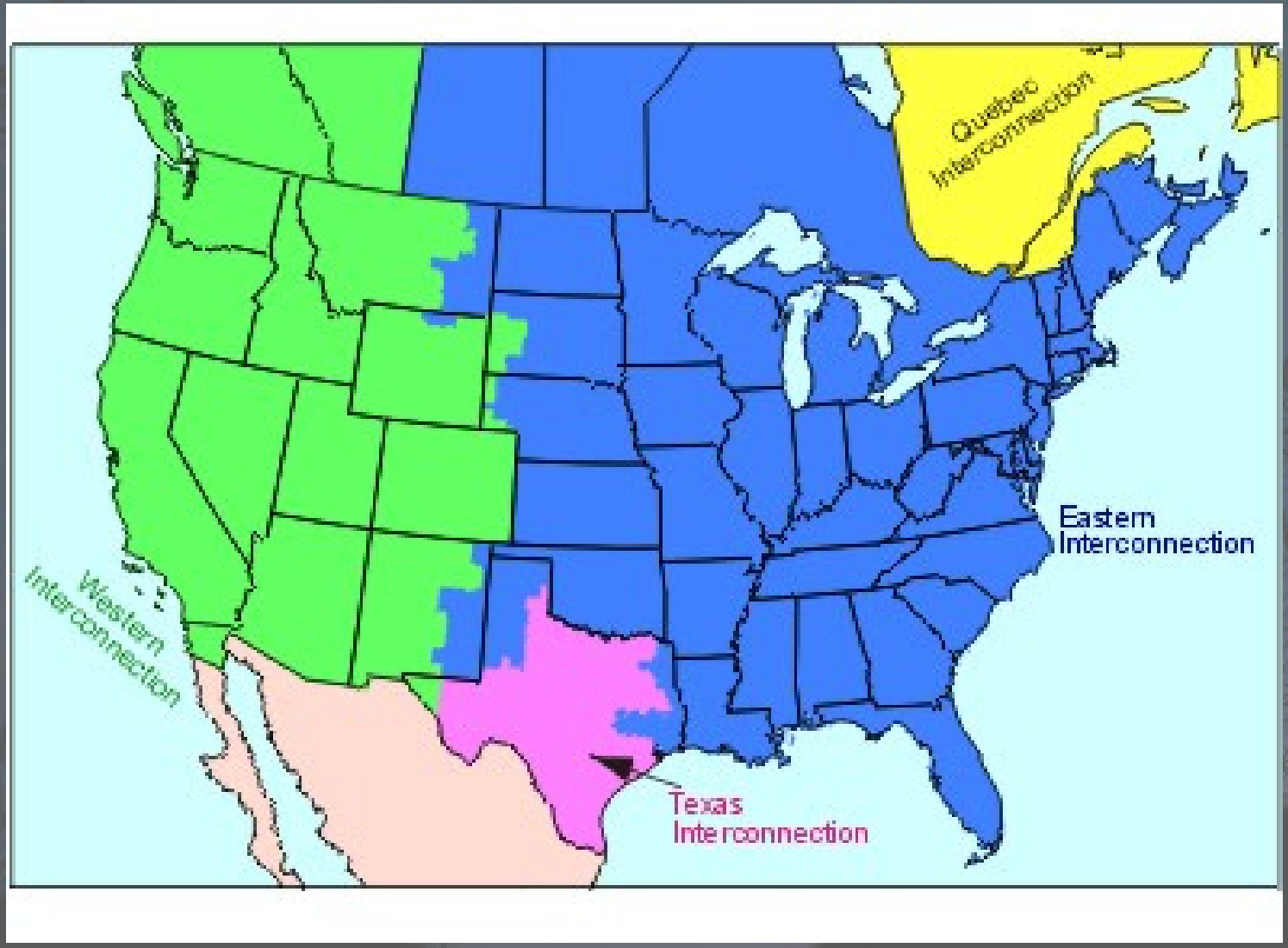
REGIONAL ELECTRICITY MARKETS IN THE UNITED STATES

James Y. Kerr, II
Commissioner, North Carolina Utilities Commission,
Immediate Past President, National Association of Regulatory Utility Commissioners

