

Grid Reliability Assessment

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U.S Nuclear Regulatory Commission Workshop on
New Reactor Licensing & Transmission Planning

May 30, 2007

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2007 Summer "Watch List" Issues

- Southern California - relies on significant amounts of imported power, transported across transmission lines that are heavily loaded during normal operation.
- Greater Connecticut – tight capacity margins; addition of 200 megawatts of demand-reduction measures since last summer will help.

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Reliability Improvements Since 2006

- Southeast - more than \$1.21 billion invested in transmission in 2006.
- Boston - import capability boosted by 1,000 MW due to two new 345 kV transmission lines from Stoughton, MA into Boston; operational in October 2006 and May 2007, respectively.
- Southwestern Connecticut - can import 230 MW more since a 345 kV transmission line from Bethel to Norwalk was put into service in October 2006.
- Texas - reduced its transmission congestion, allowing it to reduce the number of less-efficient generating units that must run in tight reliability situations from seven to one.

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2006 Long-Term Assessment

**Declining
Capacity
Margins**

**Slow
Transmission
Expansion**

**Uncertain
Fuel Supply &
Delivery**

**Aging
Workforce**

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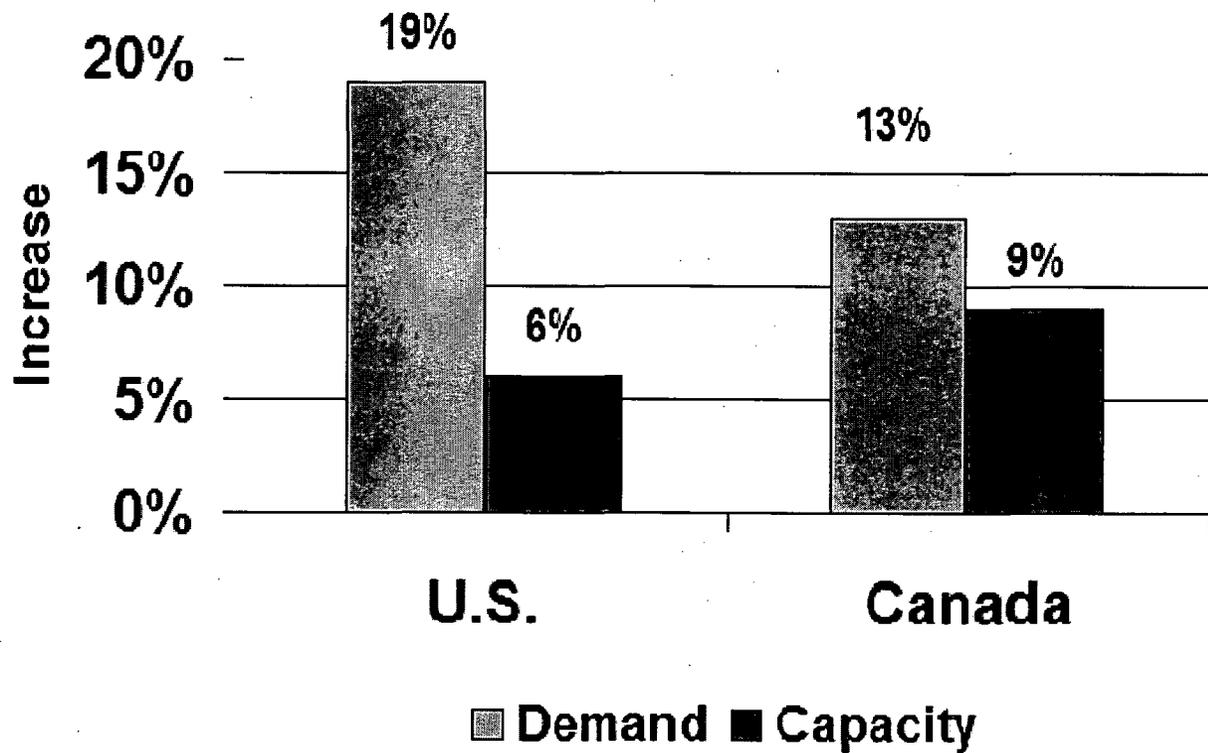
Demand Increasing Faster Than Capacity

