



Integration of HVDC Converter as a New Type of Capacity Resource

Problem / Opportunity Statement

PJM's existing Tariff (Reliability Assurance Agreement/RAA and OATT) and manuals allow dispatchable generation resources, intermittent resources and energy storage resources to participate in PJM's Reliability Pricing Model (RPM) capacity market. High Voltage Direct Current (HVDC) transmission lines that have a converter station directly connected to the PJM system, that can follow PJM dispatch instructions and that are backed by a portfolio of firm generation supply are similarly situated to these other capacity resources and can provide reliability benefits to PJM. However, current PJM Tariffs do not allow such HVDC converters to participate in the RPM market—presenting a market barrier to merchant resources seeking to sell bundled energy and capacity in the PJM market.

An HVDC converter station connected to PJM would be capable of performing like any other generating resource on the PJM system. It could contract for firm “fuel” (generation) supply, enabling it to be fully dispatchable with high availability. In fact, HVDC converter stations utilizing modern Voltage Source Conversion (VSC) technology have a demonstrated ability to respond to dispatch instructions quickly. Such stations can provide substantial amounts of reactive power at the point of interconnection, independent of the amount of real power requested. If connected to the PJM grid, such a station could enhance PJM grid stability by mimicking rotating inertia and could provide voltage and frequency support. An HVDC converter could undergo the interconnection process in accordance with PJM Manual 14 like any other generator. Furthermore, the ability to respond to dispatch signals from the PJM system operator would allow an HVDC converter to operate with the same or better responsiveness as other PJM dispatchable generating resources. Finally, in the same way that generating resources can contract for firm fuel supply, shippers on an HVDC facility could secure firm generation supply.

Any other similarly interconnected resource in PJM with the technical capabilities and firm fuel contracts analogous to the technical capabilities and firm supply described above would be eligible to participate in the RPM. However, PJM's existing Tariff (Reliability Assurance Agreement/RAA and OATT) and manuals preclude RPM participation to existing or new generating resources, intermittent resources, and energy storage resources. Given the essential similarities described above, an HVDC converter station located in PJM, delivering generation from another RTO, with the necessary interconnection and shipper arrangements, should be eligible to provide capacity through the RPM.

We would like to work with PJM and its stakeholders to develop a mechanism that would allow HVDC converter stations configured as described above to participate directly in the PJM capacity market. By providing for the integration of merchant inter-RTO HVDC connections into the capacity market, PJM and its customers would benefit from increased competition, greater geographic and technological generation diversity, and the additional instantaneous control offered by dispatchable HVDC facilities.