Q. **2013 General Rate Application, Cost of Service**

Exhibit 13, Schedule 4 - Provide all supporting documents, work papers and data used in the development of Schedule 4.4, Power Purchases.

A. Following is a description of several means Hydro uses to develop the production components used in its power purchase forecasts.

Island Interconnected System

- For the Nalcor generation at Grand Falls, Bishop's Falls, Buchans and Star Lake Hydro used the Vista DSS model following the approach recommended by Hatch in Exhibit 5. Please refer to Hydro's response to NP-NLH-115 for further detail concerning the Vista modelling approach and results. A rate of $0.04/kWh is applied to all production.
- For the generation at Rattle Brook, Hydro used the historic average generation data since the plant went in operation (in 1999), to the end of 2012. The cost is calculated using the Power Purchase Agreement (PPA) price formula with the current year escalation component applied.
- For the generation at the CBPP co-generation unit, Hydro used the production data since the shutdown of No. 4 paper machine in March 2009. Production has been significantly reduced in recent years due to the shutdown of paper machines and the resultant decrease in process steam requirements at the Corner Brook Mill. The cost is calculated using the PPA price formula with the current year escalation component applied. For the fuel component of the price, Hydro used the average monthly prices at Holyrood as a proxy for the fuel at CBPP.

- For the wind farms at St. Lawrence and Fermeuse, Hydro used the original engineering estimates of production for the facilities. As indicated in Hydro's response to PUB-NLH-014, these estimates have proven to be very accurate. The cost is calculated using the PPA price formula with the current year escalation component applied.
- For Wheeling, Hydro used its Rural Load forecast for the communities/areas of:
  Coachman's Cove;
  Kings Point;
  Little Bay/St. Patrick's;
  Westport;
  Mings Bight/Seal Cove (less the production at the Snook's Arm and Venam's Bight mini hydros);

  and applied a rate of $0.0048/kWh for all energy wheeled. This is the current wheeling rate with Newfoundland Power. For Fogo Island wheeling, Hydro has assumed an annual cost of $345,150 which is a result of the last review by Newfoundland Power in determining the actual split of load between Hydro and Newfoundland Power to the area.

Please refer to PUB-NLH-137 Attachment 1 for the supporting calculations in developing the Island Interconnected power purchases.

Labrador Interconnected

- For the power purchases required from CF(L)Co under the recall provisions, Hydro has used its April 12, 2013 forecast split of Labrador Internal (regulated) and Export (non-regulated) load requirements. The load forecast is adjusted back to the Power Contract Delivery Point using the contract loss factor with the appropriate split of costs between regulated and non-regulated based on the

energy and demand requirements. Please see to Hydro's response to PUB-NLH-082 for additional detail regarding the recall delivery point.

- For the 'Other' costs as indicated in Schedule 4.4 of Exhibit 13, Hydro has used the Wabush Terminal Station 3rd and 4th expansion costs which include the following:
    - The TWINCo 2013 Budget of Extraordinary Items dated November 30, 2012; and
    - A fixed administration charge of $198,200 to cover service fees and weekend inspections.

Hydro's share of the above expenses is assumed to be equal to 67/125 MW = 53.64%.

Please refer to PUB-NLH-137 Attachment 2 for the supporting calculations in developing the Labrador Interconnected power purchases.

Isolated Systems

- For L'Anse Au Loup power purchases Hydro used a forecast of system gross load and a forecast of diesel energy requirements to determine net energy deliveries from Hydro Québec. The PPA price formula as provided in Hydro's response to IN-NLH-064 was applied to forecast.
- For the Frontier Energy wind farm power purchases at Ramea, Hydro used a forecast of wind production based on previous years wind production and applied the PPA price formula as indicated in Hydro's response to PUB-NLH-014. For the Nalcor Wind-Hydrogen power purchases at Ramea, Hydro used a forecast of expected wind-hydrogen production and applied the operating agreement price formula as indicated in Hydro's response to PUB-NLH-014.

Please refer to PUB-NLH-137 Attachment 3 for the supporting calculations in developing the Isolated Systems power purchases.

