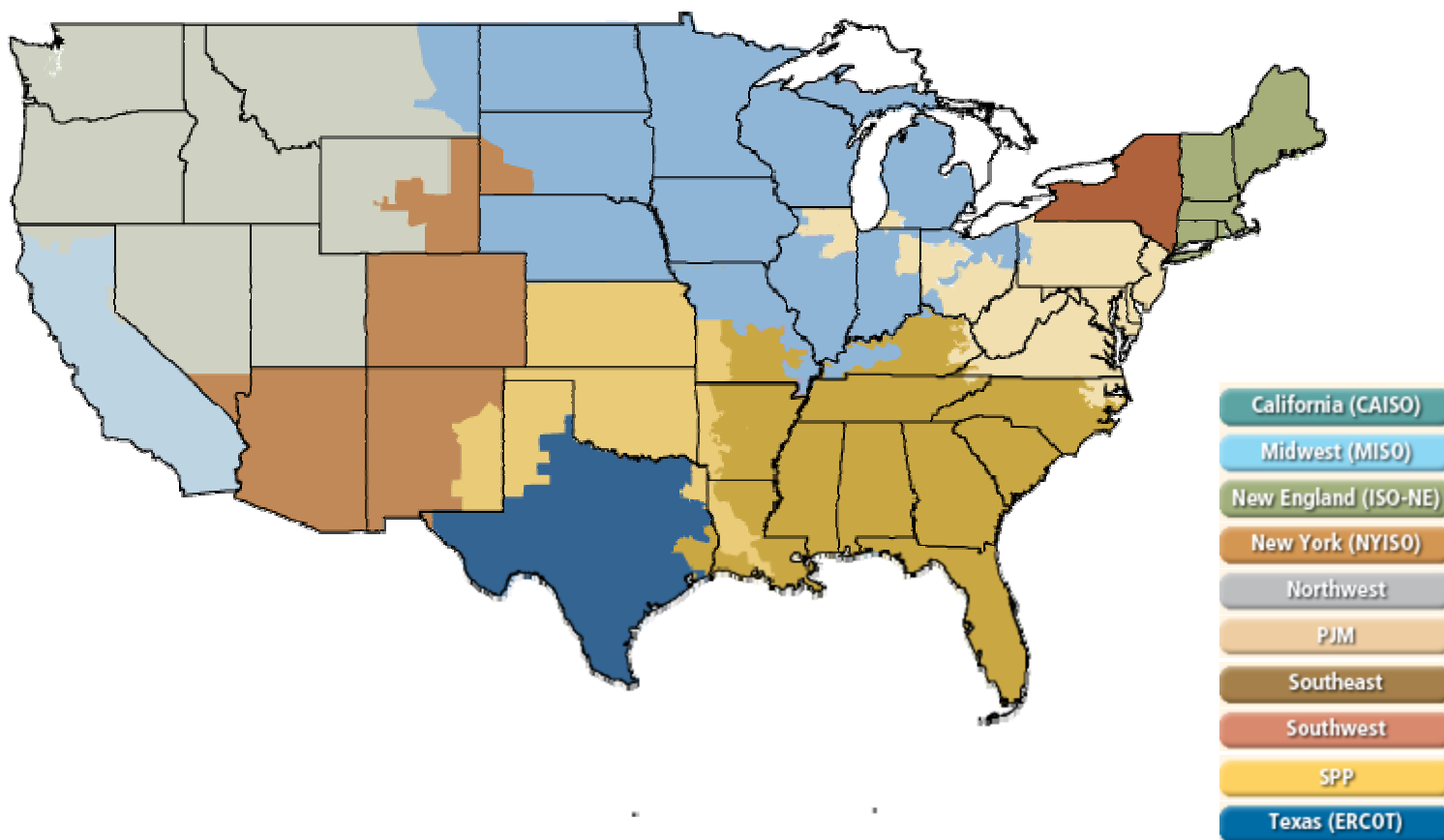
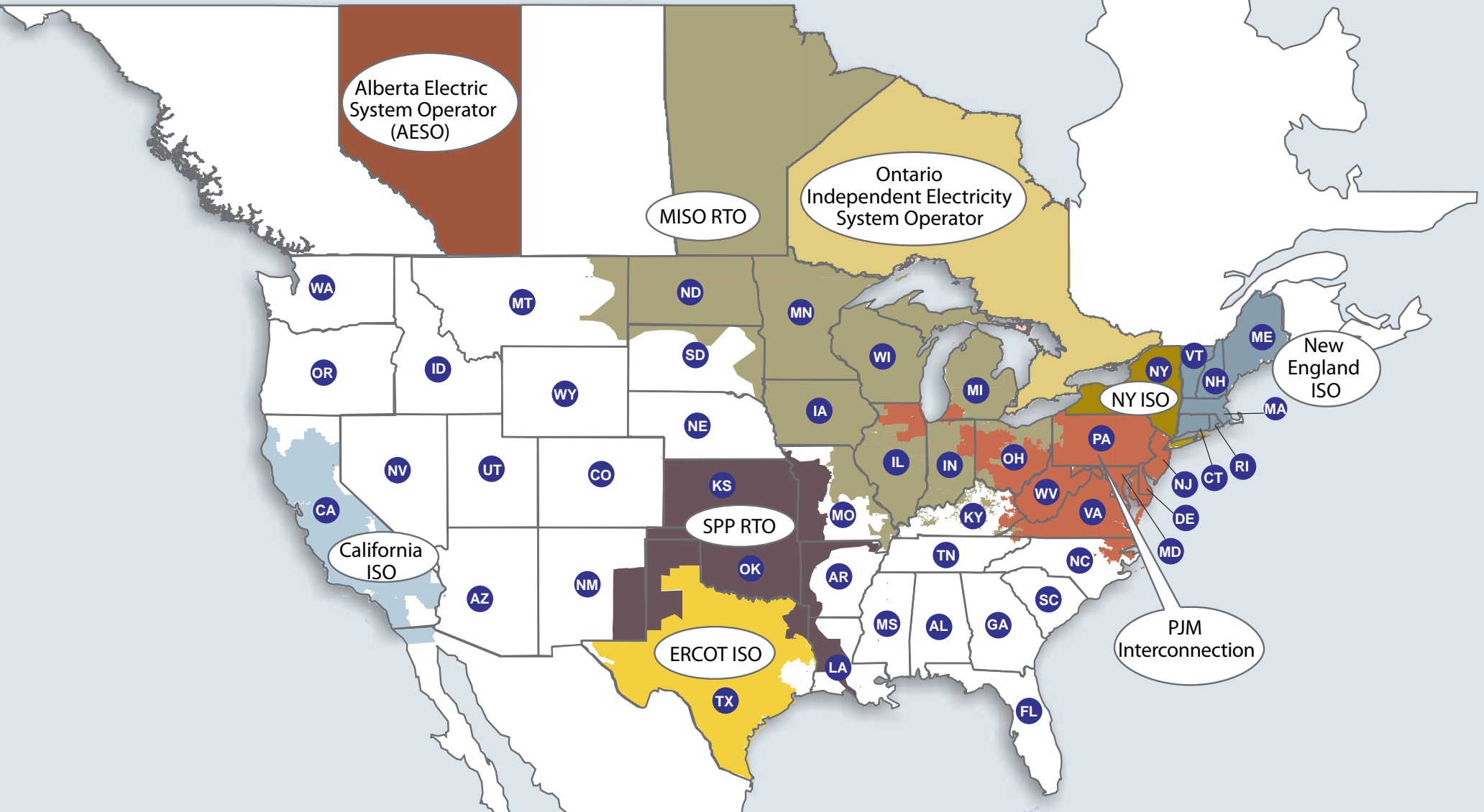


