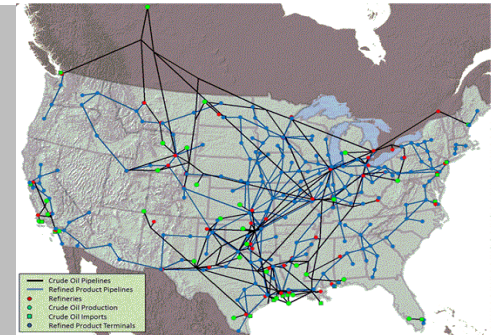


Exceptional service in the national interest



Electric Power- Natural Gas Interdependency

By MIDN Simic Tuan

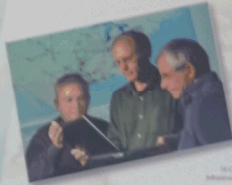




NATIONAL INFRASTRUCTURE SIMULATION AND ANALYSIS CENTER



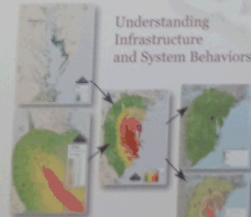
National Infrastructure Simulation and Analysis Center



Developing Unique Capabilities



Supporting
Decisionmakers with
Analysis



Understanding
Infrastructure
and System Behaviors



NABLE



U.S. Department of Homeland Security

NISAC is directed by the Office of Infrastructure Protection (OIP), Laboratory of Analysis and Testing (LAT), P.O. Box 2008

Recent Contributions RESPONSE AND RECOVERY PLANNING

Hurricanes



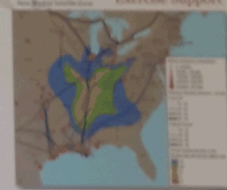
Earthquakes



Pandemics



National Planning
Exercise Support



Analysis for Crisis Response



FAST
Analysis and Simulation
Team



Hurricane
Sandy



Sandia
National
Laboratories

Los Alamos
NATIONAL LABORATORY

National Infrastructure Simulation and Analysis Center (NISAC)

- Congress mandated that NISAC serve as a “source of national expertise to address critical infrastructure protection” research and analysis.
- Conducts modeling, simulation, and analysis of the nation's critical infrastructure. It assess critical infrastructure risk, vulnerability, interdependencies, and event consequences.
- Department within Department of Homeland Security
- Works with personnel from the Washington D.C Area, Sandia National Laboratory, and Los Alamos National Laboratory
- Building 1008

Project #1

- **Job:** Convert data from a GPCM Model of U.S Natural Gas production to NetFlow Dynamics using Excel
- **Purpose:** NetFlow dynamics allows user to run simulations using a complex algorithm and create disruptions along the system
- **Application:** Find weak points within the pipeline system, see if system can withstand a natural disaster, high demand, pipeline failure, etc.

Gas Pipeline Competition Model (GPCM)

Table Tools

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View Paste Copy Cut Filter Ascending Descending Selection Advanced Refresh New Save Totals Spelling Find Replace Go To Select Calibri

Views Clipboard Sort & Filter Remove Sort Toggle Filter Records

All Access Objects

DB_Parameters dbVersion Demand Demand_Adjustments Demand_Annual Demand_by_State_and_Se... Demand_Case Demand_Link Demand_Link_Expansion... Demand_Link_Use_Annual Demand_Link_Use_Monthly Demand_Monthly Demand_Mult_by_State Demand_Mult_by_State_a... Demand_Regression_Case Demand_Regression_Coeff... Demand_Regression_Equ... Demand_Regression_Type ELC_Forecast ELC_Price_Elasticity End_Storage_Factors Exchange_Rate Export_DateExclusions Export_RegressionDef_Da... Export_RegressionDef_Su... Export_RegressionDefDetail Export_RegressionDefMas... Fcst_Years Flow_Constraint GAS_GEN_Capacity GEN_Forecast Gross_Crossborder_Flows... Growth_Rate_Limits HDD_Inputs HDDCDD30 Heat_Rate Henry_Hub_Price HH_Price_Ratio History Infeasibilities Injection_Plan

