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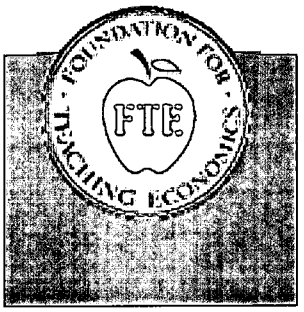
ABSTRACT

As Californians put on another sweater, light candles, and open their electricity bills with shaking hands, the rest of the nation wonders who or what caused the problem and whether they will be next. Mixing with accusations about deregulation, there are also insistent voices blaming misguided and heavy-handed government for dimming the lights in California. This lesson plan contains readings and discussion questions which are designed to help students find their way through all the pointing fingers. The lesson plan provides excerpts from three articles about the California energy crisis, and students are asked to read carefully and then work through the questions on their own or with a classmate. Included is a teacher guide that provides questions and answers and 5 Internet resources. (BT)

Foundation for Teaching Economics

The California Energy Crisis: Lesson Plan

Student Handout & Teacher's Guide



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The California Energy Crisis

As Californians put on another sweater, light candles, and open their electricity bills with shaking hands, the rest of the nation wonders who or what caused the problem and whether they'll be next. There's lots of noise about market failure and warnings that we're seeing the initial cracks in the crumbling edifice of capitalism. Mixing with the accusations about deregulation, there are also insistent voices blaming misguided and heavy-handed government for dimming the lights in California.

The reading and discussion questions that follow are designed to help you find your way through all the pointing fingers. We don't guarantee that you'll come up with "the" solution, but you should be able to hear yourself think more clearly amid the media noise.

Directions: This handout contains excerpts from 3 articles about the California energy crisis.* Read carefully and then work through the thought questions on your own or with a classmate. These interpretation questions are designed to make you an *informed* participant in the upcoming class discussion. Remember that your opinion carries more weight if there's evidence and reasoning to back it up.

The first step in preparing to analyze a public policy issue is to get a clear picture of the disagreement:

Thought Question #1: What are the opposing points of view?

"*New York Times* columnist Paul Krugman calls it 'a warning about the dangers of placing blind faith in markets.' *Los Angeles Times* commentator Robert Scheer says it's yet another sign that 'capitalism is falling apart.' They're talking about the electricity situation in California, where demand has been rising faster than generating capacity, leading to sharp increases in wholesale prices. The state's two biggest utilities, Southern California Edison and Pacific Gas & Electric, are begging for permission to pass these costs on to consumers, warning that otherwise they will go bankrupt.

To judge by most of the press coverage and punditry, the problem is that California recklessly 'deregulated' its electricity market a few years ago, allowing prices to spin out of control. 'Californians are left to the vagaries of just rampant laissez-faire capitalism,' one activist recently told *The Sacramento Bee*.

But the fact that utilities still need government approval to raise prices suggests that 'laissez faire' may not be the most accurate description of California's policy. The state legislature's unanimous approval of the 1996 law that set up the current system is further cause of suspicion: It's not the sort of vote you'd expect if the bill threatened entrenched interests by creating a genuinely free market.

'The state did not deregulate the electricity market,' observes Adrian Moore, executive director of the Reason Public Policy Institute. 'They *restructured* it, requiring far more state intervention in electricity transactions than existed before.'

Jacob Sullum, Creators Syndicate

It appears, then, that all the accusations arise over what Jacob Sullum has succinctly summarized, in the first paragraph above, as a supply and demand problem. Supply and demand analysis is a familiar and objective tool — and we know the questions to ask about the determinants of supply, demand, and price. See if you can glean the specifics of the California electricity market from the next few quoted paragraphs.

Thought Question #2: Describe the current electricity market in California.

- **Be sure to identify the suppliers and demanders, the determinants of supply and demand, the market and non-market influences on price, and the results in terms of quantity supplied and quantity demanded.**
- **Can you diagram the market? Note well: The utility companies are both suppliers and demanders of electricity!**

"In a technical sense, a well-working market is one in which ratepayers, who have varying willingness to pay for electricity, and generators, which have willingness to supply power at varying prices, interact to allocate available supply among consumers. From the 1920s until recently, however, the electricity system had no market aspects at all. Ratepayers and generators interacted under a state-administered system in which supply and demand were balanced through engineering plans, not the market. Prices served only to recover costs, not to distribute supply to those consumers who valued it most or to signal investors about the need for new supply."

