EIPC
Eastern Interconnection Planning Collaborative

Gas-Electric Study

Overview of Study Objectives and Analysis

Stakeholder Steering Committee

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Washington, DC

LEVITAN & ASSOCIATES, INC.
MARKET DESIGN, ECONOMICS AND POWER SYSTEMS

Acknowledgement and Disclaimer

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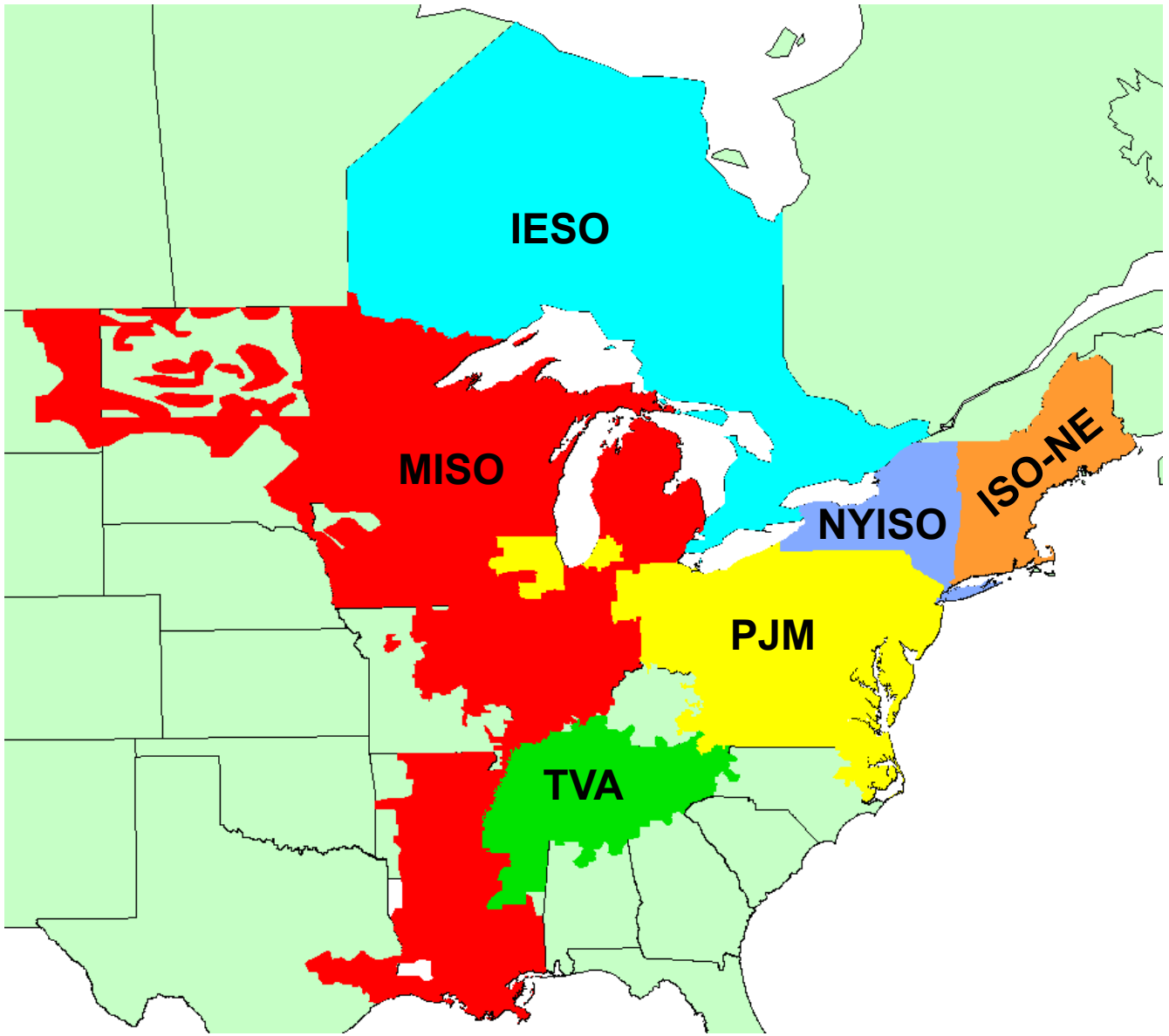
Study Region



Summary of Targets

- **Target 1**: Develop baseline assessment, including descriptions of the natural gas-electric system interfaces, interaction effects, specific drivers of the pipeline/LDC planning process
- **Target 2**: Evaluate the capability of the natural gas systems to meet individual and aggregate core and non-core gas demand over a 5- and 10-year horizon
- **Target 3**: Identify contingencies on the natural gas system that could adversely affect electric system reliability, and *vice versa*
- **Target 4**: Review the operational / planning issues affecting the availability of dual fuel capable generation, including fuel assurance objectives

