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Request IR-1:

Reference: Application, Page 5 of 5, lines 21-22 – “The cost increases forecast for this project are associated with specific cost drivers unforeseeable at the time of filing the capital work order with the UARB.”

a) Please confirm that the revised capital work order filing included a contingency amount of \$7,213,207.

b) Please break each specific unforeseen cost driver down into its monetary impact on the duct firing versus non-duct firing components of the project, and specifically itemize all cost increases related to the duct firing component and provide explanations of each such increase.

Response IR-1:

a) A contingency amount of \$7,213,207 was included in the May 2008 Tufts Cove 6 Waste Heat Recovery Application.

b) Please refer to Attachment 1, pages 1 to 3, in the May 3, 2010 TUC 6 Waste Heat Recovery Project - CI 28098 Authority to Overspend (ATO) (NSUARB P-128.07) Application. The table in this attachment breaks down the increases in capital spend by cost element and project initiative (Duct-Firing versus No Duct-Firing).

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Request IR-2:

Please provide a similar Capital Cost Breakdown comparing the current Forecast with the Budget of \$66.29 million submitted as part of the original Application on September 11, 2007. Please include additional comments to explain any variances.

In particular, please provide a more detailed explanation of the increase in estimated costs for the Steam Turbine Generator & Major Components, Boilers, and Gas Systems, from the original Application dated September 11, 2007.

Response IR-2:

Please refer to Attachment 1.

More detailed explanations of the increases in estimated capital costs are provided in UARB IR-9 through UARB IR-20.

Tufts Cove 6 Waste Heat Recovery Project - 2007-2010 Capital Cost Breakdown

Description	Sept 2007 Work Order Submission	May 2008 Work Order Submission (Budget)	Variance	2007-2008 Comments	May 2008 Work Order Submission (Budget)	2010 ATO Forecast	Variance	2008-2010 Comments
Harbour Infill, Site Prep & Foundations	3,490,000	3,818,800	328,800	Increased to better reflect marine works uncertainties and concrete and reinforcing steel commodity escalations.	3,818,800	7,863,711	4,044,911	Sheet piling required to allow for permitting rather than straight infill. - Discharge Weir added to design. - Circulating Water (CW) piping modified due to turbine. - Condenser design change. The intake structure construction placement was more difficult due to the rock ledge encountered. The CW piping required custom angles to avoid buried services and sheet piling anchors. Most of the increase is associated with piping installation and pumping costs during high tides. Bedrock was found to be less competent than indicated by the initial geotechnical investigations. Battered piles were added to accommodate lateral forces caused by the condenser / turbine design change as described in item 6 below. Removal of the existing underground structures and relocation of raw water lines was more extensive than planned due to large numbers of boulders encountered.
Environmental Assessment and Permits	550,000	641,966	91,966	Habitat compensation related to harbour infill is anticipated, not included in original estimate.	641,966	670,183	28,217	Essentially completed on budget.
Buildings & Auxiliary Systems	3,357,901	3,398,441	40,540	These costs were not re-estimated but contingency was Increased to better reflect concrete, reinforcing steel and structural steel commodity cost forecasts, and anticipated powerhouse size increase per proposed steam turbine generator (STG) requirements.	3,398,441	5,026,163	1,627,722	Structural steel quantities increased due to design code changes. Added mezzanine floor to increase equipment access and laydown space for maintenance. A steel shield wall was added to meet the new standards for arc flash protection around 15 kV switchgear. Waste water and sewage systems design changed due to the decision to route wastes directly to the HRM collection system rather than through the existing Generating Plant Treatment facilities; reducing ongoing operational costs for the plant. Auxiliary systems are more extensive than planned. Some HVAC equipment was moved from the power house roof to inside the power house to manage external noise levels. Fire detection and fire fighting protection measures were increased to meet insurance requirements. Overhead crane costs increased due to the longer time span required resulting from increased building dimensions.

