spills	1	0
Total volume of liquid reportable spills (litres)	2,740	2,515
Total volume of Liquid Reportable Spills recovered/cleaned up (litres)	Not Required	1,900
Total volume of Solid Unintended Releases (m3)	0	0
Total volume of Gaseous Unintended Releases (m3)	0	0
Total kg of SF <sub>6</sub> used for maintenance purposes (topping up)	36.6	18.0

\* Note: ENMAX tracks both single event releases caused by equipment failure and topping up of gas from slow leaks as in the case of SF<sub>6</sub> equipment.

At ENMAX, all releases to land, water, and air are reported and documented internally by the ENMAX Environmental Affairs Department. Spills that are reported as a regulatory requirement are also managed by this department. Environmental Affairs produces the reports and serves as the single point of contact with regulators. This department is also responsible for further investigation and follow-up as required. Table 4.3 (Spills and Releases) outlines ENMAX's improvement through the decline of both reportable and priority spills, as well as total volume of reportable spills from the previous reporting year. This was accomplished through a renewed emphasis on environmental training and a leak management program implemented in our Transmission group.

SF<sub>6</sub> loss has decreased this past year highlighting the efforts of our Substations and Network crews to use innovative ways of decreasing the amount of SF<sub>6</sub> lost during top-ups and installation of new SF<sub>6</sub> equipment.

**Table 4.4 Categorization of Reportable Spills**

<b>Size Category</b>	<b>Number of Reportable Spills</b>	<b>Source of Spill (Generation, Transmission or Distribution)</b>
0 to 20 L	0	
21 to 200 L	5	Distribution and Transmission
201-500 L	7	Distribution
Over 500 L	0	

## SUCCESS STORY – AN OUNCE OF PREVENTION

In 2003, ENMAX reported our McBride Wind farm as a success story in the area of renewable energy. This year, ENMAX is pleased to report a success story from the Transmission and Network Department that resulted in an ENMAX solution to an industry-wide problem.

As every electric utility has experienced, there are varying degrees of environmental impact from oil leaks and spills from Substation equipment. Aging transformers, bulk oil breakers and the like, despite being a culprit of such leaks and spills, typically continue to function well enough to avoid the cost of full replacement or major repairs.

The number of aging transformers that ENMAX owns and operates has left crews in blind anticipation of when and where a major leak from equipment may occur in the city of Calgary at any given moment.

Although a low level oil alarm alerts the Control Center of transformer leaks, tap changer leaks are typically not captured until the oil has already leaked to the ground. The ENMAX solution to these leaks originates at the source. John Hallett, one of our Lead Hands, developed a spill containment system that bides time for crews to reach the site of a spill before transformer oil hits the ground (Figure 4-2). The tap changer is hooked to a hose, through which leaking oil from the transformer can flow into two 40 gallon barrels that are both sitting in a larger 120 gallon tub. This containment unit gives crews more time (at least 120 gallons worth) to reach the 'leak' before it seeps to the ground.

Figure 4-2: Containment Unit

Also in 2004, our Asset Management department in conjunction with the Transmission department developed a Leak Management Program. This program currently allows ENMAX to track the condition of oil leaks on all existing substation equipment, and rank the risk of the occurrence of a spill for each piece of equipment. In 2003, every station was inspected, current conditions were noted, and photographs of all equipment were taken to establish a base line. In 2004, crews began inspecting each station on a monthly basis to compare the equipment with the photographs taken in 2003. Any noticeable changes that occur are recorded and entered into a risk analysis tool which re-ranks each piece of equipment to flag those with the highest risk. Beginning this year (2005), Asset Management anticipates that the top 10 leaks will be mitigated on a yearly basis to reduce the risk of major oil spills from occurring.



This initiative supports our commitment to ECR principle 2:  
**To reduce the adverse environmental impact of our business.**

### P2.3 Environmental aspects indicator for fish (hydroelectric generation)

Does not apply, since ENMAX is not a hydroelectric energy producer.

### P2.4 PCB management

The main aspects of our PCB management plan include:

1. Investigation and testing: ENMAX Power is actively testing all transformers manufactured before 1986 – this is several years after which PCBs were prohibited, by law, to be placed in new equipment. This was done in order to ensure accurate knowledge of the PCB levels in all transformers;
2. Populating the transformer online management system database with all PCB levels in all transformers;
3. Taking PCB containing transformers out of service and properly disposing of them.