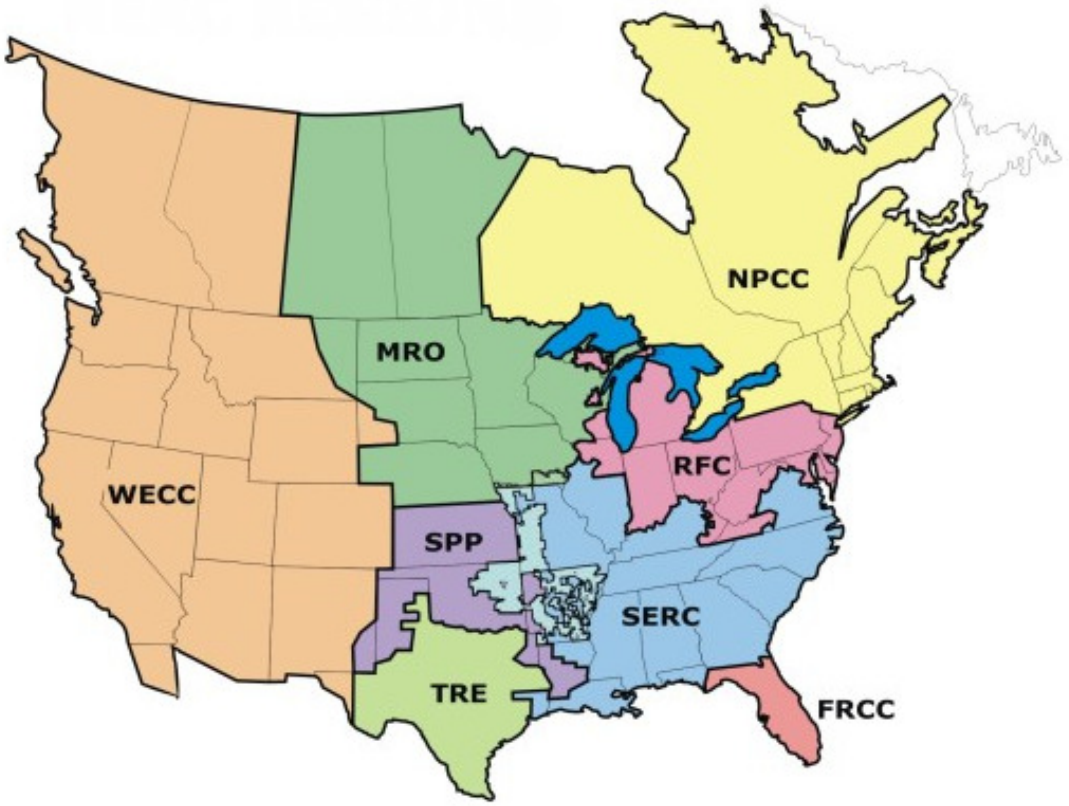
kerr@ncuc.net

EU-US Energy Regulators Roundtable
December 5-6, 2007, Athens, Greece

Interconnections



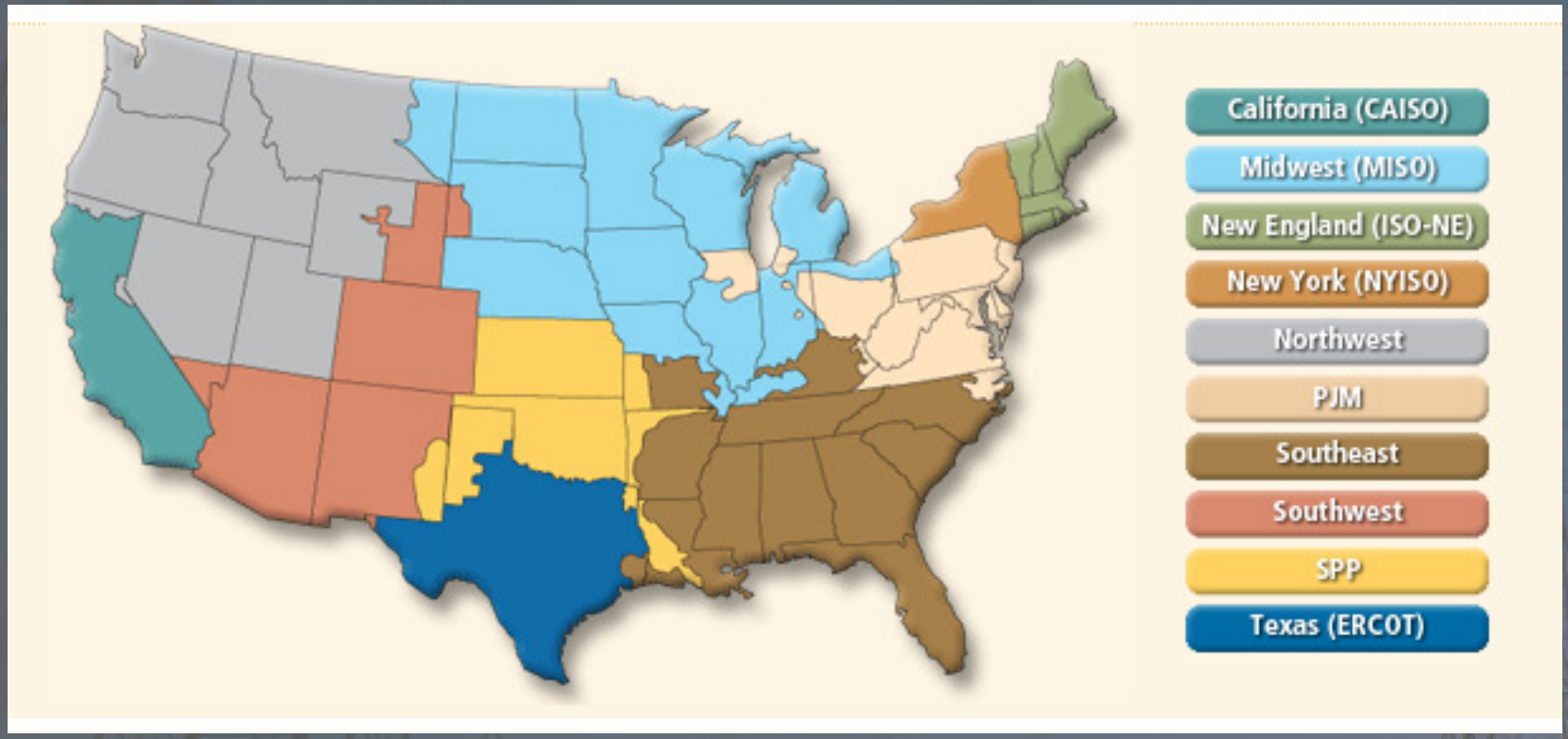
North American Electric Reliability Corporation (NERC)



ERCOT - Electric Reliability Council of Texas
FRCC - Florida Reliability Coordinating Council
MRO - Midwest Reliability Organization
NPCC - Northeast Power Coordinating Council
RFC - Reliability*First* Corporation
SERC - Southeastern Electric Reliability Council
SPP - Southwest Power Pool
WECC - Western Electricity Coordinating Council

Note: The Alaska Systems Coordinating Council (ASCC) is an affiliate NERC member.
Source: North American Electric Reliability Corporation.

US Regional Electricity Markets



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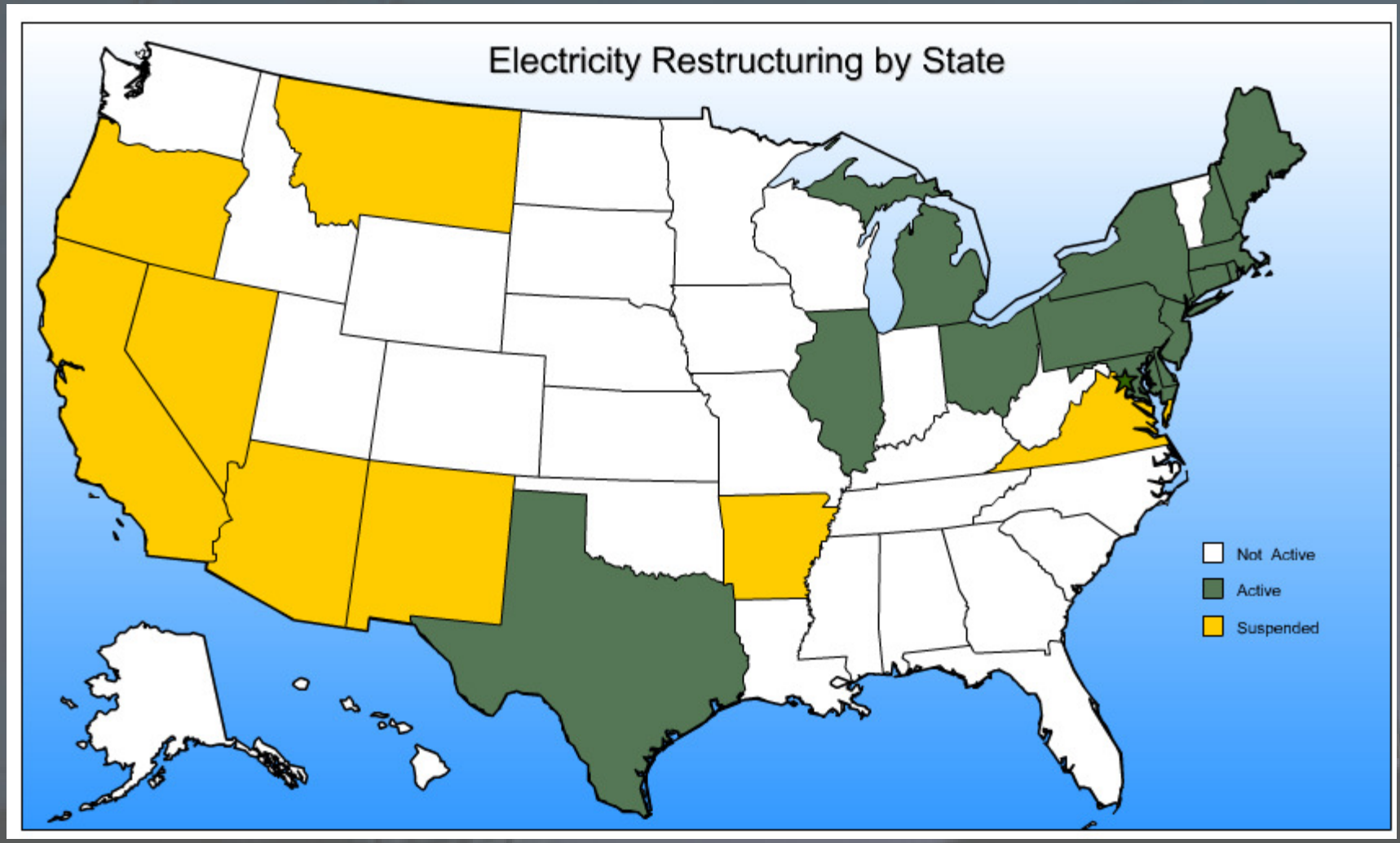
Status of Electricity Restructuring by State



