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Request IR-1:

Page 1 of the application notes that the Lingan Unit 1 steam turbine consists of a dual flow low pressure (DFLP) and a combined high and intermediate pressure (HIP) turbine that convert steam, supplied by the Lingan boiler, into mechanical energy. This mechanical energy drives the generator, ultimately resulting in the production of electrical power.

(a) What is the current rated capacity (in MW) of the Lingan Unit 1?

(b) Please provide the yearly energy production data since the most recent major overhaul in 2010.

(c) Is the Lingan unit 1 classified as a lower-emitting or higher-emitting power generation source?

(d) What is the expected retirement date of this unit?

(e) What will be the role of this unit after its retirement?

(f) Please explain how this refurbishment project aligns with NS Power's plan to meet the 80% renewable target by 2030.

(g) Please explain the specific actions NS Power has taken since the last major haul in 2010 refurbishment to extend the operation of the Lingan Unit 1 generating unit closer to its retirement date.

(h) What will be the Lingan Unit 1 utilization factor after 2030 for the next years?

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Response IR-1:

(a) Ligan 1 has a nameplate capacity of 150 MW and a net capacity rating of 153 MW.

(b) Please refer to the table below for annual net generation (MWh) since 2010.

Year	Net Gen (MWh)
2010	859,668
2011	931,836
2012	838,152
2013	873,020
2014	698,744
2015	695,126
2016	758,951
2017	604,673
2018	588,220
2019	725,843
2020	738,097
2021	731,802
2022	580,068
2023	464,444
2024	501,747
2025	692,480

(c) Ligan 1 is a coal fired generator and would be considered a higher emitting generation source relative to other units.

(d) Ligan 1 does not currently have a firm retirement date, and the previous IRP had the unit forecasted to operate out to 2050. The unit is expected to be converted from coal as the primary fuel to full Heavy Fuel Oil (HFO) operation in 2029.

(e) Please refer to part (d).

(f) Generating units designated for peak load support post 2030 are currently undergoing refurbishments as scheduled and designated by OEM recommendations, NS Power

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1 maintenance strategy, and third party expertise, as appropriate. This is being done to ensure
2 units are safe and reliable enough to meet system demands throughout coal unit
3 retirements, conversions, and as new renewable energy sources are integrated into the grid.
4

5 (g) Lingan 1 does not currently have a firm retirement date; it is planned to convert to HFO
6 operation in 2029. NS Power has continued to maintain and invest in critical generating
7 assets, such as this steam turbine, to ensure the unit can safety and reliability support system
8 load throughout the transition up to and post 2030.
9

10 (h) Based on the most recent Evergreen IRP, the utilization factor for Lingan 1 following
11 conversion to full HFO operation is forecasted to be “Ultra Low” which is typically less
12 than 1,000 hours annually. In this scenario the unit would be used for meeting peak system
13 demand.

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Request IR-2:

(a) What was the estimated cost of the major overhaul completed in 2010?

(b) Please provide the scope and associated cost breakdown comparing the major overhaul in 2010 with the proposed overhaul in 2026.

(c) At the time of the major overhaul in 2010, please provide the accumulated operating hours and the number of start/stop cycles.

Response IR-2:

(a-b) The financial data outlining total costs of the overhaul completed in 2010 were not fully recoverable following the 2025 cyber incident. A high-level estimate would put the costs of turbine work at approximately \$1,800,000 (2010 dollars), as described below.

The scope of work for the 2010 turbine overhaul included the disassembly, inspection, and assembly of the Turbine, replacement of the High Temperature (HT) Turbine Fasteners, and replacement of the #8 nozzle diaphragm, under the supervision of a Toshiba TAES Technical Advisor. In comparison, the 2026 anticipated scope of work includes inspection of the turbine, replacing #1 & #2 bearing, #8 nozzle, outer casing insulation, and valve components, as well as refurbishment of seals & diaphragm and filtration of the turbine oil, under the supervision of a TAES Technical Advisor.

A full cost breakdown of the 2010 overhaul is not available as detailed above. However, to be responsive, NS Power has provided a break down of the HT Turbine Fasteners along with estimated total cost for the #8 nozzle diaphragm performed during the 2010 overhaul, compared to the 2026 project below.

