

Energy Policy Act of 2005

The Role of Demand Response, Time-Based Rates, and Advanced Metering

Bernie Neenan
Neenan Associates LLC - A UtiliPoint Company
And
Bob Bellemare
UtiliPoint International Inc.
www.bneenan.com and www.utlipoint.com

February 13, 2006
Las Vegas, NV



Agenda

- Background
- Policy
- Roles & Responsibilities
- Integration
- Challenges



Background

- Time Frame
 - ▲ Passed by the House on April 21, 2005
 - ▲ Passed by the Senate on July 29, 2005
 - ▲ Signed by President Bush on August 8, 2005
- Several Sections relate directly or indirectly to:
 - ▲ Demand Response
 - ▲ Advanced Metering
 - ▲ Time-Based Rates

The Policy of the United States

- It is the policy of the United States to encourage States to **coordinate**, on a regional basis, State energy policies to **provide reliable and affordable demand response services** to the public.

**What are demand response services?
Is reliable demand response an oxymoron?**

The Policy of the United States

(Continued)

- It is the policy of the United States that **time-based pricing and other forms of demand response**, whereby electricity customers are provided with electricity price signals and the ability to benefit by responding to them, **shall be encouraged**,

The Policy of the United States

(Continued)

- and the deployment of such **technology** and devices that **enable** electricity customers to participate in such pricing
- and demand response systems shall be facilitated, and **unnecessary barriers** to demand response participation in energy, capacity, and ancillary service markets shall be **eliminated**.

The Policy of the United States

(Continued)

- It is further the policy of the United States that the **benefits** of such demand response that **accrue to those not deploying such technology and devices**, but who are part of the same regional electricity entity, **shall be recognized**.

The Policy of the United States (Summary)

- **Encourage:**
 - ▲ Demand Response
 - ▲ Time-Based Rates
 - ▲ Enabling Technologies (i.e., Advanced Metering)
- **Eliminate:**
 - ▲ Barriers to Demand Response participation in Wholesale Markets (Energy, Capacity and Ancillary Services)
- **Recognize:**
 - ▲ Regional Benefits of Demand Response to All Customers.

Who does What to Achieve the Intended Ends?

- Department of Energy
- FERC
- State Regulators
- Electric Utilities
- Energy Providers
- Advanced Metering and Communication Experts



What is Required, by Whom, and When?



Demand Response

- **Who:** Department of Energy
- **What:** Report to Congress
 - ▲ *Identifies and quantifies the national **benefits of demand response** and makes a recommendation on achieving specific levels of such benefits by January 1, 2007.*
- **When:** No later than February 4, 2006

Demand Response

- **Who: Department of Energy**
- **What: Education and Support**
 - ▲ *Educate consumers on the availability, advantages, and benefits of advanced metering and communications technologies,*
 - ▲ *Fund demonstration or pilot projects;*
 - ▲ *Work with States, utilities, other energy providers and advanced metering and communications experts to identify and address barriers to the adoption of demand response programs*
- **When: No specific timeframe**

Demand Response

- **Who: Department of Energy**
- **What: Technical Support to States**
 - ▲ *Identifying the areas with the greatest demand response potential;*
 - ▲ *Identifying and resolving problems in transmission and distribution networks, including through the use of demand response;*
 - ▲ *Developing plans and programs to use demand response to respond to peak demand or emergency needs; and*
 - ▲ *Identifying specific measures consumers can take to participate in these demand response programs.*
- **When: No specific timeframe**

DOE Funding

- **...But unfortunately Congress in its recent FY06 appropriations act stated it was not providing DOE any funds for EPACT implementation until FY07**
- **DOE will still submit all requested EPACT Reports to Congress**
- **For demand response, DOE does have ongoing activities that respond to Sec. 1252....**

Demand Response

- **Who: FERC**
- **What: Annual Report**
 - ▲ *Annual report, by appropriate region, that assesses demand response resources, including those available from all consumer classes, and which identifies and reviews--*
 - ▲ *Saturation and penetration rate of advanced meters and communications technologies, devices and systems;*
 - ▲ *Existing demand response programs and time-based rate programs;*
 - ▲ *Annual resource contribution of demand resources;*

