



Summer Energy Market Assessment 2006

Item No.: A-3
May 18, 2006

Mr. Chairman and Commissioners: today I'm pleased to present the Office of Enforcement's summer energy market assessment for 2006. With me are Dean Wight who runs the Electric Group in our Market Analysis branch, Keith Collins who works for Dean and Chris Peterson who works in the Gas Group. Much of what I will present today comes out of observations developed in our daily Energy Oversight Meetings. Keith and Chris currently have the responsibility of running those meetings, and as a result probably know more than any of us about the current day-to-day workings of electric and gas markets in the United States. At the end, if you have any questions, you'll understand why I will probably defer those questions to them.

The Summer Assessment is designed to share our opinions about those markets that the staff of the Division of Energy Market Oversight will be watching most carefully for indications of market problems throughout the summer. Having said that, the issues I present today are by no means the only areas we are watching. Also, nothing I say should be confused as a prediction. We don't make predictions. Still, the Assessment can help identify those markets where signals may be of most interest.

Summer 2006 Price Issues in Power Markets

- Possible Scarcity in Load Pockets
- RTO/ISO Rule and Operations Changes
- Underlying Fuel & Supply Conditions

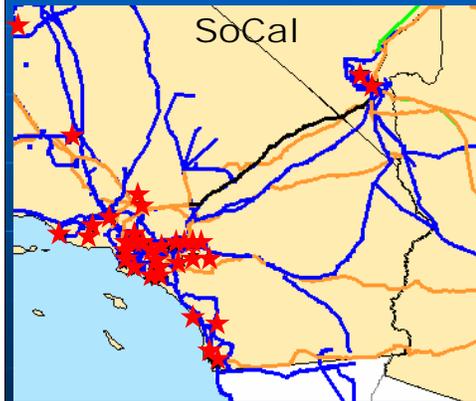
This year's summer assessment will focus on three general areas that we think will be the most significant drivers of electricity markets as we enter the summer cooling season. Those areas include a review of the four load pockets most likely to face issues of scarcity, including high prices, a few RTOs where rule and operational changes may have notable price effects and a quick review of some of the underlying fuel and supply conditions that are likely to drive electric prices broadly.

Possible Scarcity in Load Pockets

- Southern California
- Southwest Connecticut
- Ontario
- Long Island

The four major areas with likely scarcity issues we've chosen to focus on include Southern California, Southwest Connecticut, Ontario and Long Island. While Ontario is, of course, in Canada, the issues raised by the Ontario market could have repercussions in adjacent U.S. markets.

Southern California: Conditions



- Tight supply/
demand balance
- Heavy dependence
on imports
- Little
improvement since
summer 2005

Southern California faces another summer of a tight supply in an area of fast growing demand. The particulars are viewed slightly differently in assessments by the California Energy Commission, the California ISO and NERC. The region remains heavily dependent on imports from northern California, the Pacific Northwest and the Southwest, particularly to meet peak demand. We expect net generation added in Southern California since last year will barely cover load growth, though transmission upgrades may have marginally improved import capabilities.

Southern California: Summer 2006 Threats



- Extended heat
- Unplanned generation or transmission outages

Overall, with tight reserve margins, the area is vulnerable both to high peak demand from periods of heat, and to unplanned outages of generation or transmission capacity needed to maintain imports. Instances of short duration are, obviously, of less concern than more extended tightness. The California ISO expects typical peak demand in Southern California during the summer to be about 27,300 MW with peaks under high load scenarios of more than 29,500 MW. Local generation, adjusting for likely outages, totals a little less than 20,000 MW, and at the peak, the ISO expects 10,100 MW to be imported – or fully one third of Southern California's supply.

Our assessment, consistent with the ISO and NERC, is that if loads or unexpected outages are high, the ISO will call on interruptible demand and demand response to maintain adequate operating reserve margins. In the high load scenario – due, for example, to sustained heat – and with the sudden loss of local generation or transmission, the ISO might need to shed load through rolling blackouts in Southern California this summer. This extreme scenario is fairly unlikely; despite similar conditions last summer, relatively mild temperatures made sure there were no real wholesale electric problems in Southern California. Nevertheless, such a scenario is possible; electric systems experienced combined heat and equipment failure in the past, and the likelihood of such a combination this summer is as great in Southern California as anywhere.