Capacity

Transmission

Fuel

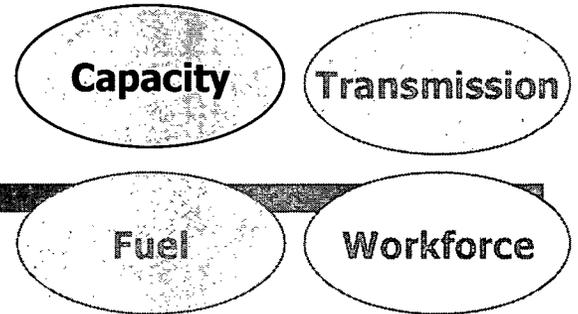
Workforce



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Capacity Margins

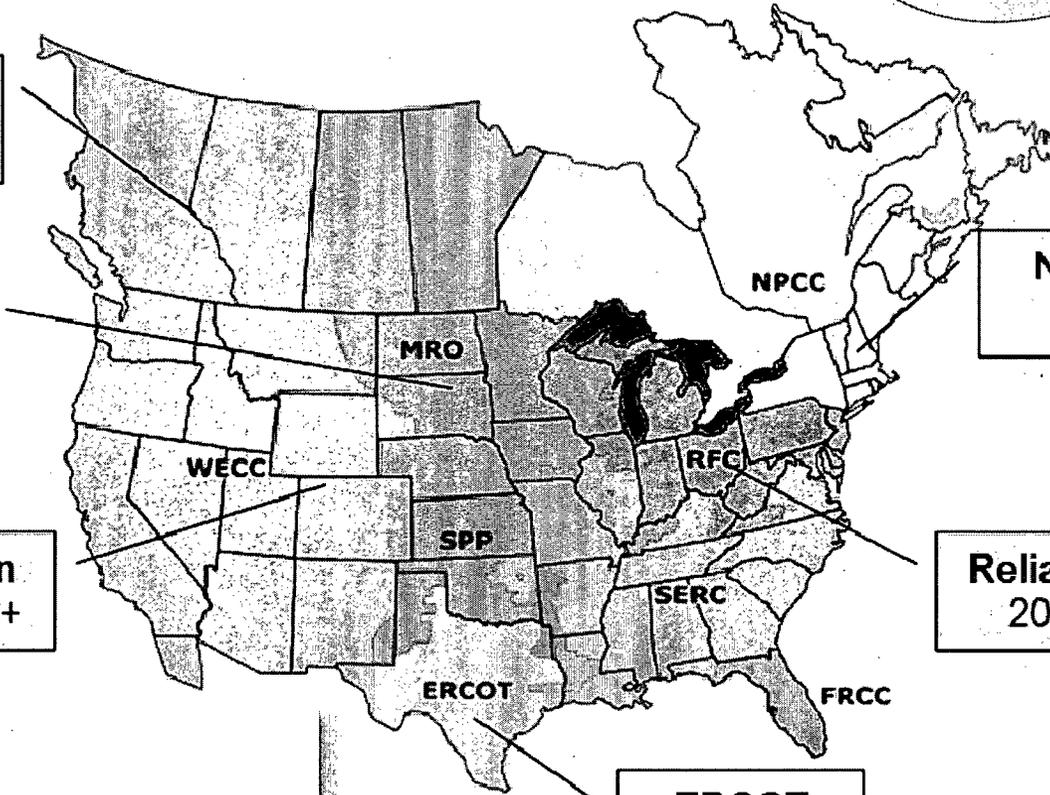


WECC Canada
2008/2009

MRO
2009/2015+

Rocky Mtn
2007/2015+

When resources drop below target / ...including uncommitted resources

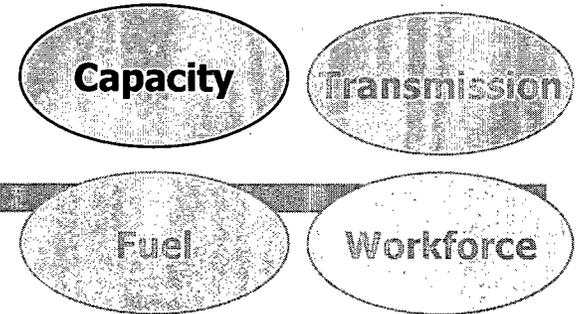


