

The Benefits of Dynamic Pricing of Default Electricity Service

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Prepared for

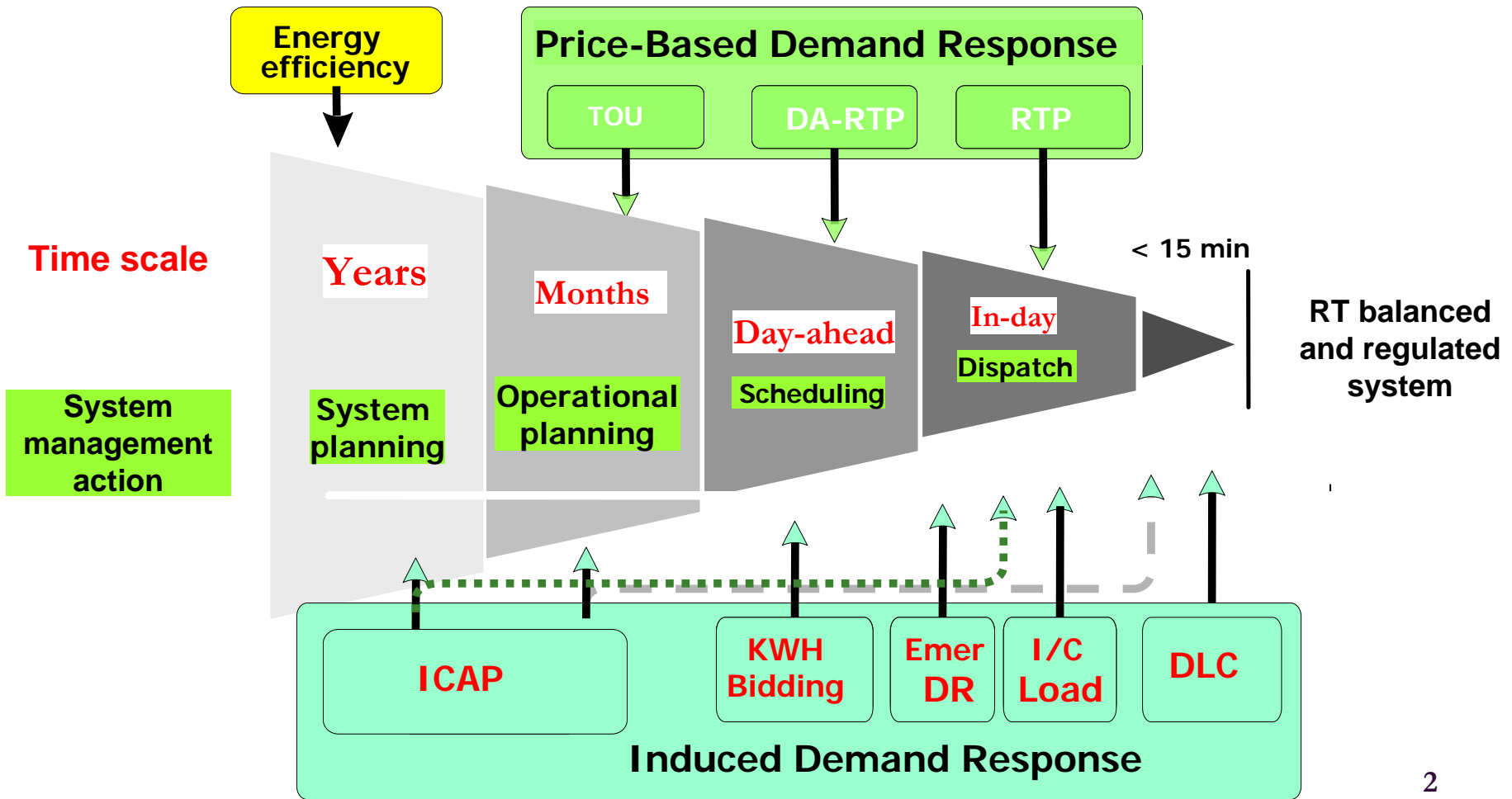
Assessing the Potential for Demand Response Programs

