

## 2006 California Heat Storm

Updated August 1, 2006

Heat storms occur when temperatures exceed 100 degrees Fahrenheit over a large region for three days in a row. Normal hot temperatures cause electricity demand to increase during the peak summertime hours of 4 p.m. to 7 p.m. when air conditioners are straining to overcome the heat. If a hot spell extends to three days or more, however, nighttime temperatures do not cool down and the heat build-up causes air conditioners to turn on earlier and to stay on later in the day. As a result, available electricity supplies are challenged during a higher wider peak electricity consumption period.

### How Hot Was It?

The accompanying chart – 2006 CA ISO Temperature Comparisons --shows the average temperatures over the past 56 years of weather data analyzed by Energy Commission staff. The chart shows the weighted maximum actual temperatures (weighted by air conditioner saturation) for the CA ISO Area. The shaded areas represent the bands for plus 1, plus 2 and plus 3 standard deviations. As shown by the chart, temperatures since June 15<sup>th</sup> were above average for all but three days until July 29<sup>th</sup>.

During the heat storm from July 17 through July 28 both Northern and Southern California hit days when normal temperatures were exceeded. This is *three standard deviations* above normal, indicating a 0.5 percent probability of a heat episode such as this ever occurring. While similarly high temperatures were reached in 1955, the fact that these high temperatures occurred simultaneously (coincidental peaks) in both Northern and Southern California increased the probability to a one in one hundred year occurrence.

The WECC reported an all-time peak on July 24<sup>th</sup> of 159,152 megawatts exceeding their previous peak of 149,147 megawatts. (ISO Peak Day Call Summary, 7/25) The Pacific North West was experiencing higher than normal temperatures in the population areas of Seattle, Portland and Boise.

### Did we hit our projected 2010 peak early?

On July 24, the CA ISO hit 50,270 megawatts for the peak after calling for 850 megawatts of interruptibles. In the Energy Commission's latest Summer Outlook the expected 2010 peak demand under normal weather conditions (1 in 2) is 50,548 megawatts and adverse (1 in 10) weather conditions is 53,457 MW. Many news stories failed to recognize that recent weather conditions qualified as an "adverse" 1 in 10 situation. The 2006 adverse weather forecast is 50,301 megawatts.

## **How many people were without power?**

Neither the CAISO nor the Energy Commission collects data on outages. The following data was compiled from newspaper reports.

### **PG&E**

1.2 million out of 5 million customers without power at some time during past week (SF Chronicle, July 27, p. A-14).

Lost 900 transformers during heat wave – less than one-tenth of the one million transformers—but enough to put about one million people in the dark at some point since Friday (Inside Bay Area, July 26). Transformer outage later increased to 1,100 ( California Energy Markets, 7/28, p.6)

### **SCE**

1.1 million of Edison's 4.7 million customers have experienced service interruptions of varying periods due to failing transformers. More than 1,200 transformers have been replaced (NBCWeatherplus.com, July 26).

Edison says 1,312 transformers overheated (LA Times, July 28)

### **SDG&E**

53,000 of 1.3 million customers affected by power outages during heat wave. 200 transformers down. (California Energy Markets, 7/28, p.11)

### **SMUD**

49,000 customers affected by power outages and utility lost approximately 150 transformers. (California Energy Markets, 7/28, p.12)

### **LADWP**

Utility had not yet calculated total number of customers who lost power. The greatest amount at one time was 30,000, but overall total much higher. (LA Times, July 28). 600 transformers down. (California Energy Markets, 7/28, p.11)

The 1955 heat wave in Los Angeles killed more than 850 people (Sacramento Bee, July 28)

## **If we hadn't had a good hydro year, would we have had blackouts?**

In the Pacific Northwest we had returned to normal hydro conditions from the high that we had experienced earlier, and although BPA was positioned to support California to run their facilities to meet our energy demand, we did not receive more hydro than what would be normal. From a California perspective, hydro conditions probably did not make that much of a difference

since most of the hydro capacity is in Northern California where we were long on power.

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