Supply_Link_Use_Monthly Supply_Monthly Demand_Monthly

Case	DCode	Period	Demand	Dest_Price	Click to Add
15Q1base	M - ALASKA	1/1/2011	10425.86	10.71875	
15Q1base	M - ALASKA	2/1/2011	9202.059	7.875	
15Q1base	M - ALASKA	3/1/2011	8611.543	5.46875	
15Q1base	M - ALASKA	4/1/2011	7433.602	0.3194599	
15Q1base	M - ALASKA	5/1/2011	5719.501	0.319543	
15Q1base	M - ALASKA	6/1/2011	5058.978	0.3155982	
15Q1base	M - ALASKA	7/1/2011	5002.548	0.3112062	
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Record: 1 of 39831 No Filter Search

Conversion to Excel

P2296 Import																			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
22778	84	ZN060-3	PEPL Mkt 3		IN	41.689439	-83.378939		0	0	0	0	0	0	Import	#####			
22779	84	ZN060-322	PEPL Mkt 3 to Mkt 2		IN	41.349173	-84.480261		0	0	0	0	0	0	Import	#####			
22780	84	ZN060-3R	PEPL Mkt 3 Rcpt		IN	41.349173	-84.480261		0	0	0	0	0	0	Import	#####			
22781	84	ZN060-F	PEPL Field		OK	35.844676	-101.889172		0	0	0	0	0	0	Import	#####			
22782	84	ZN060-IMP	PEPL Import		MI	42.281427	-83.386321		0	0	0	0	0	0	Import	#####			
22783	84	ZN060-XP	PEPL Export		MI	42.281427	-83.386321		0	0	0	0	0	0	Import	#####			
22784	84	ZN062-CLAY	Questar Clay Basin Stor INTX		UT	40.905385	-109.521106		0	0	0	0	0	0	Import	#####			
22785	84	ZN062-CLAYN	Questar Clay Basin to Kanda		WY	41.85194	-109.188005		0	0	0	0	0	0	Import	#####			
22786	84	ZN062-CLAYS	Questar Fidar to Clay Basin		UT	41.21074	-110.616892		0	0	0	0	0	0	Import	#####			
22787	84	ZN062-COWS	Questar Northwest CO Sup		CO	39.98143	-108.237752		0	0	0	0	0	0	Import	#####			
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22790	84	ZN062-PICE	Questar Rifle to Fidar		CO	39.98143	-108.237752		0	0	0	0	0	0	Import	#####			
22791	84	ZN062-SKULL	Questar Skull Creek to Kanda		WY	41.85194	-109.188005		0	0	0	0	0	0	Import	#####			
22792	84	ZN062-SWY	Questar Southern WY Sup		WY	41.85194	-109.188005		0	0	0	0	0	0	Import	#####			
22793	84	ZN062-UINTA	Questar Utah Sup		UT	39.98143	-108.237752		0	0	0	0	0	0	Import	#####			
22794	84	ZN062-UT	Questar Fidar to KRG T		UT	41.21074	-110.616892		0	0	0	0	0	0	Import	#####			
22795	84	ZN062-X BC	Questar Exp Blind Canyon		UT	41.21074	-110.616892		0	0	0	0	0	0	Import	#####			
22796	84	ZN062-X FID	Questar Exp Fidar		UT	41.21074	-110.616892		0	0	0	0	0	0	Import	#####			
22797	84	ZN062-X KR	Questar Exp Kem River		UT	40.096629	-111.570679		0	0	0	0	0	0	Import	#####			
22798	84	ZN062-XKRR	Questar Exp Kem River Rec		UT	40.096629	-111.570679		0	0	0	0	0	0	Import	#####			
