



Eastern Interconnection Planning Collaborative

EIPC GAS-ELECTRIC SYSTEM INTERFACE STUDY

Status Update

Mark Babula
Principal Engineer – System Planning
ISO New England Inc.

NPCC Governmental/Regulatory Affairs Advisory Group
December 3, 2013

Table of Contents

- History
 - DOE Interconnection Studies Grant
 - Electric-Gas System Interface Study
- Participating Planning Authorities (PPAs) / Study Region
- The Four Study Targets
- Project Administration Timeline
- SSC Meeting: Oct 31st - Nov 1st
 - Next Steps
- Project Deliverables
- Review of Results – Draft Report
- Submission of Final Report to DOE

DOE Interconnection Studies Grant

- Study of transmission needs across stakeholder-specified futures
 - Worked with Stakeholder Steering Committee (SSC) and EISPC to define futures
- Two Phase Process:
 - Phase I
 - Developed base case starting point for expansion analyses
 - Macroeconomic study of resource needs under different policy and economic growth futures (80 runs)
 - Stakeholder choice of three scenarios for further analysis
 - Interim report issued 4Q 2011
 - Phase II
 - Planning Authorities developed detailed transmission buildouts for three scenarios
 - Production cost analysis of three scenarios and six sensitivities
 - Costs estimated for generation and transmission development in three scenarios
 - Draft report sent to DOE and posted 4Q 2012
- DOE Guidance on Gas-Electric System Interface Study

