



Consumer Value of the Steam System

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Historic Context

Historic Economic Lessons

- Prometheus provides fire to early man and gets burned for his efforts.
- Centuries of devastating fires compelled the search for safer and more economic fuel sources.
- Eventually, coal displaced wood; petroleum distillates displaced whale oil; natural gas displaced some fuel oil; nuclear power displaced some fossil fuels; corn-based ethanol displaces some fossil fuels; and the list continues to grow.

Fires devastated major cities...

- Rome (Nero fiddled while his empire collapsed)
- London (subjected to repeated cycles of burning and flooding)
- Chicago (Mrs. O'Leary and her cow took the rap for bad city zoning and code enforcement)
- Southern California wildfires are legendary

Fossil Fuel Frustrations

- Energy crisis of 1974-75, marked by mile-long lines of cars waiting for fuel, led to cries to end reliance on foreign oil.
- Energy crisis of 1979, marked by high prices and supply shortages, led to demand for renewable energy.
- The Iranian Revolution and the taking of American Embassy staff as hostages led to real commitment to end reliance on Middle East Oil.

Fossil Fuel Failures

- The threat of \$100+ prices for a barrel of oil in the 1970s and 1980s fueled national commitment to energy efficiency at home and on the road. The Ford Pinto replaced the Ford LTD, and highway traffic slowed to the “double nickel” – 55 MPH
- American agriculture demanded subsidies to turn corn into ethanol.

Fossil Fuel Fiascos

- High prices for petroleum drove new exploration, and fuel supplies increased in the 1990s.
- SUVs replaced compact cars. Speed limits were raised.
- “McMansions” replaced suburban tract homes.
- Electronic communications and the “virtual offices” they supported spurred population dispersion.

Fossil Fuels Today

- Oil exceeds \$130 per barrel.
- Global demand for oil drives market prices increasingly higher.
- Global warming concerns compel reductions in fossil fuel.
- American consumers are really committed to increasing their energy efficiency.
- Hybrid cars are replacing SUVs.



Fossil Fuels Today, *continued*

- PlaNYC 2030 anticipates rebirth of New York City – 1 Million More New Yorkers.
- Distribution limitations constrain deployment of alternate fuel vehicles.
- Ever-increasing demand for more electricity places additional strain on fossil fuel supplies worldwide.
- Many now see global warming risk as greater than nuclear exposure.



Nuclear Fears Freeze Power

- On March 28, 1979 Reactor Number Two at Three Mile Island was the most serious accident in U.S. commercial nuclear power plant history.
- On April 26, 1986 Reactor Number Four at the Chernobyl Nuclear Power Plant in the Ukraine exploded, the worst nuclear power plant accident in history.
- No new nukes yet.



Economic Example

Another corny lesson



Consider Chiffon Margarine...

- In 1962, Anderson, Clayton, and Company, a Houston-based cotton merchant organization that had become a food-processing conglomerate, developed the first commercially successful tub of “soft” margarine to improve margarine’s competitive position in regards to butter.
- Price - \$1 million per half-pound tub, or \$2 million per pound.

Marketing Evolution

- First, it was marketed for its ease of spreading.
- Second, it was marketed for its dietary benefits.
- Finally, it was marketed in the 1970s for a taste so real that it could fool “Mother Nature”





Economic Lessons of Chiffon

- One tub was uneconomic.
- 100 million tubs reduced the economic disparity between stick margarine and tub margarine.
- Although tub margarine remains more expensive than corresponding stick margarine, the lower prices of corn and soy oil generally keep it lower than the cost of butter.



Relevance for Steam

Chiffon Edison Steam



Chiffon Edison Steam

- One Steam System = \$1 billion (more or less)
- Way too pricey for one single customer!
- Really pricey for 1,000 customers!
- Borderline affordable for 2,000 customers!
- Current Customer Base – 1,800 customers!



Two-Prong Solution

Reduce operating costs.
Increase customer base.



Reduce Operating Costs

- Public Service Commission Oversight
- Regulatory Intervention – New York Energy Consumers Council, Consumer Power Advocates, City of New York, Consumer Protection Board, and Westchester County
- Aging infrastructure requires attention – for economic, safety, and reliability considerations

Increase Customer Base

- Increasing the number of customers increases the operating costs.
- Increasing the number of customers decreases the individual customer's share of system costs.
- Overall, increasing customer counts drive lower customer costs. Period.
- Every customer should become a "Tom Sawyer" whitewashing the fence.

Value of Space Utilization

- In-House Boilers Require Mechanical Room Space. Flues Require Space at Every Level.
- Space Not Utilized for In-House Boilers and Peripheral Equipment is Valuable New York City Real Estate.
- Mechanical space requirements for an in-house boiler plant add up – 15,000 gsf @ \$50/gsf = \$750,000 per year (1,000 gsf @ \$50/gsf = \$50,000 per year)
- Incremental labor expense for managing in-house facility further aggravates the financial burden of an in-house facility.



Minimization of fuel oil delivery trucks – traffic congestion

- Traffic congestion costs money – the building owner/manager always pays
- Delivery congestion escalates the cost of the commodity.
- Delivery vehicle congestion competes with other building support service requirements and with constituent egress



Steam System's impact on New York City's distinctive skyline – where are the flues?

- With varying building heights, one building's exhaust could become another building's intake.
- Outside air requirements could be compromised.
- Pollution distributed more broadly than at present.



Con Ed Steam Value – Consider Multiple Factors

- Economic analysis – compare total costs of steam with total costs of in-house steam generation
- Include opportunity losses represented by space required for in-house boilers, flues, etc.
- Include labor costs associated with in-house plant operations.
- Include potential exposure of environmental impacts



Regulatory Issues

Some Thoughts



Con Edison Steam's Future

We stand at the crossroads...

One path looks bleak...

- Customers migrate away from steam cooling = strain and cost to the electric grid customers
- Customers install boilers = flue exhaust in your back yard
- Customer base diminishes = higher customer costs



The other looks brighter....

- Increase customer base = lower costs per customer
- Expand the use of steam throughout the year, levelizing peaks and valleys = lower costs per customer
- Increase the efficiency of steam production and use = lower costs per customer and a better environment



Which path will you choose?

Let's start our journey now...

New York



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Toward Economical Energy Options"**