



# **NERC Gas/Electric Interdependency Task Force Status Report**

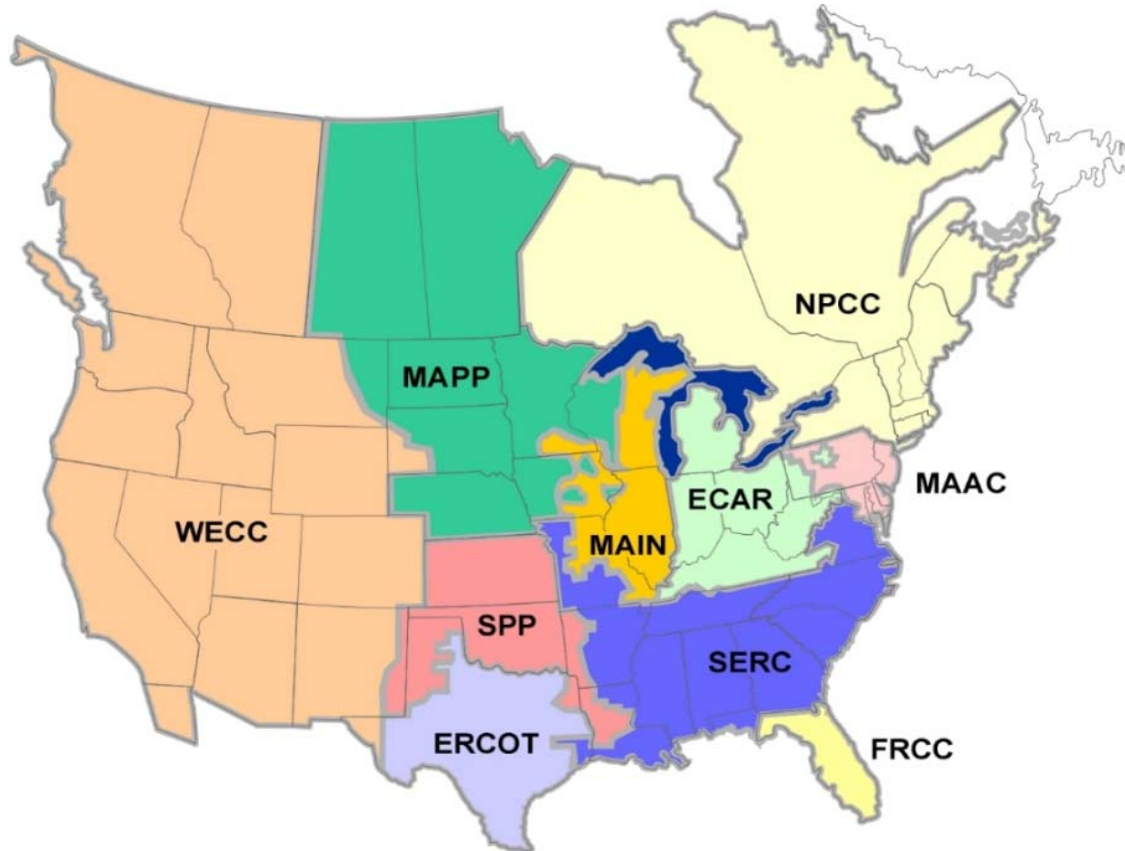
**North American Energy Standards Board  
Gas Electric Coordination Task Force  
Meeting**

**May 18-19, 2004**

**Philip A. Fedora  
Director, Market Reliability Interface  
Northeast Power Coordinating Council**



# Northeast Power Coordinating Council



## NPCC

- One million square miles
- 54 million people
- 50% US  
50% Canadian
- Represents 70% of Canadian Load

<http://www.npcc.org/>



# **NERC Reliability Assessment 2002-2011**

## **NERC RAS issues raised:**

- o Majority of new generation proposed relies on natural gas**
- o Electric network planned for first contingency – gas industry doesn't have similar standards**
- o Single gas system disturbance may result in the loss of more electrical generation than expected**

**<http://www.nerc.com/~filez/rasreports.html>**



# **NERC Reliability Assessment 2002-2011**

## **NERC RAS issues raised (continued):**

- o Natural gas pipelines generally operate independently**
- o Natural gas curtailment procedures have not been rigorously tested (rarely implemented)**
- o Operation of proposed generation units (CTs and CCGTs) depend on high gas pressures**