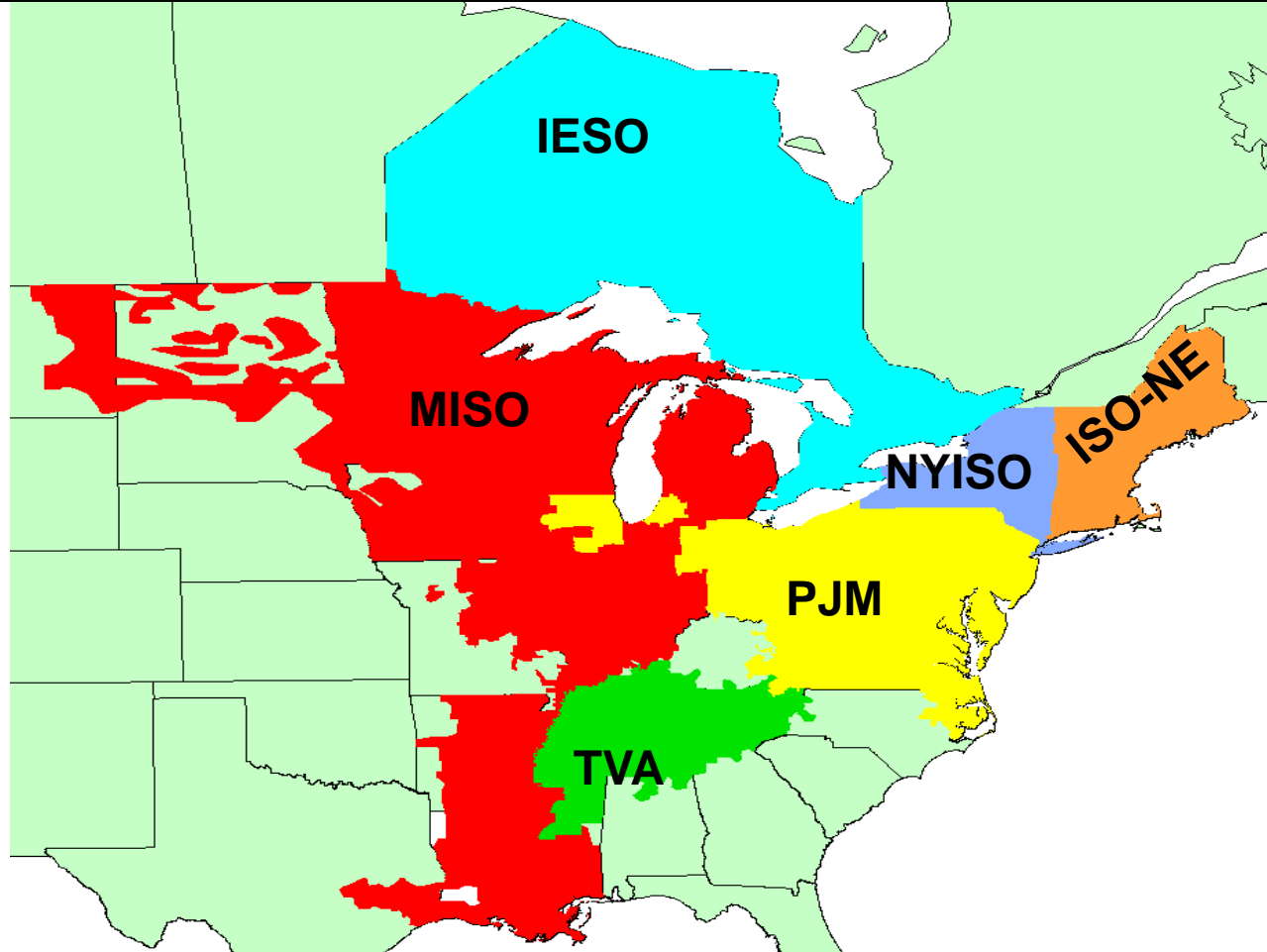
Gas-Electric System Interface Study

- Participating Planning Authorities (PPAs) are: ISO-NE, NYISO, PJM, IESO (Ontario, Canada), MISO (including the Entergy system), and TVA
- Four Targets (areas to be analyzed)
- Most analytical work to be completed by a consultant chosen through an RFP process
- Stakeholder process:
 - Requested Stakeholder Steering Committee (SSC) to reconvene
 - Recommendation to add gas expertise (SSC is currently focused on electric transmission)
 - Include regional stakeholder groups from each PPA in the process

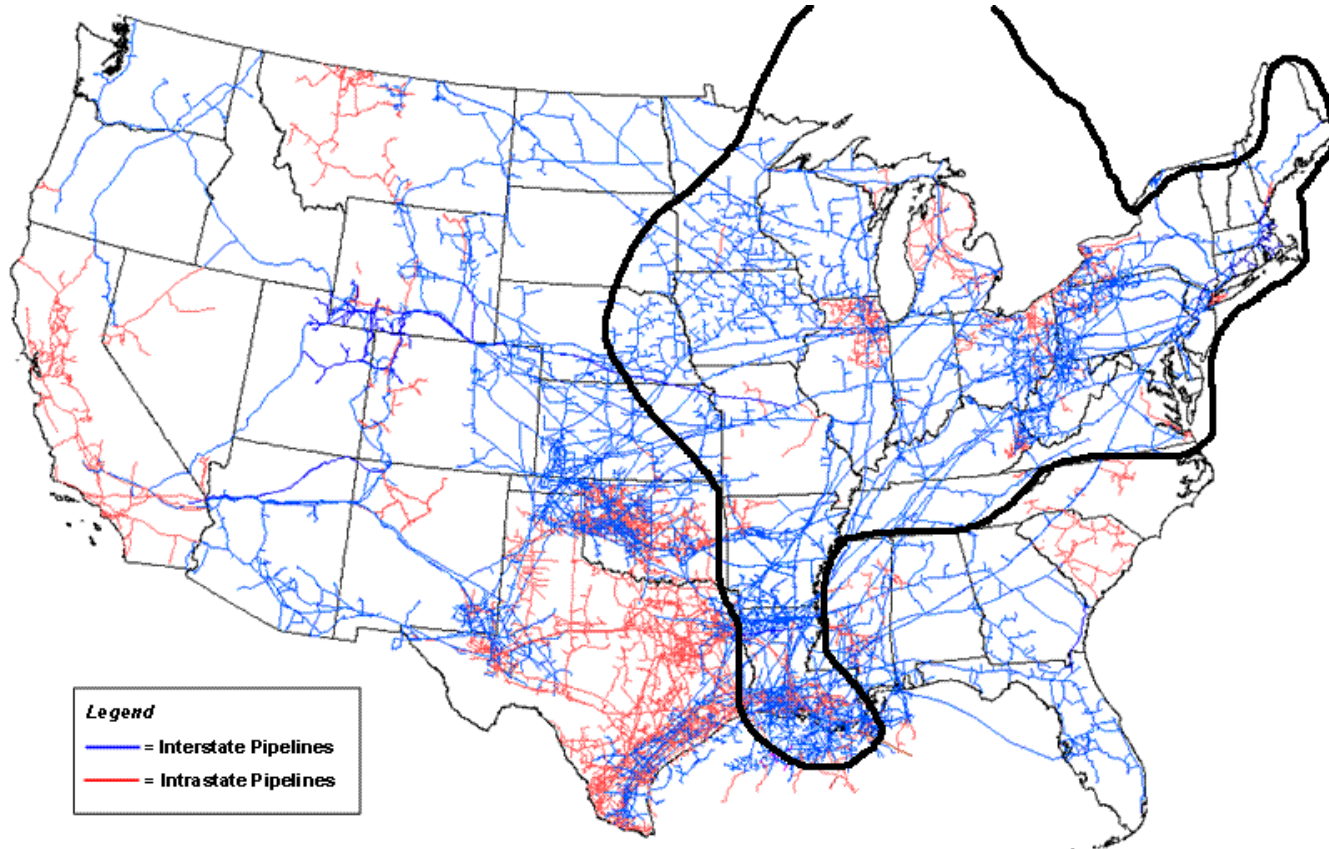
Study Region

- The Study Region is the collective area of all six PPAs electric transmission system and the natural gas pipelines that supply these areas, even if an entire pipeline does not fall within the geographic area served by the PPAs
- The next few slides illustrate, in a general manner, the Study Region

