1	Q.	Furt	her to the response of CA-NP-193 (d):
2			
3		(a)	Please provide a comparison of the purchased power cost saving that results
4			from (i) a 1% reduction in energy with no reduction in peak demand; (ii) a
5			1% reduction in peak demand with no reduction in energy, and (iii) a 1%
6			reduction in both energy and peak demand.
7			
8		(b)	Given that "[t]he Company's Five Year Conservation Plan (the "Plan") is
9			focused on energy conservation", please comment on the benefits of adding
10			into the Plan programs that focus on reductions in peak demand such as a
11			program analogous to (i.e., addressing heating as opposed to cooling load)
12			the Peak Saver and Summer Challenge programs implemented by several
13			Ontario electric LDCs.
14	٨	(-)	Table 1 more idea a summer of the more hand a summer of the transition that more the form
15	А.	(a)	Table 1 provides a summary of the purchased power cost saving that results from $(i) = 10^{(i)}$ modulation in anomaly with no reduction in peak demands $(ii) = 10^{(i)}$
10			(1) a 1% reduction in energy with no reduction in peak demand; (11) a 1%
1/ 10			both anarray and near demand (respectively, Scenarios 1, 2 and 2)
10			bour energy and peak demand (respectively, Scenarios 1, 2 and 5).
19 20			
20			Table 1

Table 1 Pro forma Impacts (\$000)

(\$000)			
(1)	Scenario 1	Scenario 2	Scenario 3
А	(4,995)	(606)	(5,601)
В	(1,804)	-	(1,804)
С	(21)	80	-
A-B+C	(3,212)	(526)	(3,797)
	A B C A-B+C	Scenario 1 A (4,995) B (1,804) C (21) A-B+C (3,212)	Scenario 1 Scenario 2 A (4,995) (606) B (1,804) - C (21) 80 A-B+C (3,212) (526)

- 21 22
- 23 (b) Assessments of the appropriateness of peak load management initiatives for 24 Newfoundland Power's Domestic and General Service customers were provided 25 in the Rate Design Report. Those assessments conclude that programs such as the 26 Peak Saver that focus on reduction in peak demand through peak load 27 management programs would not be cost-effective at this time. Attachment A 28 provides the relevant excerpts from the Rate Design Report (Section 3.2.4 for 29 Domestic and Section 4.2.4 for General Service). 30
- 31As indicated in the Plan, Newfoundland Power and Newfoundland and Labrador32Hydro (the "Utilities") will be expanding their portfolio of energy customer33conservation programs. The Utilities will continue to monitor the potential value34of programs that focus on reducing peak load.

1	Programs such as the Summer Challenge program focus on both energy savings
2	and demand savings during the summer period, when the cost of providing
3	service is greatest in Ontario. This is somewhat analogous to the Utilities'
4	customer conservation programs that focus on reducing space heating end use
5	during the winter, when the cost of providing service is greatest on the Island
6	Interconnected System. The Utilities' current customer energy conservation
7	programs, which focus on space heating and lighting, reduce both energy use and
8	peak demand during the winter season.

Excerpts from Rate Design Report on Peak Load Management

Table 15 provides a summary of the Labrador Infeed scenario marginal costs by costing period for 2015 on a \notin per kWh basis.

Table 15
Marginal Cost Update - Labrador Infeed Scenario
¢ per kWh
(\$2008)

	Winter			Spring/Fall		Summer		
	Peak	Sh ⁷⁴	Off-Peak	Peak	Off-Peak	Peak	Sh	Off-Peak
Energy	9.0	7.7	5.8	7.2	4.9	8.2	6.8	4.6
Generation Capacity	17.1	1.3	0.0	0.0	0.0	11.2	0.0	0.0
Transmission Capacity	0.8	0.3	0.1	0.0	0.0	0.0	0.0	0.0
Distribution Substation Capacity	1.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0
Total	27.9	9.8	6.0	7.2	4.9	19.4	6.8	4.6

The time of day cost differences for the Labrador Infeed scenario reflect material variations in both marginal energy costs (reflecting price variability in a market environment) and marginal capacity costs.

The marginal costs under both system scenarios indicate time of day cost differences. However, the peak periods differ by scenario and the marginal cost differentials by time period are much higher under the Labrador Infeed scenario than the Isolated System scenario. As a result, the pricing periods and time of day price differentials would differ for each scenario.