**<http://www.nerc.com/~filez/rasreports.html>**



# **NERC Gas/Electric Interdependency Task Force**

**A review of the interdependency relationship between:**

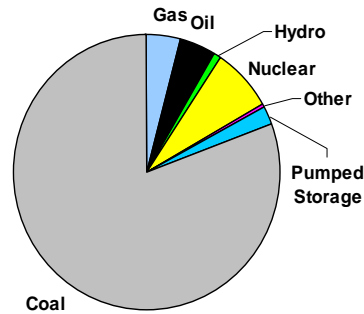
- o Gas pipeline operations and planning, and**
- o Electric generation operations and planning**

**<http://www.nerc.com/~pc/geitf.html>**

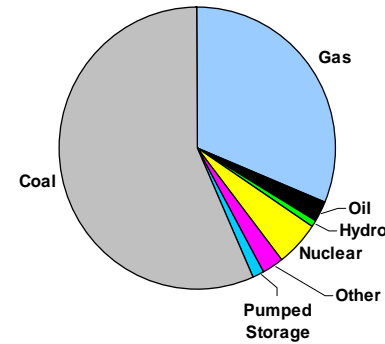


# NERC Reliability Assessment 2003-2012

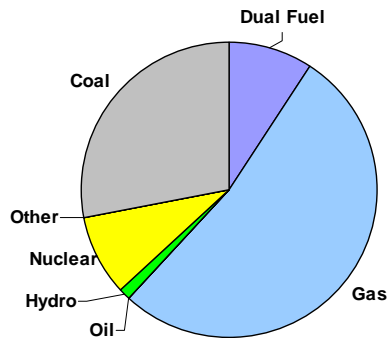
ECAR Capacity Fuel Mix 1998



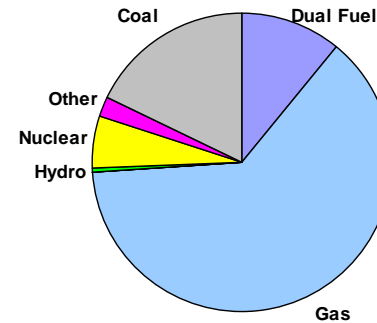
ECAR Capacity Fuel Mix 2008



ERCOT Capacity Fuel Mix 1998



ERCOT Capacity Fuel Mix 2008

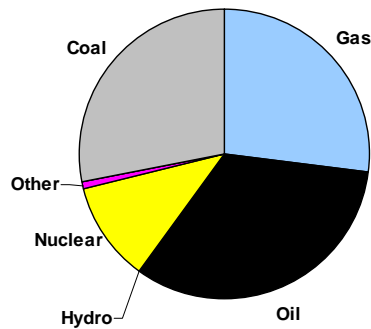


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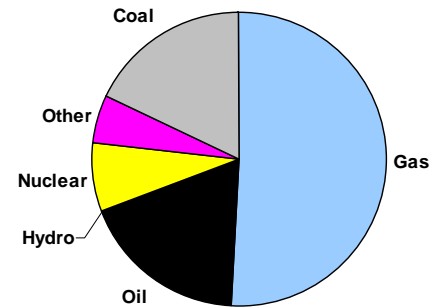