Institute for Regulatory Policy Studies

May 12, 2006



Integrating DR into Electricity Markets

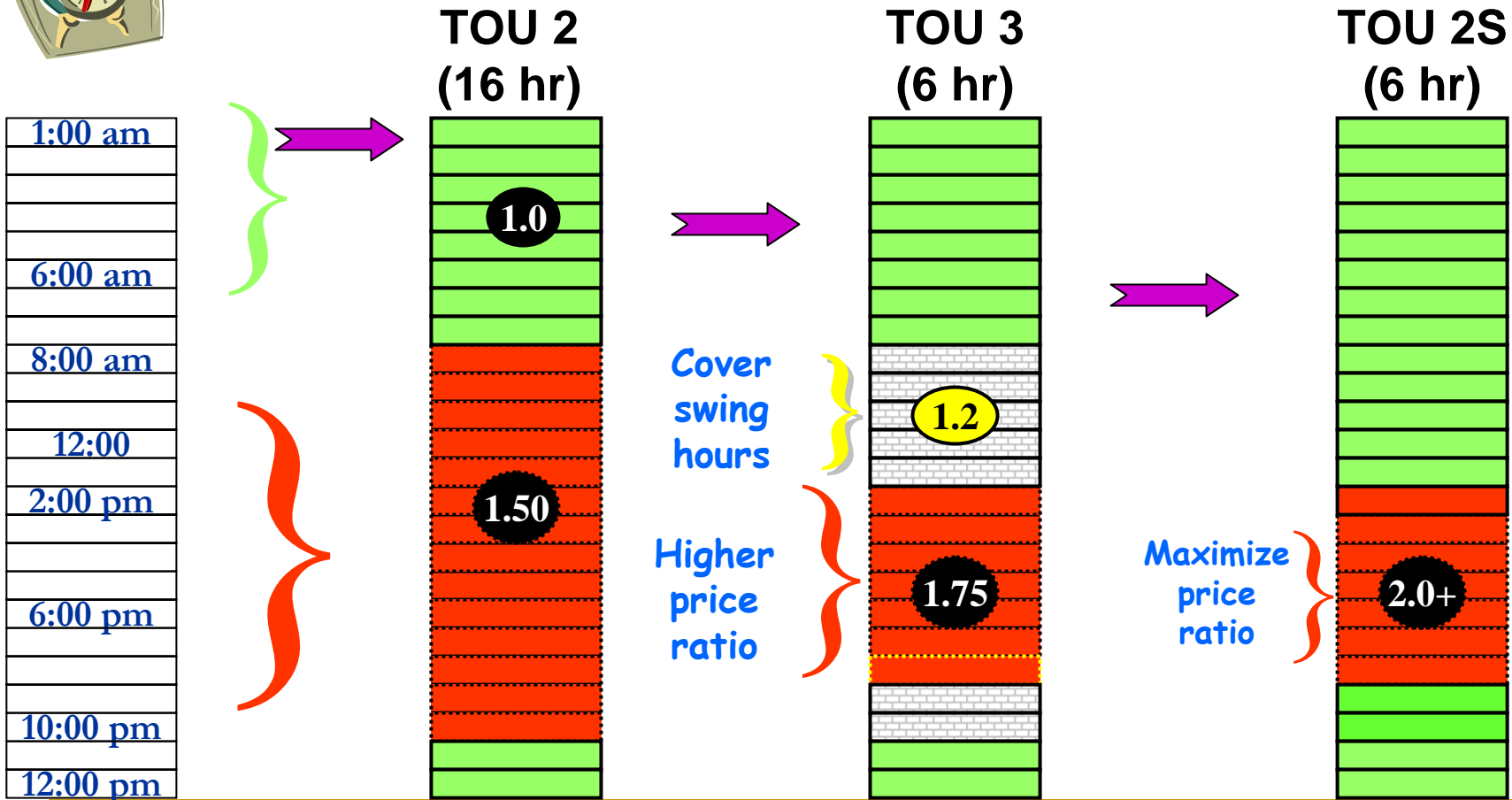


Dynamic Pricing – It's About Time



X.X

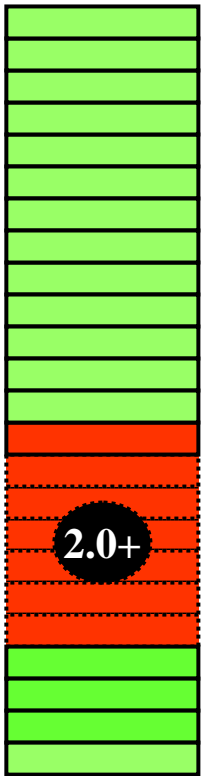
Indicates the relative price/kWh



Dynamic Pricing – It's About Time (2)



