**IN THE MATTER OF** the *Public Utilities Act*, (the "*Act*"); and

**IN THE MATTER OF** an amended application by Newfoundland Power Inc. for approvals pursuant to ss. 41 and 71 of the *Act* (the "Application").

**TO:** The Board of Commissioners of Public Utilities (the "Board")

**THE AMENDED APPLICATION OF** Newfoundland Power Inc. (the "Applicant") **STATES THAT:**

1. The Applicant is a corporation organized and existing under the laws of the Province of Newfoundland, is a public utility within the meaning of the *Act*, and is subject to the provisions of the *Electrical Power Control Act, 1994*.

2. The Applicant proposes amendment to the Rules and Regulations which govern its provision of service under section 71 of the *Act* as outlined in Schedule A to this Application.

3. To continue to provide service and facilities which are reasonably safe and adequate and just and reasonable, all as required by section 37 of the *Act*, the Applicant proposes to make capital expenditures in 1999 as set out in Schedule B (1st Revision) to this Application and to enter a lease in 1999 as set out in Schedule C to the Application.

4. Communications with respect to this Application should be forwarded to the attention of Ian F. Kelly, Q.C. and Peter Alteen, Counsel to the Applicant.

5. **THE APPLICANT REQUESTS** that the Board make an Order:

   (a) approving revisions to the Rules and Regulations set out in Schedule A to this Application effective January 1, 1999 pursuant to s. 71 of the Act;

   (b) approving the construction or purchase of improvements or additions to its property as set out in Schedule B (1st Revision) to this Application pursuant to s. 41 (3) (a) of the Act;

   (c) approving the lease set out in Schedule C to this Application pursuant to s. 41 (3) (b) of the Act; and

(d) granting such alternate, additional, or further relief as the Board, after hearing the evidence, shall consider fit and proper in the circumstances.

**DATED** at St. John's, Newfoundland, this 12th day of November, 1998.

**NEWFOUNDLAND POWER INC.**

Ian F. Kelly, Q.C. and
Peter Alteen
Newfoundland Power Inc.
P.O. Box 8910
55 Kenmount Road
St. John's, Newfoundland
A1B 3P6

Telephone: (709) 737-5859
Telecopier: (709) 737-2974

**IN THE MATTER OF** the *Public Utilities Act*, (the "*Act*"); and

**IN THE MATTER OF** an amended application by Newfoundland Power Inc. for approvals pursuant to ss. 41 and 71 of the *Act* (the "Application").

## AFFIDAVIT

I, Karl W. Smith, of St. John's in the Province of Newfoundland, Chartered Accountant, make oath and say as follows:

1. That I am employed with Newfoundland Power Inc. as Vice-President, Finance & Chief Financial Officer.

2. To the best of my knowledge, information and belief, all matters, facts and things set out in the Application are true.

SWORN to before me at St. John's
in the Province of Newfoundland
this 12th day of November, 1998
before me:

Barrister

Karl W. Smith

## 5. SERVICE STANDARDS - METERED SERVICES: (Existing)

(b) Service shall be supplied at single phase 120/240 volts where the maximum demand is estimated by the Company to be less than 75 kW.

Service shall be supplied at one of the standard three-phase voltages where the maximum demand is estimated to be 75 kW or greater, and either the three phase connected load is greater than 15kW, or, in the opinion of the Company, the nature of the load warrants three-phase voltage. The Company may provide a three phase supply where the maximum demand is estimated to be less than 75 kW or the three phase load is less than 15 kW, if requested by the Customer, and a contribution in aid of construction is paid to the Company to cover the extra cost of transformers and equipment required to provide the three phase voltage. Such a contribution is in addition to that assessed to cover any single phase line extension required. Where the necessary equipment and transformer facilities already exist at the location in question, no contribution in aid of construction shall be required to provide the three phase voltage.

## 5. SERVICE STANDARDS - METERED SERVICES: **(Proposed)**

(b) Service shall be supplied at single phase 120/240 volts where the maximum demand is estimated by the Company to be less than 75 kW. Where the maximum demand is estimated to be 75 kW or greater, service shall normally be supplied at one of the standard three-phase voltages.

The Company may, if requested by the Customer, provide a three-phase supply where the maximum demand is estimated to be less than 75 kW, if a contribution in aid of construction is paid to the Company to cover the cost of transformers, equipment and any line extensions or upgrades required to provide three-phase service.

To determine the contribution required, the cost to provide three-phase service will be reduced by the value of any single-phase plant supported by the projected revenue from the Customer, as calculated in accordance with the Company's distribution line contribution in aid of construction policy applicable to General Service Customers. Where the necessary equipment and transformer capacity already exists at the location in question, no contribution in aid of construction will be required to provide the three-phase voltage.

7. **METERING: (Existing)**

(e) Where two of more Domestic Units are metered together, the basic Customer charge shall be multiplied by the number of Domestic units.

7. **METERING: (Proposed)**

(e) Where four or more Domestic Units are metered together, the basic Customer charge shall be multiplied by the number of Domestic units.

# Newfoundland Light & Power Co. Limited
## Capital Budget 1999
## Projects Over $50,000 (exclusive of GEC)

## DISTRIBUTION

| | $'000 |
|---|---|
| **EXTENSIONS** | 1,929 |
| **METERS** | 397 |
| **SERVICES** | |
| Install New Services | 786 |
| Replace Services | 382 |
| **STREET LIGHTING** | |
| Install New Street Lights | 466 |
| Replace Street Lights | 335 |
| **TRANSFORMERS** | 2,225 |
| **RECONSTRUCTION** | 1,312 |
| **TRUNK FEEDERS** | |
| Replace Defective Insulators | 1,081 |
| Relocation Requests By Third Parties | |
| Relocate Lines For Road Realignments | 200 |
| NewTel Communications | 315 |
| Replace Poles Due To Vehicle Accidents | 50 |
| Relocate Lines For Customers | 118 |
| Specific Regional Expenditures (>$50,000) | |
| St. John's | |
| Replace Deteriorated Conductor | 150 |
| Replace Aerial Cable - King's Bridge Road | 90 |
| Feeder Reliability Rebuilds | 300 |
| Replace Underground Switch Water Street | 83 |
| New Feeder - Civic Centre | 300 |
| New Feeder Virginia Waters | 130 |
| Avalon | |
| Reconductor Dunville 01 Feeder | 100 |
| Reconductor Old Perlican 02 Feeder | 75 |
| Reconductor Trepassey 01 Feeder | 75 |
| Reconductor Victoria 02 Feeder | 75 |
| Reconductor Riverhead 01 Feeder | 100 |
| Reconductor Blaketown 02 Feeder | 100 |
| Rebuild Bay de Verde Feeder | 384 |

**Newfoundland Power Inc.**
**Capital Budget 1999**
**Projects Over $50,000 (exclusive of GEC)**

## DISTRIBUTION

| | $'000 |
|---|---|
| Eastern | |
| Extend Feeder - Bull Arm Construction Site | 50 |
| Build New Line - Rushoon to Boat Harbour | 95 |
| Western | |
| Install Lightning Arrestors | 50 |
| Replace Walbournes Feeder Cables | 80 |
| Various Upgrade Projects Less Than $50,000 | 439 |
| **IDC ON DISTRIBUTION (PROJECTS UNDER $50,000)** | 100 |
| **TOTAL DISTRIBUTION OVER $50,000** | 12,372 |

Newfoundland Light & Power Co. Limited
Capital Budget 1999
Projects Over $50,000 (exclusive of GEC)

## ENERGY SUPPLY

| | $'000 |
|---|---|
| **MT CARMEL STORAGE** | |
| Replace Spillway Blackwoods | 100 |
| **LAMANCHE STORAGE** | |
| Replace Spillway Franks Pond Dam #3 | 51 |
| **MOBILE HYDRO PLANT** | |
| Replace Surge Tank | 1,000 |
| Turbine Pit Rehabilitation | 60 |
| **HORSE CHOPS HYDRO PLANT** | |
| Replace Surge Tank | 1,000 |
| Rehabilitate Interior of Penstock | 100 |
| **PORT UNION HYDRO PLANT** | |
| Whirl Pond Spillway | 53 |
| Second Storage Pond Dam | 60 |
| **SANDY BROOK HYDRO PLANT** | |
| Raise Level Of Sandy Lake Dam | 180 |
| **LOOKOUT BROOK HYDRO PLANT** | |
| Replace Runner & Wicket Gates Unit #3 | 217 |
| **SYSTEM CONTROL CENTER** | |
| Replace SCADA System | 1,700 |
| **HYDRO PLANTS - GENERAL** | |
| Cooling Coil Replacements | 100 |
| Hydro Plant Transformer Spill Containment | 255 |
| **ST. JOHN'S DIESEL PLANT** | |
| Replace Switchgear | 60 |
| **GREENHILL GAS TURBINE** | |
| Replace Starting Air Compressor | 50 |
| **SALT POND GAS TURBINE** | |
| Replace Lube Oil Cooler | 80 |

Newfoundland Light & Power Co. Limited
Capital Budget 1999
Projects Over $50,000 (exclusive of GEC)

## ENERGY SUPPLY

| | $'000 |
|---|---|
| **MAJOR ELECTRICAL EQUIPMENT** | |
| Major Electrical Equipment Repairs | 150 |
| **TOTAL - ENERGY SUPPLY OVER $50,000** | 5,216 |

Newfoundland Light & Power Co. Limited
Capital Budget 1999
Projects Over $50,000 (exclusive of GEC)

## GENERAL PROPERTY

| | $'000 |
|---|---|
| **TOOLS & EQUIPMENT HEAD OFFICE** | |
| Office Furniture & Equipment | 85 |
| Circuit Breaker Travel Recorders | 80 |
| Mail Room Equipment | 250 |
| Relocate UPS From Rattling Brook to Duffy | 83 |
| **TOOLS & EQUIPMENT - ST. JOHN'S** | |
| Engineering & Construction | 70 |
| **TOOLS & EQUIPMENT - AVALON** | |
| Engineering & Construction | 50 |
| **TOOLS & EQUIPMENT - BONAVISTA** | |
| Thermoscan | 65 |
| **ADDITIONS TO REAL PROPERTY** | |
| Duffy Place (convert meter shop to Computer Room) | 433 |
| Construct New Control Centre | 500 |
| Upgrade Security Systems for Company Buildings | 52 |
| **ALLOWANCE FOR UNFORESEEN ITEMS** | |
| Allowance for unforeseen items | 750 |
| **TOTAL - GENERAL PROPERTY OVER $50,000** | 2,418 |

# Newfoundland Light & Power Co. Limited
## Capital Budget 1999
## Projects Over $50,000 (exclusive of GEC)

## SUBSTATIONS

| | $'000 |
|---|---|
| **REPLACE BUS AND SWITCH INSULATORS (VARIOUS SUBSTATIONS)** | |
| Cape Broyle Substation - St. John's | 53 |
| Glendale Substation - St. John's | 75 |
| Hardwoods Substation - St. John's | 81 |
| Kenmount Substation - St. John's | 53 |
| King's Bridge Road Substation - St. John's | 57 |
| Seal Cove Substation - St. John's | 82 |
| Stamp's Lane Substation - St. John's | 91 |
| Bay Roberts Substation - Avalon | 132 |
| Carbonear Substation - Avalon | 53 |
| Harbour Grace Substation - Avalon | 72 |
| Clarenville - Bonavista | 72 |
| Gambo Substation - Gander | 115 |
| Gander Bay Substation - Gander | 51 |
| Glenwood Substation - Gander | 50 |
| Wesleyville Substation - Gander | 51 |
| Bishop Falls Substation - Grand Falls | 53 |
| Grand Bay Substation - Stephenville | 57 |
| Stephenville Crossing Substation - Stephenville | 54 |
| **REPLACE HIGH VOLTAGE BREAKERS** | |
| Goulds Substation | 80 |
| Humber Substation | 80 |
| **POWER SYSTEMS** | |
| Replace Batteries and Chargers | 70 |
| Purchase Replacement Equipment | 60 |
| **GOULDS SUBSTATION** | |
| Replace 24L & 25L Switches & Poles | 64 |
| **SALT POND SUBSTATION** | |
| Replace Radiators on Salt Pond Power Transformer | 50 |
| **ST. JOHN'S AREA** | |
| St. John's Area Transmission Relaying Improvement Program | 373 |