Study Region

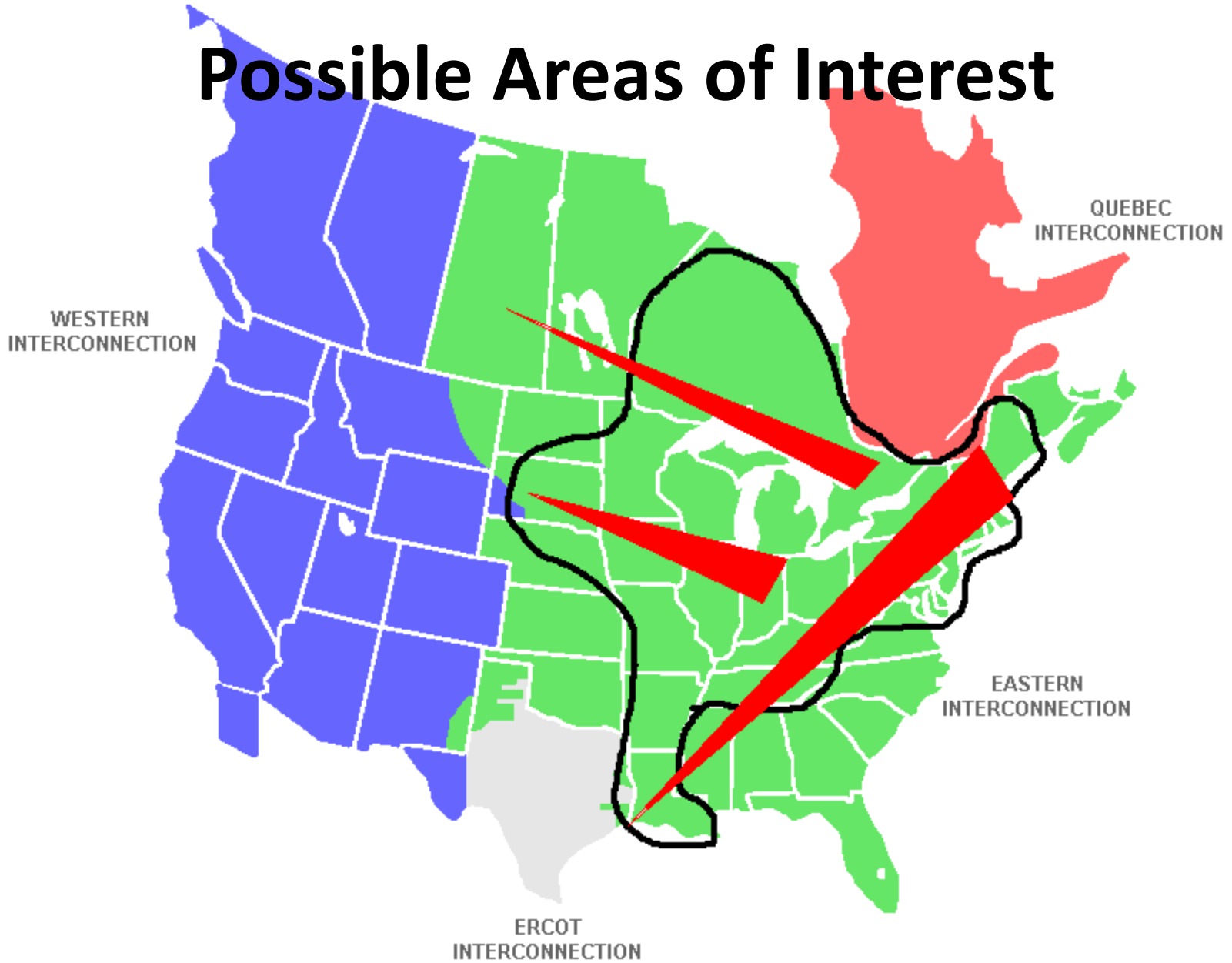


Rough Boundary of PPAs



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System

Possible Areas of Interest



Four Study 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 practices
- 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 gas 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 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 4 – Dual-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)

Project Administration Timeline

(All dates are actual)