Electric Market National Overview

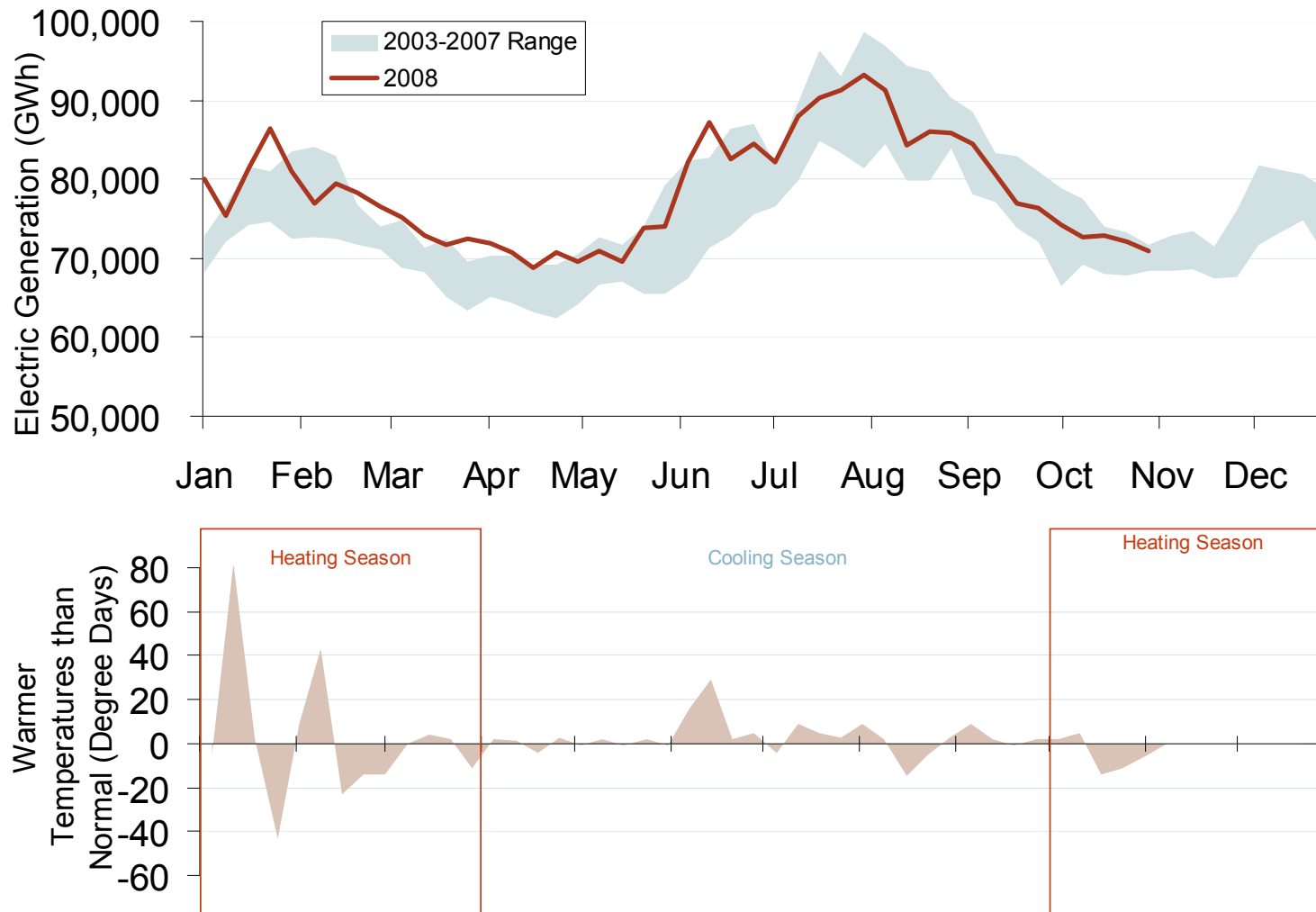




This map was created using
Platts POWERmap, November 2008
November 2008

REGIONAL TRANSMISSION ORGANIZATIONS

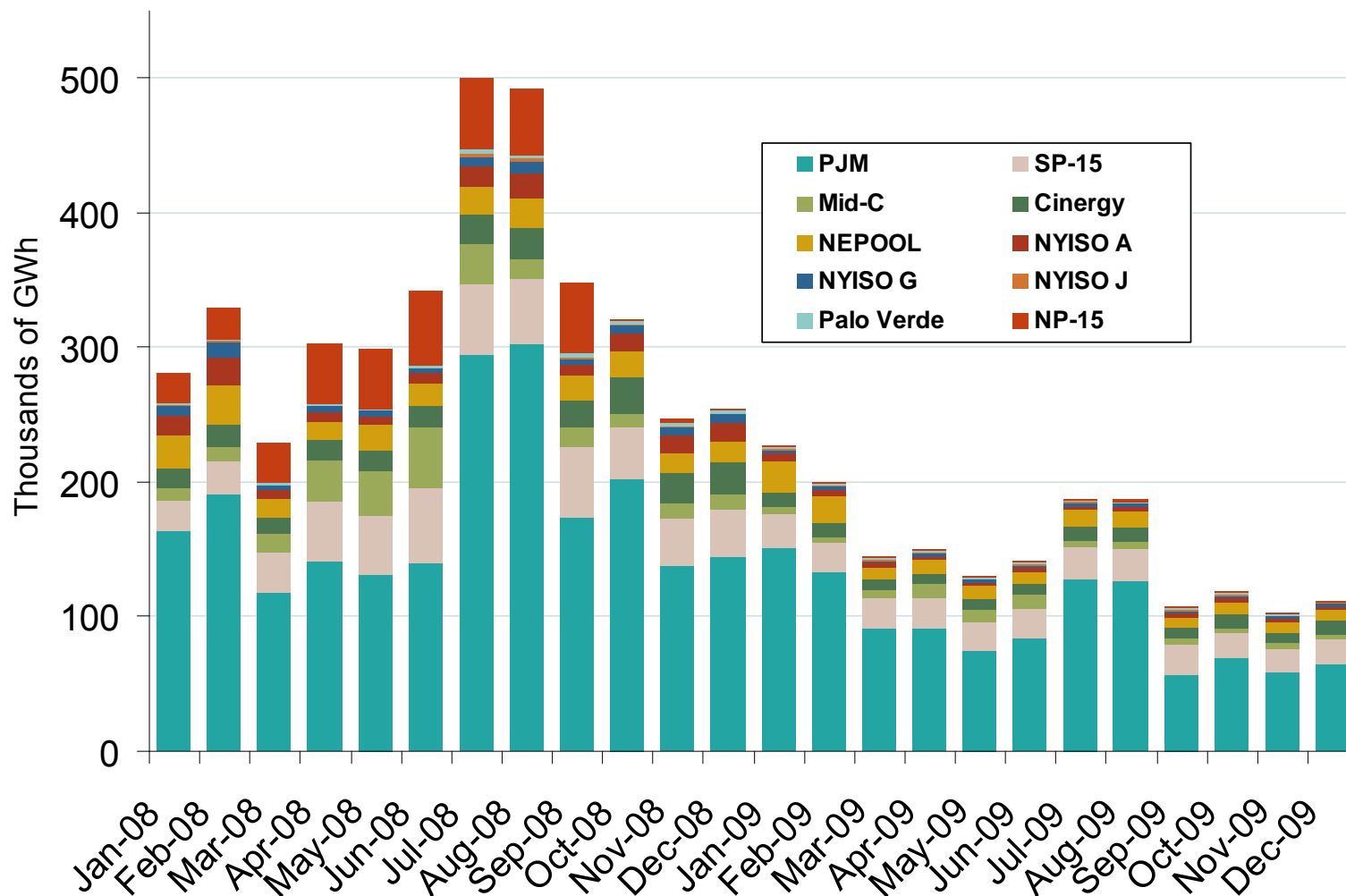
Weekly U.S. Electric Generation Output and Temperatures



Source: Derived from EEI and NOAA data.

