

THE PUSH TOWARD GRID REGIONALIZATION IN OPEN ACCESS TRANSMISSION SYSTEMS

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Extended Summary

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This presentation focuses on the major thrusts in the establishment of new independent transmission management structures that will control transmission operations and planning uniformly in large geographic regions. These so-called RTOs or regional transmission organizations are pushing strongly toward the regionalization of the grid. The well known FERC Orders No. 888 and 889 created the framework for the establishment of open access transmission in the US, while the Electricity Directive 96/92 of the European Union laid the foundation for the same in the EU countries. These initiatives serve to promote aggressively robust competition in wholesale electricity markets and mandate transmission-owning utilities to provide nondiscriminatory open access transmission. The implemented versions of the new open access regime have unfortunately many residual discriminatory practices of the past. The RTOs represent the most ambitious attempt to resolve the lingering discrimination in transmission access and to remove many of the inefficiencies in operations and planning of interconnected networks. Several organizations have plans underway to create new transmission management structures for various regions in the US. These structures are based on different business models encompassing both for profit and nonprofit organizations. FERC's Order No. 2000 and a number of subsequent Commission decisions outline the key requirements that such organizations must meet. The myriad issues for the effective running and operation of such organizations pose immense and complex engineering, technology and management challenges on a scale not previously seen. These challenges encompass major problems in data handling, storage and management, complex implementation issues in real-time monitoring and control, huge interface complexities between the market and physical system layers and planning on a heretofore unseen scale. The power system computational issues in scaling the capability of simulation and optimization tools for the very large scale networks will test the mettle of the most skillful of the industry's experts. In addition, the seams problems between interconnected RTOs pose major complexities of their own. The presentation will outline the wide-ranging challenges and opportunities of the newly emerging RTO megastructures.