# Newfoundland Light & Power Co. Limited
## Capital Budget 1999
## Projects Over $50,000 (exclusive of GEC)

## SUBSTATIONS

| | $'000 |
|---|---|
| **VIRGINIA WATERS SUBSTATION** | |
| Terminate VIR-07 at Virginia Waters | 162 |
| **TOTAL - SUBSTATION OVER $50,000** | **2,191** |

Newfoundland Light & Power Co. Limited
Capital Budget 1999
Projects Over $50,000 (exclusive of GEC)

## TRANSMISSION

| | $'000 |
|---|---|
| **REPLACE PIN TYPE AND SUSPENSION INSULATORS (VARIOUS TRANSMISSION LINES)** | |
| 52L - Kelligrews to Seal Cove | 103 |
| 41L - Carbonear to Hearts Content | 68 |
| 56L - Bay Roberts to Carbonear | 70 |
| 94L - Blaketown to Riverhead | 70 |
| **17L - ST. JOHN'S** | |
| Pole, Crossarm & Insulator Replacement On 17L | 53 |
| **34L - St. JOHN'S** | |
| Relocation of 34L for the Outer Ring Road | 54 |
| **TOTAL - TRANSMISSION OVER $50,000** | 418 |

Newfoundland Light & Power Co. Limited
Capital Budget 1999
Projects Over $50,000 (exclusive of GEC)

## TELECOMMUNICATIONS

| | $'000 |
|---|---|
| **TELECOMMUNICATIONS** | |
| Fibre Optic Networking | 78 |
| Substation Telephone Circuit Protection | 201 |
| **TOTAL - TELECOMMUNICATIONS OVER $50,000** | 279 |

# Newfoundland Light & Power Co. Limited
## Capital Budget 1999
## Projects Over $50,000 (exclusive of GEC)

## TRANSPORTATION

| | $'000 |
|---|---|
| **PURCHASE OF VEHICLES - ST. JOHN'S** | |
| Derrick, Complete | 200 |
| Panel Van | 57 |
| **PURCHASE OF VEHICLES - AVALON** | |
| Light Duty Aerial Device - Re-Chassis | 105 |
| Double Bucket Material Handler - Re-Chassis | 110 |
| **PURCHASE OF VEHICLES - BURIN** | |
| Double Bucket Material Handler - Re-Chassis | 110 |
| **PURCHASE OF VEHICLES - BONAVISTA** | |
| Light Duty Aerial Device, Upgrade to Single Bucket Material Handler | 190 |
| **PURCHASE OF VEHICLES - GRAND-FALLS** | |
| Light Duty Aerial Device - Re-Chassis | 65 |
| **PURCHASE OF VEHICLES - CORNER BROOK** | |
| Derrick, Upgrade to Light Duty Aerial Device | 100 |
| **PURCHASE OF VEHICLES - STEPHENVILLE** | |
| Double Bucket Material Handler, Complete | 205 |
| Single Bucket Material Handler, Re-Chassis | 105 |
| **TOTAL - TRANSPORTATION OVER $50,000** | 1,247 |

**Newfoundland Light & Power Co. Limited**
**Capital Budget 1999**
**Projects Over $50,000 (exclusive of GEC)**

## INFORMATION SYSTEMS

| | $'000 |
|---|---|
| **COMPUTER APPLICATIONS** | |
| Customer Service System Enhancements | 544 |
| Enhancements to Internet Service | 100 |
| Upgrade Microsoft Office Suite | 565 |
| Year 2000 | 297 |
| Replacement of Facilities Management System | 99 |
| Application Software Upgrades | 420 |
| **COMPUTING INFRASTRUCTURE** | |
| Personal Computer Renewal | 1,268 |
| Network Infrastructure Upgrade | 208 |
| Shared Servers Infrastructure | 230 |
| Client Server Backup Hardware/Software | 553 |
| **TOTAL - INFORMATION SYSTEMS OVER $50,000** | 4,284 |

**Newfoundland Light & Power Co. Limited**
**Capital Budget 1999**
**Leases over $5,000**

| | Yearly | Term |
|---|---|---|
| High Speed Black & White Copier | $28,000 | 5 Years |

**Newfoundland Power Inc.**
**1998 Capital Forecast**
**($'000)**

| | Approved by Order Nos. P.U.15 (1997-98) P.U.17(1997-98) & P.U.17(1998-99) | Forecast Oct. 31, 1998 | Variance |
|---|---|---|---|
| Energy Supply | 13,121 | 13,225 | 104 |
| Substations | 2,660 | 2,720 | 60 |
| Transmission | 2,640 | 2,498 | -142 |
| Distribution | 13,402 | 13,320 | -82 |
| General Property | 2,193 | 1,420 | -773 |
| Transportation | 1,415 | 1,415 | 0 |
| Telecommunications | 1,173 | 1,009 | -164 |
| Information Systems | 3,439 | 4,110 | 671 |
| General Expenses Capital | 3,417 | 3,511 | 94 |
| | 43,460 | 43,228 | -232 |

**Newfoundland Power Inc.**
**1999 Capital Budget**
**Budget Summary**
**($'000)**

| | Substations | Transmission | Distribution | General Property | Transportation | Total |
|---|---|---|---|---|---|---|
| Head Office | 130 | - | 515 | 2,479 | - | 3,124 |
| St. John's | 1,696 | 444 | 5,889 | 78 | 532 | 8,639 |
| Avalon | 389 | 778 | 2,214 | 60 | 285 | 3,726 |
| Burin | 118 | 94 | 595 | 58 | 175 | 1,040 |
| Bonavista | 195 | 103 | 685 | 143 | 221 | 1,347 |
| Gander | 289 | 180 | 766 | 39 | 71 | 1,345 |
| Grand Falls | 75 | 136 | 682 | 45 | 159 | 1,097 |
| Corner Brook | 225 | 40 | 788 | 19 | 153 | 1,225 |
| Stephenville | 221 | 108 | 848 | 64 | 350 | 1,591 |
| | 3,338 | 1,883 | 12,982 | 2,985 | 1,946 | 23,134 |

Other:

| | |
|---|---|
| Energy Supply | 6,276 |
| Telecommunications | 453 |
| Information Systems | 4,284 |
| Capital Expenditures Before General Expenses Capital | 34,147 |
| General Expenses Capital | 2,626 |
| TOTAL CAPITAL EXPENDITURE | 36,773 |

# Exhibit JGE-3
# 1999 Capital Expenditure Budget
# Detailed Justifications of Projects over $50,000

(1st Revision)

**Exhibit JGE-3**
**1999 Capital Expenditure Budget**
**Detailed Justifications of Projects over $50,000**
**(1st Revision)**

## Table of Contents

DISTRIBUTION

# EXTENSIONS

## Project Cost

$1,929,000

## Nature of Project

Extensions cover many projects driven by customer activity, the specifics of which are unknown at the time of budgeting. Extensions consist of both primary and secondary line work associated with the day to day connection of new customers and work required as a result of existing customers increasing their electrical load.

## Customer Impact

These projects provide electrical service to new customers or increase supply capacity to existing customers.

## Project Justification

These projects are justified on the basis of customer requirements.

## Future Commitments

None.

# PURCHASE METERS

## Project Cost

$397,000

## Nature of Project

Project cost includes purchasing revenue meters for new customers as well as replacement meters for existing customers. The quantity for new customers is based on the customer forecast. The quantity for replacement purposes is determined using historical data for damaged meters and sampling results from previous years. Sampling is done in accordance with the regulations of Industry Canada.

## Customer Impact

New meters are required to provide service to new customers and to maintain service to existing customers.

## Project Justification

This project is justified on the basis of customer requirements.

## Future Commitments

None.

# SERVICES

## Project Cost

| | |
|---|---|
| New | $ 786,000 |
| Replacements | $ 382,000 |
| TOTAL | $1,168,000 |

## Nature of Project

Services cover many projects driven by customer requirements and include all costs associated with the installation of new and replacement services. The quantities of new services are calculated from the customer forecast, whereas quantities of replacement services are estimated as a percentage of existing customers and is based on historical data.

## Customer Impact

These projects provide and maintain electric service to new and existing customers.

## Project Justification

These projects are justified on the basis of customer requirements.

## Future Commitments

None.

# STREET LIGHTING

## Project Cost

| | |
|---|---|
| New | $466,000 |
| Replacements | $335,000 |
| TOTAL | $801,000 |

## Nature of Project

Street lighting covers many projects driven by customer requirements and includes all costs associated with the installation of new and replacement street lights. Quantities of new street lights are estimated as a percentage of new customers, whereas quantities of replacement street lights are estimated as a percentage of existing in-service street lights based on historical data.

## Customer Impact

These projects provide and maintain street lighting service to new and existing customers.

## Project Justification

These projects are justified on the basis of customer requirements.

## Future Commitments

None.

# TRANSFORMERS

## Project Cost

$2,225,000

## Nature of Project

This includes the cost of purchasing transformers for customer growth as well as replacement of units that are deteriorated or have failed.

## Customer Impact

These units provide and maintain service to new and existing customers.

## Project Justification

This project is justified on the basis of customer requirements.

## Future Commitments

None.

# RECONSTRUCTION

**Project Cost**

$1,312,000

**Nature of Project**

This includes the reconstruction of deteriorated or storm damaged distribution lines which have been identified through inspections and cannot be deferred to the next budget period. Reconstruction is budgeted based on historical data.

**Customer Impact**

These projects maintain or improve reliability to customers.

**Project Justification**

These projects are justified on the basis of reliability.

**Future Commitments**

None.

# TRUNK FEEDERS
# REPLACE DEFECTIVE INSULATORS

## Project Cost

$1,081,000

## Nature of Project

The Company is experiencing a high incidence of insulator failure. Insulator failure stems from a phenomenon known as "cement growth" in which cracks develop in the insulator due to the expansion of the cement compound used in insulator construction. These cracks eventually lead to structural failure of the insulator. This causes power interruptions, poses a safety hazard for personnel and increases operating costs. The Company is committed to the replacement of all two piece pin type insulators and all CP8080 suspension insulators on critical sections of the system, such as hospital feeders and multi-circuit feeders, by the year 2000.

## Customer Impact

This project improves service reliability and safety.

## Project Justification

This project is justified on the basis of reliability and safety.

## Future Commitments

None.

# TRUNK FEEDERS
# RELOCATE LINES FOR ROAD REALIGNMENTS

## Project Cost

$200,000

## Nature of Project

This project involves work that is initiated by municipal, provincial and federal governments in conjunction with road widening and road realignment. A portion of the cost of this work is recovered from the appropriate level of government.

## Customer Impact

No direct customer impact.

## Project Justification

This project is justified as a response to third party requirements.

## Future Commitments

None.

# TRUNK FEEDERS
# NEWTEL COMMUNICATIONS

## Project Cost

$315,000

## Nature of Project

This project involves capital work on the power distribution system as a result of work initiated by NewTel Communications in the course of upgrading telecommunications lines.

## Customer Impact

No direct customer impact.

## Project Justification

This project is driven by the Joint Use Agreement between Newfoundland Power and NewTel Communications. The budget amount is based on historical expenditures and planning meetings with Newtel Communications. A portion of the costs are recovered from NewTel Communications as specified in the Joint Use Agreement.

## Future Commitments

None.

# TRUNK FEEDERS
## REPLACE POLES DUE TO VEHICLE ACCIDENTS

### Project Cost

$50,000

### Nature of Project

This project involves the replacement of poles and other distribution equipment damaged as a result of vehicle accidents.

