

- 1 Q. RE: p. B-65 Replace Power Line Carrier Equipment – Transmission
 2 System – West Coast (Previous \$300,000; \$651,000; Future \$1,428,000)
 3 RE: p. B-66 Replace VHF Mobile Radio System (\$8,373,000)
 4 RE: p. B-69 Complete Microwave Radio System Interconnection
 5 (\$269,000; Future \$8,673,000)
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7 46.1 Provide a detailed comparison of the original estimates provided in the
 8 1997 Telecommunications Plan with the actual costs to date of the
 9 implementation of the various stages of the plan. Provide
 10 explanations of the variances.

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 12 A. 46.1 The following is as per page 26 of June '97 Report –
 13 Telecommunications Plan.

CAPITAL BUDGET PROPOSAL SUMMARY (as per page 26 of June '97 Report – Telecommunications Plan)							
Capital Budget Proposal	1997	1998	1999	2000	2001	2002	2003
Phase I (\$4,140,100)							
- Back-up Communications	\$197,000						
- West Coast Microwave	\$13,000	\$2,619,000					
- Replace Omat – GPH		\$310,500					
- PLC Upgrade – Central		\$342,000	\$431,400				
- Data Network Upgrade		\$227,100					
Phase II (\$8,537,500)							
- East Coast Microwave		\$27,500	\$8,510,000				
Phase III (\$6,358,800)							
- Interconnect East-West Microwave				\$6,358,800			
Phase IV (\$2,807,000)							
- West Coast PLC Upgrade			\$402,000	\$342,000	\$381,000	\$679,000	\$1,003,000
Phase V (\$1,269,200)							
- VHF System Controller				\$1,269,200			
TOTAL BY YEAR	\$210,100	\$3,526,100	\$9,343,400	\$7,970,000	\$381,000	\$679,000	\$1,003,000
TOTAL PROPOSAL	\$23,112,600						

14

15 **NOTE:** These budgetary estimates were developed in 1995/96.

1	Variance:	Nil
2	Approved Capital Budget Proposal:	\$4,140,100
3	Actual Implementation Costs:	<u>\$3,879,000</u>
4	Variance:	(\$ 261,100)

5

6 **Phase II** (East Coast Microwave)

7	Original Plan Estimate:	\$ 8,537,500
8	Revised Plan Estimate:	<u>\$10,723,000</u>
9	Variance:	\$ 2,185,500

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11 **Explanation of Variances**

12 The original plan estimate was completed in 1995 and the revised plan
13 estimate was completed in 1999. Phase II was rescheduled from 1998/99 to
14 2000/01 to accommodate the availability of engineering resources. The
15 variance is due primarily to the following:

- 16 1. When the original budget estimate was prepared in 1995, a
17 geotechnical survey of the sites had not been completed. Costs
18 increased for civil works including site preparation, roads and
19 buildings.
- 20 2. The microwave tower design was changed from a design of 50 mm of
21 radial ice to 70 mm of radial ice. This change is consistent with the
22 updated design criteria for ice loading on Hydro's transmission lines.
- 23 3. Increase in microwave radio equipment supply costs. This cost
24 increase became apparent with the contract award for the West Coast
25 Microwave System (i.e. Phase I).

26

27	Approved Capital Budget Proposal:	\$10,723,000
28	Actual Implementation Costs:	_____*
29	Variance:	_____**

1 * Project in progress

2 ** The tendered costs reviewed in 2000 for this turnkey project are
3 within budget of the engineering estimates approved by the PUB.

4

5 **Phase III** (Interconnect East-West Microwave)

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7 Original Plan Estimate: \$6,358,800

8 Revised Plan Estimate: \$8,673,269

9 Variance: \$2,314,469

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11 **Explanation for Variance:**

12 The original estimate was completed in 1995 and the revised estimate was
13 completed in 1999. Phase III was rescheduled from 2000 to 2002/03
14 because of the rescheduling of Phase II. The explanation of the variance is
15 the same as stated for Phase II.

16

17 **Phase IV** (West Coast PLC Replacement)

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19 **Stage 1 – West Coast PLC Replacement (1999/2000)**

20 Original Plan (Stage 1) Estimate: \$ 744,000

21 Revised Plan (Stage 1) Estimate: \$1,666,000

22 Variance: \$ 922,000

23 **Stage 2 – West Coast PLC Replacement (2001 – 2004)**

24 Original Plan (Stage 2 Estimate: \$2,063,000

25 Revised Plan (Stage 2) Estimate: \$2,379,000

26 Variance: \$ 316,000

27 Note: Stage 2 (2001-2004)

28 Total Variance: \$1,238,000

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1 **Explanation of Variance:**

2 As part of Phase I, the PLC's in the central region TL 202, TL206 (Bay
3 D'Esplor to Sunnyside) and TL 204, TL 231 (Bay D'Esplor to Stoney Brook)
4 were to be replaced.

5
6 In 1997, Hydro began the design for the (PLC Upgrade Central) replacement
7 of the PLC's on TL202, TL206. ABB, the equipment supplier for the PLC
8 systems, recommended a change from phase to ground (as implemented in
9 the 1960's and 1970's) to phase-to-phase coupling in order to improve
10 performance:

- 11
12 1. Over long transmission lines;
13 2. During harsh environmental conditions (icing); and
14 3. Of the teleprotection system during a fault on the transmission line,
15 thereby reducing the risk of misoperation.

16
17 The variance of \$1.24 Million is due to the additional high voltage coupling
18 equipment required to support phase to phase coupling.

19 In 1999, Hydro updated the estimates for the replacement of the PLC system
20 on the West Coast.

21

22	Approved (Stage 1) Capital Budget Proposal:	\$1,666,000
23	Actual Implementation Costs:	<u>\$1,565,000</u>
24	Variance:	(\$101,000)