



FCRPS Hydro Benchmarking

2012 Capital Investment Review Workshop

April 19, 2012



Cost Benchmarks



The FCRPS benchmarks its hydro program annually in Navigant's GKS Hydro Program to identify areas of best practice and the potential for performance improvement.

Costs benchmarked include Corps and Reclamation costs for hydropower, recreation, and joint-use purposes, and Bonneville costs for program coordination, planning, scheduling, generation dispatch, and fish and wildlife mitigation.

Because Direct Funding program costs are only a subset of all costs benchmarked, one-to-one comparisons cannot be made between the Direct Funding program and the benchmarks.

But the benchmarking results do provide useful information on the allocation of costs within the program and how FCRPS costs compare with those of its peers.

The following slides summarize results from the Navigant 2010 program.

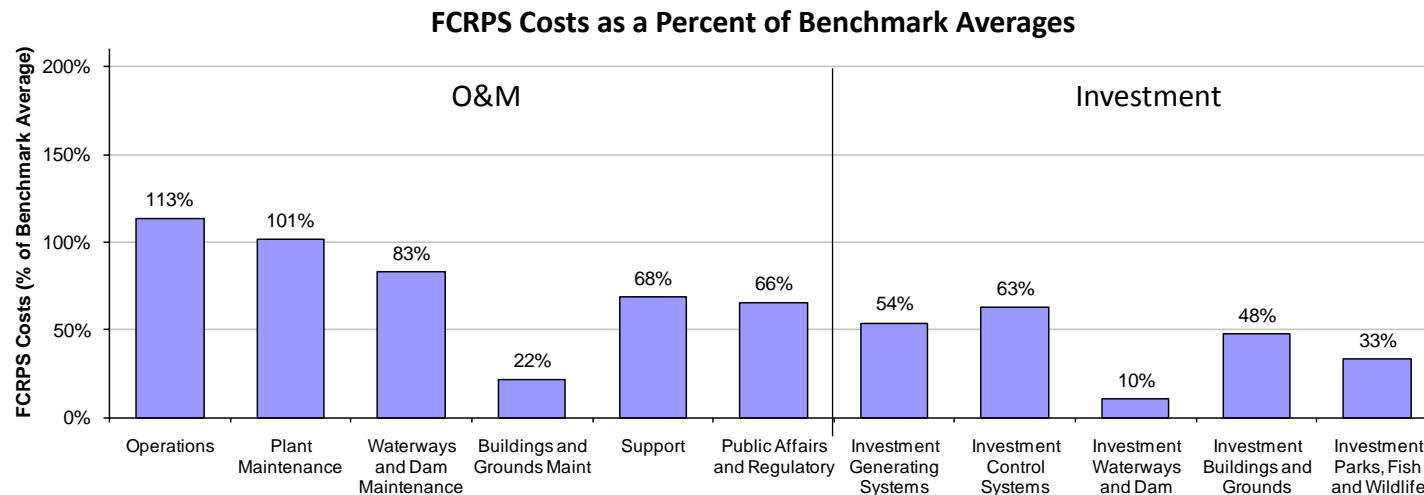
Hydro Cost Benchmarks

(FCRPS Costs Relative to Peer Averages)



Most O&M Program function costs are lower than benchmark averages.

- Operations costs are 13 percent higher than benchmark averages, in part due to water management functions that reside in three FCRPS federal agencies, but also to the number of Corps plants with staffed control rooms. Much of the industry now has automated stations, which lowers Operations staffing costs significantly.
- Powerhouse maintenance costs are 1 percent above average.
- Public Affairs and Regulatory costs for the FCRPS are high, but relatively low when compared to plants that pay falling water charges (FERC fees) or generation taxes (Canadian plants).
- Total O&M costs are 72 percent of the benchmark average.



Cost Benchmarks

(O&M Costs for the FCRPS)



Public Affairs and Regulatory (49%): Recreation, fish and wildlife mitigation (including Bonneville's direct fish program), cultural stewardship, and fees for the use of land and water.

Support (16%): Human resources, fleet services, information services, security, purchasing, training, budgeting and accounting, and legal.

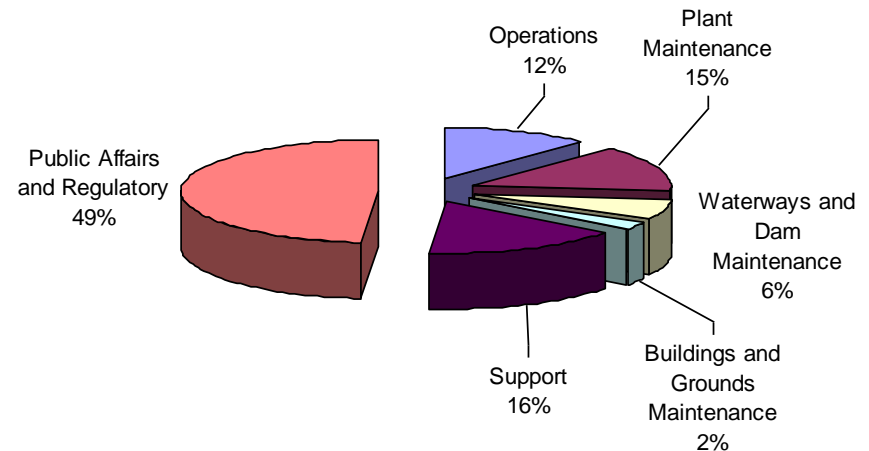
Operations (12%): On-site plant operations, off-site water management, and Bonneville's generation scheduling and dispatch.

