



CHAPTER 9

The Me Generation

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1980 – 1989

OPPOSITE: *Desmond the Dragon, Edmonton Power's famous mascot, came to life in the 1980s. At left, Desmond smites a garbage-can-lid wielding knight.*

The 1980s were challenging years for Edmonton Power. A natural disaster endangered its employees and ravaged its infrastructure. A new industrial regulatory system threatened its expansion plans. A slump in the economy meant decreasing profits. Through careful planning and rate adjustments, however, Edmonton Power persevered, and continued to supply revenues to City coffers.

GENESEEE

Environmentalists, competitors, regulatory boards, and local citizens derailed the progress of Edmonton Power's \$1.1 billion Genesee Power Plant project in the late 1970s. But Edmonton Power could not afford to delay construction for long; demand for power continued to rise and the utility had to ensure that it remained competitive.

In 1980, Edmonton Power representatives appeared in front of the Energy Resources Conservation Board (ERCB) to do battle on behalf of the Genesee project. Again, Genesee faced a competing project: Calgary Power had a new proposal on the block. It wanted to expand its new power plant in the Keep-hills area 16 km north of Genesee. Despite this, and despite continued opposition from environmentalists and some local farmers, the ERCB formally approved the construction and operation of the Genesee Power Plant in 1980. Detailed planning of the project began almost immediately, and site preparation started in February 1982. The targeted completion date was 1987 for a first generating unit and 1988 for a second one.

In 1983, foundation and steel frame construction began on the Genesee site, located 80 km southwest of Edmonton.

MILESTONES

1981

West Edmonton Mall opens; the mall expands throughout the 1980s.

1982

Edmonton becomes Canada's second largest city by land area.

The City of Edmonton investigates the purchase of a gas-producing company.

1983

Edmonton hosts the World University Games.

Prime Minister Pierre Elliot Trudeau introduces the National Energy Program.

The Electrical Energy Marketing Agency (EEMA) is established.

1984

The Edmonton Oilers win a Stanley Cup.

The Edmonton Space and Science Centre opens.

Pope John Paul II visits Edmonton.

1986

Edmonton Power employees supply food hampers to 16 families during the Christmas season. The utility matches these donations.



CONCERN FOR THE ENVIRONMENT

Edmonton Power did not turn a blind eye to public concerns about the Genesee project. The Genesee Power Project Advisory Committee (GPPAC) was formed in 1981 to listen to residents' concerns and incorporate responses to those concerns in the Genesee planning process. The committee included representatives from the Genesee area, the County of Leduc, Edmonton Power, Fording Coal, and provincial government bodies.

Many residents were concerned about the strip mining operation, which was Fording Coal's responsibility. GPPAC's efforts allowed Edmonton Power and Fording Coal to develop a mining and reclamation plan that removed only 300 to 500 hectares of land from agriculture at any time. Land was returned to an equal or better condition than it was in before mining. The time between mining and reclamation was to average six years. Land not being mined was to be used as community pasture. GPPAC was also responsible for the design of a new community hall in 1983, and the creation of a recreation area on the west shore of the "lake" formed by the cooling pond.

The generating station was built to address concerns about air pollution and other environmental issues. A state-of-the-art emission monitoring system aided operators who ensured that emissions were properly controlled. Edmonton Power's response to environmental concerns demonstrated its commitment to community needs.



ARTIFACTS UNCOVERED

While assessing the Genesee project area, archeologists discovered a very large number of pre-historic sites. Approximately 50,000 Native artifacts were uncovered; these specimens ranged in age from 250 to 12,000 years. The artifacts were collected by the provincial government and preserved at St. Stephen's College on the campus of the University of Alberta.

Source: The Edmonton Journal, 1982



Following an internal review of the project schedule, commissioning dates were advanced to 1986 and 1987. By 1984 the powerhouse was complete and work on the cooling pond and switchyard had begun.

Progress was not to be made for long. In late 1984, Alberta Power, backed by TransAlta Utilities (which had been called Calgary Power until 1981), applied to the ERCB to have Genesee delayed. In December 1984, *The Edmonton Journal* reported that “the ERCB ruled in favour of the private companies over the objections of Edmonton Power and recommended the start-up dates be delayed 18 months.”