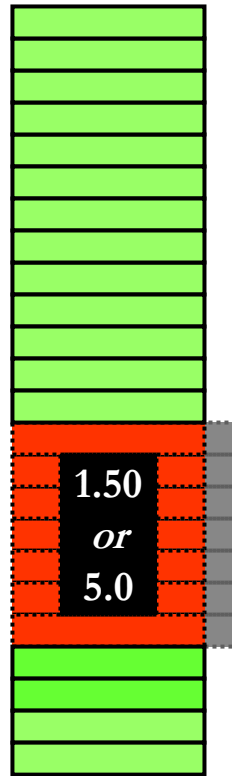
**TOU 2S
(6)**



➔

One peak price for normal days, and another for extreme days

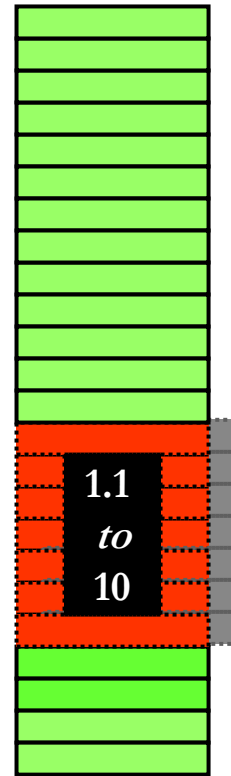
**CPP
(6)**



➔

Tie daily peak prices to market prices

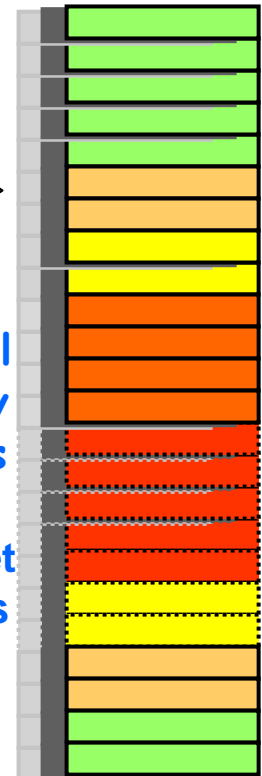
**VPP
(6)**



➔

Tie all hourly prices to market prices

RTP



Benefits of Dynamic Pricing

- **Participant Savings**

- ▲ Savings to customers that take default service consist of two components:

- Avoid paying the hedged service risk premium
- Savings from demand response behaviors
 - **Savings from shifting away from high prices**
 - **Consumer surplus from expanded load at low prices**

- **Benefits to all Electricity Consumers**

- ▲ Lower LMPS reduce bilateral market prices:

- Lower competitive prices
- Lower default service prices

Benefits of Dynamic Pricing (2)

- **Peak Load Reduction – Two Measures**
 - ▲ Maximum single hour of demand response (MW) on annual basis
 - ▲ Average level of demand response (MW) coincident with June, July, August and September monthly zonal maximum demands
- **Market Performance benefits**
 - ▲ Resource Savings - Improvement in the efficient allocation of societal resources

Benefits of Dynamic Pricing (3)

- **Other Benefits**

- ▲ Improved reliability
- ▲ Market power mitigation
- ▲ Reduced emissions
- ▲ More choices
- ▲ Portfolio risk reduction
- ▲ Vertical market development (enabling technologies)

These are hard to quantify, redundant or both

Benefits of Dynamic Pricing of Default Service in New England Service

- **Benefits of alternative default service pricing**
- **Targeted to New England customers over 500 kW**
- **Customers distinguished by:**
 - ▲ **Business activity**
 - ▲ **Load size and profile**
 - ▲ **Price response (from NGrid Study)**
- **Scenarios characterize market supply as:**
 - ▲ **Status Quo (2004-5)**
 - ▲ **High (more high prices more often)**
 - ▲ **Extreme (even more higher prices more frequent)**