Demand Response

- **Who: FERC**
- **What: Annual Report (Continued)**
 - ▲ *Potential for demand response as a quantifiable, reliable resource for regional planning purposes;*
 - ▲ *Steps taken to ensure that, in regional transmission planning and operations, demand resources are provided equitable treatment as a quantifiable, reliable resource relative to the resource obligations of any load-serving entity, transmission provider, or transmitting party; and*
 - ▲ *Regulatory barriers to improved customer participation in demand response, peak reduction, and critical period pricing programs.*
- **When: Not later than August 8, 2006**

Advanced Metering

- **Who: Electric Utilities**
- **What: Enabling Technology**
 - ▲ *Provide each customer requesting a time-based rate with a time-based meter capable of enabling the utility and customer to offer and receive such rate, respectively.*
 - ▲ *In a State that permits third-party marketers to sell electric energy to retail electric consumers, such consumers shall be entitled to receive the same time-based metering and communications device and service as a retail electric consumer of the electric utility.*
- **When: Not later than February 2007**

Advanced Metering

- **Who: Department of Energy**
- **What: Federal Buildings**
 - ▲ *Each agency shall use, to the maximum extent practicable, advanced meters or advanced metering devices that provide data at least daily on, and that measure at least hourly, consumption of electricity in the Federal buildings of the agency.*
- **When: Guidelines and plan developed by February 6, 2006. Installations no later than October 1, 2012**

Time-Based Rates

- **Who: Electric Utilities**
- **What: Offer-Time Based Rates to All Customers**
 - ▲ *Offer each of its customer classes, and provide individual customers upon customer request, a time-based rate schedule under which the rate charged by the electric utility varies during different time periods and reflects the variance, if any, in the utility's costs of generating and purchasing electricity at the wholesale level.*
 - ▲ *Time-Based Rates may include Time of Use, Critical Peak Pricing, Real-Time or Day-Ahead Indexed Rates or Credits for Load Reduction that reduce Planned Capacity Additions*
- **When: Not later than February 2007**

Advanced Metering & Time-Based Rates

- **Who: State Regulators**
- **What: Investigation and Decision**
 - ▲ *Conduct an investigation and issue a decision whether it is appropriate to implement the standards regarding Time-Based Rates and Advanced Metering set out in the Act.*
- **When: Not later than February 2007. (Hearing date must be established no later than August 2006)**
- **Exception:** Not applicable if the State has already implemented standards, conducted proceedings or voted on implementation of standards within the past 3 years