The private companies were concerned that the Genesee project’s capital costs would increase power rates for all Alberta consumers. This was possible; in 1983, Edmonton Power became part of a provincial power pool. The Electrical Energy Marketing Agency (EEMA) purchased power from Alberta’s utilities at a price that reflected production and transmission costs. The utilities then bought back the electricity. EEMA was created to ensure that all electrical consumers paid the same for their power, apart from local distribution costs.

The 18-month delay forced Edmonton Power to lay off 300 tradespeople and engineering consultants. Costs esca-

OPPOSITE TOP: *Bruce Cropley, a councillor for the County of Leduc, did the honours at a Genesee ground breaking ceremony in 1982.*

OPPOSITE MIDDLE: *Genesee under construction.*

OPPOSITE BOTTOM: *Genesee’s extensive cooling and settling ponds.*

lated, perhaps at a rate of \$7,000 per day.

When work resumed, the completion date for the first unit of Genesee was set at October 1989. Work progressed quickly. In 1987, boiler construction resumed, the chimney was constructed, the cooling pond was filled, and electrical installation had begun. As Edmonton Power’s business was to produce and distribute electricity, it was necessary to find another company to mine the coal at Genesee. A joint venture agreement was signed with Fording Coal Ltd. Fording began to produce coal in 1988.

In 1988, 500 kV transmission lines were built from the Keephills and Genesee plants to the Ellerslie substation. That substation’s switchyard was energized to 240 kV, with a possibility that it would be operated at 500 kV at a later date. Finally, by July 1989, the first Genesee unit was operating at full load. Electricity generated at Genesee was commercially available through the Alberta Interconnected System by October that same year. The project had come in well within budget. By the early 1990s, Genesee was producing more electricity than any other plant operated by Edmonton Power.

RISING COSTS AND CITY GROWTH

The cost of natural gas rose throughout the early 1980s. Power rates rose accordingly. The average monthly electricity bill increased 12 percent in April 1981.

Edmonton Power gained 4,700 new customers in the following year, when the city’s area doubled to 34,818 hectares. Despite this, 1982 was a financially difficult year for Edmonton Power

MILESTONES (continued)

1987

A tornado kills 27 people in Edmonton.

1988

Wayne Gretzky marries Janet Jones.

1988

A 230 kV direct current transmission line links Canada’s eastern and western power systems for the first time.

1989

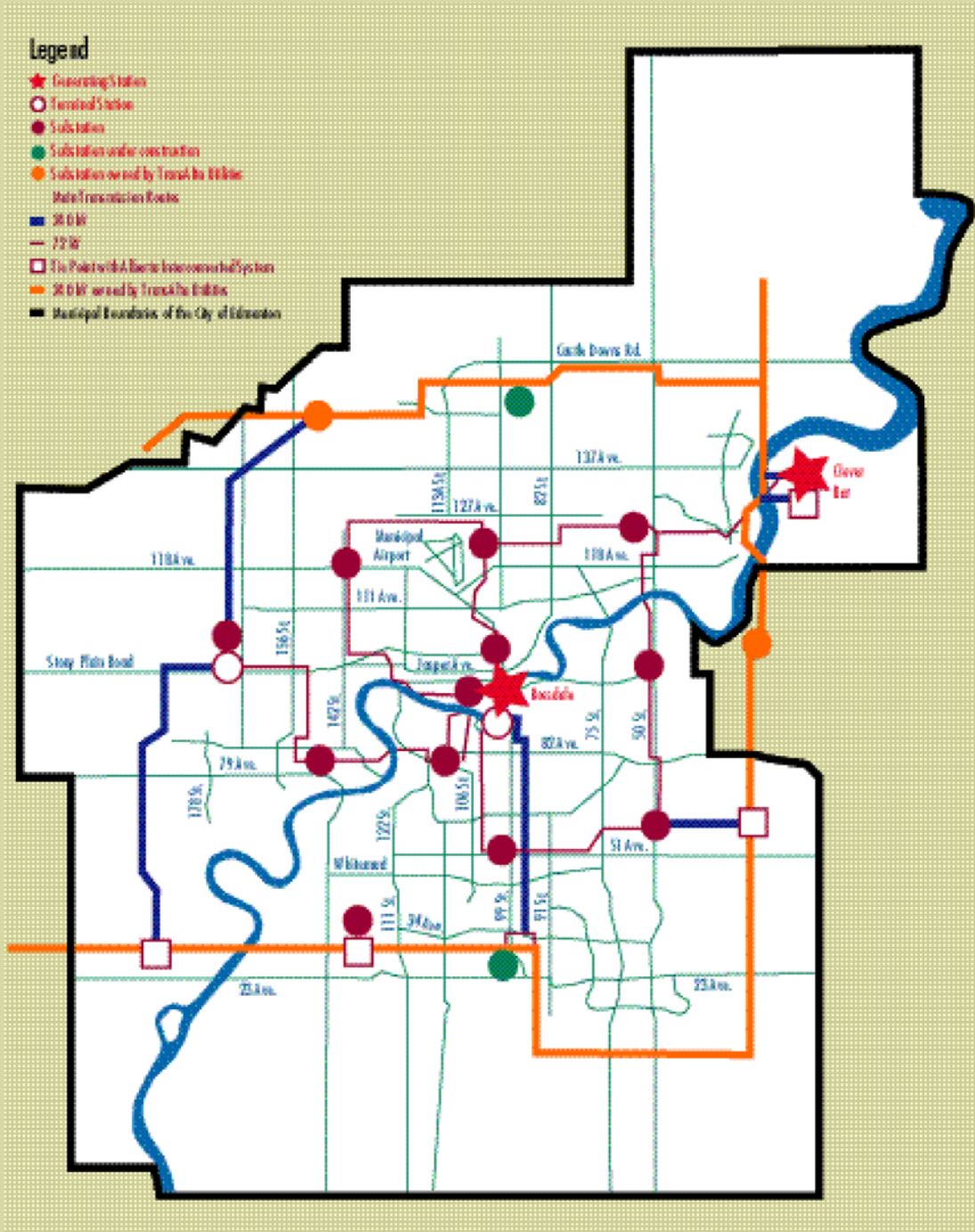
Rossdale’s Low Pressure Plant operates for the last time between August 22 and September 29.