# NERC Reliability Assessment 2003-2012

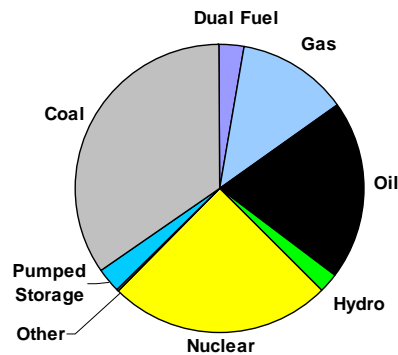
FRCC Capacity Fuel Mix 1998



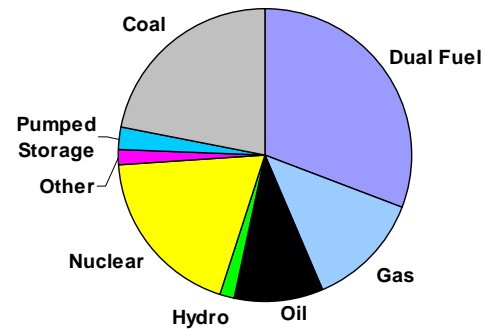
FRCC Capacity Fuel Mix 2008



MAAC Capacity Fuel Mix 1998



MAAC Capacity Fuel Mix 2008

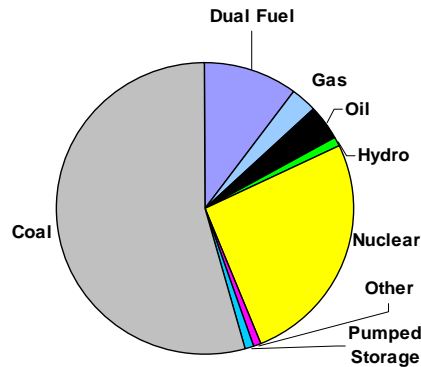


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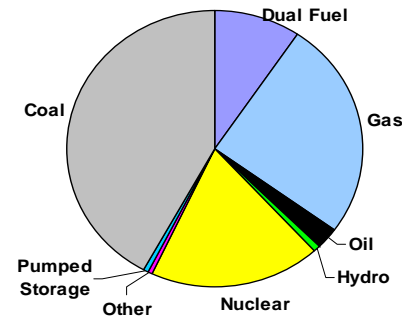


# NERC Reliability Assessment 2003-2012

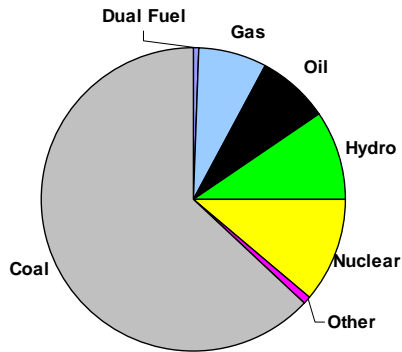
MAIN Capacity Fuel Mix 1998



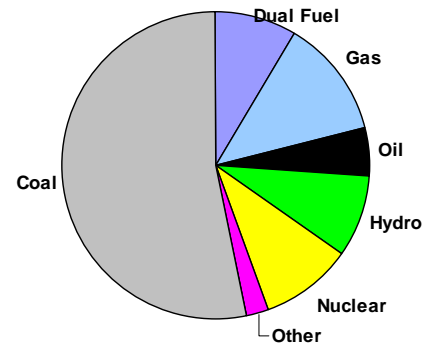
MAIN Capacity Fuel Mix 2008



MAPP US Capacity Fuel Mix 1998



MAPP US Capacity Fuel Mix 2008

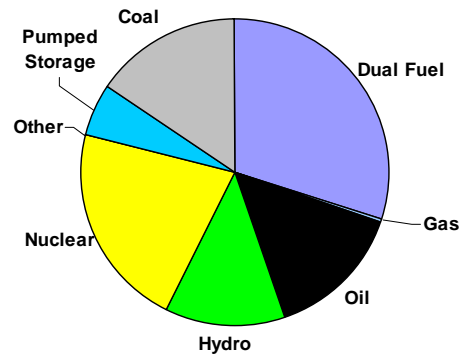


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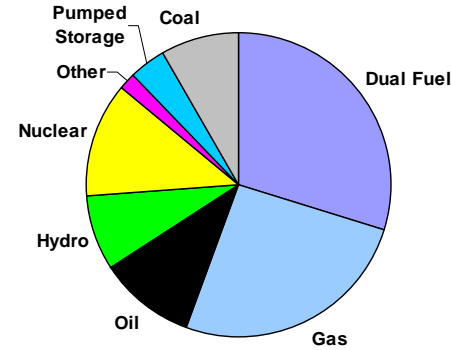


