Energy Asset Solutions, LLC

Renewable Spotlight: Filling in the "Green Valley" with Green Power

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While the move to renewable power generation is laudable for its ecological goals, intermittent resources like wind and solar come with their own set of problems; namely, reliability. When the wind doesn't blow and the sun doesn't shine, most people still want to turn on the lights. Is there a renewable option to fill in this "green valley?" We think so.

Read more below about how EAS can help solve the "green valley" problem with a renewable distributed generation option.

The US power industry is in an all out stampede to build green generation, with most of the attention going to solar and wind generation. For proof, you can either review EIA's Annual Energy Outlook 2009 or simply drive around the Midwest (to see the wind turbines spinning) & Southwest (to see the solar panels glare) here in the US.

Though solar probably has the most "long term promise", to date it continues to be "long term" and the "promise" is still unfulfilled. Small photo voltaic collector systems were initially popular with some utilities, but the economics remain questionable with paybacks of 10 years plus have caused some utilities to pull back a little. There is still question of the long term service life of the equipment and the capital costs remain high. Solar collector farms wind farms are getting attention, but the capital costs, huge land area requirement and questions regarding its capital cost and service life are also reasons for pause.

With daunting questions for solar, the main interest for green renewable power systems has switched to wind generation. Advancements in blade design and gearboxes, falling costs and increased government incentives have made previously unattractive areas of the country viable for wind farms and one-off wind towers. But, in the midst of the wind explosion, an outcry of caution continues to grow.

Unlike solar, wind is often unreliable at peak load demand times. Wind generation is often highest during off peak times. The inability to match the generation to the need is a serious drawback to wind generation. Then there is the paralyzing question, "What do you do when the wind stops?" It happens. As was recently seen in West Texas in February 2008, the wind can be capricious and can stop relatively quickly resulting in an all out crisis to replace the lost generation.

Talking to some major Independent System Operators, we've heard concerns (who hasn't?) about the growing use of wind as it relates to baseload generation. Summer peaking ISOs often cite very low wind generation during "on peak" hours from June to September. Some estimates of

equivalent availability range as low as ten to fifteen percent of rated capacity! That is an awfully expensive capital cost for such a small output!

A common response by wind supporters is better wind forecasting. True, this gives a warning; but, it does not solve the problem! Another often cited "solution" is that huge infrastructure investments will be made to provide a new, massive transmission system that will be able to bring the power in from other wind generators in other windy areas. The idea is though the wind might stop blowing locally, somewhere, it is blowing. Unfortunately, getting this new transmission system in place has proven very difficult. The reality is that siting new transmission systems is being resisted by a number of the States along the corridor that would see little benefit from simply being in the transmission path. In addition, the costs of this new super grid are enormous! Another solution is to build "spare" power plants near this wind generation. Typically this is done using natural gas fired combustion turbines that are designed to run in peaking mode. This usually idle power supply could be used when needed to supply the loss of wind generation.

Finally, regardless of whether you're discussing wind or solar, there's the so called "green valley" problem that plagues intermittent generation resources. We call it the "green valley" problem for the shape of the supply curve produced when these resources wane during peak hours. Visualize for a moment that these resources are busily producing when the winds stops or clouds block the sun; at this point generation curve forms a sort of "valley". What is going to "fill" that valley? Natural gas? Perhaps, but that is not as green a solution as other resources. How about other wind generation from miles away using the new transmission corridor? Perhaps, but that may not be in place for years.

So, how do we support the continued growth of the greenest of the green (fuel-free) resources while maintaining the ability to keep the lights on . . . and the grid up & running?

EAS is working with green renewable power developers on a number of options that put supply where demand is needed to support intermittent resources. While different in execution, most attempt to deploy a renewable power option – like small-scale biomass or the power generated by waste streams from biofuels plants and municipal solid waste facilities – that can be flexibly fueled and sited. Among the options we're working with are applications of Combined Heat and Power designs that integrate generation into new or existing biofuel plants using low energy thermal waste or biofuel by-products to generate power. The result is "green" electric power generation making biofuels greener and more profitable. Another option is to build stand alone Distributed Generation power plants that are fueled from locally indigenous renewable biomass fuels, providing a green power back-up for intermittent resources. Are any of these a silver bullet? No, but they are possible today with existing technology and only slight modifications to the way most developers, producers, grids & utilities do business.

Give EAS a call today and let us help craft a renewable power option that works for you.

If you're interested in working with EAS on your renewable power or "green valley" issues, e-mail us at info@energyassetsolutions.com.