due to a combination of poor economic growth and warm winters. Rising interest rates made financing more expensive. High gas prices continued. Thus, bills went up again in 1982, this time by 13.2 percent.

These rate increases complicated the introduction of Edmonton Power’s new logo in 1982. A bright blue turbine symbol had been adopted because it was associated with electricity, and also because it symbolized the flow of electricity outward to customers from a central point. Public concern was roused when vehicles were repainted to incorporate the new logo. It was therefore decided that vehicles would be repainted only when it was necessary for other reasons.

The rate increases also obliged the

EDMONTON POWER SERVICE AREA IN 1984



utility to cut costs in ways that did not sacrifice reliability. In 1981, a 240 kV transmission line around Edmonton was completed. The lines installed in 1981 connected the Jasper Terminal at 170 Street and 105 Avenue to the TransAlta Utilities substation in northwest Edmonton. The new lines allowed for more efficient use of the Clover Bar Generating Station, as existing 72 kV cables no longer limited the plant's output into the city. This cut costs because power from Clover Bar replaced more expensive energy from Rosssdale. This transmission line would also provide for better distribution of electricity from Genesee.

In 1985, Dome and Castle Downs 240 kV substations came into service, bringing the total number of substations to 35. Dome had fibre-optics for communications and included a new circuit breaker system. In 1987 the Jasper 15 kV substation was expanded to incorporate 15 kV SF₆ breakers.

Also in 1987, TransAlta Utilities commissioned a 500 kV tie with BC Hydro. This created an electrical link from Alberta all the way down the West Coast to California. Edmonton Power could utilize this tie to improve system stability and to exchange energy.

Edmonton Power found ways to streamline its streetlight system. By 1987, 63,000 streetlights on Edmonton city streets had been converted from older mercury vapor lamps to high-pressure sodium. Though the cost of replacing the bulbs was \$120, each new

ABOVE RIGHT: *The South Service Centre opened in 1980, bringing 200 employees closer to customers in south Edmonton.*

RIGHT: *Linemen started to wear insulated suits in the 1980s.*



ED KYTE

Born in Kentville, Nova Scotia, Ed Kyte was educated at Acadia University and the Technical University of Nova Scotia. Following his graduation, Kyte worked for Northern Telecom. There, he felt like a small cog in a big machine. So he came to Edmonton in 1967 looking for professional opportunity. He soon began working on the City of Edmonton electrical distribution system as a project engineer on substations.

Kyte thought he would work for three or four years to pay off his student loans, and then see where life took him. Marriage came in 1969, along with a promotion. He decided to stay with Edmonton Power. He made

the right choice: promotions followed until 1977, when he became the General Manager of Edmonton Power, the man in charge.