Alternative Designs Evaluated



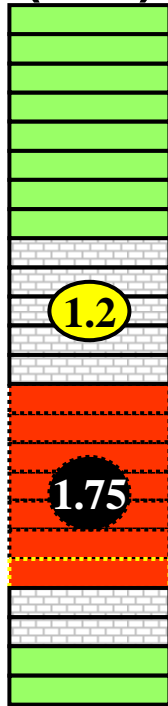
Current
Default

Dynamic Default Service Alternatives

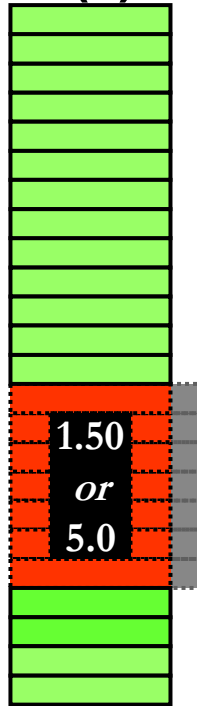
TOU 2
(16 hr)



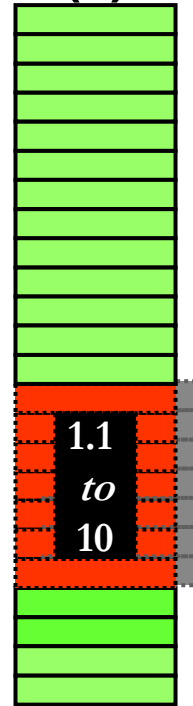
TOU 3
(6 hr)



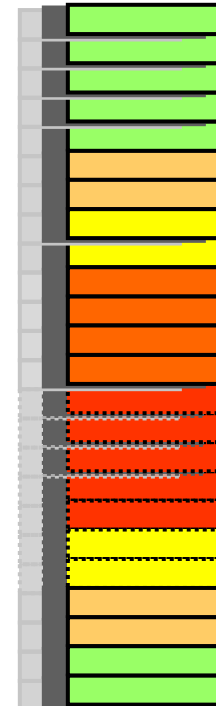
CPP
(6)



VPP
(6)



RTP

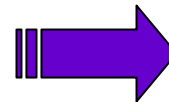
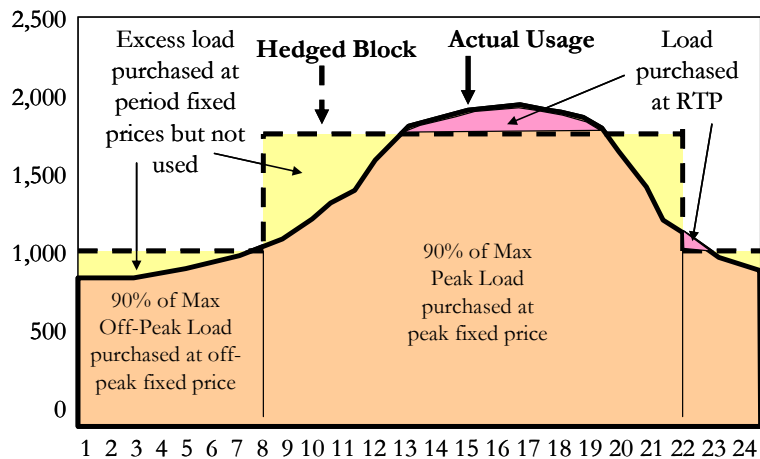


Block &
Swing

Block and Swing

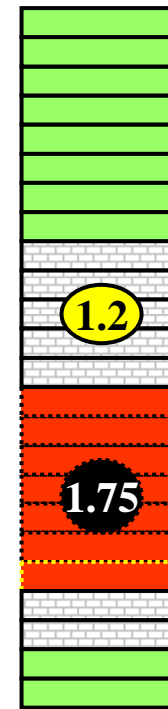
Block and Swing Design

- Nominate kW (peak and off-peak) to fixed price block (TOP)
- Variance settled at the corresponding RTP swing price