Time of day rates result in energy conservation during the on-peak periods. This provides both demand and energy savings during the time periods when it is mostly costly to provide service. However, time of day rates may result in increased usage during the lower cost periods.

The screening indicates that an optional time of day rate may be viable for implementation.75

3.2.4 Peak Load Management

Background

There are a number of mechanisms that allow utilities to incent customers to reduce their load during critical periods on the power system. Critical periods are times when there is a high risk of shortage in the amount of generation on the system due to either supply problems or high demand for electricity. Both of these situations result in high market prices where competitive wholesale markets exist.⁷⁶

⁷⁴ Sh – Shoulder peak period.

⁷⁵ Section 3.3.5 provides an illustrative optional time of day rate for Domestic customers.

⁷⁶ Newfoundland Power is subject to a demand charge related to its annual peak demand. This pricing effectively provides a critical peak period for Newfoundland Power where a reduction in peak demand will reduce purchased power costs.

The Potential Study provided an overview of peak load reduction measures for Domestic customers.⁷⁷ Direct load control is a common peak load reduction measure.⁷⁸ With direct load control, the customer is provided a bill reduction for permitting the utility to control the customer's air conditioning, space heating or hot water tank. The devices are shut down for a few hours during the critical peak period and then reactivated. The effect is to shift the demand requirements of the devices from the on-peak period to the off-peak period.

Critical Peak Pricing (CPP) programs are used by some utilities as a peak load management tool for Domestic customers in the United States. The participating customers receive savings for reducing demand during the critical peak periods. The amount of customer savings depends on the price and the amount of reduced usage during the peak period. These events typically occur a few times a year.⁷⁹

Energy conservation is not normally a result of peak load management initiatives. The demand reductions that result from peak load management initiatives normally result in savings in either purchased power costs or generation costs. These savings justify the utility making the rate available to customers.

Applicability

The savings from peak load management initiatives must evaluated against the costs of implementation and operation.

A large scale direct load control program utilizing Domestic customer hot water tanks has the potential for material demand reductions during peak periods.

A BC Hydro study indicates the annual cost of Domestic Hot Water Heater Control would be in range of \$49-\$55 per kW/year.⁸⁰ This cost excluded the credit to be provided to customers for participation and utility administration costs. Including a \$20 annual customer credit, the cost would be in the range of \$69-\$85 per kW/year.⁸¹ This cost is materially higher than the assumed marginal capacity costs of \$48 per kW for the Isolated System.

⁷⁷ CDM Potential Study, Residential Sector, pages 85-88.

⁷⁸ For many utilities, direct load control is treated as a demand management initiative and not presented as a rate option.

⁷⁹ Customers are normally notified the day ahead of a CPP event to reduce their power use during a specific time frame for the following day. There are a limited number of CPP events per year.

⁸⁰ Source: 2007 CDM Potential Study, page 87.

⁸¹ Newfoundland Power conducted an experimental hot water tank control project in the early to mid 1990's. A \$20 annual credit was determined to be sufficient to achieve customer participation. The cost per kW depends on the kW reduction per household. Based on a peak demand reduction range of 0.66 kW to 1 kW per household, the customer incentive would be cost in the range of \$20 per kW to \$30 per kW (\$20 ÷ 0.66).

Newfoundland Power has held discussions with Newfoundland Hydro with respect to the benefit of implementing new peak load management initiatives on the Isolated System at this time. Based on those discussions, the earliest time where new peak management programs may be cost effective is when the Labrador Infeed proceeds.⁸²

Based on the results of the 2007 CDM Potential Study, the Marginal Cost Update and discussions with Newfoundland Hydro, the costs of new peak load management initiatives outweigh the benefits at this time.

Therefore, it is not currently cost effective to implement peak load management initiatives for Domestic customers.⁸³

3.2.5 Summary

The screening indicates an inclining block rate or a seasonal rate may be a viable alternative to the flat energy rate for Domestic customers. The screening also indicates that an optional time of day rate may be viable for implementation. A more detailed assessment of these rates is appropriate.

The screening also indicates that implementing new rates that focus solely on peak load management are not cost-effective at this time. No further assessment of these rates is provided.

