Demand Response Workshop

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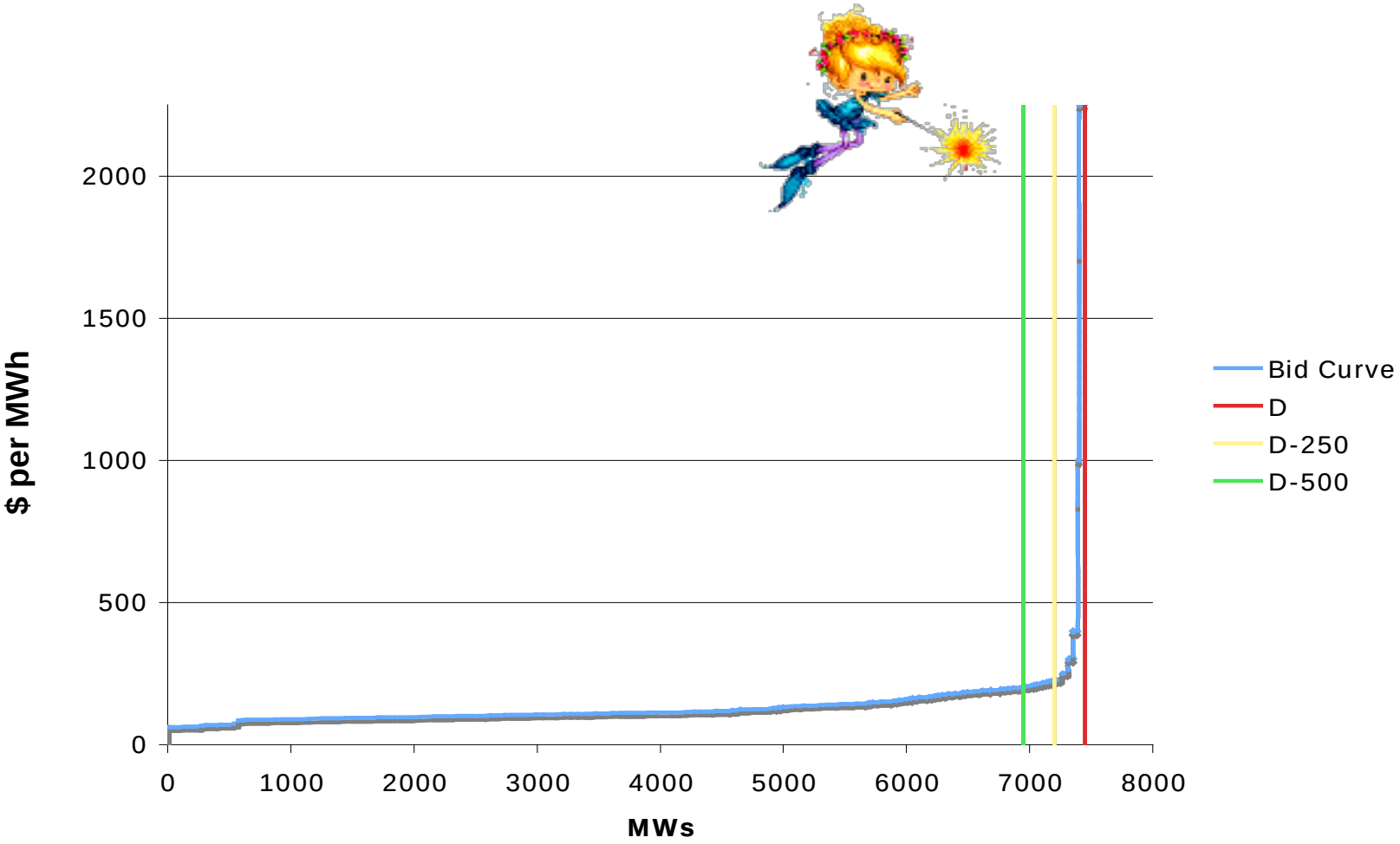
If we could just magically change this curve. . . .



Response to Wholesale Generation Prices

- Response is very small.
- I calculated an average own-price elasticity of demand of -0.000008 for all large industrial energy consumers from Jan. 2, 2002 to mid-2005.
- From 2007 to Dec. 1, 2010, I can't detect a response in the aggregate data for large industrial energy consumers.
- My estimate of the own price elasticity of demand since Dec. 1, 2010 is -0.01 for transmission voltage energy consumers. I can find no significant response from other consumer segments.

