

NASHVILLE DISTRICT CAPITAL IMPROVEMENT MASTER PLAN FOR HYDROPOWER

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Team Cumberland Brief
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CAPITAL IMPROVEMENT MASTER PLAN FOR HYDROPOWER NASHVILLE DISTRICT



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PURPOSE



- The purpose of this Capital Improvement Master Plan for Hydropower is to serve as a guide for the long-term sustainability and development of the Nashville District's hydropower facilities through capital improvements.
- It is a comprehensive 20-year project plan and associated 5-year construction work plan that covers non-routine maintenance, rehabilitation or modernization of the Cumberland River hydropower system in Nashville District.
- It provides an overview of each power plant and its hydropower production, past projects, existing conditions, and scopes, schedules and budgets of future projects.
- The Plan establishes the scope, schedule and budgets for the management and control of the Cumberland River System Hydropower Rehabilitation Program.



SECTIONS



- I. Purpose and Objectives
- II. Hydropower Program Overview
- III. Description of Components / Asset Management
- IV. Program and Funding Overview
- V. Program Implementation
- VI. Ranking Methodology
- VII. Cost Estimating
- VIII. 5 Year Plan
- IX. 20 Year Plan
- X. Nameplate Data and Five Year Performance
- XI. Individual Powerplant Development Plans



RANKING METHODOLOGY



$$\textit{Score} = W_1C_1 + W_2C_2 + W_3C_3A_E$$

W_{1-3} are weights assigned to the ranking criteria

C_1 is the condition factor

C_2 is the criticality factor

C_3 is the consequence factor

A_E is the energy loss factor

- For Section 212-funded projects, W_1 , W_2 , W_3 were each set at 0.33.
- For O&M-funded projects, W_1 was set at 0.75, and W_2 and W_3 were each set at 0.125.
- Condition was rated using HydroAMP scoring transposed to a 0 – 1 scale.
- Criticality was scored 1.00 (critical for power generation) or 0.25 (critical for plant operation).
- Consequence was standardized to reflect higher values for longer periods of forced outage, with each project fitting into one of six categories.
- The Energy Loss Factor represents the incremental annual energy production.



TOP TEN PROJECTS (SECTION 212)



SEC 212 Funding Rank	Work Item ID	Plant/System	Project Name	Start FY	Finish FY	Program Amount (\$)	MOA/SA
0	OLD02	Old Hickory	Turbine/Generator	1Q21	3Q29	\$ 125,000,000	ST 6-10
1	CHE04	Cheatham	Medium Voltage Cables & Busses	2Q20	3Q23	\$ 3,530,000	LT 9-10
2	SYS05.05	Wolf Creek	Main Power Transformer	2Q20	4Q24	\$ 16,200,000	LT 9-10
3	CEN04	Center Hill	Medium Voltage Cables & Busses	2Q20	1Q23	\$ 7,100,000	LT 9-10
4	SYS06.05	Wolf Creek	Excitation	1Q22	4Q25	\$ 10,650,000	LT10-11
5	PgM 1.008	Program	Program Management Year 7	3Q22	4Q23	\$ 1,100,000	LT 10
6	SYS13.03	Wolf Creek	DC / Preferred AC System	4Q22	1Q24	\$ 4,100,000	LT11
7	WOL22	Wolf Creek	Powerhouse Crane	3Q22	3Q24	\$ 3,200,000	LT11
8	WOL02	Wolf Creek	Turbine/Generator	3Q22	3Q33	\$ 200,000,000	ST 11-18
9	WOL04	Wolf Creek	Medium Voltage Cables & Busses	2Q24	4Q26	\$ 13,300,000	LT 11-12



TOP TEN PROJECTS (APPROPRIATIONS)



Appropriated Funding Rank	Plant	Identifier	WBS	ROM (FY21 estimate)
1	Cordell Hull	Centralized Control	COR.18	\$1,200,000
2	Old Hickory	Centralized Control	OLD.18	\$1,700,000
3	Wolf Creek	Centralized Control	WOL.18	\$2,300,000
4	Cordell Hull	Oil Systems	COR.33	\$283,592
5	Dale Hollow	Cooling Water System	DAL.17.01	\$3,585,721
6	Wolf Creek	HVAC	WOL.21	\$6,259,647
7	Cordell Hull	Intake Gantry Crane	COR.01	\$11,371,109
8	Barkley	Compressed Air Systems	BAR.24	\$152,841
9	Barkley	Switchyard Equipment	BAR.15	\$8,446,765
10	Cheatham	Cooling Water System	CHE.17.01	\$3,585,721



QUESTIONS?

