

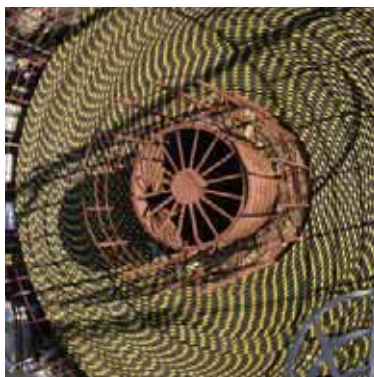


HDR

*Hydropower*

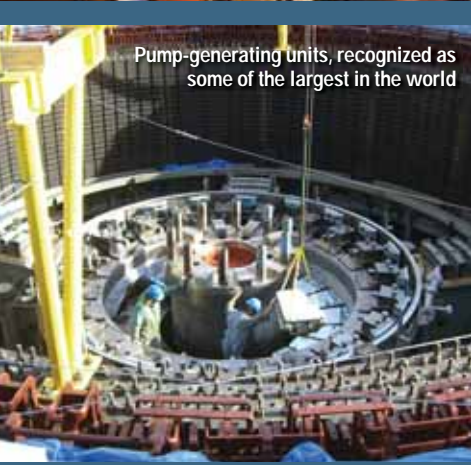
# Tailored

*Listen first. Solve second.*





Innovative design for emergency repairs of a penstock



Pump-generating units, recognized as some of the largest in the world



Grant PUD's Priest Rapids Dam, one of two dams that make up the second largest non-federal U.S. hydro project

## Trusted Solutions from a Trusted Partner

HDR|DTA offers comprehensive expertise to bring your existing or potential hydropower resources to their fullest potential. Our ability to craft innovative and flexible options for a successful and balanced energy portfolio is what makes us different. You can be confident knowing you are working with an industry leader in hydropower and complementary renewable solutions.

Our multi-disciplinary teams combine the specialized technical hydropower expertise and industry leadership of DTA with the full range of engineering, environmental and consulting services of HDR, a major full-service firm that has been solving client problems for more than 90 years. Here's what this means to you:

- Maximized project value/optimized performance
- Minimized regulatory costs
- Risk mitigation strategies through full EPC/design-build solutions

From large 2,000-megawatt projects to micro-hydro applications of several kilowatts, we understand how to keep your hydropower project operating at the highest levels of performance while minimizing operating cost and risk.

## Hydro: The Workhorse Renewable

The global push to expand renewable sources of energy means that the opportunities for hydropower have never been greater. Federal incentives to increase all aspects of hydropower generation, from incremental conventional resources to new pumped storage projects, adding hydro at existing non-hydro dams and exploring emerging hydrokinetic technologies, are making projects more competitive. You need a consultant to drive yours from concept to commissioning. That consultant is HDR|DTA.

With a tradition of involvement at the highest levels of the hydropower industry and a keen awareness of regional and national developments, we understand how to help you navigate the challenges of any hydropower project. At the same time, integrating our technical expertise in engineering disciplines, environmental science and regulatory support facilitate the best value and highest quality services to help hydropower clients meet the demanding challenges ahead. The key to our success is our dedicated, professional employees who bring unmatched commitment and expertise to every project.

# Expertise

## Regulatory Support

Our participation in over 110 project licensings over the last 10 years, representing more than 11,000 -megawatts of installed hydro capacity, translates to a skillful understanding of the complex and rapidly-changing regulatory climate. We have extensive experience with all of the FERC licensing processes, including:

- Traditional (TLP)
- Alternative (ALP)
- Integrated (ILP)

## Environmental Sciences

Our environmental expertise covers a wide range of disciplines to meet all planning, permitting and resource analyses needs, with specialties including:

- Aquatics and fisheries
- Terrestrial and wildlife
- Water quality
- Instream flow
- Rare, threatened and endangered species
- Wetland assessment and mitigation
- Recreation studies and facilities design
- Visual assessment

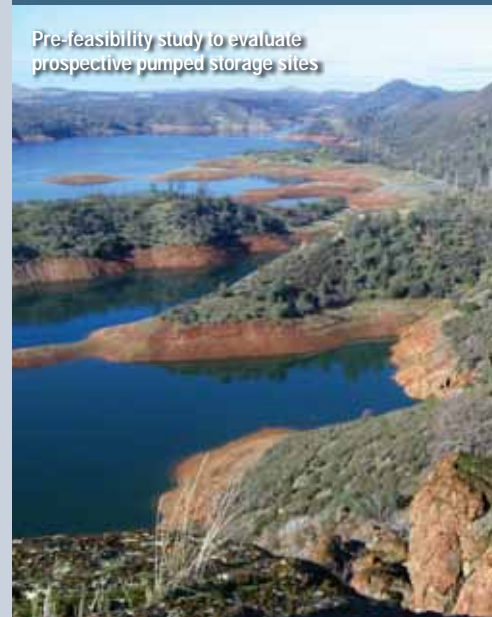
## Engineering Services

We offer a full range of hydroelectric engineering and construction management services provided by technical professionals with solid experience, using either a traditional or EPC model including:

- Hydraulics
- Hydrology
- Geotechnical
- Civil
- Structural
- Hydro-mechanical
- Electrical
- Instrumentation & controls



