The Case for Distribution Tagging and Congestion Management in Support of Transactive Energy

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Abstract: In the mid 1990's the deregulation of the electric power industry at the wholesale transmission and generation level ushered in a new era in power system operations. New tools were required to provide operators of balancing areas and transmission systems the visibility to transactions between load and generation entities, the resulting flows in the transmission systems, and tools to manage congestion in the system. Of the many proposed methods and applications, electronic tagging or E-Tagging was adopted as the main tool to provide the required visibility and solutions such as the Interchange Distribution Calculator (IDC) were developed as a tool for managing congestion in the transmission grid.

Now as the concept of Transactive energy at the distribution level becomes a reality and efforts get underway to establish Distribution System Operator (DSO) entities, the need to allow visibility to all transactions between various entities, the resulting flows in the distribution grid, and the ability of the distribution grid operator to manage congestion becomes a requirement. This will especially be the case for bilateral prosumer-to-prosumer transactions as well as transactions between prosumers and wholesale energy and ancillary services markets to which the DSO may not be a party. In this paper we review the e-tagging and congestion management concepts and will analyze how the same concepts can be adapted for application to the distribution system using D-Tags™. We will also discuss the requirements to further streamline and automate the tagging and congestion management tools for application to distribution grids to support large numbers of DERs and prosumers and many points of entry and delivery for transactions.

Keywords: Congestion Management, Distribution Systems, Distribution System Operator, DSO, Electronic Tagging, E-Tagging, , Flow Gates, D-Tag™, IDC, Interchange Distribution Calculator, Prosumer, Transactive energy.