### Customer Impact

This project restores electrical service.

### Project Justification

This project is justified on the basis of restoring electrical service. Most of the costs are recovered from third parties.

### Future Commitments

None.

# TRUNK FEEDERS
## RELOCATE LINES FOR CUSTOMERS

**Project Cost**

$118,000

**Nature of Project**

This work is initiated by customer requests to have poles and anchors relocated or removed from private property. A portion of the cost of this work is recovered from the customer.

**Customer Impact**

No direct customer impact.

**Project Justification**

This project is justified on the basis of customer requirements.

**Future Commitments**

None.

# TRUNK FEEDERS - ST. JOHN'S
# REPLACE DETERIORATED CONDUCTORS

**Project Cost**

$150,000

**Nature of Project**

This project involves the replacement of deteriorated conductors on main trunk feeders throughout St. John's Region.

**Customer Impact**

This project will improve the safety and reliability of electrical service to customers.

**Project Justification**

One of the principal causes of outages in St. John's Region is the failure of deteriorated #2 ACSR (Aluminum Conductor Steel Reinforced) conductors. These failures result from corrosion and annealing which signifies that the conductors have reached the end of their useful lives.

The failure mechanism is such that the conductor breaks and falls to the ground posing a safety hazard to employees and the general public.

**Future Commitments**

None.

# TRUNK FEEDERS - ST. JOHN'S
# REPLACE AERIAL CABLE - KINGS BRIDGE ROAD (KBR-10)

## Project Cost

$90,000

## Nature of Project

This project is needed to replace the existing aerial cable from Kings Bridge Road substation to Ordinance Street.

## Customer Impact

This project will improve the reliability of service for approximately 1,500 customers in this area.

## Project Justification

The KBR-10 aerial cable has failed on two occasions within the past year resulting in power outages. A detailed inspection of the aerial cable revealed that the cable is damaged in a number of locations. More outages will result if the cable is not replaced.

## Future Commitments

None.

# TRUNK FEEDERS - ST. JOHN'S
# FEEDER RELIABILITY REBUILDS

## Project Cost

$300,000

## Nature of Project

As a major initiative to improve service reliability, the St. John's Region will perform concentrated rebuilding projects on distribution feeders.

## Customer Impact

This project improves service reliability.

## Project Justification

Newfoundland Power undertakes visual and infrared thermoscan inspections of the distribution system to identify deficiencies which may cause power outages. This budget allocation is needed to proactively correct the emergency and high priority deficiencies before power outages occur.

## Future Commitments

None.

# TRUNK FEEDERS - ST. JOHN'S
# REPLACE UNDERGROUND SWITCH - WATER STREET

## Project Cost

$83,000

## Nature of Project

This project involves the replacement of a high voltage switch located in the Water Street underground distribution system.

## Customer Impact

This project will improve the reliability of service to approximately 400 customers in the Water Street area.

## Project Justification

The high voltage switch is 30 years old and approaching the end of its useful life. The manufacturer no longer supplies replacement parts for this switch.

There are safety issues associated with certain operations of the existing switch. The switch relies on manual operation and internal arcing and deterioration of contacts may occur. New switches have technology which eliminates these safety concerns.

## Future Commitments

None. However, there are 13 underground high voltage switches in service on Water Street. The Company plans to replace all of these switches within the next few years.

# TRUNK FEEDERS - ST. JOHN'S
# NEW FEEDER - CIVIC CENTRE

## Project Cost

$300,000

## Nature of Project

This project involves the construction of a new underground distribution feeder from the St. John's Main substation to service the proposed St. John's Civic Centre.

## Customer Impact

The Company investment to service this new customer will be calculated in accordance with the Contribution in Aid of Construction policy as approved by the Board.

## Project Justification

Based on a preliminary estimate, the proposed Civic Centre will have an electrical demand of 3,500 kVA. Technical analysis has determined that existing feeders in the area have insufficient capacity to accommodate the new load.

## Future Commitments

None.

# TRUNK FEEDERS - ST. JOHN'S
## NEW FEEDER - VIRGINIA WATERS (VIR-07)

### Project Cost

$130,000

### Nature of Project

This project involves the construction of a new distribution feeder from Virginia Waters substation to Torbay Road and north along Torbay Road to the old Airport Road. The substation cost associated with this project is $162,000.

### Customer Impact

This project will improve the reliability of electrical service for customers in the area.

### Project Justification

There has been a large increase in electrical demand and consumption in this area. Developments include: CostCo, Kent Home Improvement Warehouse, Clovelly Subdivision and Loblaws. The feeder currently serving the area is approaching maximum capacity. A new feeder is required to prevent overload and to meet growing electrical demands.

### Future Commitments

None.

# TRUNK FEEDERS - AVALON
# RECONDUCTOR FEEDER - DUNVILLE (DUN-01)

## Project Cost

$100,000

## Nature of Project

This project will involve the relocation of a one kilometre section of three phase line at Big Barasway and the reconductoring of a three kilometre section from Glenn's Cove to Big Barasway.

## Customer Impact

This project will increase the reliability of service to approximately 750 customers served by DUN-01 feeder.

## Project Justification

This is a continuation of the Company's commitment to improve service reliability for customers on the Cape Shore section of the DUN-01 feeder. Previous reconductoring projects on the Cape Shore section of the DUN-01 feeder have confirmed the existence of #2 ACSR conductor deterioration caused by extreme salt contamination.

## Future Commitments

None. However, the Company plans to reconductor the remaining nine kilometres of #2 ACSR conductor on the Cape Shore section of DUN-01 feeder. This cost is estimated at $140,000 in 2000 and $140,000 in 2001.

# TRUNK FEEDERS - AVALON
# RECONDUCTOR FEEDER - OLD PERLICAN (OPL-02)

## Project Cost

$75,000

## Nature of Project

This project will involve reconductoring three kilometres of deteriorated #2 stranded primary conductor with 4/0 conductor.

## Customer Impact

This project will increase the reliability of service to customers in the area.

## Project Justification

This project will address the problem of deteriorated conductor and increase flexibility for transferring load between OPL-02 and Victoria (VIC-02) feeders. This work will improve the voltage for customers served by OPL-02 feeder.

## Future Commitments

None.

# TRUNK FEEDERS - AVALON
# RECONDUCTOR FEEDER - TREPASSEY (TRP-01)

## Project Cost

$75,000

## Nature of Project

This project will involve the reconductoring of approximately three kilometres of deteriorated #2 ACSR conductor at Biscay Bay, Cape Pine and Portugal Cove South.

## Customer Impact

This project will increase the reliability of service to customers served by TRP-01 feeder.

## Project Justification

A number of outages at Biscay Bay, Cape Pine and Portugal Cove South have been caused by deteriorated #2 ACSR conductor.

## Future Commitments

None.

# TRUNK FEEDERS - AVALON
# RECONDUCTOR FEEDER - VICTORIA (VIC-02)

## Project Cost

$75,000

## Nature of Project

This project will involve reconductoring and upgrading approximately five kilometres of the distribution system in Salmon Cove, Cape Horn, Perry's Cove and the tap to the lighthouse at Bradley's Cove, Western Bay.

## Customer Impact

This project will increase the reliability of service to customers served by VIC-02 feeder.

## Project Justification

The existing line in the Salmon Cove area and the line to the lighthouse at Bradley's Cove are deteriorated and need rebuilding.

## Future Commitments

None.

## TRUNK FEEDERS - AVALON
## RECONDUCTOR FEEDER - RIVERHEAD (RVH-01)

### Project Cost

$100,000

### Nature of Project

This project will involve the reconductoring of approximately five kilometres of deteriorated #2 ACSR conductor at St. Vincent's, St. Stephen's, Peter's River, Gaskiers and Point La Haye.

### Customer Impact

This project will increase the reliability of service to customers served by RVH-01 feeder.

### Project Justification

A number of outages on RVH-01 feeder have been caused by deteriorated #2 ACSR conductor.

### Future Commitments

None.

# TRUNK FEEDERS - AVALON
# RECONDUCTOR FEEDER - BLAKETOWN (BLK-02)

## Project Cost

$100,000

## Nature of Project

This project will involve the reconductoring and replacement of defective insulators and deteriorated poles and general upgrading of approximately five kilometres of the BLK-02 feeder.

## Customer Impact

This project will improve service reliability to the 1,400 customers served in the Whitbourne, Ocean Pond, Brigus Junction, Markland, Colinet, North Harbour, Haricot, Mount Carmel and St. Catherine's areas.

## Project Justification

A number of outages in the area have been caused by the deteriorated condition of the conductor, poles and insulators.

## Future Commitments

None.

# TRUNK FEEDERS - AVALON
# REBUILD BAY DE VERDE FEEDER - OLD PERLICAN (OPL-01)

## Project Cost

$384,000

## Nature of Project

This project involves rebuilding 6 kilometres of 12.5 kV distribution line.

## Customer Impact

This project will increase the reliability of service to customers in the Bay de Verde, Grates Cove and Red Head Cove area.

## Project Justification

This section of line is in an exposed area that is frequently hit by wind and sleet storms. This is reflected in the very poor reliability statistics for this feeder. Not accounting for system or transmission line outages, in the past three years this feeder has averaged seven outages per year with an average duration of two hours and 10 minutes per outage. The experience with sleet storms in this area indicates that the line should be redesigned using higher wind and ice loading criteria.

## Future Commitments

None. However, a second phase of the rebuild is planned for 2000 at an additional cost of $300,000.

# TRUNK FEEDERS - EASTERN
## EXTEND FEEDER - BULL ARM CONSTRUCTION SITE

**Project Cost**

$50,000

**Nature of Project**

This project involves the construction of additional facilities as required by the Terra Nova Offshore Project at the Bull Arm construction site.

**Customer Impact**

Provision of temporary power for construction at various locations during on-site fabrication. The Company will recover costs in accordance with the Regulations governing temporary service.

**Project Justification**

This project is justified on the basis of customer requirements.

**Future Commitments**

None.

## TRUNK FEEDERS - EASTERN
## NEW LINE - RUSHOON TO BOAT HARBOUR

### Project Cost

$95,000

### Nature of Project

Build a new 4/0 Aluminum Alloy Steel Core (AASC) line on poles installed by NewTel Communications along the Burin Highway between the Rushoon and Boat Harbour intersections.

### Customer Impact

This project will increase the reliability of service to the 1,250 customers on the Bay L'Argent BLA-01 feeder.

### Project Justification

The existing line is the original Rural Electrification Area line built in the mid-1960s. This line has spans in excess of 100 metres and is located away from the existing highway, making it very difficult to maintain. The #2 ACSR conductor is deteriorated and damaged in mid-span due to the conductors slapping. A number of extended outages have occurred as a result of conductor and pole breakage.

### Future Commitments

None. This section will be used immediately. However, to obtain maximum benefits, $40,000 will be spent in 2000 to complete the section of line from the Bay L'Argent substation to the Rushoon intersection.

# TRUNK FEEDERS - WESTERN
# INSTALL LIGHTNING ARRESTORS

## Project Cost

$50,000

## Nature of Project

This project will involve the installation of lightning arrestors on distribution transformers. This is the final phase of a multi-year corporate plan initiated in 1995 to improve reliability to our customers by reducing lightning damage.

## Customer Impact

This project will increase reliability of service to the approximately 1,600 customers served by Springdale (SPR-01 and SPR-02) feeders.

## Project Justification

The 1995 report, *A Study into the Feasibility of Installing Surge Arrestors on the Newfoundland Power Distribution System*, identified that the Grand Falls area experienced an above average frequency of lightning.

## Future Commitments

None.

# TRUNK FEEDERS - WESTERN
# REPLACE WALBOURNES 4/0 FEEDER CABLES

## Project Cost

$80,000

## Nature of Project

This project will involve replacing the 4/0 PILC direct buried cables with 750 MCM Cross Link Polyethylene (XLPE) cables on WAL-04 and WAL-05 feeders at the Walbournes substation.

