Q. With regard to the response to CA 33 NLH, please provide all documentation related to customer inquiries and meetings with NP and the ICs on customer value of reliability.

A. Please refer to the following attached documents:

1. Annual Joint Utility Meeting minutes for 2003 to 2005. The minutes for the 2006 meeting have not been issued.
2. Inter-Utility System Reliability Committee Meeting Minutes for 2003 to the last approved meeting minutes for 2006.
3. Inter-Utility System Reliability Committee annual reviews for 2003 to 2005.
4. Action List from meeting with North Atlantic Refining in 2003. No follow-up meetings have been held since November 2003.

MINUTES: JOINT UTILITIES MEETING

Holyrood Generating Station Training Centre
May 17, 2005

In Attendance:

Nigel Haynes (Star Lake)
Gordon Hillier (Star Lake)
Jamie Byrne (Abitibi Consolidated – Stephenville)
Jack Casey (Newfoundland Power)
Rob Henderson (Newfoundland and Labrador Hydro)
Chris Kirby (Newfoundland and Labrador Hydro)
Peter Robbins (Abitibi Consolidated – Grand Falls)
Kevin Goulding (Deer Lake Power)
Sean LaCour (Newfoundland Power)

Item 1 - Reservoir Status and Hydraulic Production Forecasts:

Nigel provided a chart of historic reservoir levels and indicated that Star Lake's reservoir is full and there is the potential for spill. The run off started late.

Jack indicated that NP's reservoirs are 75% - 80% full, that the storages peaked last week, and that the reservoirs were 60% - 70% full all winter.

Rob commented on NLH's minimum GWH storage requirements, then walked through the storage's at each reservoir. He indicated that Victoria was the most recent to fill, Hind's Lake is cycling to handle inflows, and that NLH expects Cat arm to fill. Sean asked for an explanation on the monthly change in MOL. Rob responded by indicating that it is tied to the probable size of a flood during different seasons.

Peter indicated that Red Indian Lake was full and that the snow was gone. Forecast purchases not yet adjusted for the year.

Kevin indicated that they were working with an average snow pack for March and projected that Grand lake would be 90% full, however a dry April / May now leaves them at 69% full. DLP will review impact on Power on Order and interruptible.

Item 2 - Thermal Production Forecasts and Holyrood Maintenance

Rob indicated that Holyrood is presently not producing and that unit #3 was configured as a sync condenser. He indicated that unit #1 was operating at 50MW. May run a unit in June / July.

Sean indicated that a significant amount of work was going to be undertaken on the Weslyville GT. The unit will be out of service from mid June to late September. Green Hill GT is ok.

Kevin indicated that some 60hz generation will be coming off in the last 2 weeks of Oct.

Item 3 - Major Planned Generation Outages

Nigel indicated that Star Lake will be taking a 1 week outage starting June 13th, and they will be installing partial discharge monitoring. Jack / Sean indicated they will as well be installing partial discharge monitoring.

Jack said that Cape Broyle and Mobile will be having their main valves replaced beginning September 1st. The work is expected to take 10 weeks. 16 MW of Avalon capacity lost. 11L coming out in July and that will affect the Tor's Cove plant. At Rattling there is a plan to replace the penstock, the work will cost 16 M$ over 2 years. The units will be out from mid June to mid Nov.

Chris indicated that units 5 and 6 at BDE will be out for 6 weeks in August to undertake work on the main spherical valve. Upper Salmon will be off for 3 weeks in September and unit 1 at Cat arm will have its governor replaced in October.

Peter indicated that units 5 – 8 will have their 50 year old governors modified with high pressure, low oil volume, actuators. Low oil volume systems were chosen to minimize the affects from a spill. The work will start after the run off.

Kevin said that DLP plans 1 major outage. That outage will be to unit #1 and will last for about 6 weeks beginning Sept 5th. The existing penstock will be replaced with a new steel one.

Item 4 - Major Planned Transmission Line/ Substation Outages and Co-ordination

Kevin said that he had no major work planned.

Peter indicated that work will be undertaken on the tie lines between the frequency converter and the powerhouse; this will affect GRF #4.

Jack indicated that work will be performed on 124L between Thourbourn Lake and Porte Blanford, the line should be back by early June. Other work is planned for 24L, 11L, and 43L.

Chris listed work for Stoney Brook, Massey Drive, Oxen Pond, Hardwoods, and TL212, most of which primarily affects NP. Green Hill GT may be required for loop switching on TL212.

Jamie indicated that the mill will be taking a reduced load for 3 days in September and will have one 12 hour outage.

Nigel indicated that his transmission and station work will be completed during plant maintenance.

Item 5 - Load Forecasts for Hydro, Industry and Retailers

No one at NP could speak to forecast

Kevin projected a 151 – 152 MW load on average, no change from before. Power on Order is 58 MW, may change after a review of interruptible. The mill will be shut down on June 15th for 36 hours, the Co Gen will be off. Mill will want a 60hz connection at that time.

Peter sees no change in the Power on Order. There is the possibility that #7 machine will come down the end of June, and that will remove 20MW of demand. Some of this demand will come back when the speed of #3 machine is increased to facilitate greater production.

Jamie indicated that the power on order is 69 MW with an interruptible of 4.5 MW. This order may increase as the interruptible is decreased.

Rob indicated that the rural load is up by 0.2% – 0.7%. Demand is about 85 MW, 53% load factor

Item 6 - Rate Stabilization Plan

Rob indicated that the hydraulic component of the cost is expected to save customers about 2 M$, the component reflecting the cost of #6 fuel oil is expected to increase by 3.3 M$. With respect to customer load variation NP load is down about 10 GWh, industrial load is up about 0.8 GWh.. The legacy plan is about 122M$ in arrears, and that will be paid off over 4 years. The average fuel cost in inventory is about $39 / bbl.

Item 7 - Underfrequency Load Shedding

Rob indicated that last year was a good year, NP and industry saw 6 events, 12 is typical. Two events have occurred so far this year. Rob explained the frequency excursion of last week. Commented on correcting influence of the Cat Arm units. The cause is presently unclear, there may be a problem with BDE #6, and # 2 seemed to off load rapidly. C Walsh is heading a committee that will report.

Sean asked about DFDT relaying and indicated that NP had not had a trip on df/dt. Glendale tripped on absolute. Jamie indicated reluctance by Abitibi Stephenville to install df/dt. Rob indicated that oscillations are common, particularly in the summer.

Item 8 - Control Centers, Additions/Modifications

Rob indicated that NLH's present back up is manual / voice. Holyrood may be the back up site and that and that it may be in service by next spring. Neither industry nor NP has plans for control centre changes.

Item 9 - Review Major Capital Projects

Kevin indicated that the penstock replacement project for #1 would cost 5.9 M$.

Peter, Governors 5 – 8 and a project study on 4 – 8 for life extension.. Possibly pull a unit apart and possibly some efficiency testing.

Rob indicated that HLH's capital budget is expected to be 48 M$ - 50 M$. Some of the generation items are Upper Salmon slope stabilization (2.7M$), HRD fuel tanks, spherical valve on BDE 5 & 6, distributed control system at HRD, anti fouling system in the cooling water at HRD, stack liner for HRD # 2 (2 M$). For transmission NLH has the wood pole replacement project (2.6 M$), TL221 upgrade (0.8 M$), Duck Pond interconnection (5.7 M$), and the Farewell Head RTU. Other projects include the EMS project (total 12 M$, 5M$ this year) VHF radio project (4M$, 2 M$ this year)

Jack / Sean indicated that NP will be spending 28 M$ - 29 M$ on T&D

Jamie indicated no major maintenance was planned.

Nigel indicated that they would be replacing the drainage pumps, performing modifications to a bearing and installing generator monitors (partial discharge)

Item 10 – Other

A short conversation about the structure of operator shift schedules took place.

Terry Ledrew gave a presentation on the Holyrood generating plant and provided a tour.

Joint Utility Meeting
Location: Abitibi-Consolidated Mill – Stephenville
9:00 AM, Thursday, May 13, 2004

AGENDA:

1. Reservoir Status
2. Thermal Production
3. Rate Stabilization Plan
4. Load Forecasts
5. Planned Major Generation Outages
6. Control Centers – Additions / Modifications
7. Underfrequency Load Shedding
8. Review major Capital projects
9. Other

ABITIBI CONSOLIDATED

Joint Utility Meeting
Abitibi Consolidated
Stephenville Division
May 13, 2004
Stephenville

In Attendance

Larry Murphy (North Atlantic Refining Limited)
Andrew Walsh (North Atlantic Refining Limited)
Winston Hiscock (North Atlantic Refining Limited)
Lew Hann (ACI – Stephenville)
Mel Dean (ACI – Stephenville)
Jamie Byrne (ACI – Stephenville)
Eugene Doyle (Newfoundland Power)
Kevin Goulding (Deer Lake Power)
Dave Harris (Newfoundland and Labrador Hydro)
Rob Henderson (Newfoundland and Labrador Hydro)
Bob Conlon (Star Lake)
Nigel Haines (Star Lake)
Peter Robbins (ACI Grand Falls)

MINUTES OF MEETING

Reservoir Status

NLH

- Reservoir levels below minimum targets in the winter of 2004
- Above average snowpack over most of Hydro's reservoirs
- Storage will be above minimum levels by the end of runoff
- Recently stopped spilling at granite

NP

- 73% full, approx same as this time last year
- Have been spilling at a few plants for a number of weeks
- Production less than last year but predicting to be on par with last year by June
- Rose Blanche off/on several times

Star Lake

- Almost emptied reservoir but currently filling and almost full
- Running approx 98%
- Discussion – hydro should know if running low, possible 17MW less in system, higher cost for hydro to make up the difference using oil

ACI Grand Falls

- Unusual winter, reservoir ran low before spring runoff
- Approx. 75% full now.
- High snow pack so expecting to fill, however high winds having an affect

DLP

- Slow and steady runoff
- 46% full
- Snowpack estimate is 2/3 full by end of runoff
- Below minimum storage in April, purchased thermal from hydro

Thermal Production

NLH

- One unit at Holyrood at approx 120MW for remainder of May and into June
- All units shut for two months this summer (with average precipitation)
- Major maintenance period starts in the late summer/early fall
- One unit in September on, two units in late October, and three units in December

DLP

- Co-gen at approx 15-16 MW
- No shut planned except boiler shut late October (approx two weeks). Will use electric boiler at that time.
- Impact of bringing off co-gen and adding electric boiler is approx 25MW (50Hz). DLP can supply 10-15 MW, have to purchase the rest.

NP

- 3 gas turbines in operation. Vibration problems on one (15MW). Making up using 7.2MW from portable diesel in Grand Bay South, 2.5MW from portable diesel (newly purchased), 2.5MW from portable diesel in PAB (may be de-commissioning this unit soon due to age)

Rate Stabilization Plan

NLH

- As of end of march, changes due to recent hearing
- Legacy balance accumulated since 1985 (mostly due to higher fuel prices), frozen in 2002, recovery plan from customers in effect in 2003. Approx. $150M at end of Dec. 2003. Recovery to take place over 4 year period through rate increases of 0.32 cent/kwh from NP and 0.79 cent/kwh from industrial customers.
- New elements in plan since January 1, 2004:
    - Accumulate balance in 1 year due to fuel and recover from customer in the next year
    - Load variances to forecast – An adjustment is made such that if load is higher, increase in cost to compensate for extra fuel; or if load is lower, a rebate is applied.
    - "Hydrolic" variance – exists to balance financial risks for company. If hydro production is down, cost is to be recovered from customers (25% per year, over four years). If production is up, hydro to rebate customers. Projections were based on 2002 (and do not include granite canal). Production being up then is attributed to granite canal. Note that granite canal will be part of base rate effective July 2004.
    - Currently hydro owed approx. $800K – $4.6M owed to customers from "hydrolic" variance but $4M owed by NP and $1.4M owed by industrial customers due to load variance (fuel cost recovery).
    - Hydro using PERA to forecast fuel prices and put a "fuel rider" on the rate for NP. The forecast is based on seasonal cost changes, and current projection is $30.35/barrel for #6 fuel (bunker C). Fuel rider is 0.24 cent/kwh for NP. A fuel rider for industrial customers is to come Jan. 2005.
    - Total increase to NP due to fuel rider and cost recovery plans is approx. 0.9 cent/kwh.
    - Total increase to NP customers to be appox. 0.7 cent/kwh.

Load Forecasts

NP

- Load forecasts are 1.8% higher in 2004, expect 1.4% increase in 2005
- Sales growth of 2.1% in 2004, expect 1.5% in 2005
- Due to residential growth particularly on the east coast

ACI Stephenville

- As of Sept. power on order is 71.5 MW, interruptible A is 2 MW (2.5 in march)
- Above 2.9 MW/ton forecast, currently using 3 MW/ton
- Forecast for 2004 may drop due to market conditions
- 3 day outage planned for June, one day will be power outage

ACI Grand Falls

- purchased more power in March due to low res. levels
- not anticipating any downtime
- not anticipating any change in load forecasts

NAR

- 30.5 MW on order, expect to stay the same
- any changes should only amount to approx. 1 MW
- had unplanned outage in the spring, next outage planned for Sept., will drop to 15MW
- should remain at 30.5 MW until April 2005, unit outage planned for then

DLP

- No significant load deviation anticipated
- 151 MW at the mill with no downtime expected except 2 day maintenance shut in the fall

NLH

- for the areas served by hydro on northern peninsula, baie verte and rural areas, load growth is flat, load is below forecast, approx 400 GW/hr (bigger than NAR and GF but less than CB)
- same forecast for Labrador although hospital conversion form oil to electricity may impact
- 'Hydrowise' program in place offering energy conservation information and initiatives to help avoid having to add diesels

Planned Major Generation Outages

NLH

- Major outages planned for Holyrood, Bay D'Espair, Paradise river, Upper salmon, Cat Arm, Hinds Lake, and Granite Canal.
- Biggest ones are approx one month Bay D'Espair Unit 7 (replacing exciter), and 8 weeks per Holyrood unit (DCS installation)
- Sync condenser operation will be available on east coast in the next few weeks
- Granite Canal is making it easier to coordinate outages
- Vacation block plan implemented at Holyrood – everyone takes vacation at summer time. This influences maintenance work scheduled for Bay D'Espair. So far project staff have accepted the plan
- Granite Canal outages are affected by environmental restrictions. Planned for 20 days but will be on/off during those days.

Star Lake

- 5 day outage planned for July 12 (annual)
- Will be dewatering penstock (through runner)
- 69kV transmission line at same time, coordinating work with hydro at Buchans
- upgrading SCADA system – currently FM radio, changing to Allen Bradley SCADA on windows XP, remote control direct to PLC over network.
- Guide bearing change last year and water filter improvements should have resulted in one outage however organics in cooling system may still result in multiple outages.

NP

- New Chelsea outage planned (approx 8 months) to replace penstock, govenor, controls, etc.
- Generator Rewind planned.

ACI Grand Falls

- Normal Maintenance outages planned, should not affect total generation

DLP

- 2 planned outages – 1 is 50Hz in May (relief valve modification, 3 wk), other is 60Hz in August (turbine runner modification, 7-8 wk)
- power on order may increase by 5-7 MW in May, 7-10 MW in Aug.

Control Centers Additions/Modifications

NLH

- EMS project getting off the ground. Purchasing from OSI, currently negotiating scope, delivery, etc.
- Expect contract by June and work begin this fall through 2005 for commissioning in spring 2006

- New system includes PI, standard SCADA features, contingency analysis for failure plan, power flow analysis for outage plan, unit commitment program for efficient operation of units, operator training simulator to put operations through different scenarios.
- Backup control center will exist to run system in manual in case of control center emergency such as fire. Same advanced system is being considered but still working out location/facility
- New system is on servers vs mainframe computers, and has complete redundancy. On March 4th outage when east and west of province transmission separated, alarms that came in overwhelmed control center memory and computers froze.
- Considered corporate integration with JDE, email, etc. but decided against for security reasons.

NP

- purchased 'AT-WEB' application last fall
- drills being planned for several scenarios (loss of SCADA, loss of supply, loss of control center, etc). Should be complete by end of Sept.
- working on emergency plans, disaster recovery
- continuing remote control of feeders and relay setting (underfrequency)
- nuisance alarms becoming an issue and being worked on (NAR recommended ISA alarm management training course)

Underfrequency Load Shedding

NLH

- 3 events to date in 2004
  - Feb 20 HRD #2 tripped during investigation by plant personnel
  - Mar 7 HRD #2 tripped due to high winds affecting station service
  - Apr 13 HRD #3 tripped due to fuel oil thermocouple failure
- Target maximum of 8 underfrequency events
- Try to reduce occurrences by:
  - eliminating human error
  - maybe change trip to alarm – currently eng. investigation ongoing
  - spinning reserve policy – good job on supply to trips but results in not running efficiently – cost analysis of cost of running vs cost of trip avoidance
  - change to underfrequency load shedding schedule – implement 'rate of change' trip, won't prevent the event but lessen the impact (amount of load shed). Have some of these in service now, currently want to install in Sville.

NP

- currently rotating the customers that are load shed to share occurrences per year per customer.

Review Major Capital Projects

NLH

- Transmission
  - TL 206 lightning arrester maintenance
  - TL 233 Insulator replacement
  - TL 214 line upgrade
  - DLK and SSD protection upgrades
  - HVY transformer addition
- Generation
  - Bay D'Espair Unit 7 exciter replacement
  - Holyrood DCS replacement
  - Plant RTU replacements
- Other
  - EMS replacement
  - Replace operational data and voice network

NP

- New Chelsea Refurbish
- 4 Tx lines
- substation work, approx $4M (feeder remote control, power TX, breakers, reclosers, etc)

ACI Grand Falls

- Replace 4 gov. and pump sets (oil leaks in the design)

DLP

- Last 60 HZ turbine upgrade (runners, tail shaft, etc). 5GWh gained annually

NAR

- Substation expansion, 1 per year (feeder capacity, redundancy, improve UPS)

Other

- 2005 Meeting to be hosted by Hydro in St. Johns

Deer Lake Power
A Division of Corner Brook Pulp and Paper Limited
2 Trans Canada Highway Deer Lake Newfoundland A8A 2E4

JOINT UTILITY MEETING
DEER LAKE POWER - COMMITTEE ROOM
MAY 15, 2003
DEER LAKE

In Attendance

Richard White (ACI - Stephenville)
Kevin Goulding (Deer Lake Power)
Eugene Doyle (Newfoundland Power)
Shawn LaCour (Newfoundland Power) (Part time)
Robert Henderson (Newfoundland and Labrador Hydro)
Chris Kirby (Newfoundland and Labrador Hydro)
Nigel Haines (Star Lake)

Absent With Regrets

Larry Murphy (North Atlantic Refining Limited)
Wilmore Eddy (ACI - Grand Falls)
Peter Robbins (ACI - Grand Falls)

MINUTES OF MEETING

Reservoir Status

NLH

- Reservoirs are in 'great shape'. Holyrood was operated all winter and storage improved during ACI shuts. The rains over the past two weekends have improved position remarkably. (See attached storage chart)

- 0.2m from full at long pond. BDE plant operating at full load. Hinds Lake is well into run-off - approximately 80% full. Cat Arm is not running.

- There is spilling at Granite Lake - initiated by the heavy rains. Plant is currently being commissioned with an expected on line date of June 2, 2003.

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Reservoir Status (contd.)

NP

- Reservoir storage is at 77%. It was 70% this time last year.
- Spilling has occurred at some locations over the last couple of weeks (Rose Blanche). Look-Out Brook is full as of this week.
- Production should be on target by the end of May.

Star Lake

- Currently spilling highest volumes ever and expect to do so for 2-3 weeks.

ACI - Grand Falls

- Red Indian Lake as of May 15/03 is 95.2% full and 101% of guide curve.
- North and South Twin Lakes are 80% full. Buchans is 100% full and Long Lake is expected to be full by the end of the run-off.

DLP

- As of May 14, 80% full or 0.75m below full storage. Currently operating 60 Hz at maximum generation.

Thermal Production

NLH

- All winter long ran Holyrood as 'hard' as possible in anticipation of shuts this summer.
- For security reasons, will run two units during outages on TL206 (1 week - 10 days) starting next week even though not economical in terms of efficiencies.
- Expect that plant will be shut at about the time schools close. Unit no. 3 to be run as sync condenser.

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Thermal Production (contd.)

NLH (contd.)

- Hardwoods has been running during peak periods for security reasons on the Avalon while units at Holyrood have been shut.

DLP (Co-gen)

- Co-gen has been running since January and has met expectations. Currently averaging about 14 MW but this will drop to approximately 12 MW during the summer months as steam requirements are reduced.

- Unit will be shut during two week annual maintenance period on the boiler in November.

Rate Stabilization Plan

NLH

- 'Old' plan frozen as of August 31, 2002 - $106 Million. This will be 'written' off over a 5-year period. As of the end of March

Industrial Customers -	$27 Million
NP	$75 Million.

- 'New' plan will be written off over two year period with a new rate set each year. As of the end of March

Industrial Customers -	$11.7 Million
NP	$35 Million.

- Since September 1, 2002 the average oil price has been $36/bbl versus the plan budget of $26/bbl

Load Forecasts

NP

- This year forecasts 0.8% increase in the number of customers. 0.7% increase in 2004.

- Energy sales are expected to increase 1.8% and 1.5% this year and in 2004, respectively.

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Load Forecasts (contd.)

NP (contd)

- The average consumer consumption was up this year - even when adjusted for weather.

ACI - Stephenville

- Current power-on-order at 70.5 MW. Will increase to 71 MW on June 1. Load factor - 92-93 percent.
- No long term plans for load increase. Recycle is a possibility which could make the Mill less TMP intensive.

ACI - Grand Falls

- Power on Order remains at the 2002 level of 20 MW. The Bishop's Falls plant went into full production at the end of March 2003. Maximum capacity obtained was 20.5 MW. The Beeton project is on schedule for production at the end of September.
- There is a possibility of an inventory shut some time this summer - possibly July.

DLP

- Current power-on-order at 56 MW. Mill has no immediate plans for increases demand.
- DLP currently maximizing 60 HZ generation and will review operations at the end of May.
- Generator outage power purchases will be required for:
  Unit 6 turbine rebuild (up to 10 MW) starting September 2 (up 8 Weeks)
  No. 7 annual boiler maintenance (up to 10 MW) in November (up to 15 days)
- No formal indications of a date for the annual Mill maintenance shut

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Load Forecasts (contd.)

