

HDR|DTA will play a key role in the effort to integrate renewable sources of power onto the grid and is already involved in more than a dozen independent studies to site pumped storage facilities in the Pacific Northwest.

THE WIND-WATER NEXUS

HDR is working with clients to develop strategies to meet the ever-increasing array of renewable energy portfolio standards. By May 2009, 37 states had adopted such mandates. The added hydropower expertise from the acquisition of Maine-based DTA (see sidebar) provides opportunities for HDR to marry its skill-sets in renewable power with DTA's depth of experience in pumped storage as a vehicle to store wind, solar and other sources of variable renewable power.

Here's how this could work, using the example of wind power and pumped storage. The variable nature of wind power means that at certain times of the year even the largest wind farms scattered over a broad geographic area can't generate reliable power without a back-up source of power to cover times when the air is still. This can be mitigated to an extent by adding high voltage transmission since wind will be blowing somewhere all the time. But the existing grid is not capable of handling that kind of power flow, and won't be for years to come. As explained by Maureen Winters, an energy consultant with HDR|DTA, "Our nation needs all available energy technologies to reach our renewable energy goals," adding that because wind energy is variable, "it cannot be scheduled and dispatched reliably in the same manner as other sources on a dollar per kilowatt basis when it is sold to the grid." Transmission system operators need a mechanism to stabilize this vari-

able generation, therefore, wind generators would benefit from having some way to store their excess energy.

Enter pumped storage. Wind turbines don't have to be located near a pumped storage facility because excess wind power generated in the wee hours of the night, when energy is priced the lowest, can be moved across transmission lines to a substation near a pumped storage facility. This low-cost power can be used to fill the pumped storage reservoir. The result is a best case use of low cost power to store energy for release when demand peaks.

GAME CHANGING

While using pumped storage to compensate for the variable nature of many sources of renewable power seems a remarkably simple and effective solution, there are hurdles to overcome. Development costs are high and schedules long. Simply explaining the process and the intricacies of how power generation is valued to decision-makers is one of the greatest obstacles.

There is an uptick in interest in pumped storage, particularly in the Pacific Northwest, where, for example, Bonneville Power Authority of Portland, Ore., is faced with integrating 6,000 megawatts of new wind energy into its power system by 2024. The emergence of new renewable technologies and increasing investment in variable generation sources like wind and solar means that the need for storage has never been greater. □

Acquisition of DTA Adds Energy to HDR's Hydropower Portfolio

HDR has a long history in power and energy markets—transmission, gas, coal, wind and solar along with environmental permitting and natural resource support. Consistently listed among the top 25 power consultants in annual rankings by *Engineering News-Record*, HDR has added a strong reputation in the renewable energy market sector in recent years, especially as a leading provider of wind energy services.

The recent acquisition of Devine Tarbell & Associates (DTA) gives HDR a major step up into the world of hydropower, one of the cleanest and largest available sources of renewable energy. HDR|DTA offers a trilogy of hydropower and water resources solutions, encompassing engineering services, environmental sciences and regulatory and consulting expertise.

HDR offers a one-stop renewable energy solutions shop staffed with nationally-recognized experts. The combined resources of HDR|DTA resonate with the confidence clients appreciate with projects that are well engineered, with appropriate attention to cost, schedule and public involvement.

Prior to joining HDR, DTA operated as a specialized hydropower and water resources engineering firm, with headquarters in Portland, Maine. The nearly 300 DTA employees round out a full range of hydropower and water resources skill sets, positioning HDR as a market leader in renewable energy.

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