

The Brattle Group

Demand Response A Long View

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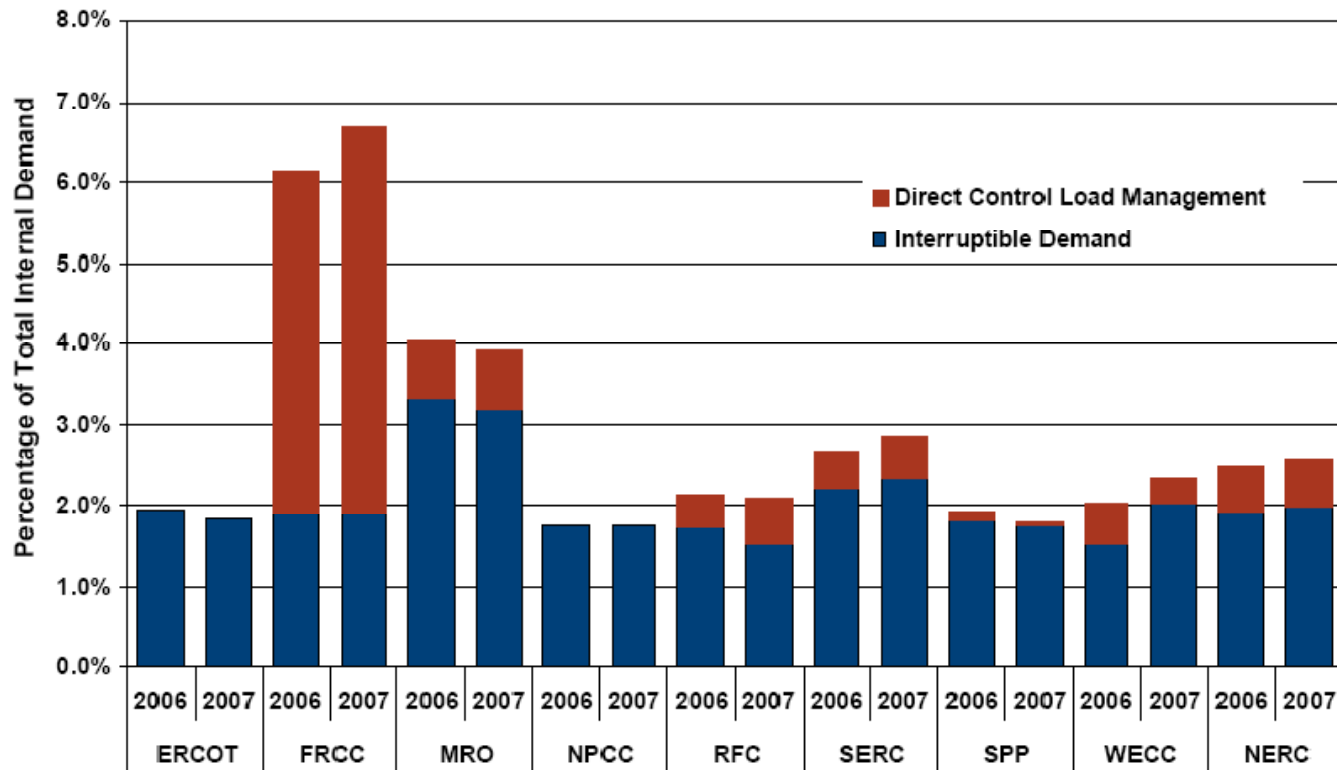
DR Expo, Santa Clara
May 21, 2008

Today's demand response

- Only invoked when brownouts and blackouts are imminent
 - ▶ Driven by reliability triggers
- Based largely on yesterday's conditions
 - ▶ Aging technology (direct load control)
 - ▶ Aging rate designs (curtailable and interruptible rates)
- Customers are paid cash for lowering peak usage against an elusive baseline