NLH

- Not much growth in the Island rural loads or the Labrador interconnected loads.
- On the Labrador isolated system there is fairly significant growth. It is attributed to the Lac Robertson interconnection which provides for electricity at the cheaper Island rates.

Planned Major Generation Outages

NLH

- See attached sheet.

Star Lake

- Major shut in September for two weeks (to commence around the second week of September).
- Shut is for regular maintenance and to install a newly designed bearing (Thordon) to replace the existing hydrostatic unit.

NP

- Shut for a new penstock installation at Locksten starting on June 20 for 3 weeks.
- Shut for a governor installation at Tors Cove.
- Relocation of the gas turbine from Salt Pond to Wesleyville (including overhaul) - to commence in June.
- Overhaul of gas turbine in Grand Bay (Mid June to October).
- Replacement of an exhaust stack at the Greenhill Plant.

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Planned Major Generation Outages (contd.)

ACI - Grand Falls

- All generators in Grand Falls will require an outage to install instrument transformers to accommodate revenue metering. Will attempt to coordinate this work with paper machine shuts or inventory shuts to prevent having to take generator outage demand. The work will be performed during the summer.

DLP

- Shut of Unit 6 on September 2 for a turbine upgrade and mechanical refurbishment. Estimated shutdown duration is 8-weeks.

Planned Major Transmission Line Outages

NLH

- See attached sheet

NP

- Outages on 301L, 24L, 124L, 123L for re-builds.
- Some breaker maintenance planned.
- Will check on status of Marble Mountain/Pasadena systems.

Star Lake

- Line outage (September 8 or 9th) to be co-ordinated with plant shut. Estimated duration is three days. Vibration dampers will be installed.

ACI - Grand Falls

- With the Bishop's Falls line de-energized last year during the refurbishment of the Bishop's Falls plant, the line was checked and any required maintenance done at that time. No anticipated major outages this year.

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Planned Major Transmission Line Outages (contd.)

DLP

- Line outage required for Line 1 (Marble Mountain to Massey Drive) to install a disconnect switch. Duration - 2 days to coordinate with Mill shut.

Control Centers - Additions/Modifications

NLH

- Current EMS system in service since 1989. At the end of its 15 year useful life expectancy. Spare parts are becoming an issue. A budget has been prepared (subject to PUB approval) with a tender package expected to be issued soon, ready for contract award upon PUB approval.

- $12 Million project with an expected in service date of January 2006 (to be confirmed).

- New system to be a distributive type with projection screens. Also investigating the merits and feasibility of a back-up control center at a location other that Hydro's head office.

- After the March 4th West Coast black-out event the restoration time was lengthened due to a failure of the present EMS system. The 'burst' of alarms during the troubles created a reporting duty that went well beyond the capability of the system. To help prevent a similar re-occurrence the number of alarms monitored and controlled by the EMS operators have been reduced. In addition SOE data is now no longer sorted *prior* to insertion into the database. This is done later by a separate process thereby freeing up 'real-time' CPU resources.

NP

- A software upgrade planned for this year. The 'At-Web' system will allow users off site access to data. In addition, replacement of servers is planned.

Phone (709) 635-2125 Fax (709) 635-5569

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Control Centers - Additions/Modifications (contd.)

Star Lake

- No changes. Have retained Avalon Controls for PLC work and for possible replacement of the data computers next year.

ACI - Grand Falls

- Part of the refurbishment of the Bishop's Falls plant included remote control of Units 1-7 at Bishop's Falls from Grand Falls. This system will be operational by the end of June. Previously units could only be tripped but the new controls will allow for synchronization and load control on Units 1 to 7.

ACI - Stephenville

- None to report

DLP

- Note to report

Underfrequency Load Shedding

NLH

- Last year was a terrible year with 17 events and a variety of causes. Most were related to a loss of generation with 6 of the 17 assigned to Unit 3 at Holyrood.
- The events are now being reported to the PUB.
- An underfrequency study was conducted by Power-Tech (an arm of BC Hydro). Although there were no obvious solutions there were a couple of recommendations:
  - Installation of rate of change underfrequency relays (df/dt) that trip on anticipation of reducing frequency. NLH and NP have both purchased these relays. They are presently being tested by NLH. NLH may provide the relays to the industrial customers.

Deer Lake Power
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Underfrequency Load Shedding (contd.)

NLH (contd.)

- Spinning reserve. Currently under review but will have impacts economically as this would probably entail moving away from the most efficient operating points of generation

NP

- Currently undertaking a relay replacement program that will see 110 - 115 feeders retrofitted with devices that will allow for more versatility in selecting feeders for the scheme and in pick-up after an event.

Review Major Capital Projects

NLH

- Holyrood Unit 1, electro-hydraulic control system (governor) - $991,000. Allows for better frequency response and black start capability.

- East Coast Microwave - $8.9 Million. Improve the reliability of the TL202/TL206 system - more reliable transfer tripping. Allows for increased, faster and more reliable data transmission.

- TL203 - Upgrading and replacement of structures
  TL209 - Insulator replacement
  TL214 - Insulator replacement and installation of MODs.

- Stoney Brook, Sunnyside and Bottom Brook terminal stations - installation of breaker failure protection.

- TL210, 222, 212, 214 upgrading of protection.

- Capital program - $31 Million.

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Review Major Capital Projects (contd.)

NP

- $55 Million capital budget.

- Gas turbine work at Greenhill (exhaust stack)
  Overhaul GT at Grand Bay
  Purchase of 2.5 MW portable generator
  Relocate Salt Pond GT to Wesleyville
  Replacement of penstock at Locksten.

- Remote control of St. John's feeders ($1.6 million).

- Line work

301L	$2.0 Million
24L	$650,000
124L	$500,000
123L	$100,000.

Star Lake

- Replacement of hydrostatic bearing with Thordon unit. Delivery to site sometime in August.

ACI - Stephenville

- No capital spending to report.

ACI - Grand Falls

- ACI experienced a washout on Goodyear's Dam (ice control structure 2 km upstream of Grand Falls) during recent high water levels. Currently investigating the cost of repairs, which could cause capital to be rerouted to this repair.

- Otherwise there are plans to upgrade the governor pumping unit for units 7 & 8 in Grand Falls ($100,000). Repairs to Buchans plant ($50,000). Buchan's penstock saddles ($50,000). Grand Falls crane upgrade ($25,000). Exploits Dam DC drive ($50,000).

DLP

- Upgrade of No. 6 Turbine ($900,000). Shut September 2, 2003 for eight weeks.

Deer Lake Power
A Division of Corner Brook Pulp and Paper Limited
2 Trans Canada Highway Deer Lake Newfoundland A8A 2E4

Other

NLH

March 4th, West Coast Power Outage

- A jumper let go on the 230 KV line (TL232) from Buchans to Stoney Brook. The line tripped on one end only. The other line (TL205) tripped - separating the 230 KV system east from west.

- The West Coast started to swing on the remaining 138 KV connection causing Hinds Lake to trip. The 138 KV connection opened at Baie Verte leaving Cat Arm and Deer Lake Power as the only generation on the West Coast. Deer Lake Power separated and Cat Arm tripped shortly afterwards.

- Hydro's EMS system failed and stations were manned. High west coast voltages were encountered. All made restoration very difficult.

Rate Application and Hearings

- Hydro advised of an upcoming rate application and hearings that will see a substantial increases in the cost of power. Factors contributing to the cost of electricity include new generation, insurance and fuel costs.

Customer Services

- Hydro is attempting to get a renewed relationship with its larger customers. It is requesting feedback in areas such as 'How well Hydro is doing' and 'How can Hydro better its service'.

Inter-Utility System Reliability Committee

Meeting – April 20, 2006
Killam Room, Newfoundland Power

Attending:

Phonse Delaney & Sean LaCour, Newfoundland Power
Jim Haynes & Rob Henderson, Newfoundland Hydro

1. Review Minutes – December 5, 2005 Meeting

The minutes of the December 5, 2005 meeting were reviewed and accepted as presented.

2. Review Action Plan

2.1 U/F Action Plan

2.1.1 Monitoring is continuing of the df/dt relay at Glendale substation. Hydro and NP will identify another location within NP's system and implement df/dt loadshedding.

2.1.2 Hydro will approach AUR Resources once the mine gets into production and discuss their ability to participate in the U/F loadshedding scheme.

2.1.3 NP continues to add feeders to the U/F loadshedding scheme as part of its feeder remote control initiative. Currently NP has 127 feeders available for participation in the scheme.

2.1.4 With the shutdown of the A-C Stephenville mill NP will have to add 60 MW of additional load in the U/F scheme. Target date of May 31 to complete.

2.1.5 Hydro struck an internal committee to investigate the cause of generation frequency oscillations experienced on May 9, 2005 and September 2, 2005. A report of the summary and recommendations was provided at the meeting noting that Hydro concludes the cause of the frequency oscillations have been addressed.

2.2 Finalize Utility Storm Restoration Response Plan

The report "Newfoundland & Labrador Hydro and Newfoundland Power Major Storm Damage Restoration Response" was reviewed and accepted as completed. The report can be used by both utilities as a high-level guide to assess ability to respond to major storms causing varying degrees of damage to each utilities power lines.

2.3 Update status of switching coordination initiative

Those who will conduct the training will receive training in May month. Beginning in June switcher training will be delivered to the designated employees in each utility.

2.4 Revise U/F loadshedding scheme

Ern Buglar and Ted Noftall have been assigned responsibility to revise the U/F loadshedding scheme with a target date of May 31 to complete.

2.5 Review and revise Joint Equipment Sharing Agreement

Assigned to Glenn Samms and Hughie Ireland to complete by the end of June.

3. *Review Reliability Performance Year-to-Date*

Reliability performance for the period December 2005 to March 2006 was reviewed. During this period there were three outages on Hydro's system that impacted NP's customers. On December 27, 2005 a fault on TL-212 caused a brief two minute outage to approximately 11,000 customers on the Burin Peninsula and an 82 minute outage to 1,700 customers in the Bay L'Argent/Terrenceville areas. On January 6, 2006 a trip on Holyrood Unit 2 caused an underfrequency load shed affecting approximately 8,800 customers for six to nine minutes. On January 15, 2006 a breaker failure at Hardwoods substation affected about 9,200 customers for 50 minutes.

Hydro's forced outage delivery point performance 12 M-T-D at the end of March was

SAIFI of 0.27 compared to target of 0.51, and
SAIDI of 8.46 compared to target of 25.70.

There was one underfrequency event as noted above with a target of no more than six. Overall Hydro's reliability performance was very good during the period.

NP noted a number of feeder level outages during the period mostly associated with insulators and conductor failures during winter storm conditions. There were also two transmission outages. On February 25, 2006 a fault on 43L suspected caused by vandals caused an 11 hour outage to customers along the Trinity Bay shore from Winterton to Bay de Verde. On March 30, 2006 insulator failure on 134L caused a 3 ½ hour outage to customers in the Botwood and surrounding rural areas.

NP's reliability performance 12 M-T-D was

SAIFI of 2.54 compared to target of 2.89, and
SAIDI of 3.08 compared to target of 3.98

Hydro also provided a summary of the January 23, 2006 system peak load situation outlining the available generation capacity, actual generation on line and the systems peak load. The combination of Holyrood Unit 2 being unavailable, loss of Upper Salmon due to frazil ice conditions and other problems with HWD and STV gas turbines and icing problems at NP's and A-C hydro generation resulted in the overall generation shortage and need to curtail loads.

4. *Review and Finalize IUSRC 2005 Annual Report*

The report was reviewed and comments on NP's and Hydro's targets were added. The report will be finalized and issued to Ed Martin, Karl Smith and the IUSRC members.

5. *New Business*

No new business discussed.

6. *Next Meeting*

Next meeting tentatively scheduled for the end of June.

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
1. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	Progress with action items ongoing. Refer to separate list.
2. Major storm damage contingency planning committee. To provide a coordinated and joint response to major transmission line damage.	P. Delaney	J. Haynes	Completed – April 2006.
3. Switching Coordination – Prepare employees of both utilities to respond to switching requirements to provide best response to outage situations.	S. LaCour	R. Henderson	Report completed. Training developed. Joint NP/Hydro outage planners meeting set for late September to review roles and procedures.
4. Revise underfrequency loadshedding schedule to reflect loss of ACI Stephenville load.	T. Noftall	E. Buglar	Complete.
5. Review the joint use and sharing of specialized equipment agreement	G. Samms	H. Ireland	Complete.

Newfoundland Hydro & Newfoundland Power
Joint Action Plan
Underfrequency Loadshedding Impact Reduction

ACTION ITEM	RESPONSIBILITY	TARGET COMPLETION DATE	STATUS
1. Investigation of rate of change of frequency relaying	Hydro R. Henderson		A df/dt U/F relay is in service at NP's Glendale substation. Operations are being monitored. A second NP substation location will be identified to pilot df/dt U/F loadshedding
2. Consultation with all customers to identify less sensitive loads to add to the loadshedding schedule.	Hydro R. Henderson		Aur Resources will be approached. No other loads could be identified.
3. Addition of Feeders available for participation in loadshedding.	Newfoundland Power S. LaCour	Dec. 31/05	Total feeders current available for participation in the underfrequency load-shedding scheme is 127.
4. Revise underfrequency loadshedding schedule to reflect loss of ACI Stephenville load.	Hydro R. Henderson Newfoundland Power S. LaCour		Completed. An additional 60 MW of NP feeder load has been added to the U/F scheme.
5. Review and recommend improvements to frequency control equipment as follow-up to May and September 2005 incidents	Hydro R. Henderson		A report summarizing the findings and recommendation has been completed. Hydro has initiated governor setting and maintenance practice changes.

INTER-UTILITY SYSTEM RELIABILITY COMMITTEE MEETING MINUTES

December 5, 2005, 2:00 p.m.

Level 6 Conference Room - Hydro Place

ATTENDING:

Nfld. Power:	Sean LaCour	Phonse Delaney	
Nfld. Hydro:	Jim Haynes	Fred Martin	Rob Henderson

1. **Review Minutes - May 25, 2005**

The minutes of the May 25, 2005 meeting were reviewed and approved after some minor amendments.

2. **Review Action Plan**

1. Action to lessen impact of underfrequency load shedding:

a) Monitoring is continuing on the df/dt relay at Newfoundland Power's Glendale Substation. There have been no operations to date.

b) Consultation with Industrial Customers to add load to the underfrequency schedule is complete. No customers were able to provide additional load. Aur Resources will be approached to see if they have any appropriate loads.

c) Newfoundland Power has brought the total number of feeders involved in the underfrequency load-shedding scheme to 120.

d) The underfrequency load-shedding schedule has be to reviewed and revised with the shutdown of the Abitibi Consolidated Stephenville mill. It was noted that this would result in a greater impact on other customers when an event occurs.

e) A review of system frequency control is underway as a result of two major frequency stability problems occurring on May 9 and September 2. A group of engineers and technical asset specialists at Hydro are investigating the problems and have developed an action plan. One particular cause has not been identified. However, governor speed control settings were found to be the main contributor to the frequency oscillations. Changes to the settings have been made to prevent the future oscillations. A

summary list of action taken to date (attached) was reviewed. Hydro will continue with this work and update the committee at the next meeting.

2. The draft Utility Storm Restoration Response report was reviewed. In summary, the report found that major storms causing damage up to 1000 poles can generally be responded to by resources available on island between Hydro, NP and local contractors with power restored within 8 to 16 days. One area of concern noted was the availability of line contractors. The report will be updated to consider the current contractor situation.

   The sharing or joint use of specialized equipment was identified to need updating during the review and preparation of this report. The updating of that arrangement will be added to the committee's action list.

3. The training for switching is to begin in January. A meeting between Newfoundland Power and Newfoundland & Labrador Hydro is planned for December 21 to firm up the schedule.

3. Review of Reliability Performance

The reliability performance for May to November for Hydro was very good. There was only 1 short duration delivery point forced outage and 5 short duration planned outages. There were 3 underfrequency load shedding events. Two were the previously noted frequency oscillation disturbance and one was the result of Holyrood unit 3 tripping caused by a loss of power to its fuel pumps. The loss of power was due to lightning related disturbances on the power system.

The 12 month to date SAIFI is 0.43 interruption per delivery point compared to a target of 0.65. The 12 month to date SAIDI is 12.04 minutes per delivery point compared to a target of 39.00 minutes. There have been 4 underfrequency events to date in 2005 with the target being 8.

The performance for Newfoundland Power for May to November was also very good. The 12 month to date SAIFI is 3.71 interruptions per customers compared to the target of 4.04. The SAIDI performance is 4.39 hours per customer compared to a target of 4.42.

Newfoundland Power noted they are doing more hot-line work, more multi-area crew blitzing and more use of portable transformers to reduce planned outage impacts. They have a significant amount of planned work to replace gap type lightning arrestors due to a number of failures. Newfoundland Power also noted they have focused on inspection and testing of power transformer auxiliary

equipment and control circuits as well as replacement of gas detector relays to address reliability of power transformers.

Discussion ensued on these transformer related problems. Hydro agreed to share with Newfoundland Power its plans with respect to transformer oil and life extension.

ACTION: R. Henderson to ask H. Ireland to contact G. Samms of Newfoundland Power.

4. **Annual Newfoundland Power Generation Credit Test**

Newfoundland Power reported they are experiencing a number of problems with the replacement of the Wesleyville gas turbine gas generator.. The supplier of the gas generator , Siemans, is going to Wesleyville to address these problems. As a result of the delay in completing this project Newfoundland Power requested a delay in the test until early January.

ACTION: S. LaCour and R. Henderson to co-ordinate

5. **Voltage Optimization Test**

Newfoundland Power reported they were able to reduce their system load by 25 MW through a reduction in voltage at various in feed points when the system load was at 65% of peak during recent testing. They dropped the voltage by 4-5%. It is not known how long the reduction can be sustained. In order to do this an early morning (0300h) test may be carried out as the load is very stable at that time.

6. **Fred Martin's Retirement**

Fred's retirement on December 30 was recognized by the committee. He was wished all the best for the future and thanked for his contribution.

7. **Next Meeting**

The next meeting will be scheduled for late January or early February at Newfoundland Power's office. At that meeting a draft of the 2005 IUSRC Annual Report would be reviewed.

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
1. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	Progress with action items ongoing. Refer to separate list.
2. Major storm damage contingency planning committee. To provide a coordinated and joint response to major transmission line damage.	P. Delaney	J. Haynes	A draft report has been reviewed with some changes required. Target Completion Date of January , 2006.
3. Switching Coordination – Prepare employees of both utilities to respond to switching requirements to provide best response to outage situations.	S. LaCour	R. Henderson	A report on the Joint Switching Initiative has been prepared and training has been developed. A target date of first quarter 2006 to complete training and implement the initiative.
4. Revise underfrequency load shedding schedule to reflect loss of ACI Stephenville load.		R. Henderson	To be initiated early in 2006.

Newfoundland Hydro & Newfoundland Power
Joint Action Plan
Underfrequency Loadshedding Impact Reduction

ACTION ITEM	RESPONSIBILITY	TARGET COMPLETION DATE	STATUS
1. Investigation of rate of change of frequency relaying	Hydro R. Henderson		A df/dt U/F relay is in service at NP's Glendale substation Operations are being monitored.
2. Evaluation of a spinning reserve criteria	Hydro R. Henderson	Completed	This had been investigated by Hydro and a report written. It concludes that various options to increase spinning reserve on the system are not justified (not economical).
3. Consultation with all customers to identify less sensitive loads to add to the load shedding schedule.	Hydro R. Henderson		Aur Resources will be approached. No other loads could be identified.
4. Addition of Feeders available for participation in load shedding.	Newfoundland Power S. LaCour	Dec. 31/05	Total feeders available for participation in the underfrequency load-shedding scheme are 120 at the end of 2005.
5. Revise underfrequency load shedding schedule to reflect loss of ACI Stephenville load.	Hydro R. Henderson Newfoundland Power S. LaCour	Early in 2006	
6. Review and recommend improvements to frequency control equipment as follow-up to May and September 2005 incidents	Hydro R. Henderson	First Quarter 2006	A draft report summarizing the findings and recommendation is under review. Hydro has initiated governor setting and maintenance practice changes.

System Frequency Oscillation Trouble

Summary of Action to Date:

1. A task group headed by Protection and Control Engineering has been established to review the incidents, analyze the data and recommend further action to limit the potential for future events of this nature.

   The group consists of Protection and Control Engineers, System Planning Engineers, System Operations Engineers, a Mechanical Engineer and Hydro Generation Asset Maintenance Specialists.

2. "Bypass Solenoids" in Bay d'Espoir units on 1 to 7 have been turned "off". This significantly increased the damping of the governors. This will significantly reduce if not eliminate potential frequency oscillations.

3. Load rejection tests and governor response testing has been completed on all mechanical governors, the seven units at Bay d'Espoir and Hinds Lake. The unit governor responses for these units were adjusted to more closely match the System Planning model's desired response.

4. Automatic Generation Control (AGC) has been tuned to accept more damped unit response. This will enable the AGC to function correctly to control system frequency for changing system load.

5. Preventative maintenance testing procedures for the governors to be followed during each units annual maintenance have been revised.

6. Mechanical Engineering have determined a number of corrective maintenance action items to be addressed over the next few months. None of these are urgent with respect to frequency control but will improve unit response.

7. In the future, plant maintenance staff will not change governor control settings without prior approval.

8. System Planning will continue simulation analysis of the system to determine enhanced governor settings and use unit testing to better match the actuals to the model.

INTER-UTILITY SYSTEM RELIABILITY COMMITTEE MEETING MINUTES

February 21, 2005

Level 6 Conference Room - Hydro Place

ATTENDING:

Nfld. Power:	Sean LaCour	Phonse Delaney	Jack Casey
Nfld. Hydro:	Jim Haynes	Fred Martin	Rob Henderson

Introduction

Jack Casey was introduced to the committee. He is the new NP Control Center Superintendent replacing Eugene Doyle who is now Superintendent of NP's operation in Clarenville.

1. **Review Minutes, November 29, 2004**

   The minutes of the November 29 meeting were approved with amendments to the notes on the Spinning Reserve Analysis as presented by R. Henderson.

2. **Action Plan Review**

   The action plan related to reducing the impact of underfrequency loadshedding was reviewed and the following reported:

   a) Rate of Change of Frequency Relays

   NLH reported that the df/dt relay for Abitibi Consolidated (ACCC) is with ACCC to install. NLH is working to get a schedule from ACCC.