New England
2009/2011

ReliabilityFirst
2008/2013

ERCOT
2008/2013

Capacity: **Action**



- **Utilities:**

- Commit to more resources
- Pursue demand response programs
- Coordinate capacity and transmission plans

- **NERC:**

- Review weather experience

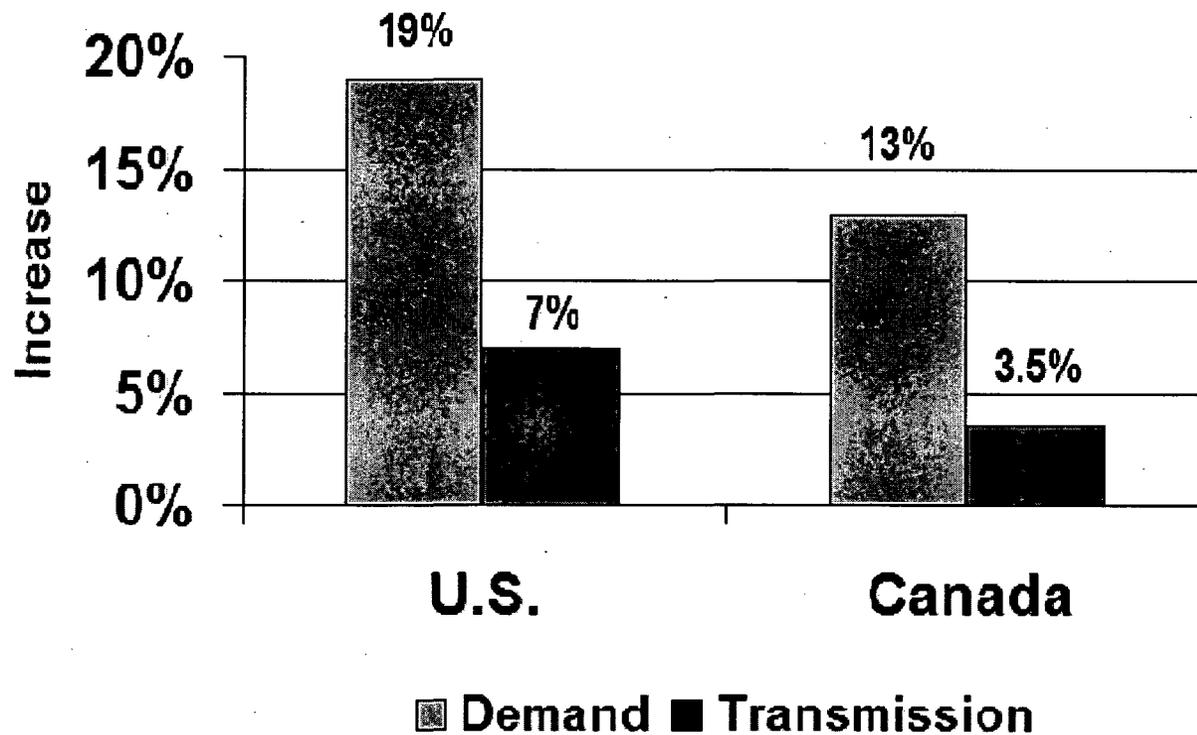
Demand Increasing Faster Than Transmission Construction

