

1 Q. For the budget items below, answer the following questions or provide the
2 information as appropriate.

3

<u>Budget item</u>	<u>Amount</u>	<u>Description</u>
B – 10	\$1,555, 000	Install 25 kV Distribution Line - Ebbegunbaeg

7

8 (a) Provide the cost benefit study that supports this expenditure.

9 (b) Will construction of the line result in the removal of all local diesel
10 generation?

11 (c) Provide a detailed cost estimate of the project, including a breakdown
12 by line and termination equipment and further by material and labor
13 identifying internal labor and contract labor separately.

14 (d) Identify the portions of construction that are forecast to be contracted
15 out.

16

17 A (a) Analysis was undertaken to determine the most economical source of
18 electrical supply for the control/intake structures at Ebbegunbeag (see
19 analysis and graph attached). The 20-year analysis compared the cost
20 of continuing to supply service through the use of onsite generation
21 against the cost of constructing a 20 km tap from an existing
22 distribution line at the Upper Salmon facility. The continued diesel
23 system option takes into account the capital costs for building, fuel
24 system and fire system protection replacement in 2002, and the
25 replacement of generation in 2010, along with associated O&M costs.
26 The distribution line option considers capital and maintenance costs
27 for the line, O&M costs for a standby diesel, along with the cost of grid
28 energy. The analysis concludes the net cumulative present worth

1 savings for the line extension to be approximately \$440,000 (\$2001),
2 with a payback period of 9 years, and a benefits-to-costs ratio of 1.25.

3

4 (b) No, one of the existing diesel units will remain to provide backup.

5

6 (c) The project requires only a distribution line extension, no terminal
7 station work is involved. The cost breakdown is as follows;

8

9	Material Supply	\$400,000
10	Labor	\$570,000
11	Engineering	\$ 75,000
12	Project Management	\$ 20,000
13	Inspection & Commissioning	\$ 70,000
14	Corporate O/H, IDEC, Esc., Contingency	\$420,000
15		_____
16	TOTAL	\$1,555,000

17

18 (d) All portions of construction are forecasted to be contracted out.

EBBE DISTRIBUTION LINE ECONOMIC ANALYSIS FOR 2001 CAPITAL BUDGET PROPOSAL
Cost of Constructing A New Distribution Line Verses The Continued Operation of The Diesels at Control Structure

Year	Onsite Generation Option								Distribution Line Option							Net Value of Distribution Over Diesel Operation			
	ANNUAL O&M			CAPITAL ADDITIONS				TOTAL GENERATION \$		CAPITAL		ANNUAL O&M			TOTAL DISTRIBUTION \$		Net \$ For Year	PW Jan-01 \$	CPW Jan-01
	Helicopter	Fuel and Lube	Parts and Labor	100KW Gensets	Fuel Tanks	Buildings	Helon	\$ For Year	CPW Jan-01	Day Tank	Line Construc	Diesel O&M	Line O&M*	Energy	\$ For Year	CPW Jan-01			
2001	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	
2002	0	0	0	0	265,000	280,000	107,000	632,000	536,856	2,500	1,555,000	0	0	0	1,557,500	1,323,027	(925,500)	(786,171)	(786,171)
2003	66,645	53,838	44,355	0	0	0	0	166,835	687,473			3,000	29,183	15,949	48,142	1,360,718	118,693	92,926	(893,245)
2004	69,573	52,338	44,855	0	0	0	0	168,866	787,879			3,041	29,588	14,174	46,803	1,394,489	120,063	86,634	(608,811)
2005	70,877	50,738	45,669	0	0	0	0	187,084	898,997			3,089	30,058	14,253	47,400	1,428,013	119,884	78,595	(527,016)
2006	71,980	53,183	46,510	0	0	0	0	171,873	1,004,223			3,146	30,812	14,899	48,446	1,455,708	123,227	75,531	(451,484)
2007	73,279	53,008	47,350	0	0	0	0	173,638	1,102,318			3,203	31,184	15,138	49,504	1,483,874	124,134	70,128	(381,358)
2008	74,807	52,837	48,208	0	0	0	0	175,652	1,193,773			3,261	31,729	15,600	50,590	1,510,015	125,062	65,116	(316,242)
2009	76,041	52,665	49,134	0	0	0	0	177,840	1,279,115			3,323	32,339	16,077	51,739	1,534,843	126,101	60,514	(255,728)
2010	77,504	52,494	50,079	417,327	0	0	0	597,404	1,543,338			3,387	32,961	16,568	52,918	1,568,247	544,488	240,819	(14,906)
2011	78,994	52,323	51,042	0	0	0	0	182,363	1,617,614			3,452	33,596	17,060	54,107	1,589,303	128,252	52,280	37,371
2012	80,514	53,605	52,024	0	0	0	0	188,143	1,697,808			3,519	34,241	17,567	55,327	1,601,089	130,817	49,148	86,519
2013	82,062	54,820	53,025	0	0	0	0	190,006	1,753,402			3,586	34,899	18,069	56,575	1,620,860	133,432	46,203	132,722
2014	83,640	56,288	54,045	0	0	0	0	193,851	1,815,300			3,655	35,571	18,628	57,852	1,639,143	136,099	43,435	176,157
2015	85,396	57,645	55,179	0	0	0	0	198,220	1,873,604			3,725	36,255	19,180	59,160	1,656,544	139,080	40,903	217,060
2016	87,189	59,058	56,337	0	0	0	0	202,583	1,928,523			3,804	37,015	19,657	60,476	1,672,939	142,107	38,525	255,585
2017	89,018	60,526	57,518	0	0	0	0	207,062	1,980,290			3,884	37,782	20,146	61,822	1,688,365	145,240	36,290	291,874
2018	90,886	62,029	58,726	0	0	0	0	211,844	2,028,997			3,965	38,566	20,647	63,198	1,702,939	148,444	34,184	326,059
2019	92,793	63,571	59,959	0	0	0	0	216,322	2,074,910			4,048	39,395	21,181	64,604	1,716,861	151,718	32,201	358,269
2020	94,948	65,150	61,351	0	0	0	0	221,450	2,118,230			4,142	40,310	21,687	66,140	1,729,589	155,310	30,381	388,641
2021	97,154	66,769	62,778	0	0	0	0	226,999	2,159,102			4,239	41,247	22,205	67,891	1,741,763	159,009	28,668	417,309
2022	99,411	68,385	64,235	0	0	0	0	232,010	2,197,654			4,337	42,205	22,736	69,278	1,753,304	162,732	27,041	444,350
PV 2001\$	\$827,869	\$442,652	\$405,700	\$184,578	\$225,106	\$220,858	\$90,862	\$2,197,654		\$2,304	\$1,433,180	\$27,428	\$268,899	\$135,961	\$1,753,304		\$444,350		