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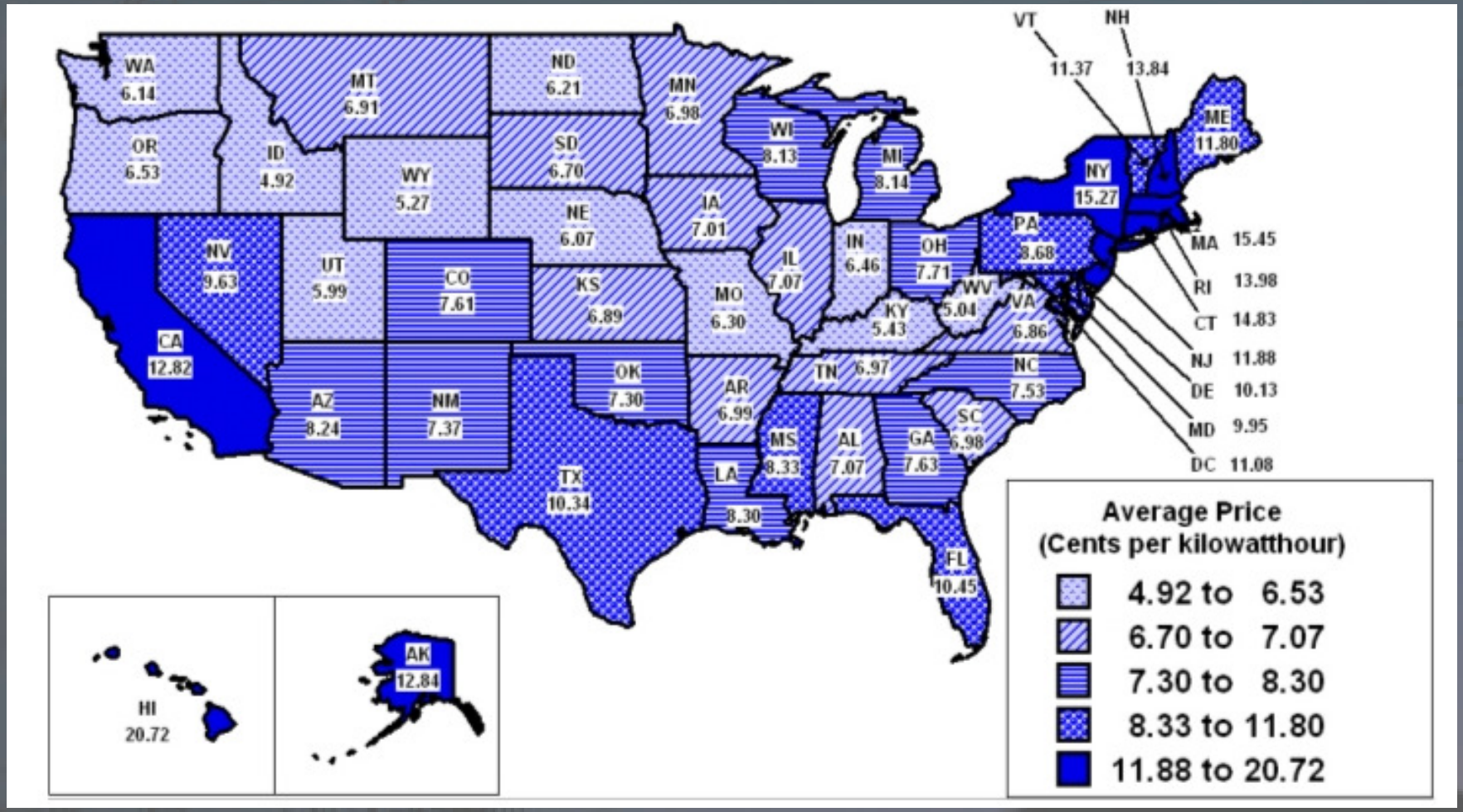
Average Retail Price of Electricity by State, 2006



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Electric Power Markets: National Overview

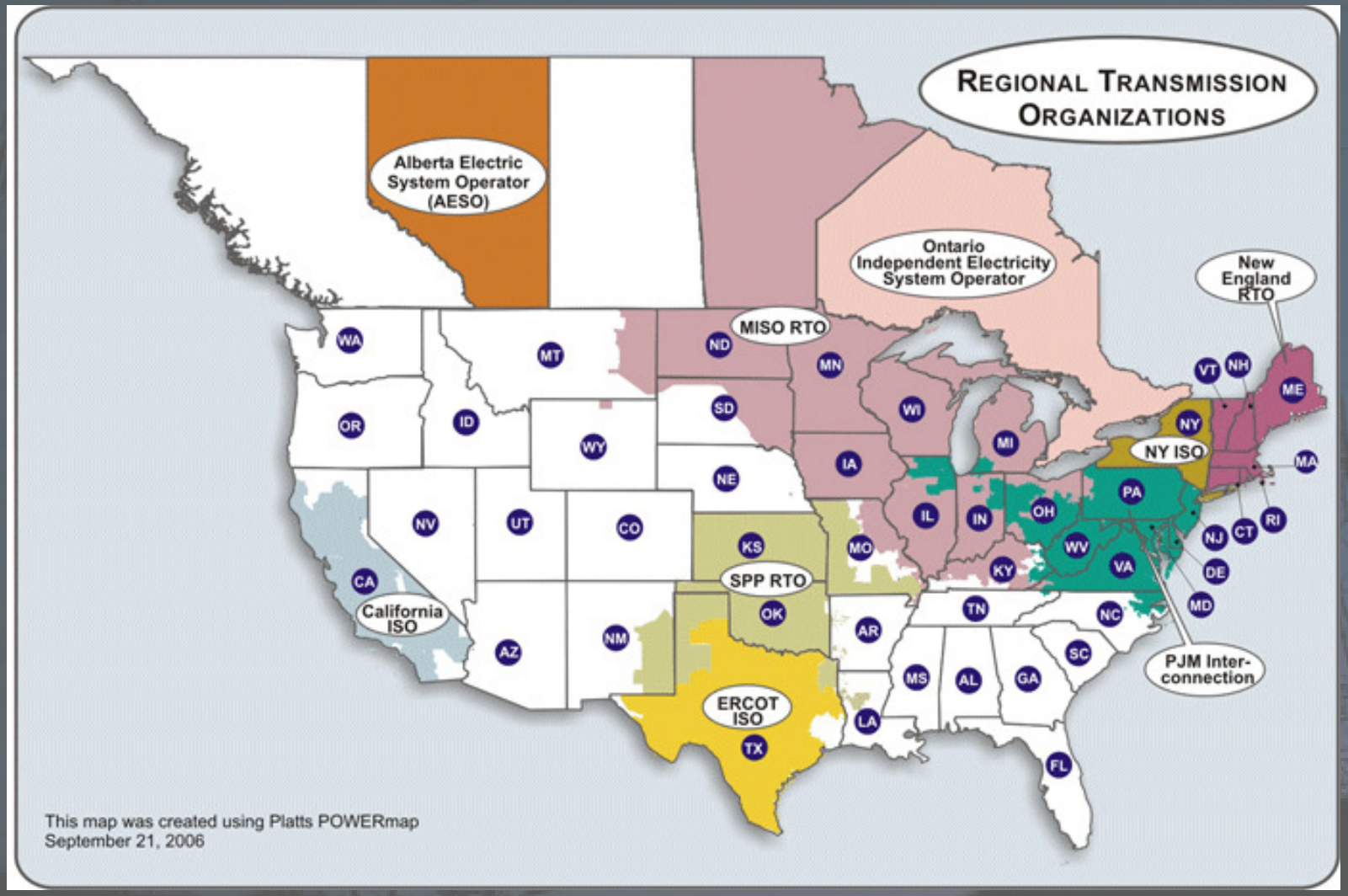

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Table 7: Wholesale Electric Markets in 2006

■ Existing □ Projected

	Real-time market (RTO/ISO)	Real-time market Bilateral	Day-ahead market (RTO/ISO)	Day-ahead market Bilateral	Virtual Bidding (RTO/ISO)	Ancillary services markets (RTO/ISO)	Financial transmission rights (RTO/ISO)	Capacity (UCAP) markets (RTO/ISO)	Associated financial markets
New England	■	■	■	■	■	■	■	■[1]	■
New York	■	■	■	■	■	■	■	■[2]	■
PJM	■	■	■	■	■	■	■	■[3]	■
Midwest	■	■	■	■	■	08	■		■
Southeast		■		■					■
SPP	■	■		■					
ERCOT	■	■	09	■		■	■		
Northwest		■		■					■
Southwest		■		■					■
California	■	■	08	■	09	■	■	[4]	■

[1] Transitioning to a formal capacity market. ISO-NE's installed capacity market was replaced on December 1, 2006, with the transition period for its new Forward Capacity Market.
[2] Locational
[3] Systemwide
[4] California is considering a formal capacity market.