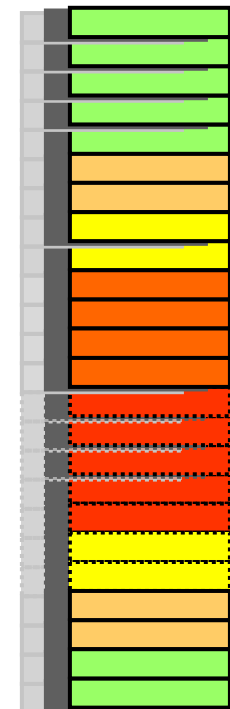
Block Load Pricing

TOU 3



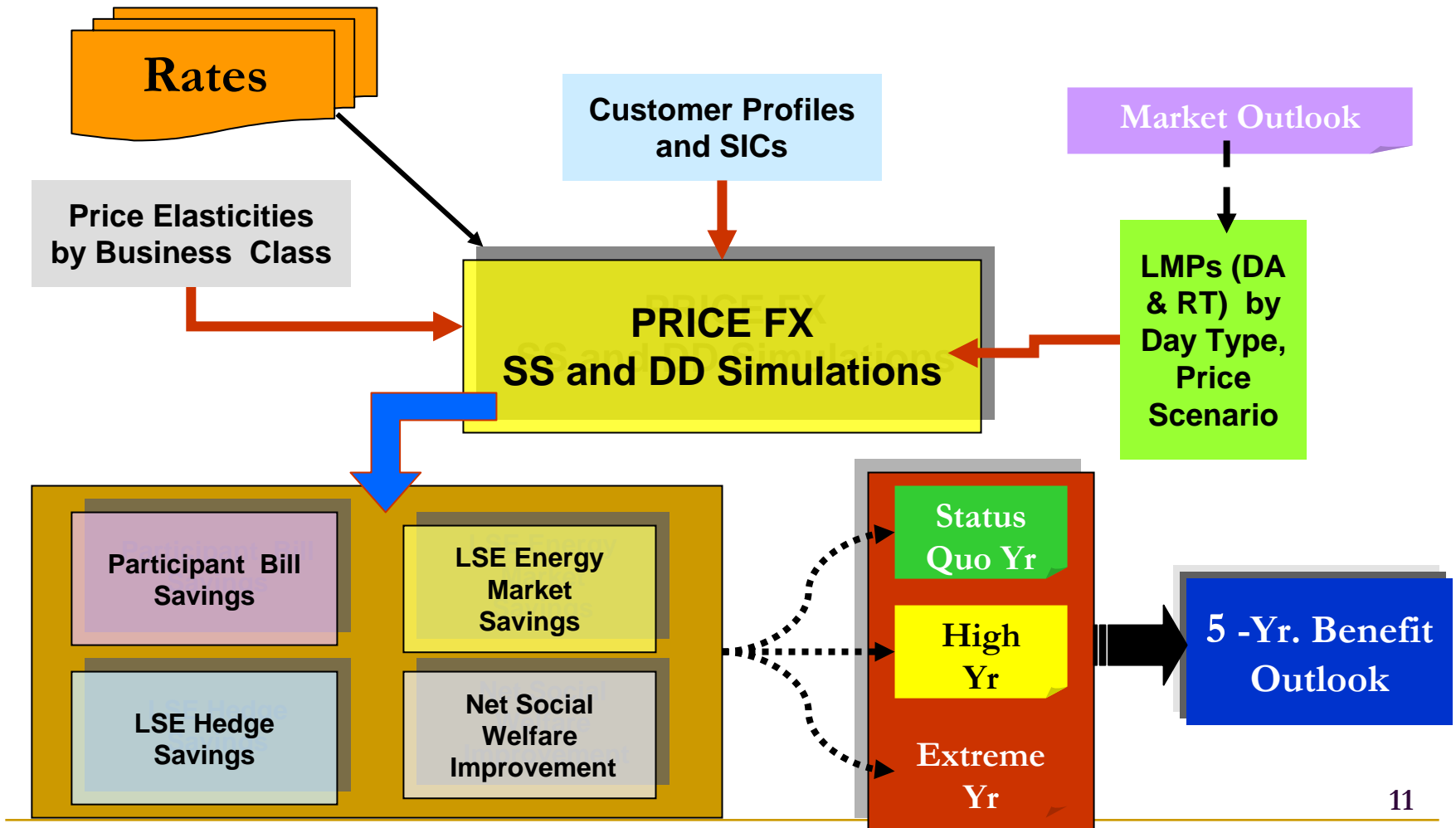