Updated November 7, 2008

Financial Trading on ICE by Contract Month

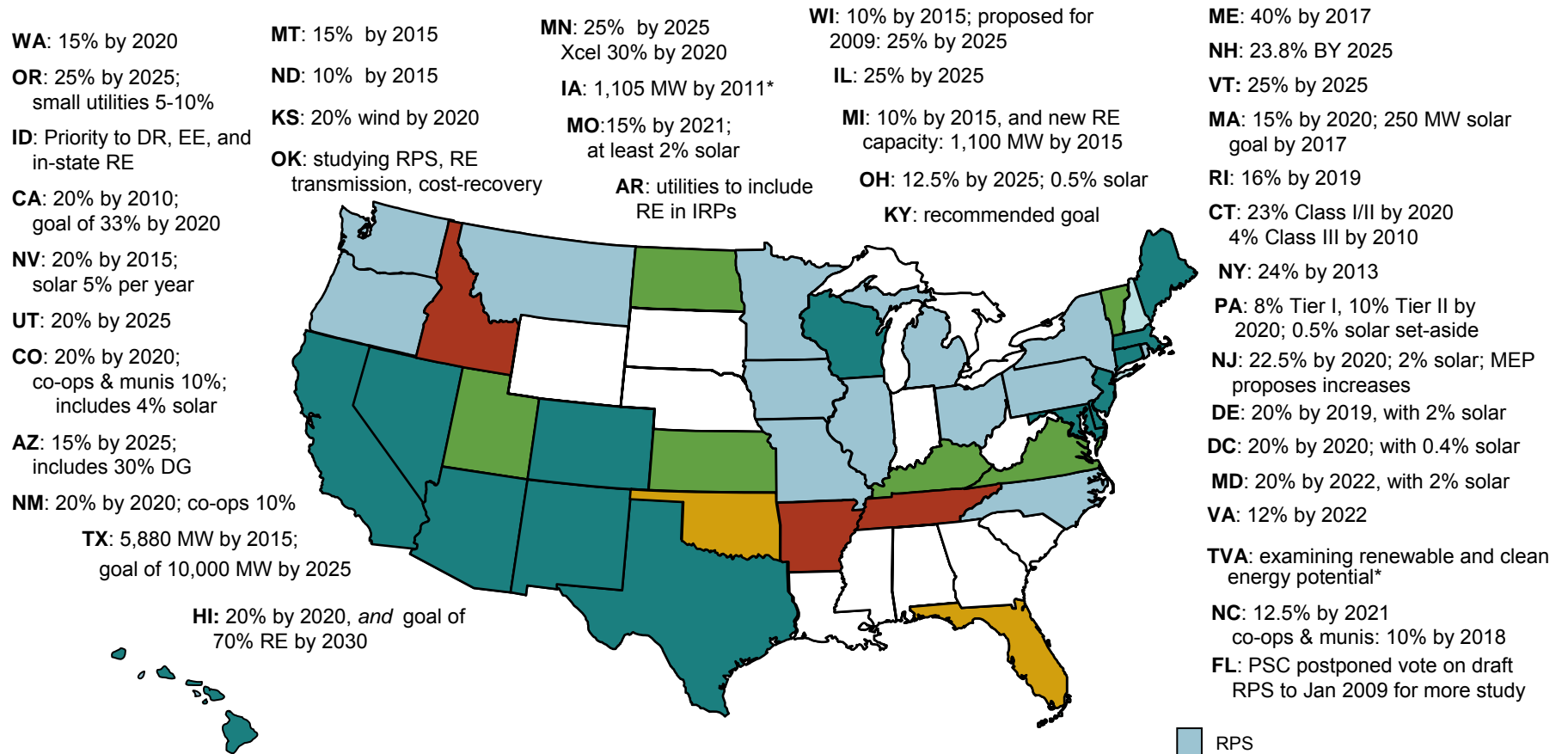


Source: Derived from ICE data. ICE on-peak swaps (financial) volume include monthly, dual monthly, quarterly, and calendar year contracts traded for each month.

Updated November 7, 2008

Renewable Energy Portfolio Standards (RPS)

28 states plus D.C. have an RPS



Updates at: <http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-rps.pdf>

Notes: Alaska has no RPS; * Iowa has a goal of 1,000 MW of wind by 2010; TVA’s “Renewable Energy and Clean Energy Assessment” is from the Public Power Authority; it is not a state policy.

Abbreviations: DG: distributed generation; DR: demand response; EE: energy efficiency; IRP: integrated resource plan.

Sources: Derived from data in: EEI, EIA, LBNL, PUCs, State legislative tracking services, Database of State Incentives for Renewables and Efficiency, and the Union of Concerned Scientists.

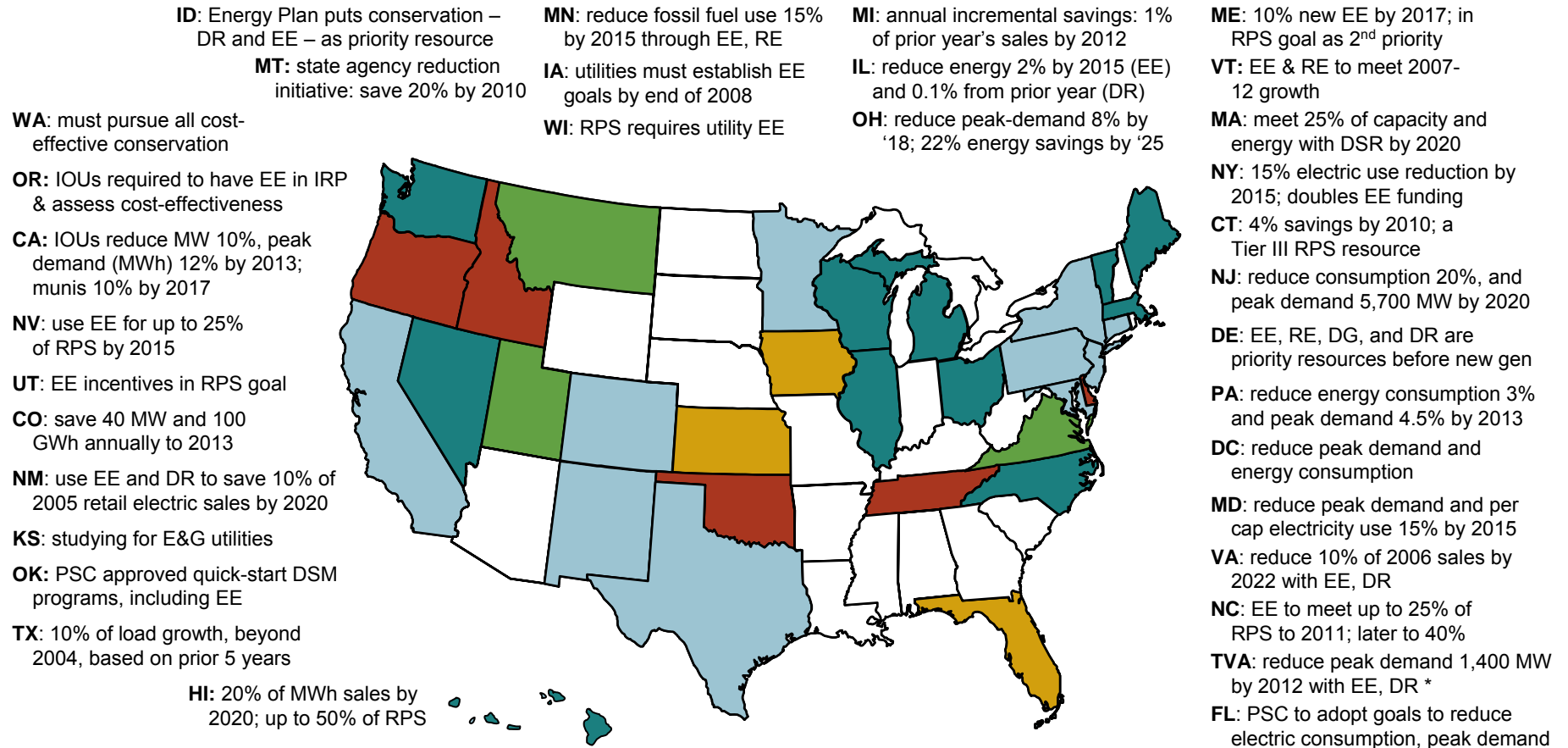
- RPS
- Strengthened/ amended RPS
- Voluntary standards or goals
- Proposed RPS or studying RPS
- Other renewable energy goal