Source: Staff analysis of RTO rules.

Table 8: RTO Market Characteristics in 2006

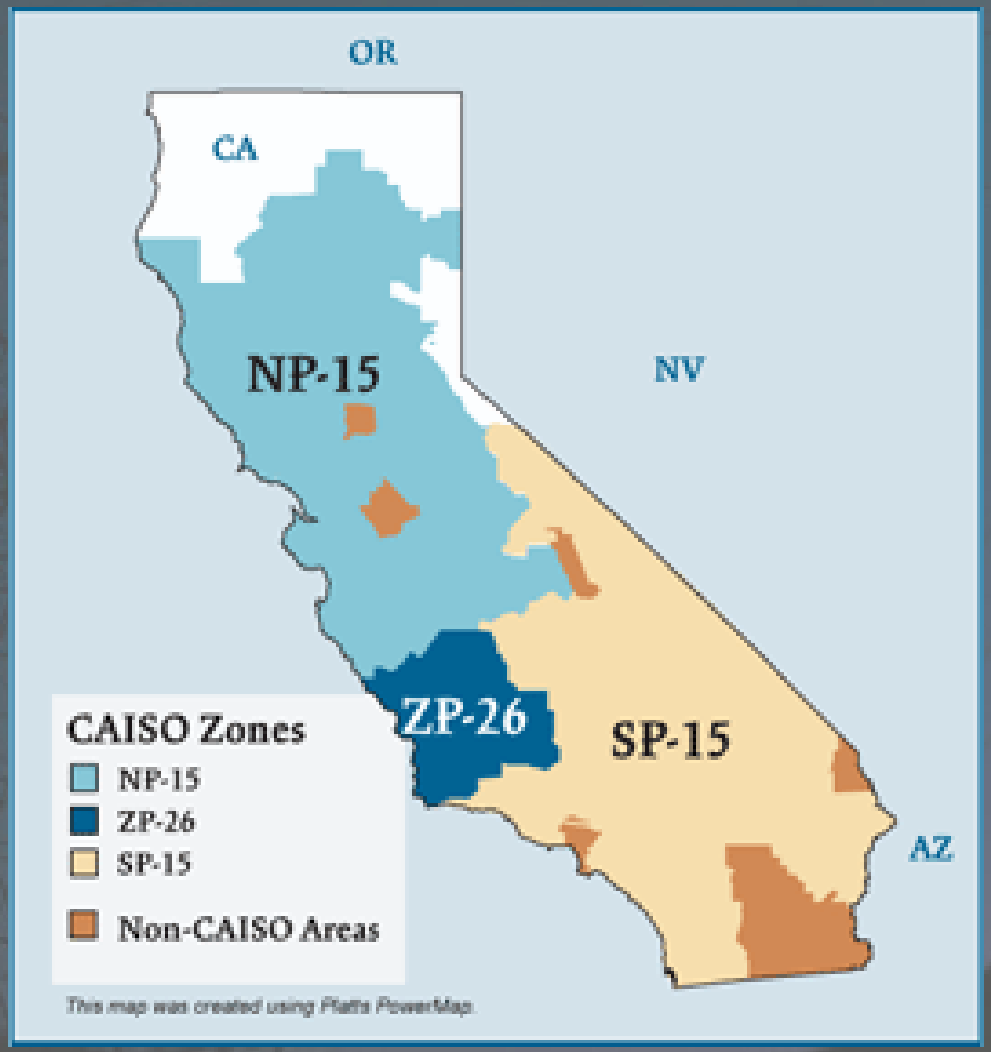
■ Existing □ Projected ♦ Cost-Based ● Other

Services Provided	ISO-NE	NYISO	PJM	MISO	SPP	ERCOT	CAISO
Bilateral transactions	■	■	■	■	■	■	■
Active online physical trading	■		■	■		■	■
Active online financial trading	■	■	■	■			■
Real-time energy market	■	■[1]	■	■	■[2]	■	■
Locational energy price	■	■	■	■	■	■	■
Hourly energy price	■	■	■	■	■	■	■
Congestion price	■	■	■	■	■	■	■
Losses price	■	■	□ 07[3]	■	■[4]	■	■[5]
Day-ahead energy market	■	■[1]	■	■		□ 09	□ 08
Locational energy price	■	■	■	■		□ 09	□ 08
Hourly energy price	■	■	■	■		□ 09[6]	□ 08
Congestion price	■	■	■	■		□ 09	■[7]
Losses price	■	■	□ 07[3]	■			□ 08
Ancillary services market	■	■	■	□ 08	♦	■	■
Regulation service market	■	■	♦[8]	♦	♦	■	■
Operating reserves market	■	■	■[9]	♦[10]	♦	■	■
Reactive power market	●[11]	●[12]	♦	♦	♦	♦	♦
Black start market		♦	♦	♦	♦	●[13]	♦
Financial transmission rights	■	■	■	■		■	■[7]
Capacity market	■[14]	■	■			●[15]	♦[16]
Regional transmission scheduling	■	■	■	■	■	■	■
Regional economic dispatch	■	■	■	■	■	■[17]	■[17]
Regional transmission planning	■	■	■	■	■	■	■
Regional interconnection process	■	■	■	■	■	■	■
Independent market monitor	■	■	■	■	■	■	■
Mitigation	■	■	■	■	■		■

1 NYISO's Real Time Commitment model considers energy reserve and regulation when calculating prices.
2 The SPP market is limited to an imbalance energy market.
3 Losses currently allocated to market participants based on a pro-rata share of total transmission losses. Marginal losses will be charged starting June '07.
4 Consumers also have the option to settle their losses by self-supply.
5 Allocated to sellers using generation meter multipliers, which reflect scaled marginal losses.
6 15 minute settlement instead of hourly.
7 To be revised in 2008 under MRTU.
8 Offers from AEP and Dominion are cost-based, and all other are market-based.
9 Non-spinning reserves are derived from market-based offers.
10 Maintained by Balancing Authorities. When provided from generating resources, an hourly MW schedule for capacity is submitted to MISO.
11 Participants capable of providing reactive power do not bid into the market. If called upon to provide this service, they are paid the energy clearing price if taken in merit or uplift if taken out of merit.
12 Fixed monthly Mvar payment plus opportunity cost.
13 RFP procurement process.
14 ISO-NE's installed capacity market was replaced on December 1, 2006, with the transition period for its new Forward Capacity Market.
15 Replacement market buys generation for short term market to satisfy local congestion and system-wide capacity shortages.
16 CAISO has cost-based contracts for RMR. California is considering a formal capacity market.
17 No day-ahead energy markets; economic dispatch used in real-time balancing markets.

Source: Staff analysis of RTO rules.