Swing Load Pricing

RTP

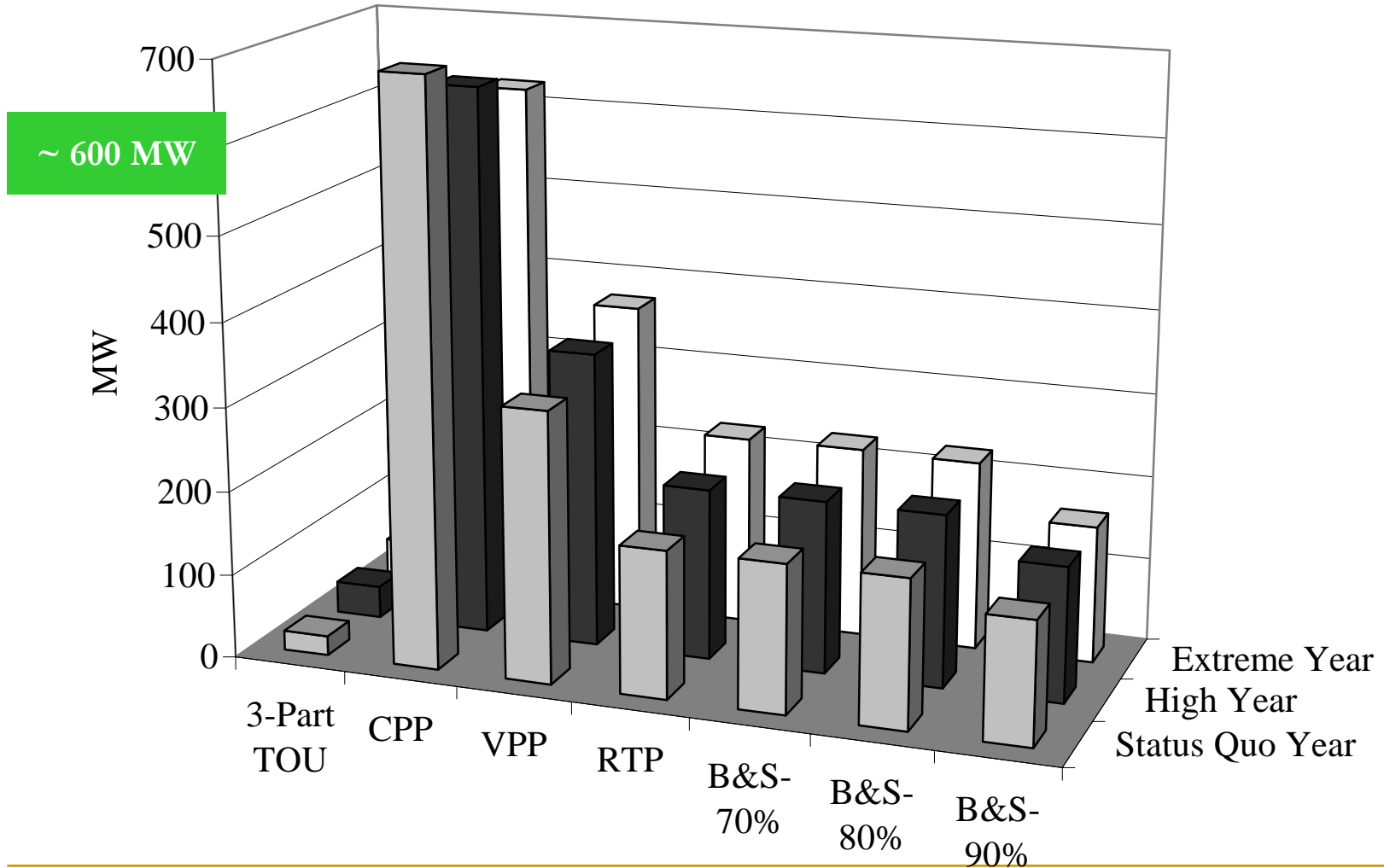