⁸² The potential need for peak load management and its value will depend on detailed engineering design of the Labrador Infeed.

⁸³ This assessment could change depending on changes in the value of peak load management.

Real Time Pricing

Real time pricing ("RTP") rates are a common rate option provided to general service customers in the United States, and to a lesser extent, in Canada.¹⁷⁴

RTP rates are generally made available in competitive wholesale markets to general service customers. RTP rates generally vary by hour according to the operation of a wholesale competitive market. Customers that avail of RTP rates have the opportunity to reduce electricity costs by managing their consumption to take advantage of low cost periods. The RTP rate is generally set to track forecast market prices by hour for the following day. The price variations are driven by market conditions.

Applicability

RTP rates are not required on the Isolated System. The short-run marginal cost of energy for all hours is No. 6 fuel at Holyrood. Changes in customer demand requirements impact longer-term marginal capacity costs on the Isolated System. There are no real-time or immediate increases or decreases in system costs that result from changes in customer demand requirements.

If a competitive market exists, as may be the case if the Labrador Infeed proceeds, then RTP rates may be beneficial.

The screening indicates there is no marginal cost basis for establishing RTP rates on the Isolated System. No further assessment of these rates is provided.

4.2.4 Peak Load Management

Background

There are several rate design options used by utilities to incent general service customers to reduce their load during critical periods on the power system. Examples of peak load management initiatives are critical peak pricing and interruptible/curtailable rate options.

Critical periods are times when there is a high risk of shortage in the amount of generation on the system due to either supply problems or high demand for electricity. Both of these situations result in high market prices where competitive wholesale markets exist.¹⁷⁵

Critical Peak Pricing (CPP) programs are becoming a more common peak load management tool in the United States.¹⁷⁶ CPP programs are similar in nature to an interruptible/curtailable rate

¹⁷⁴ Source: Appendix D, Utility Rates Survey.

¹⁷⁵ Newfoundland Power is subject to a demand charge related to its annual peak demand. This pricing effectively provides a critical peak period for Newfoundland Power where a reduction in peak demand will reduce purchased power costs.

¹⁷⁶ Source: Appendix D, Utility Rates Survey.

program. The trigger for an interruptible/curtailable request or a CPP event is basically the same. These events typically occur a few times a year.¹⁷⁷

Savings to a customer for interrupting or curtailing load during critical peak periods are normally provided through a billing credit. With a CPP program, rather than providing a billing credit, the energy rates during a CPP event are much higher than the energy rates at other times (may be as much as 14 times higher). The savings to CPP program participants are normally provided though a lower energy rate throughout the rest of the year compared to rates for customers not availing of the CPP program.

Energy conservation is not normally a result of peak load management initiatives. The demand reductions that result from peak load management initiatives normally result in savings in either purchased power costs or generation costs. These savings justify the utility making the rate available to customers.

Applicability

The Company has a Curtailable Service Option available to its General Service customers that can reduce winter peak demand by 300 kW or more.¹⁷⁸ The Curtailable Service Option provides approximately 9 MW of available peak load reduction.

The Curtailable Service Option is similar in nature to a CPP rate. Under Newfoundland Power's Curtailable Service Option, customers are provided an annual credit on their May bill for reducing demand during periods in the previous winter when system demand requirements were nearing peak.¹⁷⁹

The marginal cost of energy on the Isolated System is very high and the marginal cost of capacity is currently very low. The Isolated System marginal costs support more emphasis on conservation initiatives than peak load management initiatives.

Newfoundland Power has held discussions with Newfoundland Hydro with respect to the benefit of implementing new peak load management initiatives on the Isolated System. Based on those discussions, the earliest time where new peak management programs may be cost effective is when the Labrador Infeed proceeds.¹⁸⁰

The screening indicates that implementation of new rates that focus solely on peak load management are not cost effective at this time. No further assessment of these rates is provided.

¹⁷⁷ Customers are normally notified the day ahead of a CPP event to reduce their power use during a specific time frame for the following day. There are a limited number of CPP events per year.

¹⁷⁸ To a maximum of 5,000 kVA.

¹⁷⁹ The notice period provided to customers for demand reduction under the Curtailable Service Option is one hour.

¹⁸⁰ The potential need for peak load management and its value will depend on detailed engineering design of the Labrador Infeed.