2007 California (CAISO) Electric Regions



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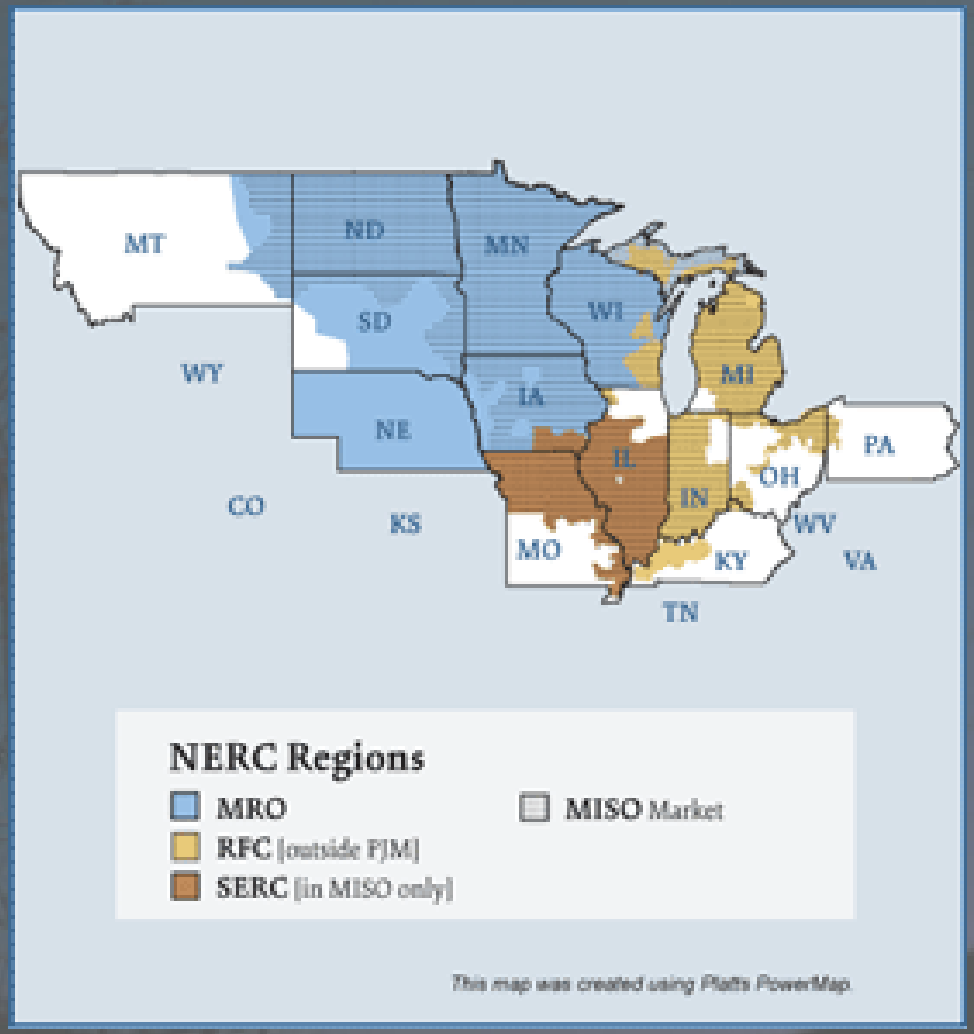
2007 California (CAISO) Electric Regions

Supply Demand Statistics	2004	2005	2006
Summer Generating Capacity MW (1)	54,038	55,694	56,347
Summer Peak Demand MW	45,597	45,431	50,270
Summer Reserves MW	8,441	10,263	6,077
Summer Reserve Margin:	19%	23%	12%
Annual Load (GWh):	239,788	236,449	240,259
Annual Net Generation GWh	178,304	179,188	177,757

Footnote (1): Generation capacity includes dynamically scheduled generation, and excludes any derates of the resources or imports.

2007 Midwest Electric Regions



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2007 Midwest (Midwest ISO) Electric Regions

Supply Demand Statistics	2005 [2]	2006
Summer Generating Capacity (MW) [1]	135,034	133,942
Summer Peak Demand MW	114,479	113,799
Summer Reserves (MW)	20,555	20,413
Summer Reserve Margin (%)	18%	18%
Annual Load (GWh) [3]	455,200	580,567
Annual Net Generation (GWh) [4]	451,604	567,728

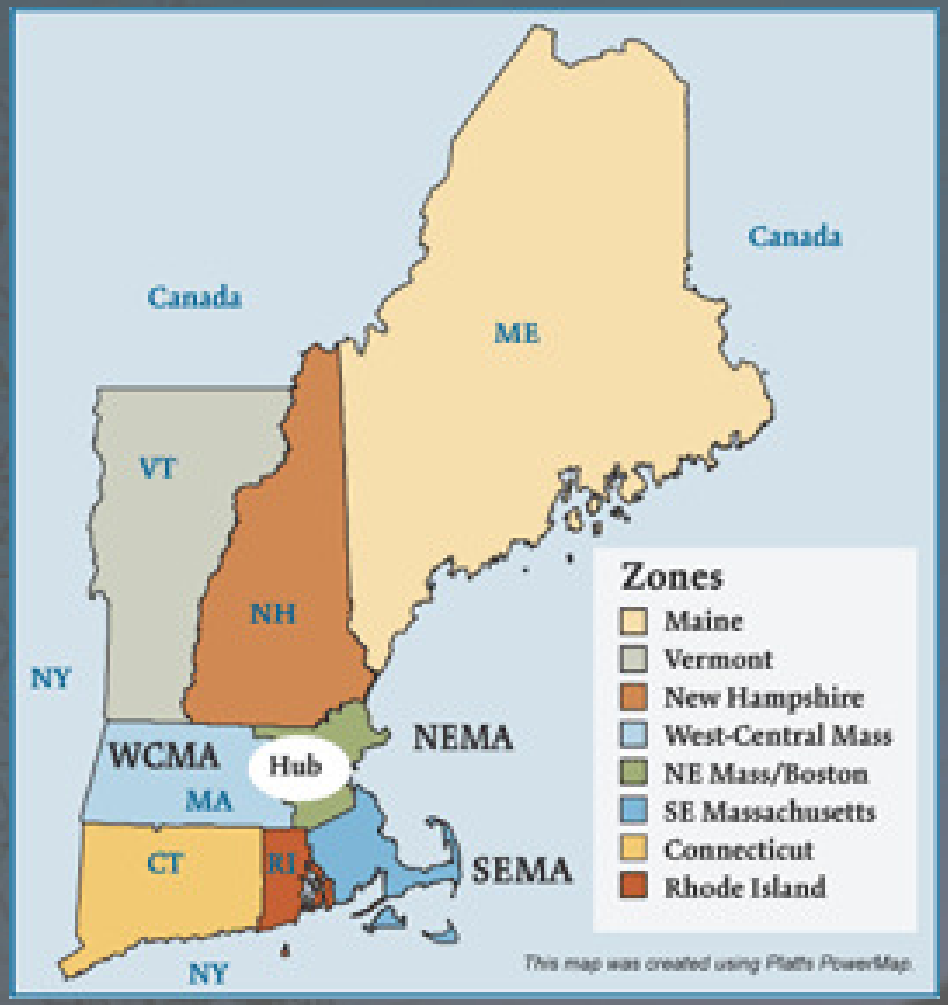
[1] Generation capacity excludes non-designated imports

[2] Midwest ISO Energy Market launched on April 1, 2005

[3] Excludes imports / Includes Grandfathered Agreements (GFA)

[4] Includes imports and Grandfathered Agreements (GFA)

Electric Power Markets: New England (ISO-NE)



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Electric Power Markets: New England (ISO-NE)

Supply Demand Statistics	2004	2005	2006
Summer Generating Capacity MW (1)	31,143	31,083	30,895
Summer Peak Demand MW	24,116	26,885	28,127
Summer Reserves MW	7,027	4,198	2,768
Summer Reserve Margin:	29%	16%	10%
Annual Load (GWh):	132,522	136,376	132,078
Annual Net Generation GWh	128,145	131,877	128,046