Peter VanDoren and Jerry Taylor, Cato Institute

"The [California] law set up . . . "a micromanaged pseudo-market,' requiring the utilities to sell off their generating plants and buy their electricity from a state-administered exchange. Instead of putting together the megawatts they needed at various prices offered by different power suppliers, utilities had to pay each supplier the price demanded by the highest bidder. . . .

As wholesale prices rose in response to the shortage that began last summer, skyrocketing from about $30 per megawatt hour to as much as $1,500, the pricing policy compounded the utilities' financial difficulties. So did rules that discouraged them from using long-term contracts as a hedge against rising costs."

Jacob Sullum, Creators Syndicate

Thought Question #3: Were recent changes in the market the result of supply shift, demand shift, or both? And what was the impact of those shifts?

"The state-administered system survived for 40 years because it coincided with an era of ever-cheaper electricity. Declining prices, however, were not the result of regulatory efficiency. They were the product of technological advances in power plant operations changes that stalled in the early 1960s."

Peter VanDoren and Jerry Taylor, Cato Institute

"The restructured California market has fixed retail prices at 6.4 cents per kilowatt-hour through March 2002, which keeps demand from reacting to the supply scarcity and produces shortages and blackouts . . .

But is this new regulatory regime the cause of the fivefold increase in California electricity costs? Hardly. While it did make things worse, the primary culprit is the high price of natural gas. Since November, the spot price of natural gas in Southern California has risen 600 percent over the 1998-1999 average. And because 90 percent of the marginal cost of natural gas fired electricity

is fuel cost, the marginal cost of electricity would have to spike from 3 cents per kilowatt-hour to above 15 cents per kilowatt-hour to cover costs. That is what's happened at the wholesale level.

The bottom line: Because the state is so heavily reliant upon natural gas during periods of peak demand, Californians would be facing the same unpleasant combination of high electricity prices and blackouts even if the old regulatory rules were still in place . . . .

'Since 1996, electricity demand in California grew by 12 percent while supply grew by 1 percent. Every time you turned around over the past two decades California state regulators were discouraging new construction . . . .'"

Peter VanDoren and Jerry Taylor, Cato Institute

"The surge in prices was caused by a variety of factors, including unanticipated increases in demand associated with recent economic growth. State regulations have contributed to the problem by encouraging over-reliance on increasingly expensive natural gas and making it difficult to build new power plants, which take years to go online.

Uncertainty about how California will respond to the shortage is also discouraging generators from investing in new capacity."

Jacob Sullum, Creators Syndicate

Ok, now that you have a clearer picture of the market and the problem, you have a basis for evaluating all the calls for action.

Thought Question #4: What remedy do you think Jacob Sullum would support - and do you agree or disagree with him?

"Critics have suggested everything from price caps to expropriation of power plants . . .

. . . Leaving aside the interests of the utilities and their shareholders, it's crazy to deregulate wholesale prices while keeping retail prices under tight control. Without the signal of higher bills, households and businesses have little reason to cut back on their electricity use, which exacerbates the mismatch between supply and demand, raising wholesale prices further.

Since the willingness to pay higher prices is a measure of how important a particular energy use is, a rate freeze encourages waste. It prevents the market from allocating electricity to those who value it most: the people running an intensive care unit, say, as opposed to the guy with the blinding Christmas display . . .

. . . Critics of California's current system are big on conservation, but they think of it as something you cajole with propaganda and encourage with subsidies, rather that the natural response to rising prices. 'We ought to do it in a completely comprehensive way,' V. John White, executive director of the Center for Energy Efficiency and Renewable Technology, told the *Bee*, practically salivating at the possibilities for new government programs. 'The state's leadership on efficiency and demand is the first step.'

Quite right. With a Department of Shut Off Those Lights and Close the Refrigerator, who needs a market?"