Updated November 7, 2008

Renewable Energy Portfolio Standards

- **A Renewable Portfolio Standard (RPS)** requires a percent of energy sales or installed capacity to come from renewable resources.
- **28** states plus D.C., have renewable energy standards.
- Recent state policy developments include:
 - **New Jersey** released its Master Energy Plan in October. The MEP calls for exceeding NJ's RPS with 30% of state electricity from renewables by 2030 and changing the solar goal from 2% of sales to 2120 GWh by 2020. Proposed renewable resources include 900 MW of biomass; 3,000 MW from offshore- and 200 MW from onshore-wind; and supporting emerging energy technologies.
 - **Florida** presented a draft RPS to PSC Commissioners at their October meeting. A vote on the RPS was deferred to a Jan 9 special PSC agenda to allow time for more study. When the PSC approves it, the RPS must be submitted to the legislature by Feb 2009 for ratification.
 - **Hawaii:** Hawaii Electric (HE) signed an agreement with the Governor and other state agencies setting forth the Hawaii Clean Energy Initiative (HCEI) goals. It agreed to a goal of 70% of HI's electricity and ground transportation energy from RE and EE by 2030. HCEI will try to amend the RPS from 20% to 25% RE by 2020 and add a further goal of 40% by 2030.
- **Six** states have renewable goals without financial penalties: UT, ND, KS, MO, KY, VA, VT.
- **Thirteen** states include energy efficiency in their RPS or renewable goals; more are considering energy efficiency additions or companion bills.
- **Ballot propositions** on renewables were on state and local elections on Nov 4:
 - **Missouri** voters passed Prop C by 66%, repealing the voluntary renewable goal and substituting a RPS. MO utilities must meet a goal of 15% renewables by 2021, including a 2% solar carve-out. They can meet the goal by generating or buying renewable energy or by buying renewable energy credits. In-state resources count 1.25 times more than out-of-state energy or credits.
 - **California** voters turned down two propositions: Prop 7 would have increased the RPS to 50% by 2025. A bond initiative that would have funded alternative-energy vehicles and renewable research also failed.
 - **Boulder, CO** voters passed Issue 1A by 65%, authorizing the county to issue special bonds to offer low-interest financing for residential and commercial energy efficiency improvements or for installing solar PV or other renewable energy systems.

Energy Efficiency Resource Standards (EERS)



Updates at: <http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-eeps.pdf>

* TVA's "EE and DR Plan" is from the Public Power Authority, and is not a state policy.

Abbreviations: CHP – Combined heat & power; DG – distributed generation; DR - demand response; DSM - demand side management; DSR – demand-side resources; EE - energy efficiency; E&G: electric and gas utilities; IRP – integrated resource plan; RPS: Renewable Portfolio Standard

Sources: ACEEE, EPA, Regulatory Assistance Project, Union of Concerned Scientists, State regulatory and legislative sites, trade press

- EERS by regulation or law (stand-alone)
- Energy efficiency part of an RPS law, rule, or goal
- Voluntary standards (in or out of RPS)
- Energy efficiency goal proposed / being studied
- Other energy efficiency or demand-side rule or goal

Updated November 7, 2008

Energy Efficiency Resource Standards (EERS)

- An **EERS** – energy efficiency resource or portfolio standard – aims to reduce or flatten electric load growth through energy efficiency (EE) measures. Goals may specify reductions in energy (MWh), demand (MW), or both. Many specify both overall energy reductions and peak-load reductions.
- **Twenty-three** states have an EERS or goal; at least 15 include EE as part of a renewable standard or goal.
- States that enacted significant energy efficiency legislation in 2008 include: DC, FL, HI, IA, MA, MD, MI, NJ, NM, NY, PA, OH, OK, UT, and VT.
- **Pennsylvania** passed a conservation bill in Oct. It requires utilities to work with consumers to cut overall electric consumption 3%, and peak consumption 4.5% by 2013. To help meet these targets, HB2200 requires utilities to deploy advanced meters and offer customers a choice of time of use rates.
- **Hawaii** issued a Clean Energy Initiative in Oct. To help Hawaii Electric meet advanced energy efficiency goals, it will seek PUC approval for immediate deployment of advanced meters and time of use rates. These EE measures are in addition to a greatly enhanced RE goal.
- States issued plans that look at the interaction of their goals and actions relative to energy efficiency, renewable energy, greenhouse gas (GHG) reduction, including California, New Jersey, and Oregon:
 - Comprehensive state energy plans (continued):
 - **California** adopted a “Long-Term Energy Efficiency Strategic Plan” in September, covering EE goals from 2009 to 2020. It includes multiple-sector energy-saving actions for government, utilities, and the private sector. The plan integrates EE savings with the achievement of CA’s GHG and other resource goals, while keeping EE as CA’s highest priority energy resource.
 - **New Jersey** issued its Master Energy Plan” (MEP) in October. The MEP identified challenges in supply reliability; in rising electric, natural gas, and home heating fuel oil prices; and in the contribution of power generation and fuels to climate change. The MEP incorporates action items to meet these challenges and identifies three encompassing goals:
 - reduce peak power demand
 - reduce overall electricity and fuel consumption
 - increase locally-available clean energy supply
 - **Oregon’s** Governor announced his 2009 legislative package. Its goals are guided by OR’s goal to reduce GHG to 10% less than 1990 levels by 2020. EE and conservation proposals include:
 - create energy performance certificates to guide renters or buyers on a building’s energy performance.
 - increase EE in residential and commercial building codes 30% and 50%, respectively.
 - enhance government financing for EE and increase EE tax incentives
 - provide EE assistance to low income households.

Abbreviations: CHP – Combined heat & power; DR - demand response; DSM - demand side management; DSR – demand-side resources; EE - energy efficiency; GHG – greenhouse gases; RGGI – Regional Greenhouse Gas Initiative; RE – renewable energy; RPS - Renewable Portfolio Standard

Collaborative Greenhouse Gas (GHG) Programs

Collaborative Regional GHG Programs:

- Three North American groups with goals to lower regional GHG emissions were initiated by state Governors.
- 32 U.S. states, D.C., eight Canadian provinces, and six Mexican states are Participants or Observers.
- Observer jurisdictions do not commit to group GHG reduction goals, but participate in proceedings should they opt to join later.

Western Climate Initiative (WCI):

- Created February 2007
- Partners: 7 states, 4 provinces; Observers: 5 states, 1 province*
- WCI announced its design for a market-based, *multi-sector* cap-and-trade program, Sept 2008:
 - 15% CO₂ reduction below 2005 levels by 2020
 - Phase I to take effect Jan 2012

Midwest Greenhouse Gas Reduction Accord:

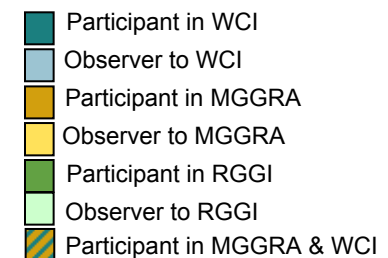
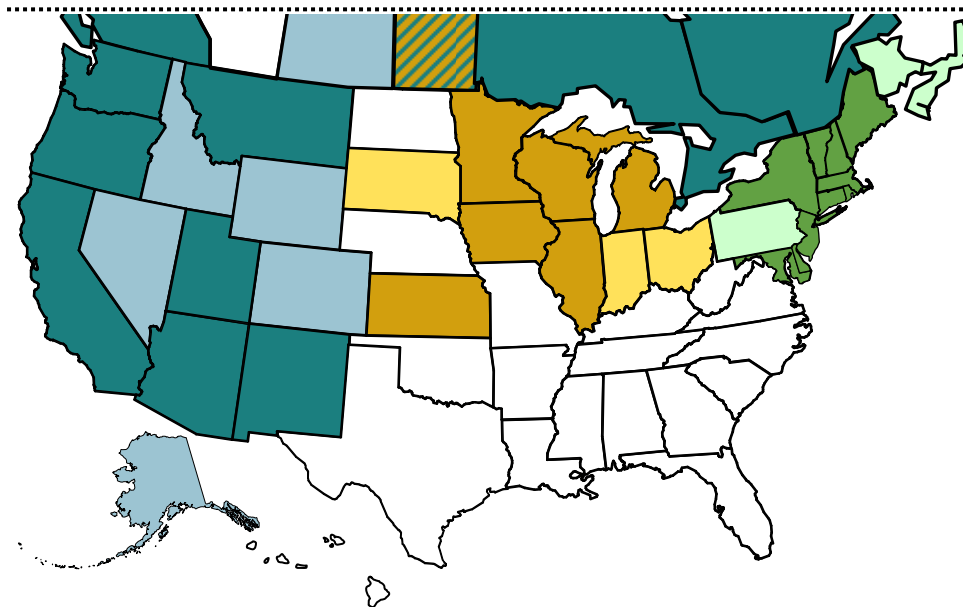
- Established November 2007
- Participants: 6 states, 1 province; 3 Observer states, 1 province
- *Preliminary* GHG policy recommendation: 15 – 25% reductions by 2020, 60 – 80% by 2050