“[Being General Manager is] a challenge,” he said in an interview in 1991, “but I’ve thoroughly enjoyed it all the time.” There were numerous challenges and changes during the years that Kyte was at the helm, including the long battle over Genesee. He led his team with confidence and resolve.

Kyte is quick to praise the employees he has worked with over the years, and is appreciative of the friendship that developed among them. Ed retired in 1993.

light saved about \$29 in energy costs per year, so they would pay for themselves in less than five years. Additionally, they cast a pleasant golden glow rather than the bluish white light of the older lamps.

Computer technology greatly increased and improved in the 1980s. In 1988 the Supervisory Control and Data Acquisition System (SCADA) was put into operation, with hookups to the Alberta Interconnected System control centre. This allowed remote monitoring of transmission and distribution throughout Alberta. For the first time, operators had access to real time information on capacity availability, load demands and system status; this enabled them to better respond to customer demand and to problems in the network. It was also conducive to proactive system planning.

PCBs

Public concern was raised over 240 sealed drums of toxic polychlorinated biphenyls (PCBs) stored at the downtown substation in the summer of 1983. A voltage regulator had ruptured some months before; the recovered PCBs and PCB-soaked rags were stored in drums at the substation until disposal could be arranged. People were concerned about further spills or leaks in this heavily-populated area of the city.

Though amounts of PCBs in the gravel under the downtown substation were at levels below industry standards, the utility decided to move the barrels to a less populated area in west Edmonton. After many unsuccessful attempts to find an acceptable site, another City

LEFT: The core of a power-hungry city: downtown Edmonton in the 1980s.



A LOOK AT THE GENESEE OPERATION

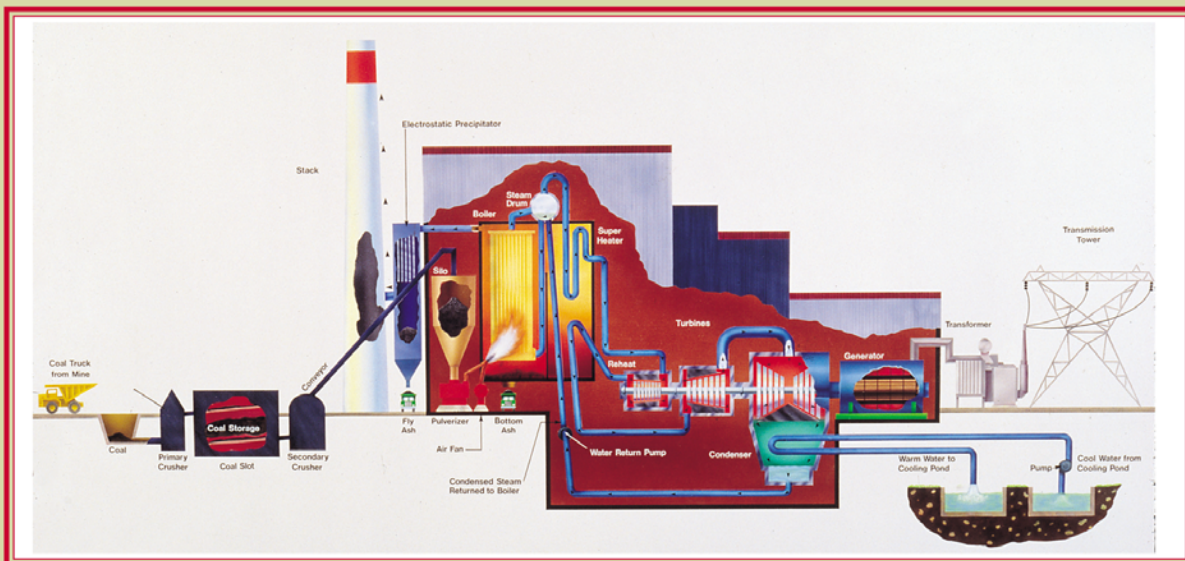
- A massive machine equipped with a 50 m³ bucket lifts coal from Genesee's mine to a stockpile on the surface. This stockpile is subsequently transferred to the plant. A 450,000-tonne reserve stockpile is also maintained to provide a 45-day emergency supply.
- Trucks transport the coal to the plant, where it is dumped into an underground compartment. From there it is conveyed to a crusher. The crushed coal is fed into pulverizers that grind the coal to the consistency of fine talcum powder. The coal is now suitable for use as boiler fuel.
- In the boiler, a combustion chamber is pre-heated using eight giant blowtorches. These torches raise the temperature until it is sufficiently high to ignite the coal dust. This creates a continuous fireball. Ash is a byproduct of the burning process. Some of the ash falls to the bottom

of the boiler where it is collected in a water-filled trough. This ash is removed for disposal in the mine. Other ash, called *fly ash*, is held by the flue gases from the boilers, and rises along with the gas. Flue gases are forced through an electrostatic precipitator, where the charged ash particles are attracted to a large grid. This ash is collected for use in cement production, or is disposed of in the mine.

