

1 **Q. Please provide the evidence filed by Mr. Brockman in the 1992 COS Hearing with**
2 **respect to the Rural Deficit allocation methodology.**

3
4 **A. Attachment A provides a copy of the evidence filed by Mr. Brockman in the 1992 COS**
5 **Hearing with respect to the Rural Deficit allocation methodology.**

**Newfoundland and Labrador Hydro's
1992 Cost of Service Methodology Hearing:**

Newfoundland Power's Evidence

Newfoundland Power Evidence

**Newfoundland & Labrador
Hydro 1992
Cost of Service
Methodology Hearing**

August 1992

**NEWFOUNDLAND
POWER**

Testimony of Larry Brockman
Hydro 1992 Cost of Service Investigation

August 1992

1 with Dr. Sarikas' recommendation on Hydro's cost of service approach on this
2 issue.

3
4 **Issue Five**

5 **Q. How should the Hydro Rural revenue deficit be allocated?**

6 A. Unfortunately, there is no causal theory to guide us here. This deficit was not
7 created by demand, energy, or number of customers. Only the principle of fairness
8 can assist in resolving this issue. Hydro has proposed allocating this deficit on the
9 basis of revenues contributed by the various classes. NP pointed out in the last
10 referral that this method does not seem fair, because certain customers, such as
11 the ones in the Labrador Interconnected area have very low rates and would not
12 pick up a fair share of the costs this way. The Board acknowledged in its report on
13 the 1992 Hydro Rate Referral that at least the Labrador portion of this argument
14 was troublesome.

15
16 I recently investigated how regulators in the U.S. have allowed costs that have
17 nothing to do with the cost of serving certain classes to be allocated. The states
18 of California, Florida, Iowa, Maryland, Montana, New Hampshire and New Jersey
19 responded that they allocate some social costs, such as uncollectibles or life-line
20 subsidies, on energy.

21
22 My evidence in the 1992 Hydro Rate Referral pointed out that there is no scientific
23 way to resolve this question, but that a 50/50 split between energy and revenues
24 seemed more fair to me than the revenue only split.

1 I therefore respectfully recommend that the Board consider allocating the Rural
2 Revenue Deficit 50% on energy and 50% on revenues.

3
4 As an alternative to NP's preferred method described above, the Board may wish
5 to consider another method. In this method, the total deficit would be separated
6 between the Island system and the Labrador system on the basis of energy sales.
7 These distributions would then be allocated to customer classes within each area
8 according to revenues.

9
10 **Issue Six**

11 **Q. How should interruptible load that is expected on Hydro's system in late 1993**
12 **be treated in the cost of service study?**

13 A. Interruptible load is by definition, load that is the first shed when the utility is short
14 of capacity. In addition, utilities do not usually plan generation capacity and some
15 portion of their transmission capacity to serve interruptible customers. Because
16 generation and transmission capacity may be avoided for these customers, they
17 expect a lower demand charge than firm customers in exchange for being
18 interruptible.

19
20 There are several acceptable ways to treat interruptible customers in the cost of
21 service study. The first way was discussed by Dr. Sarikas in the 1992 Hydro rate
22 referral (on pages 506-508 of the hearing transcript). As Dr. Sarikas pointed out
23 it is not necessary to actually run the cost of service study differently for interruptible
24 customers. Instead, he argues that all demand related generation and transmission

run-out rates (rates for the last energy block) are close to short run marginal energy cost. Unit costs from Scenario 1 would certainly come closer to being directly useable for rate design than unit costs from Scenario 4.

Finally, the relationship between demand costs and energy costs may change when Hydro adds new plant. If the Labrador Infeed line from Churchill Falls ever materializes, the large capital expenditure will be justified primarily on energy savings. Therefore, the transmission line from Churchill Falls should have an energy weighting greater than the 50% recommended in Scenario 1. Adopting an approach which is causally based now should ensure that the proper relationship between demand and energy is maintained in the future.