# NERC Reliability Assessment 2003-2012

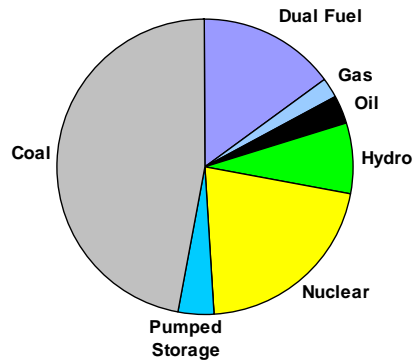
NPCC US Capacity Fuel Mix 1998



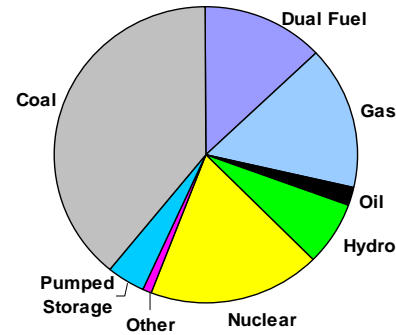
NPCC US Capacity Fuel Mix 2008



SERC Capacity Fuel Mix 1998



SERC Capacity Fuel Mix 2008

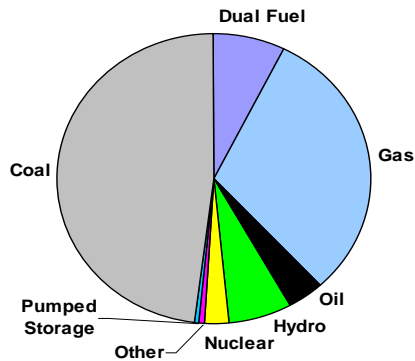


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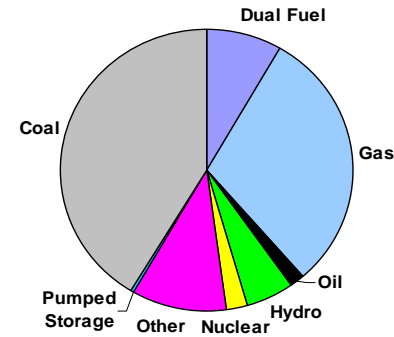


# NERC Reliability Assessment 2003-2012

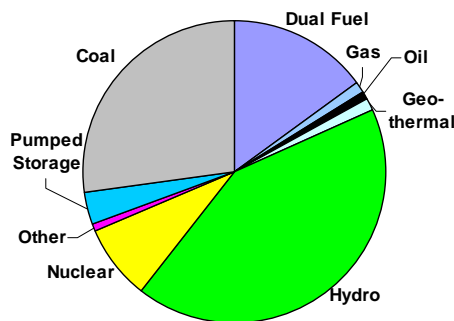
SPP Capacity Fuel Mix 1998



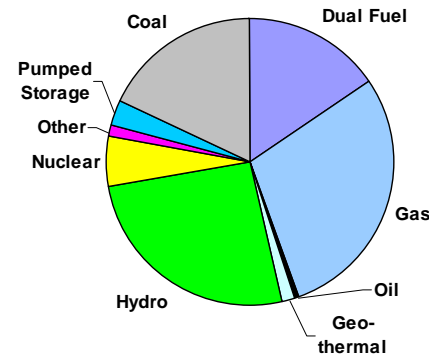
SPP Capacity Fuel Mix 2008



WECC US Capacity Fuel Mix 1998



WECC US Capacity Fuel Mix 2008

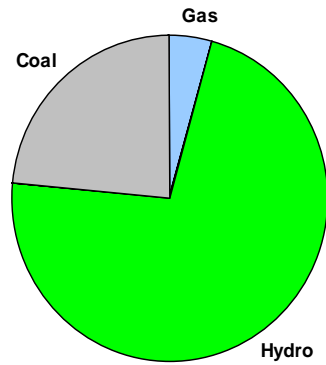


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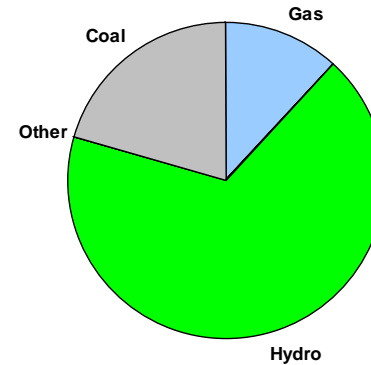


