

Transmission Planning Overview for National Electric Power Company of Jordan

April 30, 2009

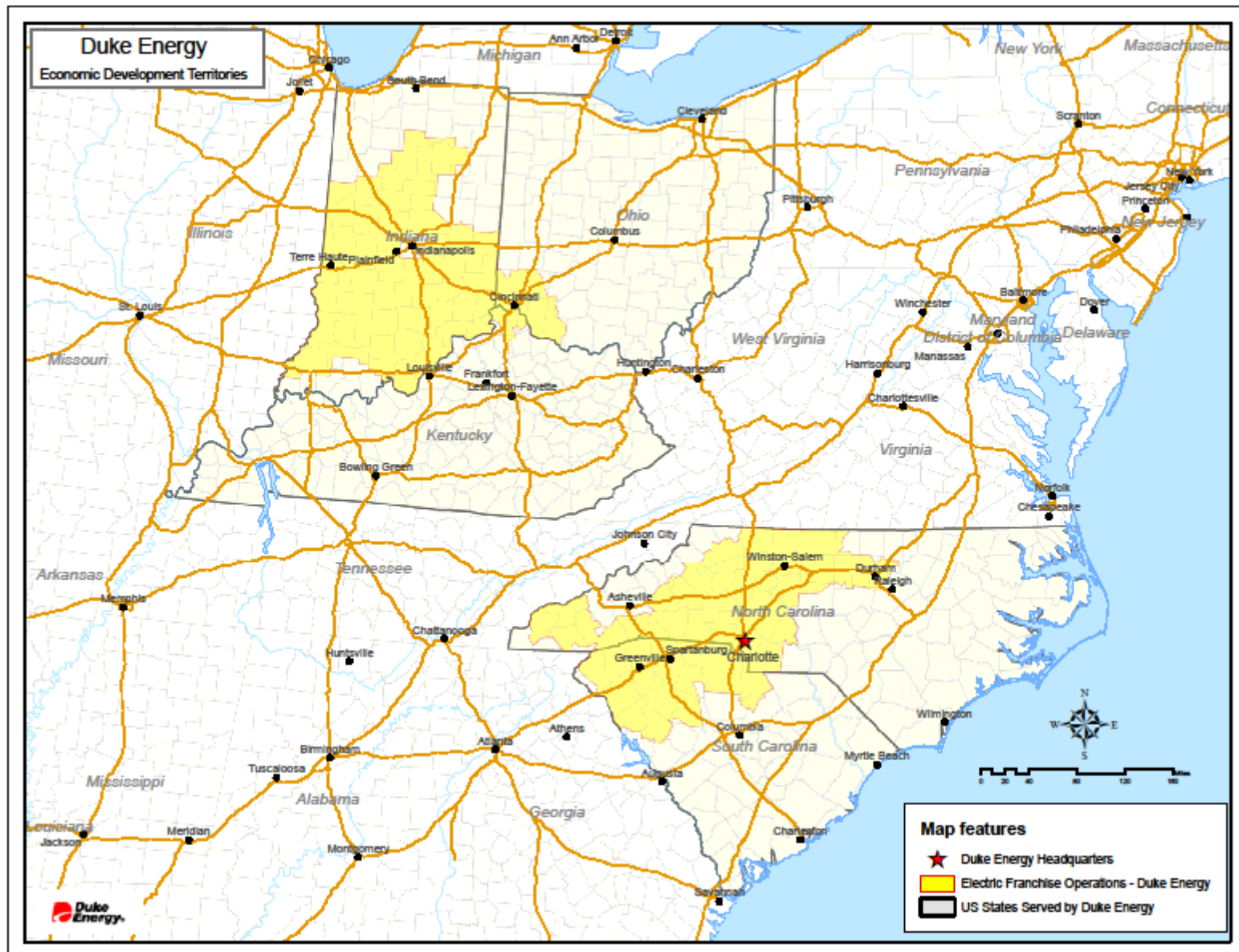
Outline

- Overview of Duke Energy Transmission System
- Deliverables of Transmission Planning
- The Transmission Planning Process
- Drivers of the Transmission Plan
- Neighboring System Coordination



Overview of Duke Energy Transmission System

- Duke Energy-Carolinas
 - 44 kV, 69 kV, 100 kV, 161 kV, 230 kV, 525 kV
 - 13,000 circuit miles of transmission
 - Peak load – 20,000 MW
 - 21 interconnections with 9 neighboring control areas
- Duke Energy-Midwest
 - 69 kV, 138 kV, 230 kV, 345 kV
 - 7,000 circuit miles of transmission
 - Peak load- 12,000 MW
 - 76 interconnections with 10 systems
 - Member of MISO RTO



Deliverables of Transmission Planning

- Our primary deliverable is the System Capacity Plan for Transmission Assets
 - A 10 year plan with emphasis on projects for the next 5 years
- In order to produce our primary deliverable, we:
 - attempt to predict the future performance of the Duke Electric transmission system from a thermal & voltage perspective using a model of our interconnected transmission system;
 - compare the predicted performance to the NERC Planning Standards and internal planning criteria;
 - identify violations and/or gaps; and
 - work with Engineering and Operating to initiate projects/plans that will keep the Transmission system within the Planning Guidelines in the most cost effective manner.
- We also contribute to the development of the Power Delivery Asset Plan by:
 - working with Distribution Planning in attempt to make the most optimal use of Power Delivery assets; and
 - working with Reliability & Integrity Group on prioritization of obsolescence projects.

The Transmission Planning Process

- November-February: Annual Model Update
- February-March: Model Screening
- March-June: Solution Identification and Development
- June-October: Annual Budget Development
- Ongoing – continuous re-assessment of study results based on new information

Drivers of the Transmission Plan

- Load Growth Assumptions
- Generation Dispatch/Resource Assumptions
- NERC Reliability Criteria
- Company Transmission Planning Criteria
- Customer requests for:
 - Transmission service to transfer power
 - Generator interconnection
 - Major load connections to transmission system
- Coordination of plans with neighboring systems

Neighboring System Coordination

- MISO Transmission Planning Process
- RFC Reliability Assessment Process
- Ad-hoc coordination with neighboring systems
- NC Transmission Planning Collaborative Process
- SERC Reliability Assessment Process
- Ad-hoc coordination with neighboring systems
- FERC regulations requiring greater coordination with neighbors and transparency for stakeholders