   NLH also reported that there have been no operations to date of the df/dt element of the underfrequency relays. The rate of change of frequency has not been beyond the trip setting since the relay was placed in service.

   b) Spinning Reserve

   NLH reported the report is completed and is currently being printed. A copy will be provided to NP for their records.

   It was noted that additional costs were identified by NLH since the last meeting. These related to the requirement of running gas turbines during peak load conditions and the need to obtain additional generation sources to replace the 45 MW of reserve required from the Holyrood TGS. The

additional sources are necessary to replace the 45 MW of firm energy production capability relied on at Holyrood during drought conditions.

c) Identification of Additional Loads

NLH reported that letters were sent to all industrial customers asking for greater participation in underfrequency load shedding. A response was received by all except NARL, although NARL has indicated a willingness to participate to the extent it can. The responses were all positive and NLH is following up on this with them.

d) Addition of Feeders

NP reported they completed the addition of 11 feeders in 2004. There are now 145 feeders capable of being included in the U/F scheme and currently 131 feeders are active in the load shedding scheme. Another 8 feeders will be added in 2005.

Some discussion was held on the noteworthy improvement in underfrequency events in 2004. The conclusion was the improvement could be attributed to changes to protection alarm and trip settings at Holyrood and a more cautious approach to on-line testing and maintenance.

3. **Performance Review**

a) Hydro Performance

NLH reviewed their performance since November. There were four delivery point interruptions over this period. Two related to a planned outage on TL-225 affecting customers in Deer Lake and one a short outage of 4 minutes on TL-214 on December 6. The most significant outage was on December 7 when the entire Stephenville area and the ACCC paper mill in the area were interrupted. This outage was caused by a failure of a NP breaker that resulted in NLH's back-up protection operating. The outage to NP customers was 1 hour 44 minutes.

b) Newfoundland Power Performance

NP reported numerous incidents over the period. Many were related to severe weather causing salt spray build-up. Others which were noteworthy included: 2 outages causing transformer gas relays to misoperate at Chamberlains and Gallants; trouble on Deer Lake Power's line 1 affecting Pasadena and Marble Mountain; a tree contact on 353L

affecting the south shore of the Bay of Islands; and a January 24 ice storm affecting Paradise, the St. John's east end and Bell Island areas.

NP met and exceeded the 2004 targets set by the IUSRC but came up short on achieving its' own internal reliability targets.

4. **2004 Committee Report**

The draft report was reviewed. It was noted that all targets were met and that there was significant improvement to NLH's performance.

The following sections require additional work to finalize:

System Enhancements – NLH will finalize their section to include all action taken at Holyrood.

Committee Achievements – R. Henderson will draft this section.

2005 Reliability Performance Targets – It was agreed a 10% improvement over the 5 year average will continue to be set as the target. S. LaCour will complete NP's section and R. Henderson will complete the NLH section.

5. **Annual NP Generation Capacity Credit Test**

NP reported they did a test on Friday, February 18, to assure themselves they will be ready for the agreed test date of February 24. They identified nine issues during the test that they will be correcting. In particular, it was noted that the meter on Rattling Brook unit 2 failed and the Port Union diesel output was not being metered. However, despite these issues the capacity credit of 125.45 MW was exceeded with a total output of 133 MW.

NP asked if the test on February 24 was still required given that the pre-test proved the capacity. They noted that they spent $25,000 to $30,000 to carry out the test and would like to avoid incurring a repeat of these costs.

NLH agreed to look at the metered output for the pre-test and let NP know if an additional test is required.

6. **New Business**

a) Seal Cove Road Area Damage Complaints

NP asked if the distribution complaints in the Westport area were resolved. NLH agreed to confirm that there have been no further

incidents. [Note; since the meeting, NLH's customer service department has confirmed there have been no complaints since mid-January.]

b) Contingency Planning

NP asked NLH if a joint committee could be established to look at coordination of response to major storm damage contingencies. This was agreed and NLH (F. Martin) will ask the NLH Central Region staff to make contact with G. Emberly of NP's planning department to begin this process.

c) Switching Coordination

NLH asked NP if the switching coordination activity could be continued to get the switching training completed. This was agreed. J. Casey and E. Doyle will take this on for NP and will coordinate with R. Henderson.

7. Next Meeting

The next meeting is tentatively scheduled for May 19th, 2005 at 10:00 am Killiam Room at NP's Kenmount Road office.

Inter-Utility System Reliability Committee
Meeting Minutes
November 29, 2004
Killam Room – Newfoundland Power, 55 Kenmount Road

Attending: Fred Martin – Newfoundland and Labrador Hydro
Rob Henderson – Newfoundland and Labrador Hydro
Jim Haynes – Newfoundland and Labrador Hydro
Phonse Delaney – Newfoundland Power
Sean LaCour – Newfoundland Power

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1. Review minutes June 28, 2004.

   The minutes of the June 28, 2004 meeting were reviewed and approved.

2. Review U/F Loadshedding Action Plan.

   This is the only item remaining on the IUSRC Action Plan. Hydro advises that the df/dt (rate of change of frequency) relay for Abitibi-Consolidated Stephenville operation has been purchased and should by now be installed. A-C STV have about 48 mw of refiner load in the load shed scheme with a total load of about 70 mw. At present there are two df/dt underfrequency relays in operation within the electrical system; one at A-C in Stephenville and one at Glendale substation. Hydro will monitor operation of these relays and review the relay settings in 2005.

   With respect to the spinning reserve study, Hydro have analyzed 16 cases for dynamic modelling with only 3 cases indicating reduced load shedding due to the additional spinning reserve. Further technical analysis is being completed to assess the benefits and cost of increasing system spinning reserve. However, preliminary findings suggest the cost of operating the system generating units to provide additional spinning reserve is in the ballpark of $2 m associated with the required inefficient operation of the hydraulic units that in turn will result in additional energy production at Holyrood.

   Jim Haynes undertook to follow up with a letter to Hydro's industrial customers to explore possibility of including additional load in the u/f load shed scheme.

   Hydro asked if any of Newfoundland Power's large customers could feasibly be added to the u/f load shedding scheme. Newfoundland Power agreed to look into it in conjunction with exploring expanding the curtailable rate.

3. Review June to October Reliability Performance

Hydro

Hydro's reliability of service to Newfoundland Power has been quite good year-to-date. Hydro experienced an u/f load shedding event on September 21, 2004 when unit #7 at Bay Despoir tripped while commissioning the unit's exciter. This impacted 13,411 customers in the St. John's area. Another u/f load shedding event occurred on October 7, 2004 when Holyrood unit G2 tripped during testing of controls on the boiler drum level and the unit became unstable. This impacted 8,138 customers in the St. John's area. Hydro experienced an infeed outage to the entire Stephenville area on October 20, 2004 when personnel inadvertently initiated a station lookout while replacing bulbs in the potential indicator lights on the station protection panel. The outage affected 9,901 customers for 15 minutes in the St. George's Bay, Stephenville and Port Au Port peninsula areas.

Newfoundland Power

Newfoundland Power's reliability performance has been good during the period since the last meeting. On a 12 M-T-D basis SAIFI is 3.12 and SAIDI is 4.08 however there were several significant outage events. On September 20, 2004 high winds from the remnants of hurricane Ivan caused power outages to over 10,000 customers mostly in the south, west and central portions of the province. On November 16, 2004 high winds and an early season snow storm created outages to more than 13,000 customers in the Grand Falls and Gander areas including Hydro's 1,743 customers on Fogo and Change Island's.

4. Scada/Coordination and Sharing

Newfoundland Power indicated that they would not be moving forward with a pilot project at Western Avalon substation. In 2005 Newfoundland Power will complete a review of the feasibility of expanding control of it's electrical system equipment utilizing Hydro's substation and Scada infrastructure as part of it's overall Scada expansion plan.

5. System Peak Load Preparations

Both utilities acknowledged the operational procedures in place to monitor and respond to system peak load events.

6. New Business

A target date of January 31, 2005 was set to complete a draft of 2004 IUSRC Annual Report.

7. Next Meeting

The next meeting was set for early February to be held at Hydro Place. The meeting would review the annual report and set reliability targets for 2005.

INTER-UTILITY SYSTEM RELIABILITY COMMITTEE MEETING MINUTES

June 28, 2004

Level 6 Conference Room - Hydro Place

ATTENDING:

George Durnford -	Nfld. Power	Fred Martin -	Nfld. Hydro
Phonse Delaney -	Nfld. Power	Rob Henderson -	Nfld. Hydro

It was noted that while the normal schedule would have seen the meeting being held at Newfoundland Power's office, it had been agreed to hold the meeting at Newfoundland Hydro's office because Phonse & George were already scheduled to be at Newfoundland Hydro's office for another meeting.

1. **Review Minutes, March 2, 2004**

The minutes of March 2, 2004 were reviewed and approved with some minor adjustments. R. Henderson to reissue. (Reissued on June 28th)

2. **Action List**

As per the previous meeting the only action items remaining from the 2003 list relates to underfrequency load shedding reduction initiatives. The status of the outstanding items is as follows:

.1 Investigation of rate of change of frequency relays

NP completed an under frequency loadshed feeder rotation on 2004-04-05. This included the df/dt function at Glendale sub. The setting was at 59.5 with a df/dt of 0.6 Hz/sec at 12 cycles as per Hydro's request. On April 13, an under frequency occurred, and the Glendale feeders did not trip. Hydro has a new high-speed frequency recorder in service that will assist in evaluating the effectiveness of the new settings. Hydro will check to see if everything worked properly.

Subsequent to the meeting Hydro checked this incident and it was found that the rate of change of frequency must be sustained above 0.6 Hz/sec for more than 12 cycles. In this incident the rate of change of frequency was not sustained for that time and therefore the relay did not operate.

.2 Evaluation of spinning reserve criteria

- Hydro is beginning an analysis of the options for criteria and the potential cost impacts. It is a joint System Planning and System Operations project. The analysis is going to be carried out using simulation of the underfrequency load-shedding scheme in combination with unit response. This will reflect the benefits of spinning reserve and any effects changes in system inertia have as a result. Nfld. Power generation is reflected in the analysis, although it has minor influence. The analysis will not include adding inertia to the system such as flywheels.

  Target completion: Last quarter of 2004.

3. **Review of February to May Performance**

Hydro

Hydro experienced two under frequency trips affecting Nfld. Power since the last meeting.
On March 7, Holyrood Unit 2 tripped due to the lost of the backup fuel pump. This occurred when the station service (which supplied the backup fuel pump) tripped while the primary fuel pump was out of service due to equipment failure. The station service trip occurred when wind conditions caused overhead wires to slap together. The wires have since been re sagged.

The second event occurred on April 13, when the fuel oil thermal couple failed . This has since been replaced.

Nfld. Power

Newfoundland Power indicated that while reliability has not been good since the last meeting, there were only a few noteworthy events.
On April 17, there was a trip on 358L serving the Gillams Substation. The reason turned out to be vandalism by teenagers in the area. Unfortunately one of the teenagers was injured in the incident. It appears a lock had been removed from a switch and the switch opened under load. As a result of the incident all similar

installations have been checked to ensure proper equipment is in place. Hydro took note of the incident and said it would review its similar installations.

On April 25, a snow, ice and windstorm in the Wesleyville area damaged 116L and a number of distribution feeders. While the Wesleyville gas turbine was utilized to energize the substation and to serve the majority of the Wesleyville load, the damaged feeders prevented the restoration of service to customers in Lumsdon.

4. **SCADA Improvements**

Hydro provided the cost estimates to give NP access through Hydro's RTU's at various substations, in order for NP to monitor and eventually control their equipment.

NP indicated that based on the estimates provided it would like to undertake a pilot project involving Western Avalon Sub.

R. Henderson will provide G. Durnford with the name of the person who will coordinate the work.

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5. **2004 TL – 214 Upgrade Co-ordination**

This project is progressing well, without any issues at present. Hydro will confirm that it is providing the generation for the base load, while NP will provide generation for peak load and emergency conditions.

6. **Next Meeting**

This will be set for late September at Nfld. Power's office.

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	Newfoundland Power	Newfoundland & Labrador Hydro	Status
1. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	G. Durnford	R. Henderson	Progress with action items ongoing. Refer to separate list.
2. Wood Pole Management Program Presentation to Nfld. Power.	P. Delaney	F. Martin	Complete.

INTER-UTILITY SYSTEM RELIABILITY COMMITTEE MEETING MINUTES

March 2, 2004

Level 6 Conference Room - Hydro Place

ATTENDING:

Sean Lacour -	Nfld. Power	Fred Martin -	Nfld. Hydro
George Durnford -	Nfld. Power	Jim Haynes -	Nfld. Hydro
Phonse Delaney -	Nfld. Power	Rob Henderson -	Nfld. Hydro

Introduction:

George Durnford was introduced as a new committee member. He is replacing Sean Lacour. George has recently been assigned responsibility for Newfoundland Power's System Control Centre. Eugene Doyle will therefore now be reporting to George rather than Sean.

1. **Review Minutes, December 15, 2003**

   The minutes of December 15, 2003 were reviewed and approved with some minor adjustments. S. Lacour to reissue.

2. **Action List**

   The only action item remaining from the 2003 list relates to underfrequency load shedding reduction initiatives. The status of the outstanding item are as follows:

   .1 Investigation of rate of change of frequency relays

   Newfoundland Power will be implementing a 29 MW block of load with a frequency trip level of 58.2 Hz to have a rate of change of frequency trip set point of 0.6 Hz/sec.

   Target completion: March 31, 2004.

   Hydro reported they have a new high speed frequency recorder in service that will assist in evaluating the effectiveness of the new setting. Hydro also reported that for the short term the industrial customers will not have a rate of change setting as they do not have a relay with that capability. Hydro is continuing to work on having this implemented.

.2 Evaluation of spinning reserve criteria

- Hydro is beginning an analysis of the options for a criteria and the potential cost impacts. It is a joint System Planning and System Operations project. The analysis is going to be carried out using simulation of the underfrequency load shedding scheme in combination with unit response. This will reflect the benefits of spinning reserve and any effects changes in system inertia has as result. Nfld. Power generation is reflected in the analysis, although it has minor influence. The analysis will not include adding inertia to the system such as flywheels.

  Target completion: Last quarter of 2004.

.3 Addition of less sensitive loads to the load shedding scheme

- Nfld. Power has completed their consultation.

- Hydro reported there is little to be obtained from NARL. However, it will explore the possibility with Corner Brook Pulp and Paper.

.4 More frequent rotation of feeders

- This is complete. Nfld. Power noted that the introduction of the rate of change of frequency setting may cause them to review how this is implemented.

.5 Additional Feeders

- Nfld. Power plans to add between 9 and 12 feeders to the feeders under control from their control centre in 2004. These will also be added to the underfrequency load shedding rotation.

3. Review of December and January Performance

Hydro

Hydro experienced two underfrequency and no delivery point events affecting Nfld. Power in December. On December 23, Holyrood Unit 2 tripped due to a problem with a cooling water pump. This large pump is used to pump sea water for condenser operation. The pump shaft broke causing a loss of vacuum in the condenser and a unit trip. The pump had to be removed from site for repairs resulting in a unit derating until very recently.

The second event occurred on December 20 when the differential protection on the Upper Salmon unit transformer operated due to a corrosion problem in a CT secondary circuit. Since that event, Hydro has checked many of its other 230 kV CT secondary connections for similar problems and has not identified any other problems.

During January there were no underfrequency events, but two delivery point events. These were due to severe weather of wet snow and high winds. The more significant event was on January 24 caused by a problem on TL 215 that was exacerbated by difficulties Nfld. Power had in running their standby generation. As a result, the customer load interruption was significant at nearly 8 hours and 7,491 MW-minutes.

Nfld. Power

Newfoundland Power indicated they did not have any noteworthy events in December since the December 15 meeting. However, in January they experienced a worse than normal performance due to high winds and wet snow that resulted in numerous insulator failures, floating phases and downed secondary. They noted that in January they experienced problems on 302L on the Burin Peninsula at the same time Hydro had troubles on TL 212.

Newfoundland Power made special note of problems they are experiencing on their porcelain cutouts. They have a program underway of replacing these with polymer type cutouts on 20% of their feeders every year. The replacements are based on a risk assessment. Hydro remarked they are experiencing similar problems.

4. SCADA Improvements

Hydro reported it is working on the estimates for providing access through Hydro's RTU's for Nfld. Power to control their equipment. Hydro is agreeable to providing this access. However, the pricing must be such that it is fair and can stand the scrutiny of the PUB process.

Nfld. Power indicated that in terms of priority they see Buchans as the highest priority followed by Western Avalon, Sunnyside and Doyles.

5. 2004 TL – 214 Upgrade Co-ordination

This work is progressing without any issues at present. Nfld. Power has begun engineering work to prepare the Grand Bay station for the mobile diesel units to be rented by Hydro for the prime sources during this line outage.

The outage is scheduled between August 2 and August 22. This was determined to be the optimum time. There will be sufficient standby capacity available through the Rose Blanche unit and the mobile gas turbine to protect for contingencies on the diesel units.

6. **2003 Committee Report**

Some changes to the draft report were suggested to highlight the substantial progress made with respect to underfrequency load shedding. S. Lacour will oversee this being done.

The recommended approach for establishing the 2004 targets was discussed. The merits of various new approaches were discussed such as an analysis of past performance and the action taken to improve that performance, and a subjective approach of removing the best and worst years and determining the average. It was determined that the approach of the previous two years would be used and that further discussion should take place before establishing the 2005 targets. The targets will be for a 10% improvement on the 5 year average.

R. Henderson and S. Lacour will determine the targets and make the necessary report changes. This and other report changes are targeted for completion on March 9.

7. **New Business**

- Wood Pole Management Program

  Hydro agreed to prepare a presentation to Nfld. Power on their wood pole management program. Nfld. Power expects to have six people available for the presentation. F. Martin will arrange for this to occur by late March.

8. **Next Meeting**

This will be set for early May at Nfld. Power's office.

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
1. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	G. Durnford	R. Henderson	Progress with action items ongoing. Refer to separate list.
2. Wood Pole Management Program Presentation to Nfld. Power.	P. Delaney	F. Martin	End of March, 2004.

NEWFOUNDLAND & LABRADOR HYDRO/NEWFOUNDLAND POWER

INTER-UTILITY SYSTEM RELIABILITY COMMITTEE MEETING

Monday, December 15th, 2003
Main Boardroom, Newfoundland Power, Kenmount Road

MINUTES

ATTENDEES:

Mr. Earl Ludlow, Newfoundland Power
Mr. Phonse Delaney, Newfoundland Power
Mr. Sean LaCour, Newfoundland Power
Mr. Fred Martin, Newfoundland & Labrador Hydro
Mr. Rob Henderson, Newfoundland & Labrador Hydro

1. Review Minutes, July 28, 2003

The minutes of the July 28, 2003 meeting were reviewed and approved. With respect to item 5.2, Rob Henderson advised that Hydro are developing a template to evaluate the feasibility of sharing Hydro's SCADA infrastructure to control Newfoundland Power's electrical equipment located in Hydro's stations. The template to include consideration of O&M costs (Eric Downtown/Phil Jeans are to follow-up on this).

2. Review Action List

Item 1 dealing with the joint review of transmission line fault clearing time requirements is complete.

The January 30th, 2003 St. John's system outage action plan (item 2) has been completed.

Rob Henderson gave an update on action item 3 dealing with the underfrequency loadshedding improvement plan. Hydro have requested Newfoundland Power to set up 29 MW load in the 58.2 hz group with df/dt. Newfoundland Power will have this set up by the end of March 2004. Hydro advised that Abitibi-Consolidated in Stephenville may not be ready to participate in the df/dt pilot project. Regarding the evaluation of spinning reserve criteria, Hydro were not optimistic that anything practical could be done noting the negative impacts on Holyrood thermal generation as the main consideration. Rob Henderson to prepare report in Q1 2004. With respect to adding feeders to the underfrequency loadshedding scheme, Newfoundland Power is in the process of adding

4 feeders at Gallant Street substation, 3 feeders at Goulds substation and 2 feeders at Bishop's Falls.

3. *Review Reliability Performance, July to November*

Hydro gave an overview of their reliability performance since July and highlighted the following:

- In July, Hydro experienced 6 delivery point interruptions affecting the Avalon Region due to lightning and 1 underfrequency loadshedding event caused by a trip on TL-234 knocking off the Upper Salmon plant.

- Hydro's performance in August was very good as there were no delivery point interruptions affecting Newfoundland Power customers and no underfrequency events.
- In September there were no infeed outages but Hydro experienced 3 underfrequency loadshedding events. Two were related to loss of generation at Bay D'Espoir associated with problems with the station service and the third was caused by loss of generation at Granite Canal.

- In October there was one underfrequency loadshedding event. Unit G2 at Holyrood tripped.

- November was a good month for reliability performance as there were no events affecting Newfoundland Power customers.

Newfoundland Power reviewed its reliability performance over this period and highlighted the following:

- In July 402L tripped due to faulty suspension insulators affecting 2,300 customers in the Port au Port Peninsula area.

- In August Lewisporte substation tripped due to a crow contacting the station service transformer - 3,900 customers were affected.

- In September BVS-T1 tapchanger failed – used Hydro's portable P-235.

- In October 80L tripped due to damaged insulators (vandalism suspected) affecting 5,300 customers along the Trinity shore.

- On December 7, 2000 a snow storm caused outages to feeders on the Burin Peninsula and several feeders in St. John's as well as 3L to Petty Harbour. Most of the lines tripped due to snow build-up and high winds slapping lines together.

At the end of November SAIFI was 5.35 12 month year-to-date compared to the annual target of 4.66. Hydro's impact was 45% of total SAIFI. SAIDI performance was 5.20 compared to the annual target of 5.66 with Hydro's contribution amounting to 25%.

4. ***Joint Response to PUB Staff Review of St. John's 66 kV System Reconfiguration Report***

Hydro indicated that they will now move forward to submit their report to the PUB>

5. ***IUSRC 2003 Review Report***

It was agreed to follow the same format as used last year and to have a draft prepared by January 30, 2004. Sean LaCour to lead on preparation of draft.

6. ***New Business***

Newfoundland Power inquired about the results of Hydro's wood pole testing with MUN. Hydro explained the project involved statistical sampling of poles removed from service to determine remaining strength and degree of deterioration. Only about 10% of the poles removed from service had been tested to date but early indications are that ground line rot is not an issue, some poles have ant damage and some have rotten tops causing "the stove pipe affect". Hydro are considering use of Boron rods to extend the life of wood poles. The results of the project could shape a capital pole treatment program beginning in 2005. Hydro agreed to share the results of the project with Newfoundland Power.