Jacob Sullum, Creators Syndicate

*Sources quoted in this handout include:

- *California's Energy Crisis: Government, Not Market Failure,* by Jacob Sullum, Creators Syndicate
- *Wrong Way Out of the Dark?* by Peter VanDoren and Jerry Taylor, Cato Institute. *Washington Times, January 25, 2001*

- *California Screamin' . . . About Electricity Deregulation* by Peter VanDoren and Jerry Taylor, Cato Institute, *Houston Chronicle, January 17, 2001*

Teacher Guide to *The California Energy Crisis*

The student reading, *The California Energy Crisis* is intended to prepare students for a class discussion. As such, it can be distributed as an individual homework assignment or an in-class pairs or small group activity. In any case, students should have time to read and think about the handout before the large group discussion.

The Thought Questions in the handout provide a review of economic principles and guide students in the application of economic reasoning to the problem at hand. They are not intended to be a written assignment. However, as you circulate around the room during the small group task time, you can help students to focus on the salient points. Suggestions are provided below.

Thought Question #1: What are the opposing points of view?
The basic disagreement is whether the California energy crisis is the result of a regulated energy market (i.e. what some would call "government failure") or the result of de-regulation (so-called "market failure").

Thought Question #2: Describe the current electricity market in California.
The description should include recognition that this is a 2-tiered market. At the wholesale level, the generators are the suppliers and the utilities are the buyers. At the retail level, the utilities are the suppliers and California consumers are the buyers. In both cases, the "market" and, therefore, the price of electricity, is affected by law and regulation. At the wholesale level, prices are administered or engineered; at the retail level prices are fixed.

Encourage students to play with some graphs to see if they can transfer from their study of other markets with fixed prices - price floors or price ceilings.

Thought Question #3: Were recent changes in the market the result of supply shift, demand shift, or both? And what was the impact of those shifts?
As students sort through the reading, hopefully they'll come to appreciate the complexity of the situation—and come to the realization that the answer to question #3 is "all of the above! and then some! Encourage them to consider the market components separately:

- *The building problem has been a long term increase in demand - presumably as the population of California grew. (In graphic terms, we're talking about a shift to the right.)*
- *The more recent phenomenon has been a change in the cost of generating electricity - the rising price of natural gas. Students should recognize that a change in production cost is a supply shifter. (Graph shift? Left.) Which part of the market experienced this shift? Correct - the wholesale market, as power generators compensated for higher resource costs.*

  Also important is the fact that new generating plants aren't being built. The quotes tell us that government-imposed restrictions, many of them environmental, have raised the

cost of new electricity generating plants to the level that businesses are unwilling to take the risk.

What about the retail market? The utility companies, facing a higher price for electricity, reacted as the law of demand tells us buyers always react to higher prices—they were unwilling to purchase more electricity to sell on the California retail market. This, in turn, means that the supply in the California retail market wasn't responding to the ever-growing demand. Even worse, the fixed price of 6.4¢/kilowatt hour meant that the quantity supplied was less than quantity demanded—hence the shortages.

Thought Question #4: What remedy do you think Jacob Sullum would support—and do you agree or disagree with him?
Clearly, Mr. Sullum has a strong distaste for government intervention, as his sarcastic comments about the "Department of Turn Off Those Lights" indicates. Students should then respond by predicting what would happen if the market were truly deregulated, and noting the advantages and disadvantages of those outcomes.

Class Discussion Guide

Discussion Topic (post on the board or overhead transparency)
We don't hear of "carouts" or "breadouts" caused by short supply of cars or food, so why is California suffering "brownouts" because of the short supply of electricity? What's the same and what's different?

Notes: The difference is the existence of relatively unregulated markets for bread and cars. The similarity is that consumers and producers respond to the prices of cars, bread, and electricity, regardless of whether or not the market is regulated. In the markets for bread and cars, that produces desirable results and social cooperation. In the "market" for electricity, that produces shortages and social conflict.

In the car and bread markets, a short supply doesn't become a persistent shortage. As the short supply causes prices to rise, the quantity demanded would fall as many consumers chose not spend as much on cars or bread, In addition, the rising price would serve as an incentive for producers to provide more cars and bread, also helping to eliminate the shortage.

In the California electricity market, fixed prices act as perverse incentives, encouraging producers and consumers to behavior that actually worsens the shortage. When retail prices are fixed, consumers have no price incentive to purchase less. The quantity demanded tends to remain the same despite all the public service pleas for people to reduce usage. On the other hand, fixed prices make it difficult - and eventually impossible - for producers to cover increasing costs, so they have no incentive to produce more electricity for their insistent customers.