Capacity

Transmission

Fuel

Workforce



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Transmission: **Action**

Capacity

Transmission

Fuel

Workforce

- **DOE:** Designate National Interest Electric Transmission Corridors
- **RTOs and transmission owners:** Create longer-term vision for transmission grid
- **Regulators:**
 - Remove barriers
 - Encourage investment
- **NERC:** Develop standards for assessing transmission performance

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Fuels

Capacity

Transmission

Fuel

Workforce

- Critical to electric supply reliability
- Almost 50% is natural gas-fired
- Growing gas dependence in Texas, Florida, Midwest, Northeast, & West
- Gas supply can be interrupted in favor of home heating needs
- Mid-west coal delivery improving

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Fuels: Action

Capacity

Transmission

Fuel

Workforce

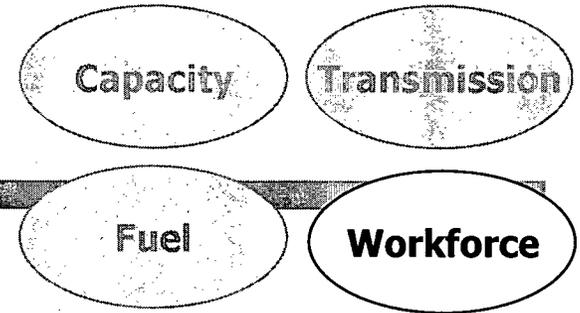
• Utilities:

- Evaluate fuel supply and delivery reliability
- Assess the impact of fuel transportation interruptions
- Strengthen fuel contracts
- Improve communications between electricity and gas pipeline operators

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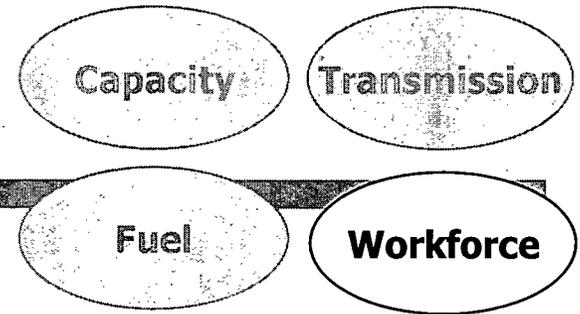
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Workforce



- Retiring “boomers”
- Fewer engineering students
- Fewer universities offering power system education