Salvage value of assets are considered equal to the cost for removal

Discount Rate 8.5%

* O&M Costs for the distribution line are assumed to be 2.0% of capital costs

Parts & Labor (2000\$) \$ 42,000.00

Fuel & Lube (2000\$) \$ 52,350.00

helicopter (2000\$) \$ 65,000.00

PV GENERATION COST-Jan 2001

PV LINE COST - Jan 2001

NET PRESENT VALUE OF LINE

\$2,197,654

\$1,753,304

\$444,350

EBBE DISTRIBUTION LINE ECONOMIC ANALYSIS FOR 2001 CAPITAL BUDGET PROPOSAL
Cost of Constructing A New Distribution Line Verses The Continued Operation of The Diesels at Control Structure

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2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2002	0	0	0	0	265,000	280,000	107,000	632,000	536,856	2,500	1,555,000	0	0	0	1,557,500	1,323,027	(925,500)	(786,171)	(786,171)
2003	66,645	53,838	44,355	0	0	0	0	166,835	687,473			3,000	29,183	15,949	48,142	1,360,718	118,893	92,926	(893,245)
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2006	71,980	53,183	46,510	0	0	0	0	171,873	1,004,223			3,148	30,812	14,899	48,446	1,455,708	123,227	75,531	(451,484)
2007	73,279	53,008	47,350	0	0	0	0	173,638	1,102,318			3,203	31,184	15,138	49,504	1,483,874	124,134	70,128	(381,358)
2008	74,807	52,837	48,208	0	0	0	0	175,652	1,193,773			3,261	31,729	15,600	50,590	1,510,015	125,082	65,116	(318,242)
2009	76,041	52,665	49,134	0	0	0	0	177,840	1,278,115			3,323	32,339	16,077	51,739	1,534,843	126,101	60,514	(255,728)
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2012	80,514	53,605	52,024	0	0	0	0	188,143	1,697,808			3,519	34,241	17,567	55,327	1,601,089	130,817	49,148	86,519
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PV GENERATION COST-Jan 2001

PV LINE COST - Jan 2001

NET PRESENT VALUE OF LINE

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\$1,753,304

\$444,350

**EBBE ENERGY REQUIREMENTS
ON SITE GENERATION VERSES DISTRIBUTION LINE SERVICE
CPW OF CAPITAL COST AND YEARLY EXPENSES FOR EACH OPTION**