## Customer Impact

This project will increase the reliability of service to approximately 5,000 customers who are serviced from Walbournes substation. It will also enhance the capability of providing backup to the Humber substation's 12.5 kV feeders (500 customers) and to Bayview Substation (2,800 customers).

## Project Justification

WAL-04 and WAL-05 feeders are exceeding their continuous winter ampacity and cannot reliably carry winter loads. This also limits the capability of Walbournes' feeders to be used as backup for other feeders for maintenance and trouble situations. New 750 MCM cables have a continuous winter ampacity of 624 amps and will allow the flexibility needed for load growth, cold load pick up and load transfers.

## Future Commitments

None.

# TRUNK FEEDERS
## VARIOUS UPGRADE PROJECTS (<$50K)

### Project Cost

$439,000

### Nature of Project

This project is comprised of planned projects, each costing less than $50,000, that are grouped together for budgeting purposes. These projects are identified through routine inspections and are not of an emergency nature. However, if left unresolved a degradation of service could result. Typical projects include the replacement of crossarms, secondary conductors and poles.

### Customer Impact

This project improves service reliability.

### Project Justification

This project is justified on the basis of reliability.

### Future Commitments

None.

# INTEREST DURING CONSTRUCTION

## Project Cost

$100,000

## Nature of Project

This is an estimate of the interest during construction that will be charged on distribution work orders with an estimated expenditure of less than $50,000 and a construction period in excess of three months. This calculation is based on an estimated monthly average of total distribution work in progress of $1 million. The interest rate which is applied each month is dependent on the source of funds to finance the capital expenditure and is calculated in accordance with Order No. P.U. 37 (1981).

## Customer Impact

No direct customer impact.

## Project Justification

These costs are justified on the same basis as the distribution work orders to which they are charged.

## Future Commitments

None.

# ENERGY SUPPLY

# MOUNT CARMEL STORAGE
# REPLACE BLACKWOODS POND SPILLWAY

**Project Cost**

$100,000

**Nature of Project**

Rehabilitation of the spillway at Blackwoods Pond/Northwest River Diversion will be performed to maintain the integrity of this water containment system.

**Customer Impact**

This project will ensure the lowest possible power rate to customers by maintaining existing hydro generation and avoiding the expense of purchased power.

**Project Justification**

Inspections of the Mount Carmel storage system indicate that the spillway is deteriorated and in need of repair. The Blackwoods Pond/Northwest River Diversion accounts for approximately 10 per cent of the combined inflows for both the Horsechops and Cape Broyle hydro developments. This storage area provides approximately eight GWh of combined production from these two plants.

The replacement cost of purchased power for the total production of eight GWh per annum would be approximately $365,000 per year.

**Future Commitments**

None.

# LAMANCHE STORAGE
# REPLACE SPILLWAY FRANKS POND DAM #3

## Project Cost

$51,000

## Nature of Project

Rehabilitation of the emergency spillway at Franks Pond is needed in order to maintain usage of the Franks Pond drainage area.

## Customer Impact

This project will ensure the lowest possible power rate to customers by maintaining existing hydro generation and avoiding the expense of purchased power.

## Project Justification

The spillway at Franks Pond has deteriorated and is in need of repair. The Franks Pond drainage area, which is approximately 60 square kilometres, accounts for approximately 35 per cent of the inflows into the Rocky Pond system and thus contributes 4.9 GWh of production to this plant. This drainage area also provides water to the Tors Cove hydro development and accounts for approximately 29 per cent or 7.6 GWh of production. The rehabilitation of the emergency spillway at Franks Pond Dam is required to maintain this water supply and associated energy production.

The replacement energy cost of 12.5 GWh per annum would be approximately $570,000 per year if Franks Pond drainage area was not available.

## Future Commitments

None.

# MOBILE HYDRO PLANT
# REPLACE SURGE TANK

## Project Cost

$1,000,000

## Nature of Project

An inspection of the Mobile surge tank was performed in July 1998. The inspection report recommended that major repairs and replacement of the structure was warranted within a year due to heavy corrosion and deterioration of structural steel members.

## Customer Impact

This project will ensure the continued safe operation of the Mobile hydro plant. If this project is not undertaken, the risk to property, employee safety and the environment is greater due to the possibility of failure. Tank failure would cause a shutdown of the facility and result in the energy being replaced by more expensive purchased power.

## Project Justification

This project is being carried out on the recommendation of an independent engineering consultant following a structural inspection of the Mobile surge tank. The project will ensure the safe operation of the plant and prevent the possibility of a temporary shutdown.

## Future Commitments

None.

# MOBILE HYDRO PLANT
# TURBINE PIT REHABILITATION

## Project Cost

$60,000

## Nature of Project

The concrete foundation for the Mobile turbine has deteriorated to the point that the turbine's mounting bolts are no longer rigidly set in the concrete. As a result, vibration in the turbine assembly cannot be properly attenuated in the foundation. This is causing damage to the turbine bearings and seal clearances. Replacement of the concrete in the pit would be a very difficult and expensive procedure. Instead, a turbine pit rehabilitation will be attempted using structural steel sections. These will be designed to form a frame that will increase support to the turbine while reducing the forces on the concrete. The concrete will also be strengthened through grouting.

## Customer Impact

This project will ensure the continued operation of the Mobile hydro plant. This project will preserve the lowest possible power rate to customers by maintaining existing hydro generation and avoiding the expense of purchased power.

## Project Justification

The life expectancy of the turbine runner, bearings and seals will be extended through this project. The alternative to making this improvement would be to leave the unit as is until the foundation has deteriorated to the point where the unit fails. A permanent shutdown of this facility would result in the hydraulic energy being replaced by more expensive purchased power.

## Future Commitments

None.

# HORSECHOPS HYDRO PLANT
# REPLACE SURGE TANK

## Project Cost

$1,000,000

## Nature of Project

An inspection of the Horse Chops surge tank was performed in June 1998 in response to reports of vibration of structural members. The report recommended that major repairs and replacement of the structure were warranted within five years due to heavy corrosion and deterioration of structural steel members.

## Customer Impact

Replacement of this surge tank is required to ensure the safe operation of this plant. If this project is not undertaken the risk to property, employee safety and the environment is greater due to the possibility of failure. Tank failure would cause a shutdown of the facility and result in the energy being replaced by more expensive purchased power.

## Project Justification

This project is being carried out on the recommendation of an independent engineering consultant following a structural inspection of the Horse Chops surge tank. This project will ensure the safe operation of the plant and prevent the possibility of a temporary shutdown.

## Future Commitments

None.

# HORSECHOPS HYDRO PLANT
# REHABILITATE INTERIOR OF PENSTOCK

**Project Cost**

$100,000

**Nature of Project**

A section of the Horse Chops penstock is in poor condition. This project will preserve the competency of the section of penstock by placing 600 metres of an internal marine plywood liner. The liner will provide a seal for the water and provide structural reinforcement for the deteriorated staves. The bands are in good condition and the new system will allow for safe operation.

**Customer Impact**

This project will ensure the lowest possible power rate to customers by maintaining existing hydro generation and avoiding the expense of purchased power.

**Project Justification**

The life expectancy of the penstock will be extended by more than five years through this rehabilitation project. The alternative to making this significant improvement would be to replace the penstock at an additional cost of approximately $3 million. Also, severe damage could cause a temporary shutdown of the facility resulting in the hydraulic energy being replaced by more expensive purchased power.

**Future Commitments**

None.

# PORT UNION HYDRO PLANT
# WHIRL POND SPILLWAY

## Project Cost

$53,000

## Nature of Project

This project involves the rehabilitation of the concrete spillway at Whirl Pond to improve the integrity of the structure.

## Customer Impact

This project will ensure the lowest possible power rate to customers by maintaining existing hydro generation and avoiding the expense of purchased power.

## Project Justification

Inspections indicate that the spillway at Whirl Pond is severely deteriorated with numerous leaks under the foundation and structural cracks in the concrete. Rehabilitation is required to improve the integrity of the structure.

## Future Commitments

None.

# PORT UNION HYDRO PLANT
# SECOND STORAGE POND DAM

## Project Cost

$60,000

## Nature of Project

This project involves the rehabilitation of the sluice gate on the Second Storage Pond Dam.

## Customer Impact

This project will ensure the lowest possible power rate to customers by maintaining existing hydro generation and avoiding the expense of purchased power.

## Project Justification

Inspections indicate that the sluice gate on the Second Storage Pond Dam requires rehabilitation in order to continue the use of this storage reservoir.

## Future Commitments

None.

# SANDY BROOK HYDRO PLANT
# RAISE LEVEL OF SANDY LAKE DAM

## Project Cost

$180,000

## Nature of Project

The height of the Sandy Lake Dam will be raised by one metre in order to increase the volume of storage available in the Sandy Brook Hydro Development.

## Customer Impact

This project will ensure the lowest possible power rate to customers by maintaining existing hydro generation and avoiding the expense of purchased power

## Project Justification

The height adjustment to the Sandy Lake Dam will result in an increase in production of approximately 800 MWh per year by retaining more water. This will reduce the significant amount of water spilled from the system at Sandy Lake each year. This extra 800 MWh of generation will displace approximately $36,000 per year in purchased energy costs. The present value of this displaced purchased power is approximately $414,000 over 20 years at an after tax discount rate of 6.44 per cent.

## Future Commitments

None.

# LOOKOUT BROOK HYDRO PLANT
## REPLACE RUNNER & WICKET GATES UNIT # 3

**Project Cost**

$217,000

**Nature of Project**

This project involves replacing existing 1957 vintage turbine runner. The existing runner and wicket gates are deteriorated resulting in a loss of efficiency. The last inspection revealed that the runner hub is cracked compromising the structural integrity of the equipment. Older equipment is also causing operating difficulty.

**Customer Impact**

This project will ensure the lowest possible power rate to customers by maintaining and enhancing existing hydro generation and avoiding the expense of purchased power.

**Project Justification**

This project is required to maintain the continued operation of the facility. The capital expenditure for the initial phase of this project was approved as part of the Company's 1998 capital budget.

**Future Commitment**

None.

# SYSTEM CONTROL CENTRE
# REPLACE THE SCADA SYSTEM

## Project Cost

| | |
|---|---|
| SCADA | $ 1,700,000 |
| Building | $ 500,000 |
| TOTAL | $ 2,200,000 |

## Nature of Project

The existing Supervisory Control and Data Acquisition (SCADA) system will be replaced, complete with telecommunications facilities and an interruptible power supply, in a new System Control Centre building. The new SCADA will be a modern system capable of providing enhancements such as monitoring and controlling of individual distribution lines.

## Customer Impact

This project will improve system reliability by reducing the frequency and duration of power interruptions, and enhance worker and public safety.

## Project Justification

The current SCADA system was designed in the 1970s and was installed at Newfoundland Power's System Control Centre in the early 1980s. The existing SCADA system has undergone two major system upgrades in its 15 year life. A further upgrade would be required to ensure Year 2000 compliance. Maintenance of the existing computer hardware has become increasingly difficult with individual components becoming obsolete. The remote terminal units (RTUs) associated with this system are no longer manufactured.

The existing SCADA system is limited in functionality. After 1998, it will not be possible to add any further control points to the system as it will have reached its capacity. The current system restricts Newfoundland Power from monitoring and controlling individual distribution lines.

## SYSTEM CONTROL CENTRE
## REPLACE THE SCADA SYSTEM (Cont'd)

It is Newfoundland Power's intent to make further advances in distribution automation so as to increase the efficient use of personnel and other resources, and to enhance system reliability. This system will enable the Company to remotely monitor and control its entire electrical system, both transmission and distribution lines, from a centralized control centre.

The new system will permit the range of control to be extended from the substation to the actual feeder. With the expenditures planned for 2000, the SCADA operator will be able to operate switches located on the individual feeders, thereby reducing personnel resources required at remote sites.