Regional Greenhouse Gas Initiative (RGGI):

- Takes effect Jan 2009
- 10 Participant states; Observers: 1 state, D.C., 3 provinces.
- Market-based cap-and-trade effort to reduce *power-sector* CO₂ emissions.
- 10% CO₂ reduction by 2018 covers over 200 plants
- 188 million allowances to be sold in 6 auctions

Auctions:

- 1. 9/25/08:** 12.5 million allowances cleared at \$3.07/allowance, raising \$38.5 million.
 - 6 states participated: CT, MA, ME, MD, RI, VT; these 6 will offer 1/6 of allowances at next 5 auctions
- 2. 12/17/08:** first 6 states plus NY, NJ, NH, DE to participate
 - 31.5 million allowances
- 3 to 6:** All ten states on same percent basis as prior auctions.
 - 2009 dates: 3/18, 6/17, 9/16, 12/16



Updates at: <http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-ghg.pdf>

Notes: Kansas is a MGGRA participant and WCI observer. Ontario is a Partner to WCI and MGGRA Observer.
Sources: Regional initiatives: www.rggi.org, www.midwesternaccord.org, www.westernclimateinitiative.org, trade press, Pew Center.

Collaborative Greenhouse Gas Programs

Regional Greenhouse Gas Initiative (RGGI):

- First U.S. mandatory cap-and-trade program for CO₂ emissions and targets only *power plants*
- Established Dec 2005. Takes effect January 1, 2009
- Cooperative effort by northeastern states to reduce CO₂ emissions:
 - Participants: CT, DE, ME, MD, MA, NH, NJ, NY, RI, VT
 - Observers: PA, D.C., and 4 Canadian provinces.
- Allowances will be auctioned, not allocated, although sources may trade allowances. One allowance is the right to emit 1 ton of CO₂.
- States' allowance shares apportioned from overall cap.
- By law, at least 25% of auction proceeds must support consumer benefit programs such as renewable energy, energy efficiency, or low-income energy assistance. In fact, 4 states will so allocate 100%; the rest at least 75%.
- Auction timing: two pre-compliance auctions in 2008, four quarterly auctions in 2009. There will be quarterly auctions in subsequent years.

Second RGGI auction, December 17, 2008:

- Six participating states from 1st auction will auctioned 1/6 of allowances: CT, MA, ME, MD, RI, VT.
- DE, NH, NJ, and NY will also participate in Auction 2, having passed necessary legislation or regulations.
- Four new states will auction 20% of allowances in 5 auctions
- 31.5 million allowances in auction
- Base price of \$1.86/allowance, same as 1st auction.

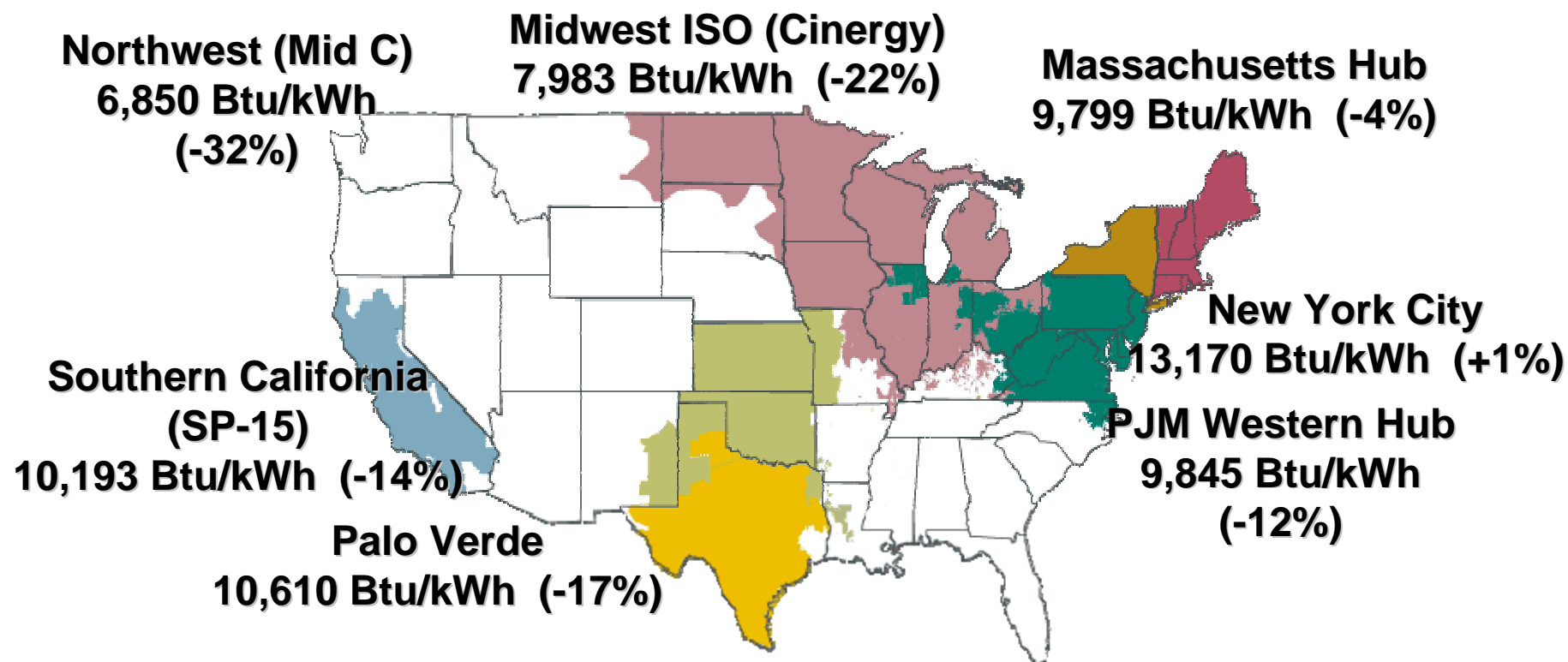
Midwest Greenhouse Gas Regional Accord:

- Signed Nov 2007 at Midwestern Governors Association Energy Summit to establish emission reduction targets consistent with members' policies.
 - Participants: IA, IL, KS, Manitoba, MI, MN, WI
 - Observers: IN, OH, Ontario, SD
- Expects to release draft design in Dec. To be decided:
 - Which sectors should cap-and-trade cover?
 - electric power and large industrials (nearly ½ of regional emissions)
 - or include transportation, too (1/4)
 - Target reductions from 2005 levels:
 - 15% - 20% - 25% reductions by 2020
 - 60% - 80% reductions by 2050
 - recommendations subject to modeling outcomes conducted by ICF on costs and other impacts of cap-and-trade under different scenarios, including complementary policies in sectors outside the cap.