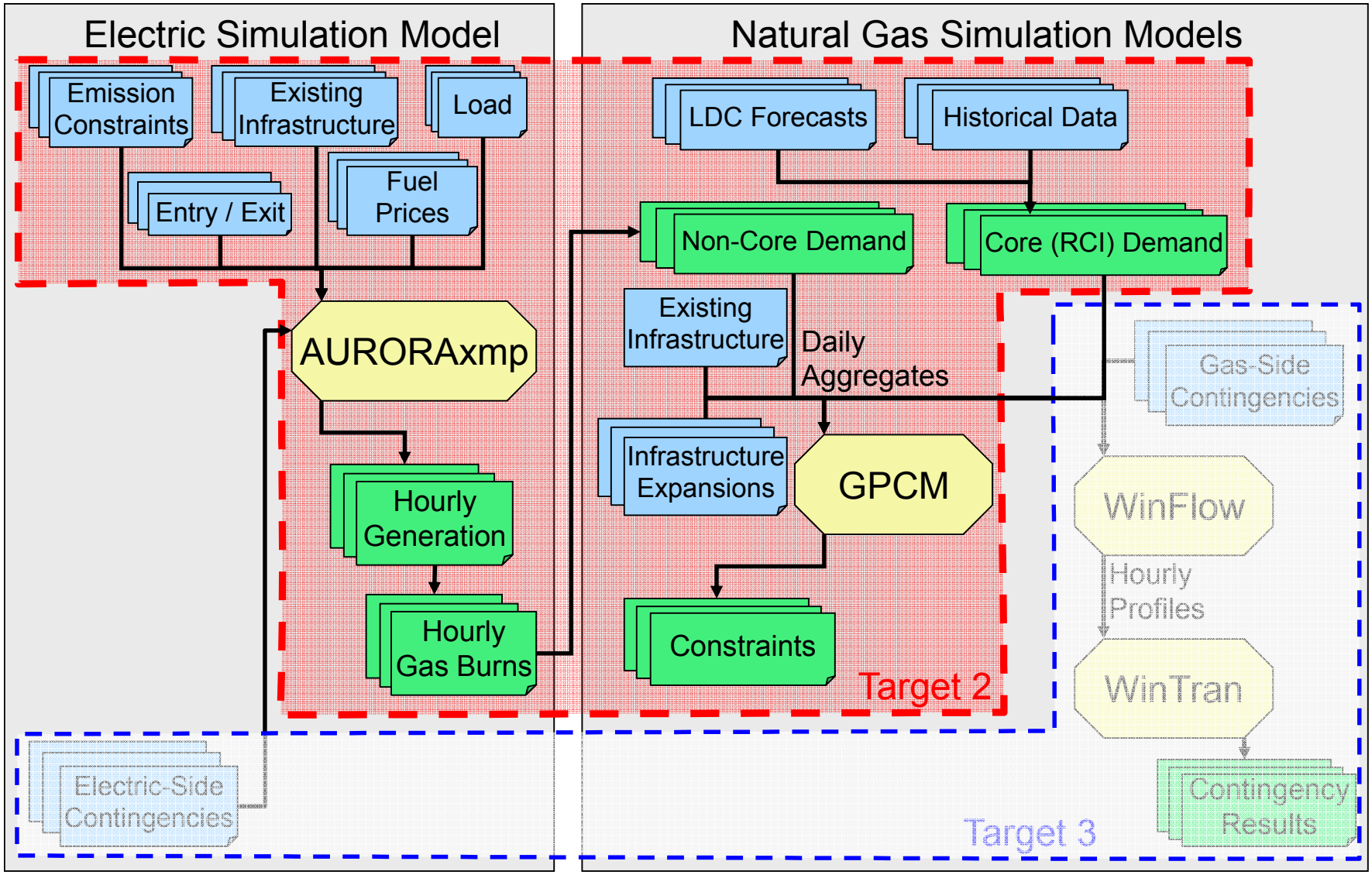
Target 1 – Baseline Existing Systems

- Identify natural gas infrastructure & generators
  - Tabulate ownership and locations of facilities
  - Summarize operations, incl. PHMSA regs
- Storage and transportation options available to generators
  - Nomination cycles, scheduling priorities
- Generator fuel assurance
  - Firm transportation and/or back-up fuel capability
- Capacity release markets
  - Liquidity, availability, process
  - Alternative pipeline services
  - Differences between PPA markets
- Unsubscribed transportation capacity

Target 2 – Infrastructure Adequacy

- Electric simulation modeling
  - AURORAxmp model used to develop generator gas demands
  - Reference, High, Low (optional) demand cases
  - Sensitivities developed with stakeholder groups
  - Assumptions / inputs developed with PPAs and SSC
- RCI sector gas demand forecast
  - Infrastructure expansions, load growth, LDC expansion, oil-to-gas conversion, EE/DR/DSM programs
- GPCM used to combine core and non-core demand forecasts
  - Identify constraints and unconstrained locations
  - Test constraint mitigation opportunities