The existing System Control Centre building is 35 years old, is of timber construction, and does not provide a level of security appropriate to its critical function.

### Future Commitments

A further $1,278,000 is scheduled to be spent in 2000 to upgrade remote terminal units in substations and to add other equipment necessary to extend the range of control to the distribution feeders.

# HYDRO PLANTS GENERAL
# COOLING COIL REPLACEMENTS

## Project Cost

$100,000

## Nature of Project

This project involves replacing existing bearing cooling coils with new units utilizing better designs and materials, installation of oil level monitoring devices and automatic cooling water shut-off valves.

## Customer Impact

This project will ensure the lowest possible power rate to customers by maintaining existing hydro generation and avoiding the expense of purchased power.

## Project Justification

Newfoundland Power hydroelectric stations are of a vintage that bearing cooling coil failures are becoming more frequent. These failures have caused unscheduled outages and higher maintenance costs. This project will allow the continued operation of our hydro generating units and reduce the risk of oil spills into the environment.

## Future Commitments

None.

# HYDRO PLANTS GENERAL
# HYDRO PLANT TRANSFORMER SPILL CONTAINMENT

**Project Cost**

$255,000

**Nature of Project**

This project involves installing spill containment systems around oil filled power transformers associated with hydro generation facilities. This will be a two stage project with spill containment systems being installed around 15 transformers in 1999 and the remaining 15 transformers in 2000.

**Customer Impact**

This project will reduce the risk of oil spills at power plants which could result in environmental damage and expensive cleanup costs.

**Project Justification**

All hydro generation facilities have oil filled power transformers to step up the voltage to transmission levels. A rupture of the transformer could result in oil being spilled into waterbodies adjacent to the site. The environmental impact and cleanup costs from a spill are significant. Spill containment will reduce the risk of such an occurrence.

**Future Commitments**

None.

# ST. JOHN'S DIESEL PLANT
# REPLACE SWITCHGEAR

**Project Cost**

$60,000

**Nature of Project**

This project involves replacing the 15kV indoor switchgear (vintage 1950) at St. John's diesel plant.

**Customer Impact**

This unit is used for emergency backup purposes for the St. John's area. Replacing the indoor switchgear will ensure the safe operation of the St. John's diesel plant.

**Project Justification**

The existing plant switchgear has deteriorated and is at its maximum MVA fault clearing capacity. Replacement of the unreliable equipment will ensure continued safe operation of the plant.

**Future Commitments**

None.

# GREENHILL GAS TURBINE PLANT
# REPLACE STARTING AIR COMPRESSOR

## Project Cost

$50,000

## Nature of Project

The existing air compressor which supplies the starting air receiver at the Greenhill gas turbine will be replaced with a unit more suitably sized to meet the requirements for starting the gas turbine.

## Customer Impact

This project will ensure the starting reliability of the Greenhill gas turbine will be enhanced.

## Project Justification

The existing air compressor unit cannot keep up with the system requirements. The air compressor operates continuously when the air dryer is in operation. The installation of the new air compressor will increase the reliability of starts on the Greenhill gas turbine.

## Future Commitments

None.

# SALT POND GAS TURBINE PLANT
# REPLACE LUBE OIL COOLER

**Project Cost**

$80,000

**Nature of Project**

This project involves the replacement of the lube oil cooler at the Salt Pond generating plant.

**Customer Impact**

The replacement of the lube oil cooler will help maintain the security and reliability of the electrical system.. The Salt Pond gas turbine provides both system peaking capacity and backup supply for the Burin Peninsula.

**Project Justification**

The existing lube oil cooler (vintage 1968) has deteriorated and requires replacement.

**Future Commitments**

None.

# MAJOR ELECTRICAL EQUIPMENT
# MAJOR ELECTRICAL EQUIPMENT REPAIRS

**Project Cost**

$150,000

**Nature of Project**

This project is a budget allocation to cover the cost of major equipment replacement or rehabilitation jobs.

**Customer Impact**

The project provides the ability to replace failed equipment to allow for continuity of service.

**Project Justification**

Past experience has indicated that unforeseen equipment failures will be experienced. Types of items covered by this budget item in the past include generator rewinding and power transformer rehabilitation.

**Future Commitments**

None.

# GENERAL PROPERTY

# TOOLS AND EQUIPMENT - HEAD OFFICE
## OFFICE FURNITURE & EQUIPMENT

**Project Cost**

$85,000

**Nature of Project**

This project includes the replacement of broken and deteriorated furniture and office equipment, as well as the acquisition of additional filing and storage equipment.

**Customer Impact**

This project has no direct customer impact.

**Project Justification**

This project will help maintain a safe and productive work environment.

**Future Commitments**

None.

# TOOLS & EQUIPMENT - HEAD OFFICE
# CIRCUIT BREAKER TRAVEL RECORDER

## Project Cost

$80,000

## Nature of Project

This project involves the purchase of two circuit breaker travel recorders. One will be used in the Transformer Shop and the other in Eastern Region.

## Customer Impact

This project will increase reliability by detecting faulty equipment.

## Project Justification

These units are required to test the integrity and operating performance of high voltage circuit breakers.

## Future Commitments

None.

# TOOLS & EQUIPMENT - HEAD OFFICE
## MAILROOM EQUIPMENT

**Project Cost**

$250,000

**Nature of Project**

This project involves the purchase of a new mail inserter.

**Customer Impact**

This project will increase the efficiency of the mailroom operation.

**Project Justification**

The existing inserter is seven years old and has processed over 19 million pieces of mail. During 1997, there were 57 service calls for the machine with an average down time of one to two hours per call. A couple of these service calls resulted in the machine being down for at least one day. Year to date, there have been 28 calls with an average down time of one to two hours per call. Six of these service calls were about the turntable which is one of the more mechanical parts of the existing inserter. The design of new inserters does not require a turntable.

The new inserter will increase functionality to allow for:
- processing 8.5 by 11 inch documents (mailing bills with eight or more sheets);
- collating and inserting up to seven sheets (versus three sheets currently);
- accepting more sophisticated bar codes;
- folding prior to collating to improve the perforation of the bill (improvement for cash control); and
- an in-line folder feeder allowing inserts to be folded.

In addition the machine would improve operations since it has:
- better error detection in jams and stoppages;
- increased reliability due to fewer moving parts; and
- less noise and vibration.

**Future Commitments**

None.

# TOOLS & EQUIPMENT - HEAD OFFICE
# RELOCATE UNINTERRUPTABLE POWER SUPPLY (UPS) FROM RATTLING BROOK TO DUFFY

**Project Cost**

$83,000

**Nature of Project**

This project involves the transfer of an industrial UPS system from the decommissioned Rattling Brook control centre to the Duffy Place office building.

**Customer Impact**

The UPS system will provide battery backup and surge protection to the computers and telephone system in the Customer Service Department. In the event of a power outage, customers will still be serviced. This impacts all customers.

**Project Justification**

Currently there is no online UPS system serving the customer service computers and telephone system at Duffy Place. If there is even a short power outage all personal computer sessions will be disrupted and customer telephone calls will be dropped. Without battery backup all communication services would be interrupted and equipment recovery time would be in the order of minutes once the existing standby power supply started. There would be significant customer service impact since all customer transactions and partly completed inquires would be lost and have to be restarted.

**Future Commitments**

None.

# TOOLS AND EQUIPMENT - ST. JOHN'S ENGINEERING & CONSTRUCTION

**Project Cost**

$70,000

**Nature of Project**

This project involves the purchase of line tools, power quality monitoring equipment, load monitoring equipment and test instruments.

**Customer Impact**

This project enables our employees to better serve the needs of our customers.

**Project Justification**

These tools are required for day to day operations.

**Future Commitments**

None.

# TOOLS AND EQUIPMENT - AVALON ENGINEERING & CONSTRUCTION

**Project Cost**

$50,000

**Nature of Project**

This project involves the purchase of line tools, power quality monitoring equipment, load monitoring equipment and test instruments.

**Customer Impact**

This project enables our employees to better serve the needs of our customers.

**Project Justification**

These tools are required for day to day operations.

**Future Commitments**

None.

# TOOLS & EQUIPMENT - BONAVISTA
# INFRARED THERMAL IMAGING UNIT (THERMOSCAN)

**Project Cost**

$65,000

**Nature of Project**

This project involves the purchase of a Thermoscan unit for use in the Bonavista, Gander and Grand Falls areas.

**Customer Impact**

This project will assist in maintaining the reliability and security of the power system.

**Project Justification**

Thermoscan technology allows crews to identify and eliminate potential outage causing problems on the electrical system. With only two thermoscanning units from Clarenville to Port Aux Basques, the units are in very high demand and are not always available when required. An additional unit will allow the Company to thermoscan more of the electrical system each year, and to identify and eliminate problems before they cause outages.

**Future Commitments**

None.

# ADDITIONS TO REAL PROPERTY
# DUFFY PLACE COMPUTER FACILITY

## Project Cost

$ 433,000

## Nature of Project

This project will involve the refurbishing of existing space to accommodate a computer room/backup computing facility at the Company's Duffy Place building. It will involve the design and modification of a room to house the facility, along with the acquisition and installation of dedicated components including power conditioning equipment, an air conditioning system, a fire suppression system and a security system.

## Customer Impact

The Company's ability to provide high quality customer service and to minimize costs is dependent on the continued availability of its key systems. This facility will allow for the continued operation of key information systems in the provision of customer service.

## Project Justification

The need to invest in a fully functional computing facility for the Duffy Place location is driven by the Company's increased use of information technology in its day to day operations and the migration of the key information systems to a client/server environment.

This facility will eliminate the possibility of downtime at the Company's customer call centre resulting from problems on the data link between the Duffy Place and Kenmount Road buildings, thereby enhancing customer communications. The facility will also provide backup computing capability in the event that problems are experienced with the Kenmount Road computer facility.

## Future Commitments

None.

# ADDITIONS TO REAL PROPERTY
# CONSTRUCT NEW CONTROL CENTRE

**Project Cost**

$500,000

**Nature of Project**

This project involves construction of a new Systems Control Centre building to house the new SCADA system.

**Customer Impact**

Please see Exhibit JGE-3, page 41 and 42.

**Project Justification**

Please see Exhibit JGE-3, page 41 and 42.

**Future Commitments**

None.

# ADDITIONS TO REAL PROPERTY
# SECURITY ACCESS SYSTEM

**Project Cost**

$52,000

**Nature of Project**

This project will involve the installation of an approved security access system for the Company's buildings in St. John's.

**Customer Impact**

There is no direct customer impact associated with this project.

**Project Justification**

The Company needs to upgrade building security to ensure employee safety and to avoid losses due to theft or vandalism.

**Future Commitments**

None.

# ALLOWANCE FOR UNFORESEEN ITEMS

**Project Cost**

$750,000

**Nature of Project**

This item is required to cover any unforeseen capital expenditures which have not been budgeted elsewhere. Examples of such expenditures are the replacement of facilities and equipment due to major storm damages or equipment failure.

**Customer Impact**

This project provides funds for service restoration.

**Project Justification**

Projects for which these funds are intended are justified on the basis of reliability or the need to replace deteriorated or damaged equipment immediately.

**Future Commitment**

None.