# NERC Reliability Assessment 2003-2012

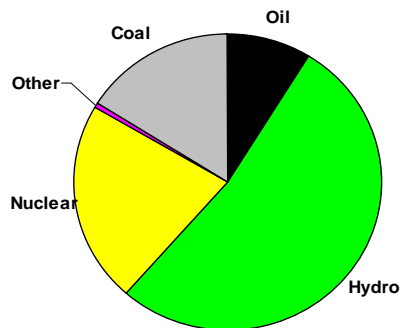
MAPP Canada Capacity Fuel Mix 1998



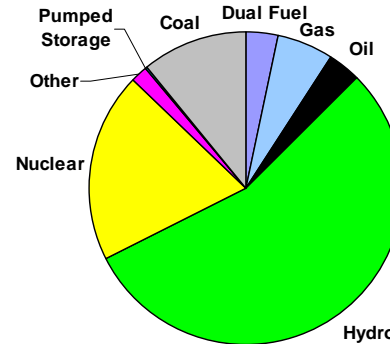
MAPP Canada Capacity Fuel Mix 2008



NPCC Canada Capacity Fuel Mix 1998



NPCC Canada Capacity Fuel Mix 2008

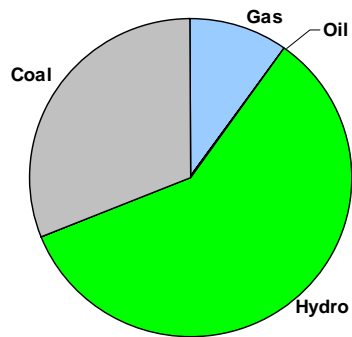


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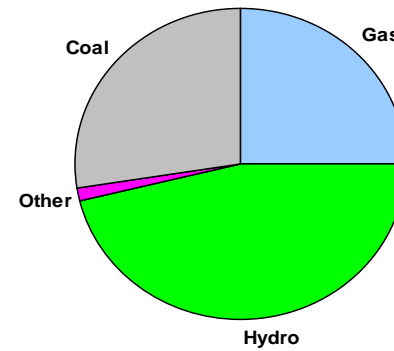