7. ***Next Meeting***

The next IUSRC meeting was set for February 2004.

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
1. NP and NLH to review the transmission line clearing-time requirements for system.	T. Noftall	C. Walsh	**Completed**
2. An action plan in response to the January 30, 2003 St. John's system outage has been developed and progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	**Completed**
3. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	Progress with action items ongoing.

MINUTES OF THE INTER-UTILITY SYSTEM RELIABILITY COMMITTEE

July 28, 2003
Level 6 Conference Room - Hydro Place

ATTENDING:

Earl Ludlow -	Nfld. Power	Dave Reeves -	Nfld. Hydro
Sean LaCour -	Nfld. Power	Fred Martin -	Nfld. Hydro
		Rob Henderson -	Nfld. Hydro

1. Introduction

Fred Martin was introduced to the group as the new Hydro Vice President of Transmission & Rural Operations.

2. Review Minutes, April 30, 2003

The minutes of the April 30, 2003 meeting were reviewed and approved.

3. Action Items

The Committee Action List was reviewed with the following updates.

.1 Transmission Line Critical Clearing Time Report

- The report as previously tabled has been made final. Newfoundland Power is proceeding with West Coast 66kV improvements in 2005 pending PUB approval. Additional work will be done in future years.

- Status is complete.

.2 January 30, 2003 Action Plan

- All items have now been completed with the exception of the following:

  6) Restoration of Hardwoods Gas Turbine to full capacity. Note this was completed and released for normal loading on August 18, 2003.

7a) The final report from Hubbell has not been accepted by Hydro. Hydro will confirm that it can be shared with Newfoundland Power.

- It was agreed the action list would be updated and provided to the two CEOs.

.3 Underfrequency Load shedding Improvements

The following is the change in status of the action items:

.1 The underfrequency load shedding report prepared by Hydro's System Performance & Protection group has been provided to all major customers. The plan is to install rate of change of frequency relays as recommended in the report for in-service this fall. Target completion November 30, 2003.

.2 No change

.3 Newfoundland Power have added 4 new feeders following a review of their sensitive loads.

.4 Feeders will be rotated within the underfrequency schedule after 2 events in a month or 4 in one year.

.5 Four feeders have been added as per item 3 above and seven more additions have been identified for later in 2003.

4. Review of April to June Performance

Hydro's delivery point performance has been very good over this period with no forced outages. There was one underfrequency load shedding event on June 27th when Cat Arm unit 1 tripped due to a malfunction of the unit transformer's deluge air supply. Hydro has investigated the problem and has identified the problem with a faulty air supply pressure-regulating valve. The PM program is being reviewed to include this valve and related items.

Newfoundland Power reviewed its performance and highlighted the following:

- 80L was damaged due to gun shots in May

- Problems with cable potheads are becoming more frequent. The problems are hard to identify using infrared scanning.

- The June 12 month to date SAIFI is worse than target. The Hydro portion is also behind target and contributing to the poor performance. The January 30th, March 4th and December 25th incidents were the major contributions.

- The June 12 month to date SAIDI is better than target. However, due to the above events, Hydro's contribution is worse than the target.

5. *SCADA Improvements*

1. Additional Data Exchange – 50 status and 150 analog points in Hydro's EMS will be added to the exchange with Newfoundland Power's SCADA system.

2. Sharing of RTUs – Newfoundland Power and Hydro are working together to permit Newfoundland Power to access and control their equipment remotely using Hydro's RTUs in stations where Newfoundland Power doesn't currently have RTUs. R. Henderson to report status at next meeting.

3. Remote Operation of Air Break Switches – Hydro is investigating installing remote operation equipment at the Bay L'Argent and Monkstown terminal stations to enable operation of the switches in these stations to improve services to customers in this area. Budget estimates are being prepared. R. Henderson will report back on this and will look to R. Spurrell for assistance for Hydro's IS&T staff.

6. *2004 TL-214 Upgrade Co-ordination*

Hydro outlined the preliminary plan for taking TL-214 out of service for 3 weeks in 2004. Planning work on this has been initiated and it was recognized that careful co-ordination with Newfoundland Power is necessary. Newfoundland Power emphasized that they want the same attention to this work as was done for the TL-236/TL-218 work in 2002.

7. *Retirement Presentation*

E. Ludlow presented D. Reeves with some retirement gifts from Newfoundland Power. He thanked Dave for his work and the good working relationship between the companies.

8. *Next Meeting*

Early September will be targeted.

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
1. NP and NLH to review the transmission line clearing-time requirements for system	T. Noftall	C. Walsh	**Completed**
2. An action plan in response to the January 30, 2003 St. John's system outage has been developed and progress will be monitored by the IUSRC	S. LaCour	R. Henderson	Progress with action items ongoing.
3. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	Progress with action items ongoing.

NEWFOUNDLAND & LABRADOR HYDRO/NEWFOUNDLAND POWER

INTER-UTILITY SYSTEM RELIABILITY COMMITTEE MEETING

Wednesday, April 30th, 2003
3:00 p.m.

Killam Room, Newfoundland Power

MINUTES

ATTENDEES:

Mr. Earl Ludlow, Newfoundland Power
Mr. Sean LaCour, Newfoundland Power
Mr. Dave Reeves, Newfoundland & Labrador Hydro
Mr. Jim Haynes, Newfoundland & Labrador Hydro
Mr. Rob Henderson, Newfoundland & Labrador Hydro

1. ***Review Minutes, November 27, 2002***

The minutes of the February 24, 2003 meeting were reviewed and approved.

2. ***Action List***

The action list is to be revised to show only items requiring follow up. Completed items will be removed.

3. ***Review of Reliability Performance***

Hydro

Hydro gave an overview of their delivery point performance in February and March. During February there were no delivery point interruptions affecting Newfoundland Power. In March there was a three minute outage to the South West Coast due to a trip on TL214 due to high winds. On March 4 a major outage affected the entire Western portion of the province.

At 12:56 on March 4, power was interrupted to 33,405 Newfoundland Power customers on the west coast due to a fault on TL-232 between Buchans and Stony Brook. Areas affected included Buchans, Deer Lake, Corner Brook, Stephenville, and Port Aux Basques areas. Restoration was delayed due to failure of Hydro's EMS control system.

Newfoundland Power's Grand Bay gas turbine was started to restore partial service to the Port Aux Basques area. Hydro were unable to start the Stephenville 50 mw gas turbine. Cold temperatures and high winds caused further delays in restoring particular distribution feeders on Newfoundland Power's system due to cold load pickup limitations. Power was restored to all customers by 19:00 hrs.

The outage on TL-232 was due to a jumper letting go at Stony Brook station. However, line TL-205 between Buchans and Stony Brook also tripped inadvertently separating the west coast from the rest of the system. The Deer Lake Power system isolated and continued to supply the Deer Lake and Humber Valley local loads.

The reason why both lines tripped between Buchans and Stony Brook appears related to saturation of the capacitive voltage transducers (CVT) supplying the protective relaying. During the fault on TL232 the CVT may have distorted the waveforms to the protective relays to cause the fault to appear to be on TL-205. The problem with the CVT may be related to loading and harmonics. An investigation and report is expected by mid-May. This may have significant ramifications for other Hydro standard protection circuit design.

The failure of the EMS remote control was due to a real time clock failure on a computer card. Hydro are reviewing the design of the back up power supply for the Stephenville gas turbine.

Overall in March there were nine (9) delivery point interruptions affecting Newfoundland Power. There were no underfrequency events in February or March. On a 12-MTD basis Hydro's SAIFI is 1.29 compared to a target of 1.33, SAIDI is 77.63 compared to a target of 48.90 and year-to-date there have been 2 underfrequency events with a target of 8 for the year.

Newfoundland Power

February's performance was impacted by a number of winter storms causing a higher than average SAIFI of 0.31 and SAIDI of 0.46. An early February sleet storm hit the Humber Valley area causing feeder outages in Pasadena. As well Deer Lake Power line 1 tripped due to sleet interrupting service to Marble Mountain and Pasadena.

March's performance was dominated by the events of March 4 affecting the west coast region. SAIFI and SAIDI were over 1.0 and 2.0 respectively in Corner Brook and Stephenville / Port Aux Basques areas. Another significant outage on March 14 affecting 10,255 customers serviced from the Hardwoods and Broad Cove Substation was due to the failure of a transformer power cable on HWD-T2. Overall for March SAIFI was 0.41 and SAIDI was 0.49.

Newfoundland Power performance 12-MTD at the end of March was SAIFI of 5.62 compared to target of 4.66 and SAIDI of 5.64 compared to target of 5.66.

4. Critical Clearing Time Report

The report was accepted by the IUSRC subject to a final check on the cost estimates by Newfoundland Power for the communications infrastructure.

5. Review Status of January 30, 2003 Outage Action Plan

The 18 item action plan was reviewed for status as of April 29. The following items were noted as completed- items 2, 3, 4, 7, 8, 9, 10, 12, 14, 15, 17 and 18. A total of 12 of the 18 action items (66%) have been completed. This action plan will continue to be reviewed at IUSRC.

6. Review Status of Underfrequency Loadshedding Scheme Improvement Plan

Hydro provided an updated status of a joint action plan comprising 5 items. Monitoring of rate of change of underfrequency relays is underway at Hydro. An evaluation of spinning reserve criteria will begin following commissioning of Granite Canal. Newfoundland Power has begun a review of feeders in the load shed plan with a view to add more customers to the scheme. Also feeders will be instated in the plan more frequently.

7. Presentation on Newfoundland Power's substation and Distribution Automation

Rick Spurrell provided the committee with an overview of the status of automation used within NP substation including the use of gateway and IED devices. The main focus was on explaining the feeder control program, the use of feeder management relays and NULEC reclosers and the benefits being realized from this new equipment and technology.

8. New Business

No new business was discussed.

9. Next Meeting

Tentatively set for June at Hydro Place.

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
1. NP and NLH to review the transmission line clearing-time requirements for system	T. Noftall	C. Walsh	Final report has been accepted. NP to review communications cost estimates.
2. An action plan in response to the January 30, 2003 St. John's system outage has been developed and progress will be monitored by the IUSRC	S. LaCour	R. Henderson	Progress with action items ongoing.
3. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	Progress with action items ongoing.

NEWFOUNDLAND & LABRADOR HYDRO/NEWFOUNDLAND POWER

INTER-UTILITY SYSTEM RELIABILITY COMMITTEE MEETING

Monday, February 24th, 2003
3:00 p.m.
Hydro Place

MINUTES

ATTENDEES:

Mr. Earl Ludlow, Newfoundland Power
Mr. Sean LaCour, Newfoundland Power
Mr. Dave Reeves, Newfoundland & Labrador Hydro
Mr. Jim Haynes, Newfoundland & Labrador Hydro
Mr. Rob Henderson, Newfoundland & Labrador Hydro

1. Review Minutes, November 27, 2002

The minutes of the November 27, 2002 meeting were reviewed and approved.

2. Items Arising from the Minutes

Newfoundland Power provided Hydro a response to the Burin Peninsula undervoltage system operation in June 2002. The undervoltage load shedding at Greenhill and Laurentian substations operated correctly as reported previously. Newfoundland Power's review of SCADA data shows that NLH's breakers at Sunnyside on TL-219 and TL-212 opened within 4 seconds of each other resulting in a momentary outage to the Burin Peninsula. TL-212 reclosed at Sunnyside, in accordance with its design, restoring power to all Burin Peninsula stations within 12 seconds. The outage by NLH was properly recorded as a momentary outage. TL-219 failed to reclose and was remotely closed back in from the ECC about 3-1/2 minutes later. Newfoundland Power's undervoltage load shedding at Laurentian and Greenhill substations is design to trip after 4 seconds upon sensing no voltage. As a result, Newfoundland Power's customers served from these substations experienced an outage for several minutes until feeders were remotely closed back in from the SCC. Newfoundland Power will undertake a review of this undervoltage loadshedding scheme to determine if improvements can be made to coordinate the undervoltage loadshedding scheme with the reclosing set up of Hydro's infeed lines to the Burin Peninsula.

3. *Action Item List*

Item 4 – The committee agreed to postpone review of the Critical Clearing Time Report dated January 31, 2003 to the next IUSRC meeting.

Item 6 – The presentation to overview NP's substation and distribution automation projects will be given at the next IUSRC meeting scheduled for April.

4. *Review of Performance Indices*

Hydro

Hydro gave an overview of their reliability performance for November, December and January. In November 2002 there was one delivery point interruption affecting the Southwest Coast. This was caused by a trip on TL-215 due to high winds. During December there was also one delivery point interruption affecting the St. John's area. This was related to the lightning arrestor failure at Oxen Pond 230/66 kV transformer that caused an outage to the entire substation affecting service in the east half of the City of St. John's. In total, in 2002 there were 8 delivery point interruptions – one in Avalon Region, two in Central, one in Western and four on the South West Coast.

In January there were six delivery point interruptions. All of these relate to the January 30th problems experienced at Oxen Pond and Hardwoods substations. The first interruption was caused by the failure of a lightning arrester on Oxen Pond T1 transformer. The second outage was due to Hardwoods substation T4 transformer tripping due to overload. This transformer was inadvertently set to trip at 75% of its nameplate load rating. Subsequent attempts to restore Hardwoods and Oxen Pond substations resulted in tripping of units at Holyrood and additional overload tripping on Hardwoods transformers.

There was an underfrequency loadshedding event in each of November and December months and two in January 2003. On November 27, 2002 Holyrood unit #3 tripped due to a valve set in an incorrect position causing a low boiler drum level trip resulting in loss of 15 MW of Newfoundland Power load. On December 25, 2002 following attempts to restore the St. John's system after the lightning arrestor failed at Oxen Pond T1, an underfrequency trip was created when too much load was restored at the same time by Newfoundland Power. On January 30, 2003 during attempts to restore the St. John's system there were two underfrequency loadshedding events. One occurred during load restoration when the system was not prepared for the amount of load picked up at one point during the load restoration process. The second event was caused by the tripping of Holyrood units #2 and #3 due to the sudden loss of system load when both the Hardwoods and Oxen Pond Terminal Stations tripped on overload due to cold load pick-up during load restoration.

The total number of underfrequency events in 2002 was 17. Year-to-date in 2003 there have been 2 underfrequency events causing 1,125 MW-MIN of unserved energy. The problems at Oxen Pond and Hardwoods substations have had a major impact on unserved energy year to date 2003 with 33,637 MW-MIN of unserved energy in the first month of the year.

Newfoundland Power

Newfoundland Power's SAIFI for November was 0.23 compared to a plan of 0.19. SAIDI performance for November was 0.21 and compares favorably to a plan of 0.31. Hydro's contribution to November's SAIFI and SAIDI performance was 0.06 and 0.01 respectively.

In December, there were several storms that impacted reliability performance causing feeder outages mainly due to broken insulators, tie-wires and salt spray. On December 17th there was a planned interruption to the Codroy Valley area and backup generation was used to supply the Port aux Basques area to allow Hydro to replace insulators on TL-214. The December 25th outage to Oxen Pond substation impacted nearly 35,000 customers in the St. John's area and the associated underfrequency event due to load restoration caused load shedding to another 15,000 customers. Newfoundland Power's load restoration following the Oxen Pond outage caused an overload on Newfoundland Power's 66 kV lines that caused a further outage to about 13,000 customers in the Goulds to Southern Shore areas. On December 27th and 28th the Twillingate and Bonavista North areas were impacted by severe weather. Overall, SAIFI performance in December was 0.61 and SAIDI was 0.56 with St. John's and Gander areas impacted the most. Hydro's contribution to SAIFI and SAIDI was 0.21 and 0.12 for the month.

January's reliability performance was dominated by the events of January 30, 2003. SAIFI for January was 1.31 of which 0.26 was attributed to Newfoundland Power's performance and 1.05 associated with Hydro's performance. SAIDI for January was 0.99 overall with Newfoundland Power's and Hydro's contributions 0.42 and 0.57 respectively. January's reliability results compares poorly to the five-year average SAIFI and SAIDI of 0.22 and 0.24. The January 30th St. John's system outage was reviewed in detail in a meeting on February 11, 2003 and an action plan has been developed. The majority of other power outages in January were associated with several blizzards impacting distribution lines with failed insulators/floating phases being the leading causes of problems. On January 15th there was a planned outage to customers in the St. Mary's Bay and Trepassey areas to replace a broken crossarm on transmission line 94L.

5. *2002 IUSRC Annual Report*

The committee reviewed the draft report and discussed setting of targets for 2003. There was general agreement to continue to target a 10% improvement on the 5-year average reliability performance measures with some adjustment for January 2003 actual results given the very significant impact that January's performance will have on achieving year

end 2003 targets. A number of options for setting 2003 targets for each utility will be developed within the next week with a view to finalize the report by the week of March 24th.

6. *New Business*

The committee agreed to delay discussions on the Critical Clearing Time report recommendations until the next meeting.

The committee reviewed proposed changes to improve the underfrequency loadshed scheme (UFLS) and agreed to the following actions:

1. In 2003 Hydro will complete field testing of rate of change of underfrequency relaying and make a decision on their use throughout the system.

2. In 2003 Hydro will evaluate the implementation of a spinning reserve criteria for the interconnected island system and make a decision following analysis of the costs and benefits.

3. Both Hydro and Newfoundland Power will consult with their customers and investigate placing less sensitive customers in the UFLS scheme and review loads currently removed from the scheme with the intention to increase the number of customers participating in the UFLS scheme.

4. For 2003 Newfoundland Power has set criteria that will rotate customers in the UFLS more frequently. This is designed to reduce the risk that an individual customer will become overly sensitive to the operation of the UFLS scheme.

5. In 2003, Newfoundland Power will place 14 feeders at Glendale, Kenmount and Hardwoods substations back in the UFLS scheme. As well 12 additional feeders will be added to the scheme at Gallant's Street, Goulds, Bishop's Falls and Botwood substations.

7. *Next Meeting*

Newfoundland Power will host the next meeting to be held in April.

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
1. System Control Operator exchange/familiarization exercise.	S. LaCour	R. Henderson	**Status: Completed**
2. NP and NLH to have the distribution planning sections in each organization look at the possibility of improving reliability through a revised line layout in the Little Bay area (NP SPR-03 feeder currently serves the area).	S. LaCour	D. Reeves	**Status: Completed**
3. NP and NLH to organize regional meetings for operational personnel to review reliability and co-ordination issues and to further relationships.	E. Doyle	B. Butler	**Status: Completed**
4. NP and NLH to review the transmission line clearing-time requirements for system.	T. Noftall	C. Walsh	Final report has been issued and will be discussed at the next meeting.
5. Identifying measures to more closely tie NP Service Continuity to NLH Delivery Point Reliability.	S. LaCour	R. Henderson	**Status: Completed**
6. NP distribution automation activities.	S. LaCour		A presentation to overview NP's substation and distribution automation projects is scheduled for the March IUSRC meeting.

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
7. An action plan in response to the January 30, 2003 St. John's system outage has been developed and progress will be monitored by the IUSRC.	**S. LaCour**	**R. Henderson**	Progress with action items ongoing.
8. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	**S. LaCour**	**R. Henderson**	Progress with action items ongoing.

6. NP distribution automation activities.	S. LaCour		A presentation to overview NP's substation and distribution automation projects is scheduled for the March IUSRC meeting.
7. An action plan in response to the January 30, 2003 St. John's system outage has been developed and progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	Progress with action items ongoing.
8. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	Progress with action items ongoing.

Inter-Utility System Reliability Committee

2003 Review

March 16, 2004

Table of Contents

1.0 Committee Mandate

The Committee was established in December, 1999, by the Presidents and Chief Executive Officers of Newfoundland Power and Newfoundland and Labrador Hydro with the objective of improving service to the customers of both utilities. In particular the key objectives are to reduce outages arising from underfrequency load shedding, set targets, and to monitor and initiate activities to improve the System Average Interruption Frequency Index (SAIFI) and the System Average Interruption Duration Index (SAIDI).

At the beginning of the year the Committee consisted of:

E. Ludlow	Vice President Engineering & Operations Newfoundland Power
D. Reeves	Vice President Transmission and Rural Operation Newfoundland and Labrador Hydro
R. Henderson	Manager, System Operations Newfoundland & Labrador Hydro
S. LaCour	Manager, Engineering & Energy Supply Newfoundland Power

During the year, F. Martin replaced D. Reeves and P. Delaney replaced E. Ludlow.

Other representatives of the companies may attend from time to time depending on the agenda items.

The Committee meets bi-monthly to review each utility's performance to date and identify necessary remedial action(s) to be taken. The Chair of the Committee alternates monthly between the two utilities.

2.0 Performance Targets

In March 2003, the targets for performance improvements were set to generally achieve a 10% improvement in reliability performance over the past five year average. The following utility specific targets for reliability performance were targeted:

Newfoundland Power	Caused by Nfld. Power	Caused by Nfld. Hydro	Total
Service Continuity SAIFI (Interruptions per customer)	3.43	1.23	4.66
Service Continuity SAIDI	4.91	0.75	5.66

Newfoundland & Labrador Hydro	
Delivery Point SAIFI (Interruptions per Delivery Point)	1.33
Delivery Point SAIDI (Minutes per Delivery Point)	48.9
Underfrequency Events (Maximum Number)	8
Total Unserved Energy (MW-minutes)	19,833

Note:

(1) Newfoundland Power reliability performance targets include both planned and unscheduled power interruptions.

(2) Newfoundland and Labrador Hydro's reliability performance targets include only unscheduled (forced) power interruptions.

