

California ISO Interim Report

August 25th, 2005 PDCI Loss and Subsequent Load Shedding Event

Introduction

As power use was approaching its daily peak on August 25, 2005, the loss of a major transmission line partially-owned and operated by Los Angeles Department of Water & Power required the ISO to direct utilities in southern California to drop 900 megawatts of firm load for approximately 40 minutes, and 800 megawatts of load from voluntary interruptible customers for approximately 77 minutes. CEO Yakout Mansour immediately initiated an investigation of the event, which was led by Armando Perez, Vice President Planning and Infrastructure Development. The findings and conclusions of the investigation to date are summarized below.

Findings

The ISO procured reserve capacity – stand-by power for use in emergencies – in accordance with industry standards for reliability. These standards are intended to ensure that utilities have enough reserve capacity to respond to sudden events, thereby reducing the risk that a single failure could lead to widespread blackouts. Under the industry standards, reserves for the ISO control area must at least equal the larger of two values: either enough to compensate for the breakdown of the single piece of equipment that would cause the greatest loss of power – known as the “single largest contingency” or “N minus 1” – or the sum of five percent of the load that is served by hydro generation and seven percent of the load served by thermal generation. On August 25, the reserves procured by the ISO, when combined with those “self-provided” by the utilities, met the criteria.

As the day progressed, it became apparent to the ISO and Southern California Edison that the temperatures in southern California would be higher than anticipated, and that this would lead to customer demand greater than forecast. By 3:00 p.m., the temperature climbed to 14 degrees above forecast. As a result, actual demand exceeded the forecast by approximately 2,000 megawatts.

Throughout the morning and early afternoon, southern California utilities including Edison responded to the increased demand by scheduling additional generation resources. The ISO systems and personnel similarly increased generation.

The unexpected additional demand in southern California also created a need for more reserve capacity. Throughout the day, the ISO procured additional reserves to respond to the increased demand. The control area maintained compliance with applicable standards until the loss of the Pacific DC Intertie just before 4:00 p.m. Planning ahead for possible contingencies, the shift supervisor at the ISO also contacted Edison at approximately 2:00 p.m. and determined that 800 megawatts of

load from customers that had voluntarily agreed to interruptible service would be available if necessary.

At approximately 3:47 p.m., ISO dispatchers learned through telemetry systems of the loss of one pole (half the capacity) of the Pacific DC Intertie – a 500-thousand volt transmission line that brings power from Oregon to Southern California. The shift supervisor immediately directed utilities in southern California to begin shedding interruptible load, and asked all generating resources in the area to increase output. Shift personnel attempted to telephone the Los Angeles Department of Water and Power (LADWP), which operates the line, to discuss the loss of first pole. No one answered the call.

At approximately 3:50 p.m., the other operator of the line, the Bonneville Power Administration, informed the ISO that transmission on the line would be reduced to zero. This occurred approximately two minutes later. At that point, not enough time had passed to implement the interruptible load shedding. The shift supervisor was therefore required to order shedding of 900 megawatts of firm load in accordance with the earlier established plan and with applicable reliability criteria.

At 4:32 p.m., approximately 40 minutes after the Pacific DC Intertie was ramped to zero, the LADWP reported that the line had been restored and was stable. The ISO promptly ordered the restoration of firm load. Just over thirty minutes later, at 5:05 p.m., the ISO ordered the restoration of service to interruptible customers.

Conclusions

The actions taken by the ISO shift personnel were appropriate, taken in accordance with a proper plan, and prevented the occurrence of more widespread outages. The need for these actions resulted from temperatures that were higher than forecast, which created greater than anticipated customer demand and reserve requirements, combined with the loss of the Pacific DC Intertie.

The events of August 25 have presented the ISO an opportunity to review its standards and procedures, specifically to ensure that shift personnel have clear directions on triggering events and actions. The events also highlighted a need for better communication between and among control areas, specifically the ISO and LADWP. The ISO expects to complete its review of these issues by October 21, 2005.