# SUBSTATIONS

# REPLACE BUS & SWITCH INSULATORS (VARIOUS SUBSTATIONS)

## Project Cost

| | | | |
|---|---|---|---|
| Cape Broyle | $ 53,000 | Harbour Grace | $ 72,000 |
| Glendale | 75,000 | Clarenville | 72,000 |
| Hardwoods | 81,000 | Gambo | 115,000 |
| Kenmount | 53,000 | Gander Bay | 51,000 |
| King's Bridge | 57,000 | Glenwood | 50,000 |
| Seal Cove | 82,000 | Wesleyville | 51,000 |
| Stamp's Lane | 91,000 | Bishop's Falls | 53,000 |
| Bay Roberts | 132,000 | Grand Bay | 57,000 |
| Carbonear | 53,000 | Stephenville Crossing | 54,000 |

TOTAL $1,252,000

## Nature of Project

These projects involve replacement of all cap and pin insulators as well as transmission and distribution suspension insulators in substations. These insulators are prone to failure due to manufacturing defects. These replacements are part of an ongoing program. There are 18 similar projects in the 1999 budget valued at less than $50,000 each. The total cost of these 18 projects is $420,600. The total 1999 substation budget for the insulator replacement program is approximately $1,672,600. Initiated in 1997, this program covers all substations and is scheduled for completion in 2000. The forecast expenditure for 2000 is $981,600.

## Customer Impact

These projects contribute to improvements in reliability and continuity of customer service.

## Project Justification

These projects are justified on the basis of replacement of defective equipment, reliability and safety.

## Future commitments

None.

# REPLACE High Voltage BREAKERS

## Project Cost

| | |
|---|---|
| Goulds Substation | $80,000 |
| Humber Substation | 80,000 |

## Nature of Project

This project involves the replacement of a 1935 and a 1955 vintage high voltage breaker.

## Customer Impact

This project will improve the reliability and continuity of electrical supply.

## Project Justification

This project is justified as the extended age of the equipment makes it prone to failure. The replacement of damaged parts is becoming increasingly difficult and are expensive to obtain.

## Future Commitments

None.

# POWER SYSTEMS
# REPLACE BATTERIES & CHARGERS

## Project Cost

$70,000

## Nature of Project

This project involves the replacement of battery banks and chargers. The Company has over 100 battery banks and chargers in substations and hydro stations. Each year a number of these require replacement. These units have reached the end of their useful life due to age or loss of capacity. Loss of capacity is confirmed through a battery load test.

## Customer Impact

This project will help to maintain the reliability and security of the power system by providing power to protective and emergency circuits.

## Project Justification

The cost of this project is justified based of the need to replace deteriorated equipment and resulting reliability and security of supply benefits.

## Future Commitments

None.

# POWER SYSTEMS
## PURCHASE REPLACEMENT EQUIPMENT

**Project Cost**

$60,000

**Nature of Project**

This project involves replacement of failed substation equipment, such as high voltage switches, current and potential transformers.

**Customer Impact**

This project will help to maintain the reliability and security of the power system.

**Project Justification**

The budgeted amount is based on recent experience and is required to replace damaged or deteriorated equipment to maintain reliable service.

**Future Commitments**

None.

# GOULDS SUBSTATION
# REPLACE 24L & 25L SWITCHES & POLES

## Project Cost

$64,000

## Nature of Project

This project involves the replacement of deteriorated line and bus switches on lines 24L and 25L with new switches, and the replacement of three deteriorated poles in the Goulds substation.

## Customer Impact

This project will benefit customers through maintaining the reliability and security of the power system.

## Project Justification

This project is justified on the basis of replacing deteriorated equipment. These switches were installed in 1964 and no longer operate properly. Attempts to repair and realign them have been futile.

## Future commitments

None.

# SALT POND SUBSTATION
## REPLACE RADIATORS ON SALT POND POWER TRANSFORMER

### Project Cost

$50,000

### Nature of Project

This project will replace deteriorated radiators on power transformer 200233 with new galvanized radiators. The in-service date for the original radiators was 1972. There are four other radiator replacement projects in the 1999 budget valued at less than $50,000 each, with original in-service dates ranging from 1949 to 1975. The total cost of these four projects is $167,300. The total cost for radiator replacement in 1999 is $217,000.

### Customer Impact

This project will improve the reliability and continuity of service to customers.

### Project Justification

This project is justified on the basis of the replacement of deteriorated equipment, safety and environmental regulations.

### Future Commitments

None.

## ST. JOHN'S AREA

## ST. JOHN'S AREA TRANSMISSION RELAYING IMPROVEMENT PROGRAM

### Project Costs

1999 $ 373,000

### Nature of Project

This project involves establishing and/or upgrading pilot wire relaying, breaker failure and backup protection on identified 66 kV transmission lines and buses in the St. John's area over a three year period (1999-2001).

### Customer Impact

This project will assist in maintaining the reliability and security of the power system.

### Project Justification

Newfoundland Power's existing protection scheme for the 66 kV transmission system in the St. John's area cannot ensure adequate clearing times to prevent some faults on this system from causing stability problems at the Holyrood generation facility. The resulting system wide disturbances can cause unnecessary customer outages as well as possible damage to utility equipment.

Newfoundland Power and Newfoundland & Labrador Hydro have jointly developed recommendations to reduce or eliminate the system wide disturbances related to problems on Newfoundland Power's transmission system in the St. John's area. As a result, it is proposed that Newfoundland Power revise its protection scheme for specific transmission lines in this area. The new protection scheme consists of pilot wire relaying using fiber optic cables as a communication medium. This protection scheme will ensure that multiphase faults on these 66 kV lines in the St. John's area are cleared by the primary protection scheme within 10 cycles or by the backup protection scheme within 30 cycles.

## ST. JOHN'S AREA
## ST. JOHN'S AREA TRANSMISSION RELAYING IMPROVEMENT PROGRAM (Cont.)

### Future Commitments

The work undertaken each year will provide immediate benefit to the power system and is not dependent on future work. However, further expenditures of $282,000 and $511,000 are planned for 2000 and 2001 respectively. To provide full benefits to the system, the entire project must be completed.

# VIRGINIA WATERS SUBSTATION
## TERMINATE VIRGINIA WATERS (VIR-07) AT VIRGINIA WATERS

**Project Cost**

$162,000

**Nature of Project**

Due to customer growth in the VIR-07 substation area, an additional distribution feeder will have to be built. To accommodate this feeder, the substation yard will have to be expanded. A steel structure and associated protective and control equipment will also have to be installed. The distribution cost associated with this project, discussed at Exhibit JGE-3, page 17, is $130,000.

**Customer Impact**

This project will maintain the reliability and continuity of customer service.

**Project Justification**

This project is required due to customer growth, as discussed at Exhibit JGE-3 page 17.

**Further Commitments**

None.

TRANSMISSION

# REPLACE PIN TYPE & SUSPENSION INSULATORS (VARIOUS TRANSMISSION LINES)

## Project Cost

| | |
|---|---|
| 52L Kelligrews to Seal Cove | $103,000 (Pin Type) |
| 41L Carbonear to Hearts Content | 68,000 (Suspension) |
| 56L Bay Roberts to Carbonear | 70,000 (Pin Type) |
| 94L Blaketown to Riverhead | 70,000 (Suspension) |
| TOTAL | $311,000 |

## Nature of Project

These projects involve replacement of transmission pin type and suspension insulator strings which have tested defective or are prone to failure due to manufacturing defects. This is a continuation of the pin type and suspension insulator programs which were initiated in 1989 and 1994 respectively. There are 18 similar projects in the 1999 budget which are less than $50,000 each. The total cost of these 18 projects is $414,300. The 1999 budget for the transmission insulator replacement program is $725,300.

## Customer Impact

These projects will benefit customers through improvements to reliability and security of the power system.

## Project Justification

These projects are necessary to prevent service interruptions.

## Future commitments

None.

## ST. JOHN'S REGION
## POLE, CROSSARM & INSULATOR REPLACEMENT ON TRANSMISSION LINE 17L

### Project Cost

$53,000

### Nature of Project

This project involves the replacement of poles, crossarms and insulators based on deficiencies identified during annual inspections. There are approximately 60 similar projects in the 1999 budget which are less than $50,000 each. The total 1999 budget for these projects is approximately $902,000.

### Customer Impact

This project will improve the reliability and security of the power system.

### Project Justification

Field visits conducted in 1998 identified deficiencies on 17L that require repair. Replacement of poles, crossarms and insulators are necessary to prevent service interruptions.

### Future Commitments

None.

## ST. JOHN'S REGION
## RELOCATION OF TRANSMISSION LINE 34L FOR THE OUTER RING ROAD

### Project Cost

$54,000

### Nature of Project

The construction of the Outer Ring Road has resulted in the need to relocate sections of 34L which runs from Oxen Pond to Virginia Waters substations. The Outer Ring Road will also require sections of transmission line 58L to be relocated at a cost of $46,000. There are five other road relocation projects in the 1999 budget valued at less than $50,000 each. The total cost of these five projects is $156,300. The total 1999 transmission budget for road relocation is approximately $256,000. The Department of Works & Services will reimburse the Company for the cost of these projects.

### Customer Impact

There is no direct customer impact related to this project.

### Project Justification

This project is based on the specific request to relocate sections of 34L to accommodate the construction of the Outer Ring Road.

### Future Commitments

None.

# TELECOMMUNICATIONS

# TELECOMMUNICATIONS
# FIBER OPTIC NETWORKING

## Project Cost

$78,000

## Nature of Project

This project involves the design and installation of communications multiplexers on fiber optic cable in St. John's.

## Customer Impact

This project contributes to improved customer service and safety by supporting teleprotection systems, corporate data systems and supervisory control communications.

## Project Justification

The fiber optic multiplexer system will provide economic savings by reducing the number of teleline substation protection units required and by lowering circuit leasing costs. A multiplexing system will also permit consolidation of voice and data circuits, thereby minimizing maintenance cost.

## Future Commitments

None.

# TELECOMMUNICATIONS
# SUBSTATION TELEPHONE CIRCUIT PROTECTION

## Project Cost

$201,000

## Nature of Project

This project will upgrade existing telephone line isolation equipment in substations to ensure that the equipment operates properly during electrical fault conditions.

This will involve:

- the installation of communications circuit isolating equipment by NewTel Communications at three substations (Cape Broyle, Horse Chops and Gambo);
- the purchase and installation of cellular phones to replace six existing telephones at various substations; and
- the purchase and installation of four fiber optic/telephone interfaces in four St. John's area substations.

## Customer Impact

This project will ensure adequate protection is available to employees, customers and equipment in and around Company substations.

## Project Justification

Telephone communications within a substation are critical for employee safety and efficient operation. NewTel Communications requires Newfoundland Power to carry out a multi-year program to replace or protect telephone lines in substations. This project meets that requirement.

## Future Commitments

None. However, an additional $200,000 will be budgeted in 2000 to complete the remaining unprotected substations.

# TRANSPORTATION

# PURCHASE OF VEHICLES & AERIAL DEVICES

## Project Cost

$1,247,000

## Nature of Project

This project involves the replacement of vehicle chassis, vehicle bodies, associated aerial equipment, or a combination of all three. The existing units have reached the end of their useful life and are beyond economical repair.

## Customer Impact

This project will help maintain an acceptable level of customer service and personnel safety.

## Project Justification

All the units have been evaluated for factors such as overall condition, maintenance history and immediate repair requirements. Based on this evaluation, it has been determined that each unit has reached the end of its useful life and is beyond economical repair.

## Future Commitments

None.

**Newfoundland Light & Power Co. Limited**
**1999 Capital Budget**
**Leases over $5,000**

| | Yearly | Term |
|---|---|---|
| High Speed Black & White Copier | $28,000 | 5 Years |

Exhibit KWS-15 (1st Revision)
1999 Information Systems Capital Expenditures

# Exhibit KWS-15 (1st Revision)
# 1999 Information Systems Capital Expenditures

## Table of Contents

## Introduction

Information technology is now an integral component of Newfoundland Power's operations. It is critical to a range of processes including hand held meter reading, call centre operations, and the Company's SCADA system. As technology has become more central to operations, investments have increased and the importance of maintaining and improving its effectiveness has escalated.

The Company's information technology system consists of two basic components. The application software component is made up of approximately forty computer applications that automate or facilitate business processes. The other component is the technology infrastructure, which is the network of hardware and software that is the foundation upon which all applications operate. Maintaining these two components and keeping them up to date is essential to the provision of quality, reliable and economical service to Newfoundland Power's customers.