Western Climate Initiative (WCI):

- Launched by Western Governors Association Feb 2007 to reduce regional GHG collectively and cooperatively.
- Partners: seven U.S. states and four Canadian provinces: AZ, British Columbia, CA, Manitoba, MT, NM, Ontario, OR, Quebec, UT, WA
- Observers: AK, CO, ID, NV, Sask., WY
- WCI announced design for a market-based, *multi-sector* cap-and-trade program (Sept 2008):
 - 15% CO₂ reduction below 2005 levels by 2020
 - Covers 90% of regional emissions
 - Phase I to take effect Jan 2012
 - Phase II will begin 2015

June-August Implied Heat Rates, 2008 vs. 2007

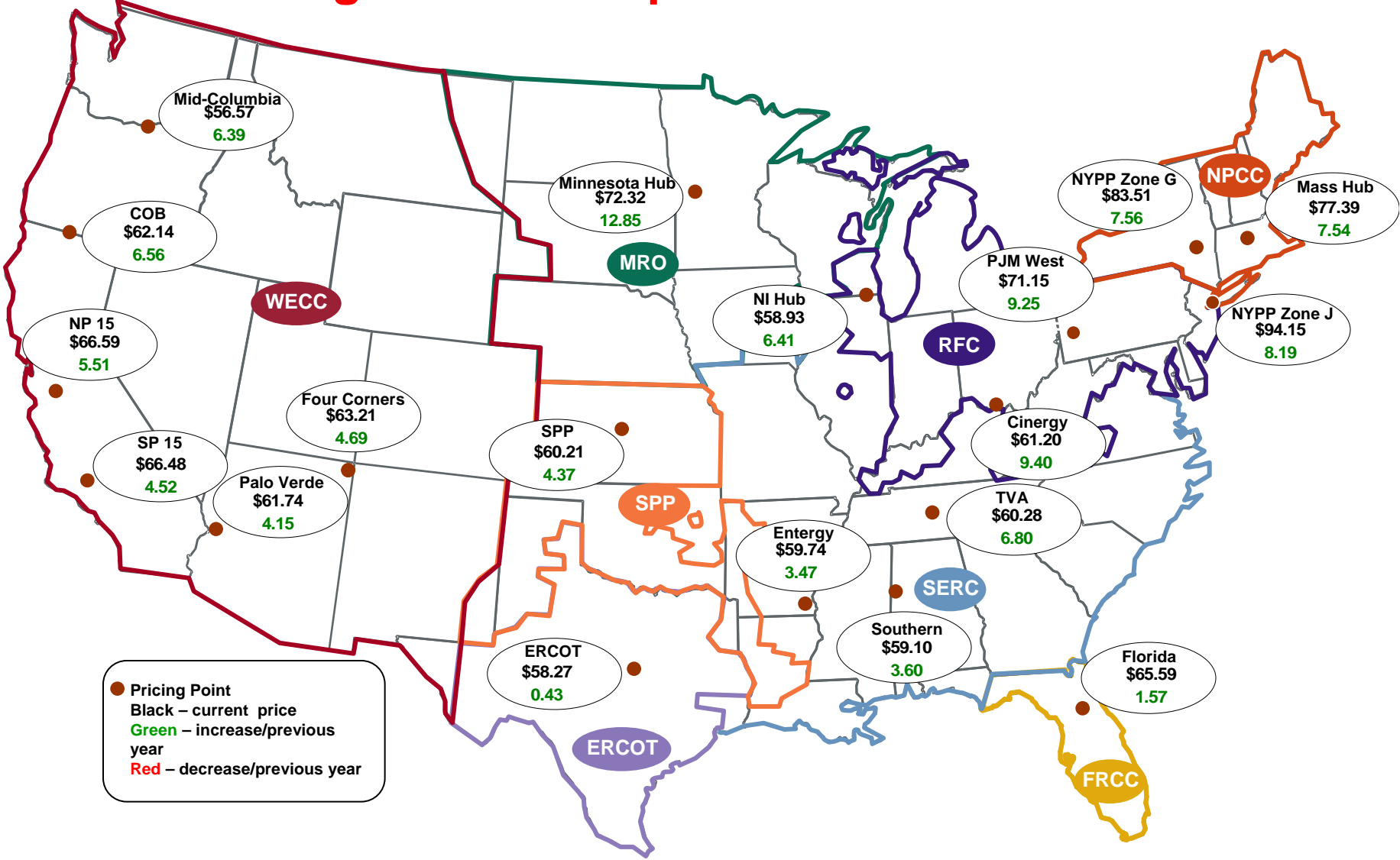


Source: Implied heat rates derived from Platts *Megawatt Daily* data.

Updated September 9, 2008

1206

Average On-Peak Spot Electric Prices 2007



Source: Derived from Platts data.

Updated March 20, 2008

Electric Market Overview: Regional Spot Prices

Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

Regional Spot Prices: 2005-2007

	On-Peak Spot Prices					Off-Peak Spot Prices				
	2005	2006	2007	% Change 05-06	% Change 06-07	2005	2006	2007	% Change 05-06	% Change 06-07
Northeast										
Mass Hub	89.87	69.85	77.39	-22.3%	10.8%	63.75	48.35	55.17	-24.2%	14.1%
Ny Zone G**	92.46	75.95	83.51	-17.9%	10.0%			48.86		
NY Zone J**	110.03	85.96	94.15	-21.9%	9.5%			53.66		
NY Zone A**	76.04	58.70	64.02	-22.8%	9.1%			41.26		
PJM West	76.64	61.90	71.15	-19.2%	14.9%	42.94	37.90	42.80	-11.7%	12.9%
Southeast										
VACAR	71.88	56.34	60.52	-21.6%	7.4%	39.48	35.21	33.99	-10.8%	-3.5%
Southern	70.84	55.50	59.10	-21.7%	6.5%	38.96	34.29	33.30	-12.0%	-2.9%
TVA	67.39	53.48	60.28	-20.6%	12.7%	35.71	33.34	33.86	-6.6%	1.6%
Florida	85.03	64.02	65.59	-24.7%	2.5%	44.23	40.08	36.09	-9.4%	-10.0%
Entergy	69.96	56.28	59.74	-19.6%	6.2%	39.55	34.47	32.18	-12.9%	-6.6%
Midwest										
Cinergy	63.76	51.81	61.20	-18.7%	18.1%	30.90	27.98	29.30	-9.5%	4.7%
Michigan Hub*	72.79	55.29	64.43	-24.0%	16.5%	32.43	30.53	31.40	-5.8%	2.8%
Minnesota Hub*	69.25	59.47	72.32	-14.1%	21.6%	30.30	28.06	29.86	-7.4%	6.4%
NI Hub	61.76	52.52	58.93	-15.0%	12.2%	30.53	29.47	29.64	-3.5%	0.5%
Illinois Hub*	67.92	51.32	59.88	-24.4%	16.7%	30.34	26.77	27.81	-11.8%	3.9%
MAPP South	65.48	55.11	61.18	-15.8%	11.0%	29.77	32.98	31.08	10.8%	-5.8%
South Central										
SPP North	67.44	55.84	60.21	-17.2%	7.8%	36.02	34.20	31.54	-5.1%	-7.8%
ERCOT	70.96	57.83	58.27	-18.5%	0.8%	48.91	39.29	39.04	-19.7%	-0.6%
Southwest										
Four Corners	69.39	58.52	63.21	-15.7%	8.0%	48.75	38.39	40.57	-21.2%	5.7%
Palo Verde	67.39	57.59	61.74	-14.5%	7.2%	49.17	38.63	42.33	-21.4%	9.6%
Mead	70.17	59.93	64.49	-14.6%	7.6%	51.11	40.36	44.54	-21.0%	10.4%
Northwest										
Mid-C	62.95	50.18	56.57	-20.3%	12.7%	52.48	39.08	44.41	-25.5%	13.6%
COB	66.95	55.58	62.14	-17.0%	11.8%	54.07	41.13	46.74	-23.9%	13.6%
California										
NP15	72.49	61.08	66.59	-15.7%	9.0%	53.71	41.20	47.46	-23.3%	15.2%
SP15	73.04	61.95	66.48	-15.2%	7.3%	53.55	42.06	47.13	-21.5%	12.0%

Notes: * As of April 1, 2005. ** Off Peak as of April 2, 2007.