Plant Maintenance (15%): Maintenance of generation facilities.

Waterways and Dam Maintenance (6%): Dam, spillways, and reservoir maintenance.

Buildings and Grounds Maintenance (2%).

Distribution of FCRPS O&M Costs



Cost Benchmarks

(Investment Costs for the FCRPS)

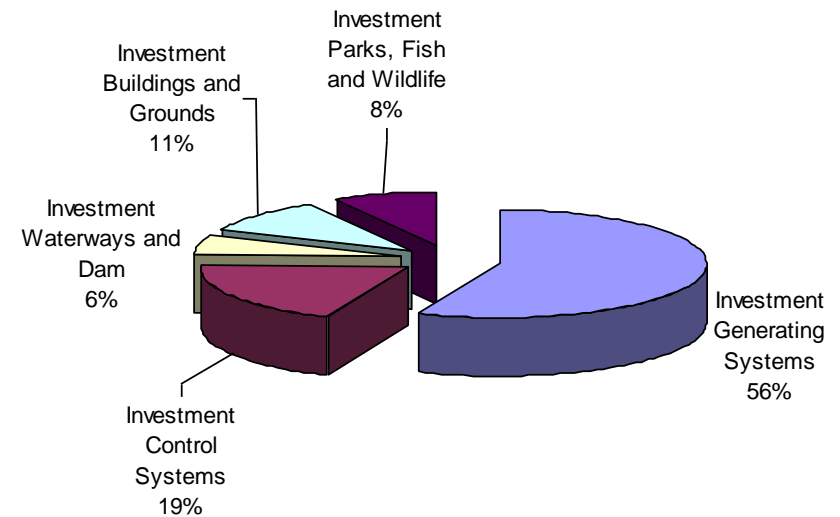


Large Capital and Extraordinary Maintenance projects to repair, replace, and enhance hydropower and joint-use equipment.

Investment is comprised of both Direct Funding and appropriated dollars.

More than half of benchmarked Investment costs are in Generating Systems, with the remainder of costs in Control Systems and other multi-purpose equipment.

Distribution of FCRPS Investment Costs





2006 Northwest Regional Benchmarking Study

HJA Consulting

A Comparison of Hydro Generating Plants
in the Pacific Northwest



Overall Observations

(2006 Regional Benchmarking Study)



All the Northwest power projects benchmarked share similarities including:

- Hourly wage rates for job classifications within NW power projects have similar wages rates. Wage rates for skilled craft workers – plant mechanics and electricians - averaged about \$30 per hour in 2004 for all NW Region participants.
- Wage rates are increasing at about the same rate as inflation.
- NW peer group staffing levels are relatively similar, with some notable exceptions discussed within the functional benchmarking analysis.
- Most stations in the NW are experiencing similar age demographics characterized as an aging workforce that is just beginning to be replaced with younger workers.

Conclusions

(2006 Regional Benchmarking Study)



Most of the NW hydro stations in this study compared favorably to HJA North American panel averages for the functions benchmarked.

For the majority of functions, average costs for FCRPS stations and other NW stations were similar. Exceptions are where the FCRPS has:

- Somewhat higher costs for Operations;
- Lower Plant Maintenance costs in the Large segment and higher costs in the Medium and Small segments;
- Much lower costs for Buildings and Grounds Maintenance.

There was no discernable trend where benchmarks showed FCRPS stations were either consistently more costly or less costly than other regional stations.

Support costs (such as finance, human resources, and procurement) for all but two NW stations were below the HJA North American panel average, reflecting the structural advantage that NW utilities enjoy where support functions within the organization support multiple missions.

Public Affairs & Regulatory costs comprise nearly half of benchmarked costs. PA&R costs for many NW stations are at or above the HJA North American panel average, reflecting significant program costs for fish mitigation, recreation, and visitor operations.

Opportunities

(2006 Regional Benchmarking Study)



Automation: FCRPS stations have an opportunity to reduce Operations costs through automation. Many Small and Medium FCRPS stations with staffed controls rooms have significantly higher costs than automated stations in their peer groups. Medium-Large and Large FCRPS stations may also derive some cost improvements from development of an integrated automation strategy. Other HJA panel participants that have recognized these differences have developed plant automation strategies in cooperation with their plant modernization programs.

Water Management: Currently, the water management function within the FCRPS resides in three agencies. Similar costs for other organizations in the NW study suggest an integrated three-agency review of the water management function might identify opportunities for process and cost efficiencies.

Plant Maintenance: Most NW stations costs were at or below HJA panel averages for their peer groups. There was some variability of costs among NW stations benchmarked. The study team recognized that continued sharing of maintenance practices could help all the regional utilities.