

## Virtual Power Plants Control Center and its Impact on Power System Control Architecture

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### Abstract

In new liberalized environment number of small size DER/RES sources start to steadily increase. No matter their technical limitations (low voltage ride through, 50.2 Hz problem, etc.) their expansion is continuing. As a level of their penetration increases, due to their power volatility there is a need for their balancing. On the other side, due to their small size (often 1MW or less) there is a need for their aggregation, on the monitoring and control level and as well as on the market level. All this will require wider introduction of the so called Virtual Power Plant (VPP) concept needed to aggregate smaller distributed energy resources (DER), including those renewables (RES), and thus putting them under monitoring and control to the possible level and relating them with the control centers at the same or higher level of control hierarchy. This, if in high numbers, will of course have an impact on the power system existing monitoring and control center architecture. The monitoring and control aspects of the local sources and VPP's, together with the changes and new requirements at the level of DSO/TSO control centers, will be examined and presented in the proposed paper/presentation.

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