Regional & National Gas-Electric Interdependency Studies

The following are recent (2009-2013) regional/national natural gas-electric interdependency studies WIEB has identified (links to the studies are provided after the table):

Eastern Interconnection				
Geographic Area of the Study	**Group Responsible (Contractor)**	**Title & Date of Release**	**Notes / general conclusions**	**Study Range**
New England ISO service region: Conn., Maine, Mass., NH, RI and Verm.	New England ISO (ICF Internat'l)	Phase I: *Assessment of New England's NG Pipeline Capacity to Satisfy Short and Near-Term Elect. Needs* (high level, first approximation study) June 15, 2012	NG pipeline capacity will be insufficient to satisfy gas needs at New England's power plants, during the next 10 years.	2011-2020
NESCOE region: Conn., Maine, Mass., NH, RI, and Verm.	NESCOE (Black & Veatch)	This is a 3 Phase study Phase 1*: Natural Gas Infrastructure and Electric Generation: A Review of Issues Facing New England* Dec. 14, 2012	Phase 2: Integrated analysis to assess NG infrastructure for the electric sector, will i.d. infrastr. constraints, constraint durations and explore solutions. Underway,expected Mar. 2013. Phase 3: Scenario analysis (expected mid-summer 2013)	15 yrs.
MISO service region	MISO (EnVision Energy Solutions)	*Gas & Electric Infrastructure Interdependency Analysis* (high level screening analysis) February 22, 2012	The Midwest will need expanded pipeline capacity or additional storage to meet the expected rise in NG demand from electricity generation.	2011-2030
NYISO, ISO-NE , PJM, MISO, TVA and Ontario IESO service regions	PJM / EIPC (TBD)	A comprehensive operational and planning study of the gas-electric interface within these states and adjoining regions in the Eastern Interconnection.	NYISO, ISO-NE, PJM, MISO TVA and Ontario IESO are participating in this multi-regional gas study. Final draft of RFP expected at end of March, 2013.	10 yrs.
Eastern Interconnection	EISPC (TBD)	A collaborative effort intended to provide a comprehensive analysis of the potential long-term infrastructure requirements for the electric and natural gas industries in the Eastern Interconnection.	RFP released Mar. 8, 2013.	20 yrs.
New England, NYC metro area, upstate eastern NY, NJ, eastern Penn./Delaware & Baltimore/ D.C. area	DOE (ICF Intnat'l)	Assess gas supply, infrastructure delivery capability and gas market needs over the coming year and identify potential trouble spots or bottlenecks in the system.	Underway	1 year

Western Interconnection				
Geographic Area of the Study	Group Responsible (Contractor)	Title & Date of Release	Notes / general conclusions	Study Range
Western Interconnection (WI)	SPSC/CREPC (TBD)	Study will address two questions: (1) Will there be adequate natural gas infrastructure to meet the long-term needs of the electric industry in the WI? (2) Will the gas system have adequate short-term operational flexibility to meet electric industry requirements in the WI?	For both questions study will address what needs to be done for vulnerabilities identified. RFI released Feb. 1, 2013; responses received Mar. 1; expect SOW for RFP to be approved in early April.	10-yr. time horizon and intermediate study periods
California and the Western U.S.	California Energy Commission (CEC) (ICF Internat'l)	*The Value of Natural Gas Storage and the Impact of Renewable Generation on California's Natural Gas Infrastructure* December 2009	It surveys the infrastructure of the Western U.S., but analyzes the implications for California. Concludes CA's natural gas infrastructure is generally adequate.	2008-2020
Pacific NW (NW U.S. and Western Canada) I-5 corridor analysis	PNUCC-NWGA Power & Natural Gas Planning Task Force[i] (Work being performed by task force members)	*Is the I-5 corridor NG delivery infrastructure adequate to meet the NG needs for LDCs and power generators?* 3 steps completed	Step 1: Peak day demand/ supply balance. Step 2: est. hourly generation for 500 scenarios to compare with peak day anal. Step 3: selected simulations examined.	Step 1: 10 yrs. Step 2: focus on 2015
I-5 corridor of Washington and Oregon	Gas Electric Interdependencies Study Team (Columbia Grid in coordination with PNUCC & NWGA)	*An investigation of transmission system reliability issues that could result from a potential limitation in NG supply to generation in the I-5 corridor.*	Draft Report: Dec. 20, 2012. Next step: add a study of abnormally cold winter weather loads to the study plan.	2012 (10 yr. assessment case)
Wyoming	Wyoming Infrastructure Authority,*et. al.* (ICF Internat'l)	*Wyoming Wind Collector System and Integration Study: Phase 2* Dec. 2010	It assesses the infrastructure necessary to support a 12 GW wind collector system incl. gas pipeline and storage for firming capacity	2010
Texas Interconnection				
ERCOT service region	ERCOT (Black & Veatch)	*Gas Curtailment Risk Study* March 2012	ERCOT's natural gas infrast. adequately meets the needs of the power sector. However, extreme weather conditions pose a significant threat to gas supply loss.	1-yr, 5-yr & 10-yr time horizons
ERCOT Service region	ERCOT (Black & Veatch)	Operational level study that builds on 2012 study.	Study being developed, potentially very granular analysis.	TBD