The proposed information technology capital expenditures for 1999 total approximately $4.3 million. Of this total, approximately $2.0 million has been budgeted for software application improvements. The remaining $2.3 million is to be spent on the ongoing maintenance and development of the technical infrastructure.

This report outlines the Company's proposed 1999 capital expenditure budget for information systems, and contains a discussion of how the planned expenditures support the Company's overall information technology program by helping to maintain the delivery of benefits from past technology initiatives and by introducing new capabilities.

## Background

The period since 1996 has been one of fundamental change in both the information technology deployed at Newfoundland Power and in the way employees use that technology. The expansion of the use of networked personal computers (PCs) and personal productivity technologies such as shared databases and workflow applications has changed the way employees work together to serve customers and operate the business.

A major accomplishment was achieved in 1998 with the successful migration of the Customer Service System ("CSS"), the Company's most important computer application, to the new client-server environment. The Company is currently completing the work necessary to decommission the old mainframe technologies that have been in use for the last two decades.

Entering 1999, all of the Company's major computer applications will be operating in the new technical environment. With a refreshed infrastructure in place, Newfoundland Power will have a solid foundation upon which both new and current applications can be supported.

## 1999 Information Technology Challenges

The so-called Year 2000 computer problem has substantially influenced the Company's information technology plans and initiatives for 1998 and 1999. Managing the threat presented by this phenomenon is the highest priority in the Company's near-term information technology strategy. Where possible, necessary Year 2000 corrections to computer applications are being made simultaneously with the migration of the applications to the new client server environment. This combination of processes results in efficiencies and reduced costs.

The Company's plan for dealing with the Year 2000 issue is outlined in Appendix B of this report.

Newfoundland Power's information technology plan for 1999 consists of dealing with the Year 2000 problem, maintaining the installed technologies, and providing some new functionality to respond to changing customer needs and enable increased productivity within the Company's operations.

## 1999 Capital Expenditures

Appendix A outlines the Company's proposed 1999 capital expenditures for information technology. The proposed budget of approximately $4.3 million consists of expenditures on applications and investments in infrastructure. The proposed expenditures in each of these two broad categories is discussed separately below.

## Investments In Computer Applications

### *General*

Application software at Newfoundland Power is comprised of a variety of computer applications that improve customer service, enable efficiency, or reduce overall costs. Some of the software consists of common business tools, such as the Microsoft Office Suite of electronic mail, spreadsheet, presentation and database software. These software products, by making day to day business processes more efficient, contribute to minimizing the cost of serving the Company's customers.

Other software programs are relatively unique to the Company's business. The CSS, for example, which facilitates the exchange of information with customers and among employees, is the Company's main information technology vehicle for providing customer service. The

Facilities Management System, which is used to track and schedule maintenance on substation equipment, is an important component in ensuring the safety of both the public and utility employees, and in maintaining reliability of the electrical supply.

All application software requires ongoing investment to ensure it remains current with changes in business and technology. Year 2000 remediation is an added challenge to maintaining applications in 1999. A total of approximately $500,000 of the proposed expenditures on applications is allocated to correct or replace non-compliant applications. This includes $99,000 to complete the replacement of the Facilities Management System and $100,000 to migrate from identified end user software that will not be functional beyond 1999. The remaining $300,000 is a provision for other anticipated Year 2000 remediation.

Proposed capital expenditures on improvements to the Company's application software for 1999 total approximately $2.0 million. The following table provides a summary of the proposed expenditures:

| **1999 Application Software Capital Expenditures (000s)** | |
|---|---|
| Customer Service System Enhancements | $544 |
| Enhancements to Internet Service | 100 |
| Upgrade Microsoft Office Suite | 565 |
| Year 2000 | 297 |
| Replacement of Facilities Management System | 99 |
| Application Software Upgrades | 420 |
| Total | $2,025 |

The first two items in the above table will provide enhanced service to the Company's customers. The remainder of the expenditures are focused on investment in existing technology resources to keep them current with business and technological change or to address Year 2000 problems.

*Service Improvements*

The planned enhancements to the CSS are focused on providing an improved level of service to customers. While the CSS was being migrated to the client server environment, no major changes in functionality were possible. With the migration now complete, a number of enhancements are planned which will improve service to the Company's customers.

The CSS enhancements include an improved customer bill format which will be easier to understand, and which will provide more information to customers. The system will be modified to allow the Company to offer a 10 month Equal Payment Program option, which is an option a number of customers have requested. Another customer-requested service enhancement planned for the CSS will allow the Company to offer electronic billing options and improved group billing for commercial customers.

The Internet project will allow customers to access CSS to obtain information specific to their accounts. This enhancement of the Company's customer service was not possible prior to the technical migration of CSS. The Company's Internet strategy is a conservative one. Customers' use of the Internet will be monitored to confirm the continued appropriateness of the Company's strategy. Customer feedback will also be sought to assist in identifying desirable future enhancements to the service.

*Technology Upgrades*

The Company plans to update its current suite of personal productivity software in 1999 at a total cost of $565,000. This amount also includes an expenditure of approximately $100,000 associated with the conversion of Company data contained in outdated versions of software that can no longer be maintained due to the Year 2000 problem.

The personal productivity suite currently in use at Newfoundland Power is Microsoft Office 95. This software includes word processing, spreadsheet, electronic mail, presentation and database packages. By 1999 the current suite will be two major versions out of date. The choice of Microsoft office software reflects the Company's strategy of aligning itself with industry leaders in information technology. Because the sharing of documents within and between businesses is growing quickly, working with a widely-used version of software is desirable to minimize inefficiencies due to software incompatibility.

Because it is also important that Company employees be using the same version of the software, the updated version will be provided at the same time to all Company employees that use PCs. The Company anticipates that to maintain a relatively-current version of its office software will require replacement approximately every two to three years. A recent Newfoundland Power survey of information technology management practices at other Canadian electric utilities

revealed that most of the companies surveyed have already upgraded from Microsoft Office 95. The survey is attached as Appendix C to this report.

The expenditure of $420,000 for application upgrades is comprised of a variety of small upgrades of a number of the Company's computer applications. It includes the upgrade of purchased software as well as upgrades and enhancements to internally-developed software. These changes are prompted by regulatory and legislative changes such as the Harmonized Sales Tax, by cost reduction initiatives as they arise, and in response to customer requests. The proposed expenditure level is an estimate based on past experience.

## Investments In Technical Infrastructure

### *General*

Newfoundland Power's information technology infrastructure consists of a large number of components including individual PCs, shared printers and larger computers known as servers that are a common resource containing computer data and applications. These various components are linked province-wide by a common communications network. Expenditures on the technical infrastructure must focus on maintaining its cost-effectiveness, reliability, flexibility and sustainability over the long term. A stable, yet flexible, technology infrastructure is required to enable applications to deliver value now and in the future.

Proposed capital expenditures on improvements to the Company's information technology infrastructure for 1999 total approximately $2.3 million. The following table provides a summary of the proposed expenditures:

| **1999 Technical Infrastructure Capital Expenditures (000s)** | |
|---|---|
| Personal Computer Renewal | $1,268 |
| Network Infrastructure Upgrade | 208 |
| Shared Servers Infrastructure | 230 |
| Client Server Backup Hardware/Software | 553 |
| Total | $2,259 |

Expenditures on technical infrastructure in 1999 may be grouped into two major categories. Approximately $1.3 million is budgeted for personal computer renewal. The remaining $1.0 million will cover the cost of communication network upgrades and servers.

*Personal Computer Renewal*

Of the amount budgeted for personal computer renewal, about $1.1 million is for the purchase of 214 PCs. This is slightly higher than the 1998 expenditure because of accelerated replacements related to the Year 2000 problem. The Company currently has approximately 600 PCs in service, and estimates that its requirements for PC replacements in future will number between 160 and 180 per year.

Approximately $120,000 of the expenditure is to cover the cost of the upgrade and redeployment of existing PCs. It is the Company's practice to provide the most demanding users with the newest, most powerful PCs. Less powerful computers are then recycled, or "cascaded", to users with lesser technology requirements. This practice extends the useful life of all of the Company's PCs and reduces costs. The survey attached as Appendix C indicates the life cycle of PCs at Newfoundland Power is consistent with other Canadian utilities.

Most of the remaining $80,000 is for the purchase of 10 printers.

*Network and Server Upgrades*

The amount budgeted for network infrastructure and server upgrades covers expenditures of $438,000 to upgrade shared servers and the communications network, and an expenditure of $553,000 to purchase additional servers to provide backup in the event of catastrophic system failure.

In order to maintain the reliability of the network, which links all users to available computing resources and supports critical customer service functions, the shared servers and the network must be upgraded to accomodate normal growth in data and application use. If memory, disk storage, central processing unit speed and network connections are not modified to keep pace with capacity requirements, system delays will occur. A single server, such as the server on which the CSS runs, supports up to 200 end users simultaneously. The 1999 upgrade is necessary to avoid system delays, which are costly and disruptive to customer service.

With the migration to client server technology largely complete, the additional investment in backup servers is required to provide disaster recovery capability for the client server environment. The proposed 1999 expenditures will increase backup coverage from about 25 per cent to approximately 50 per cent to enable essential systems, such as CSS, payroll and accounts payable to be quickly recovered in the event of a disaster.

The survey contained in Appendix C indicates that disaster recovery capacity at other Canadian utilities ranges from none to complete coverage of production systems. The upgrade will place Newfoundland Power at the midpoint of this range. It will also provide an improved environment for the testing of technology changes before implementation, reducing the risk of a failure during project implementation.

The amounts in the budget for server and network upgrades can be expected to recur on an annual basis to accommodate software application upgrades requiring system capacity improvements.

**Conclusion**

The Company's computing environment requires on-going maintenance as it ages and as new demands are placed upon it. With the Year 2000 computer problem fully addressed in 1999, the Company will continue to rely on technologies which are industry proven and flexible enough to accommodate the evolving requirements of the business and of the Company's customers.

The proposed 1999 capital expenditures on both the technical infrastructure and the Company's application software are necessary to ensure that the Company is well positioned to take advantage of new opportunities for improvement in service levels and operating efficiencies, and to respond to evolving customer expectations as they become apparent.

APPENDIX A

**Newfoundland Light & Power Co. Limited**
**Capital Budget 1999 (exclusive of GEC)**

**INFORMATIONS SYSTEMS**

| | $'000 |
|---|---|
| **COMPUTER APPLICATIONS** | |
| Customer Service System Enhancements | 544 |
| Enhancements to Internet Service | 100 |
| Upgrade Microsoft Office Suite | 565 |
| Year 2000 | 297 |
| Replacement of Facilities Management System | 99 |
| Application Software Upgrades | 420 |
| **COMPUTING INFRASTRUCTURE** | |
| Personal Computer Renewal | 1,268 |
| Network Infrastructure Upgrade | 208 |
| Shared Servers Infrastructure | 230 |
| Client Server Backup Hardware/Software | 553 |
| **TOTAL - INFORMATION SYSTEMS** | 4,284 |

APPENDIX B

# Managing Year 2000 Exposures at Newfoundland Power

## Background

The Year 2000 poses a number of challenges to computer technology. Many computer applications do not have the first two digits of the century built in. This could cause erroneous results when the date advances to "00" from "99" because the application may read the new date as "1900". The potential consequences of this problem range from a simple calculation error to an equipment malfunction or system failure.

Technology is deployed in all areas of Newfoundland Power's operations. Traditional information technology systems such as the CSS and the infrastructure it runs on are clearly exposed to Year 2000 risks. However, technology is much more pervasive in the electric utility industry; and the potential exists for the failure of any equipment with imbedded electronic components. These embedded technology items can range from remote substation controllers to telephone systems and even motor vehicles.