# NERC Reliability Assessment 2003-2012

WECC Canada Capacity Fuel Mix 1998



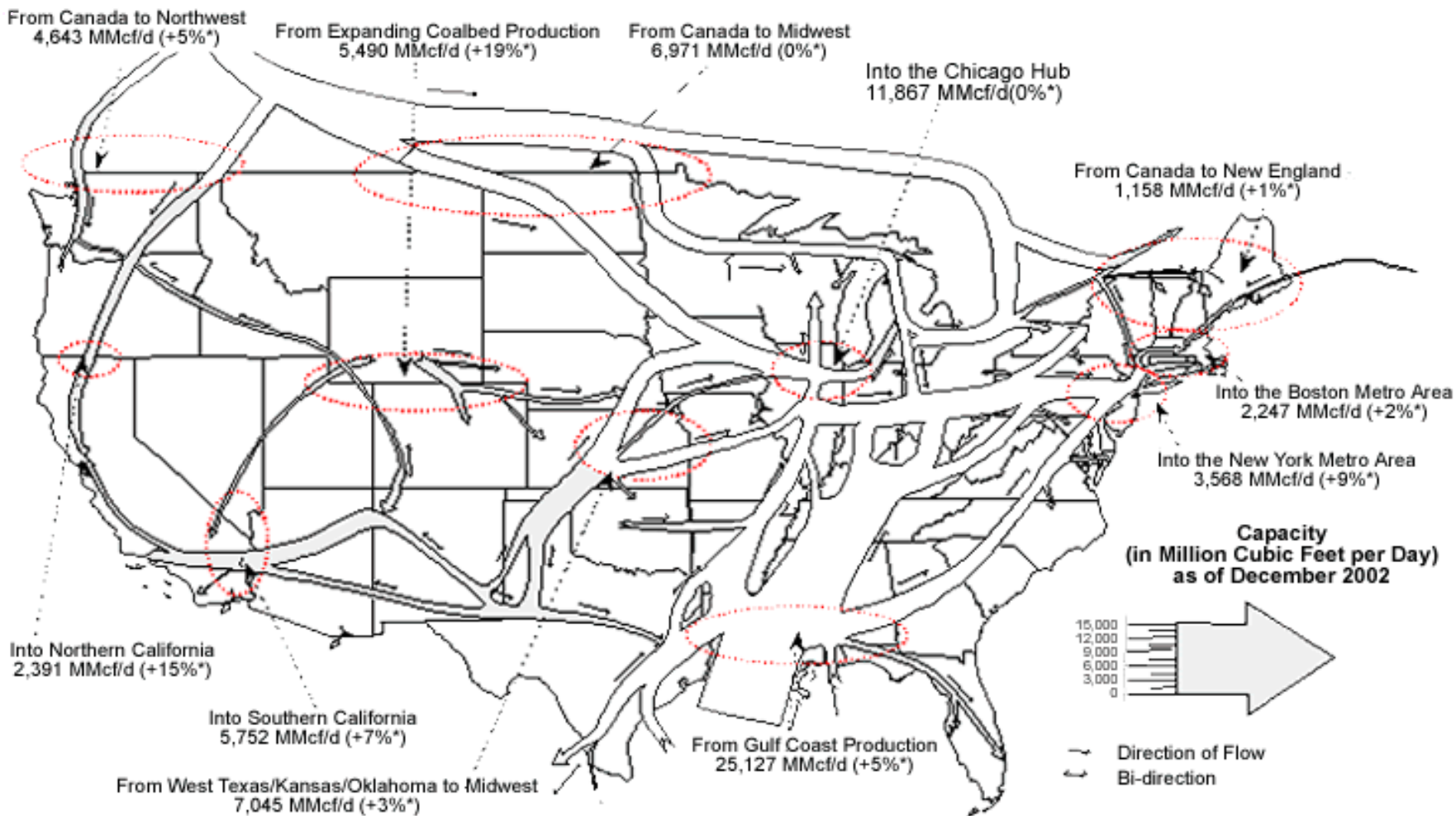
WECC Canada Capacity Fuel Mix 2008



<http://www.nerc.com/~filez/rasreports.html>



**Figure 3. Major Natural Gas Transportation Routes and Capacity Levels at Selected Key Locations, 2002**



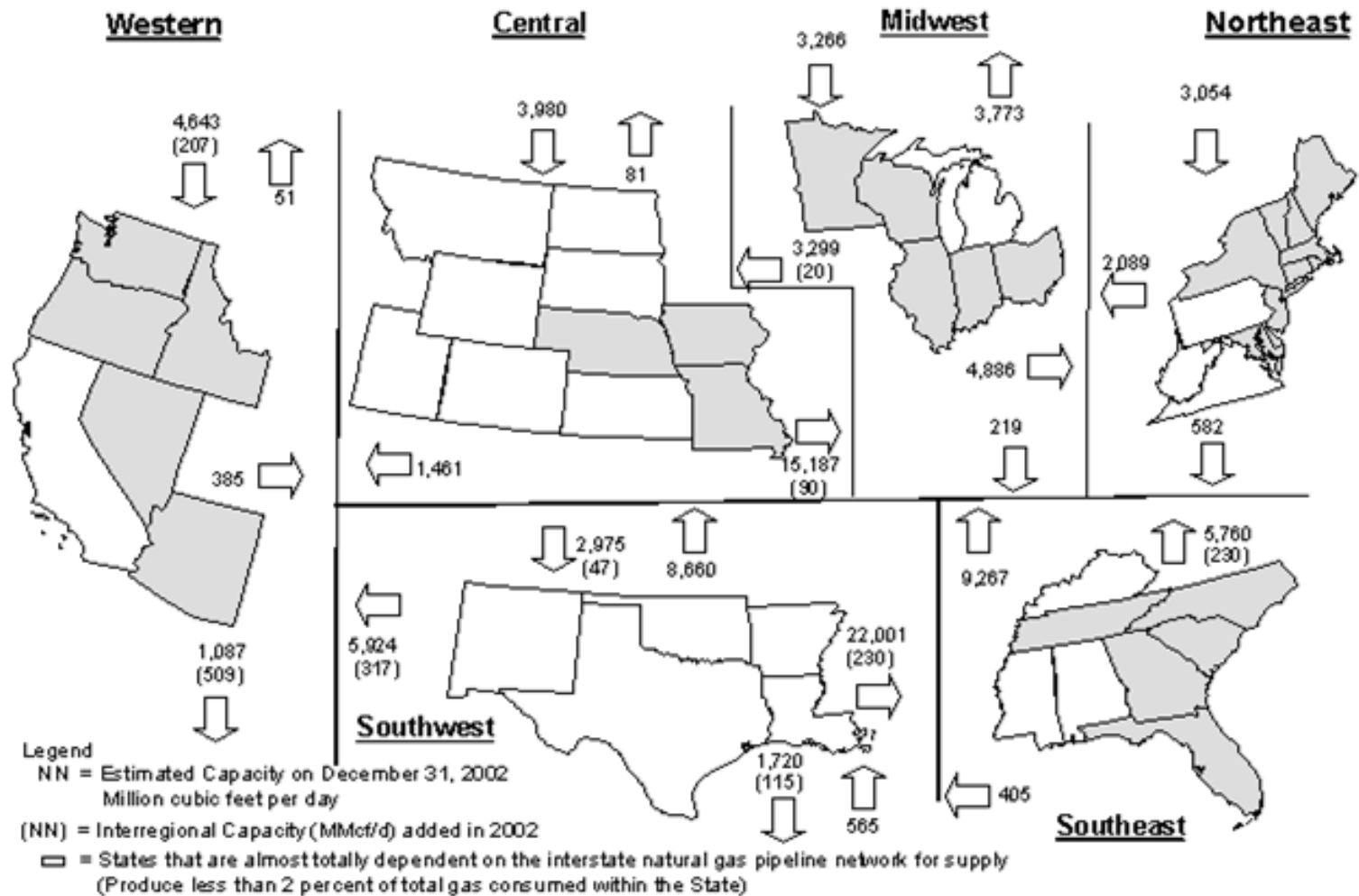
\*Percent change since 2000.