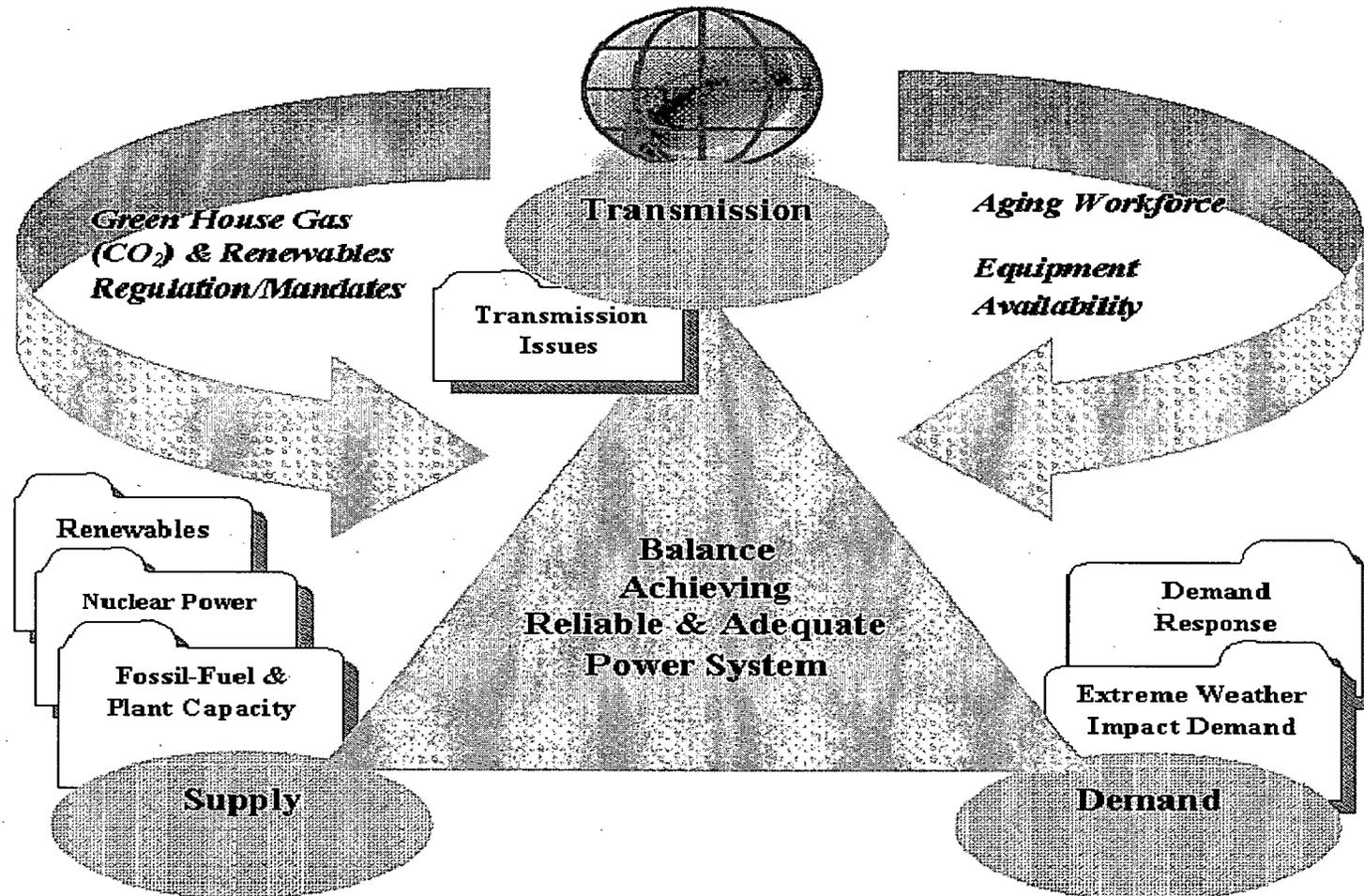
Workforce: **Action**



• **Utilities:**

- Retain aging personnel and establish mentoring programs to transfer knowledge
- Encourage students to pursue engineering careers
- Sponsor colleges and universities to offer power system studies

2007 Emerging Issue Focus



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Projected Increases in Nuclear Capacity

2015

- ERCOT – 5,900 MW
- SERC – 1,475 MW

2016

- FRCC – 1,125 MW
- SERC – 4,014 MW

EPAct 2005 & Transmission Development

- DOE transmission congestion study – *Completed August 2006*
- DOE designated draft National Interest Electric Transmission Corridors
 - Public meetings held in May
 - Written comments due July 6, 2007
- FERC can exercise backstop siting authority if state approvals not forthcoming

