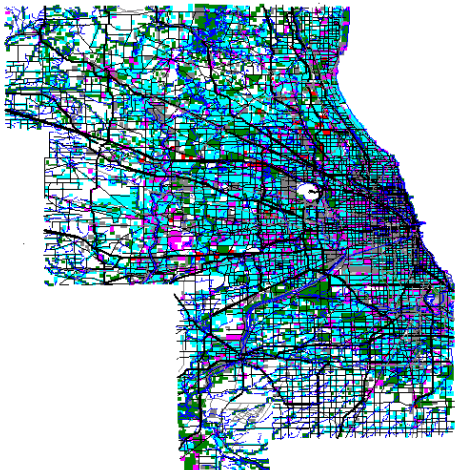


Spatial Load Forecasting

Load forecasts form the basis for development of strategic system plans. Accurate load forecasting is critical since the future load characteristics determine the location, size, and timing of future facilities. ABB is unique in the power industry in its capability to perform load forecasts using small-area land-use based simulation techniques.

Load forecasting using simulation is the most accurate long-range load forecast technique available. The simulation technique relies upon a geographic representation of existing and planned infrastructure and development. The technique then simulates the underlying principles and fundamentals about how, where and why additional load develops to determine future spatial load characteristics.

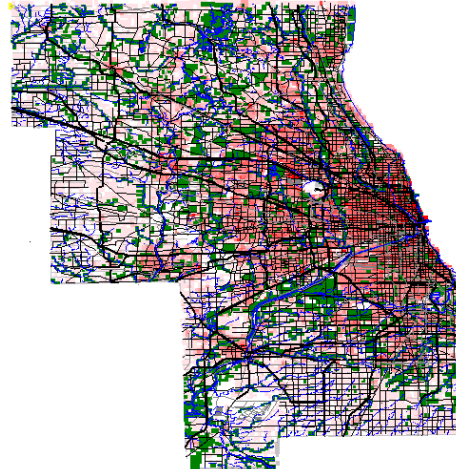


Infrastructure and Existing Land Use

Land-use simulation permits the planner to evaluate multiple scenarios, since land-use simulation considers the growth across an entire region and the interaction of the various load-growth drivers in that region. Most importantly, land-use simulation identifies areas of the system where capacity and reliability deficiencies will occur in the future.

Performing a land-use based load forecast simulation for a particular service territory is easier than ever. The required geographic information (including mapping and land use data) is often available electronically from utility information technology departments, government planning agencies, or third-party vendors.

Data from SCADA and geographic transformer load-management (TLM) programs can be utilized to calibrate the forecast to present system loading conditions.



TLM Calibration Overlay

The use of such data, in conjunction with advanced load forecasting simulation techniques, permits ABB to perform rapid and accurate geographic load forecasts for periods of up to twenty years in the future.

A key aspect of spatial load forecasting is the tie between land use/development and electrical load. This tie is achieved by assigning each small area of development to the substation serving the area. This tie allows the forecast to be calibrated to actual load levels as well as “rollup” of load growth to components of the electrical system.

Substation	2001	2002	2003	2004	2005
01	145	148	152	155	157
02	96	98	99	100	101
03	155	156	156	156	156
04	281	287	293	299	304
05	236	241	246	250	253
06	155	165	176	186	196

Annual Forecast Peak Load by Substation

The annual peak load forecasts can be used by system planners for development of a system expansion plan to meet long terms needs by leveraging current system expansions to address longer term capacity requirements.