CI C0080671 – LIN1 HP IP Turbine Refurbishment 2026 (NSEB M12745)
NSPI Responses to NSEB Information Requests

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Cost Element	2010 (\$)	2026 (\$)
Regular Labour	72,681	291,136
Overtime Labour	24,196	101,624
Term Labour	53,971	228,986
Travel Expenses	8,474	-
Materials	355,911	630,000
Contracts	262,252	1,170,000
Meals	683	-
Contingency		484,349
Administrative Overhead (AO)	45,150	212,685
Contractor AO		110,343
AFUDC	10,834	20,261
<i>Subtotal HT Turbine Fasteners</i>	<i>834,153</i>	
<i>Subtotal #8 Nozzle Diaphragm</i>	<i>971,000</i>	
Total	1,805,153	3,249,384

- 1
- 2 (c) In 2010, the unit had accumulated approximately 234,000 hours with 425 start/stop cycles.
- 3 By 2026, the unit has accumulated approximately 340,000 hours with 650 start/stop cycles.

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Request IR-3:

(a) Was an engineering assessment performed that recommended the proposed overhaul of the components? If yes, please provide the report. If not, please explain why no assessment was conducted.

(b) Please provide the documents supporting the contract estimates included in the application's project detailed estimate.

(c) Please identify the risks that the 20% contingency allocated in the application is intended to cover.

Response IR-3:

(a) No. The overhaul of the components included in the LIN1 HP IP Turbine Refurbishment project is recommended based on achieving the maximum operating interval targets based on the unit's overall maintenance strategy.

(b) All contract estimates were prepared based on quotes/POs from previous turbine projects with varying scopes compared to the proposed HP IP Turbine work in 2026. NS Power SMEs, including the Plant Planning Supervisor, reviewed the available quotes and other project information to estimate the 2026 project contract costs including appropriate adjustments driven by the scale and complexity of the work. Please refer to Confidential Attachment 1 and Confidential Attachment 2 for contract cost supporting documents.

Line Item in DCE	Reference
HIP Insulation	Confidential Attachment 1 PO#2131027 page 29
Seals/Diaphragm Refurbishment	Confidential Attachment 2 Quote EWA - #1 - HIP Diaphragm Repairs

CONFIDENTIAL (Attachment Only)

Line Item in DCE	Reference
TAES Technical Advisor	Confidential Attachment 1 PO#2102074 page 41
Insulation Replacement	Confidential Attachment 1 PO# 2131027 page 29
Inspection	Confidential Attachment 1 PO# 2111078 page 1
Turbine Oil Filtration	Confidential Attachment 1 PO# 2113307 page 15

1
2 (c) The planned HP IP Turbine Refurbishment scope is based on previous experience on the
3 anticipated findings prior to opening the asset and performing a detailed internal inspection
4 during the fall outage when the final scope will be determined. As stated in the application
5 description, the 20% contingency is intended to cover:

6
7 ...potential changes in material costs due to market changes and/or tariff
8 additions, unforeseen changes to labour requirements during
9 dismantle/removal of the existing equipment, and changes in cost from the
10 contractor prior to the outage.

REDACTED (CONFIDENTIAL INFORMATION REMOVED)

**CI C0080671 NSEB IR-3 Attachment 1 has been removed
due to confidentiality.**

REDACTED (CONFIDENTIAL INFORMATION REMOVED)

**CI C0080671 NSEB IR-3 Attachment 2 has been removed
due to confidentiality.**

CONFIDENTIAL (Attachment Only)

Request IR-4:

(a) If this project were not to proceed, please identify the net present value of the total replacement cost of energy to replace Ligan Unit 1 energy for 2026 to 2029.

(b) Please identify all assumptions used for the analysis and provide the results in pdf and electronic format with all formulas intact.

Response IR-4:

(a) If the project were not to proceed, the net present value of the total replacement cost of energy to replace LIN1 energy from 2026 to 2029 would be \$405,120. This does not include replacement energy costs beyond 2030 when Ligan Unit 1 is anticipated to convert to heavy fuel oil generation, as no replacement energy costs have been defined at this time. This value also does not include the cost for the replacement of the 162MW of firm capacity that Ligan Unit 1 provides, which would have to be replaced by a new combustion turbine unit.

(b) Please refer to Attachment 1. The assumptions used for the replacement energy cost analysis include:

(i) The unit having a 50% likelihood of not operating in 2027 and assumed not to be operating in 2028 and 2029 if the HP/IP Turbine is not refurbished in 2026.

(ii) The future running hours of the unit are based on the 10 Year System Outlook.

(iii) The estimated Unit de-rate is the capacity of the unit at full load.

**LIN1 HP/IP Turbine Refurbishment
Summary of Alternatives**



Division : Power Production
Department : Lingan Unit 1

Date : 07-May-26
CI Number: C0080671
Project No. :

	Alternative	After Tax WACC	PV of Revenue Requirement	PV of EVA / NPV	Rank (based on PV of RR)	IRR	Disc Pay
A	Do Nothing	5.77%	-561,273	405,120	1	#NUM!	0.0 years
	0	NA	NA	NA	NA	#VALUE!	#VALUE!
	0	NA	NA	NA	NA	#VALUE!	#VALUE!
	0	NA	NA	NA	NA	#VALUE!	#VALUE!