(1) "Generating Capacity" is generator capacity + net firm purchases & sales

2007 New York (NYISO) Electric Regions

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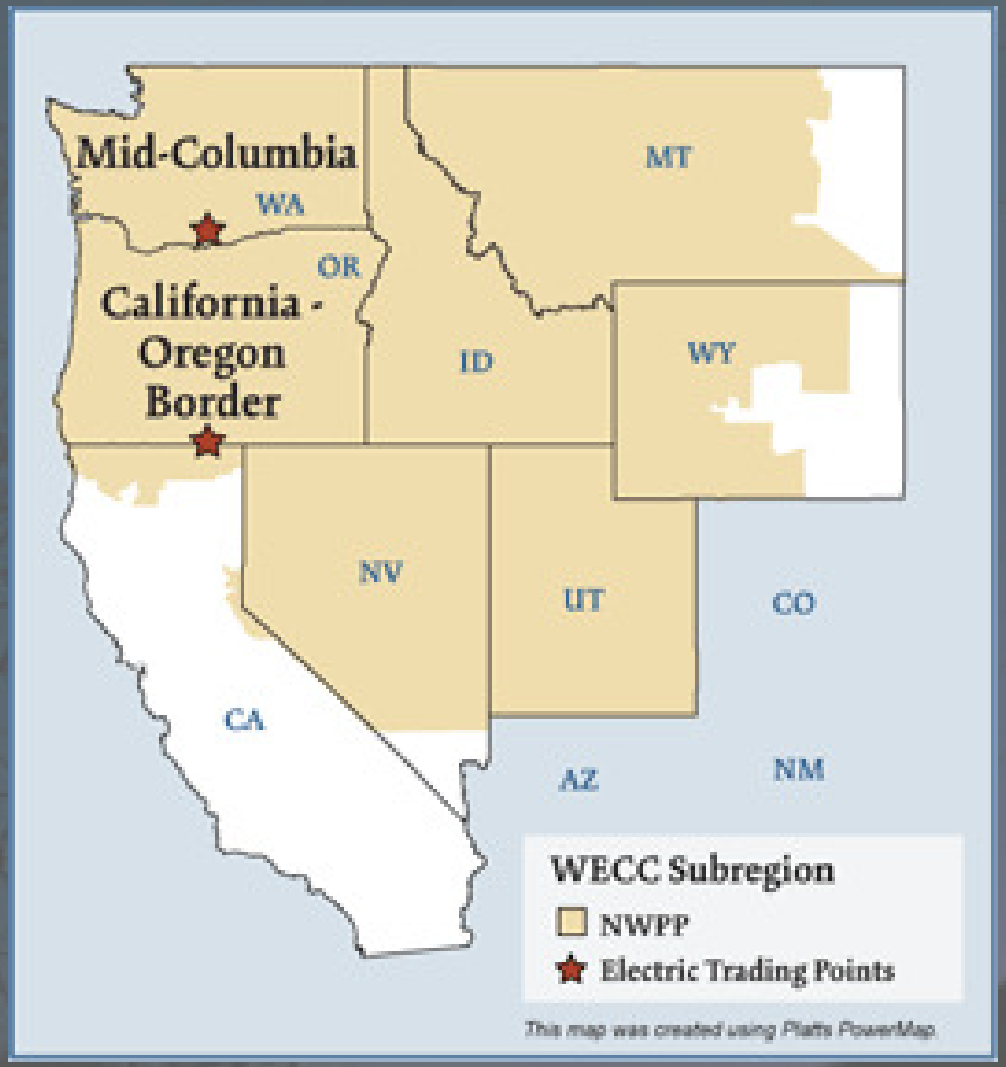
2007 New York (NYISO) Electric Regions

Supply Demand Statistics			
	2004	2005	2006
Summer Generating Capacity (MW)	38,111	37,548	39,704
Summer Peak Demand (MW)	28,433	32,075	33,939
Summer Reserves (MW)	9,678	5,473	5,765
Summer Reserve Margin	34%	17%	17%
Annual Load (GWh)	160,211	167,208	166,893
Annual Net Generation (GWh)	147,170	153,264	NA

2007 Northwest Electric Regions



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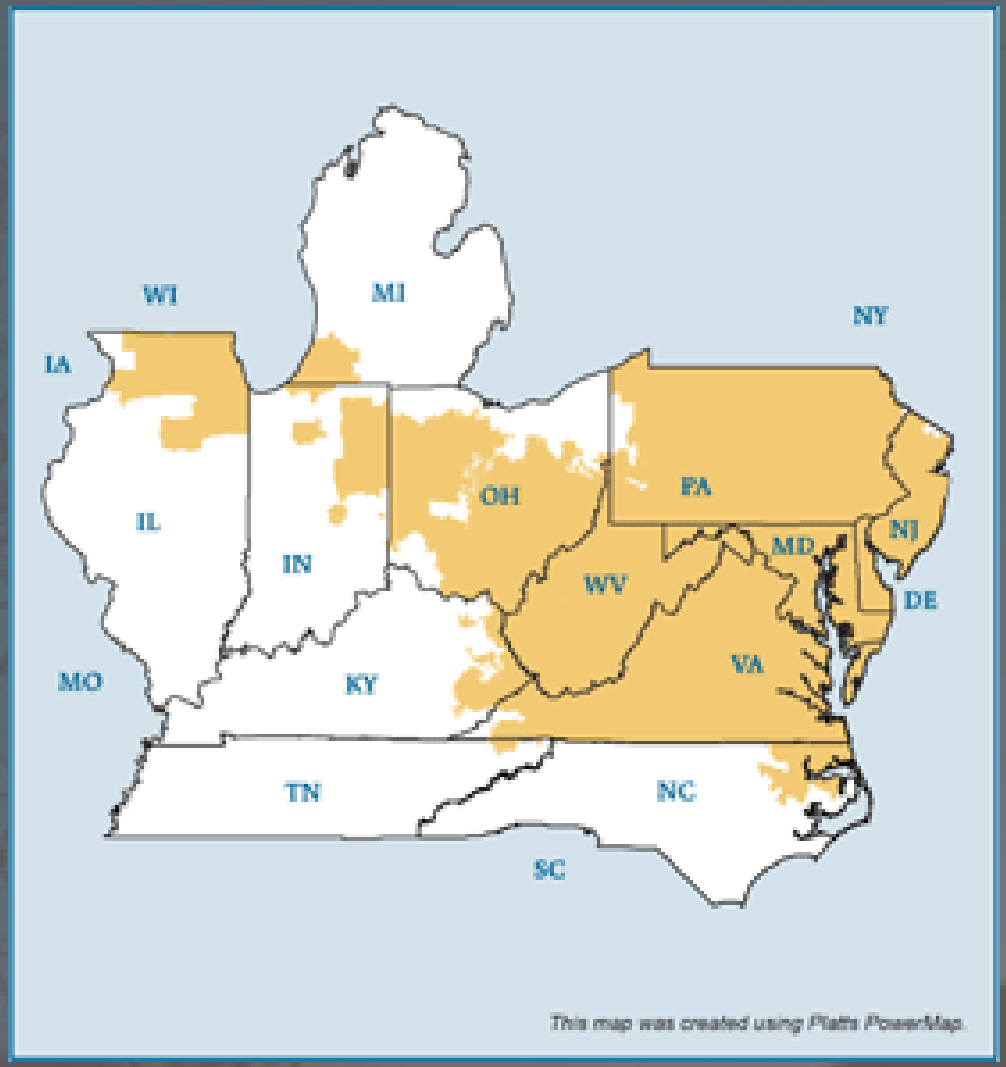
2007 Northwest Electric Regions