VIII. Recommendations to the Board

Q. Based on your examination, please summarize your final recommendations to the Board on these matters.

A. After examining the evidence, my recommendations on the proper cost of service method for Hydro are as follows:

- (1) That Hydro functionalize generation, transmission and distribution plant serving only Hydro Rural customers only to Hydro Rural, and not as common;
- (2) That Hydro classify hydraulic and thermal production plant between demand and energy based on an equivalent peaker method;
- (3) That Hydro classify transmission lines as 50% related to demand and 50% related to energy, and substation and transmission terminal equipment as 100% related to demand;

1 (4) That Hydro allocate the demand related portions of hydraulic and thermal
2 production plant and transmission plant to the rate classes based on a 5 CP
3 demand allocator. Energy related costs should be allocated on energy
4 weighted for losses;

5 (5) That Hydro allocate the Hydro Rural revenue deficit between Labrador and
6 Island Interconnected customer classes, 50% on revenues and 50% on
7 energy; and,

8 (6) That at the time interruptible customers become a reality, the exact details of
9 the impact on cost allocation among customer classes should be reviewed by
10 the Board.

11

Newfoundland Light & Power Co. Limited
Summary of Cost of Service Scenarios

LBB-1
Page 1 of 1
Revised

<u>Scenario</u>	<u>Revenue Allocated to Classes</u>				
	<u>NP</u> <u>\$(000's)</u>	<u>Island</u> <u>Industrials</u> <u>\$(000's)</u>	<u>Labrador</u> <u>Industrials</u> <u>\$(000's)</u>	<u>Labrador Rural</u> <u>Interconnected</u> <u>\$(000's)</u>	<u>Total</u> <u>\$(000's)</u>
1. <u>Recommended by NP</u>					
- \$340/kW Equivalent Peaker Generation Classification	189.4	48.3	5.0	11.6	254.3
- Fuel 100% Energy except Gas Turbines 100% Demand					
- Transmission Lines 50/50 Demand/Energy; Substation and Terminal Equipment 100% Demand					
- Deficit Allocated 50/50 Revenue/Energy					
- Northern Peninsula Directly Assigned					
- 5CP Allocator Generation/Transmission Plant					
2. <u>Previous (Approved '77 Method)</u>					
- Generation 50/50 Demand/Energy Adjusted for Capacity Factor (including fuel)	193.6	45.0	4.6	11.1	254.3
- All Transmission Plant 50/50 Demand/Energy					
- Deficit Allocated 100% Revenue (per RAB-2) ¹					
- Northern Peninsula Directly Assigned					
- AED Allocator Generation/Transmission Plant					
3. <u>High Sensitivity by NP</u>					
- \$680/kW Equivalent Peaker	195.0	43.8	4.3	11.2	254.3
- Fuel 100% Energy except Gas Turbines 100% Demand					
- All Transmission Plant 100% Demand					
- Deficit Allocated 100% Revenue					
- Northern Peninsula Directly Assigned					
- 5CP Allocator Generation/Transmission Plant					
4. <u>Recommended by Hydro</u>					
- Generation Plant 100% Demand	197.4	41.8	4.2	10.9	254.3
- All Fuel 100% Energy					
- All Transmission Plant 100% Demand					
- Deficit Allocated 100% Revenue					
- Northern Peninsula Common					
- AED Allocator Generation Plant					
- CP Allocator Transmission Plant					

¹ Deficit Allocation Method was not an issue in 1977 - 100% Revenue Allocator was used in RAB-2.

APPENDIX 2

Scenario 1

Recommended by NP

601 NEWFOUNDLAND HYDRO
602 Sch 1.2
603 1992 Forecast
604

9-SEP-92
Sch 1.2
NEW355PE

Base Case
\$355/kW Peaker
50% Revenue
50% Energy
Deficit Alloc.