Recommendation :

This analysis looks at the total cost of replacement energy in the event that this project is not completed, therefore Lingan 1 would not be available for future operation. The \$405,120 is the Net Present Value of the replacement energy costs.

Notes/Comments :

Do Nothing

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**LIN1 HP/IP Turbine Refurbishment
Summary of Sensitivities**



Division :

Power Production
Lingan Unit 1

Date :

07-May-26

CI Number :

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Project No. :

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	Alternative	After Tax WACC	PV of Revenue Requirement	PV of EVA / NPV	Rank	IRR	Disc Pay
A	Do Nothing	5.77%	-561,273	405,120	1	#NUM!	0.0 years
	0	NA	NA	NA	NA	#VALUE!	#VALUE!
	0	NA	NA	NA	NA	#VALUE!	#VALUE!
	0	NA	NA	NA	NA	#VALUE!	#VALUE!

	Alternative Variance on Capital Spend	Variance (%)	PV of Revenue Requirement	PV of EVA / NPV	Rank	IRR	Disc Pay
A	Do Nothing	30%	-561,273	405,120	1	#NUM!	0.0 years
	0	30%	NA	NA	NA	#VALUE!	#VALUE!
	0	30%	NA	NA	NA	#VALUE!	#VALUE!
	0	30%	NA	NA	NA	#VALUE!	#VALUE!

Change:	A	0	0	0	#NUM!	0.0 years
		NA	NA	NA	#VALUE!	#VALUE!
		NA	NA	NA	#VALUE!	#VALUE!
		NA	NA	NA	#VALUE!	#VALUE!

	Alternative Variance on Avoided Expenses	Variance (%)	PV of Revenue Requirement	PV of EVA / NPV	Rank	IRR	Disc Pay
A	Do Nothing	-10%	-505,145	364,608	1	#NUM!	0.0 years
	0	-10%	NA	NA	NA	#VALUE!	#VALUE!
	0	-10%	NA	NA	NA	#VALUE!	#VALUE!
	0	-10%	NA	NA	NA	#VALUE!	#VALUE!

Change:	A	56,127	-40,512	0	#NUM!	0.0 years
		NA	NA	NA	#VALUE!	#VALUE!
		NA	NA	NA	#VALUE!	#VALUE!
		NA	NA	NA	#VALUE!	#VALUE!

REDACTED (CONFIDENTIAL INFORMATION REMOVED)