Description	Sept 2007 Work Order Submission	May 2008 Work Order Submission (Budget)	Variance	2007-2008 Comments	May 2008 Work Order Submission (Budget)	2010 ATO Forecast	Variance	2008-2010 Comments
Steam Turbine Generator & Major Components	21,673,392	29,427,431	7,754,039	RFP proposal for the STG significantly higher (\$6M) than original work order estimate (vendor supplied). Other turbine auxiliaries (condenser, feed water system, high pressure steam piping) are experiencing increased costs.	29,427,431	35,025,858	5,598,427	STG on budget (firm price established before submission).
								The Turbine Bypass System increased from 35% unfired to 100% fired capacity. This change will manage external noise levels during start up and to conserve demin water to avoid on going operating expenses. Demin water conservation required capture of drain water. This involved an increase in complexity and also increased the amount of steam piping.
								Cooling loads for the turbine generator and other equipment were greater than expected.
								More expensive pump models were selected based on performance and reduced maintenance costs.
								The CW Piping layout was more complex due to changing the condenser to a split design. This will efficiently cover the full operating range of the steam turbine under all operating combinations planned for the combustion turbines.
								Electrical switchgear, motor control centers and associated cabling and cable tray increased due to increased automation.
Boilers, Duct Burners and Gas Systems	15,747,480	18,351,798	2,604,318	RFP proposals for the boilers and auxiliaries significantly higher than work order estimates (vendors supplied).	18,351,798	19,382,454	1,030,656	The budget assumed a salvage value for the existing stacks that can not be realized under current market conditions for resale of used equipment or scrap. Stack removal will be done in a compressed timeline to minimize outage time for the LM6000s for system operating benefits
								Boiler modifications were selected to put gas skids on ductwork, conserving space and improving maintenance access. This will also involve modifying the access platforms.
Local Control System Integration with Main Plant	1,052,550	1,193,036	140,486	RFP proposal for the control system higher than original work order estimate (vendor supplied).	1,193,036	1,961,406	768,370	The extent of plant controls significantly increased from the original budget due to increased automation and initial underestimating the complexity of the combined cycle process.
Generator Transformer, Cables, Protection & BOP	2,143,350	2,658,933	515,583		2,658,933	3,393,616	734,683	Cabling costs have increased.
				Estimate revised to better reflect NSPI's recent experience with similar products and commodity escalations.				Small variances in a number of smaller balance of plant systems and the generator transformer combine to account for this variance.
138kV Substation Modification and Protection	449,465	621,938	172,473	Increased due to feasibility estimates of effects on NSPI's transmission system beyond Tufts Cove Substation (91H).	621,938	621,938	0	

Description	Sept 2007 Work Order Submission	May 2008 Work Order Submission (Budget)	Variance	2007-2008 Comments	May 2008 Work Order Submission (Budget)	2010 ATO Forecast	Variance	2008-2010 Comments
Engineering Design, Procurement & Commissioning	5,390,000	6,541,256	1,151,256	The increase is based on an average proposed cost of service from the proposals received.	6,541,256	9,041,714	2,500,457	EPCM consultant (AMEC) required engineering overspend due to a number of design changes to accommodate plant optimization.
								EPCM consultant required additional survey and geotechnical data to complete the detailed design.
								The controls consultant increased design cost due to increased automation and underestimating the complexity of the combined cycle process.
								Forecast includes costs for external personnel, experienced in combined cycle plants based on LM6000 combustion turbines, to assist with the commissioning and start up of the plant.
								NSPI costs are forecast above budget due to additional engineering and project management requirements.
								Site management costs increased due to increased contractor overtime to maintain schedule.
Insurance, AFUDC, Duty & A/O	6,007,320	9,819,573	3,812,253	* Original submission assumed insurance coverage through corporate policies - now expect project specific insurance per broker advice*. AFUDC increased in proportion to new estimates. * Duty calculated as 6% of STG supply price. The September 07 submission included this cost in contingency. It has been reassigned here for clarity.* A/O recalculated using latest approved rates.	9,819,573	9,399,201	(420,372)	Delayed spending results in lower AFUDC. Completion date is by year end 2010.
Studies and Preliminary Engineering	554,895	610,385	55,490	increase to cover costs since December 2007 to prepare for work order resubmission	610,385	610,385	0	
Contingency	5,870,067	7,213,207	1,343,140	net increase in contingency based on continuing market volatility, labour uncertainty and vendor escalation requirements tied to commodity pricing	7,213,207	0	(7,213,207)	Fully Allocated Contingency.
Total	66,286,420	84,296,763	18,010,343		84,296,763	92,996,628	8,699,865	

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1 **Request IR-3:**

2
3 **Reference: Attachment 2, Page 5 of 5.**

4
5 **Please confirm that the Strategist economic analysis indicates that the TUC6 No Duct**
6 **Firing is more economic than the TUC6 with Duct Firing (i.e. NPV of \$12,483.585 versus**
7 **\$12,486.640 M)**

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9 **Response IR-3:**

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11 Attachment 2, referenced above, confirms that the cost of Tufts Cove 6 with duct firing is
12 effectively equal in cost to Tufts Cove 6 without duct firing (i.e. a forecast difference of \$3
13 million in a plan present value cost of \$12.5 billion). As provided in Attachment 2 page 5 of the
14 May 2010 ATO filing, duct firing with the benefits presented in the Hatch study provides an
15 estimated savings to customers of \$29.49 million.

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Request IR-4:

Reference: Attachment 3, Page 6 of 7 – “Approval to proceed in June will allow this project to be in service for the winter of 2010/11 peak season. The sooner it is undertaken; the sooner NSPI customer will begin to realize these benefits.” Please provide an estimate of the benefits to NSPI customers in 2010 that have been lost due to NSPI’s failure to achieve the commercial operation date for the project that was forecast in the original Application dated September 11, 2007 (i.e. June, 2010).

Response IR-4:

Please refer to UARB IR-7 for the projected change in net present value due to the change in in-service date and capital costs. The actual effect of the delay on 2010 fuel cost has not been quantified. Please also refer to UARB IR-12 (b).