Questions

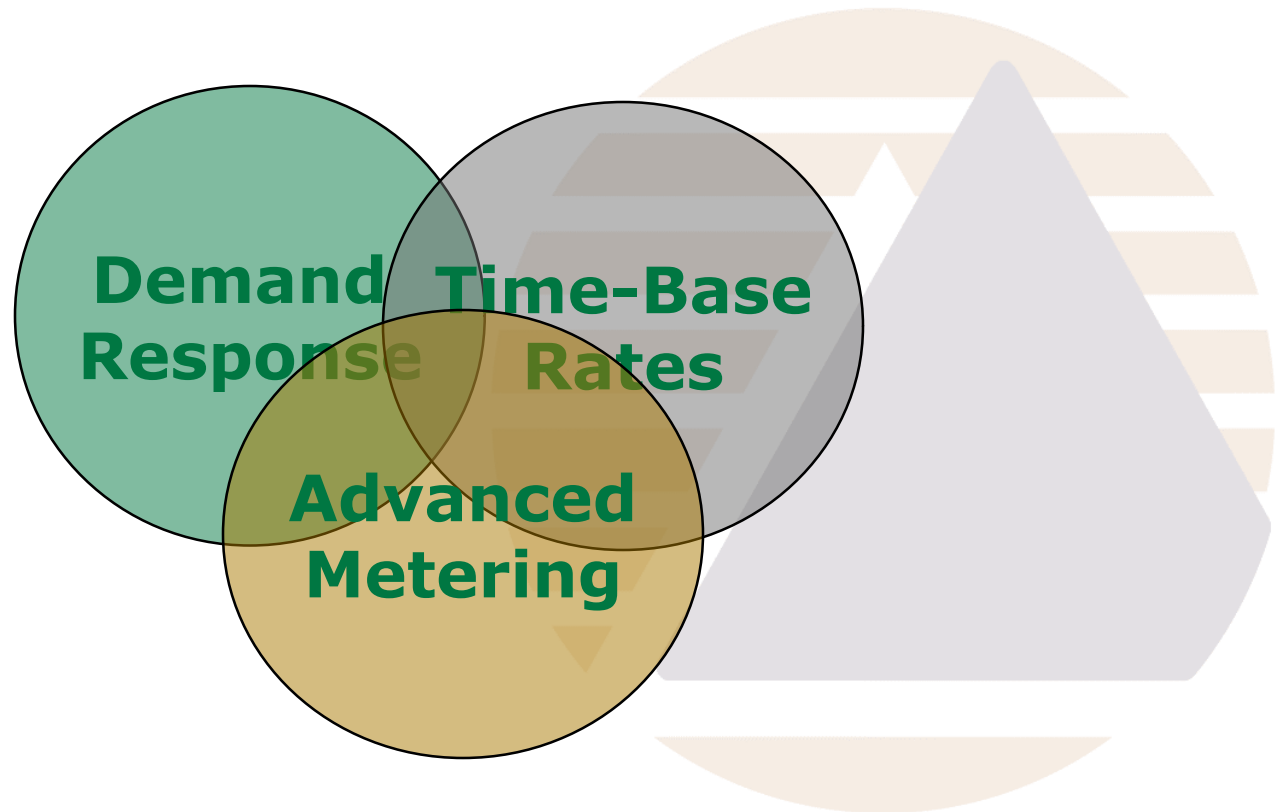
- **Time-Based Rates**

- ▲ To whom does the obligation Apply?
- ▲ What satisfies the requirement (define TOU)?
- ▲ What does “*purchasing electricity at the wholesale level*” mean?
- ▲ How does this affect utilities that contract out default service?
- ▲ Unbundled or bundled TOU designs?

- **Advanced Metering**

- ▲ What is the definition of a “*communication system*”?
- ▲ Who is responsible for or has jurisdiction over metering functions?
- ▲ Standards, standards, standards – but, who sets them?

Integration



Integration

- **Demand elasticity** that drives Demand Response can lower Wholesale Prices and improve Reliability
- The **availability of Time-Based Rates** impact
 - ▲ the type and number of customers that exhibit demand responsive behavior
 - ▲ The intensity of demand response
- **Enabling technologies**, like Advanced Metering, can improve both the inclination to participate and the level of participation intensity
- But, so can education, training, and trial participation
- The role depends on the **marginal value** they contribute to either participants or other customers

Challenges

- The Act calls for **multiple investigations** by different parties with different timeframes
 - ▲ DOE, FERC, 6 State Commissions and numerous electric utilities
- **Multiple independent investigations** risk not identifying the interdependencies between Advanced Metering, Time-Based Rates and Demand Response.
 - ▲ Likely to yield different results than an Integrated Approach
- **Process** by which States and utilities to evaluate the impacts of Time-Based Rates and Advanced Metering on Wholesale Market Prices and Reliability
 - ▲ How is the value of DR measured?
 - ▲ How gains, and who pays?
 - ▲ **Autonomous** vs. **induced** methods of for fostering demand response

Thank you

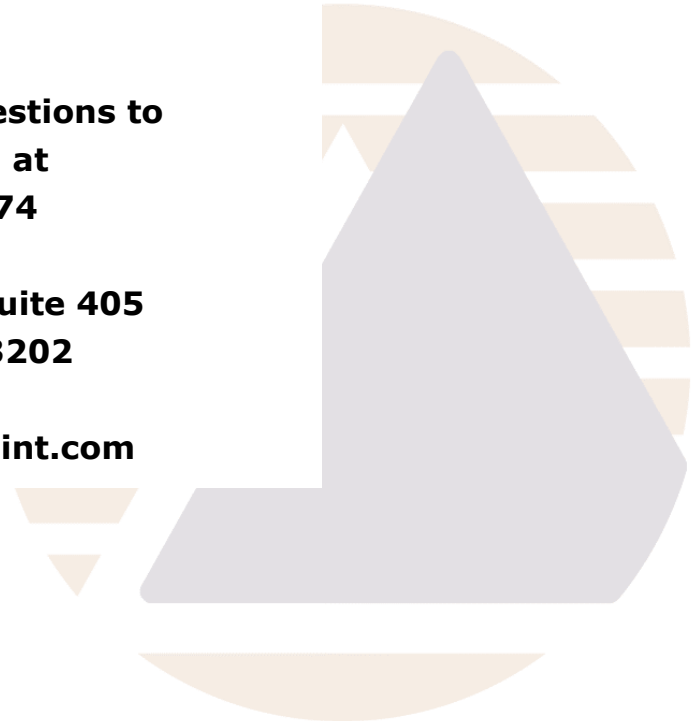
UtiliPoint International, Inc.