	National			
Geographic Area of the Study	**Group Responsible (Contractor)**	**Title & Date of Release**	**Notes / general conclusions**	**Study Range**
National	NERC	*2011 Special Reliability Assessment: A Primer of the Natural Gas and Electric Power Interdependency in the US* (Phase I) December, 2011	General conclusions regarding storage, communications and reliability	Includes some projections through 2030
National	NERC (Coordinating with INGAA and NGSA)	Phase II Reliability Assessment: Electric Power Dependencies on Natural Gas (expected release in April 2013)	Determine vulnerabilities that can affect BPS reliability, ways that minimize those vul-nerabilities, approaches where coordinated inter-industry activities could provide enhanced system reliability and improve efficiency.	TBD
National	INGAA (ICF Internat'l)	*National Pipeline and Storage Infrastructure Projections through 2030* October 2009	Projects infrastructure needs and costs through 2030	2010-2030
National	INGAA	*North American Natural Gas Midstream Infrastructure Through 2035: A Secure Energy Future* *June 2011*	Update to the October 2009 Report –provides updated projections on infrastructure needs and costs	2011-2035
National	INGAA (ICF Internat'l)	*Firming Renewable Electric Power Generators: Opportunities and Challenges for Natural Gas Pipelines* *March 2011*	A systematic review of the operational and regulatory issues raised by deploying significant natural gas fired generators to back-up intermittent power sources. Includes transient analysis of pipeline flows for 6 scenarios.	2015-2025
National	American Public Power Institute (APPA) et al. (Aspen Environmental Group, AEG)	*Implications of Greater Reliance on NG for Electricity Generation* July 2010	Presents a broad assessment of issues that would arise as utilities replaced their base load coal-fired electricity generating units with new units fired by natural gas.	Through 2030
National	American Public Power Institute (APPA) et al. (AEG)	*Gas Storage Needed to Support Electricity Generation* June 2012	Update to the June 2010 Report --provides more detail on gas storage and explores changes to gas storage in the past two years.	2010-2012

Links to studies:

Eastern Interconnection

- ISO-NE Full Report: http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/reports/2012/gas_study_public.pdf
- NESCO Phase I report: http://www.nescoe.com/uploads/Phase_I_Report_12-17-2012_Final.pdf
- NESCO RFP: https://files.secureserver.net/3fwqVHzOlEFz73; ("NESCOE material" folder, "Gas Elec RFP release").

