



Orange County
Sanitation District
70th Anniversary

Engine and Generator Overhauls at Plant No. 1 and 2, Project No. J-135B

Presented by:

Raul Cuellar, Engineering Manager

Operations Committee

December 4, 2024

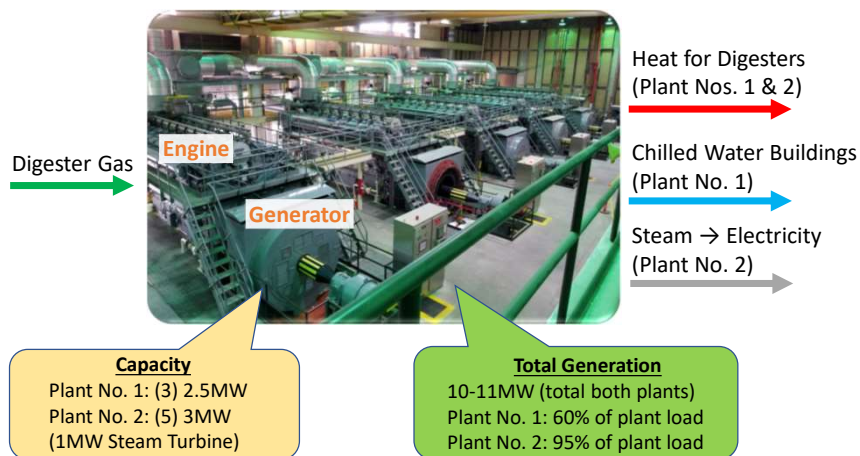
Construction Contingency Increase

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Central Generation Background



Central Generation Facilities installed in the early 1990s at Plant Nos. 1 and 2



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Scope of Work



Contract Award (July 2022)

- Cooper Machinery Services LLC
- Amount: \$29,361,029

Generator Scope (5 generators – 4 completed):

- Overhaul
- Rewind (Change Order: \$2,554,900)

Engine Scope (4 engines – 2 completed):

- Complete disassembly, cleaning and inspection
- Replace wearable parts
- Excluded replacement of parts that were planned to be refurbished and reused



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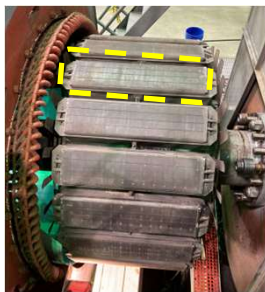
Generator Rewinding



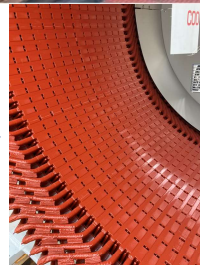
As Found

Completed Unit

Rotor



Stator



April 2023

Contingency Increase: \$1,637,117

➤ 3 generators

Total

Change Order: \$2,554,900

➤ 5 generators

4

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Engine Findings – Cylinder Head Failures



Damaged valve guides



Failed hydro testing;
bubbles should not be present

Original Scope: Resurface all head sealing surfaces and provide new gaskets

Change Order: Multiple cylinder heads required replacement due to unrepairable damage (\$239K)

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Engine Findings – Crankshafts and Camshafts



Crankshafts require straightening

Original Scope: Inspect crankshaft

Change Order: Crankshafts out of spec and required straightening (\$91K)



Camshafts worn;
new camshaft lobes required

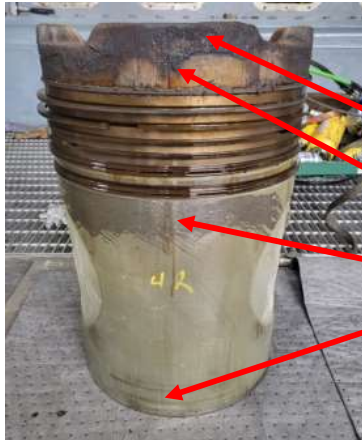
Original Scope: Remove, inspect, disassemble, refurbish, reassemble, and reinstall camshafts

Change Order: Replace lobes as part of optional pricing costs (\$189K)

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Engine Findings – Pistons



Pistons worn; refurbishment not possible

- Carbon buildup
- Scoring from poor fitment due to piston and liner wear
- Potential cavitation pitting
- Signs of piston chatter



New piston

Original Scope: Remove, disassemble, clean, inspect, refurbish, reassemble, and reinstall pistons
Change Order: Replace damaged pistons (\$85K)

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Remaining Work



- Plant No. 2 Generator 3
- Plant No. 2 Engine 3 and 5
- Estimated completion: April 2026
- Future estimated change orders:
 - Plant No. 2 Engine 3 Repair \$928,000
 - Plant No. 2 Engine 5 Repair \$890,000
 - Other Repairs \$182,000
 - Total \$2,000,000



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Contingency Fund Request



Original Contract = \$29,361,029

	CONTINGENCY	
	Amount	%
Approved Contingency (Contract Award + April 2023)	\$4,573,220	15.6
Change Orders to Date	-\$3,093,065	-10.5
Current Remaining Contingency	\$1,480,155	5.1
Estimated Future Change Orders	-\$2,000,000	-6.8
Contingency Increase Needed	\$519,845	1.7
Contingency Increase Request	\$711,765	2.4
Remaining Contingency After Request	\$2,191,920	7.5

Total Contingency = \$5,284,985 (18%)

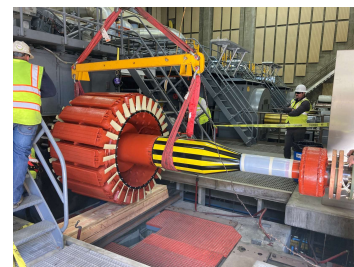
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Recommendation

Recommend to the Board of Directors to:

Approve a contingency increase of \$711,765 to the existing Sole Source Service Contract with Cooper Machinery Services LLC for Engine and Generator Overhauls at Plant Nos. 1 and 2, Project No. J-135B, as part of Central Generation Engine Overhauls at Plant Nos. 1 and 2, Project No. J-135, for a new total contingency of \$5,284,985 (18%).



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