3.0 Performance Indices in 2003

Newfoundland and Labrador Hydro
Delivery Point Performance Report
2003

SAIFI

Region	Num. Of Delivery Pts	Int. per Del. Point per YEAR					Target
		1999	2000	2001	2002	2003	
Avalon	6	0.00	0.00	0.67	0.17	2.00	
Burin	4	1.75	1.75	1.50	1.00	0.00	
Central	8	0.00	0.13	0.00	0.25	0.38	
West Coast	2	0.00	1.50	0.00	0.50	1.00	
Port aux Basques (S.W. Coast)	3	1.33	4.67	3.00	3.67	2.33	
White Bay	1	0.00	0.00	0.00	0.00	1.00	
Total	24	N/A	N/A	N/A	0.79	1.04	
Forced Only		0.46	1.04	0.79	0.33	0.96	1.33

SAIDI

Region	Num. Of Delivery Pts	Int. per Del. Point per YEAR					Target
		1999	2000	2001	2002	2003	
Avalon	6	0.00	0.00	2.83	5.50	70.7	
Burin	4	129.50	122.25	228.50	45.25	0.00	
Central	8	0.00	0.50	0.00	1.75	0.00	
West Coast	2	0.00	25.50	0.00	29.50	73.00	
Port aux Basques (S.W. Coast)	3	102.00	440.67	109.33	324.33	83.33	
White Bay	1	0.00	0.00	0.00	0.00	57.00	
Total	24	N/A	N/A	N/A	52.50	43.46	
Forced Only		34.33	77.75	52.46	12.21	43.17	48.90

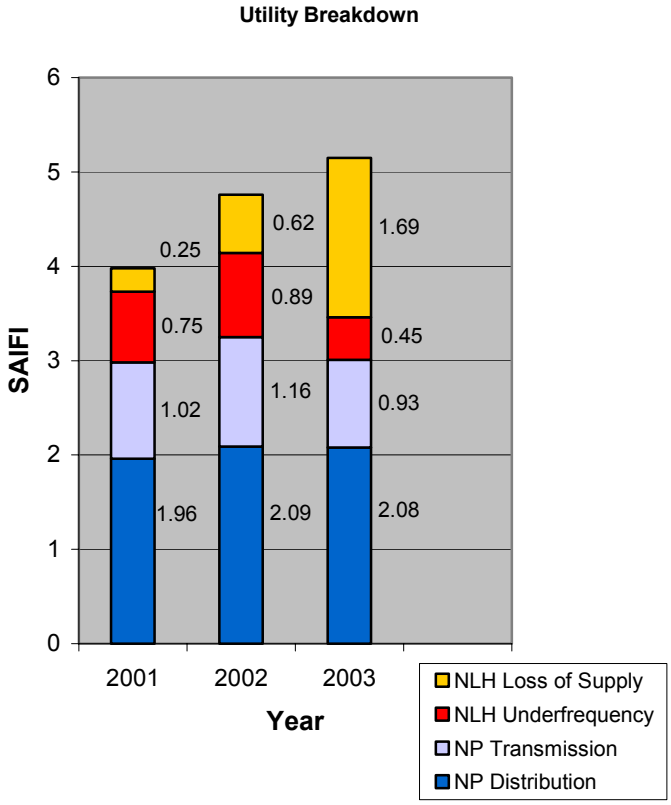
Underfrequency Events and Unserved Energy

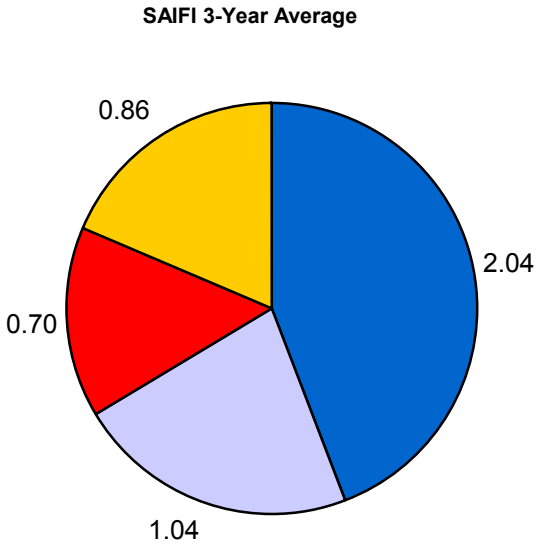
	Year to Date					Target
	1999	2000	2001	2002	2003	
No Events Affecting Nfld. Power	18	7	9	17	10	8
Unserved Energy Due to Underfrequency (MW-min)	5,414	1,456	2,892	4,120	3,185	
Unserved Energy Due to Other Forced Outages (MW-min)	2,554	6,206	4,940	7,693	45,799	
Unserved Energy Due to Planned Outages (MW-min)	N/A	N/A	N/A	1,761	13	
Total Unserved Energy (MW-min)	N/A	N/A	N/A	13,574	48,997	
Forced Only (MW-min)	7,968	7,662	7,832	11,813	48,984	19,833

Newfoundland Power
Customer Service Continuity Report
2003

SAIFI

Region	Number [1] Customers	Interruptions per Customer			2003 Target
		2001	2002	2003	
St. John's	84,380	3.70	3.76	6.11	
Avalon	31,767	3.56	2.42	4.96	
Burin	10,838	4.47	9.55	4.15	
Bonavista	14,716	3.64	7.44	5.77	
Gander	18,447	3.34	6.72	6.30	
Grand Falls	19,293	5.02	3.76	2.10	
Corner Brook	18,867	4.16	6.25	2.99	
Stephenville	14,895	5.76	6.19	6.26	
Total	**213,203**	**3.99**	**4.76**	**5.20**	**4.66**



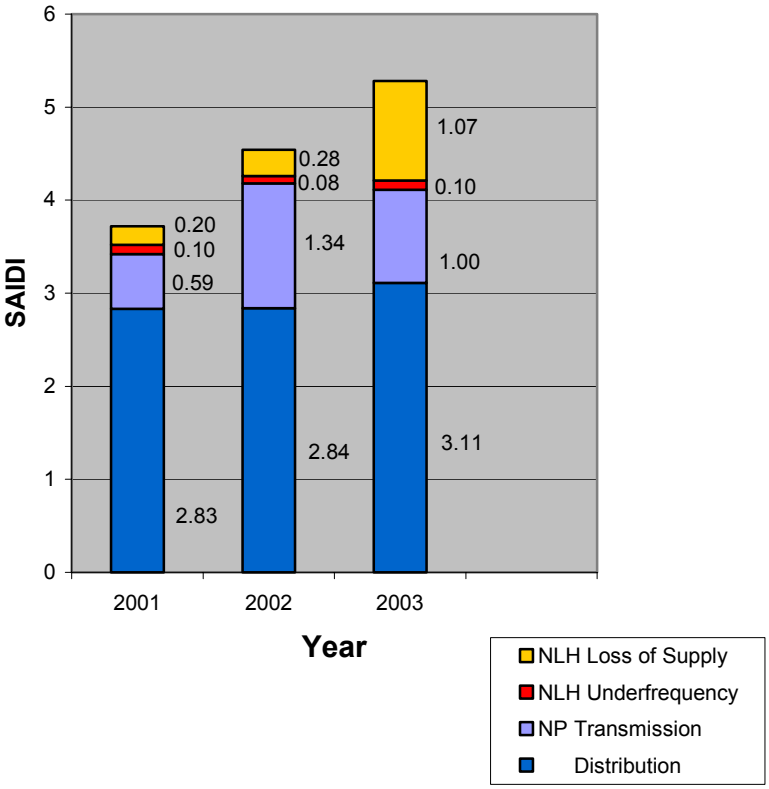


(1) Number of customers at year end 2003.

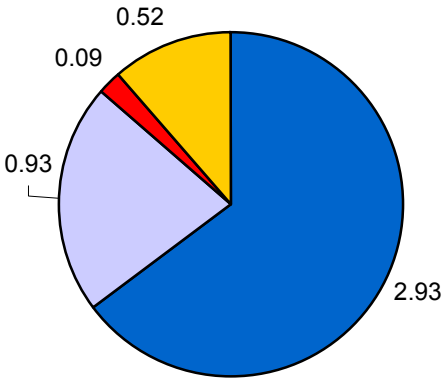
SAIDI

Region	Number [1] Customers	Hours Per Customer			2003 Target
		2001	2002	2003	
St. John's	84,380	2.00	2.14	4.61	
Avalon	31,767	3.75	3.03	5.40	
Burin	10,838	8.74	9.12	6.54	
Bonavista	14,716	4.99	7.96	6.91	
Gander	18,447	4.23	11.32	9.15	
Grand Falls	19,293	5.67	4.51	3.14	
Corner Brook	18,867	3.37	3.50	3.44	
Stephenville	14,895	6.07	7.57	6.60	
Total	**213,203**	**3.73**	**4.54**	**5.28**	**5.66**

Utility Breakdown



SAIDI 3-Year Average



(1) Number of customers at year end 2003.

3.1 Major Events Affecting Newfoundland and Labrador Hydro's Performance

The 2003 reliability was dominated by four major events having widespread impact. Three related to transmission or terminal station equipment causing delivery point interruptions and one was due to underfrequency load shedding caused by station service problems at Bay d'Espoir. Underfrequency load shedding continued to have a significant impact, but substantially less than 2002. The following table summarizes the 2003 underfrequency events.

No	Date/ Time	Major Equipment	Generation Loss	Cause	NP Load Shed
1	Jan. 30/ 10:31	OPD	-	An OPD T1 lightning arrestor faulted, resulting in the loss of all loads supplied by both the OPD and HWD stations. During restoration activities, Nfld Power picked up too much load, causing underfrequency loadshedding.	15 MW
2	Jan. 30/ 10:55	HRD 2 & HRD 3	306 MW	During the process of restoring loads from the HWD and OPD stations, both stations tripped. HRD Units 2 & 3 tripped in response to these conditions.	35 MW
3	June 27/ 21:12	CAT 1	60 MW	Cat Arm unit 1 tripped due to a malfunction in the deluge air supply system for transformer T1.	12 MW
4	July 6/ 12:25	TL 234	75 MW	Lightning strike on TL 234 tripped Granite Canal (18 MW) and Upper Salmon (55 MW).	31 MW
5	Sept. 18/ 21:31	BDE 2, 5 & 6	178 MW	Station service for the Bay d'Espoir plant tripped due to an inverter failure. Station service was not restored in time to prevent loss of governor oil pressure to Unit 2, 5 and 6.	20 MW

No	Date/ Time	Major Equipment	Generation Loss	Cause	NP Load Shed
6	Sept. 18/ 21:50	BDE 1 & 3	124 MW	Station service for the Bay d'Espoir plant tripped due to an inverter failure (see item 5). Governor oil pressure was lost to Units 1 and 3 19 minutes after the loss of Units 2, 5 and 6	79 MW
7	Sept. 30/ 07:12	GCL	39 MW	The Granite Canal unit tripped due to a loose connection on a guide bearing vibration detector.	10 MW
8	Oct. 2/ 15:58	HRD 2	54 MW	Unit 2 at Holyrood unloaded from 153 MW to 68 MW due to the loss of a boiler feedwater pump, then tripped.	20 MW
9	Dec 23/ 19:20	HRD 2	85 MW	Unit 2 at Holyrood tripped due a mechanical failure in a cooling water pump.	33 MW
10	Dec 30/ 09:47	USL	76 MW	The Upper Salmon unit tripped due to operation of transformer differential protection caused by failed contacts in a CT circuit.	9 MW

The three significant delivery point interruptions were:

- On January 30, 2003 at 0953 hours the 230kV bus at Oxen Pond Terminal Station locked out due to a failed lightning arrestor on transformer T1. As a result, Holyrood generating unit 1 and all transformers in Hardwoods tripped. The Hardwoods transformers tripped after the Oxen Pond delivery point was interrupted. While personnel were attending to the bus lockout in Oxen Pond, some of Newfoundland Power customers were restored through the Hardwoods delivery point. Restoration began at approximately 1005. At 1025, amidst the restoration process, all transformers in Hardwoods tripped. Around the same time, transformer T1 at Oxen Pond was isolated and the remaining two transformers, T2 and T3, were restored.

Customer restoration began again around 1035 following restoration of the Hardwoods transformers. Most of Newfoundland Power's customers were restored by 1052, when both Oxen Pond and Hardwoods terminal station transformers tripped. This subsequently resulted in Holyrood generating units 2 and 3 tripping.

By 1115 all available transformers in Oxen Pond and Hardwoods were restored and Stephenville and Hardwoods gas turbines and Holyrood unit 1 were placed in service. Again Newfoundland Power began restoring their customers to service. This process lasted about an hour. During that time, other generation sources were placed in-service to meet the system load requirements. Diesels sources, customer generation and Interruptible 'B' were used to meet the system demand. All customers were restored by 1213.

- On March 4, 2003 at 1256 hours, an A-phase jumper pad of 230 kV transmission line TL232 (Stony Brook to Buchans) broke at Stony Brook terminal station, resulting in the trip of TL232 and its parallel line TL205 (Stony Brook to Buchans) and 138 kV transmission line TL224 (Indian River to Howley). Electrical service was interrupted to Newfoundland Power customers on the West Coast, Southwest Coast, and portions of Central Newfoundland. Restoration of the majority of customers occurred between 36 and 97 minutes. This process was significantly impacted by the co-incident loss of the Energy Management System (EMS), used to monitor and control the power system. The EMS was restored for use at 1401 hours. When the EMS became available the restoration process quickened and the bulk of the areas were restored between 1413 and 1433 hours.

- On July 18, 2003 at 0153 hours, lightning forced both TL203 and TL237 to trip and directly interrupted supply to the Western Avalon, Hardwoods, Oxen Pond and Holyrood terminal stations. Customers were without power for between 3 and 45 minutes.

3.2 Major Events Affecting Newfoundland Power's Performance

The major events affecting Newfoundland Power's reliability performance can be broken down into unscheduled outages and planned interruptions. Unscheduled outages accounted for 81% of total SAIFI performance and 75% of SAIDI performance in 2003. The vast majority of events impacting the unscheduled performance were caused by severe weather, equipment failure or loss of supply. The following highlights the major unscheduled outages originating on Newfoundland Power's System experienced in 2003.

- On January 27, 2003 an insulator failure on 407L caused a power interruption to 3,043 customers in the St. George's and Robinson's areas. Power was restored to some customers using Lookout Brook generation and to all customers within 3 hours.

- On February 11, 2003 a wind and snowstorm caused isolated power interruptions to Burin, Bonavista, Trinity, St. John's and Bay Roberts areas. A total of 9459 customers were affected. This outage involved a number of feeders and power was off for an average of 3 hours.

- On February 24, 2003 an insulator failed on the Springdale feeder (SPR-03) causing a pole and crossarm to burn. This feeder supplies power to 228 customers, (226 of whom are Newfoundland & Labrador Hydro customers in the Little Bay and St. Patrick's area). Power was off for 25.5 hrs. This feeder has since been rebuilt to a stronger design standard and located closer to the road.

- On March 14, 2003 a power cable pothead faulted on Hardwoods T2 transformer affecting 10,000 customers in the Donovan's and West Mt. Pearl area for 1.2 hours.

- On April 13, 2003 high winds, snow and sleet caused power interruptions to feeders in parts of the Central Newfoundland and Bonavista. Interruptions began early on Sunday morning and continued throughout the rest of the day and into early morning on Monday, April 14th. The number of customers affected was 5037. Interruptions were caused by ice build up on the lines, wires down, and trees across lines.

- On April 13, 2003 a faulty lightning arrestor on the Gallants Street T1 transformer caused the power interruptions to the Stephenville area, affecting 5,300 customers for 2 hours.

- On May 3, 2003, 80L transmission line faulted between Blaketown and Hearts Content due to insulators damaged caused by vandalism. The nature of the fault and protective relaying set up caused two breakers at Carbonear substation to trip. In total 9,500 customers in the Carbonear and Trinity Shore areas were affected for several hours.

- On June 2, 2003 some 4,500 customers in the Bonavista, Catalina and Trinity areas experienced outages for several hours due to trouble on 110L. The second line into Bonavista 123L was out of service for maintenance when lightning caused 110L to trip. Power was restored in stages to accommodate cold load pickup and 123L was returned to service.

- On June 7, 2003 a broken pole on 116L caused a power outage to the Bonavista North area affecting 3,400 customers for 11 hours.

- On July 9, 2003, insulators failed and caused a fault on 39L between Holyrood and Colliers substations. This affected Holyrood, Colliers and Springfield substations affecting 5,804 customers for 1.5 hours.

- On July 18, 2003 a severe lightning storm hit Eastern Newfoundland. A lightning strike on 55L resulted in damage to approximately 10 structures and interrupted service from Dunville Substation to Clarkes Pond Substation. A total of 3,094 customers were affected in the Freshwater, Dunville and Fox Harbour areas. Service was interrupted to some customers for up to 22 hours.

- On July 27, 2003 three insulators failed on 402L resulting in loss of service to 2,600 customers in the Port Au Port Peninsula Area for 3.3 hours.

- On August 28, 2003, supply was lost to the Pulpit Rock substation. The bushing on PUL-02-R was damaged by lightning. Power was interrupted to 3,400 customers in the Torbay and Pouch Cove areas for 3 hours.

- On the evening of December 7, 2003 a wind storm mixed with snow and freezing rain caused power interruptions to two feeders on the Burin Peninsula and a number of feeders and one transmission line in the St John's area. In excess of 22,000 Newfoundland Power customers were affected for several hours. The majority of customers affected were in the St. John's West, Paradise, Mount

Pearl, Donovans Industrial Park, Logy Bay and Petty Harbour areas. The Petty Harbour Plant was used to supply the Petty Harbour area while 3L transmission line was out of service.

- In the early morning of December 9, 2003 a winter storm caused power interruptions on two transmision lines in the Bonavista and Gander areas. The majority of outages affected customers in the Summerville, Port Blandford and Glovertown areas. The ice covered sections of both lines were isolated and customers supplied via other lines. In excess of 4,600 Newfoundland Power customers were affected. Outages ranged from 2 minutes to approximately 8 hours.

4.0 Achievement of 2003 Targets

4.1.0 Newfoundland and Labrador Hydro – Performance

Hydro established a target for 2003 to reduce unsupplied energy to Newfoundland Power, caused by forced outages, to 10% below the 5 year average. This is consistent with Newfoundland Power's target to reduce its SAIDI and SAIFI by 10% below the 5 year average. Hydro's target unsupplied energy was 19,833 MW-minutes while the actual was 48,984 MW-minutes. The two significant events of January 30 and March 4 were the primary causes of not achieving this target. In total these two events caused 43,038 MW-minutes of unsupplied energy.

4.1.1 Underfrequency Events

Hydro set an underfrequency load shedding event target of a maximum of 8 which was 32 percent below the 5-year average. Hydro did not meet this target as there were 10 events, 25% above the target. However, this is an improvement of 15% from the 5-year average.

It is noteworthy that action taken at Holyrood has resulted in a significant reduction in the number of events caused by problems in that plant. In 2003 there were only 2 events affecting Newfoundland Power caused by Holyrood. In 2001 and 2002 there were 7 and 9 respectively.

4.1.2 Delivery Point Performance

The delivery point targets were a SAIFI of 1.33 interruptions per delivery point and a SAIDI of 48.90 minutes per delivery point. The corresponding unsupplied energy was 16,496 MW-minutes.

The SAIFI and SAIDI targets were met. The SAIFI was 0.96 interruptions per delivery point, 27.8% below target. The SAIDI was 43.17 minutes per delivery point, 11.7% below target. However, the unsupplied energy was 45,799 MW-minutes, 278% above target. As previously mentioned, this was caused by the two very significant events on January 30 and March 4.

4.2 Newfoundland Power – Service Continuity Performance

The target for 2003 was a 10% improvement on the past five-year average (1998-2002) SAIFI and SAIDI performance indices. The SAIFI target was missed by 12% with a 2003 SAIFI performance of 5.20 compared to a target of 4.66. Breaking 2003 SAIFI performance down by utility, Newfoundland Power's performance was 3.01 and better than the target of 3.43. Hydro's contribution was 2.20 compared to a target of 1.23.

In 2003, underfrequency load shedding events accounted for 9% of overall SAIFI performance. Including loss of supply events, Hydro's contribution was 42% of overall SAIFI which is significantly higher than the 5-year average of 27% of overall SAIFI.

The overall SAIDI performance for 2003 was slightly better than the target. Actual SAIDI performance was 5.28 compared to the target of 5.66, a 7% improvement. Newfoundland Power's component of SAIDI was 4.11 compared to a target of 4.91 and Hydro's contribution was 1.17 compared to a target of 0.75. Hydro's contribution was 22% of overall SAIDI which is significantly higher than the 5-year average of 10% of overall SAIDI.

Planned interruptions to accommodate electrical system upgrading and maintenance represented 19% of total SAIFI and 24% of total SAIDI performance in 2003.

Over the past several years the impact on reliability performance due to planned interruptions has significantly decreased. The percentage of total SAIFI attributed to planned outages reduced from 31% in 2000 down to 23% in 2001 and further reduced to 21% in 2002 and 19% in 2003.

5.0 System Enhancements

5.1 Newfoundland and Labrador Hydro

	ACTIVITY	STATUS
1.	COB insulators replaced on TL 209, Bottom Brook Stephenville.	Completed
2.	Wood pole test and treat program implemented, 1500 poles inspected and treated (2003).	Annual
3.	Tower components changed out on 25 towers on TL214, Bottom Brook to Doyles.	Completed
4.	6 poles and 3 sets of jumpers replaced on TL 215, Doyles to Port Aux Basques.	Completed
5.	12 crossarms replaced on TL223, Indian River to Springdale.	Completed
6.	Up-rating of TL 203, Sunny Side to Western Avalon.	Completed
7.	Replaced 129 VDC station battery banks at Deer Lake, Howley, and Hardwoods.	Completed
8.	Replaced 250 VDC battery bank at Stephenville Gas Turbine.	Completed
9.	Replaced Digital Fault Recorder at Holyrood.	Completed
10.	Overhaul two 230 kV air blast circuit breakers.	Completed
11.	Upgraded 138 kV protection at Stony Brook, Indian River and Sunnyside.	Completed
12.	Replace insulators on TL-228 for Grand Lake Crossing.	Completed
13.	Upgrading of TL 214.	Initiated Engineering
14.	Purchased & installed high speed frequency monitor for improved underfrequency analysis.	Completed
15.	Df/dt relay implementation for better underfrequency performance.	Field implementation scheduled in early 2004

16.	Teleprotection upgraded on: TL-202, TL-206 Sunnyside Bay d'Espoir TL-243, Howley to Hinds Lake TL-245, Howley to Deer Lake.	Completed
17.	Replace relay breaker controls with PLC's on Sunnyside 230 kV breakers B1L03 and L06L07.	70% Complete
18.	RTU Replacement (9 year project).	56% Complete
19.	Upper Salmon fault recorder installation.	Completed
20.	Design modification to Bay d'Espoir Station Service (temporary modification completed).	50% Complete
21.	Review of Holyrood boiler/turbine protection and control.	Completed
22.	Energy Management System replacement.	20% Complete

5.2 Newfoundland Power

	ACTIVITY	STATUS
1.	The 15 MW gas turbine was relocated from Salt Pond to Wesleyville to provide a back up supply for 115L/116L serving the Bonavista North area.	95% Completed
2.	The Mobile Gas Turbine and Greenhill Gas Turbine were significantly upgraded and refurbished.	Completed
3.	Purchase 2.5 mw Portable Diesel to provide backup supply to feeders.	80% Completed
4.	Install remote control on 26 distribution feeders.	Completed
5.	Upgrade transmission line protection in the St. John's 66kV system and install breaker fail schemes backup protection.	Completed
6.	Install additional system power transformer at Salt Pond Substation.	Completed

7.	Replace governor & controls on G2 & G3 at Tors Cove Hydro Plant.	75% Completed
8.	Install second 25 mva power transformer at Chamberlains substation.	Completed
9.	Install third 25 mva power transformer at Virginia substation.	Completed
10.	Rebuild a 32 km section of 301L transmission line from Grand Beach to Salt Pond.	Completed
11.	Rebuild a 11 km section of 24L from Big Pond to Goulds.	Completed
12.	Rebuild a 5.5 km section of 124L near Clarenville.	Completed.
13.	Upgrade the underground distribution system along Water Street, St. John's.	Completed
14.	Rebuild distribution lines SPR-03, LGL-02, MIL-02 and GLV-02 serving the Little Bay, Rose Blanche, Random Island and Eastport Peninsula areas respectively.	Completed
15.	Overhaul maintenance completed on 18 power transformers, 34 breakers, 22 reclosers, and 97 battery banks & chargers to ensure reliable operation of this substation equipment.	Completed

6.0 Committee Achievements

1. Following from the January 30, 2003 outage affecting the metro St. John's areas, a joint utility action plan was developed to reduce the risk of re-occurrence of a similar outage situation. All 18 identified action items have been completed (Appendix B). The more significant include a review of the Hardwoods and Oxen Pond restoration procedures, a review of protective relay settings at major substations, establishing transformer overload guidelines, and a review of lightning arrestors to identify any other defective units.