Comparison of Revenue & Allocated Revenue Requirement

607 (b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
608								
609		(\$000)						
610								
611			Revenue			Revenue	Revenue	
612			Before		Deficit	Deficit	After	
613 Line		Allocated	Deficit		Alloc	Alloc	Deficit	
614 No.	Description	Revenue Req	Alloc	Deficit	50% Rev	50% Energy	Alloc	Ratio
615								
616								
617 1	Newfoundland Power	163,968	163,968		13,345	12,145	189,458	1.16
618 2	Island Industrial	41,363	41,363		3,367	3,541	48,271	1.17
619 3	Labrador Industrial	3,723	3,723		303	978	5,004	1.34
620	Rural							
621 4	Island Interconnected	35,112	23,112	12,000	(6,000)	(6,000)	23,112	0.66
622 5	Isolated Systems	34,593	10,988	23,605	(11,803)	(11,803)	10,988	0.32
623 6	Labrador Interconnected	9,679	9,679	0	788	1,138	11,605	1.20
624								
625 7	Subtotal Rural	79,384	43,779	35,605	(17,015)	(16,665)	45,705	0.58
626								
627	Total	288,438	252,833	35,605	(0)	0	288,438	1.00
628								

636	Island Interconnected							
637								
638 8	Newfoundland Power	163,968	163,968	0	13,345	12,145	189,458	1.16
639 9	Industrial	41,363	41,363	0	3,367	3,541	48,271	1.17
640 10	Rural	35,112	23,112	12,000	(6,000)	(6,000)	23,112	0.66
641								
642 11	Total	240,443	228,443	12,000	10,712	9,686	260,841	1.08
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NEWFOUNDLAND HYDRO

9-SEP-92

662 Sch 1.3.1

Sch 1.3.1

663

Island Interconnected

NEW355PE

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Total Demand, Energy and Customer Amounts

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(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
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669 (\$000)

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672

-----Before Deficit Allocation----- After Deficit Allocation-----

673 Line

674 No.	Description	Total	Demand	Energy	Customer	Total	Demand	Energy	Customer
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679 Island Interconnected

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681	1	Newfoundland Power	163,968	53,501	108,224	2,243	189,458	61,818	125,048	2,592
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682	2	Industrial	41,363	8,598	31,796	968	48,271	10,034	37,106	1,130
-----	---	------------	--------	-------	--------	-----	--------	--------	--------	-------

683	3	Rural	35,112				23,112			
-----	---	-------	--------	--	--	--	--------	--	--	--

684

685	4	Total	240,442				260,840			
-----	---	-------	---------	--	--	--	---------	--	--	--

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691 Sch 1.3.2 Sch 1.3.2

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693		Billing Dems	Sales	Bills	Sales Used For Deficit Alloc.	Sales Deficit Alloc. Factor
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694 Demands, Sales & Bills

695		(kw)	(mwh)	(Total No)		
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696 Island Interconnected

697	5	Newfoundland Power	11,805,000	4,284,100	12	4,284,100	0.6822
-----	---	--------------------	------------	-----------	----	-----------	--------

698	6	Industrial	2,043,300	1,249,200	84	1,249,200	0.1989
-----	---	------------	-----------	-----------	----	-----------	--------

699	7	Rural		273,199			
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702 Labrador Interconnected

703	8	Industrial		345,100		345,100	0.0550
-----	---	------------	--	---------	--	---------	--------

704	9	Rural		401,373		401,373	0.0639
-----	---	-------	--	---------	--	---------	--------

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706						6,279,773	1.0000
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709 Sch 1.3 Sch 1.3

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712 -----Before Deficit Allocation----- After Deficit Allocation-----

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714		Total	Demand	Energy	Customer	Total	Demand	Energy	Customer
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715									
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716		(\$/kw)	(\$/kwh)	(\$/Bill)		(\$/kw)	(\$/kwh)	(\$/Bill)
-----	--	---------	----------	-----------	--	---------	----------	-----------