In 2004, ENMAX completed the testing and collection of data of the PCB content of all of its transformers. This data was then entered in our internal transformer management system database. These two significant steps, as part of our PCB management plan, have allowed us to actively manage the risk associated with a PCB release. We have taken approximately 260 tonnes of low-level PCB materials out of service since implementing the plan in 2000.

**Table 4.5 PCB Management**

<b>Total Inventory at December 31</b>	<b>2003</b>	<b>2004</b>
Total inventory of high-level PCB material in storage (tonnes)	0	0
Total inventory of low-level PCB material in storage (tonnes)	9.3	10.0
Total amount of high-level PCB material sent for destruction (tonnes)	0.34	0
Total amount of low-level PCB material sent for destruction (tonnes)	116.7	105.0
Total amount of high-level PCB material taken out of service. (tonnes)	0.14	0
Total amount of low-level PCB material taken out of service (tonnes)	73.5	95.0

Note: Definitions of “high level” and “low level” PCB material and of “sent for destruction” are as set out in the document entitled “Guidelines for the 2003 ECR Utility Progress Reports”.

**Table 4.6 In-service estimates (information only, not an indicator)**

	<b>2003</b>	<b>2004</b>
Total estimated inventory of high-level PCB materials in service (tonnes).	0	0
Total estimated inventory of low-level PCB materials in service (tonnes).	138.1	46.0

ENMAX has an extremely low amount of high level PCB material known to be in-service. Between 2003 and 2004, a significant amount of PCB material was taken out of service, as indicated in Table 4.6 (in-service estimates). However, ENMAX does not currently have an accurate estimation of the total amount of PCB liquid-filled lead cables that are still in service. As these PCB liquid-filled lead cables reach the end of their useful lifecycle, they will be disposed of in an appropriate manner.

**P2.5 Generation of low- and intermediate-level radioactive waste**

Does not apply, as ENMAX is not a nuclear power generator.

**P2.6 Species at risk and habitat stewardship**

**Self Assessment**

Last year we reported that ENMAX had conducted an assessment of its facilities in relation to areas and habitats associated with species at risk. The outcome of that assessment was that some ENMAX facilities overlap with areas where there is a potential to encounter species at risk, however no species at risk occurrences have been attributed to ENMAX facilities or operations. Generally, our facilities and infrastructure operate in an urban setting and away from habitats associated with species at risk.

No further assessments have been taken in 2004. However, ENMAX endeavors to monitor any changes to the Species at Risk Act or other legislative drivers that may change in relation to species at risk or habitat stewardship.

**Management Actions**

Once again, in 2004, no species at risk or habitat stewardship occurrences have been observed and no formalized management action process is currently in place. If an occurrence should arise, an investigation and follow-up would be conducted, consistent with the ENMAX EMS.

### 4.3 PRINCIPLE 3 – TO BE ACCOUNTABLE TO OUR CONSTITUENTS

#### P3.1 Public reporting on environmental performance

Table 4.7 Public reporting on the environment

	2003	2004
Number of residential customers	396,129	382,000
Does the utility produce a publicly available report on environmental performance?	Yes	Yes
Does the utility include environmental or sustainable development indicators as part of its publicly available report on environmental performance?	Yes	Yes
Does the utility include environmental or sustainable development objectives and targets as part of its report on environmental performance?	No	No
Does the utility report achievements in comparison to the objectives and targets that are described in its report on environmental performance?	No	No
Does the report include a public feedback and response mechanism?	Yes	Yes

ENMAX made information about its environmental performance publicly available in three ways:

- through the Annual Report,
- through the ENMAX website (ENMAX.com), and
- through this report (the ECR Report) which is currently available to the public through our website

We publish and distribute approximately 4,000 hard copies of our Corporate Annual Report which is also posted on our website. The environmental portion of our external website received 1,754 hits in 2004. All of our reports and public website material provide an email link for readers with responses or inquires. A similar prompt invites anyone that downloads the Annual Report to email inquiries arising from the Report. If an inquiry of an environmental nature arises, it is routed to the Environmental Affairs Department for response or follow-up as required.

In addition to these informal feedback mechanisms, the Annual Report which includes information about ENMAX's environmental performance is reviewed at the Annual General Meeting (AGM). The AGM is announced through various means and media, and is an open and public event. Public feedback is solicited and recorded at the AGM.