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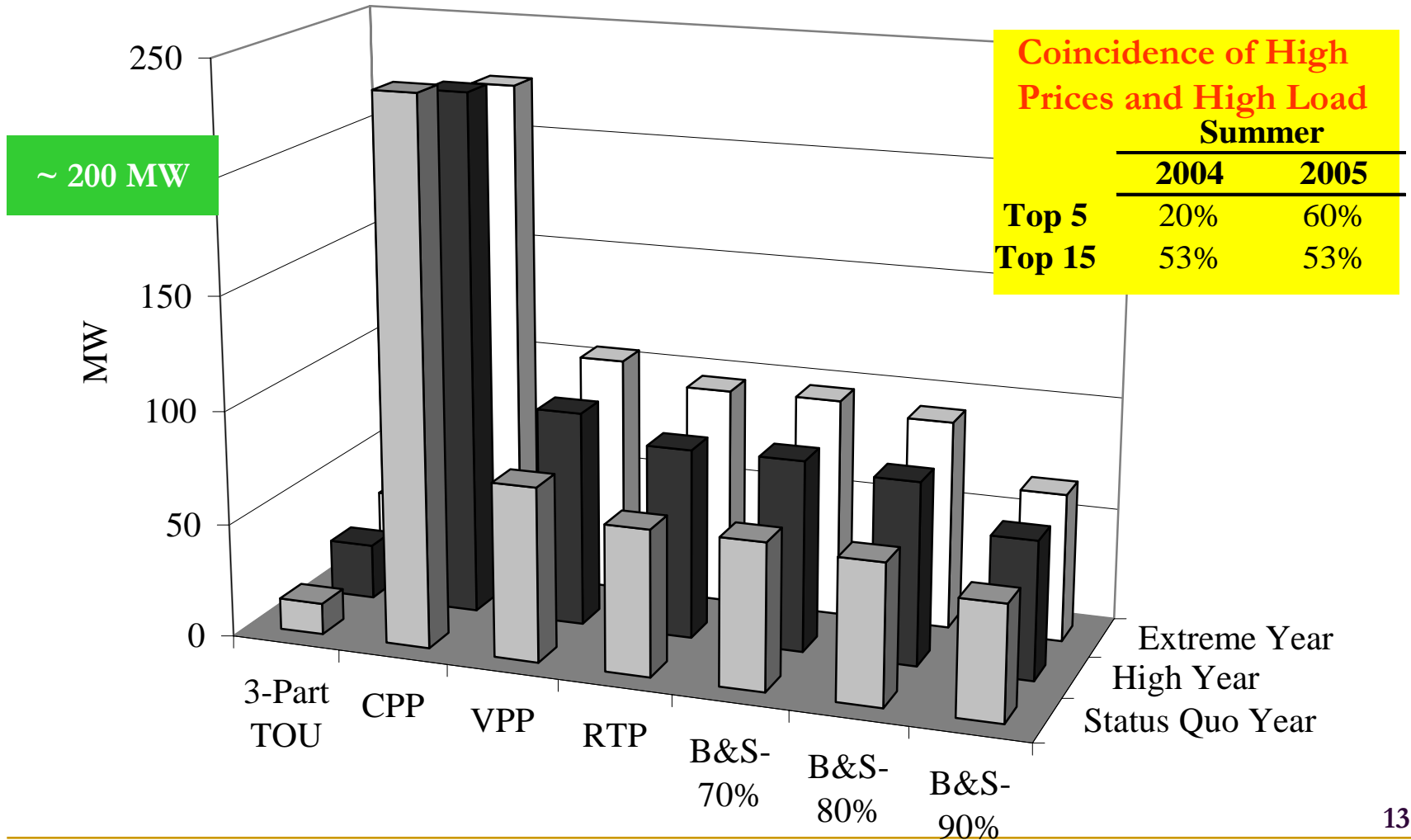
Price FX Model