Each boiler consumes 230 tonnes of coal per hour. The stack is as tall as a 40-storey building.

- In the boilers, thermal energy heats pure water within the boiler tubes. The water boils and forms steam. The steam is then at a temperature of 538°C, and at a pressure of 16.9 megapascals.
- The steam is piped to the turbine. Nozzles direct the steam onto the turbine wheel blades, causing them to rotate at 3600 RPM.

- The turbine shaft is bolted to the shaft of the generator rotor, which is a powerful electromagnet. Spinning the magnet within the stationary windings (wound wire) of the generator causes an alternating electric current to flow in these windings. The electricity produced flows out to the switchyard.
- In the switchyard, the voltage of the electricity is increased to 240 kV so it can be efficiently transmitted over long distances. The voltage is reduced by the distribution system before it is used by the consumer.
- After moving through the turbine, steam condenses to water in the condenser and is returned to the boilers. Water extracted from the cooling pond is used to condense the turbine exhaust steam.



CRITTERS BLAMED FOR POWER HICCUPS

Edmonton Power operators are going squirrely over a rash of minor power failures in the Laurier Heights area [which have been] blamed on inquisitive rodents.

Power went off three times in two- or three-block areas Monday and again Tuesday as squirrels running along power lines caused short circuits, says Edmonton Power dispatcher Ben Hesselink.

“The squirrels climb up the poles and sit on the transformers. When their tails hit a high-voltage line, they short themselves out and cause a little power bump that lasts two or three seconds.

“They fry themselves; usually you just find a little ball of fur at the bottom of the pole,” says Hesselink, who received about 25 complaints Tuesday ...

Short of trapping all the squirrels in the area, there’s little that can be done. Power failures may continue until the critters go into hibernation, he says.

[According to one resident, the power] “goes out for 20 or 30 seconds and comes back on again. You run around and re-set all your clocks and it goes out again.”

From The Edmonton Journal, 1984

department, Edmonton Telephones, provided the location.

A metal building with an impervious paved floor was built. The building sat atop a dike, which was sealed where it met the structure’s floor. Liquids stored in the building were kept in closed-top

heavy-duty barrels, which sat in seamless containment trays. The building was monitored and alarmed for fire, and was inspected weekly. Provincial and federal environmental agencies licensed the building. The public was invited to tour the \$12,000 facility upon its completion so they could see that the matter had been taken seriously and dealt with appropriately. By the decade’s end, these hazardous chemicals had all been sent to Swan Hills Hazardous Waste Disposal Plant to be incinerated.

Edmonton Power commenced a long-term response to public concern over PCBs. The Network Decontamination Program involved replacing all PCBs with another type of oil that provided insulating properties similar to those of PCBs, but did not present the same hazards. During the 1980s, Edmonton Power became known for being voluntarily proactive on environmental issues, says Dave Walker, director of systems development at EPCOR.

PUBLIC EDUCATION

In 1985, Edmonton Power employees removed 187 kites from power lines. At the same time, per-capita power consumption rates were rapidly increasing. Edmonton Power responded to these problems with public education programs.

City safety officers visited schools to demonstrate the effects of electrocution. Wires from a high-voltage (4,000 V) hazard demonstrator were attached to a wiener. The wiener burst into flames, a reaction much less dramatic than the fate a child would suffer upon contact with high-voltage lines. The students were much impressed, and swore they would never fly their kites near power

lines again!

Edmonton Power’s home economist presented many power-saving innovations to consumers, including power saver cords and vehicle block heater timers. Customers enthusiastically embraced such devices. An expanded education program included teacher seminars, materials for primary school students, presentations on energy management and appliance purchasing, and customer consultations on energy use.