Another way that interested parties can request environmental information or comment on our environmental performance is through a telephone call to the general administration phone line, to the utility billing call centre, or to the 24 hour trouble line. Historically, information requests via email came to the general ENMAX email address or to the “Greenmax” address if they related to “green power” (i.e., renewable energy). These avenues of communication remain in place, but in 2004 ENMAX included a direct e-mail link to the Environmental Affairs Department through the “Help the Environment” section on its external website.

ENMAX has a defined process for dealing with these types of information requests. ENMAX Power’s transmission department also has a documented process for commissioning new substations which includes advertised public meetings and responding to any comments or concerns in a timely manner.

### P3.2 Responding to external input concerning environmental performance

**Table 4.8 Responding to external clients for the environment**

All Business Units (T/D)	2003	2004
Does the utility have a procedure in place to <u>document</u> relevant information and requests on environmental performance from external interested parties?	Yes	Yes
Does the utility have a procedure in place to <u>respond to</u> relevant information requests on environmental performance from external interested parties?	Yes	Yes
Does the utility <u>track responses</u> to documented, non-government external inquiries to ensure they are timely?	Yes	Yes
Does the utility have a <u>process in place</u> to consider documented, non-government external inputs as part of its decision-making?	Yes	Yes
Is there <u>documentation in place</u> describing how documented, non-government external inputs are considered as part of the utility’s decision-making?	Yes	Yes

In 2004, ENMAX received requests for information on different environmental issues including:

- Environmental aspects of substation activities and equipment
- Contaminants from a capacitor bank fire
- The link between energy management and environmental impacts
- Electro magnetic field impacts
- New substation siting and construction
- Greenhouse gas/climate change topics
- Regulatory requirements
- McBride Lake wind farm project
- Renewable energy proposals
- Environmental education requests

In 2004 most of the inquiries directed to Environmental Affairs related to a capacitor bank fire that occurred at one of ENMAX's substations. Although those inquiries were sufficiently handled, ENMAX took it one step further and added a section to the external website that is dedicated to the [Environmental Aspects of Substations](#). The material on the website has been an effective tool for answering questions that have come in since the initial set of inquiries.

ENMAX also fields a large number of inquiries on PCB levels in current and historic transformers, as well as requests for environmental assessment information related to real estate transactions. As a result of the commissioning of the McBride Lake wind farm, our other inquiries now include wind generation and renewable power.

#### 4.4 PRINCIPLE 4 – TO ENSURE THAT OUR EMPLOYEES UNDERSTAND THE ENVIRONMENTAL IMPLICATIONS OF THEIR ACTIONS AND HAVE THE KNOWLEDGE AND SKILLS TO MAKE THE RIGHT DECISIONS

##### P4.1 Evidence of an effective employee awareness and training program

Table 4.9 Employee awareness and training

Transmission & Distribution	2003	2004
Has the utility implemented a procedure to identify environmental training needs?	Yes	Yes
Has the utility implemented procedures or information systems to track the number of employees that require environmental training?	Yes	Yes
Is your training consistent with ISO 14001 requirements?	No	Yes

ENMAX improved its delivery and tracking of environmental training for 2004. We reached more employees and provided more effective training. Figure 4-3 highlights the number of ENMAX employees that received training in environmental and sustainability awareness in 2004.

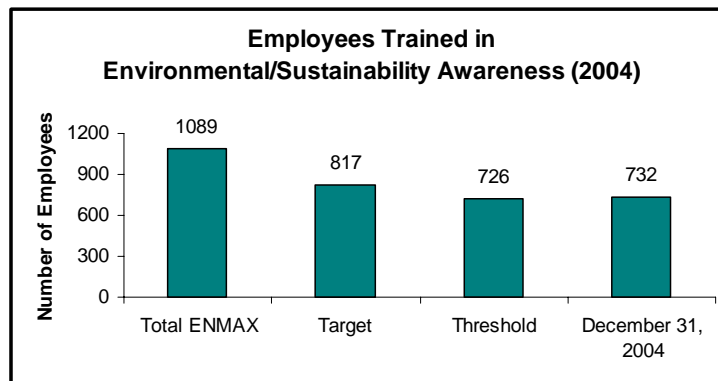


Figure 4-3: Employees Trained in 2004

## 5 PILOT INDICATORS AND PROTOCOLS

### 5.1 TREATED WOOD UTILITY POLES

Table 5.1 Draft User Guidance Document

	2003	2004
Which of the recommendations set out in the Draft User Guidance Document has your utility committed to implementing by the end of 2004?	All of the recommendations	All Recommendation
Has a schedule been prepared for the implementation of each recommendation?	No	No
When will the recommendations that you have committed to be fully implemented?	December 2004	December 2006