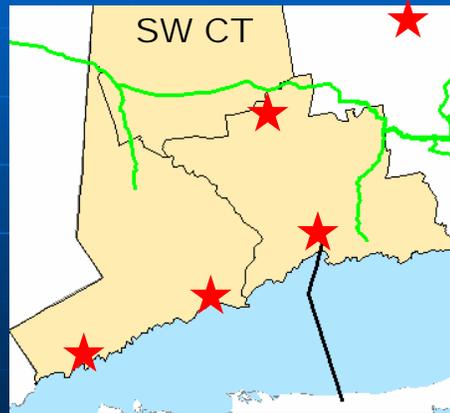
Southern California: Possible Market Effects



- Extensive forward contracting reduces spot price effects on customers
- High levels of volatility in ISO balancing market

The price effects of this tightness on customers are not likely to be as pronounced as one might expect. The ISO's balancing market will probably be quite volatile as it attempts to balance marginal supply with overall demand. However, last fall, as one of the efforts to manage through these conditions, the California Public Utilities Commission (CPUC) established resource adequacy requirements for all Load Serving Entities within the CPUC's jurisdiction. These Load Serving Entities were required to procure resources adequate to meet their peak demands and planning reserves, identifying resources one year in advance to meet 90 percent of summer peak demand, and demonstrating for June 2006 and every month thereafter the procurement of resources equal to at least 115 percent of forecasted monthly peak load. This level of contracting for resource adequacy purposes may reduce Southern California imbalance market price volatility.

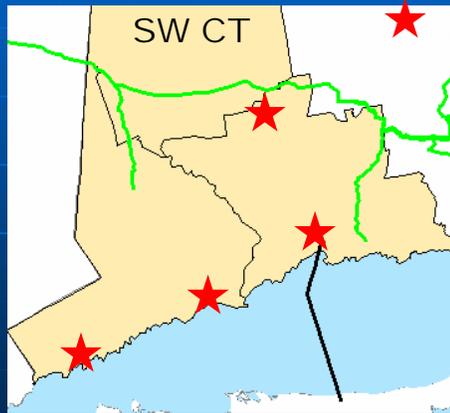
Southwest Connecticut: Conditions



- Capacity is not adequate for reliability
- Transmission now operates at limit
- No significant additional capacity since 2004

Another region that has concerned us for several years now is Southwest Connecticut which, once again, faces extreme tightness in its supply-demand balance. In southwest Connecticut, combined local generation and import transmission capacity are not sufficient to meet both expected demand and reliability requirements. In effect, transmission capacity for imports now operates at its limit. In addition, transmission capacity within southwest Connecticut is inadequate to support local generation. No significant generation or transmission capacity has been added since 2004, and current plans indicate that transmission improvements that would allow additional imports will not be completed until late 2009, though improvements to transmission capacity within the region should be completed by the end of the year.

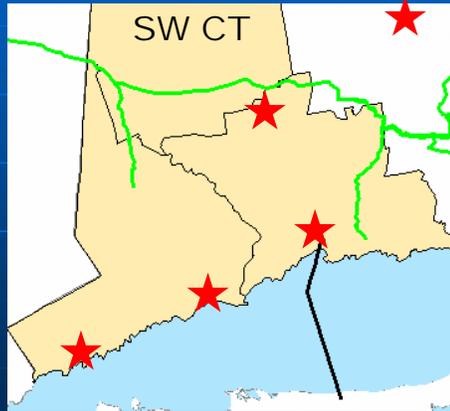
Southwest Connecticut: Summer 2006 Threats



- Extended heat
- Unplanned transmission or generation outages
- High loads that could limit imports

As in the case of southern California, the most important threats to electricity markets in Southwest Connecticut come from extended periods of summer heat and from unplanned outages of local generation or of import-related transmission. In addition, widespread periods of heat in the northeastern United States could result in limited supplies available for import into Southwest Connecticut. Overall, the fragility of the infrastructure into and within the region makes high prices and problems possible and maybe even likely.

Southwest Connecticut: Possible Market Effects

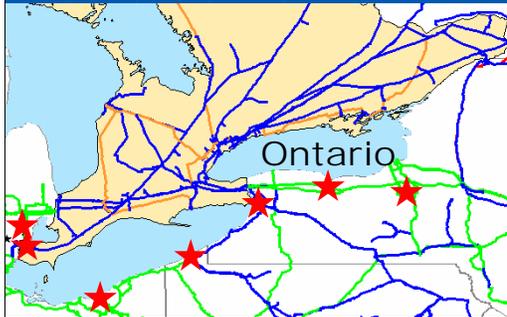


- High zonal prices due to congestion and expensive generation
- Demand unaffected due to fixed retail rates
- ISO emergency procedures likely under stress

Resulting price effects in Southwest Connecticut are difficult to assess. Continued high zonal prices due to congestion are likely as relatively expensive generation alternatives will have to be called on to meet load and reliability requirements. In addition, the scarcity pricing approach adopted by ISO New England in 2003 could increase prices if used although the ISO has implemented it only once before, in October 2005.