2. A Critical Clearing Time Report was completed to investigate the need to upgrade protective relaying on transmission lines west of Sunnyside Station. Recommendations to improve fault clearing on transmission lines in Western, Central, and Eastern Newfoundland were made and this work is planned in the 5-year capital programs for each utility.

3. An action plan to improve underfrequency performance was developed and progress with the action items is ongoing. (Appendix C). Hydro are investigating the benefits of using rate of change sensing underfrequency relaying. It is expected that loadshedding based on rate of change of frequency can result in less overall load being shed for certain underfrequency events. A pilot project is underway and Newfoundland Power is in the process of including 20 mw of load in a 58.2 hz rate of change of frequency loadshedding scheme. Hydro are also evaluating increasing the spinning reserve within the system to reduce the impact of underfrequency events. A feasibility report is expected in Q4 2004. Newfoundland Power continues to make progress with adding additional feeders to the underfrequency loadshedding scheme. At the end of 2003 a total of 114 feeders (about 40% of total feeders) were capable of participating in the loadshedding scheme and plans for 2004 include the addition of 10 more feeders. The addition of feeders coupled with frequent rotation of feeders in the loadshedding scheme reduces the impact of these nuisance outages on customers.

4. A joint response to the PUB's staff review of the St. John's 66 kv System Reconfiguration Report was prepared and submitted to the PUB. A follow-up presentation to the PUB is being planned for April 2004.

5. Both utilities are working together to investigate the feasibility of providing Newfoundland Power with remote control and monitoring of its electrical equipment located in Hydro's substations. If this proves feasible, it has the benefit of reducing Scada and Telecommunications costs for both utilities through the cost sharing of existing infrastructure.

6. The committee initiated a review of the reliability of Newfoundland Power's SPR-03 feeder serving Hydro's customers in the St. Patrick's and Little Bay area. In 2003 a 9 km section of SPR-03 feeder was relocated and rebuilt to a higher standard to improve reliability to customers in that area.

7.0 2004 Reliability Performance Targets

Newfoundland Power Targets

Newfoundland Power proposes to set a 10% improvement on the past five year average performance as 2004 targets for SAIFI and SAIDI.

	Caused by Newfoundland Power	Caused by Newfoundland and Labrador Hydro	Total
Service continuity SAIFI (Interruption per customer)	3.34	1.23	4.57
Service Continuity SAIDI (Hours per customer)	4.76	0.51	5.27

Newfoundland and Labrador Hydro Targets

Hydro proposes to reduce the unsupplied energy to Newfoundland Power by 10% from the five year average unsupplied energy of 16,852 MW-minutes for 2004. This is proposed to be achieved by setting a 34.4% reduction from the five year average number of underfrequency events of 12.2 to 8 in 2004. This results in a 6.97% reduction from the 5-year average unsupplied energy. The remaining 3.03% targeted reduction from the 5 year average is proposed to be achieved by improving delivery point performance in 2004 by 3.8% from the 5 year average SAIFI of 0.72 interruptions per delivery point and SAIDI of 43.98 minutes per delivery point. The following table summarizes the proposed targets.

Delivery Point SAIFI (Interruptions per Delivery Point)	0.69
Delivery Point SAIDI (Minutes per Delivery Point)	42.3
Underfrequency Events (Maximum Number)	8
Total Unserved Energy (MW-minutes)	15,167

Appendix A
IUSRC Action List

Appendix A
IUSRC Action List

NEWFOUNDLAND POWER – NEWFOUNDLAND AND LABRADOR HYDRO INTER-UTILITY SYSTEM RELIABILITY COMMITTEE ("IUSRC") ACTION LIST			
ACTION ITEMS	**RESPONSIBILITY**		**STATUS**
	NPOWER	**NLHYDRO**	
1. NP and NLH to review the transmission line clearing-time requirements for system.	T. Noftall	C. Walsh	**Completed**
2. An action plan in response to the January 30, 2003 St. John's system outage has been developed and progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	**Completed**
3. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	Progress with action items ongoing.

Appendix B
Jan 30, 2003 Outage Joint Action Plan

Newfoundland and Labrador Hydro & Newfoundland Power
Joint Action Plan
January 30, 2003 Outage

ACTION ITEM	RESPONSIBILITY	TARGET COMPLETION DATE	STATUS
1. Review Hardwoods and Oxen Pond Restoration Procedures	System Operations R. Henderson	June 30/03	**Completed**
2. Review Holyrood unit load level during disturbances	System Operations R. Henderson	Mar. 31/03	**Completed**
3. Review start-up procedures of standby generation with Power System Operators.	System Operations R. Henderson	Mar. 15/03	**Completed**
4. Establish transformer overloading guidelines	System Operations R. Henderson	July 31/03	**Completed** Generic guidelines have been issued in an instruction to ECC Operators.
5. Review alarm management strategies during a disturbance.	System Operations R. Henderson	April 30/03	**Completed** Analog Limit Alarms to be reduced by two thirds.
6. Resolve maximum loading on gas turbines (HWD/SVL).	TRO – Eng. F. Martin	July 31/03	**Completed** Hardwoods burner rehab on A-end completed August 18 when outage was completed.
7. Lightning arrestor review	TRO – Eng. F. Martin		
a. finalize the report from Hubbell		March 31/03	**Completed**
b. complete inventory on other VN type LA's.		Feb. 28/03	**Completed**
c. review LA spec. (compare assembly types – Hubbell vs others)		April 30/03	**Completed**
d. review LA maintenance procedures.		May 31/03	**Completed**

ACTION ITEM	RESPONSIBILITY	TARGET COMPLETION DATE	STATUS
8. Finalize review of setting letters and AC schematics – system wide.	TRO – Eng. F. Martin	Feb. 28/03	**Completed**
9. Protection and Control procedures - issue instruction to Engineering and TRO operations to include cross-referencing CT/PT rating with setting letters.	TRO – Eng. F. Martin	Feb. 28/03	**Completed**
10. Finalize analysis on the December 25 and January 30 incidents.	TRO – Eng. F. Martin	Feb. 28/03	**Completed**
11. Develop restoration plans for St. John's system jointly with NL Hydro and review with SCC operators.	Eugene Doyle	April 30/03	**Completed**
12. Develop load trends for all substations, and make displays available to SCC operators.	Frank Antle	Mar. 21/03	**Completed**
13. Develop cold load pickup curves and peak loads for substation to assist restoration process.	Eugene Doyle	Apr. 15/03	**Completed**
14. Identify trip settings for transmission lines and transformers for SCC operators and review overload coordination of NP lines and NLH transformers.	Ted Noftall	Apr. 15/03	**Completed**
15. Investigate and make decision on the feasibility of remote resetting of generator plant lockouts to assist more rapid restoration of system following outages.	Mike Jardine	Apr. 30/03	**Completed** Decision made to incorporate remote resetting of lockout relays at top 10 plants when protection schemes are scheduled for upgrading.

ACTION ITEM	RESPONSIBILITY	TARGET COMPLETION DATE	STATUS
16. Complete a review of power transformer and transmission line protection settings and verify in the field. Complete for all main infeed and multiple transmission line substations.	Rick Spurrell	Apr. 30/03	**Completed** Field inspections completed at 5 main infeed and 17 multiple transmission line substations. No errors found in relay field settings that would impact system load capacity but discrepancies were found in relay file documentation. Protection personnel are reviewing findings and will issue recommendations.
17. Transfer 40MW's of load from Oxen Pond to Hardwoods Substation.	Eugene Doyle	Completed	**Completed**
18. Review if NP has same problem Hubbell arresters in system or inventory.	Rick Spurrell	Completed	**Completed**

Appendix C
Underfrequency Loadshedding Joint Action Plan

Newfoundland and Labrador Hydro & Newfoundland Power
Joint Action Plan
Underfrequency Loadshedding Impact Reduction

ACTION ITEM	RESPONSIBILITY	TARGET COMPLETION DATE	STATUS
1. Investigation of rate of change of frequency relaying	NF Hydro F. Martin	March 31/04	Ongoing. Report issued to all major customers. Relays to be implemented.
2. Evaluation of a spinning reserve criteria	NF Hydro R. Henderson	March 31/04	Report in the first quarter of 2004.
3. Consultation with all customers to identify less sensitive loads for load shedding.	NF Hydro J. Haynes Newfoundland Power E. Ludlow		NP has consulted with customers. Four feeders have been added.
4. More frequent rotation of customers affected by UFLS events.	Newfoundland Power S. LaCour		**COMPLETED** Customers rotated after two events in one month or 4 in one year.
5. Addition of Feeders available for participation in load shedding.	Newfoundland Power S. LaCour	Ongoing	Nine scheduled for the end of 2003.

Inter-Utility System Reliability Committee

2004 Review

March 8, 2005

Table of Contents

1.0 Committee Mandate

The Committee was established in December, 1999, by the Presidents and Chief Executive Officers of Newfoundland Power and Newfoundland and Labrador Hydro with the objective of improving service to the customers of both utilities. In particular the key objectives are to reduce outages arising from underfrequency load shedding, set targets, and to monitor and initiate activities to improve the System Average Interruption Frequency Index (SAIFI) and the System Average Interruption Duration Index (SAIDI).

At the beginning of the year the Committee consisted of:

P. Delaney	Vice President Engineering & Operations Newfoundland Power
F. Martin	Vice President Transmission and Rural Operation Newfoundland and Labrador Hydro
R. Henderson	Manager, System Operations Newfoundland & Labrador Hydro
S. LaCour	Manager, Engineering Newfoundland Power

Other representatives of the companies may attend from time to time depending on the agenda items.

The Committee meets bi-monthly to review each utility's performance to date and identify necessary remedial action(s) to be taken. The Chair of the Committee alternates monthly between the two utilities.

2.0 2004 Performance Targets

In March 2004, the targets for performance improvements were set to generally achieve a 10% improvement over the past five year average performance.

Newfoundland Power	Caused by Nfld. Power	Caused by Nfld. Hydro	Total
Service Continuity SAIFI (Interruptions per customer)	3.34	1.23	4.57
Service Continuity SAIDI (Hours per customer)	4.76	0.51	5.27

Newfoundland & Labrador Hydro	
Delivery Point SAIFI (Interruptions per Delivery Point)	0.69
Delivery Point SAIDI (Minutes per Delivery Point)	42.3
Underfrequency Events (Maximum Number)	8
Total Unserved Energy (MW-minutes)	15,167

Note:

(1) Newfoundland Power reliability performance targets include both planned and unscheduled power interruptions.

(2) Newfoundland and Labrador Hydro's reliability performance targets include only unscheduled (forced) power interruptions.

3.0 Performance Indices in 2004

Newfoundland and Labrador Hydro
Delivery Point Performance Report
2004

SAIFI

Region	Num. Of Delivery Pts	Int. per Del. Point per YEAR					Target
		2000	2001	2002	2003	2004	
Avalon	6	0.00	0.67	0.17	2.00	0.00	
Burin	4	1.75	1.50	1.00	0.00	1.25	
Central	8	0.13	0.00	0.25	0.38	0.50	
West Coast	2	1.50	0.00	0.50	1.00	1.00	
Port aux Basques (S.W. Coast)	3	4.67	3.00	3.67	2.33	1.67	
White Bay	1	0.00	0.00	0.00	1.00	0.00	
Total	24	N/A	N/A	0.79	1.04	0.67	
Forced Only		1.04	0.79	0.33	0.96	0.42	0.69

SAIDI

Region	Num. Of Delivery Pts	Minutes per Del. Point per YEAR					Target
		2000	2001	2002	2003	2004	
Avalon	6	0.00	2.83	5.50	70.7	0.00	
Burin	4	122.25	228.50	45.25	0.00	15.25	
Central	8	0.50	0.00	1.75	21.13	48.88	
West Coast	2	25.50	0.00	29.50	73.00	57.00	
Port aux Basques (S.W. Coast)	3	440.67	109.33	324.33	83.33	169.33	
White Bay	1	0.00	0.00	0.00	57.00	0.00	
Total	24	N/A	N/A	52.50	43.46	44.75	
Forced Only		77.75	52.46	12.21	43.17	27.50	42.3

Underfrequency Events and Unserved Energy

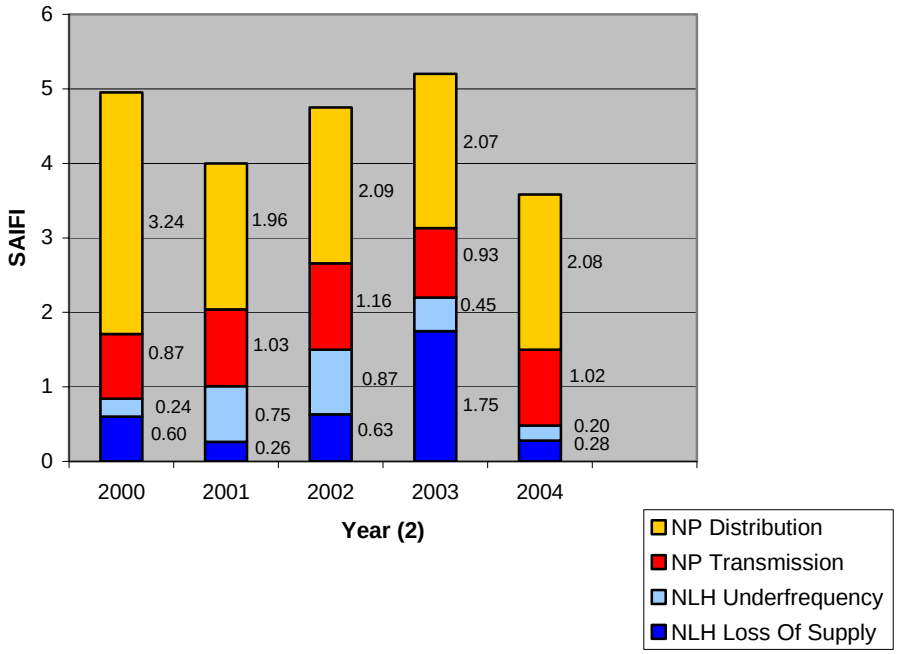
	Year to Date					Target
	2000	2001	2002	2003	2004	
No Events Affecting Nfld. Power	7	9	17	10	6	8
Unserved Energy Due to Underfrequency (MW-min)	1,456	2,892	4,120	3,185	1,070	
Unserved Energy Due to Other Forced Outages (MW-min)	6,206	4,940	7,693	45,799	11,460	
Unserved Energy Due to Planned Outages (MW-min)	N/A	N/A	1,761	13	1,331	
Total Unserved Energy (MW-min)	N/A	N/A	13,574	48,997	13,861	
Forced Only (MW-min)	7,662	7,832	11,813	48,984	12,530	15,167

Newfoundland Power
Customer Service Continuity Report
2004

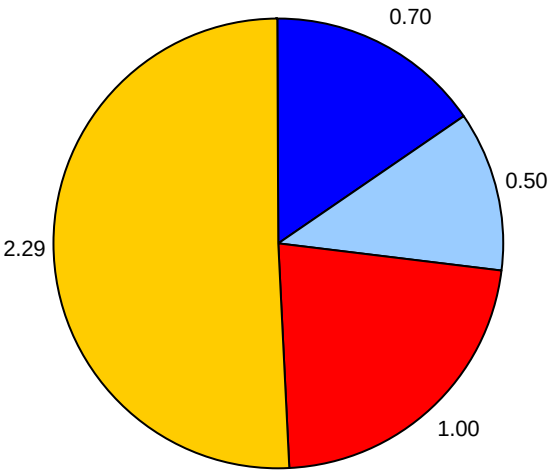
SAIFI

Region	Number [1] Customers	Interruptions per Customer					2004 Target
		2000	2001	2002	2003	2004	
St. John's	86,314	3.88	3.73	3.76	6.11	2.68	
Avalon	31,949	3.76	3.53	2.42	4.96	1.49	
Burin	10,866	9.65	4.46	9.55	4.15	6.18	
Bonavista	14,766	3.66	3.62	7.44	5.77	5.79	
Gander	18,556	5.91	3.33	6.72	6.30	6.86	
Grand Falls	20,023	5.66	4.83	3.76	2.10	4.30	
Corner Brook	19,111	3.89	4.27	6.25	2.99	1.92	
Stephenville	14,958	10.16	5.74	6.19	6.25	6.12	
Total	**216,543**	**4.93**	**3.99**	**4.76**	**5.20**	**3.58**	**4.57**

Utility Breakdown



SAIFI - 5 Year Average = 4.49

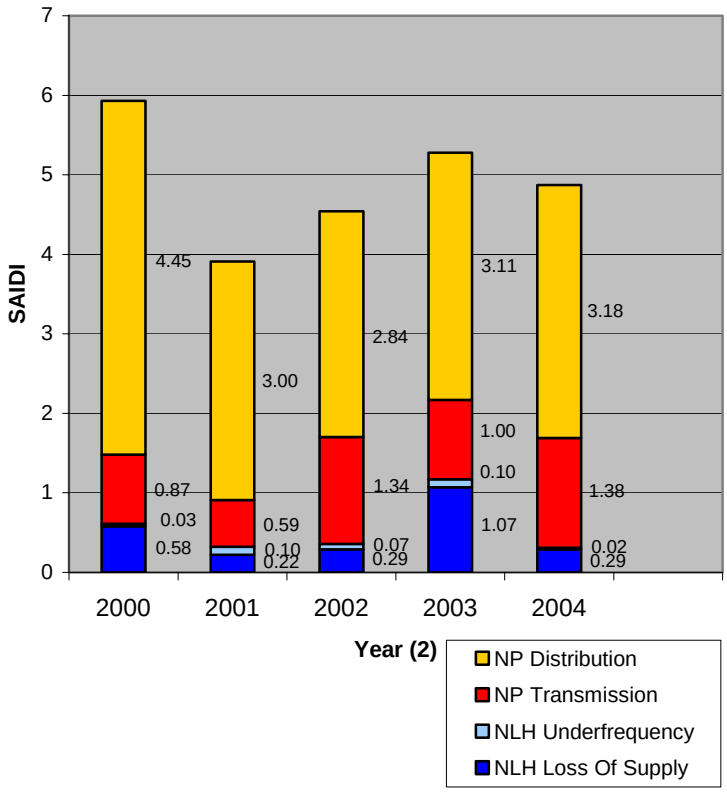


(1) Number of customers at year end 2004.

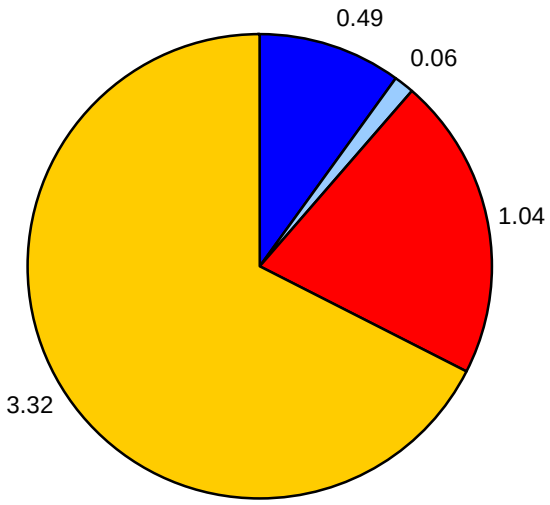
SAIDI

Region	Number [1] Customers	Hours Per Customer					2004 Target
		2000	2001	2002	2003	2004	
St. John's	86,314	4.87	1.99	2.14	4.61	3.05	
Avalon	31,949	4.38	3.71	3.03	5.40	2.08	
Burin	10,866	11.99	11.96	9.12	6.54	3.98	
Bonavista	14,766	3.50	4.95	7.96	6.91	6.43	
Gander	18,556	7.82	4.21	11.32	9.15	10.58	
Grand Falls	20,023	6.76	5.40	4.51	3.14	8.24	
Corner Brook	19,111	3.27	3.43	3.50	3.44	3.98	
Stephenville	14,958	13.05	6.04	7.57	6.60	9.75	
Total	**216,543**	**5.93**	**3.89**	**4.54**	**5.28**	**4.87**	**5.27**

Utility Breakdown



SAIDI - 5 Year Average = 4.91



(1) Number of customers at year end 2004.

3.1 Major Events Affecting Newfoundland and Labrador Hydro's Performance

The 2004 reliability was dominated by two major events having significant impact along with 6 relatively minor underfrequency events. Both major events involve transmission or terminal station equipment causing delivery point interruptions. Underfrequency load shedding continued to have a significant impact, but substantially less than 2003. With 4 fewer events and 66% less unsupplied energy. The following table summarizes the 2004 underfrequency events.