**6000 Uptown Blvd. NE, Suite 314
Albuquerque, NM 87110
(505) 244-7612**

**Please direct any questions to
Bernie Neenan at
(315) 478-9974**

**126 N. Salina St. , Suite 405
Syracuse, NY 13202**

or bneenan@utilipoint.com



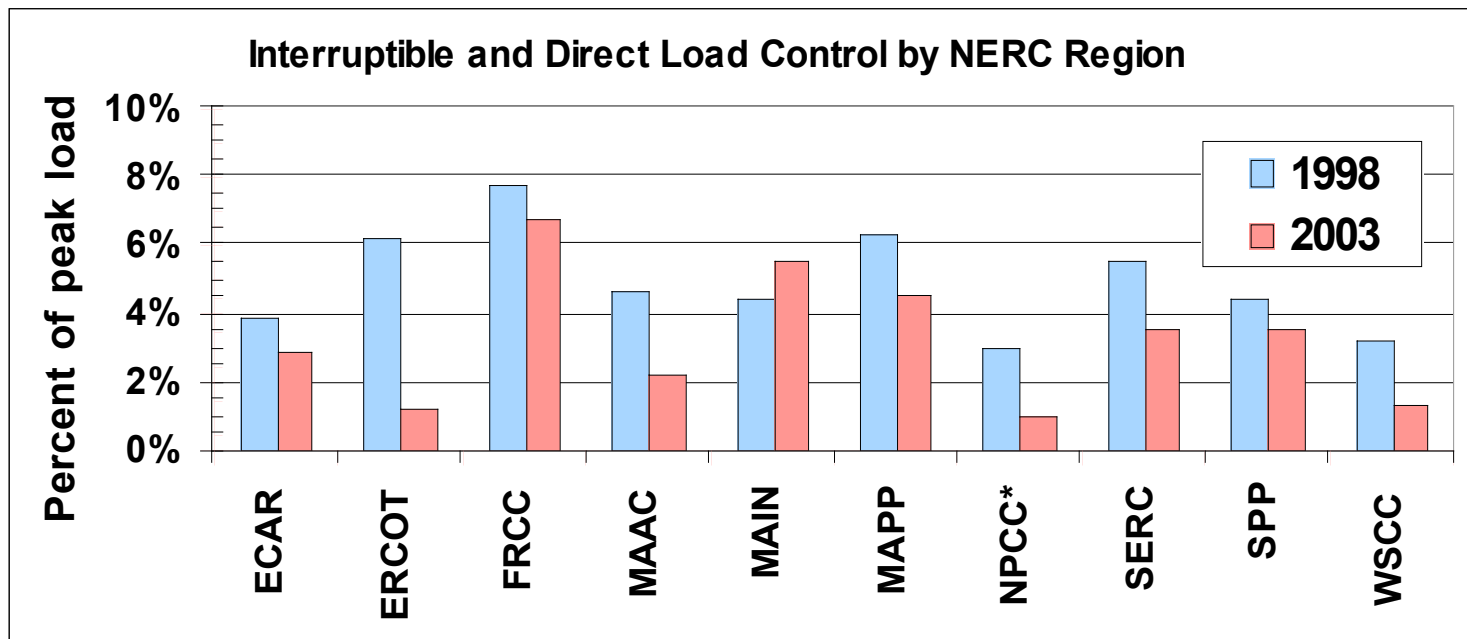
Developing Linkages Between Retail and Wholesale Markets through Demand Response