At the same time, demand is unlikely to be much affected by wholesale price signals because the current retail standard offer rate – used by 97 percent of retail customers in Connecticut – will not change until the end of the year. More likely, in cases of supply-demand imbalances is the ISO's non-market set of emergency procedures to manage load, such as dispatching and paying generators on a outside-the-market basis. In addition, Southwest Connecticut has about 300 MW of demand response resources available.

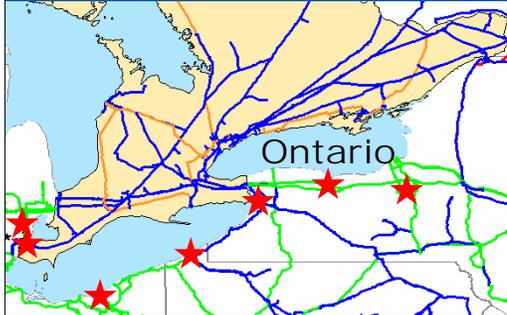
Ontario: Conditions



- Tight supply/
demand balance
- Less capacity
margin than
summer 2005
- Dependent on
imports

The Canadian Province of Ontario has a load pocket that relies on adjacent U.S. electric markets in New York and Michigan, as well as the Province of Quebec, to meet its demand. Although Ontario has seen modest improvements in generation and transmission, but our view, based on NERC's recent assessment, is that Ontario has lost some of its already-tight capacity margin since last summer when it had to use emergency control actions aggressively to balance its peak demands.

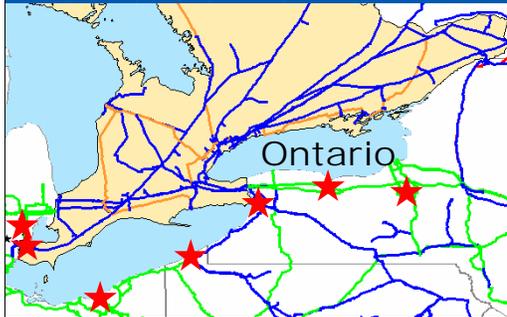
Ontario: Summer 2006 Threats



- Severe weather
- Regional heat limiting imports
- Transmission failures

As a load pocket, Ontario remains vulnerable to extended periods of heat as well as to unexpected outages. Given its dependence on imports, it is also vulnerable to import restrictions if there is heat across the northeastern United States.

Ontario: Possible Market Effects



- Emergency energy could affect supplying markets
- Imports disrupted last summer – scheduling changes should improve

One of our concerns with supply-demand balance problems in Ontario is the effects they may have on U.S. markets. Demands for emergency energy could make balancing supply and demand in New York and in the Midwest more difficult and certainly more expensive. Ripple effects could be felt in PJM and New England as well. In addition, last summer Ontario disrupted imports frequently, causing a variety of commercial problems. Fortunately, Ontario's Independent Electricity System Operator has implemented a day-ahead commitment process which may take care of this issue this summer.

Long Island/ New York City



- NYC capacity additions improve conditions
- LI still very tight supply/demand balance

We've been concerned about New York City and Long Island for several years given the perennial tightness in electric supply and demand in those markets. In New York City, however, recent generation investments appear to have relieved some reliability concerns. Given the price of gas-fired generation at the margin, market prices are expected to remain relatively high in the city, though reserves appear adequate.

On Long Island, however, supply-demand balances remain tight.

Long Island/NYC: Summer 2006 Threats



- Extended heat
- Regional heat limiting imports
- Unplanned generation or transmission outages

As a consequence, Long Island remains exposed to the same kinds of risks associated with the other load pockets we've considered – mainly, heat and unexpected generation and transmission outages.

Long Island/NYC: Possible Market Effects



- High local day-ahead and real-time prices
- Existing scarcity pricing rule likely to raise prices

The result is likely to be continued volatility in day-ahead and real-time electric prices on Long Island, with very high prices when supply is tight. The New York ISO's scarcity pricing program, implemented in 2003, is likely to continue to generate high prices at those times when tight markets mean reserves are being used for energy.