The state of play

NERC Estimate of Existing DR by Region

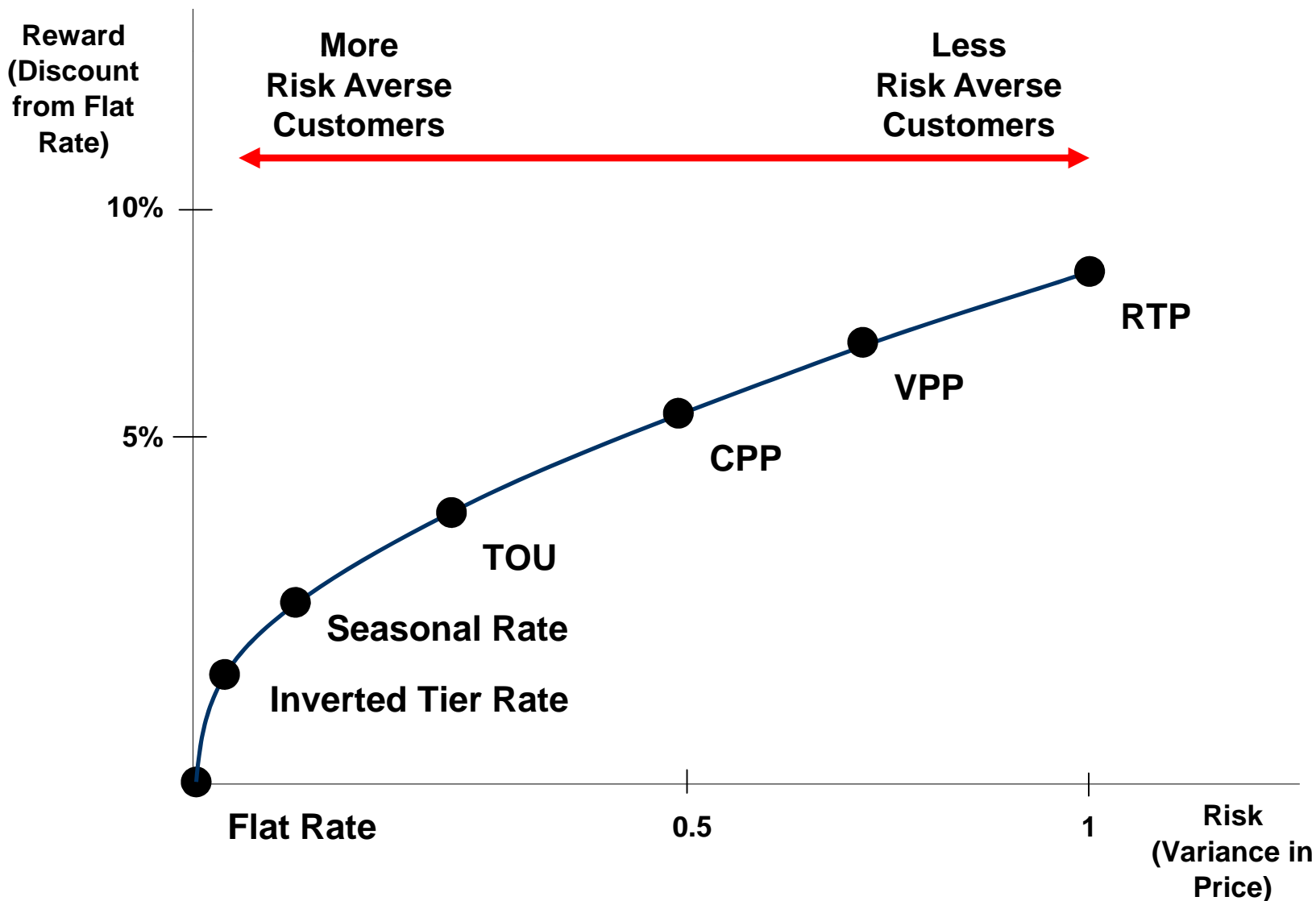


Source: 2007 NERC Summer Assessment, 2007 FERC Assessment of DR & Advanced Metering

