

The Importance of Demand Response

Sally Hunt, NERA

International Energy Association

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Today is my birthday

- I shall wear a purple hat and sing in the street

China



Three jewels

- Prices work
- Even monopolists cannot set price above what consumers will pay
- Spot markets always clear

Four issues to worry about :

Who worries?

System security -- engineers

Price volatility -- politicians

Market power -- FERC

Economic efficiency -- economists

Two policy requirements

- Metering
- Price setting including demand

One fall back

- Interruptible load for intra- period security

Metering used to be expensive



In the US a whole “Demand Side Management” industry grew up



In competition the price should do most of the economic work e.g.



- Allocate resources
- Clear the markets
- Signal for new supply
- Cut off consumption when shortages threaten

(1) System security

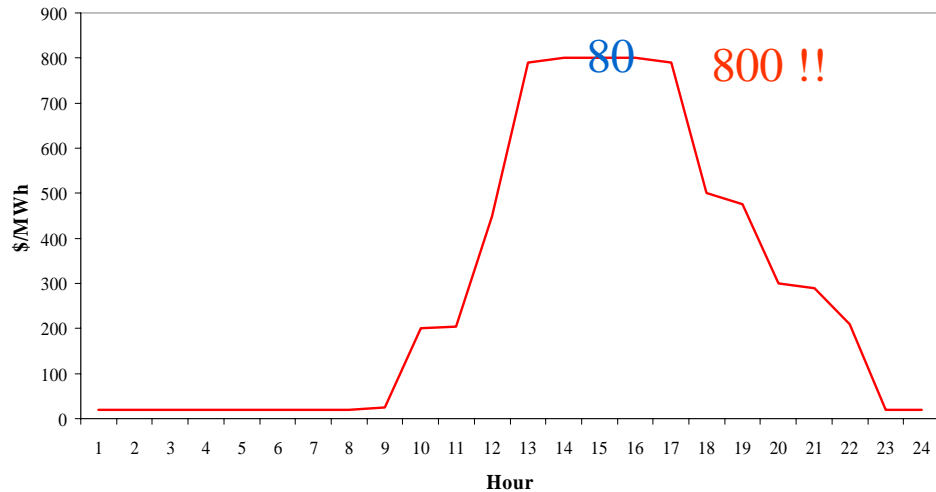
- Market will provide adequate long term and daily capacity if the price is left alone
- (Properly constructed) spot markets always clear – there is never a shortage

Intra-period issues

- Within period, price does not work
- Price points too broad (1/2 hour, when what you want is 10 seconds)
- Need some automatic trading -- interruptible load -- who pays whom for this?

(2) Price Volatility

Hourly Market Clearing Prices
CA 6/26/2000



- Volatility is normal
- But not that much (see California excursions)
- Demand response would have saved California, even if everything else was still wrong.

(3) Market power

(not many people know this!!)

- Market Power Is:
 - A) Withholding supply
 - B) *With intent*
 - C) Which raises prices
- Having customers able to respond to prices solves most of the market power problem
- Is equivalent to having additional generators.

(4) Economic Efficiency

- Unbundle the prices for more efficient production and consumption
- Metering is not expensive any more
- If customers are not metered by the hour they cannot possibly be charged by the hour

Who pays for metering?

- Measuring, reporting and responding are three separable things.
- Measure by the hour, but not necessary to report on line, nor to control in real time
 - Measurement is a public requirement like an ISO.
 - Reporting is a cost-effectiveness problem for the ISO.
 - Control is a customer problem.

When people propose DSM or other forms of re-regulation, it's always because there is a problem with the price

- Too low
- Too high
- No information to traders (buyers or sellers)
- No way to respond
- No reason to do so
- Not fast enough

But is there any elasticity of demand??

- Yes
- Yes
- Yes

How to get demand into the price-setting mechanism

- Please, do not bid “demand reductions”
- Can't sell what you have not bought
- Customers should bid prices and quantities
- Price set at intersection of demand and supply

A digression on capacity markets



Gene:

We have to have
capacity markets
because we don't
have demand
response!



Sally:

We have to have
demand response,
then we won't need
capacity markets!

Two policy requirements

- (1) Metering by the ½ hour
Spot market by the ½ hour
- (2) Price setting with demand as part of the scissors

Also Forward markets
New forms for tariffs

- Within the half hour use operating reserves or (rarely) ISO- interruptible load.

Five issues for research

- How much metering
- Who, if not everyone
- Ways to get demand into the price
- How to set tariffs
- Who controls interruptible



The End