Newfoundland and Labrador Hydro
Island Interconnected System
2013 Non-Utility Generation Power Purchase Forecast

Year	Secondary Account 7320	Non-Utility Generation Account 7345							
	Deer Lake Power 7320.1453	Nacor Exploits 7345.31457	Nalcor Star Lake 7345.31457	Rattle Brook 7345.1456	Corner Brook P&P CoGen 7345.1461	St. Lawrence Wind 7345.31465	Fermeuse Wind 7345.31466	Future Wind	Total Energy Rec'd
2013	0.00	621.63	140.87	15.00	50.50	104.80	84.41	0.00	1,017.21

Year	Secondary Account 7320	Non-Utility Generation Account 7345										Island Wheeling	Total Purchases
	Deer Lake Power 7320.1453	Nalcor Exploits 7345.31457	Nalcor Star Lake 7345.31457	Rattle Brook 7345.1456	Corner Brook P&P CoGen 7345.1461	St. Lawrence Wind 7345.31465	Ecoenergy Incentive Payments 7345.31470	Fermeuse Wind 7345.31466	Ecoenergy Incentive Payments 7345.31471	Future Wind	Total NUGS	7360.3	
2013	$ -	$ 24,865,200	$ 5,634,800	$ 1,235,826	$ 7,391,136	$ 7,472,240	$ (620,850)	$ 6,398,278	$ (620,850)	$ -	$ 26,890,580	$ 661,762	$ 52,417,542

Newfoundland and Labrador Hydro
Island Interconnected System
2013 Nalcor Exploits (GF and BF and Buchans) Power Purchase Forecast

Nalcor Exploits		
(kWh)	Rate ($/kWh)	7345.31457
54,280,000	$0.04000	$2,171,200
49,200,000	$0.04000	$1,968,000
53,140,000	$0.04000	$2,125,600
56,890,000	$0.04000	$2,275,600
58,950,000	$0.04000	$2,358,000
49,520,000	$0.04000	$1,980,800
53,230,000	$0.04000	$2,129,200
54,740,000	$0.04000	$2,189,600
50,240,000	$0.04000	$2,009,600
41,430,000	$0.04000	$1,657,200
46,800,000	$0.04000	$1,872,000
53,210,000	$0.04000	$2,128,400
621,630,000		$24,865,200

Newfoundland and Labrador Hydro
Island Interconnected System
2013 Non-Utility Generation Power Purchase Forecast
Nalcor Star Lake

Month		Energy (kWh)	Rate ($/kWh)	Purchase Cost
	2013			
January		12,120,000	$0.04000	$484,800
February		10,570,000	$0.04000	$422,800
March		11,340,000	$0.04000	$453,600
April		12,160,000	$0.04000	$486,400
May		12,880,000	$0.04000	$515,200
June		11,840,000	$0.04000	$473,600
July		12,350,000	$0.04000	$494,000
August		12,420,000	$0.04000	$496,800
September		6,970,000	$0.04000	$278,800
October		12,830,000	$0.04000	$513,200
November		12,520,000	$0.04000	$500,800
December		12,870,000	$0.04000	$514,800
Total		140,870,000		$5,634,800

Newfoundland and Labrador Hydro
Island Interconnected System
2013 Non-Utility Generation Power Purchase Forecast
Algonquin Power Inc. {Rattle Brook}

Month	Energy (kWh)	Demand Rates Base ($/kWh)	Energy Rates Base ($/kWh)	Combined Rates Base ($/kWh)	Purchase Cost
2013					
January	740,000	$0.04784	$0.05198	$0.09982	$73,867
February	450,000	$0.04784	$0.05198	$0.09982	$44,919
March	630,000	$0.04784	$0.05198	$0.09982	$62,887
April	1,710,000	$0.02238	$0.05198	$0.07436	$127,156
May	2,580,000	$0.02238	$0.05198	$0.07436	$191,849
June	1,610,000	$0.02238	$0.05198	$0.07436	$119,720
July	840,000	$0.02238	$0.05198	$0.07436	$62,462
August	790,000	$0.02238	$0.05198	$0.07436	$58,744
September	1,120,000	$0.02238	$0.05198	$0.07436	$83,283
October	1,620,000	$0.02238	$0.05198	$0.07436	$120,463
November	1,760,000	$0.04784	$0.05198	$0.09982	$175,683
December	1,150,000	$0.04784	$0.05198	$0.09982	$114,793
Total	15,000,000				$1,235,826

Newfoundland and Labrador Hydro
Island Interconnected System
2013 Non-Utility Generation Power Purchase Forecast
Corner Brook P&P CoGen