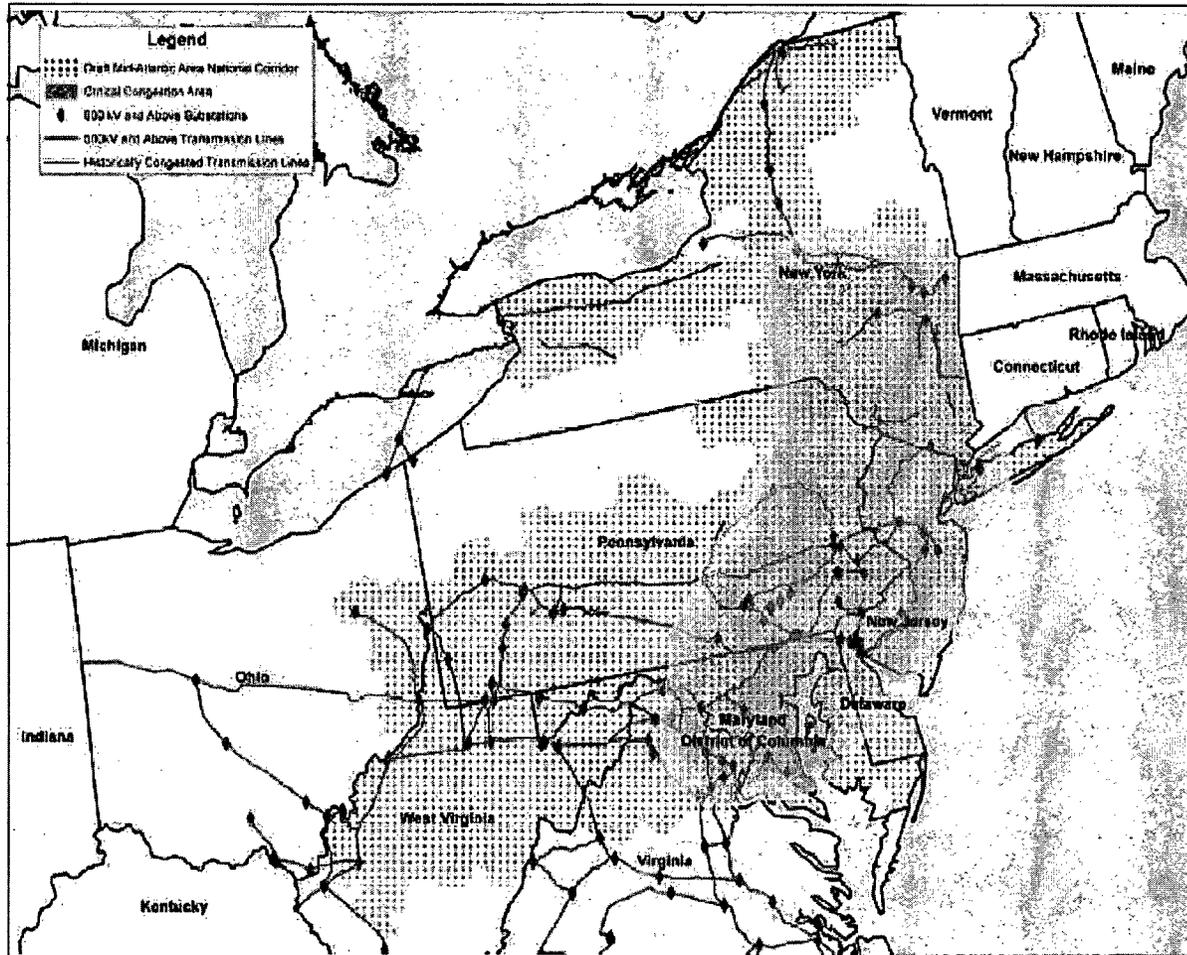
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DOE NIETC Congestion Categories