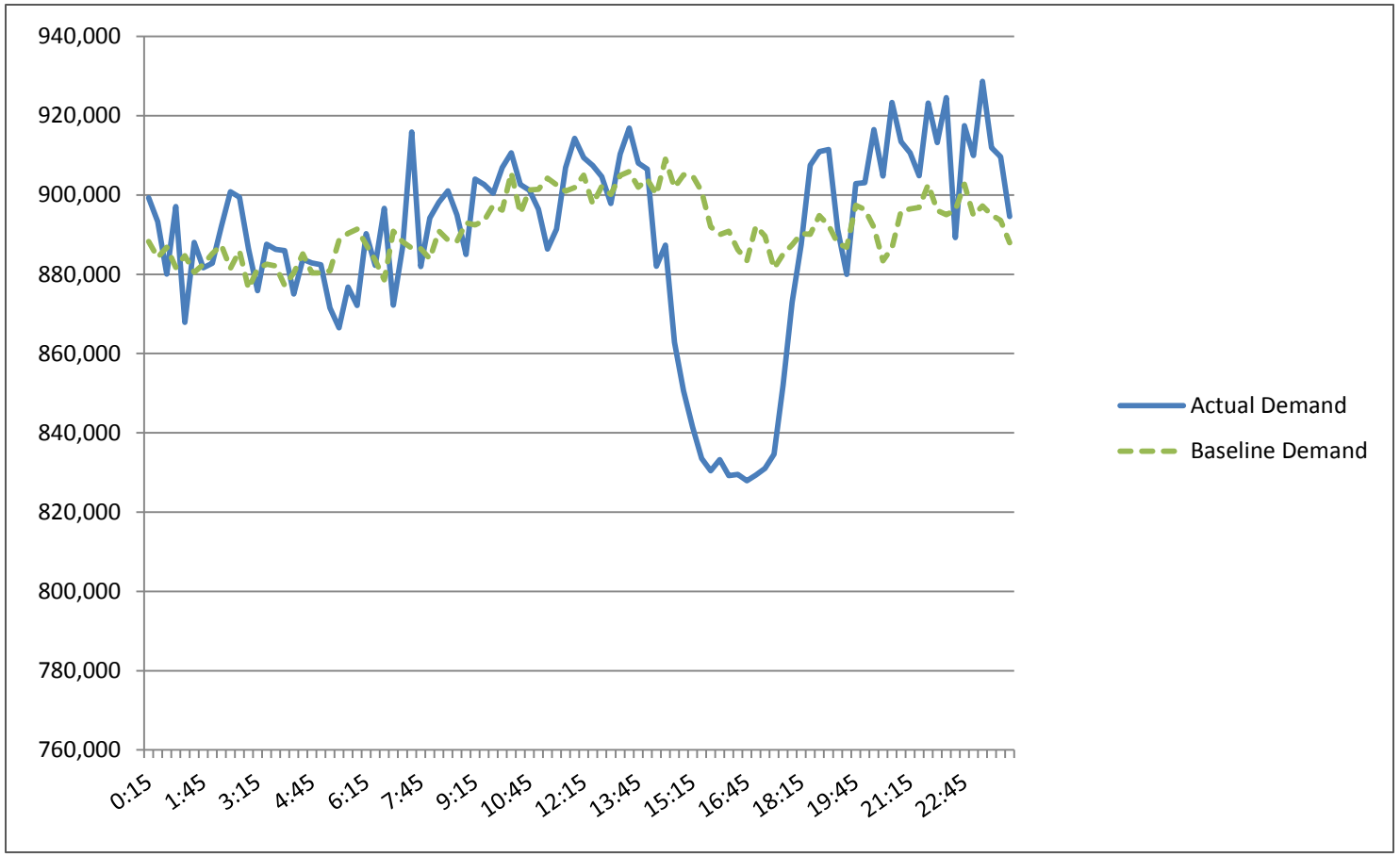
Why don’t energy consumers respond to wholesale generation prices?

- Knowing that few consumers have the interest or ability to monitor prices that change every 15 minutes, electricity is normally sold at fixed predetermined rates or time-of-use prices to all but the largest energy consumers.
- Price changes are not known with certainty until after-the-fact.
- Until recently, the metering infrastructure didn’t provide utilities or retailers with the capability to price electricity differently during different 15-minute intervals or hours to smaller residential consumers.

Yet, We are Seeing Some Response to Transmission Prices

- Transmission pricing based on the 4 CP formula provides a strong price signal to large industrials to reduce their energy purchases during periods with high electricity demand.
- Industrial energy consumers served at transmission voltage reduce their consumption by up to 4% during a 4 CP.
- Although the exact interval of the CP is not known, the savings from a response can be easily calculated, the timing (late summer afternoons) is somewhat predictable, and the duration of the transmission price is known. The situation with generation prices is much different.

Response to Transmission Prices



Energy Consumption (in kWh) by Transmission Voltage Customers on June 26, 2011, Contrasted against Baseline Energy. (An example)

What Else is Happening?

- Some retail electric providers offer innovative rate structures.
- Some cooperative and municipal utilities directly control customers' air conditioners and water heaters in response to high generation prices, 4 CP transmission charges, and network conditions.
- Emergency Response Service (ERS).
- TDU Load Management Standard Offer Programs.

Adding It All Up

Operating Reserves provided by Interruptible Energy Consumers (Load Resources)	1,400 MW
Emergency Response Service (ERS)	450 MW
Utility Load Management	300 MW
Response to Transmission Prices (in competitive areas)	350 MW
Other Programs by NOIEs and REPs	300 MW
Total	2,800 MW
ERCOT 2012 Peak Demand	**66, 548 MW**

This is slightly below our pre-restructuring levels of demand side resources. ERCOT's CDRs for 2000 and 2001 report 3,000 MW of demand side adjustments.

Loads in SCED

- This has some theoretical appeal
- *Consequently, I am not optimistic that this will solve our problems*
- But there is minimal interest by loads in being directly deployed by ERCOT.
  - Prospect of large performance penalties
  - Difficulties adhering to recall instructions
  - Aside from price certainty, price-responsive loads have little to gain.

Price Reversals

- If passive or voluntary load response causes prices to drop
  - This is a proper and beneficial market effect
  - This should be encouraged
- If a deployment of Load Resources or ERS causes prices to fall
  - Yes, this is a concern
  - But, NPRRs 427, 432, 435, and 508 (pending) should have largely taken care of this situation
  - Generally, prices will be at the system-wide offer cap when this occurs

The Path Ahead

- Let's build on our existing programs.
  - Facilitate the participation of aggregations of smaller loads into ERS and ancillary services markets
  - Continue to improve the features of ERS
- Improve price information and communications
- Align offer caps with VOLL
- Eliminate needless barriers to demand side participation
- Facilitate new technologies
- Once passive or voluntary response becomes significant, ensure that ERCOT's short-term load forecasts contain an adjustment for the price elasticity of demand.