Bernie Neenan
Neenan Associates LLC
A UtiliPoint Company
www.bneenan.com

February 13, 2006
Las Vegas, NV



Declining Load Management Resources in Most U.S. Regions



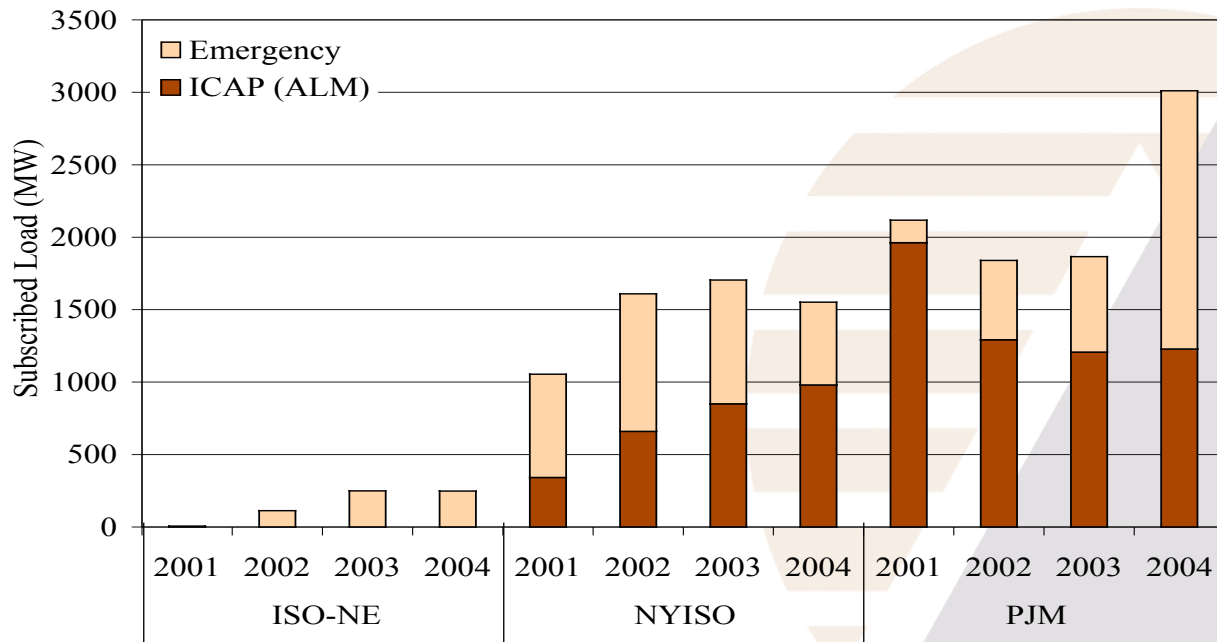
Note: data from NERC 1998 and 2003 summer assessments. NPCC data is for 1998 and 2002.

Source: C. Goldman, May 13, 2005. The Future of Demand Response. presented at SO-NE Demand Response Summit, Sturbridge, MA.

- **Uncertainties surrounding electricity restructuring and role of utility**
- **Changing load resource balance in some regions**