THE TORNADO

Late in the afternoon of July 31, 1987, the skies over Edmonton darkened as a funnel cloud developed south of the city. Disaster struck at around 3:00 PM. The funnel cloud, with winds reaching speeds of 416 km/h, touched down in southeast Edmonton, throwing vehicles, sheet metal, and trees into the air. The tornado released its final blast of fury over the Evergreen Trailer Park. In all, 27 people died as a result of the storm. Homes, businesses, vehicles, power lines, and poles were damaged.

The impact on Edmonton Power’s infrastructure was considerable. More than one quarter of the utility’s clientele, or 73,000 customers, were without power. A 240 kV transmission line in the eastern part of the city was completely down and the surrounding area was blacked out. Trees and debris short-circuited power lines. Transformer fuses were blown. Crews replaced 155 wooden poles and straightened and reset another 83. In addition, 36 distribution transformers were destroyed, 42.5 km of wire went down, and two 240 kV transmission towers were reduced to scrap metal. There was also some damage to the Clover Bar Generating Station, but



it was insufficient to halt production. The disaster caused a total of \$2.3 million damage to Edmonton Power property.

Employees from TransAlta, Alberta Power and Edmonton Power, as well as numerous volunteers, worked together to repair the damage. The City of Calgary provided a 13-member work crew, Alberta Power sent materials, and TransAlta sent workers to get the system back into operation. In spite of the major damage, power outages lasted only between 20 minutes and 3 1/2 hours. By Saturday morning, almost all of the affected area had its power back on. Nevertheless, employees working on adrenaline and long overtime shifts continued making repairs for weeks after. Some worked shifts as long as 48 hours straight.

Like most Edmontonians, Edmonton Power employees were deeply affected by the disaster. Seeing the destruction of trees and buildings is one thing; witnessing human tragedy is quite another. The emotional impact of the disaster remains



with those who were involved to this day. Ron Donaldson has particularly vivid memories of the disaster:

I had taken my car to work that day because I was leaving right from work on holidays. I remember being in the control room and looking down at the hailstones bouncing off my Oldsmobile. I

TOP LEFT: *Rushed repairs were made to Edmonton's electrical distribution system after the tornado.*

TOP RIGHT: *Jim Williams and Ed Kyte in the field after the tornado.*

ABOVE RIGHT: *The tornado flattened transmission towers.*



heard on the radio what had happened. I couldn't get down the Yellowhead because of traffic, so I headed south where I actually met Doug McAvoy [substation director]. We couldn't move from there because of traffic and power lines, so we ended up helping the fire department and police look into vehicles that had been turned over in these parking lots. I will never forget it in my life. While we were doing that there was a county guy who was dead and they had pulled him out and covered him with a tarp. We were working but you couldn't keep your eyes off him. Soon we heard that the tornado had hit Evergreen Trailer Park. Someone came on the radio and said you would never believe it – everything is gone. He was hysterical. It looked like a war zone.

Clinton Keates, a troubleman for the utility, was touched personally by the disaster. He and three or four other employees were in the Evergreen area at the time the tornado hit. They weath-ered the storm in a bathroom in the South Service Station. When they emerged, they began to search for one trailer in particular: Clinton Keates' home. It was nowhere to be seen. Clinton, knowing that his wife would have been in the trailer when the tornado hit, was distraught. Yet nothing could be done. Employees started work on the cleanup and hoped for the best.

At about 4:00 in the morning, the Evergreen crew received a call for Clinton Keates. It was the Royal Alexandra Hospital. Clinton was nowhere to be found, so another employee went to the

TOP: *Linemen take a breather after the storm.*

LEFT: *The tornado stripped foliage from trees.*



hospital to see about Clinton’s wife. He learned that the Keates trailer had been blown half a mile before coming back down. Miraculously, Mrs. Keates had survived, though she had been badly bruised. The employee was able to track down the Keates family and Clinton himself. The family had survived the ordeal.

The dramatic events of July 31, 1987 will not be forgotten. Edmonton Power employees can take pride not only in the prompt and efficient way they restored electricity to thousands, but also in the compassion they showed to people in extreme distress.

WORKING LIFE

Edmonton Power employees started a fitness club in 1982. After having their physical status appraised, 225 workers underwent a nine-week fitness program to see if they could improve their assessment.

Despite being physically fit, utility employees had higher than normal stress symptoms according to a survey conducted in the 1980s. In response, Edmonton Power introduced the Quality of Work Life and Stress Management program in 1986. The program was initiated to help employees deal with stress in the workplace. It allowed employees to address some of the issues that created stress, and worked with management to make changes necessary to reduce stress in the workplace.