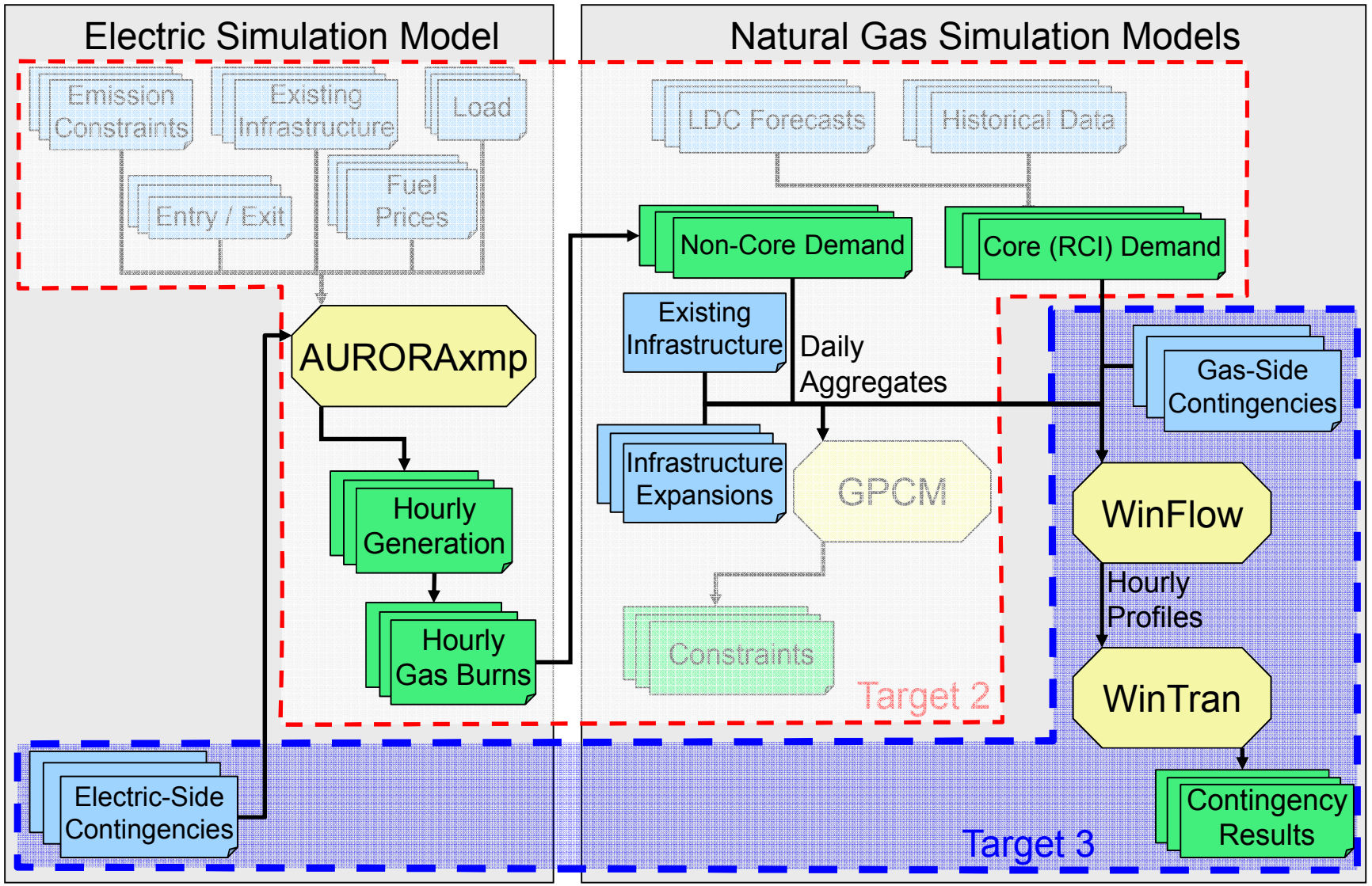
Target 2 Model Interactions



Target 3 – Contingency Analysis

- Hydraulic modeling of selected areas
  - WinFlow (steady-state) / WinTran (transient)
- Gas contingencies
  - Loss of supply, loss of storage, line break, loss of compression
- Electric contingencies
  - Loss of electrical supply (bulk power system outage), loss or outage of electric-drive compression
- Identify top three to five gas and electric contingencies in each PPA and in Study Region as a whole
- Identify possible mitigation measures / infrastructure work-arounds

Target 3 Model Interactions



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Target 4 – Duel-Fuel Capability

- Liquid fuel storage capability and method of resupply for dual-fuel units
- Operating characteristics of new plants
  - Fuel switching, regulatory barriers
  - Pressure-sensing capabilities, reaction time
- Analysis of petroleum market and supply options
- Compare trade-offs between gas system expansion (firm transportation contracts) and adding dual-fuel capability (incl. liquid storage capacity)