- MISO (February & July 2012 Reports): https://www.midwestiso.org/Library/Repository/Communication%20Material/Key%20Presentations%20and%20Whitepapers/Natural%20Gas-Electric%20Infrastructure%20Interdependency%20Analysis_022212_Final%20Public.pdf https://www.midwestiso.org/Library/Repository/Communication%20Material/Key%20Presentations%20and%20Whitepapers/Embedded%20Gas%20Units%20Infrastucture%20Analysis.pdf
- Multi-ISO collaborative (overview of study): http://www.pjm.com/~/media/committees-groups/stakeholder-meetings/ipsac/20130128/20130128-multi-regional-natural-gas-electric-study-status-update.ashx
- EISPC RFP: A copy of the draft RFP can be obtained from WIEB staff, (303)573-8910.
- DOE study: link not available.

Western Interconnection

- SPSC/CREPC Western Gas-Electric Regional Assessment Task Force: http://www.westgov.org/ngei/index.htm
- California 2009 Storage Report: http://uc-ciee.org/downloads/CNGStorage.Brock.pdf
- Related reports from California: *2012 Integrated Energy Policy Report Update*, http://www.energy.ca.gov/2012publications/CEC-100-2012-001/CEC-100-2012-001-LCD.pdf; *2012 California Gas Report*, http://www.socalgas.com/regulatory/documents/cgr/2012%20CGR_Final.pdf *; Impact of Variations in Renewable Generation on California's Natural Gas Infrastructure*, Oct. 2009 (ICF), http://www.energy.ca.gov/2009publications/CEC-500-2009-083/CEC-500-2009-083.PDF; and more http://www.energy.ca.gov/publications/ and http://uc-ciee.org/all-documents/a/lbrsearch.
- Pacific NW Power and Natural Gas Planning Task Force: http://www.pnucc.org/system-planning/power-natural-gas-taskforce
- Related reports from Pacific NW Task Force: *Natural Gas-Electricity Primer*, *Power and Natural Gas Planning Task Force* (August 2012) and *The Role of Natural Gas in the Northwest's Electric Power Supply*, white paper (June 13, 2012) available at http://www.pnucc.org/system-planning/reports.
- ColumbiaGrid I-5 Corridor Study Draft Report: http://www.columbiagrid.org/GasElectric-documents.cfm
- Pacific Northwest, Columbia Grid , abnormal winter load study description: http://www.columbiagrid.org/GasElectric-documents.cfm
- Wyoming 2010 Phase II Report: http://www.icfi.com/~/media/Files/ICFi/Reports/wyoming_collector_integration_final.ashx

Texas Interconnection

- ERCOT 2012 curtailment study: http://www.ercot.com/content/news/presentations/2012/BV%20ERCOT%20Gas%20Study%20Report%20March%202012.pdf

National

- National/NERC Phase I 2011: http://www.nerc.com/files/Gas_Electric_Interdependencies_Phase_I.pdf
- National/NERC Phase II (overview at slides 26-42): http://www.nerc.com/docs/mrc/MRC_Informational_Session_presentations_11022012.pdf
- National/INGAA 2009: http://www.ingaa.org/File.aspx?id=10509
- National/INGAA June 2011, Infrastructure Report: http://www.ingaa.org/File.aspx?id=14911
- National/INGAA March 2011, Firming Renewables Report: http://www.ingaa.org/File.aspx?id=12761
- National/APPA 2010: http://www.publicpower.org/files/PDFs/ImplicationsOfGreaterRelianceOnNGforElectricityGeneration.pdf
- National/APPA 2012: not yet available online; a copy can be obtained through WIEB staff, (303) 573-8910.

[i]The Pacific Northwest Utilities Conference Committee (PNUCC) & Northwest Gas Association (NWGA) have been coordinating efforts over the past 14-20 months to investigate the interdependencies of natural gas and electricity generation. Their mission is to explore and address the long-term planning and reliability challenges stemming from the high interdependence of the Pacific NW's two main energy delivery industries --power and natural gas. On the operational side, the Task Force has developed the Northwest Mutual Assistance Agreement which currently has 18 member/signatory companies. Each signatory entity utilizes, operates or controls natural gas transportation and/or storage facilities in the Pacific Northwest. Copies of the Northwest Mutual Assistance Agreement are available from Kevin Sullivan, Western Energy Institute: (971)255-4734.