Supply Demand Statistics			
	2003	2004	2005
Winter Generating Capacity MW	54,802	57,101	57,120
Winter Peak Demand MW	35,456	39,710	40,298
Winter Reserves MW	19,346	17,391	16,822
Winter Reserve Margin:	55%	44%	42%
Annual Load (GWh):	219,582	223,148	234,153
Annual Net Generation GWh	NA	NA	NA

2007 PJM Electric Regions



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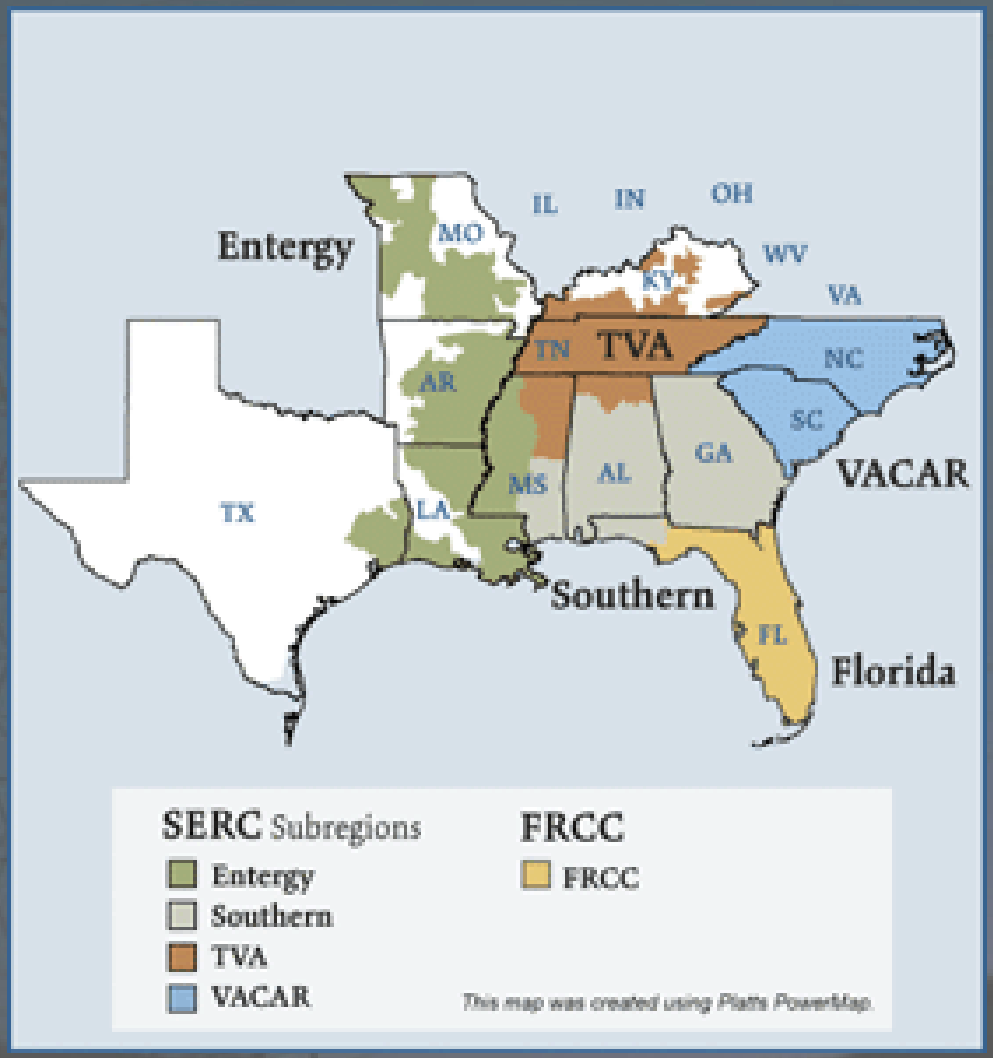
2007 PJM Electric Regions

Supply Demand Statistics			
	2004	2005	2006
Summer Generating Capacity MW	106,250	166,950	164,634
Summer Peak Demand MW	77,887	133,762	144,644
Summer Reserves MW	28,363	33,188	19,990
Summer Reserve Margin:	36%	25%	14%
Annual Load (GWh):	438,874	684,592	696,165
Annual Net Generation GWh	441,778	701,443	714,091

2007 Southeast Electric Regions



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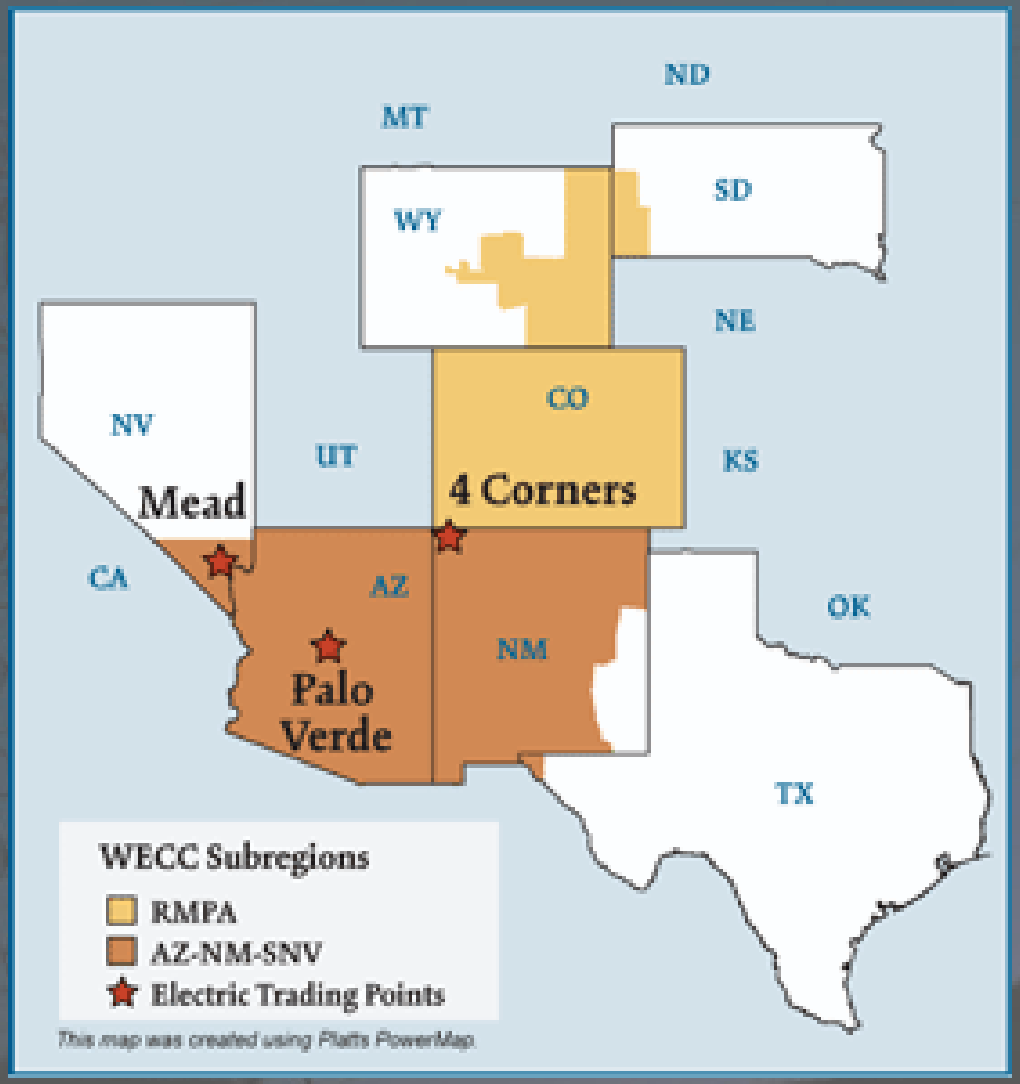
2007 Southeast Electric Regions