- 1 The EIPC advised the SSC of the continuation of the Phase II work with the Gas-Electric System Interface Study on 06/07/13
- 2 The PPA Stakeholder Groups were introduced to the SSC and its process for interaction with the PPA Stakeholder Groups via two Webinars held on 06/20/13 and 06/26/13
 - Reconvene the SSC and review its membership
 - Update the final SSC Roster by 09/30/13
- 3 The EIPC invites comments from the SSC and PPA Stakeholder Groups on the draft SOW – comments were due by 07/12/13
- 4 The SSC structure was adjusted to include natural gas industry representation on 07/27/13
- 5 The PPAs compiled stakeholder feedback on the proposed SOW thru 08/02/13

Project Administration Timeline – (Cont'd)

(All dates are actual)

- 6 Prior to issuance of the Request for Proposals (RFP), PPAs review, post and incorporate appropriate Stakeholder comments into a revised SOW
- 7 The PPAs finalized the Project Management Plan (PMP) and SOW by 08/02/13
- 8 The RFP process was initiated with the publishing of the final Statement of Work, along with the formal announcement of the RFP on the EIPC website, an EIPC *Media Release*, and advertisements in both *Platts MW Daily* and *Gas Daily* publications on August 3, 2013
- 9 Responses to the RFP were due by midnight on August 30, 2013
- 10 Levitan & Associates selected as Consultant – Press Release Oct. 23, 2013
- 11 The EIPC held the formal kick-off for the study at an SSC meeting in Washington DC on October 29-30th

SSC Meeting: Oct 31-Nov 1st

- Introduction of Levitan & Associates as the Study Consultant
- Review of Work Plan and Models
 - Overview of Targets 1 – 4
 - Kickoff of Targets 1 & 2
 - Discussion of proposals for Target 2 data inputs
 - Review of modeling outputs and formats
- Discussion of scenarios and sensitivities
- Project Management update
 - Schedule
 - Next Steps
- Meeting materials are posted on the EIPC website:
 - http://eipconline.com/Gas-Electric_Activities.html

Next Steps

- SSC Webinar: December 20th
 - Discuss electric sector assumptions for Targets 1 – 4
 - Use of EIPC Roll-Up Case
 - Discuss gas sector assumptions for Targets 1-4
 - Describe three Scenarios – Reference, High & Low Gas Use
 - Discuss possible sensitivities for Target 2
 - *NOTE:* There will be two Webinars on the same day. The first will be a high level update and the second will be for those stakeholders desiring additional details
- SSC Webinar: January 31st
 - Status of Target 1
 - Sensitivities for Target 2
 - Kickoff of Target 4

Project Deliverables

(All dates are preliminary)

- 1 Participating Planning Authority (PPA) Inputs - Baseline Assessment of the Natural Gas-Electric Interface due 01/13/14
- 2 Consultant Target 1: Baseline the Existing Natural Gas-Electric System Interface(s) due 04/04/14
- 3 Consultant Target 2: Evaluate the Capability of the Natural Gas Systems to Satisfy the Needs of the Electric Systems due 07/11/14
- 4 Consultant Target 3: Identify Gas System Contingencies that Could Impact Electric System Reliability and Vice Versa due 12/26/14
- 5 Consultant Target 4: Examine the pros and cons of dual fuel capability for generation versus expanding gas system infrastructure due 09/05/14

Review of Results: Draft Report

(All dates are preliminary)

- 1 The Consultant delivers draft report and presentations for Targets 1-4 to the PPAs by 01/05/15
- 2 The PPAs incorporate the draft report and presentations for Targets 1-4 into the 12/22/12 draft EIPC Phase II report by 02/16/15
- 3 The revised EIPC Phase II draft report and presentations are delivered to the SSC and PPA Stakeholder Groups for review and comment on 02/17/15
- 4 The SSC and PPA Stakeholder Groups review and deliver comments on the EIPC Phase II draft report and presentation back to the PPAs by 03/10/15
- 5 The PPAs review and incorporate applicable SSC and PPA Stakeholder Groups comments into a revised EIPC Phase II draft report and presentation by 04/07/15

Submittal of Final Report to U.S. DOE

(All dates are preliminary)

- 1 The PPAs send the revised EIPC Phase II draft report and presentation to the U.S. DOE for review and comment on 04/08/15
- 2 The U.S. DOE delivers comments on the revised EIPC Phase II draft report and presentation back to the PPAs by 05/01/15
- 3 The PPAs incorporate U.S. DOE comments into the final EIPC Phase II Final Report and presentation by 05/15/15
- 4 The PPAs deliver the Final EIPC Phase II Report and presentation to U.S. DOE for acceptance on 05/18/15
- 5 Final administrative wrap-up and project completion by 06/04/15