717 Unit Demand, Energy & Customer Amounts

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719	8	Newfoundland Power	4.53	0.0253	186,956	5.24	0.0292	216,020
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720	9	Industrial	4.21	0.0255	11,529	4.91	0.0297	13,454
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301	NEWFOUNDLAND HYDRO
302 Sch 2.1A	
303	Island Interconnected

Functional Classification of Revenue Requirement

	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(L)
			(\$000)					Distribution			
					Prod &			-----			Spec
Line			Total	Prod	Trans	Trans	Rural	Substation		Acct	Assigned
No.	Description		Amount	Demand	Energy	Demand	Trans	Demand	Other	Customer	Customer
----	-----		-----	-----	-----	-----	-----	-----	-----	-----	-----
	Expenses										
1	Operating & Maintenance		61,974	16,951	27,451	4,859	2,740	1,228	6,554	1,074	1,116
2	Fuels		38,433	418	38,015		0				
3	Power Purchased		428		428						
4	Depreciation		20,399	8,217	8,284	1,343	608	262	1,316	0	369
	Expense Credits										
5	Sundry		(61)	(17)	(27)	(5)	(3)	(1)	(6)	(1)	(1)
6	Building Rental Income		(131)	(28)	(77)	(11)	(6)	(2)	(5)	0	(2)
7	Tax Refunds		(56)	(15)	(25)	(4)	(2)	(1)	(6)	(1)	(1)
8	Suppliers' Discounts		(75)	(21)	(33)	(6)	(3)	(1)	(8)	(1)	(1)
9	Pole Attachments		(426)						(426)		
10	Subtotal Expenses		120,485	25,505	74,016	6,176	3,334	1,485	7,419	1,071	1,479
11	Interest		110,568	21,624	68,099	9,912	5,360	1,412	2,564	0	1,598
12	Disposal Gain/Loss		186	36	115	17	9	2	4	0	3
13	Subtot Rev Req't Excl Margin		231,239	47,165	142,230	16,104	8,702	2,899	9,987	1,071	3,080
14	Margin		9,205	1,800	5,669	825	446	118	213	0	133
15	Total Revenue Requirement		240,444	48,966	147,900	16,929	9,148	3,016	10,200	1,071	3,213

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Island Interconnected

63 Island Interconnected

Functional Classification of Plant in Service for the Allocation of O&M Expenses

[illegible]

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NEWFOUNDLAND HYDRO

Island Interconnected

Functional Classification of Net Book Value

127	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
128											
129			(\$000)					Distribution			
130					Prod &						Spec
131	Line		Total	Prod	Trans	Trans	Rural	Substation		Acct	Assigned
132	No.	Description	Amount	Demand	Energy	Demand	Trans	Demand	Other	Customer	Customer
133											
134											
135		Production									
136		Hydraulic									
137	1	Bay D'Espair	145,046	46,560	98,486						
138	2	Upper Salmon	167,332	22,824	144,508						
139	3	Hinds Lake	77,552	15,813	61,739						
140	4	Cat Arm	262,415	36,371	226,044						
141	5	Paradise River	21,219	7,106	14,113						
142	6	Snooks Arm/V Bight	13	0	0		13				
143											
144	7	Subtotal Hydraulic	673,577	128,674	544,890	0	13				
145											
146											
147	8	Holyrood	90,475	41,600	48,875						
148	9	Gas Turbines	7,546	7,546	0						
149	10	Diesel	471	0	0		471				
150											
151	11	Subtotal Production	772,069	177,820	593,765	0	484				
152											
153											
154		Transmission									
155	12	Lines	173,565	1,302	62,658	62,658	42,942				4,005
156	13	Terminal Stations	90,510	27,161	0	32,671	7,814	11,152			11,712
157											
158	14	Subtotal Transmission	264,075	28,463	62,658	95,329	50,756	11,152	0	0	15,717
159											
160											
161	15	Total Distribution	27,837	50				2,512	25,275	0	
162											
163	16	Subtotal Prod Trans Dist	1,063,981	206,333	656,423	95,329	51,240	13,664	25,275	0	15,717
164											
165											
166	17	General	42,751	8,291	26,375	3,830	2,059	549	1,016	0	632
167	18	Telecontrol - Common	24,687	4,905	15,608	2,267	1,643	265			
168	19	Telecontrol - Specific	40								40
169	20	Feasibility Studies	2,492	2,240		227	24	0	0	0	
170											
171	21	Total Plant	1,133,951	221,768	698,406	101,653	54,966	14,478	26,291	0	16,389
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Island Interconnected