Supply Demand Statistics			
	2004	2005	2006
Summer Generating Capacity MW	272,604	297,221	299,712
Summer Peak Demand MW	220,299	237,100	235,524
Summer Reserves MW	52,305	60,121	64,188
Summer Reserve Margin:	24%	25%	27%
Annual Load (GWh):	1,077,069	1,188,598	1,205,776

2007 Southwest Electric Regions



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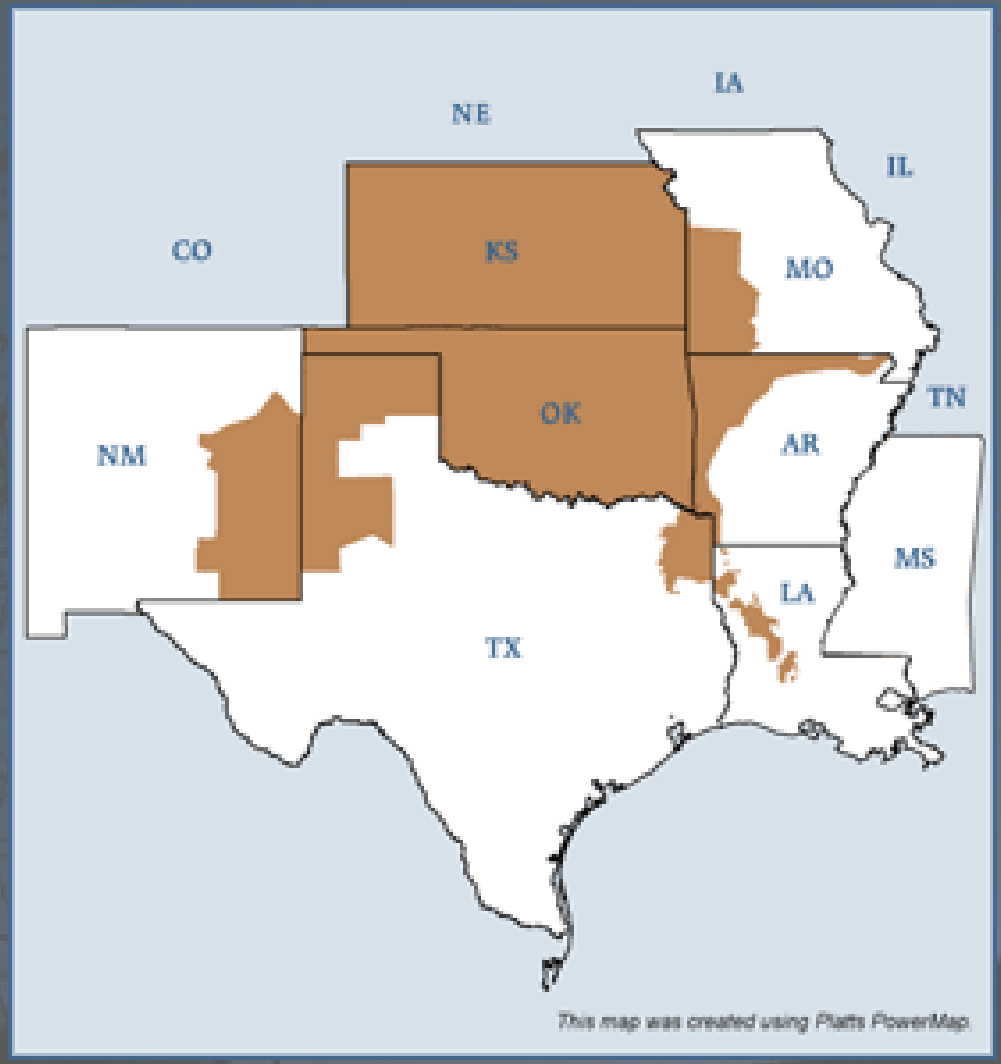
2007 Southwest Electric Regions

Supply Demand Statistics			
	2003	2004	2005
Summer Generating Capacity MW	41,646	45,588	45,459
Summer Peak Demand MW	35,815	35,280	36,519
Summer Reserves MW	5,831	10,308	8,940
Summer Reserve Margin:	16%	29%	24%
Annual Load (GWh):	177,401	180,154	185,730
Annual Net Generation GWh	NA	NA	NA

2007 Southwest Power Pool (SPP) Regions



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2007 Southwest Power Pool (SPP) Regions

Supply Demand Statistics	2004	2005	2006
Summer Generating Capacity MW (1)	45,039	45,768	48,267
Summer Peak Demand MW	39,383	40,451	42,227
Summer Reserves MW	5,656	5,317	6,040
Summer Reserve Margin:	14%	13%	14%
Annual Load (GWh):	191,829	194,180	205,104
Annual Net Generation GWh	NA	NA	NA

2007 Texas (ERCOT) Electric Regions

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2007 Texas (ERCOT) Electric Regions

Supply Demand Statistics	2004	2005	2006	2007
Summer Generating Capacity MW	75,056	69,380	70,756	71,244
Summer Peak Demand MW	58,506	60,214	62,339	62,500
Summer Reserves MW	15,324	9,166	8,417	8,744
Summer Reserve Margin:	26%	15%	14%	14%
Annual Load (GWh):	289,113	299,227	NA	NA
Annual Net Generation GWh	NA	NA	NA	NA

FERC Approach to Wholesale Markets

- **INFRASTRUCTURE**
  - ✓Support the Development of Infrastructure
- **COMPETITIVE MARKETS**
  - ✓Support Competitive Markets
- **ENFORCEMENT**
  - ✓ Prevent Market Manipulation

FERC Approach to Wholesale Markets INFRASTRUCTURE

- Implement Infrastructure Provisions of EPACT 2005
- Oversee Development and Enforcement of Electric Reliability Standards

FERC Approach to Wholesale Markets COMPETITIVE MARKETS

- Open Access Transmission Tariff Reform
- Support Voluntary Regional Transmission Organizations
- Respond to Complaints
- Merger and Acquisition Review
- Market Based Rate Authority

FERC Approach to Wholesale Markets ENFORCEMENT

- Transmission Provider Standards of Conduct
- Market Power and Enforcement Provisions of EPACT 2005
- Market Monitoring and Oversight Program
- Order 670 – Prohibition of Energy Market Manipulation

State's Role in Wholesale Markets

- **FERC/State Relationship**
  - ✓ Informal
  - ✓ States as Parties in FERC Dockets
- **NARUC**
  - ✓ Policy Development and Advocacy Before Congress, Administration, and FERC
  - ✓ Party in FERC Dockets and Appeals of FERC Orders
  - ✓ Joint Boards and Collaboratives
  - ✓ Informal

State's Role in Wholesale Markets

National NGOs

- NERC - Reliability
  - ✓ WIRAB - pursuant to EPACT 2005
- NAESB – Business Practices

State's Role in Wholesale Markets

Regional Organizations

- RTO State Advisory Committees
  - ✓ NECPUC, OPSI, OMS, SPP
- NARUC Regional Affiliates
  - ✓ NECPUC, MACRUC, SEARUC, MARC, WCPSC
- Issue Specific Regional Efforts
  - ✓Western Electricity Coordinating Council (WECC)
  - ✓Committee on Electric Power Cooperation (CREPSI)
  - ✓Regional GHG Initiative
  - ✓ Western Governor's Initiative
  - ✓ Northeast Demand Response Initiative
- Interstate Transmission Siting Compacts pursuant to EPACT 2005
- Order 890 Regional Transmission Planning Efforts