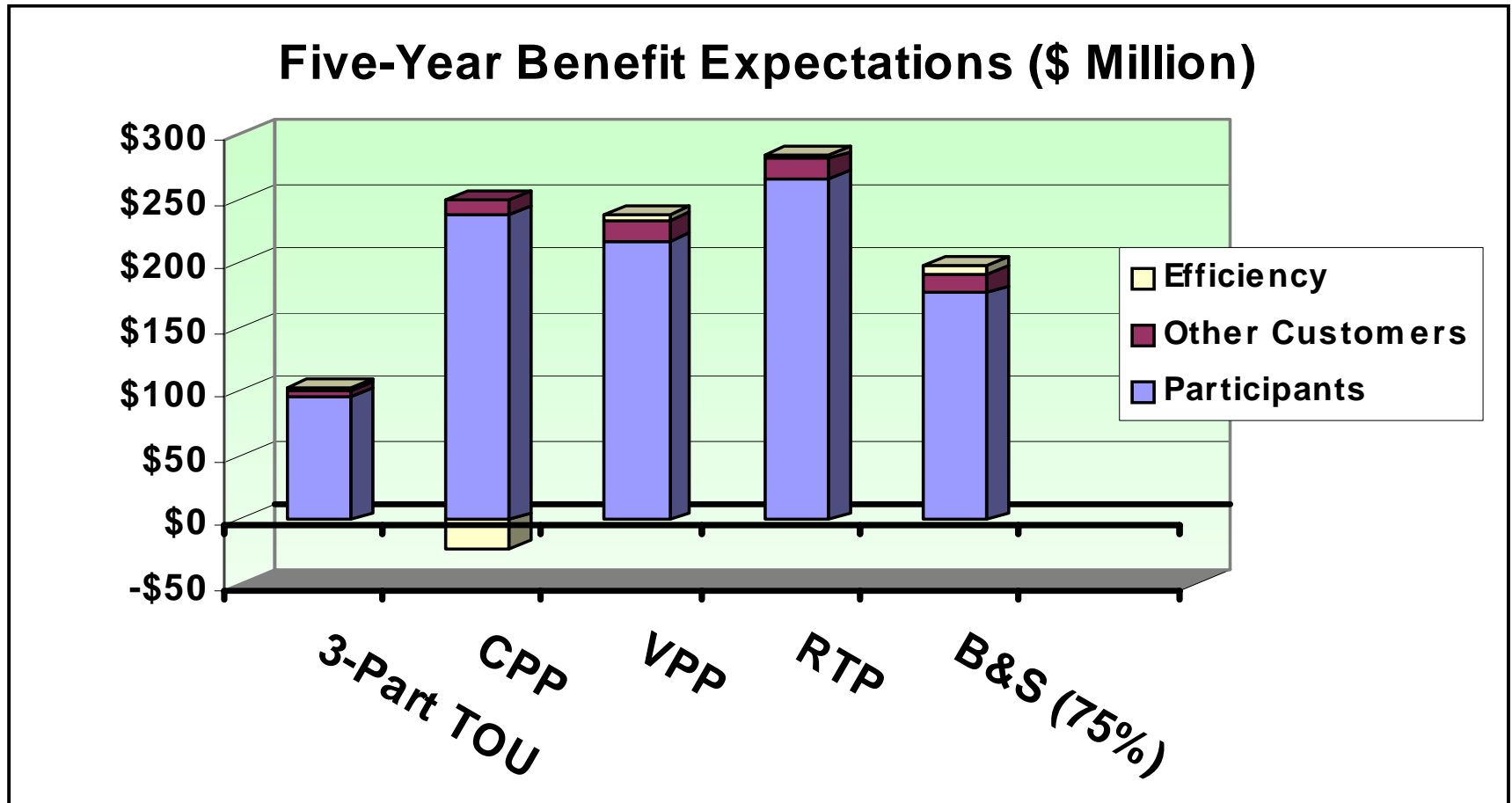
Maximum *Non-Coincident* Peak Load Reduction – New England



Average *Coincident* Monthly Peak Load Reduction – New England



Benefits – Five Year Outlook – New England (33% of customers over 500 kW price responsive)



Some Observations

- **Autonomous price response is the desired end result**
 - ▲ **Don't expect bloom naturally**
 - ▲ **Flat default service engenders price inelasticity**
 - ▲ **Dynamic default service fosters the development of price response**
- **Load bidding as a resource is poor second best solution**
- **Because reliability is a social good, ISO ICAP, emergency and ancillary service programs**

**I welcome your comments and
criticisms:**

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