



# Capacity and Risk Management

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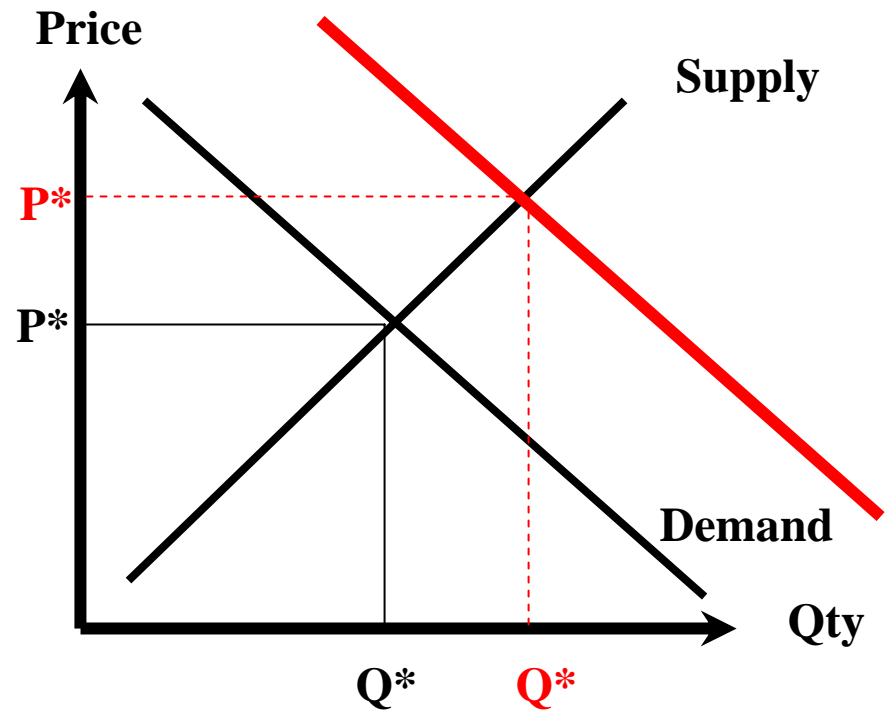
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# Introduction

- ◆ Look at capacity through the lens or context of risk management.
  - That is, lets focus on what “risks” that capacity as a separate identifiable product or service is attempting to mitigate.

# Supply, Demand and Risk

- ◆ The intersection of supply and demand establish the equilibrium price and quantity.
  - Lets complicate things just a little - suppose these aren't the "actual" supply and demand curves but rather the "expected" supply and demand curves...



**Now lets suppose the actual demand is greater.**

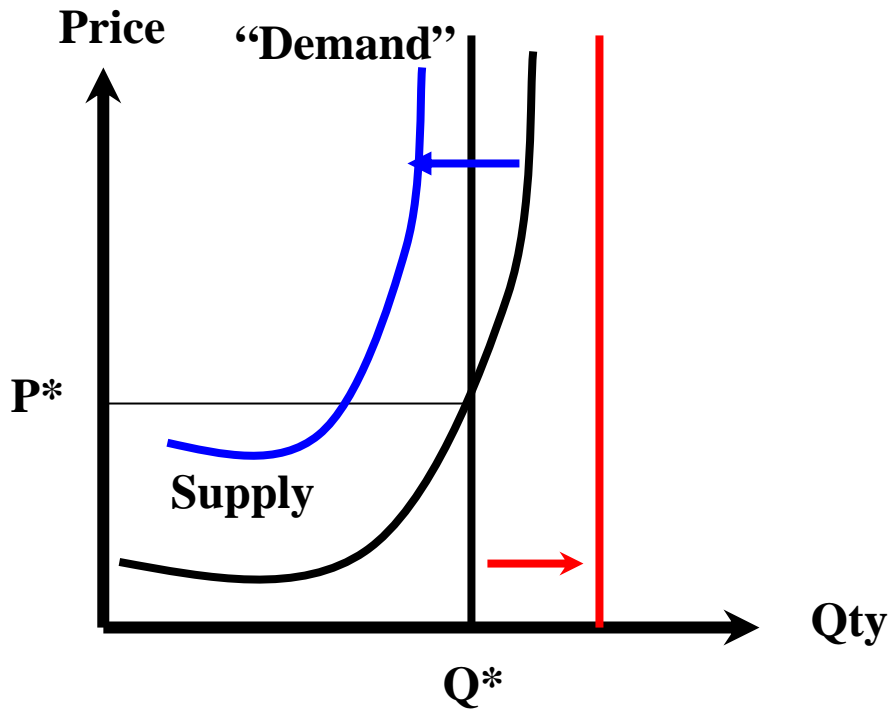
**...then price is higher than anticipated...call this price risk.**

**...and quantity is greater also...call this volume risk.**

# Volume Risk

- ◆ With “normal” goods, managing the physical aspects of differing volumes isn’t nearly as problematic as it is in electricity.
- ◆ Why...
  - Because the lights can go out!
- ◆ Typically...we assume the “demand” for electricity is vertical...especially in real time...and is therefore taken as a “given”...i.e. it isn’t demand it is load.

# The effect of vertical “demand”



With a vertical “demand” curve, a shift of either the demand or supply curves can potentially lead to problems...in either case there may be no intersection...and either everybody doesn’t get electricity or somebody needs to be involuntarily shut off.

# Managing the volume risk

- ◆ So how has this “volume” risk been managed to date....primarily through two “capacity” constructs.
  - First...Operating reserves
    - Requiring an excess of supply over anticipated load on a short term basis (usually next day)
  - Second, in order to ensure that adequate operating reserves are on hand...we need so called Planning reserves
    - Requiring an excess of supply over anticipated load on a long term basis.

# Can/should we rethink this?

- ◆ “Capacity” as a concept is directly related to the assumption of a vertical “demand” curve...as soon as you relax this assumption capacity takes on a different meaning.
  - In the past it was appropriate to think of demand this way because there were no price signals.
- ◆ In other words, the entire capacity issue hinges fundamentally on whether or not we can develop a real demand curve.
  - What is the meaning of a “reserve margin” or how is it even defined in a world in which demand responds to price?

## In the end...

- ◆ The debate is really about how best to facilitate the development of a “true” demand curve...and whether or not we are going to let prices work...distorting prices *always* has consequences.
  - It is technologically feasible for demand to respond to price signals.
  - It is commercially feasible to hedge exposure to prices.



# Concluding Remarks

- ◆ A “market” is best thought of as a complex interdependent network of arrangements.
  - The Real Time or “spot” electricity market...reflects the situation when the commodity “goes” physical...it is not “the” market.
- ◆ The way in which markets are linked is through prices...
  - Price = Information! A “good” price is one that accurately reflects the information in the market.
- ◆ The electricity industry needs better long term price signals, i.e. an improved long run market.
  - Lack of forward contracting.
- ◆ A “real” market will, by necessity, force us to rethink what we mean by reliability and how we define reliable.
  - Nobody is “involuntarily” turned off...



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