Month	Avg. Price bbl	VERe	Energy (GWh)	FC Rate ($/kWh)	BEOM Rate ($/kWh)	VBE Rate ($/kWh)	Combined Rate ($/kWh)	Purchase Cost
2013								
January	108.7876	4.3515	5.21	$0.04313	$0.01248	$0.09138	$0.14699	$765,826
February	110.7738	4.4310	4.62	$0.04313	$0.01248	$0.09305	$0.14866	$686,814
March	108.0617	4.3225	5.17	$0.04313	$0.01248	$0.09077	$0.14638	$756,798
April	106.8610	4.2744	4.81	$0.04313	$0.01248	$0.08976	$0.14537	$699,241
May	106.8610	4.2744	3.70	$0.04313	$0.01248	$0.08976	$0.14537	$537,878
June	106.8610	4.2744	3.80	$0.04313	$0.01248	$0.08976	$0.14537	$552,415
July	106.8610	4.2744	3.88	$0.04313	$0.01248	$0.08976	$0.14537	$564,045
August	106.8610	4.2744	3.85	$0.04313	$0.01248	$0.08976	$0.14537	$559,684
September	106.8610	4.2744	3.93	$0.04313	$0.01248	$0.08976	$0.14537	$571,314
October	108.4252	4.3370	3.02	$0.04313	$0.01248	$0.09108	$0.14669	$442,995
November	109.4847	4.3794	3.76	$0.04313	$0.01248	$0.09197	$0.14758	$554,891
December	109.0452	4.3618	4.75	$0.04313	$0.01248	$0.09160	$0.14721	$699,237
Total			50.50					$7,391,136

Newfoundland and Labrador Hydro
Island Interconnected System
2013 Non-Utility Generation Power Purchase Forecast
St. Lawrence Wind

Month		Energy (kWh)	Demand Rate ($/kWh)	Energy Rate ($/kWh)	Combined Rate ($/kWh)	Purchase Cost	Ecoenergy Incentive Payment	Net Purchase Cost
	2013							
January		11,200,000	$0.05606	$0.01528	$0.07130	$798,560	($82,125)	$716,435
February		11,200,000	$0.05606	$0.01528	$0.07130	$798,560	$0	$798,560
March		10,570,000	$0.05606	$0.01528	$0.07130	$753,641	$0	$753,641
April		9,420,000	$0.05606	$0.01528	$0.07130	$671,646	($70,650)	$600,996
May		7,860,000	$0.05606	$0.01528	$0.07130	$560,418	($58,950)	$501,468
June		6,070,000	$0.05606	$0.01528	$0.07130	$432,791	($45,525)	$387,266
July		5,760,000	$0.05606	$0.01528	$0.07130	$410,688	($43,200)	$367,488
August		5,970,000	$0.05606	$0.01528	$0.07130	$425,661	($44,775)	$380,886
September		7,750,000	$0.05606	$0.01528	$0.07130	$552,575	($58,125)	$494,450
October		8,480,000	$0.05606	$0.01528	$0.07130	$604,624	($63,600)	$541,024
November		9,740,000	$0.05606	$0.01528	$0.07130	$694,462	($73,050)	$621,412
December		10,780,000	$0.05606	$0.01528	$0.07130	$768,614	($80,850)	$687,764
Total		104,800,000				$7,472,240	($620,850)	$6,851,390

Newfoundland and Labrador Hydro
Island Interconnected System
2013 Non-Utility Generation Power Purchase Forecast
Fermeuse Wind

Month		Energy (kWh)	Demand Rate ($/kWh)	Energy Rate ($/kWh)	Combined Rate ($/kWh)	Purchase Cost	Ecoenergy Incentive Payment	Net Purchase Cost
	2013							
January		9,020,000	$0.05982	$0.01598	$0.07580	$683,716	($67,650)	$616,066
February		9,020,000	$0.05982	$0.01598	$0.07580	$683,716	($67,650)	$616,066
March		8,510,000	$0.05982	$0.01598	$0.07580	$645,058	($51,600)	$593,458
April		7,590,000	$0.05982	$0.01598	$0.07580	$575,322	($56,925)	$518,397
May		6,330,000	$0.05982	$0.01598	$0.07580	$479,814	($47,475)	$432,339
June		4,890,000	$0.05982	$0.01598	$0.07580	$370,662	($36,675)	$333,987
July		4,640,000	$0.05982	$0.01598	$0.07580	$351,712	($34,800)	$316,912
August		4,810,000	$0.05982	$0.01598	$0.07580	$364,598	($36,075)	$328,523
September		6,240,000	$0.05982	$0.01598	$0.07580	$472,992	($46,800)	$426,192
October		6,830,000	$0.05982	$0.01598	$0.07580	$517,714	($51,225)	$466,489
November		7,840,000	$0.05982	$0.01598	$0.07580	$594,272	($58,800)	$535,472
December		8,690,000	$0.05982	$0.01598	$0.07580	$658,702	($65,175)	$593,527
Total		84,410,000			$0.00220	$6,398,278	($620,850)	$5,777,428