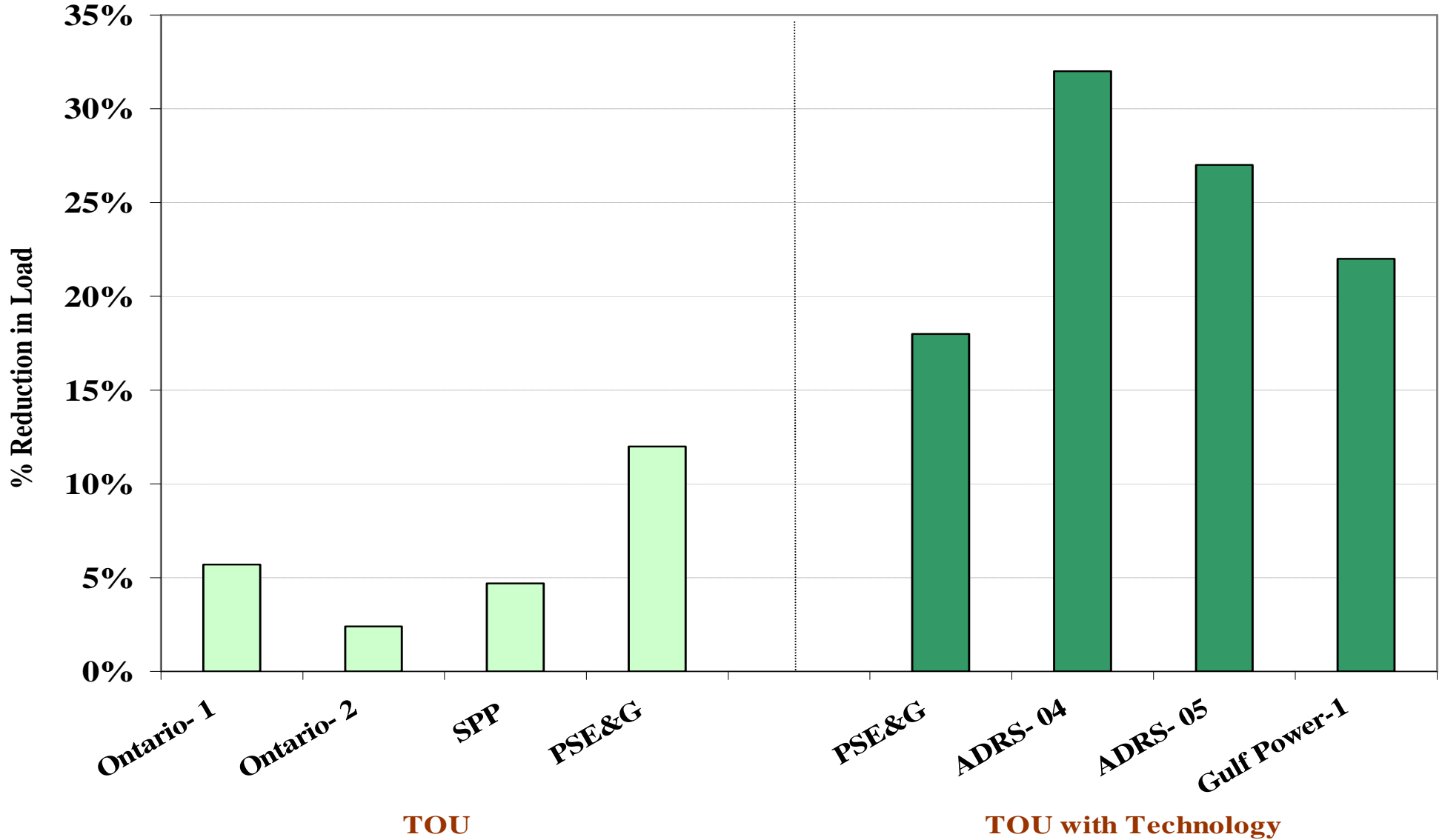
Tomorrow's DR

- Will be price-driven
 - ▶ Default dynamic pricing
- Digital technologies will play a decisive role
 - ▶ AMI
 - ▶ Smart Grid
 - ▶ Programmable thermostats and EMS
- No longer an option but a condition of service