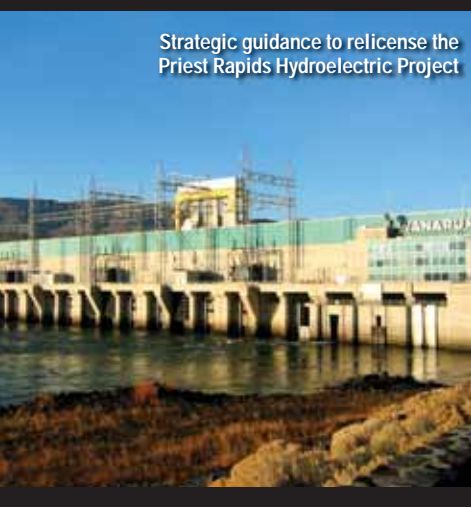
Owner's engineer for pump-turbine upgrades



Pre-feasibility study to evaluate prospective pumped storage sites



Installation of new pump-turbine runners



Strategic guidance to relicense the Priest Rapids Hydroelectric Project



Loup Power District's Integrated Licensing Process strategic consulting

## Conventional Hydropower

Hydropower produced in the United States today represents 75 percent of the country's current renewable energy generation. And some estimates place the incremental hydro potential at double the existing capacity. The National Hydropower Association estimates that increases in conventional hydropower alone can add 10,000-megawatts of power to the U.S. portfolio of renewable power by the year 2025. Getting there is the challenge. Whether your project involves increasing capacity at an existing hydropower facility, building new hydro at an existing, non-powered dam or development of a small hydro project, HDR|DTA has the hydropower expertise and experience to bring your project to life.

From greenfield studies to plant start-up, we offer a complete suite of services for your new hydro project:

- Site reconnaissance and feasibility studies
- Environmental and regulatory support
- Detailed engineering and design
- EPC/design-build packages

The more than 2,400 active U.S.-based hydropower plants can benefit from technology improvements that will keep costs low while enhancing environmental protection. The opportunity to retool plants of all ages to boost power production with new technologies is substantial. An overview of our modernization services includes:

- Condition assessment
- Upgrade analysis
- Signature testing
- Full implementation services
- Remaining life analysis

## Pumped Storage

Creating power from renewable sources is just part of the equation. Due to the increasing investment in variable generation sources like wind and solar we must be able to store the energy when it is produced and release it when it is needed most. Pumped storage is the only proven, large-scale technology with the ability to efficiently store energy, acting as a large, rechargeable battery.

The hydroelectric industry is responding. Pumped storage is being studied in all corners of the globe as a primary integrator of variable generation and provider of strained transmission system enhancements.

Yet pumped storage projects are complex engineering systems that require the right mix of skills and experience to ensure success. Our technical experts—many with decades of hands on pumped storage experience—work to identify needs, develop work plans and implement best-value and best-engineered solutions.

From greenfield studies to plant start-up, we offer a complete suite of services for your new hydro project:

- Site reconnaissance and feasibility studies
- Environmental and regulatory support
- Detailed engineering and design
- Construction management

## Ocean and Instream Hydrokinetic Energy

Waves and tides and even river currents hold potential as significant sources of renewable energy. As a leading provider of services in this emerging arena, HDR|DTA understands the regulatory and site development challenges that confront ocean and hydrokinetic energy projects.

By working with developers, regulators and stakeholders, we guide you through permitting and licensing processes for emerging technologies to capture energy from moving waters. HDR|DTA brings the added resources of a full-service major consulting firm, including specialized services in marine and aquatic modeling and biological sciences. Beyond our expertise in power and energy, we are one of the leading fisheries service providers, adding a layer of expertise to our hydropower-focused services.

Engineering feasibility and solid scientific studies are essential in helping you make a reasoned, fact-based decision to proceed with a project to harness this kinetic energy. Our depth of experience with regulatory and permitting processes boosts our ability to tackle expedited licensing opportunities and to respond to the special environmental conditions that apply to small hydrokinetic projects. Whether its the Marine Mammal Protection Act (MMPA) and the Magnuson-Stevens Fishery Conservation and Management Act (Essential Fish Habitat) or any component of environmental requirements, we understand how each affects your project and how to craft a reasonable solution that balances risk and cost while getting your project built.



Ocean energy technologies



HDR is committed to reducing our environmental impact through increased use of recycled post-consumer materials. This brochure is printed on paper that is 30% post-consumer waste.

**F**ounded in 1917, HDR is an architectural, engineering and consulting firm that excels at complex projects and improving quality of life. With locations across North America and abroad, we deliver hundreds of different design and scientific disciplines.

Your community matters to HDR. After all, it's HDR's community too. HDR's operating philosophy is to be an expertise-driven national firm, which delivers tailored solutions through a strong local presence.

Service is what differentiates HDR from firms of similar size. Repeat business stands at 80 percent, a clear indication of client satisfaction and confidence. Professional publications consistently rank HDR among the leading consulting and design firms. You'll have confidence knowing that HDR is an international firm with a small-firm-service approach and a reputation for exceeding clients' expectations.

Like the complementary relationship between hydro and other renewables, the joining of HDR and DTA brought together a powerhouse of power and energy technical services, with an emphasis on renewables. No other consulting firm can match the combination of in-depth expertise and real-world experience in the full range of hydropower and renewable energy disciplines offered by HDR.

Front Cover: Grant PUD's Wanapum Dam powerhouse and tailrace



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