Functional Classification of O&M Expenses

[illegible]

NEWFOUNDLAND HYDRO

Island Interconnected

Functional Classification of Depreciation Expense

(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		(\$000)					Distribution			
				Prod &						Spec
Line		Total	Prod	Trans	Trans	Rural	Substation		Acct	Assigned
No.	Description	Amount	Demand	Energy	Demand	Trans	Demand	Other	Customer	Customer
	Production									
	Hydraulic									
1	Bay D'Espair	701	225	476						
2	Upper Salmon	222	30	192						
3	Hinds Lake	241	49	192						
4	Cat Arm	189	26	163						
5	Paradise River	32	11	21						
6	Snooks Arm/V Bight	1	0	0	0	1				
7	Subtotal Hydraulic	1,386	341	1,044	0	1				
8	Holyrood	7,418	3,411	4,007						
9	Gas Turbines	806	806	0						
10	Diesel	56	0	0	0	56				
11	Subtotal Production	9,666	4,558	5,051	0	57				
	Transmission									
12	Lines	1,180	3	445	445	209				79
13	Terminal Stations	1,185	425	0	429	48	83			200
14	Subtotal Transmission	2,365	428	445	874	257	83	0	0	279
15	Total Distribution	1,121	3				105	1,013	0	
16	Subtotal Prod Trans Dist	13,152	4,989	5,495	874	314	188	1,013	0	279
17	General	3,934	1,492	1,644	261	94	56	303	0	83
18	Telecontrol - Common	2,579	1,039	1,145	182	195	17			
19	Telecontrol - Specific	5								5
20	Feasibility Studies	728	696		26	5	0	0	0	2
21	Total Depreciation Expense	20,398	8,217	8,284	1,343	608	262	1,316	0	369

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NEWFOUNDLAND HYDRO

Island Interconnected

Basis of Allocation to Classes of Service

[illegible]

481 * NEWFOUNDLAND HYDRO
482 Sch 3.2A
483 Island Interconnected

Allocation of Functional Amounts to Classes of Service

[illegible]

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Island Interconnected

(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
		(\$000)	O&M			Depreciation			Subtotal		
Line		Total	Transmission		Admin &	Lines &	Telecntr &		Expense	Interest &	Excl
No.	Description	Amount	Lines	Terminals	General	Terminals	Feas Study	General	Credits	Gain/Loss	Margin
			(Plant)	(Plant)	(e + f)	(Direct)	(Direct)			(NBV)	
Basis of Allocated Amounts											
1	Newfoundland Power		2,950	9,697	12,647			213		12,033	
2	Industrial		4,172	5,327	9,499			66		3,725	
3	Rural		0	0	0			0		0	
4	Total	0	7,122	15,024	22,146	0	0	280	0	15,758	0
Ratios											
5	Newfoundland Power		0.4142	0.6454	0.5711			0.7627		0.7636	
6	Industrial		0.5858	0.3546	0.4289			0.2373		0.2364	
7	Rural		0.0000	0.0000	0.0000			0.0000		0.0000	
8	Total	0	1.0000	1.0000	1.0000			1.0000		1.0000	
Amounts Allocated											
9	Newfoundland Power	2,244	67	305	275	213	0	64	(4)	1,222	2,142
10	Industrial	969	95	167	207	66	6	20	(2)	378	937
11	Rural	0	0	0	0	0	0	0		0	0
12	Total	3,213	162	472	482	280	6	83	(6)	1,601	3,079