22799	84	ZN062-X016	Questar X016 to Coalville		WY	41.21074	-110.616892		0	0	0	0	0	0	Import	#####			
22800	84	ZN064	Sea Robin		LA	29.860141	-92.381362		0	0	0	0	0	0	Import	#####			
22801	84	ZN066-0CTX	SoNat Z0 (Carthage TX)		TX	32.192004	-94.315422		0	0	0	0	0	0	Import	#####			
22802	84	ZN066-0N	SoNat Z0 (N LA)		LA	32.598888	-92.698387		0	0	0	0	0	0	Import	#####			
22803	84	ZN066-0S	SoNat Z0 (S LA)		LA	30.616307	-92.057063		0	0	0	0	0	0	Import	#####			
22804	84	ZN066-0SW	SoNat Z0 (SW LA)		LA	29.502976	-91.443469		0	0	0	0	0	0	Import	#####			
22805	84	ZN066-1N	SoNat Z1 (N MS)		MS	33.168327	-89.625165		0	0	0	0	0	0	Import	#####			
22806	84	ZN066-1NR	SoNat Z1 (N MS) Rcpt		MS	33.168866	-90.074677		0	0	0	0	0	0	Import	#####			
22807	84	ZN066-1S	SoNat Z1 (S MS)		MS	32.325144	-89.232839		0	0	0	0	0	0	Import	#####			
22808	84	ZN066-1SR	SoNat Z1 (S MS) Rcpt		MS	33.607342	-89.277291		0	0	0	0	0	0	Import	#####			
22809	84	ZN066-2N	SoNat Z2 (N AL)		AL	33.491412	-86.982429		0	0	0	0	0	0	Import	#####			
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22811	84	ZN066-2S	SoNat Z2 (S AL)		AL	32.538745	-86.314971		0	0	0	0	0	0	Import	#####			
22812	84	ZN066-3E	SoNat Z3 (Eba Lat GA)		GA	31.999419	-81.119608		0	0	0	0	0	0	Import	#####			
22813	84	ZN066-3ER	SoNat Z3 (Eba Lat GA) Rcpt		GA	32.378148	-81.383933		0	0	0	0	0	0	Import	#####			
22814	84	ZN066-3MR	SoNat Z3 (S GA) Macon to SC Rcpt		GA	32.786574	-83.719914		0	0	0	0	0	0	Import	#####			
22815	84	ZN066-3N	SoNat Z3 (N GA)		GA	34.803357	-84.981754		0	0	0	0	0	0	Import	#####			
22816	84	ZN066-3NR	SoNat Z3 (N GA) Rcpt		GA	34.01324	-85.147936		0	0	0	0	0	0	Import	#####			
22817	84	ZN066-3S	SoNat Z3 (S GA)		GA	32.479413	-84.898478		0	0	0	0	0	0	Import	#####			
22818	84	ZN066-3SE	SoNat Z3 (S GA) Macon to SC		GA	33.320534	-82.08429		0	0	0	0	0	0	Import	#####			
22819	84	ZN066-CYP	SoNat Cypress Lateral		GA	30.841741	-83.847302		0	0	0	0	0	0	Import	#####			
22820	84	ZN066-OFF	SoNat Z0 SE La Offshore		GOM-ELA	28.3942	-89.3305		0	0	0	0	0	0	Import	#####			

Import Data to NetFlow Dynamics

NetFlow Dynamics - Data Manager

Models

- Model
- Sources
- Sinks
- Nodes
- Edges
- Disruptions
- Results

Who Is On

- Network Flow
- Management
- Privilege Management

How to create a new model:

Without importing

1. Enter the model name
2. Enter the model description
3. Click Save.

With importing

1. Browse to the model Excel file (xls orxlsx)
2. Click Import
3. Click Save

Note: In order to override the model name or description in the import file, simply enter the model name or description on this page.