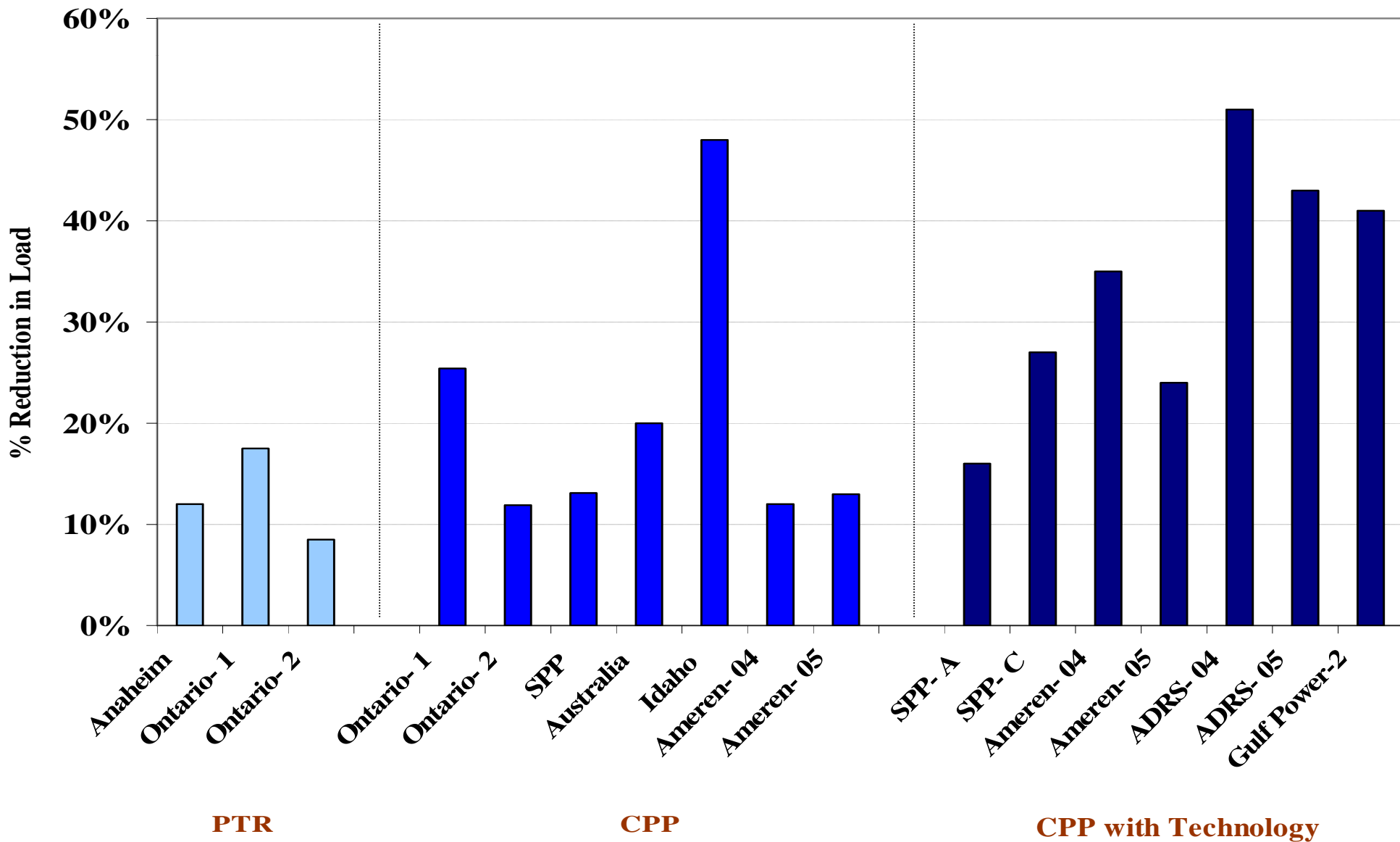
The shape of prices to come



Customers respond to static time-of-use rates

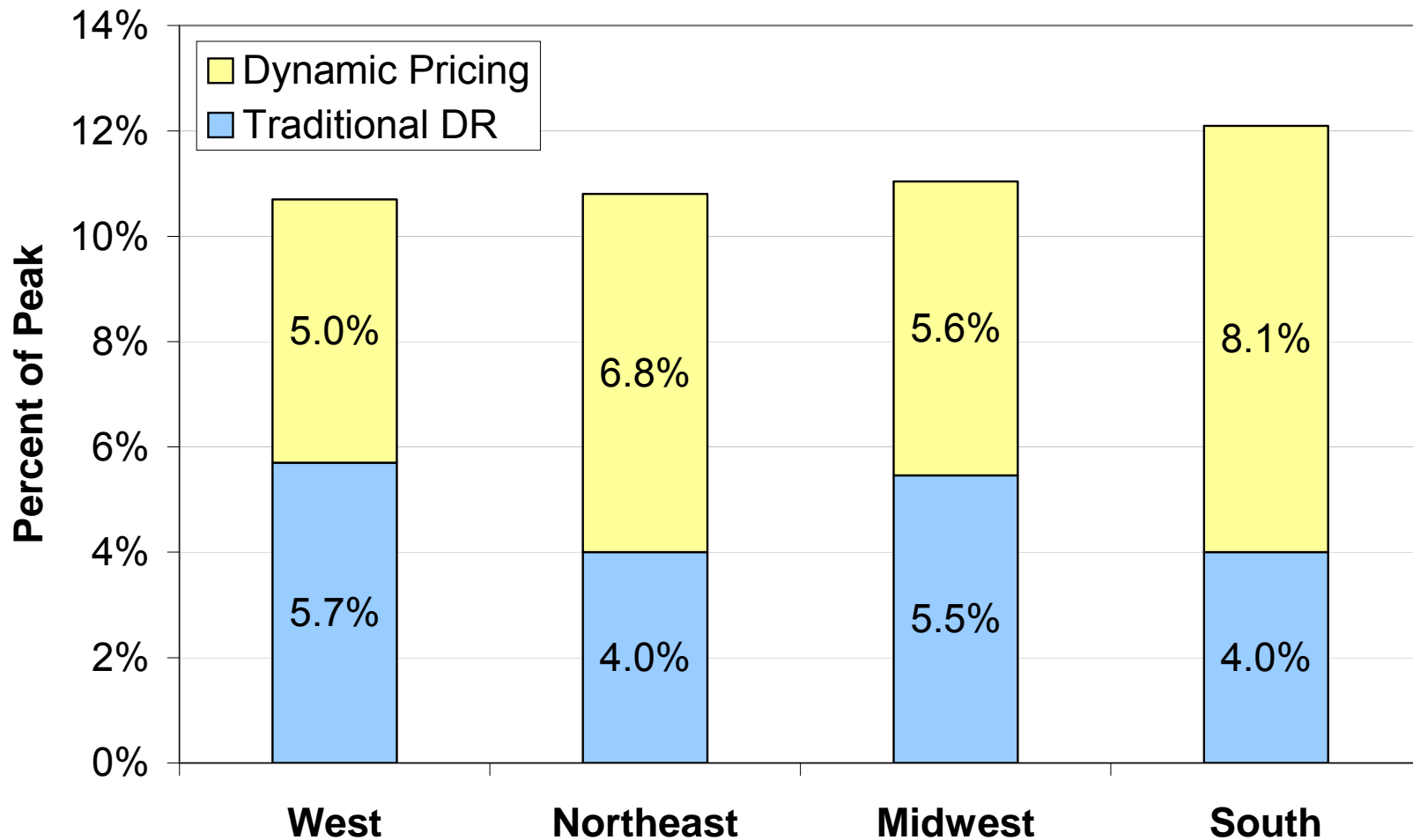


They respond even more to dynamic pricing



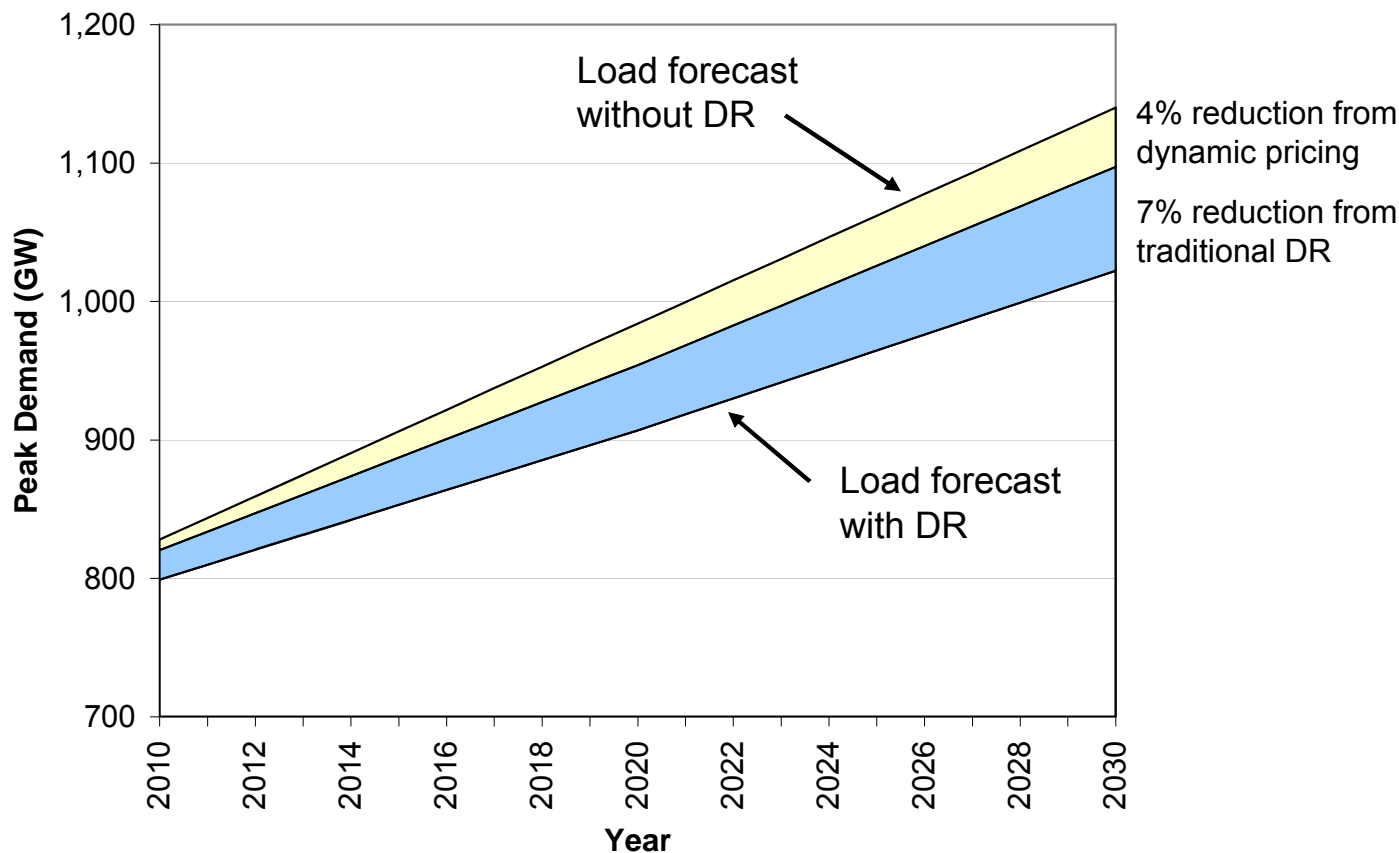
We are projecting a large impact on peak demand

Regional DR Achievable Potential by 2030



EPRI-EEI are projecting that DR may offset 11% of peak demand

Forecast of U.S. Achievable Potential for DR



Additional peak savings would be achieved through energy efficiency

EPRI, EEI. "Potential for Energy Efficiency in the U.S., 2008 – 2030." Preliminary results of Reference Case analysis of Demand Response achievable potential. April 2008.

