

## Chapter 1

### **INTRODUCTION**

California is the world's fifth largest economy. Its average and median per-capita incomes are well above those in the rest of the states in the United States and all but four other countries in the rest of the world. The state is a magnet for entrepreneurs and innovation. Available energy is taken as a given.

The state is rich in human capital. It benefits from a creative mix of cultures and religions from virtually every part of the planet. This diversity, plus ambition and a culture that rewards new ideas and products, makes California special. Life in the state is generally excellent in many important respects. The climate is particularly good—generally warm with relatively little humidity. The state's ports move much of the world's commerce. California sets worldwide trends in fashion, entertainment, technology, services, and many other consumer goods.

Against this backdrop of good fortune and great economic success, the state experienced a dramatic energy crisis in 2000 and 2001, a crisis that by any standards was huge. This crisis was mostly unprecedented in California's history, and was even more surprising when compared to California's historic "golden touch" and youthful "can do" attitude. The state's recent energy crisis, particularly in the electric sector, and the economic problems that followed have hit California hard. This circumstance was so unique that it helped propel an unprecedented recall of recently elected Governor Gray Davis, who was then sacked by the state's voters.

The state's treasury is deeply in the red. The three large investor-owned utilities (IOUs) were pushed close to financial ruin. The state's collective confidence has been shaken deeply. Nevertheless, people still flock to California, mostly from less fortunate places. These new immigrants want to work and they need housing, energy, transportation, education, and health

services. These new challenges, coupled with the state's recent energy and financial crisis, put many of the state's diverse aspirations in jeopardy.

This book explains "what" California was trying to do in the 1990s in order to reduce its energy costs. The details are critical because there are important lessons to be learned and steps to be avoided in other markets and other places. While most know that the California economic powerhouse was crippled by an electricity crisis in 2000, fewer realize that California's complex energy industry and institutional restructuring was, by all accounts, deemed widely successful in 1998 and 1999. To avoid making similar mistakes in the future, it is important to understand what was done, why it was done, and review the program's initial success. Consequently, this book addresses "why" things went so bad, so fast.<sup>1</sup>

We start this discussion in Chapter 2 by undertaking a rudimentary review of the economics that drive power production.

The starting point for all electricity restructuring is traditional comprehensive cost-of-service regulation. Thus, Chapter 3 discusses the underlying principles of traditional regulation.

Chapter 4 explains how regulators have attempted to reconcile the economic principles associated with competitive markets and cost-of-service regulation principles.

In Chapter 5, we discuss tariff reforms that are based on this reconciliation. Here, we explain how these reforms led to experiments in complex restructuring where competitive wholesale generation replaced comprehensive cost-of-service regulation.

Chapter 6 uses California as an example to explain the basic features of this restructuring approach.

Next, in Chapter 7, we turn to California's specific market design, and explain how California's restructuring went from a "good" start to a "bad" patch and ultimately culminated in an "ugly" conspiracy of mistakes, missteps, and bad luck. This "ugly" trifecta has been dubbed "The Perfect

<sup>1</sup> Our approach is complimentary to other studies that have appeared in the literature, including Faruqi, et al. (2001), Joskow (2001), Borenstein (2002), Cicchetti, et al. (2001); Ahmad Faruqi, Hung-po Chao, Vic Niemeyer, Jeremy Platt, and Karl Stahlkopf, "Analyzing California's Power Crisis," *The Energy Journal*, Vol. 22, No. 4, 2001, pp. 29-52; Paul Joskow, "California's Electricity Crisis," *Oxford Review of Economic Policy*, Vol. 17, No. 3, 2001, pp. 365-388; Severin Borenstein, "The Trouble with Electricity Markets: Understanding California's Restructuring Disaster," *Journal of Economic Perspectives*, Vol. 16, No. 1, 2002, pp. 191-211; Charles J. Cicchetti, Jeffrey A. Dubin, Jon Hockenyos, Colin M. Long, and J.A. Wright, "Energy Deregulation: The Benefits of Competition Were Undermined by Structural Flaws in the Market, Unsuccessful Oversight, and Uncontrollable Competitive Forces," California State Auditor, Bureau of State Audits, Sacramento, California, March 2001.

Storm” because virtually all the things that could have gone wrong did go wrong, seemingly at the same time from May 2000 through June 2001.

Some of the worst problems were related to “design flaws and regulatory missteps.” These problems were exacerbated by climate and market forces. Chapter 8 takes a statistical approach to analyze what happened in California. In this chapter, several statistical hypotheses are stated. We then explain how we performed the econometric analyses.

Chapter 9 reviews the modeling and approaches several others used to explain electricity prices in California. These efforts informed and influenced much of what we did.

Chapter 10 analyzes natural gas, which is the primary marginal fuel used to generate electricity in California, and natural gas prices. In late 2000, natural gas prices snapped a decade and a half price slump, jumping spectacularly (five-fold) in North America, and particularly so (nearly thirty-fold) in California. We identify potential causes of these price spikes and then use an econometric analysis to test various hypotheses related to natural gas prices.

Chapter 11 uses a similar econometric approach to analyze structural, regulatory, climatic, natural gas, and other economic factors that contributed to or caused electricity prices to surge from an average of about \$30 per MWH in 1999 to \$150 per MWH from mid-year 2000 to mid-year 2001. Potential causes for this price surge are identified and hypotheses tested in this chapter.

To complete an analysis of “what and why,” we must go beyond reviewing the events leading up to and during the crisis. Thus, Chapter 12 discusses the role that market participants played in attempting to manipulate the market.

Much has been said about gaming or attempting to game the market. These issues are reviewed in some detail in Chapter 13.

Chapter 14 analyzes what the two primary regulatory bodies did during the crisis to bring the market under control. The California Public Utility Commission (CPUC) and the Federal Energy Regulatory Commission (FERC) were the key governmental entities charged with overseeing and controlling these markets. These regulatory agencies often were in conflict and, by all accounts, were slow to respond. This is an important sidebar within the main story of the electricity crisis, particularly because there are, ironically, new calls to expand regulation in response to what arguably was, at least partially, a major political/regulatory failure.

Chapter 15 is a very important addendum to the regulatory actions taken during the crisis where we examine federal and state agencies’ efforts to revisit the “winners and losers” and recreate the prices that would have attained in a competitive market. In attempting to award refunds and grant

some relief in an effort to neutralize the worst of the market's fury, new "winners and losers" will be created. We examine these regulatory efforts in this chapter.

Chapter 16 explains how the crisis spawned by the failures in 2000 continues to plague the state and threaten its ability to recover and to build the infrastructure needed for the state to grow. Here, we discuss how California is responding to these new challenges and boldly propose some new pragmatic hybrid solutions to achieve growth and regain prosperity

Chapter 17 discusses how events in California are conspiring to handicap the winners.

Chapter 18 details the lessons learned so as to guide others in their various pursuits to liberalize their energy industries.