Source: Energy Information Administration, GasTran Gas Transportation Information System, Natural Gas Pipeline State Border Capacity Database.

[www.eia.doe.gov/pub/oil\\_gas/natural\\_gas/feature\\_articles/2003/Pipenet03/pipenet03.html](http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2003/Pipenet03/pipenet03.html)



**Figure 4. Region-to-Region Natural Gas Pipeline Capacity, 2002**



Source: Energy Information Administration, Gas Tran Gas Transportation Information System, Natural Gas Pipeline Capacity Database.

[www.eia.doe.gov/pub/oil\\_gas/natural\\_gas/feature\\_articles/2003/Pipenet03/pipenet03.html](http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2003/Pipenet03/pipenet03.html)



# **NERC Gas/Electric Interdependency Task Force**

## **Draft Conclusions**

- Gas pipeline reliability can substantially impact electric generation.**
- Electric system reliability can have an impact on gas pipeline operations.**
- In general, pipeline and electric system operators do not understand each other's business very well.**
- Pipeline planning and expansion are substantially different from the electric equivalent.**
- Communications between pipeline operators and electric reliability coordinators are generally weak.**
- Pipeline tariffs for firm delivery service are not compatible with peaking generation economics in many electric markets.**
- Modern combustion turbines have stringent fuel delivery and fuel quality requirements.**



# **NERC Gas/Electric Interdependency Task Force**

## **Under Consideration**

**Recommendation 1 — NERC Regions should include in their regional assessment program a review of the impact of any fuel transportation infrastructure interruption that could adversely impact electric system reliability.**

**The focus of the GEITF was on gas transportation. However, interruptions to fuel delivery systems other than for gas could also have an adverse impact on electric system reliability.**



# **NERC Gas/Electric Interdependency Task Force**

## **Under Consideration**

**Recommendation 2 — NERC reliability coordinators or their delegates, subject to appropriate treatment of commercially sensitive information, should develop regular, real-time communications with pipeline operators about disturbances that could adversely impact the reliability of either the electric systems or the gas pipeline.**



# **NERC Gas/Electric Interdependency Task Force**

## **Under Consideration**

**Recommendation 3 — For planning purposes, gas pipeline outages that could have an adverse impact on the reliability of the electric systems must be coordinated with the electric industry so that plans to mitigate any impacts to the electric systems may be developed.**



# **NERC Gas/Electric Interdependency Task Force**

## **Under Consideration**

**Recommendation 4 — NERC should develop a reliability standard relating fuel infrastructure reliability to resource adequacy.**

**Recommendation 5 — NERC should include analysis of fuel infrastructure contingencies that could adversely impact the reliability of the electric systems in the NERC planning standards.**



# **NERC Gas/Electric Interdependency Task Force**

## **Under Consideration**

**Recommendation 6 — NERC should establish a monitoring system that tracks fuel infrastructure contingencies that have, or could have, an adverse impact on electric system reliability.**

**Recommendation 7 — NERC should, in concert with other energy industry organizations, formalize communications between the electric industry and the gas transportation industry for the purposes of education, planning, and emergency response.**



# **NERC Gas/Electric Interdependency Task Force**

## **TIMELINE**

- **NERC PC approved Recommendations – March 23<sup>rd</sup> – 24<sup>th</sup>**
- **NERC PC vote on Final Draft Report due May 20th**
- **Present to NERC Board of Trustees – June 15<sup>th</sup>**
  - **Approval of Report**
  - **Implementation of Recommendations**