Regional Electric and Input Prices: 2005-2007

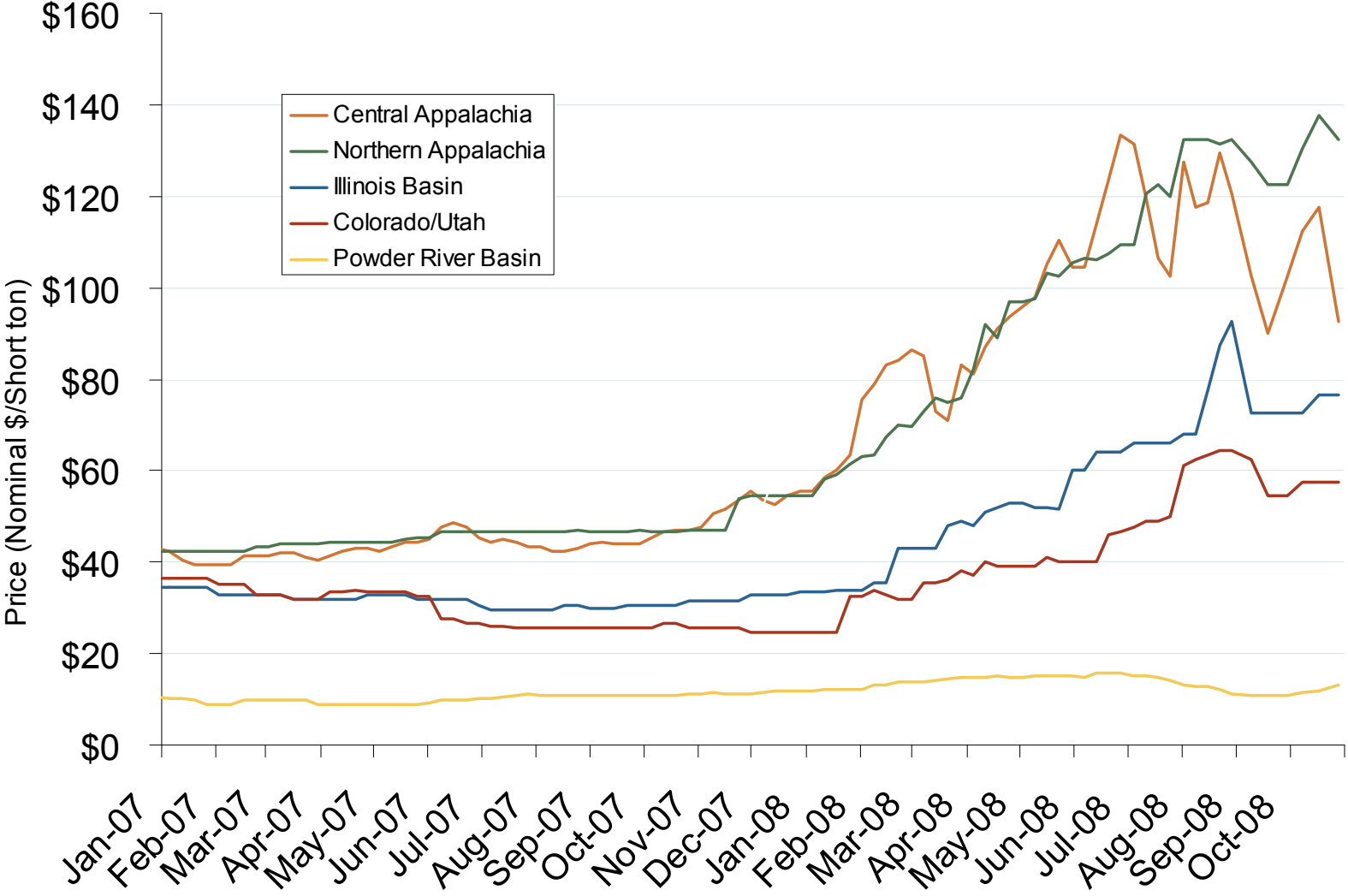
Table 2: Electricity Prices and Input Prices, 2005-07			
	2005	2006	2007
Electric Spot Prices (On-Peak \$ per MWh)			
Mass Hub	\$89.87	\$69.85	\$77.39
Cinergy	\$63.76	\$51.81	\$61.20
SP-15	\$73.04	\$61.95	\$66.48
Input Prices			
Natural Gas (\$ per MMBtu)			
Henry Hub	\$8.69	\$6.74	\$6.94
New York	\$10.03	\$7.37	\$8.46
Southern California	\$7.56	\$6.10	\$6.41
Coal (\$ per ton)			
Central Appalachian (Eastern)	\$60.06	\$51.82	\$44.89
Powder River Basin (Western)	\$9.62	\$13.35	\$10.23
Emissions (\$ per ton)			
SO ₂ Allowances	\$901.21	\$738.12	\$527.58
NO _x allowances	\$2,770.87	\$1,862.03	\$815.87
Oil			
WTI (Crude - \$ per barrel)	\$56.49	\$66.12	\$72.45
Residual Fuel, New York (\$ per barrel)	\$50.43	\$55.07	\$64.35
Distillate Fuel, New York (\$ per gallon)	\$1.86	\$2.04	\$2.22

Source: Derived from Platts & Bloomberg data.

Updated March 20, 2008

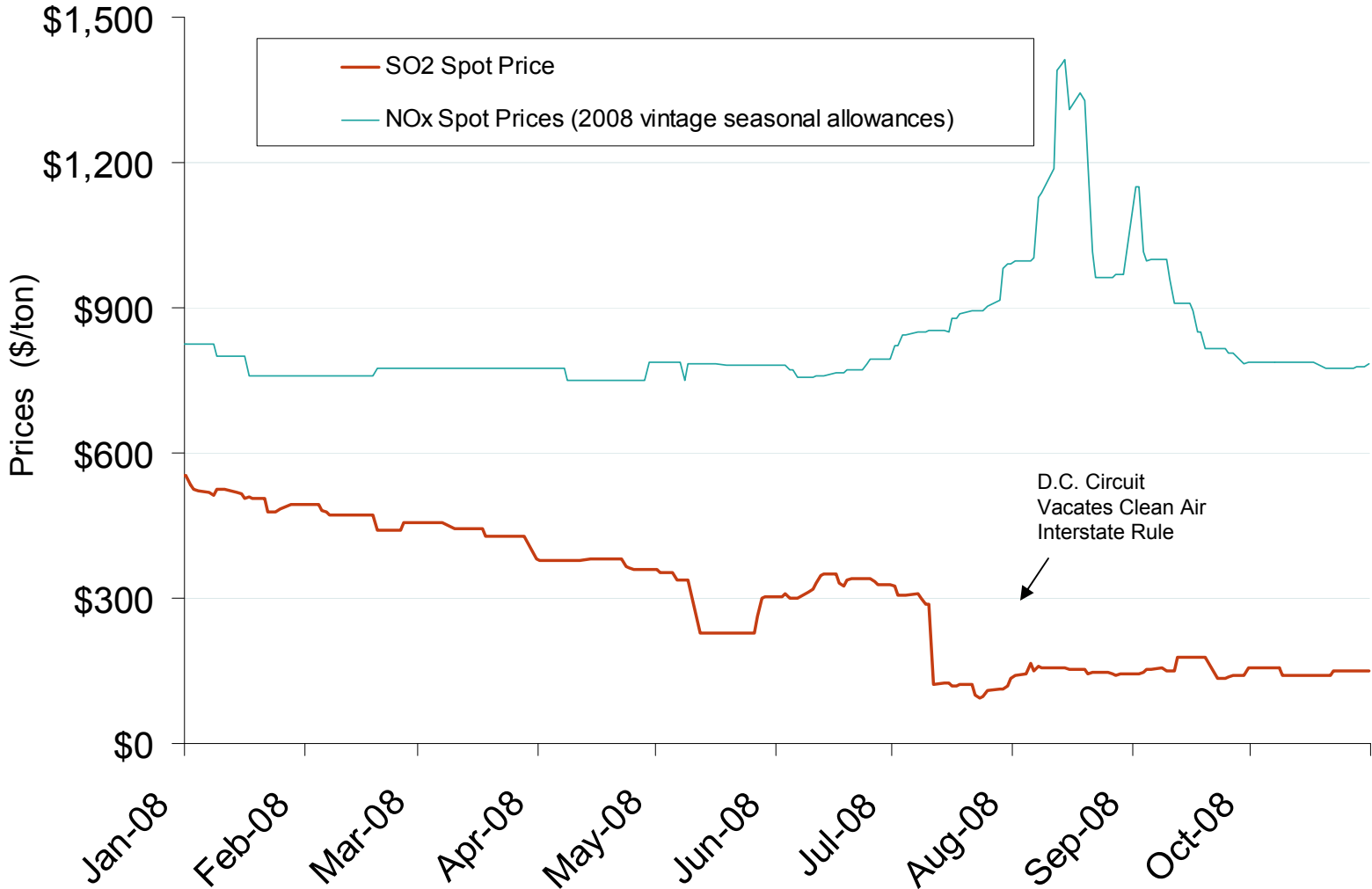
1209

Central Appalachian and Powder River Basin Coal Prices



Source: Derived from Bloomberg data.