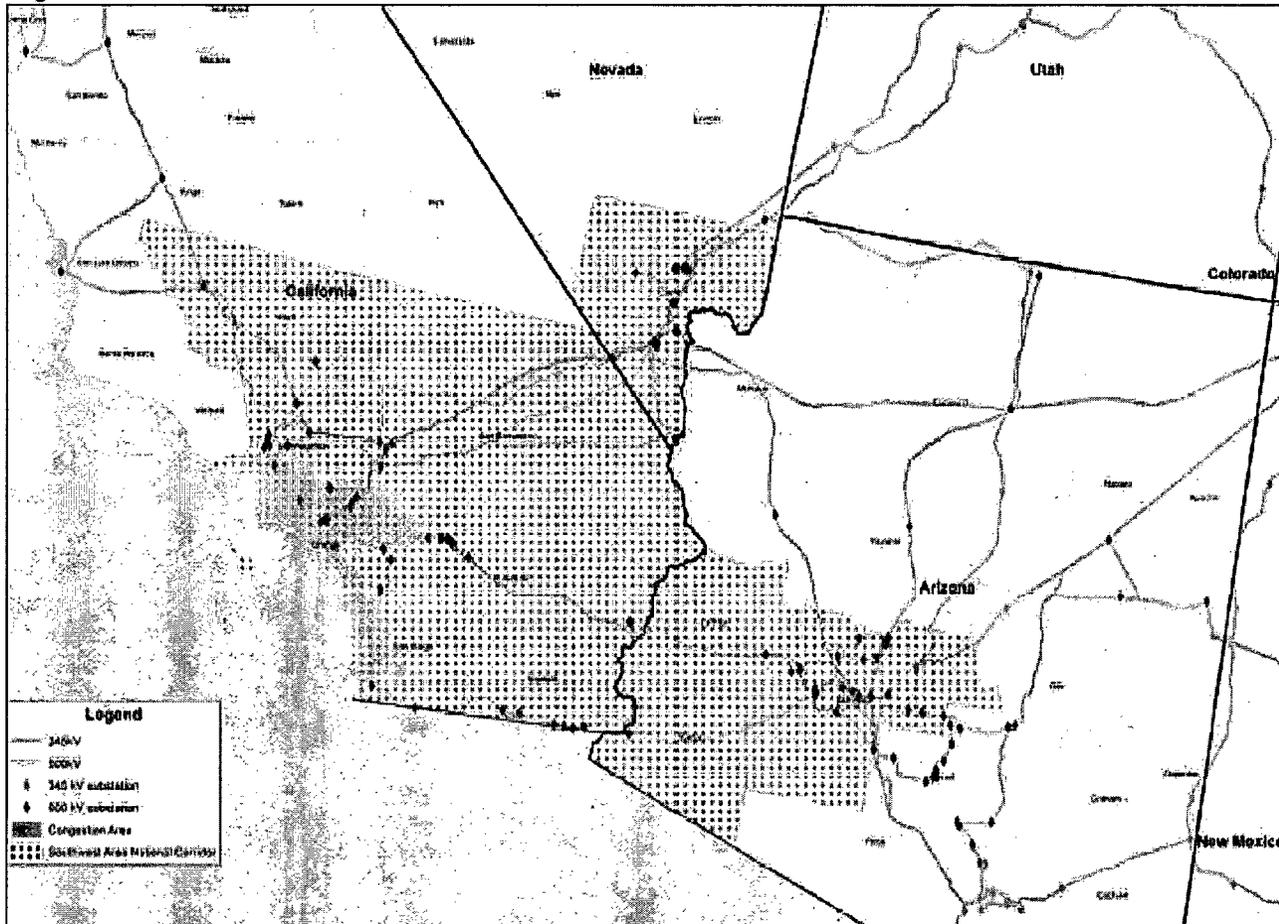
- **Critical Congestion Areas**
 - Atlantic coastal area - metropolitan New York through northern Virginia
 - Southern California
- **Congestion Areas of Concern**
 - New England
 - Phoenix-Tucson
 - San Francisco Bay
 - Seattle-Portland
- **Conditional Congestion Areas**
 - Montana-Wyoming
 - Dakotas-Minnesota
 - Kansas-Oklahoma
 - Illinois, Indiana and upper Appalachia
 - Southeast

Draft Mid-Atlantic Area National Corridor



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Draft Southwest Area National Corridor



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Summary

- Transmission planning for proposed new nuclear units must begin now
- Planners need complete information about characteristics of proposed units
- Studies need to take into account collective transmission needs of all proposed plants

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