REDACTED CI C0080671 NSEB IR-4 Attachment 1 Page 3 of 5

LIN1 HP/IP Turbine Refurbishment Do Nothing

Year	Total Revenue	Operating Costs	Avoided Expenses	Capital	CCA	UCC	CFBT	Applicable Taxes	CFAT	PV of CF	Discount Factor	CNPV
2026	-	-	-	-	-	-	-	-	-	-	1.00	-
2027	-	-	124,450.5	-	-	-	124,450.5	(36,090.6)	88,359.8	83,539.6	0.95	83,539.6
2028	-	-	381,948.4	-	-	-	381,948.4	(110,765.0)	271,183.4	242,403.0	0.89	325,942.6
2029	-	-	131,957.0	-	-	-	131,957.0	(38,267.5)	93,689.5	79,177.8	0.85	405,120.4
2030	-	-	-	-	-	-	-	-	-	-	0.80	405,120.4
2031	-	-	-	-	-	-	-	-	-	-	0.76	405,120.4
2032	-	-	-	-	-	-	-	-	-	-	0.71	405,120.4
2033	-	-	-	-	-	-	-	-	-	-	0.68	405,120.4
2034	-	-	-	-	-	-	-	-	-	-	0.64	405,120.4
2035	-	-	-	-	-	-	-	-	-	-	0.60	405,120.4
2036	-	-	-	-	-	-	-	-	-	-	0.57	405,120.4
2037	-	-	-	-	-	-	-	-	-	-	0.54	405,120.4
2038	-	-	-	-	-	-	-	-	-	-	0.51	405,120.4
2039	-	-	-	-	-	-	-	-	-	-	0.48	405,120.4
2040	-	-	-	-	-	-	-	-	-	-	0.46	405,120.4
2041	-	-	-	-	-	-	-	-	-	-	0.43	405,120.4
2042	-	-	-	-	-	-	-	-	-	-	0.41	405,120.4
2043	-	-	-	-	-	-	-	-	-	-	0.39	405,120.4
2044	-	-	-	-	-	-	-	-	-	-	0.36	405,120.4
2045	-	-	-	-	-	-	-	-	-	-	0.34	405,120.4
2046	-	-	-	-	-	-	-	-	-	-	0.33	405,120.4
2047	-	-	-	-	-	-	-	-	-	-	0.31	405,120.4
2048	-	-	-	-	-	-	-	-	-	-	0.29	405,120.4
2049	-	-	-	-	-	-	-	-	-	-	0.28	405,120.4
2050	-	-	-	-	-	-	-	-	-	-	0.26	405,120.4
2051	-	-	-	-	-	-	-	-	-	-	0.25	405,120.4
2052	-	-	-	-	-	-	-	-	-	-	0.23	405,120.4
2053	-	-	-	-	-	-	-	-	-	-	0.22	405,120.4
2054	-	-	-	-	-	-	-	-	-	-	0.21	405,120.4
2055	-	-	-	-	-	-	-	-	-	-	0.20	405,120.4
2056	-	-	-	-	-	-	-	-	-	-	0.19	405,120.4
2057	-	-	-	-	-	-	-	-	-	-	0.18	405,120.4
2058	-	-	-	-	-	-	-	-	-	-	0.17	405,120.4
2059	-	-	-	-	-	-	-	-	-	-	0.16	405,120.4
2060	-	-	-	-	-	-	-	-	-	-	0.15	405,120.4
2061	-	-	-	-	-	-	-	-	-	-	0.14	405,120.4
2062	-	-	-	-	-	-	-	-	-	-	0.13	405,120.4
2063	-	-	-	-	-	-	-	-	-	-	0.13	405,120.4
2064	-	-	-	-	-	-	-	-	-	-	0.12	405,120.4
2065	-	-	-	-	-	-	-	-	-	-	0.11	405,120.4
2066	-	-	-	-	-	-	-	-	-	-	0.11	405,120.4
Total	-	-	638,355.9	-	-		638,355.9	(185,123.2)	453,232.7	405,120.4		

**LIN1 HP/IP Turbine Refurbishment
Avoided Cost Calculations**



Division :	Power Production	Date :	07-May-26
Department :	Lingan Unit 1	CI Number:	
		Project No. :	

Do Nothing

Year	Avoided Replacement Energy Costs		Avoided Unplanned Repair Costs		Total Annual Avoided Costs	
	2027	2028	2027	2028	2027	2028
Replacement Energy Cost (\$/MWh)						
Repair Cost (\$)			0	0		
Events/Outages (#)	1	1	1	1		
Probability of Occurance (%)	50%	100%	50%	100%		
Capacity Factor (%)						
Energy Replaced (MW)	150.0	150.0				
Duration (Hours or Years)	3301	3968				
Totals	\$124,450	\$381,948	\$0	\$0	\$124,450	\$381,948
Total Capital Cost of Alternative						\$0

0

Year	Avoided Replacement Energy Costs		Avoided Unplanned Repair Costs		Total Annual Avoided Costs	
	2027	2028	2027	2028	2027	2028
Replacement Energy Cost (\$/MWh)						
Repair Cost (\$)			0	0		
Events/Outages (#)	0	0	0	0		
Probability of Occurance (%)	0%	0%	0%	0%		
Capacity Factor (%)						
Energy Replaced (MW)	0.0	0.0				
Duration (Hours or Years)	0	0				
Totals	\$0	\$0	\$0	\$0	\$0	\$0
Total Capital Cost of Alternative						\$0

0

Year	Avoided Replacement Energy Costs		Avoided Unplanned Repair Costs		Total Annual Avoided Costs	
	2027	2028	2027	2028	2027	2028
Replacement Energy Cost (\$/MWh)						
Repair Cost (\$)			0	0		
Events/Outages (#)	0	0	0	0		
Probability of Occurance (%)	0%	0%	0%	0%		
Capacity Factor (%)						
Energy Replaced (MW)	0.0	0.0				
Duration (Hours or Years)	0	0				
Totals	\$0	\$0	\$0	\$0	\$0	\$0
Total Capital Cost of Alternative						\$0

0

Year	Avoided Replacement Energy Costs		Avoided Unplanned Repair Costs		Total Annual Avoided Costs	
	2027	2028	2027	2028	2027	2028
Replacement Energy Cost (\$/MWh)						
Repair Cost (\$)			0	0		
Events/Outages (#)	0	0	0	0		
Probability of Occurance (%)	0%	0%	0%	0%		
Capacity Factor (%)						
Energy Replaced (MW)	0.0	0.0				
Duration (Hours or Years)	0	0				
Totals	\$0	\$0	\$0	\$0	\$0	\$0
Total Capital Cost of Alternative						\$0