No	Date/ Time	Major Equipment	Generation Loss	Cause	NP Load Shed
1	Feb. 2 10:22	HRD2	115 MW	Unit tripped due to exciter trouble. The unit was delivering 115 MW to the island's total 1011 MW load.	36 MW
2	Mar. 7 22:03	HRD T/S	143 MW	Unit tripped as a result of loss of Station Service. Station Service was lost due to high winds and blizzard conditions. Unit was producing 143 MW of the total island use of 987 MW.	70 MW
3	Apr. 13 20:37	HRD3	125 MW	Unit tripped due to a low fuel oil temperature alarm. Investigation found that a failed fuel oil thermocouple was to blame. The unit was generating 125 MW of the system's 843 MW demand.	41 MW
4	Sep. 21 13:43	BDE7	141 MW	Unit tripped due during exciter commissioning. The trip was caused when the supplier attempted a software reconfiguration, overwriting critical control variables that ultimately tripped the unit. The unit was producing 141 MW of the system's 770 MW demand.	36 MW

No	Date/ Time	Major Equipment	Generation Loss	Cause	NP Load Shed
5	Oct. 7 12:30	HRD1	100 MW	Unit tripped during commissioning of a new control system. The problem caused a low drum level alarm that tripped the unit. The unit was delivering 100 MW of the system's 703 MW demand.	24.3 MW
6	Dec. 21 15:53	HRD1	81 MW	Unit 1 tripped as a result of low airflow when the Unit 2 operator gained control of unit one through a software bug. At the time Unit 2 was in the process of coming online. The unit was delivering 81 MW of the island's 922 MW demand.	13 MW

The two significant delivery point interruptions were:

- On January 24, 15:34, TL215 at Doyles tripped and affected NP customers in the Grand Bay to Port Aux Basque area. Following a number of attempts to reclose the line, the line was isolated and repairs were made at Structure #192. The line was restored 00:44 January 25th. The duration of the outage was 9 hours, 10 minutes. . NP experienced problems with starting the Grand Bay gas turbine, which in turn impacted their ability to operate the Rose Blanche hydro plant.

- On December 7, 20:57, the main power transformer at Stephenville terminal station tripped due to a phase overcurrent event. It is believed that the fault initiated within NP's transmission system but failed to clear hence operating Hydro's protection. As a result of the fault, 34 MW was interrupted to NP customers at Stephenville for 1-hour, 44-minutes. Furthermore, the fault caused TL209 to reclose. This event caused 72 MW to be interrupted to the Stephenville Paper Mill. The mill was advised to resume normal loading within 3-minutes.

3.2 Major Events Affecting Newfoundland Power's Performance

The major events affecting Newfoundland Power's reliability performance can be broken down into unscheduled outages and planned interruptions. Unscheduled outages accounted for 81% of total SAIFI performance and 80% of SAIDI performance in 2004. The vast majority of events impacting the unscheduled performance were caused by severe weather and equipment failure. The following highlights the major unscheduled outages originating on Newfoundland Power's System in 2004.

- During the afternoon of February 19, 2004 high winds combined with snow and rain caused power interruptions to various feeders in the St. John's, Avalon, Bonavista, Gander, Grand Falls and Stephenville areas. Interruptions continued into the early hours of February 20 with a total of 10,735 customers affected.

- On March 22, 2004 a jumper burned off on 59L resulting in a loss of infeed to the Pulpit Rock substation. A total of 3,448 customers were affected with service restored to 1,995 within 2 hours and the remainder within 4 hours.

- During the evening of April 25, 2004 high winds combined with snow and rain caused power interruptions to various feeders in the Burin, Bonavista, Gander, and Grand Falls areas. Interruptions continued into April 26, with a total of 10,405 customers affected.

- On May 15, 2004, an insulator failure caused a trip on 20L resulting in a loss of infeed to the Cape Broyle and Fermuese substations and an interruption in service to 1,719 customers. Power was restored to all customers within 3.25 hours.

- On May 31, 2004 an oil switch in the Water Street underground system faulted resulting in an outage to 97 commercial customers. The fault resulted in significant destruction of equipment. All customers were offloaded onto other feeders with power restored to the majority within 2.25 hours. However 18 customers experienced a 10 hour outage.

- On June 30, 2004 a faulty 12.5 KV underground cable caused a bus lockout at the Gander substation resulting in an outage to 1,597 customers. All customers were transferred to Cobbs Pond substation feeders and service was restored to all customers in about 3.5 hours.

- On July 1, 2004 a lightning strike caused breakers at Gambo and Wesleyville substations to trip resulting in an outage to 3,360 customers in the Bonavista North area. A series of switching procedures and

protection setting changes were completed restoring power to all customers in an average of 1.8 hours.

- On July 24, a bus lookout on the 12.5kV bus at Hardwoods Substation due to an animal contact caused an outage to 4,704 customers. The faulted piece of equipment was isolated and the system restored to normal within 1.5 hours.

- On September 10, 2004 a current transformer failure caused a lockout on the 4.16 kV bus at Grand Falls Substation. The faulted piece of equipment was isolated and power restored to all 1,403 affected customers within 4 hours.

- On September 20, 2004, high winds associated with the remnants of Hurricane Ivan caused power interruptions across the entire island, with more significant outages occurring in the south, west and central portions of the island. More than 10,000 customers were affected for various durations.

- On September 26, 2004, a lightning strike caused 351L to trip at Massey Drive Substation, resulting in an outage to Frenchman's Cove Substation and its 1,328 customers. A helicopter patrol found two strings of insulators damaged. The insulators were replaced and service restored within 7.5 hours.

- On November 7, 2004 a lightning strike at Cobbs Pond substation resulted in loss of transmission lines supplying Gander, Gander Bay, Summerford, Twillingate and Jonathan's Pond Substations. Power was restored to all 8,903 customers (including 1,743 Newfoundland Hydro customers at Fogo and Change Islands) within 1.25 hours.

- On November 16, 2004, high winds combined with wet snow and rain caused power interruptions to various feeders in the Gander and Grand Falls areas. A total of 13,352 customers (including 1,743 Newfoundland Hydro customers at Fogo and Change Islands) were affected at various times throughout the day.

- On December 6, 2004 high winds caused power interruptions to various feeders in all areas of the province. Interruptions continued late into the evening with 19,056 customers affected in total.

- On December 7, 2004 salt contamination associated with high winds resulted in a trip on 407L and a subsequent breaker failure at Stephenville substation resulting in an outage to 9,921 customers in the Stephenville and Bay St. George areas. Power was restored to the Stephenville area within 1.67 hours. A portion of 407L was isolated restoring power to a further 1,020 customers at Stephenville Crossing within 2.3 hours.

Insulators on 407L were washed down and power was restored to the remaining 2,037 within 9.3 hours.

- On December 19, 2004 a transformer gas detector circuit problem resulted in a bus lockout at the Gallant Street substation and a power outage to 5,850 customers in the Stephenville and Port au Port Peninsula areas. The problem was isolated and power was restored to all customers within 1.6 hours.

- On December 24, 2004 a conductor failure resulted in a feeder trip at the Hardwoods substation and a power outage to 1,318 customers in the Paradise area. Repairs to the conductor were completed within 4 hours however a disconnect switch failed when reenergized. Final repairs were complete and power restored to all customers within 6 hours.

- On December 27, 2004 high winds caused power interruptions to various transmission lines and feeders in the St. John's, Avalon, Burin and Bonavista Peninsula areas. A total of 8,536 customers were affected at various times throughout the day and continuing into the early hours of December 28th.

- On December 29, 2004 salt deposited on transmission lines and distribution feeder equipment resulted in power interruptions to customers in the St. John's, Avalon, Burin and Bonavista Peninsula areas. Interruptions continued into the early hours of December 30 with approximately 13,000 customers affected for various durations.

4.0 Achievement of 2004 Targets

4.1.0 Newfoundland and Labrador Hydro – Performance

Hydro established a target for 2004 to reduce unsupplied energy to Newfoundland Power, caused by forced outages, to 10% below the 5 year average. This is consistent with Newfoundland Power's target to reduce its SAIDI and SAIFI by 10% below the 5 year average. Hydro's target unsupplied energy was 15,167 MW-minutes while the actual was 12,530 MW-minutes. This is a significant performance improvement with the result being 17.4% below the target.

4.1.1 Underfrequency Events

Hydro set an underfrequency load shedding event target of a maximum of 8 which was 34 percent below the 5-year average. Hydro made a significant improvement beyond the target with only 6 events affecting Newfoundland Power. This represents a 51% reduction from the 5 year average of 12.2 per year.

4.1.2 Delivery Point Performance

The delivery point targets were a SAIFI of 0.69 interruptions per delivery point and a SAIDI of 42.30 minutes per delivery point.

The SAIFI and SAIDI targets were also met. The SAIFI was 0.42 interruptions per delivery point, 39.1% below target. The SAIDI was 27.50 minutes per delivery point, 35.0% below target.

4.0 Achievement of 2004 Targets

4.2 Newfoundland Power – Service Continuity Performance

The target for 2004 was a 10% improvement on the past five-year average (1999-2003) SAIFI and SAIDI performance indices. Actual 2004 SAIFI performance of 3.58 was a 22% improvement over the target of 4.57. Breaking 2004 SAIFI performance down by utility, Newfoundland Power's performance was 3.10 and better than the target of 3.34. Hydro's contribution was 0.48 and significantly better then the target of 1.23.

In 2004, underfrequency load shedding events accounted for 6% of overall SAIFI performance. Including loss of supply events, Hydro's contribution was 13% of overall SAIFI which is significantly lower than the 5-year average of 27% of overall SAIFI.

The overall SAIDI performance for 2004 was slightly better than the target. Actual SAIDI performance was 4.87 compared to the target of 5.27, an 8% improvement. Newfoundland Power's component of SAIDI was 4.56 compared to a target of 4.76 and Hydro's contribution was 0.31 compared to a target of 0.51. Hydro's contribution was 6% of overall SAIDI which is significantly lower than the 5-year average of 11% of overall SAIDI.

Planned interruptions to accommodate electrical system upgrading and maintenance represented 19% of total SAIFI and 20% of total SAIDI performance in 2004.

Over the past several years the impact on reliability performance due to planned interruptions has significantly decreased. The percentage of total SAIFI attributed to planned outages reduced from 31% in 2000 down to 23% in 2001 and further reduced to 21% in 2002 and 19% in both 2003 and 2004.

5.0 System Enhancements

5.1 Newfoundland and Labrador Hydro

	ACTIVITY	STATUS
1.	Insulator replacement on TL 233	Completed
2.	Wood pole test and treat program, TL201 (40%), TL203 (100%), TL222 (60%), TL223 (50%), TL224 (40%), TL215 (40%), TL209(60%), TL233(25%), TL245(100%).	Annual
3.	Structural upgrade and insulator replacement on TL-214.	Completed
4.	Replacement of fault recorder at Bay D'Espoir Terminal Station	Completed
5.	Replaced 129 VDC station battery banks at HRD, SVL and BBK.	Completed
6.	Upgraded Tele-protection TL234 and TL247	Completed
7.	Upgraded Breaker Controls at Western Avalon and Holyrood (B1L17 both locations)	Completed
8.	Overhauled two 230 kV circuit breakers (B1B2 and B9L34 BDE)	Completed
9.	Upgraded Protection at Deer Lake (TL225, TL245)and Sunnyside (100 L, 109L).	Completed
10.	Surge Arrestor replacement (BBK T1&2 , HWD T1& T3, OPD T1, BDE T6),	Completed
11.	Instrument Transformer replacement (SVL L405 Phase C CT, BBK Bus 2 C Phase PT, HWD T3 Ph-Ph PT)	Completed
12.	Transformer Oil Reclaiming on two power transformers (BDE T2 and USL T1)	Completed
13.	Exciter replacement on Bay d'Espoir Unit 7	Completed
14.	DCS for Holyrood Unit 1 and 2 replaced.	Completed
15.	Replace relay breaker controls with PLC's on Sunnyside 230 kV breakers B1L03 and L06L07.	Completed

16.	Implemented Holyrood boiler/turbine protection and control changes to have fewer trip settings and more alarm settings.	Completed
17.	RTU replacement (multi-year project).	50 % Completed
18.	Energy Management System replacement.	30 % Completed

5.2 Newfoundland Power

	ACTIVITY	STATUS
1.	Substantial refurbishment at the Rattling Brook, New Chelsea, Tors Cove, Topsail and Mobile Gas Turbine generating plants.	95% Completed
2.	Install 2.5 MW Portable Diesel to provide backup Supply to feeders.	Completed
3.	Rebuild the 4.7 km 3L from Goulds to Petty Harbour.	Completed
4.	Rebuild the 2.8 km section of 38L from Seal Cove to Golden Eagle Tap.	Completed
5.	Rebuild a 5.1 km section of 403L from St. Georges to Lookout Brook Plant.	Completed
6.	Upgrade transmission lines 357L, 116L. 132L, 133L, 123L, and 66L.	Completed
7.	Replace Walbournes transformer and add second transformer at Bayview Substation.	Completed
8.	Refurbish two portable substations.	Completed
9.	Overhaul maintenance completed on 13 power transformers, 35 breakers, 40 reclosers, 35 voltage regulators and 97 battery banks & chargers to ensure reliable operation of this substation equipment.	Completed
10.	Terminate two new feeders at Chamberlains and Pulpit Rock.	Completed

11. Install remote control on 36 distribution feeders. Completed

12. Rebuild and upgrade distribution lines WES-02, KBR-08, SMV-01, LEW-03, SCR-01, ROB-01, WAL-01, GBS-02, GDL05, GFS-09, GLN-01 and SLA-09 Completed.

6.0 Committee Achievements

1. The committee met three times in 2004. The frequency of meetings was reduced because there were fewer performance issues in 2004 requiring active management. The issues monitored during the year related to efforts to reduce the impact of underfrequency events, wood pole management, SCADA data sharing, and co-ordination of a planned sustained outage to transmission line TL-214.

2. Four initiatives related to improving underfrequency performance were monitored.
    - The implementation of underfrequency relays with rate of change settings was monitored. Newfoundland Power placed a relay with this function in service in April. The implementation of this function is expected to lessen the impact of underfrequency events by more quickly arresting the decay of the system's frequency. An additional relay at one of Hydro's industrial customers was also scheduled for implementation. There were no underfrequency events in 2004 that exceeded the relay's setting. However, the assessment will continue and operations closely monitored.
    - Hydro completed a review of the costs and benefits of implementing a spinning reserve policy for the Island Interconnected System. The policy assessed was in accordance with a recommendation made to Hydro in a report by Power Tech consultants. The results of Hydro's review indicated underfrequency load shedding cannot be avoided by implementing such a policy and would only reduce the impact under certain scenarios. The costs identified by Hydro were very high and therefore it was not recommended to pursue implementation of a spinning reserve policy.
    - Newfoundland Power continued to implement additional feeder automation that will benefit customers by enabling more sharing of the impact of underfrequency events across their customer base. Through automation Newfoundland Power can change underfrequency settings on feeders more easily and thereby switch settings between customer groups so that one group is not impacted more frequently than another.

- Hydro wrote its industrial customers to request greater participation by this customer group. Hydro asked these customers to check their operations for loads that would not affect production if they were subject to the type of short outage required for underfrequency protection.

3. A presentation was made by Hydro to Newfoundland Power on Hydro's Wood Pole Line Management Program in May. This Program provides for the inspection, treatment, testing, analysis, and, where necessary, replacement of Hydro's 26000 wood transmission poles. The Program is currently planned such that all poles would be inspected on 2 10-year cycles and is expected to extend the overall life of these assets by at least 10 years. Newfoundland Power will be reviewing the results of the Program over the short term for possible implementation on their systems.

4. A three-week outage was planned on TL-214 to upgrade the line to improve reliability to the Port Aux Basques and Codroy Valley area that has been frequently affected by long interruptions caused by wind damage. The outage to this line required extensive coordination and planning between the two utilities. The coordination and planning included the operation of a temporary isolated diesel system for 3 weeks and the development of contingency plans for potential problems. The coordinated effort was very successfully executed resulting in the planned line outage being one week shorter and no unscheduled outages affecting customers during the period of isolated operation.

5. Discussions were held between the two utilities to identify opportunities for Newfoundland Power to obtain SCADA access in areas where Hydro has SCADA facilities. Several sites were identified for budgetary estimates. Newfoundland Power decided not to pursue these initiatives further at this time. New opportunities may arise later following completion of Hydro's new EMS.

7.0 2005 Reliability Performance Targets

Newfoundland Power Targets

Newfoundland Power proposes to set a 10% improvement on the past five year average performance as 2005 targets for SAIFI and SAIDI.

	Caused by Newfoundland Power	Caused by Newfoundland and Labrador Hydro	Total
Service continuity SAIFI (Interruption per customer)	2.96	1.08	4.04
Service Continuity SAIDI (Hours per customer)	3.92	0.50	4.42

UUNewfoundland and Labrador Hydro Targets

Hydro proposes to reduce the unsupplied energy to Newfoundland Power by 10% from the five-year average unsupplied energy of 17,764 MW-minutes for 2004. It is proposed to achieve this by setting an 18.4% reduction from the five-year average number of underfrequency events of 9.8 to 8 in 2005. This results in a 2.62% reduction from the 5-year average unsupplied energy. The remaining 7.38% targeted reduction from the 5 year average is proposed to be achieved by improving delivery point performance in 2005 by 8.6% from the 5 year average SAIFI of 0.71 interruptions per delivery point and SAIDI of 42.62 minutes per delivery point. The following table summarizes the proposed targets.

Delivery Point SAIFI (Interruptions per Delivery Point)	0.65
Delivery Point SAIDI (Minutes per Delivery Point)	39.0
Underfrequency Events (Maximum Number)	8
Total Unserved Energy (MW-minutes)	15,988

Appendix A
IUSRC Action List

Appendix A
IUSRC Action List

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
1. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	S. Lacour	R. Henderson	Progress with action items ongoing. Refer to separate list.
2. Wood Pole Management Program Presentation to Nfld. Power.	P. Delaney	F. Martin	Complete.

Appendix A
Newfoundland Hydro & Newfoundland Power
Joint Action Plan
Underfrequency Loadshedding Impact Reduction

	ACTION ITEM	RESPONSIBILITY	TARGET COMPLETION DATE	STATUS
1.	Investigation of rate of change of frequency relaying	Hydro F. Martin	Ongoing	Implemented at an NP Station. Implementation pending at Abitibi-Stephenville.
2.	Evaluation of a spinning reserve criteria	Hydro R. Henderson	Dec. 31/04	**COMPLETED**
3.	Consultation with all customers to identify less sensitive loads for load shedding.	Hydro J. Haynes	Ongoing	Hydro contacted Industrial Customers. Follow-up being planned.
4.	More frequent rotation of customers affected by UFLS events.	Newfoundland Power S. Lacour		**COMPLETED** Customers rotated after two events in one month or 4 in one year.
5.	Addition of Feeders available for participation in load shedding.	Newfoundland Power S. Lacour	Dec. 31/04	9 to 12 feeders to be added in 2004.

Inter-Utility System Reliability Committee

2005 Review

April 20, 2006

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1.0 Committee Mandate

The Committee was established in December, 1999, by the Presidents and Chief Executive Officers of Newfoundland Power and Newfoundland and Labrador Hydro with the objective of improving service to the customers of both utilities. In particular the key objectives are to reduce outages arising from underfrequency load shedding, set targets, and to monitor and initiate activities to improve the System Average Interruption Frequency Index (SAIFI) and the System Average Interruption Duration Index (SAIDI).

The Committee consists of:

P. Delaney	Vice President Engineering & Operations Newfoundland Power
F. Martin	Vice President – Engineering Services Newfoundland and Labrador Hydro
R. Henderson	Manager, System Operations Newfoundland & Labrador Hydro
S. LaCour	Manager, Engineering Newfoundland Power

At the end of 2005 F. Martin retired from Hydro and Jim Haynes, Vice President – Regulated Operations, replaced him on the committee.

Other representatives of the companies may attend from time to time depending on the agenda items.

The Committee meets quarterly to review each utility's performance to date and identify necessary remedial action(s) to be taken. The Chair of the Committee alternates between the two utilities.

2.0 2005 Performance Targets

The targets for performance improvements were set to generally achieve a 10% improvement over the past five-year average performance.

Newfoundland Power	Caused by Nfld. Power	Caused by Nfld. Hydro	Total
Service Continuity SAIFI (Interruptions per customer)	2.96	1.08	4.04
Service Continuity SAIDI (Hours per customer)	3.92	0.50	4.42
Newfoundland & Labrador Hydro			
Delivery Point SAIFI (Interruptions per Delivery Point)		0.65	
Delivery Point SAIDI (Minutes per Delivery Point)		39.0	
Underfrequency Events (Maximum Number)		8	
Total Unserved Energy (MW-minutes)		15,988	

Note:

(1) Newfoundland Power reliability performance targets include both planned and unscheduled power interruptions.

(2) Newfoundland and Labrador Hydro's reliability performance targets include only unscheduled (forced) power interruptions.