RTO/ISO Rule and Operations Changes

- New York ISO
- PJM
- California ISO

I'll shift now to consider how observed changes in market rules or operational procedures in certain RTOs are likely to change the patterns visible in prices this summer.

New York ISO Changes Likely to Affect Prices

- New real-time model should better reflect short-term scarcity in local prices
- Improved modeling of gas turbines should improve real-time price accuracy

The first market is the New York ISO which is making some changes in its price modeling to improve its ability to reflect physical realities. On May 1st, the NYISO modified its real-time software to include a set of New York City constraints previously modeled only in its day-ahead software. Convergence between day-ahead and real-time prices should improve as a result, because both will now be monitoring a similar set of constraints. The changes do not affect day-ahead results or transmission congestion contracts settled off of day-ahead congestion. Also, the ISO is planning to implement software by the end of May that better accounts for the real-time operational characteristics of gas turbine operations. The current real-time pricing mechanism overstates the maximum output of gas turbines during the summer months. When temperatures are hot, gas turbine efficiency decreases; lowering output levels. The current real-time pricing model assumes that the units can still reach maximum output levels. On several days in the past, differences between the desired output and the actual output of these plants were significant, resulting in prices that did not reflect actual system conditions. The new software is designed to account for the actual conditions of the gas turbines. Thus, real time prices should more accurately reflect system operations, particularly during periods of scarcity in New York City and Long Island where most gas turbines are located. Again, day-ahead pricing is not affected by these changes. We're not certain exactly how these model changes will affect the level or volatility of prices, though they are intended to make real-time prices reflect underlying operations better.

PJM Dispatch Changes to Decrease Uplift

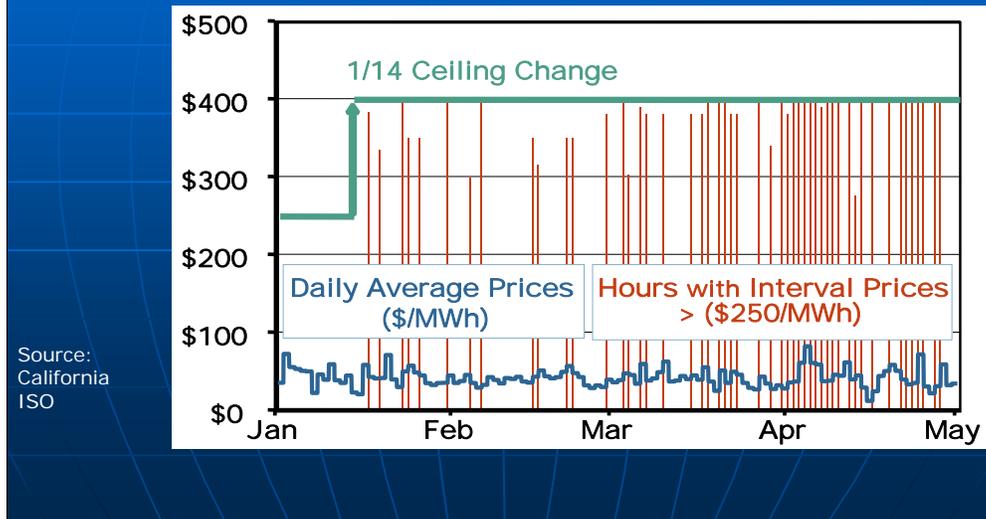
- Dispatch changes designed to better match generators with load changes
- Implementing scarcity pricing
- Likely to increase real-time prices in certain intervals

PJM has made changes with regard to its dispatch that have affected real-time prices and will affect them into the summer. In order to meet daily peaks and valleys in demand, PJM must ramp up and down a set of less-flexible steam units. Last year they tended to run a certain number of steam units at minimum levels between peaks to respond as needed to meet unexpected loads. This procedure tended to force down real-time prices because the remaining load was served by units lower in the bid stack, though it generated costs seen through higher uplift costs, known in PJM as “operating reserve charges.”

In the second half of 2005, PJM began to reduce the number of steam units left running between peaks to reduce these operating reserve charges. PJM began using quick-start gas-fired combustion turbine capacity to meet unexpected loads rather than steam units running at minimum load. In part because of this change operating reserve costs have come down,. At the same time, real-time prices are higher in some hours – even climbing to combustion turbine levels on occasion. Staff has observed the effects of this change on short-interval real-time pricing, and expects that it might affect short-term prices during the summer.