## A Year 2000 Process

Newfoundland Power has designed and implemented a thorough process by which all Year 2000 threats are remedied. By staying current with evolving best practices, Newfoundland Power ensured the process incorporated the experience of other businesses where appropriate. The major steps in Newfoundland Power's process include:

| | |
|---|---|
| *Inventory* | obtain an accurate listing of every possible item which is either itself electronic, or which has electronics involved in its operation |
| *Assessment* | establish a priority for each item such as "A - mission critical", determine if the item is Year 2000 compliant and develop a plan to repair if required |
| *Repair* | for items requiring repair, either replace the item, upgrade or repair it |
| *Testing* | for higher priority items, perform tests to confirm the repair was successful or the initial assessment of compliance was accurate |
| *Contingency Plan* | develop a range of failure scenarios and appropriate action plans to mitigate these situations |

## Progress to Date

Newfoundland Power's Year 2000 initiatives commenced early in 1997 with reviews of the most significant computer programs such as the financial and customer systems. Plans were developed to remedy the Year 2000 exposures by early 1999.

Early in 1998 a comprehensive inventory of the more than 280 Company sites identified in excess of 1000 items that have some form of electronics involved in their use. With a complete list of all potential exposures identified, a process to work through all items was established and a team put in place to lead the process. The process is supported by a cross-functional leadership team with representation from Information Services, Internal Audit, Regional Operations, Materials Management and Corporate Communications.

## Year 2000 Inventory Classifications

The following table illustrates the classifications into which the Company has grouped the items identified for review, as well as some representative examples of the types of equipment in each classification:

| Classification | Count | Examples of items in classification |
|---|---|---|
| Information Technology | 425 | PC hardware & software, major applications like CSS, printers, modems, network equipment |
| Power Quality | 219 | Power line Thermoscan equipment, load recorders, power monitoring equipment, revenue meters, protective relays |
| Telecommunications | 146 | Phone systems, SCADA hardware & software, Radio equipment, FAX machines, pagers and cellulars, TVD - Trouble call information system |
| Building Systems | 145 | Alarms, card access systems, photo copiers, heating cooling & lighting control systems |
| Control Systems | 69 | water level controllers, sensors |
| Customer Accounting | 44 | Handheld meter reading units, cashiering equipment, Energy consumption monitors, Banking software |
| Transportation | 18 | Engine analyzer, battery charger, fork lift |
| Purchasing Material | 13 | weigh scales |
| Total | 1079 | |

## Process Steps and Completion Targets Based on Priority

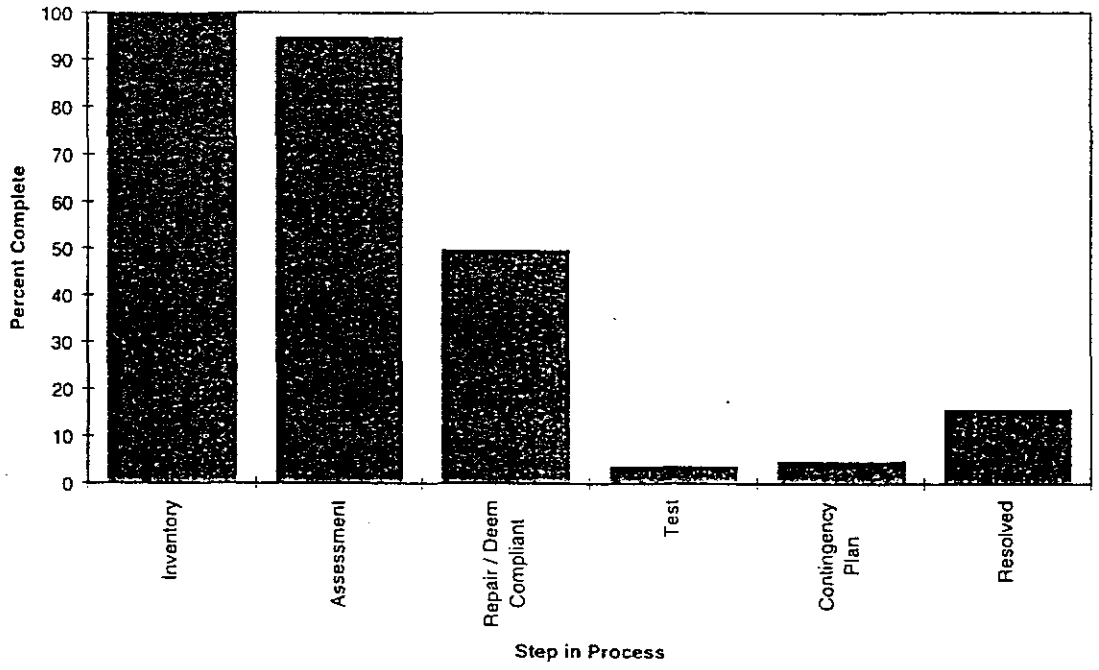
Based on the Company's assessment of priority, approximately 45 per cent of the identified items are considered to be critical, or "Priority A", items. The priority placed on each item dictates the steps and the timing required to resolve the associated Year 2000 concerns. The following table sets out the schedule by priority classification:

| Priority | Inventory | Assess | Repair | Test | Contingency Plan |
|---|---|---|---|---|---|
| A | Q2/1998 | Q3/1998 | Q4/1998 | Q4/1998 | Q2/1999 |
| B | Q2/1998 | Q3/1998 | Q4/1998 | Q1/1999 | NR |
| C | Q2/1998 | Q3/1998 | Q1/1999 | NR | NR |

*Note: NR - this step not required for this priority item*

## Current Status of Process

The following table indicates the completion status of each step in the process in percentage terms as of September 1, 1998:



## Managing Supplier Risks

A letter has been sent to every Company supplier inviting them to work with the Company to examine and resolve any Year 2000 exposures that may affect their ability to meet the Company's supply requirements. Regular co-ordinative meetings with Newfoundland and Labrador Hydro are a critical part of the management of supplier risks. To date, key suppliers have been very cooperative.

## Summary

Newfoundland Power is committed to focussing its resources on the Year 2000 computer problem to ensure all efforts to mitigate Year 2000 risks are made in a timely manner.

Because of the pervasiveness of electronic technology in the operations of the Company, it was necessary to make an early start on resolution of the Year 2000 issue. Significant progress has been made. Repairs will be substantially completed by early 1999. At that point, the Company will establish detailed contingency plans to address the unlikely event of a major failure related to the Year 2000 problem.

In the meantime, the Company will be working closely with key suppliers, including Newfoundland and Labrador Hydro, to ensure customers are not affected by any disruption in the suppliers' services.

APPENDIX C

# Personal Computer Hardware and Software Survey
# Canadian Electrical Utilities

## Overview of Survey

In August of 1998 Newfoundland Power conducted a survey of the personal computer ("PC") hardware and software management practices employed at other Canadian electric utilities. This survey was completed to compare the standards and practices in place at Newfoundland Power with the Canadian electric utility industry.

The utilities that participated in the survey are as follows: Newfoundland Power; Newfoundland Hydro; Maritime Electric; New Brunswick Power; Hydro Quebec; Ontario Hydro; Toronto Hydro; Manitoba Hydro; Saskatoon Hydro; TransAlta Utilities; Alberta Power; and West Kootenay Power.

The main areas of focus for this survey were PC sizing, average life cycle, software suite type and life cycle as well as overall percentages of disaster/recovery systems in relation to production systems. A summary of the responses from each utility is attached.

## Personal Computer Capacity

The standard PC capacity for Newfoundland Power is a Pentium II 266 MHz with a disk size of 4 gigabytes. This standard is in the mainstream of the survey group.

Newfoundland Power has a process to manage user capacity requirements on a corporate basis to ensure efficiency. This process involves the monitoring of applications used by an employee to perform daily work activities. When an employee needs increased speed or disk space, the requirements are recorded in a database for future purchases. When the capital budget is prepared for the following year this database produces a report which sorts PC capacity requirements by employee.

## Personal Computer Life Cycle

Newfoundland Power's PC life cycle is currently in the range of 3-4 years. This means that on average, every 3.5 years each employee acquires a new computer. Overall, Newfoundland Power's rigorous management of PCs, including swapping between end-users, extends the life cycle of PCs as long as or longer than most survey participants. The average life cycle of PCs for the survey participants was 3.4 years.

## Personal Computer Software

Newfoundland Power's standard desktop software is Microsoft Office Suite. All but one utility that responded to the survey are using Microsoft Office Suite.

## Personal Computer Software Upgrades

Newfoundland Power's latest version of Microsoft Office Suite is Microsoft Office 95. The majority of electric utilities have upgraded to Microsoft Office 97. All but three have already upgraded and most indicated a practice of upgrading every two or three years as new versions are made available.

## System Reliability

At present, approximately 25 per cent of Newfoundland Power's production computer systems are covered by disaster recovery protection. After the proposed 1999 hardware acquisitions, coverage will increase to 50 per cent. The survey revealed that coverage in other Canadian electrical utilities ranges from 0 to 100 per cent. This range can be attributed partly to the subjective nature of the question, but also reflects the varied attitudes towards risk management among the surveyed companies.

## Summary

The results of the survey indicate that Newfoundland Power's management of PC hardware and software is consistent with other Canadian electrical utilities.

# PC Hardware and Software Survey

## Canadian Electrical Utilities

**Survey Results**

| Utility | % System Redundancy | PC Standard Speed | PC Standard Capacity | PC Life Cycle | Life Cycle is based on... | Current Office Suite | Frequency of Software Upgrades | Software Upgrades are based on... |
|---|---|---|---|---|---|---|---|---|
| Newfoundland Power | Estimate 25% | Pentium II 266 MHz | 4 GB | 3 - 4 Yrs | Application driven | Office 95 | 3 Yrs | Compatibility |
| Newfoundland Hydro | 75% | Pentium 233 MHz | 3.2 GB | 3 - 5 Yrs | Application driven | Corel Suite | N/A | Driven by requirements for new functionality |
| Maritime Electric | Disk Space 1:1; Costs 30% | Pentium II 300 MHz | 4 GB | 4 Yrs | Application driven | Office 97 | 2 Yrs | Leading Edge |
| New Brunswick Power | 10% - Hoping to increase to 40% | Pentium II 266 MHz - Compaq | 6 GB | 3 Yrs | Application driven | Office 95 | 3 Yrs | Need for Uniformity |
| [redacted]dro Quebec | <10% | 200 MHz | 2 GB | Laptops 2 Yrs; Desktops 3 Yrs | Evolution of PC and apps running on PC | Office 95 | Every Second Release | Based on need, for new release and current budget |
| Ontario Hydro | Disk Space 1:1; Costs 100% | Pentium 90 MHz | 4 GB | 2-3 Yrs | Application driven | Office 97 | 2-3 Yrs | Functionality |
| Toronto Hydro | 100% | Pentium 266 MHz | 2.1 GB | 3 Yrs | Application driven | Office 97 | 3 Yrs | Compatibility |
| Manitoba Hydro | All critical systems are contracted out | Pentium 100 MHz - Compaq | 6 GB | 2 Yrs - Power Users: 3 Yrs | Cost of Repairs | Office 97 | 2 Yrs | Compatibility |
| Saskatoon Hydro | 50-70% Soon 100% | 200MHz | 4 GB | Laptops 2 Yrs; Desktops 3 Yrs | Obsolete after this time | Office 97 | 2 Yrs | Based on need, maintenance and service requirements. |
| TransAlta Utilities | 25-30% | 166 MHz | 2GB | 2-3 Yrs Laptops: 3-4 Yrs Desktops | Anticipated life use; Application driven | Office 95 | 1 Yr | Stay Current |
| Alberta Power | 15% - Used for testing as well | Pentium II 300 MHz | 1 GB | 5 Yrs | Application driven | Office 97 | 2 Yrs | Compatibility |
| [redacted] West Kootenay | 0% | Pentium II 300 MHz - Compaq | 3.5 GB | 3 Yrs | Application driven | Office 97 | 2 Yrs | Required by Users |