

**USACE Portland District (NWP) FFDRWG Update Form
6 February, 2020**

PROJECT INFORMATION

Project Title	John Day Dam Turbine Unit Rehab
SCT Reference Number	
Project Manager (PM)	Steve Sipe (NWP, 503-808-4724)
Technical Lead (TL)	Curtis Lipski (NWP 503-808-4351)
Biologist/Coordination	Jon Rerecich (NWP, 503-808-4779)

PROJECT DESCRIPTION

The purpose of this project is to address reliability concerns and maximize production of hydroelectric power at JDA, which includes electrical energy production and electrical grid ancillary services while at the same time, improving survival of fish passing through the turbines. Maximum production of hydroelectric power at JDA will be realized through increased reliability and increased efficiency. Reliability improvements will be realized through a combination of replacement and refurbishment of powertrain equipment to include, but not limited to, turbine runners, shafting, generators, isophase bus, breakers, switches, and transformers. Efficiency improvements will be realized through increased turbine efficiencies associated with new turbine runners and other modifications to the turbines.

The purpose of this project is also to increase survival of turbine passed fish. Increased survival of turbine passed fish will be realized through developing state-of-art hydroelectric turbines to obtain improved fish passage survival through the turbines. The design of the state-of-the-art turbines will be an iterative and collaborative process that focuses on fish-friendly design features and criteria. This iterative and collaborative design process will be similar to the ongoing Ice Harbor L&D turbine runner replacement design and upcoming McNary L&D turbine runner replacement in NWW. Phase 1A recommendations include replacing up to 14 units with combination fixed blade & adjustable blade to obtain improved fish passage survival through the turbines.

CURRENT SCHEDULE –

A. Phase 1 Short Term Schedule	Start	Finish
- 30% DDR/P&S review	3/12/2020	4/1/2020
- 60% DDR/P&S review	8/28/2020	9/18/2020
- 90% DDR/P&S review	10/1/2021	1/21/2022
- BCOES review	4/19/2022	5/31/2022

B. Overall Schedule

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|---------------------------|-----------|
| - Contract award | Oct. 2024 |
| - Model testing | 2024-2029 |
| - First Unit installation | 2029 |
| - Unit 14 install | 2040 |

PROGRESS AND KEY ISSUES (List)

Phase 1 Turbine Rehab and Generator Rewind (TRGR) Scope includes:

- Preparation of DDR -
 - Turbine runner type and operating range
 - Powerhouse configuration
 - Replacement sequence
 - Fish passage operations, future operations uncertainties, hydraulic and fish passage considerations in runner design, fish passage criteria, etc...
- Develop P&S for the award of a Hybrid Design Build contract, i.e., collaborative, Government/Contractor iterative design effort.
 - Economic and hydraulic modeling data/criteria will be required for the development of Plans & Specs to determine number and configuration of fixed-blade vs. adjustable blade turbine units
- JDA 1:25 scale, physical observational turbine model at ERDC needs to be rehabbed and baseline data established to support the collaborative and iterative design process.
 - Rebuild in FY20.
 - Existing model baseline runs in FY21.
 - Collaborative design process will occur in Phase 2.
- Tailrace modeling with CFD and 1:45 general model at ERDC to evaluate spill, powerhouse, and JBS outfall egress as well as adult approach.
 - Validate tailrace CFD and physical model in FY 20
 - Model runs in FY 20 and 21.

FFDRWG REVIEW NEEDED AT MEETING? (If YES, list discussion topics below)

PDT members will be available for questions.