SO₂ and NO_x Allowance Spot Prices



Source: Derived from Cantor Fitzgerald data.

Updated November 7, 2008

Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

Brief Overview of the SO₂ and NO_x Emissions Markets

The electric power industry is a major source of sulfur dioxide emissions (SO₂) and nitrogen dioxide emissions (NO_x) emissions – both precursors of acid rain and smog. According to the Environmental Protection Agency's (EPA) 2006 Acid Rain Progress Report, the power sector is responsible for 70% of SO₂ emissions and 20% of NO_x emissions.

Reduction in SO₂ and NO_x emissions can be obtained through a cap-and-trade program, which is a market-based compliance option that also provides an emitting source with relative flexibility in compliance options. These options include pollution control technology such as flue gas desulfurization (FGD) for SO₂ and selective catalytic reduction (SCR) for NO_x (i.e., scrubbers), fuel switching, and/or participating in their respective cap-and-trade markets. Compliance measures can be capital-intensive and the decision to use pollution controls and/or emission allowances is primarily driven by the regulatory environment, fuel input type and the level of emission output by emitting sources. The associated costs with this decision contribute to the price of wholesale power and ultimately, the retail price.

The Acid Rain Program

<http://www.epa.gov/airmarkets/progsregs/arp/index.html>

EPA's Acid Rain Program (ARP), established under the 1990 Clean Air Act Amendments, required reductions of SO₂ and NO_x emissions from the electric power industry. The Acid Rain Program was the first cap and trade program implemented nationwide to reduce SO₂ emissions. The SO₂ program set a permanent cap on the total amount of SO₂ that can be emitted by fossil fuel-fired generating units and allows allowance trading so affected sources have some flexibility in their compliance method. Currently, SO₂ sources must surrender one allowance to emit one ton of SO₂. If a source falls short on the number of allowances it needs to comply with its individual cap, it can purchase allowances from another source that has a surplus of allowances. An emitting source may have a surplus of allowances for several reasons. For example, if it chose to install and/or run scrubbers then it can "bank" those unused allowances for future use or sell the leftover allowances to other emitting sources.

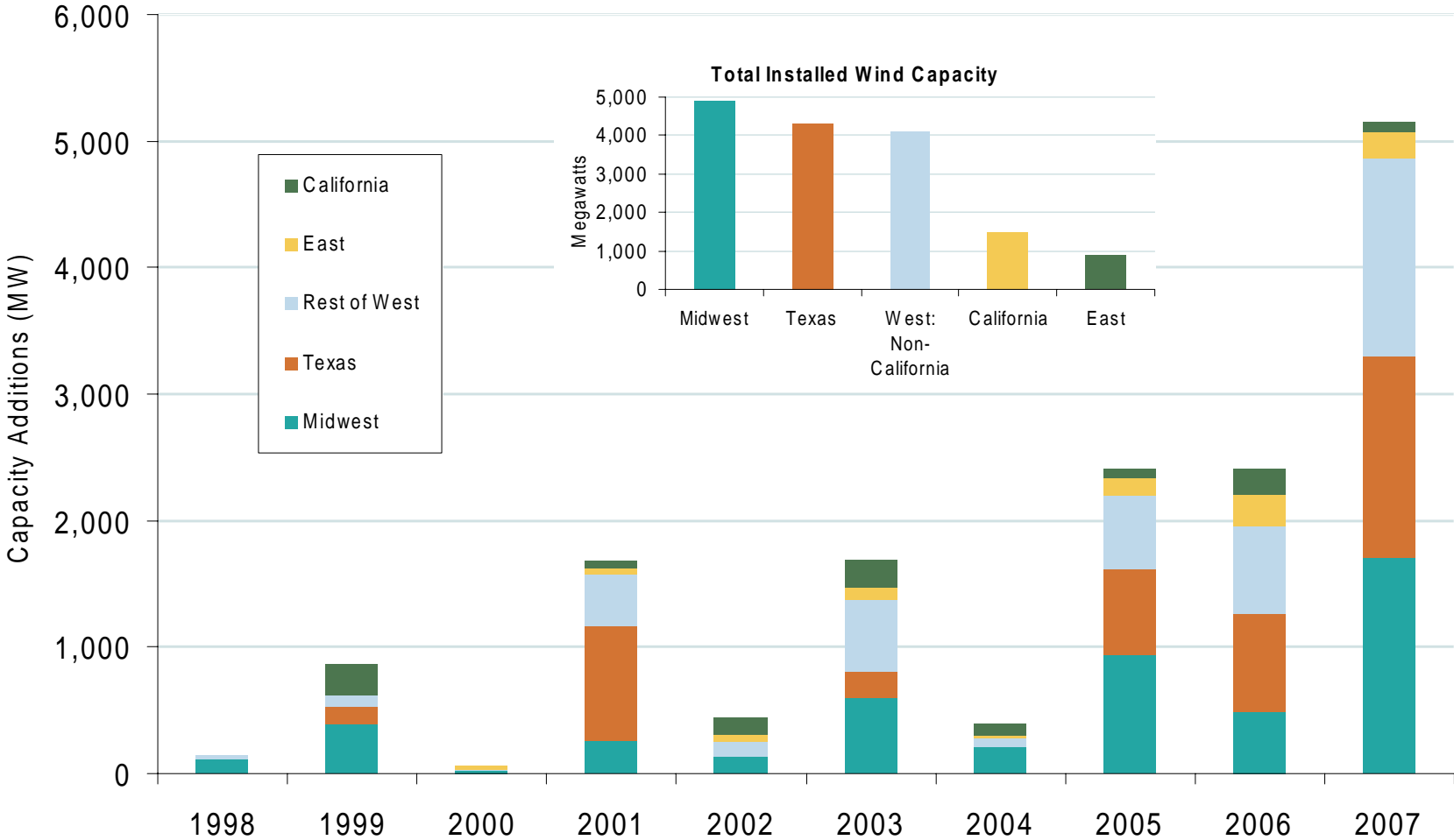
The NO_x Budget Trading Program

<http://www.epa.gov/airmarkets/cap-trade/docs/nox.pdf>

In 2003, the cap-and-trade method was also implemented to reduce seasonal (primarily summer) NO_x emissions from fossil fuel-fired plants. While the EPA administers the program, states are required to share the responsibility for allowance allocation and enforcement. Currently, NO_x sources must surrender one allowance to emit one ton of NO_x.

[1] The Acid Rain Program also required NO_x emission reductions by select coal units but under a rate-based regulatory program [\[http://www.epa.gov/airmarkets/progsregs/arp/nox.html\]](http://www.epa.gov/airmarkets/progsregs/arp/nox.html).

Growth of U.S. Installed Wind Capacity (MW)



Midwest includes: IL, IA, KS, MI, MN, MS, NE, ND, OH, OK, SD, WI
East includes: ME, MA, NH, NJ, NY, PA, RI, TN, VT, WV

Source: American Wind Energy Association (AWEA)

Updated March 7, 2008

2007 Review of Wind Generation

- Installed wind capacity grew 5,244 MW from 11,603 MW in 2006 to 16,818 MW in 2007, a 45% increase.
- More new wind capacity was added in 2007 than any prior year.
- Just over half of new capacity – 2,704 MW – was installed in states with the highest wind potential. 59 percent of that – 1,588 MW – was in Texas.
- Installed capacity grew 150% from 2004 to 2007, while:
 - the number of states (including D.C.) with a renewable portfolio standard grew from 21 to 27, and
 - the wind production tax credit did not lapse.
- The top five states by capacity added in 2007 were: Texas (1,618 MW), Colorado (776), Illinois (592), Oregon (447), and Minnesota (405). Texas moved into 1st place in installed wind capacity in 2006, passing long-time leader California.
- The top 10 states by cumulative installed capacity have 14,366 MW of wind, or 85% of U.S. capacity. Nine of them had a Renewable Portfolio Standard (RPS) in 2007.
- The rapid growth of wind generating capacity has led to a backlog in many interconnection queues. The Commission held a Technical Conference on December 11, 2007 (AD08-2-000) to re-examine the Large Generator Interconnection Rule. Many ISO/RTOs reported that the queuing procedures specified by Order 2003 impede the timely interconnection of wind resources.