So why is there so much resistance?

- To quote Arthur C. Clarke, any radical new idea will generate three reactions
 - ◆ “It is completely impossible”
 - ◆ “It’s possible but not worth doing”
 - ◆ “I said it was a good idea all along”

Library

- **Ahmad Faruqui and Sanem Sergici, “The Power of Experimentation,” Discussion Paper, The Brattle Group, May 11, 2008**
(Downloadable from www.brattle.com/Publications/ReportsPresentations.asp)
- **Electric Power Research Institute and Edison Electric Institute. “Potential for Energy Efficiency in the U.S., 2008 – 2030.” Preliminary results of Reference Case analysis of Demand Response achievable potential. April 2008.**
- **The Brattle Group, “Quantifying the benefits of dynamic pricing,” Edison Electric Institute, January 2008** (Downloadable from www.eei.org/ami)
- **Plexus Research, Inc., “Deciding on Smart Meters,” Edison Electric Institute, September 2006** (Downloadable from www.eei.org/ami)
- **Federal Energy Regulatory Commission, “Demand Response and Advanced Metering,” Staff Report, August 2006**
- **Robert Earle and Ahmad Faruqui, “Toward a new paradigm for valuing demand response,” The Electricity Journal, May 2006**
- **US Department of Energy, “Benefits of Demand Response in Electricity Markets,” February 2006**
- **Join the AMI/Smart Grid list serve – send name and affiliation to moldak@eei.org**