ENMAX has committed to managing treated wood poles in accordance with the recommendations in the Draft User Guidance Document. These recommendations are to:

1. Use purchasing policies that make certain any treated wood purchased has been treated appropriately.
2. Address potential impacts appropriately in locating storage facilities for treated wood.
3. Address potential impacts appropriately in managing storage facilities for treated wood.
4. Consider, where practicable, alternatives to the use and in-service re-treatment of wood treated with CEPA-toxic substances in areas that may be sensitive in terms of the environment and human health, such as areas in close proximity to potable water supplies and aquatic resources.
5. Encourage the original user to re-use treated wood to the extent practicable, and where such reuse occurs, make every reasonable effort to manage the handling of that wood and any by-products (e.g., wood chips, saw dust, extracted preservatives) in a manner that prevents or minimizes:
  - (a) preservatives being released to the environment; and
  - (b) risks to human health.
6. Develop procedures to keep account of treated wood taken out of service. Whenever the transfer of possession of treated wood occurs, make every reasonable effort to include an advisory bulletin for the subsequent user that details:
  - (a) that wood has been treated with a wood preservative; and
  - (b) any suggested management practices related to its future handling and use.
7. Make every reasonable effort to utilize the recommended waste management hierarchy that includes reuse, recycle, recovery options for treated wood, when disposing treated wood.
8. Make every effort to continually improve the handling and management practices of treated wood.

### Progress to implementation

Although ENMAX has adopted a number of the recommendations as part of its handling practices, a schedule to implement the complete set of guidelines is yet to be formalized. In 2005, one of our goals will be to document and schedule when these guidelines will be fully implemented.

### Treated wood distribution poles purchased in 2004

ENMAX Power's transmission business purchased 102 poles in 2004, while its distribution business purchased 1,412. Approximately 98% of the poles purchased by ENMAX Power were Copper-Chromium Arsenic (CCA) treated poles, while the rest were Pentachlorophenol treated. ENMAX Power has mainly purchased CCA for the last three years.

**Table 5.2 Transmission poles by treatment type**

<b>Treatment</b>	<b>Number</b>	<b>Pole Feet (Number x Length of Pole)</b>
Non-treated	0	0
Pentachlorophenol	16	1,200
CCA	86	6,495
Other (fiberglass)	0	0
<b>Total</b>	<b>102</b>	<b>7,695</b>

**Table 5.3 Distribution poles by treatment type**

<b>Treatment</b>	<b>Number</b>	<b>Pole Feet (Number x Length of Pole)</b>
Non-treated	0	0
Pentachlorophenol	0	0
CCA	1,412	67,645
Other (fiberglass)	0	0
<b>Total</b>	<b>1,412</b>	<b>67,645</b>

**Table 5.4 Reuse/Recycle/Landfill**

<b>Destination</b>	<b>Amount in kg</b>
Sold	78,748
Landfill	157,945
Recycled	33,044



**Figure 5-1: “Life-enhanced” pole**

**Life-enhancement treatments on poles**

2004 was the 5<sup>th</sup> year of a ten-year cycle for ENMAX Power’s life-enhancement pole treatment plan. Every year, approximately 6,000 poles are tested above and below ground line for integrity. Poles that do not require replacement are supported with an industry standard ten foot metal stub that is hammered half way into the ground, wrapping around the pole for reinforcement (Figure 5-1).

**Poles to landfill**

ENMAX Power estimates that 157,945 kg of power poles were placed in landfills. This is a significant increase over last years’ reported amount of 82,000 kg. One of the major contributing factors to this increase is a better system for weighing the poles that go to landfill. In previous years it was an estimate based on the number of poles that came out of services (not actual weights).

Despite more poles going to landfill, significant gains were made in the amount of poles going for recycling (33,044 kg). This number represents the poles going to a contractor that after stripping the wood treatment off and they reusing the wood for constructing playhouses, gazebos and other pre-made buildings.

These pilot indicators and protocols support Principle 2:  
**To reduce the adverse environmental impact of our business.**