Suggested Guide Questions for the Class Discussion

1. In what ways is the California electricity market regulated? In what ways was it "deregulated?"
   - The California electricity market is highly regulated, or as one of the authors put it, "it has only been restructured." The points of regulation include: a fixed or administered retail price range charged to consumers; government-administered prices in the wholesale market; restrictions on construction of new power generating facilities. The only real point of deregulation is that consumers can choose which utility company to purchase electricity from.
2. How have consumers and utilities responded to the 6.4 cents/kilowatt-hour fixed price of retail electricity?
   - For the consumer, the 6.4 cent per kilowatt-hour price has been fairly constant for the past few years. As that price, both residential and commercial customers have chosen to use increasing amounts of electricity. Meanwhile, the utilities have been caught between the relatively low retail price they can charge and the sharply rising wholesale price they must pay to power generators. The result has been that the utility companies (not the power generating companies) have been losing money as the sell electricity for less than they pay for it. Many are on the verge of bankruptcy.
3. Why haven't investors responded to higher electricity prices in California by increasing supply?
   - The answer lies in transaction costs and uncertainty. The legal process of getting permits to build a new power plant in California are so burdensome that even with much higher prices there would not be a big enough incentive for entrepreneurs and investors to undertake the process. The other contributing factor is that potential power producers are uncertain as to what will be done in the future in terms of permits and pricing. Without some assurance that they would be able to respond to market conditions, they are very hesitant to risk entering the power generating business.
4. Why, in most markets, do higher wholesale prices NOT result in shortages at the retail level?
   - In markets that are free of regulation, when wholesale prices rise, suppliers cut back on the quantity supplied. This causes a rise in retail prices, which in turn causes a reduction in quantity demanded. Result: no shortage - or at the most a very short-lived one. The new quantity supplied and quantity demanded coincide, albeit at a slightly higher price. The higher retail price induces suppliers to continue to supply even though wholesale prices, and thus their costs, have risen.
5. What role did California lawmakers play in discouraging the building of new power plants. Do you think the shortage of electricity was their intent?
   - California lawmakers increased the cost of new production by making the permitting process so burdensome. In addition, as the article point out, pollution control requirements force the producers to use natural gas to generate much of the electricity. The high cost of natural gas has proven a strong deterrent to the construction of new generating capacity, especially in the face of the fixed retail prices.
6. Does the current regulated market help insure that electricity is put to its best uses? Why or why not?

- One of the problems that arises when retail prices are held below their natural market level is that buyers who value the product more than someone else have no way to express their higher value. For instance, as the article points out, the consumer who wants to light his Christmas display is competing directly with the hospital needing electricity to power a kidney machine. In a market with freely moving prices, the electricity is allocated by price to the uses that people value most. When fixed prices are in place the allocation process cannot distinguish between users. While markets do not assure that electricity will always be use wisely, (some people may decide to pay the higher bills for their Christmas lights), they do assume that it will move toward the most highly valued uses.

7. The proposed remedies fall into 2 basic categories - more regulation and less regulation. Predict the outcomes of each course of action.
   - More regulation:
     - Control of the wholesale market through fixed prices, limited production levels, or government entry into the power generation business. (There currently is a plan to force wholesalers to refund some of their profits from the last year. How do you suppose they will respond in terms of future electricity generation?)
     - Some form of government directed allocation based on some criteria other than price.
     - Continuing misallocation of electricity.
     - Continuing allocation problems because the mismatch between quantity supplied and quantity demanded persists.
   - Less regulation:
     - Decrease in the quantity of electricity demanded as price increases.
     - Increase in the quantity of electricity supplied as price rises.
     - Increased investment in new power generation.

References and Additional Materials:

California's energy crisis: Government, not market, failure. Jacob Sullum: www.heartland.org/environment/mar01/sullum.htm

California's energy crisis: Not an accident. Fredrick D. Palmer; www.heartland.org/environment/feb01/crisis.htm

Why California's restructuring failed. Jim Johnston: www.heartland.org/environment/mar01/california.htm

California Screamin' . . . About Electricity Deregulation. Jerry Taylor and Peter VanDoren, access through Policy Bot at www.heartland.org

Wrong Way Out of the Dark? Jerry Taylor and Peter VanDoren; access through Policy Bot at www.heartland.org

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