DESMOND THE DRAGON

At the 1985 Grey Cup Parade in Vancouver, a giant green dragon made its first public appearance outside of Alberta. “Desmond,” a giant lizard made of wire mesh, metal strapping, automotive

insulation, and fibreglass primer, was the brainchild of David Fraser, then director of substations and control. Fraser had believed that Desmond would be a fun volunteer activity that would build camaraderie among workers and also promote the department.

“Dave did the original artwork and was the chief design consultant on Desmond,” recalls Dave Walker. “Lots of people volunteered to work on the project. They spent about 2000 hours building Desmond.” By the time the dragon was complete, he had a tail and wings that moved up and down, and a nose that blew “smoke.” He had an eight-inch thick skin and could float on water. Using traditional Edmonton Power innovation, volunteers used an old washing machine transmission, hydraulic pistons, a 50 horsepower engine, and 24 fire extinguishers to create these impressive effects.

Between 1985 and 1998, Desmond participated in all Grey Cup parades as an ambassador for Edmonton Power and the City of Edmonton. He was transported by a crew of six to eight volunteers on a special trailer to games in Montreal, Calgary, Vancouver, Ottawa, Winnipeg, and Toronto. Desmond also appeared in the annual Sourdough Raft Race and in Yellowknife’s Canada Day parade.

The only time that the fearless dragon appeared to be in peril was on a trip home from the United States in 1992. Desmond had participated in the Shriner’s Parade in Billings, Montana. Edmonton Shriners had hoped that his presence in the parade would encourage the international organization to hold its next annual convention in Edmonton.

According to Dave Walker, American Customs stopped Desmond at the

ELECTRIC BLAST THROWS SOUTH SIDE MANHOLE COVER

A short circuit in electrical wiring under a south side intersection caused an explosion Wednesday, which threw a manhole cover into the air.

Heat created by contact between underground power cables sent flames and smoke billowing from the manhole at 99th Street and 52nd Avenue, about 4:50 PM, said Edmonton Power trouble lineman Jim McCrank.

“I was just sitting here serving customers and then there was a big explosion,” said Dylan Parry, a cashier ...

“I looked over and the manhole cover was just coming back to earth and there was a big cloud of green smoke pouring out,” he said.

Police arrived quickly but backed away when another blast of air from the manhole blew an officer’s hat off his head, Parry said.

“After that they got a little more serious about it.”

A police spokesman said a car was struck by the manhole cover, but Parry and other witnesses said the cover didn’t hit anything.

McCrank said the cause wasn’t known and added it caused only minor power interruptions.

From The Edmonton Journal, 1985

border and demanded that his crew provide proof that the dragon had not been built or purchased in the United States. “That’s when I started smoking again,” says Dave Walker ruefully. “I was that

HEY, BUDDY, DO YOU HAVE THE TIME?

In the early part of the twentieth century, electrical clocks would sometimes begin to run either too fast or too slow. But the clocks themselves weren't faulty; timepieces in perfect working order were as subject to this problem as any other. What, then, caused the problem?

Frequency instability was the culprit. Turbine generators tend to run at inconstant speeds; this causes the electricity they produce to change frequency. Thus, when a just a few generators are running in isolation, as was the case in Edmonton in the early part of the century, frequency can change considerably over time. This was remedied by maintaining the

speed of generators, which was accomplished using an accurate clock.

Later, when Edmonton was connected to Calgary Power's generation grid, frequency stability was only a concern when that connection was severed. In the 1980s, subsequent ties linked Edmonton's grid to those of BC Hydro and a number of American utilities. Thus, the clock that once kept time for Edmonton still proudly hangs in Rossdale's boardroom, but is no longer needed.

*Adapted from text prepared by
Paul Collis*

RIGHT: *This is the clock once used to maintain frequency stability in Edmonton.*



worried that we weren't going to get Desmond back to Canada." Fortunately, Walker and his crew were able to convince American Customs that Desmond was 100-percent Canadian made. Officials finally waved the giant lizard across the Canadian border towards home.

In 1998, Desmond was retired. But old dragons never die; today, Desmond is in storage, waiting for the time when dragons like him are needed once again.

Edmonton Power would face unexpected challenges in the last decade of the century. These challenges would make it necessary to fundamentally change the way the utility operated. However, the progress the utility made in the 1980s enabled it to face these new difficulties with confidence.



ABOVE: *Desmond blasts his enemies with simulated smoke.*