Overall, however, if the changed approach to dispatch works as it is intended, it should lower overall costs. The cost of bringing on quick-start units occasionally should be less than that of running more steam units all the time.

California Bids Respond to Cap Increase



Effective this year on January 14, the bid cap in California was raised from \$250 to \$400 per MWh. This graph shows staff's tracking of bids above \$250 since the change on January 14. Through April, prices during 86 five-minute intervals have risen materially above the old cap level of \$250/MWh, indicating that generators have been making use of the additional bidding flexibility. These spikes are almost entirely concentrated in hours where CAISO requires use of a limited supply of fast-ramping units – usually morning and evening hours. These intervals are represented by the red columns. Note that daily average prices have not been affected much. Prices above \$250/MWh have occurred in only about three percent of the five-minute intervals in the first quarter.

Underlying Summer Fuel and Supply Conditions

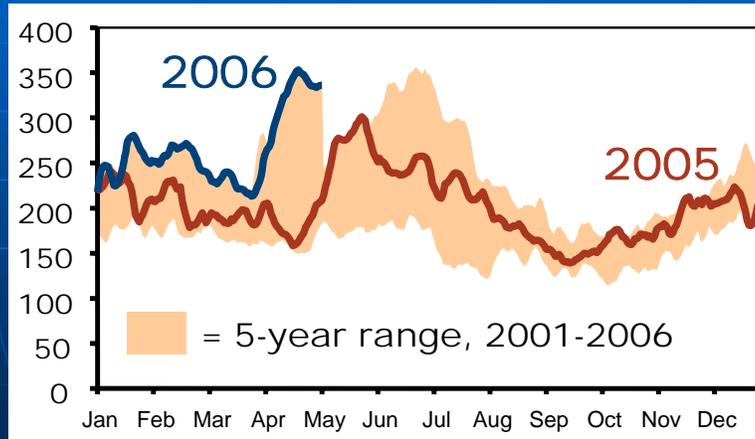
- Hydroelectric Power
- Coal
- Oil
- Natural Gas

Finally, I'd like to consider underlying summer fuel and supply conditions, with a focus on hydroelectric power in the Pacific Northwest, coal, oil and natural gas.

Hydro Conditions in the West Significantly Better

Trend lines represent 7-day moving average of daily production for 24 hydroelectric facilities monitored by the USACE within the Pacific Northwest

Source:
U.S. Army Corps
of Engineers

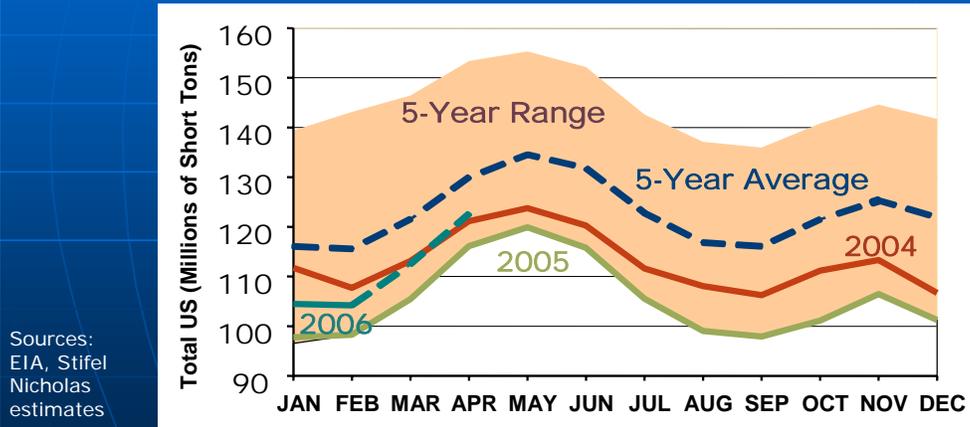


Last year, we expressed our concerns in the summer outlook about relatively poor western hydroelectric generating conditions. This year, the situation is quite different. Snowpack levels are quite robust. For example, as of May 12, average snowpack in the mountains feeding the Columbia River Basin was about six percent above historical average, while snowpack in California was about 66% above average.

On May 5 the Northwest River Forecast Center forecast the April through September runoff on the Columbia River at The Dalles Dam at two percent above average. By contrast, last year's outlook in early May was only two-thirds of average. Overall, hydroelectric generation in the Pacific Northwest has been strongly above last year's levels, and above the past 5-year range. Consequently, spring electric prices in the northwest have been relatively low, and conditions for the summer are much improved over what we expected last summer.