NEWFOUNDLAND HYDRO

Island Interconnected

Calculation of Generation & Transmission AED Factors

(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
Line No.	Rate Class	Sales+Losses For AED mwhs	Class 5CP AT Generator (5CP kw)*	Class NCP AT Generator (NCP kw)	----Average Demand----		----Excess Demand----		-----Total-----	
					Amount	Weighted	Amount	Weighted	Weighted	Amount
1	Generation									
2	Newfoundland Power	4,390,777	954,563	1,015,791	501,230	0.4076	514,561	0.3856	0.7932	975,372
3	Industrial	1,274,029	153,408	168,436	145,437	0.1183	22,999	0.0172	0.1355	166,629
4	Rural	319,697	67,735	92,068	36,495	0.0297	55,573	0.0416	0.0713	87,703
5	Subtotal at Generation	5,984,503	1,175,706	1,276,295	683,162	0.5556	593,133	0.4444	1.0000	1,229,704
6	Transmission									
7	Newfoundland Power	4,284,100	921,660	983,750	489,053	0.4119	494,697	0.3825	0.7944	943,206
8	Industrial	1,243,075	148,120	163,123	141,904	0.1195	21,219	0.0164	0.1359	161,384
9	Rural	302,467	65,400	87,061	34,528	0.0291	52,533	0.0406	0.0697	82,756
10	Subtotal at Transmission	5,829,642	1,135,180	1,233,934	665,484	0.5605	568,450	0.4395	1.0000	1,187,345
11	Coincident Peaks									
12	Transmission CP*									
13	Newfoundland Power	970.2	921.7	873.1	873.1	970.2	921.7			
14	Industrial	148.4	148.0	148.1	147.7	148.4	148.1			
15	Rural	68.8	68.4	61.2	60.1	68.5	65.4			
16	Subtotal at Coincident Peaks	1,187.4	1,138.1	1,082.4	1,080.9	1,187.1	1,135.2			

* Class 5CP at Transmission and Generator as per response to NP-38 (Page 3 & 4 of 25)

Sch 4.2		NEWFOUNDLAND HYDRO										Page 20 of 20 9 SEP 92	
Base Case		Island Interconnected										Sch 4.2	
\$355/kW Peaker												NEW355PE	
50% Revenue		Functionalization and Classification Ratios											
50% Energy													
Deficit Alloc.													
(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)		
				Prod &				Distribution					
		Total	Prod	Trans	Trans	Rural	Substation		Acct	Spec	Plant	Cost	
Line	Description	Amount	Demand	Energy	Demand	Trans	Demand	Other	Customer	Assigned	Customer	In 1991	\$
14	Cost of Peaker used for D/E Splits		\$355 /kW										\$/kW
15	Cost of Peaker (Paradise River)		933 /kW										
17	Production												
18	Hydraulic												
19	1 Bay D'Espair	100.0%	32.10%	67.90%									1,106
20	2 Upper Salmon	100.0%	13.64%	86.36%									2,602
21	3 Hinds Lake	100.0%	20.39%	79.61%									1,741
22	4 Cat Arm	100.0%	13.86%	86.14%									2,561
23	5 Paradise River	100.0%	33.49%	66.51%									2,786
24	6 Snooks Arm/V Bight	100.0%	0.00%	0.00%		100.00%							
26	7 Subtotal Hydraulic		19.57%	80.42%		0.01%							
29	8 Holyrood	100.0%	45.98%	54.02%									772
30	9 Gas Turbines	100.0%	100.00%	0.00%									
31	10 Diesel	100.0%	0.00%	0.00%		100.00%							
33	11 Purchase Power Island	100.0%		100.0%									
36	Transmission												
37	12 Lines	100.0%		50.0%	50.0%								
38	13 Terminal Stations	100.0%		0.0%	100.0%								
40	14 Subtotal Transmission												
43	15 Total Distribution	100.0%						100.0%					