3.0 Performance Indices in 2005

Newfoundland and Labrador Hydro
Delivery Point Performance Report
2005

SAIFI

Region	Num. Of Delivery Pts	Int. per Del. Point per YEAR					Target
		2001	2002	2003	2004	2005	
Avalon	6	0.67	0.17	2.00	0.00	0.00	
Burin	4	1.50	1.00	0.00	1.25	2.50	
Central	10	0.00	0.25	0.38	0.50	0.70	
West Coast	2	0.00	0.50	1.00	1.00	0.00	
Port aux Basques (S.W. Coast)	3	3.00	3.67	2.33	1.67	0.67	
White Bay	1	0.00	0.00	1.00	0.00	0.00	
Total	26	N/A	0.79	1.04	0.67	0.73	
Forced Only		0.79	0.33	0.96	0.42	0.46	0.65

SAIDI

Region	Num. Of Delivery Pts	Minutes per Del. Point per YEAR					Target
		2001	2002	2003	2004	2005	
Avalon	6	2.83	5.50	70.7	0.00	0.00	
Burin	4	228.50	45.25	0.00	15.25	91.75	
Central	10	0.00	1.75	21.13	48.88	22.90	
West Coast	2	0.00	29.50	73.00	57.00	0.00	
Port aux Basques (S.W. Coast)	3	109.33	324.33	83.33	169.33	0.67	
White Bay	1	0.00	0.00	57.00	0.00	0.00	
Total	26	N/A	52.50	43.46	44.75	23.00	
Forced Only		52.46	12.21	43.17	27.50	14.19	39.00

Underfrequency Events and Unserved Energy

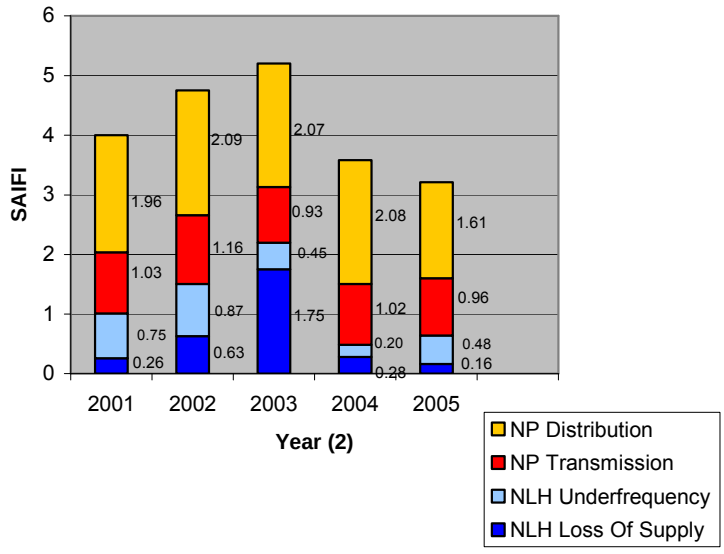
	Year to Date					Target
	2001	**2002**	**2003**	**2004**	**2005**	
No Events Affecting Nfld. Power	9	17	10	6	4	8
Unserved Energy Due to Underfrequency (MW-min)	2,892	4,120	3,185	1,070	4,704	
Unserved Energy Due to Other Forced Outages (MW-min)	4,940	7,693	45,799	11,460	1,376	
Unserved Energy Due to Planned Outages (MW-min)	N/A	1,761	13	1,331	303	
Total Unserved Energy (MW-min)	N/A	13,574	48,997	13,861	6,383	
Forced Only (MW-min)	7,832	11,813	48,984	12,530	6,080	15,988

Newfoundland Power
Customer Service Continuity Report
2005

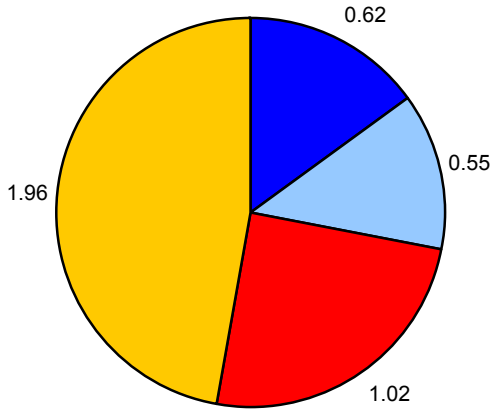
SAIFI

Region	Number[1] Customers	Interruptions per Customer					2005 Target
		2001	2002	2003	2004	2005	
St. John's	88,258	3.73	3.76	6.11	2.68	3.00	
Avalon	32,198	3.53	2.42	4.96	1.49	2.13	
Burin	10,882	4.46	9.55	4.15	6.18	6.49	
Bonavista	14,855	3.62	7.44	5.77	5.79	3.38	
Gander	18,687	3.33	6.72	6.30	6.86	4.72	
Grand Falls	20,131	4.83	3.76	2.10	4.30	3.06	
Corner Brook	19,407	4.27	6.25	2.99	1.92	2.12	
Stephenville	14,964	5.74	6.19	6.25	6.12	3.87	
Total	**219,382**	**3.99**	**4.76**	**5.20**	**3.58**	**3.21**	**4.04**

Utility Breakdown



SAIFI - 5 Year Average = 4.15

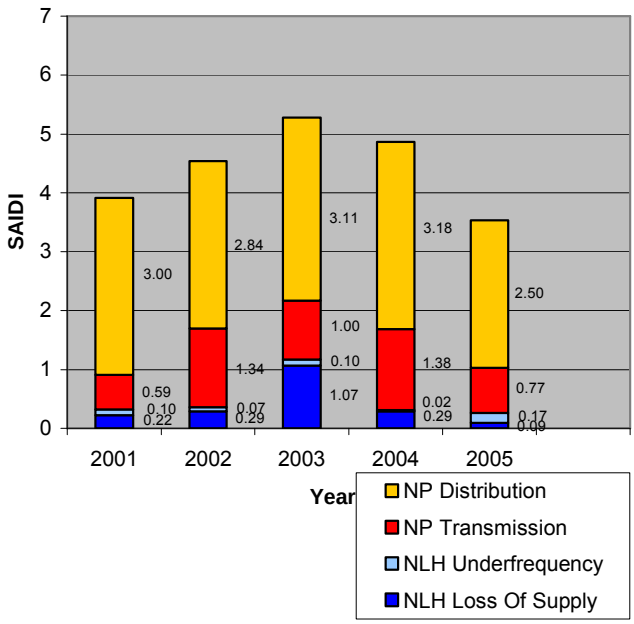


[1] Number of customers at year end 2005.

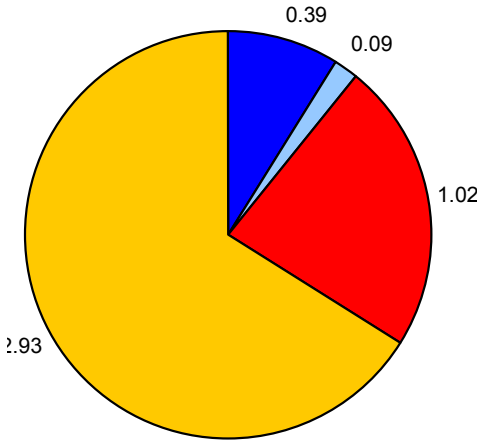
SAIDI

Region	Number[2] Customers	Hours Per Customer					2005 Target
		2001	2002	2003	2004	2005	
St. John's	88,258	1.99	2.14	4.61	3.05	2.51	
Avalon	32,198	3.71	3.03	5.40	2.08	3.35	
Burin	10,882	11.96	9.12	6.54	3.98	5.73	
Bonavista	14,855	4.95	7.96	6.91	6.43	3.67	
Gander	18,687	4.21	11.32	9.15	10.58	4.80	
Grand Falls	20,131	5.40	4.51	3.14	8.24	6.11	
Corner Brook	19,407	3.43	3.50	3.44	3.98	2.45	
Stephenville	14,964	6.04	7.57	6.60	9.75	4.54	
Total	**219,382**	**3.89**	**4.54**	**5.28**	**4.87**	**3.53**	**4.42**

Utility Breakdown



SAIDI - 5 Year Average = 4.43



[2] Number of customers at year end 2003.

3.1 Major Events Affecting Newfoundland and Labrador Hydro's Performance

The 2005 reliability was dominated by two major underfrequency events having significant impact and two relatively minor underfrequency events. There were two fewer underfrequency events in 2005 from 2004, and 4 less than the 5-Year average. The following table summarizes the 2005 underfrequency events.

No.	Date/Time	Major Equipment	Cause	NP Load Shed
1	March 22, 2005	HLK	While testing the low water protection circuit, the unit inadvertently tripped on low water alarm. At the time the unit was generating 61 MW of the system's total 1013 MW.	15 MW
2	May 9, 2005	BDE	System frequency oscillation that caused operation of underfrequency load shedding protection. Cause still under investigation.	80 MW
3	Sept 2, 2005	BDE	System frequency oscillation that caused operation of underfrequency load shedding protection. Cause still under investigation.	132 MW
4	Sept 30, 2005	HRD Unit 3	Trip during transferring between redundant fuel oil pumps. Unit was generating 80 MW of the system's total 686 MW.	28 MW

3.2 Major Events Affecting Newfoundland Power's Performance

The major events affecting Newfoundland Power's reliability performance can be broken down into unscheduled outages and planned interruptions. Unscheduled outages accounted for 78% of total SAIFI performance and 73% of SAIDI performance in 2005. The vast majority of events impacting the unscheduled performance were caused by severe weather and equipment failure. The following highlights the major unscheduled outages originating on Newfoundland Power's System in 2005.

- On Jan 24th, a sleet storm resulted in some broken conductor and an outage to 1001 customers in the Portugal cove area. The net result was 423,423 customer minutes of outage.

- On Mar 2nd, a sleet storm resulted in a broken cutout and some downed conductor near Fortune resulted in 797 customers losing power. 490,952 customer minutes of outage resulted.

- On Mar 18th, a faulty metering tank at Marystown substation caused an outage to 2,570 customers in the Marystown area. 552,592 customer minutes of outage resulted.

- On Mar 30th, a snow/sleet storm in the central area of the province resulted in numerous outage in the Grand Falls-Windsor, Lewisporte and Wesleyville areas. In total 3,148,153 customer minutes of outage resulted. In many cases outages were lengthened due to poor driving conditions.

- On April 1st, a broken insulator on the transmission line 358L running from Corner Brook to Gillams resulted in 553,061 customer minutes of outage.

- On April 4th, a portable substation placed in service at Holyrood substation to allow maintenance to be carried out on a power transformer experienced an internal fault resulting in 826,711 customer minutes of outage.

- On May 30th, a lightning arrestor at Berry Head substation on the Port au Port Peninsula failed resulting in 441,669 customer minutes of outage.

- On Aug 21st, a broken jumper on a recloser at Glovertown Substation affected 1,675 customers on the Eastport Peninsula and resulted in 351,989 customer minutes of outage.

- On Oct 16, a lightning arrestor failure at Webber's Cove Substation on the Burin Peninsula caused an outage affecting 3,764 customers and resulted in 441,080 customer minutes of outage.

- On Dec 27, a snow and sleet storm on the Port au Port Peninsula caused feeder outages affecting 1,796 customers and resulted in 695,948 customer minutes of outage.

4.0 Achievement of 2005 Targets

The reliability of service provided to customers in 2005 was exceptional. The combined strong performance of both Newfoundland and Labrador Hydro's and Newfoundland Power's electrical systems delivered the best SAIFI and SAIDI results ever achieved.

4.1 Newfoundland and Labrador Hydro – Performance

Hydro established a target for 2005 to reduce unsupplied energy to Newfoundland Power, caused by forced outages, to 10% below the 5 year average. This is consistent with Newfoundland Power's target to reduce its SAIDI and SAIFI by 10% below the 5 year average. Hydro's target unsupplied energy was 15,988 MW-minutes while the actual was 6,080 MW-minutes. This is a significant performance improvement with the result being 62% below the target.

4.1.1 Underfrequency Events

Hydro set an underfrequency load shedding event target of a maximum of 8 which was 34 percent below the 5-year average. Hydro made a significant improvement beyond the target with only 4 events affecting Newfoundland Power. This represents a 57% reduction from the 5 year average of 9.2 per year.

4.1.2 Delivery Point Performance

The delivery point targets were a SAIFI of 0.65 interruptions per delivery point and a SAIDI of 39.00 minutes per delivery point.

The SAIFI and SAIDI targets were also met. The SAIFI was 0.46 interruptions per delivery point, 29% below target. The SAIDI was 14.19 minutes per delivery point, 64% below target.

4.2 Newfoundland Power – Performance

The target for 2005 was a 10% improvement on the past five-year average (2000-2004) SAIFI and SAIDI performance indices. Actual 2005 SAIFI performance of 3.21 was a 21% improvement over the target of 4.04. Breaking 2005 SAIFI performance down by utility, Newfoundland Power's performance was 2.56 and better than the target of 2.96. Hydro's contribution was 0.65 and significantly better then the target of 1.08.

In 2005, underfrequency load shedding events accounted for 15% of overall SAIFI performance. Including loss of supply events, Hydro's contribution was 20% of overall SAIFI which is significantly lower than the 5-year average of 28% of overall SAIFI.

Overall SAIDI performance for 2005 was better than the target. Actual SAIDI performance was 3.53 compared to the target of 4.42, a 20% improvement. Newfoundland Power's component of SAIDI was 3.27 compared to a target of 3.92 and Hydro's contribution was 0.26 compared to a target of 0.50. Hydro's contribution was 7% of overall SAIDI which is lower than the 5-year average of 11% of overall SAIDI.

Planned interruptions to accommodate electrical system upgrading and maintenance represented 22% of total SAIFI and 27% of total SAIDI performance in 2005.

Over the past several years the impact on reliability performance due to planned interruptions has significantly decreased. The percentage of total SAIFI attributed to planned outages reduced from 31% in 2000 down to 23% in 2001 and further reduced to 21% in 2002 and 19% in both 2003 and 2004. In 2005, this increased slightly to 22%.

5.0 System Enhancements

5.1 Newfoundland and Labrador Hydro

	Activity	Status
1.	Insulator replacement on TL243.	Completed
2.	Wood pole test and treat program, TL201 (100%), TL210 (77%), TL218 (50%), TL223 (77%), TL226 (79%), TL227 (67%), TL234(100%), TL240/L1301(9%), TL241(13%), TL243(100%), TL250(28%).	Annual
3.	New fault recorder at Bottom Brook Terminal Station.	Completed
4.	Replaced 129 VDC station battery banks at Hardwoods, Massey Drive, and Sunnyside Terminal Stations.	Completed
5.	Installed 66 kV Breaker Failure Protection at Massey Drive Terminal Station.	Completed
6.	Install backup diesels at Hardwoods & Stephenville gas turbines.	Completed
7.	Surge Arrestor replacement (BDE T5, HRD T5, and mobile transformer completed in 2005).	Annual
8.	Instrument Transformer replacement (STB Bus 3 PTs all phases, STB 130L Phase B PT, & STB 133L Phase B PT completed in 2005).	Annual
9.	DCS for Holyrood Unit 3.	Completed
10.	Replaced relay breaker controls with PLC's on Massey Drive 230 kV breaker B1L28.	Completed
11.	Replaced relay breaker controls with PLC's on Bottom Brook 230 kV breaker B1L1.	80% Complete
12.	Overhauled three 230 kV Air Blast Circuit Breakers (BDE B6B10 & B3B4 and WAV B1L37).	Completed
13.	Overhauled one 230 kV SF6 Circuit Breakers (HWD B2L42).	Completed
14.	RTU replacement (multi-year project).	50 % Completed
15.	Energy Management System replacement.	70 % Completed

5.2 Newfoundland Power

The following outlines the more significant projects Newfoundland Power completed in 2005 aimed at enhancing the electrical system and improving reliability of service.

1. Replace Wesleyville gas turbine gas generator with a refurbished unit.

2. Replace main valves at Cape Broyle and Mobile hydro plants and rebuild dams at Seal Cove and Heart's Content hydro systems.

3. Rebuild transmission lines 11L (5 km) Mobile to Tors Cove, 43L (8 km) Heart's Content to New Chelsea and 124L (5 km) Clarenville to Gambo.

4. Replace feeder relays and reclosers and install remote control on 22 feeders.

5. Replace transmission line switches Port Blandford tap and install remote control transmission switches on 39L at Colliers substation.

6. Upgrade transformer and bus protection at Salt Pond Substation.

7. Repair and refurbish portable substation transformer P-435.

8. Distribution reliability upgrades on feeders WES-02 (Bonavista North) and GBY-02 (Gander Bay).

9. Complete upgrading work on 56 feeders under Rebuild Distribution Lines Program.

10. Build new feeder PUL-03 to enhance reliability Torbay area.

6.0 Committee Achievements

1. The committee met 3 times in 2005. The frequency of meetings was reduced because there were fewer performance issues in 2005 requiring active management. The issues monitored during the year related to efforts to reduce the impact of underfrequency events, emergency response coordination, peak demand management planning and switching coordination.

2. Four initiatives related to improving underfrequency performance were monitored.

   - The implementation of underfrequency relays with rate of change settings was monitored. Newfoundland Power placed a relay with this function in service in 2004. Hydro was going to implement a similar relay on a load at the Abitibi Consolidated mill in Stephenville. However, with the shutdown of this mill this is no longer possible. There have been no events to date to cause an operation of this relay. The assessment will continue and operations closely monitored.

   - Newfoundland Power continued to implement additional feeder automation that will benefit customers by enabling more sharing of the impact of underfrequency events across their customer base.

   - Hydro wrote its industrial customers to request greater participation by this customer group. No customers were able to provide any additional loads. When new industrial customers come into service, Hydro will request they participate where possible.

   - The action plan related to the two major frequency oscillation events that occurred during the year was followed. Hydro implemented a comprehensive review of these events. This has resulted in enhancements to their governor maintenance practices. In addition, control changes were implemented on the Bay d'Espoir governors to make them significantly less likely to cause frequency oscillations.

3. An ad hoc committee was struck to review the response capabilities of the two utilities to a major storm that could result in the significant loss of transmission and distribution equipment. A draft report was prepared and reviewed. A final report is expected in early 2006. The results indicate that the response capabilities are in good shape.

4. Newfoundland Power completed formalization of its switching training program so that both utilities' programs are consistent and ready for rolling out to train each other's staff. The result of implementation of this effort will be to have more rapid response by both utilities in emergencies to isolate and repair transmission equipment. The training is being scheduled for the spring of 2006.

7.0 2006 Reliability Performance Targets

7.1 Newfoundland Power Targets

Newfoundland Power has in past years set targets for SAIFI and SAIDI based on a 10% improvement on the past five year average performance and agrees in principle to continue this approach. However, the company has undertaken an exceptionally large feeder rebuild program in 2006 that will require planned outages to complete. As a result, reliability targets for 2006 will be based on a 10% improvement on past 5 year performance with an additional allowance for planned outages to complete feeder rebuild projects. The reliability targets established for 2006 are:

Service continuity SAIFI (Interruption per customer)	2.89
Service Continuity SAIDI (Hours per customer)	3.98

These targets are for Newfoundland Power's system performance only and do not include outages originating within Newfoundland and Labrador Hydro's system such as loss of supply and under-frequency load shedding events.

7.2 Newfoundland and Labrador Hydro Targets

Hydro proposes to set a range for each target in 2006. The upper end of the range was set using the previous year procedures of a 10% improvement in unsupplied energy and setting the underfrequency events to six events. The SAIFI and SAIDI targets were calculated from the improvements in the unsupplied energy and underfrequency targets.

The lower end of the range was set using a new corporate approach of improvement in all customer area targets. The SAIFI and SAIDI were set to the 2005 levels. The number of underfrequency events was set to the 2005 level and the unsupplied energy target followed from these improvements.

The procedures used to set the lower end targets were as follows:
To reduce the unsupplied energy to Newfoundland Power by 51% from the five-year average unsupplied energy of 17,448 MW-minutes for 2006. It is proposed to achieve this by setting a 56.5% reduction from the five-year average number of underfrequency events of 9.2 to 4 in 2006. The SAIFI and SAIDI targets were both set to their 2005 level. These are: SAIFI of 0.46 interruptions per delivery point and SAIDI of 15.0 minutes per delivery point.

The following summarizes the proposed range of targets.

Delivery Point SAIFI (Interruptions per Delivery Point)	0.46 – 0.51
Delivery Point SAIDI (Minutes per Delivery Point)	15.00 – 25.70
Underfrequency Events (Maximum Number)	4 - 6
Total Unserved Energy (MW-minutes)	8,543 – 15,703

Appendix A

IUSRC Action List

Appendix A
IUSRC Action List

NEWFOUNDLAND POWER – NEWFOUNDLAND & LABRADOR HYDRO INTER UTILITY SYSTEM RELIABILITY COMMITTEE			
	Responsibility		
Action Items	**Newfoundland Power**	**Newfoundland & Labrador Hydro**	**Status**
1. An action plan to lessen the impact of underfrequency loadshedding on customers has been developed. Progress will be monitored by the IUSRC.	S. LaCour	R. Henderson	Progress with action items ongoing. Refer to separate list.
2. Major storm damage contingency planning committee. To provide a coordinated and joint response to major transmission line damage.	P. Delaney	F. Martin/J. Haynes	A draft report has been reviewed with some changes required. Target Completion Date of January 2006.
3. Switching Coordination – Prepare employees of both utilities to respond to switching requirements to provide best response to outage situations.	S. LaCour	R. Henderson	A report on the Joint Switching Initiative has been prepared and training has been developed. A target date of first quarter 2006 to complete training and implement the initiative.

Appendix A
Newfoundland Hydro & Newfoundland Power
Joint Action Plan
Underfrequency Loadshedding Impact Reduction

ACTION ITEM	RESPONSIBILITY	TARGET COMPLETION DATE	STATUS
1. Investigation of rate of change of frequency relaying	Hydro R. Henderson		A df/dt U/F relay is in service at NP's Glendale substation Operations are being monitored.
2. Consultation with all customers to identify less sensitive loads to add to the load shedding schedule.	Hydro R. Henderson		***Aur Resources will be approached. No other loads could be identified.***
3. Addition of Feeders available for participation in load shedding.	Newfoundland Power S. LaCour	Dec. 31/05	Total feeders available for participation in the underfrequency load-shedding scheme are 120 at the end of 2005.
4. Revise underfrequency load shedding schedule to reflect loss of ACI Stephenville load.	Hydro R. Henderson Newfoundland Power S. LaCour	Early in 2006	

ACTION ITEM	RESPONSIBILITY	TARGET COMPLETION DATE	STATUS
5. Review and recommend improvements to frequency control equipment as follow-up to May and September 2005 incidents	Hydro R. Henderson	First Quarter 2006	A draft report summarizing the findings and recommendation is under review. Hydro has initiated governor setting and maintenance practice changes.

ACTION LIST

North Atlantic Refining (NARL) and Newfoundland and Labrador Hydro (NLH) Reliability Committee Status: November 14, 2003

	ACTION ITEM	RESPONSIBILITY	STATUS
1.	Station Configuration Proposal	P. Humphries – NLH	NLH preparing ± 10% budget estimate and scope statement.
2.	Fault Levels at CBC	P. Humphries – NLH W. Hiscock – NARL	NLH will provide NARL with fault levels. NARL will provide fault study results.
3.	Transformer Gas Analysis	F. Martin - NLH	NLH will provide gas analysis results and keep NARL informed of findings.
4.	Lightning Arrestor for TL 207	F. Martin – NLH	NLH provided on order of magnitude cost of $500,000.
5.	High Voltage Condition	R. Henderson – NLH	NLH will review voltage during July lightning storm.
6.	Refinery Maintenance Plan	L. Murphy – NARL	NARL will provide 10 year plan for maintenance shutdown.
7.	Underfrequency Load Shedding	W. Hiscock – NARL	NARL will investigate and report opportunities for load to shed.
8.	Next Meeting	L. Murphy – NARL R. Henderson – NLH	3 to 4 months