Last summer, our early concerns did not play out as expected because of unexpected spring rains and relatively mild California temperatures. This year, hydro supplies in the western United States start the summer in better shape.

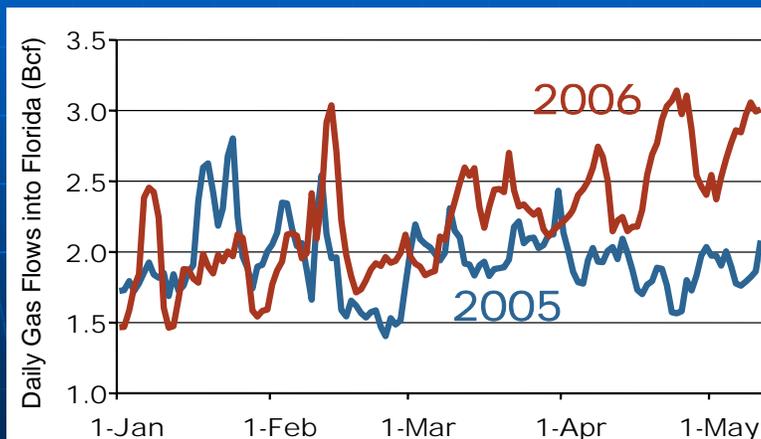
Low Coal Stockpiles for Power Generation Show Recent Improvement



Coal stockpiles for electric generation have also faced some stress over the past few years. Currently, coal stockpiles as reported by the Energy Information Administration and (most recently) estimated by a Stifel Nicholas analyst remain below their 5-year average for the first quarter of the year, but are well above last year's levels and may have reached, at the end of April, levels above those in 2004. Railroad disruptions and strong coal demand for generation in the face of high natural gas prices have driven lower stockpile levels for the past few years. While worth watching, staff's view is that coal stockpiles are likely to continue building.

Relative Prices Driving Fuel Switching From Oil

Sources:
Pipeline
Bulletin
Boards,
Bentek Energy
Consulting



The recent relative weakness of natural gas prices vis-à-vis oil seems to be having a variety of effects on fuels markets. We've begun to see some of the first indications of fuel switching away from oil and towards natural gas. This graph is of gas deliveries into Florida from interstate pipelines. Over the past few weeks, gas delivered into Florida has averaged about 50 percent – fully one billion cubic feet a day – above last year's levels. While Florida has seen some growth, a large part of this increase appears to be related to fuel switching away from residual fuel oil. Staff has confirmed this switching in Florida, and has observed a similar, though lower-volume trend in New York State. If it continues, oil may play a smaller direct role in electricity prices this summer than we've seen in the recent past.

Natural Gas Prices Face Mixed Market Pressures

- Concern about hurricane season
- Continued Gulf production outages
- Oil price uncertainty
- Record high storage levels/ strong early injections
- Production increases in the West

Finally, natural gas prices continue to face mixed pressures. Short-term prices remain at last year's levels despite far higher levels of current storage inventories. Futures prices, though they've weakened recently, [Update Wednesday PM] signal upward pressures on prices through the summer and (especially) into the winter. Likely to be pushing prices up are concerns about the upcoming hurricane season in the Gulf, continuing outages from hurricanes Katrina and Rita, and ongoing international uncertainty about the price of oil. Likely to be pushing prices down are current storage inventories, recent strength in injections, and apparent production increases – particularly relevant to the western United States.

Day-to-day through the summer, we expect regional natural gas price volatility – and associated electric price volatility – based on changing weather forecasts as much as anything. Reports of tropical storms heading for the Gulf of Mexico or of high temperatures localized around population centers are likely to generate concerns about short-term supply among traders and force prices upward, at least temporarily. As a consequence, we review forecasts at a regional level daily in our Oversight meetings to help assess price movements.

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Altogether, conditions faced by U.S. electricity markets at the onset of the summer appear to be stronger than last year, reflecting better underlying fuels conditions. In certain areas, changes in RTO/ISO rules and operational procedures appear to be increasingly reflecting operational realities and efficient dispatch – though these changes could increase volatility in real-time markets. Finally, staff continues to be concerned about key load pockets where investment in needed infrastructure has not kept up with needs.

We will continue to watch these areas throughout the summer, on every trading day, and report back to you as needed about these and any other relevant market issues.

We'd be delighted to answer any questions.