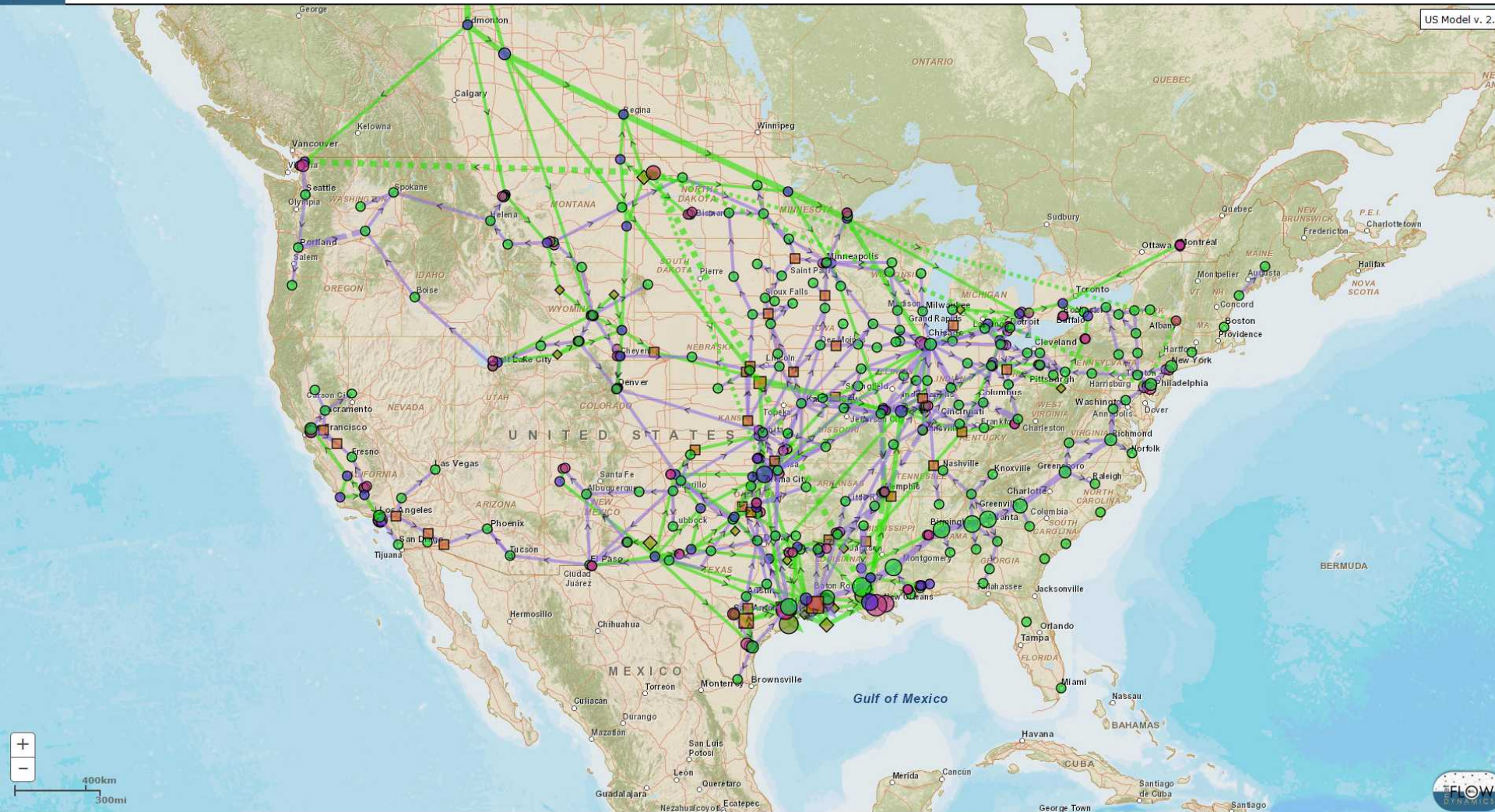
Model Name: Simic's Natural Gas Model

Model Description: Test

Import Browse... No file selected.

Save Cancel

NetFlow Dynamics



Outside Sandia