Newfoundland and Labrador Hydro
Central Distribution Interconnected
Account 7360.3 Island Wheeling

Month	Fogo	Others		Total
		kWh		
2013				
January	$28,763	7,056,080	$33,869	$62,632
February	$28,763	6,012,671	$28,861	$57,624
March	$28,763	6,273,391	$30,112	$58,875
April	$28,763	5,510,839	$26,452	$55,215
May	$28,763	5,193,938	$24,931	$53,694
June	$28,763	4,651,406	$22,327	$51,090
July	$28,763	4,550,217	$21,841	$50,604
August	$28,763	4,593,464	$22,049	$50,812
September	$28,763	4,661,858	$22,377	$51,140
October	$28,763	5,309,409	$25,485	$54,248
November	$28,763	5,536,846	$26,577	$55,340
December	$28,763	6,609,444	$31,725	$60,488
Totals	$345,156	65,959,562	$316,606	$661,762

Twin Falls Power Corporation Limited
2013 Budget of Extraordinary Items
As of November 30, 2013

	Project Description	2013	Hydro Portion
1	**Perform Inspection on Synchronous Condensor #1**	$164,222	$88,023
2	**Perform Inspection on Synchronous Condensor #2**	$164,214	$88,019
	IOCC (46.4%) And Hydro (53.6%)	$328,436	$176,042

Newfoundland and Labrador Hydro
Labrador Interconnected System
2013 Power Purchases and Wabush T.S. 3rd & 4th Expansion O & M Forecast
Business Unit 2159

Month	Regulated 2159 CF(L)Co Demand & Energy 7325.1115	3RD & 4TH Expansion O & M 7355
2013		
January	$252,740	$8,853
February	$241,063	$8,853
March	$281,732	$8,853
April	$201,409	$12,069
May	$171,931	$8,853
June	$117,448	$8,853
July	$105,532	$12,069
August	$110,273	$8,853
September	$118,951	$8,853
October	$194,500	$70,750
November	$250,674	$67,534
December	$317,129	$70,750
Totals	$2,363,382	$295,141

Newfoundland and Labrador Hydro
Power Purchase Costs for Island Isolated (Ramea)

	Frontier Wind Power Purchases			Nalcor Wind-Hydrogen Power Purchases			
	Purchased Power (kWh)	Price ($/kWh)	Purchase Cost ($)	Purchased Power (kWh)	Price ($/kWh)	Purchase Cost ($)	Total Purchase Costs ($)
Jan	113,400	0.295	33,409	27,070	0.295	7,975	41,385
Feb	99,960	0.305	30,445	27,995	0.305	8,526	38,971
Mar	54,500	0.288	15,700	37,000	0.288	10,700	26,400
Apr	41,900	0.290	12,100	29,000	0.290	8,400	20,500
May	18,700	0.288	5,400	12,000	0.288	3,500	8,900
Jun	9,300	0.292	2,700	5,000	0.292	1,500	4,200
Jul	4,200	0.300	1,300	10,000	0.300	3,000	4,300
Aug	6,400	0.305	2,000	7,000	0.305	2,100	4,100
Sep	9,100	0.305	2,800	18,000	0.305	5,500	8,300
Oct	26,600	0.304	8,100	33,000	0.304	10,000	18,100
Nov	50,100	0.306	15,400	34,000	0.306	10,400	25,800
Dec	84,900	0.304	25,800	59,000	0.304	17,900	43,700
Total	519,060		155,154	299,065		89,502	**244,656**

Newfoundland and Labrador Hydro
Power Purchase Costs for L'Anse au Loup

	Purchased Power (kWh)	Price ($/kWh)	Purchase Cost ($)
Jan	2,974,730	0.140	415,629
Feb	2,339,850	0.142	333,312
Mar	2,209,500	0.138	304,600
Apr	2,046,200	0.136	278,900
May	1,834,200	0.136	248,600
Jun	1,781,700	0.139	247,000
Jul	1,566,500	0.142	222,000
Aug	1,601,400	0.146	233,200
Sep	1,550,400	0.144	223,400
Oct	1,737,100	0.146	253,000
Nov	1,870,300	0.148	276,800
Dec	2,130,000	0.149	316,800
Total	23,641,880		**3,353,241**