White Paper

Swan Lake Reservoir Expansion

(Hydroelectric Storage Increase Project)

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SWAN LAKE RESERVOIR EXPANSION

Appropriation Request: $12,330,519

Organization: Southeast Alaska Power Agency (SEAPA) is a not-for-profit Joint Action Agency of the State of Alaska that supplies wholesale power to the municipal utilities of Petersburg, Wrangell, and Ketchikan over its interconnected transmission system.

Objective: To obtain necessary State funding for final design, construction engineering, project management, and construction of the Swan Lake Reservoir Expansion Project.

Project Location: The Swan Lake Hydroelectric Project is a remote facility located approximately 22 air miles northeast of Ketchikan.

Existing Project Description: The Swan Lake Hydroelectric Project is comprised of a concrete arch dam, 174 feet high and 430 feet long at its crest, located approximately 3/4 mile downstream from the mouth of the original Swan Lake and having an uncontrolled ogee spillway section, 100 feet long, with a crest elevation of 330 feet. Normal maximum reservoir storage capacity is 86,000 acre-feet, spilling an average of 35,000 acre-feet of water annually. The power tunnel is 2,200 feet long and 11 feet in diameter, leading from the intake structure down to the powerhouse. There are two Francis style hydro turbines with a total rated capacity of 22,000 kW. The project output in 2011 was 91,584 MWhrs.

Figure 1

Proposed modification to Swan Lake Dam

Proposed Reservoir Expansion: SEAPA has conducted preliminary engineering, license amendment, and system integration studies in the pursuit of expanding the Swan Lake reservoir. After one and a half years of effort, at an expense to SEAPA of funds totaling $389,000, we continue to promote expanding the reservoir at Swan Lake. A detailed cost benefit analysis (available at www.seapahydro.org) determined that raising the dam face height 15 feet will result in the best return on investment. It will add 25% additional storage for winter hydro generation, displacing up to 12,000 MWhrs of diesel generation annually. This year SEAPA plans to conduct agency meetings in February and then file the Initial Consultation Document (ICD) during March. Based on positive feedback regarding the ICD process, SEAPA expects to proceed with the license amendment, and in parallel, conduct a detailed engineering design effort. These activities will be funded by the storage initiative portion ($578,000) of our 2012 legislative appropriation ($3M) and SEAPA. The subsequent cost to complete final design, construction engineering, project management, and construction is $12.3M.

Project Costs	2011 - 2012	2013	2014	2015 - 2016	Total
Feasibility, License Consulting, Environmental Studies	$389,000	$214,000			$603,000
Amendment Costs (Timber Harvest, 4e Constraints, etc.)			$557,000		$557,000
Construction Eng.& PM		$458,350	$739,611	$9,416,698	$10,614,659
Total	$389,000	$672,350	$1,296,611	$9,416,698	$11,774,659
Escalation	$0	$0	$132,903	$1,484,307	$1,617,210
Project Grand Total	$389,000	$672,350	$1,429,514	$10,901,005	**$13,391,869**

Funding	2011 - 2012	2013	2014	2015 - 2016	Total
SEAPA Funds	$389,000	$94,350			
DCCED Grant Funds		$578,000			
Remaining Construction & Engineering Funds Needed			$1,429,514	$10,901,005	$12,330,519
Total Requested Funds					**$12,330,519**

Project Benefits:

- Directly contributes to increasing regional hydro storage capacity, which was identified as a priority in the Southeast Alaska Integrated Resource Plan (SEIRP)
- Displaces up to 12,000 MWhrs of winter diesel generation, which equates to a reduction of 800,000 gallons of diesel fuel annually
- Swan Lake is interconnected to the communities of Petersburg, Wrangell, and Ketchikan; the additional storage adds operational flexibility that benefits the entire region
- Project would be fully operational by 2016 and will shift summer spill that would have occurred at the Whitman hydro facility to much needed winter hydro generation
- Provides additional storage for future longer term projects
- Maximizes value of an existing hydro project