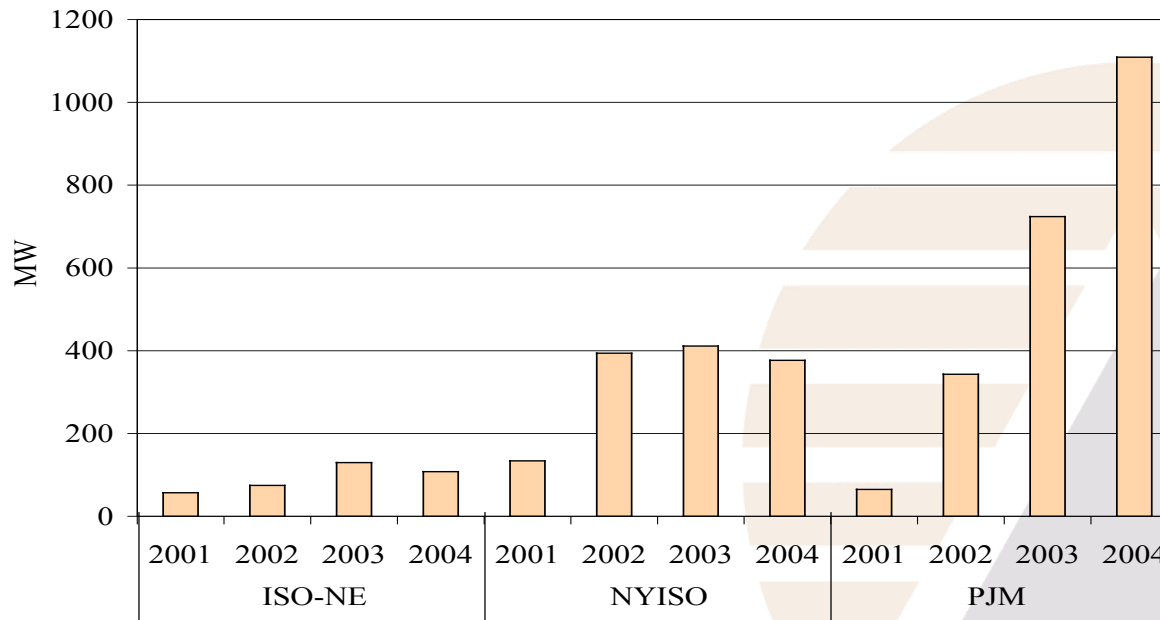
27

ISO Emergency DR Programs: Enrollment is increasing



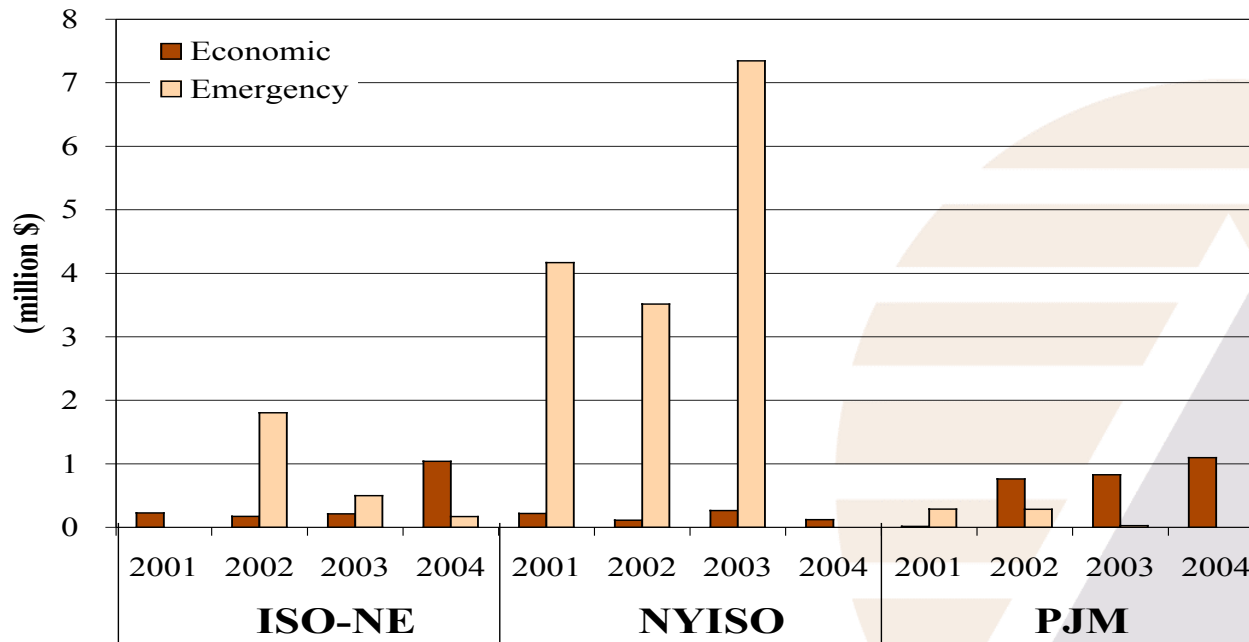
- **Steady growth in subscribed load among three Northeast ISOs**

ISO **Economic** DR Programs: Enrollment is increasing, but performance lags



- **Subscribed load increasing, particularly in PJM**
- **However, scheduled load curtailments are typically low:**
 - **~10-15 MW peak (NYISO day-ahead market)**
 - **~13 MW avg. (PJM real-time market)**

ISO DR Program Costs and Payments

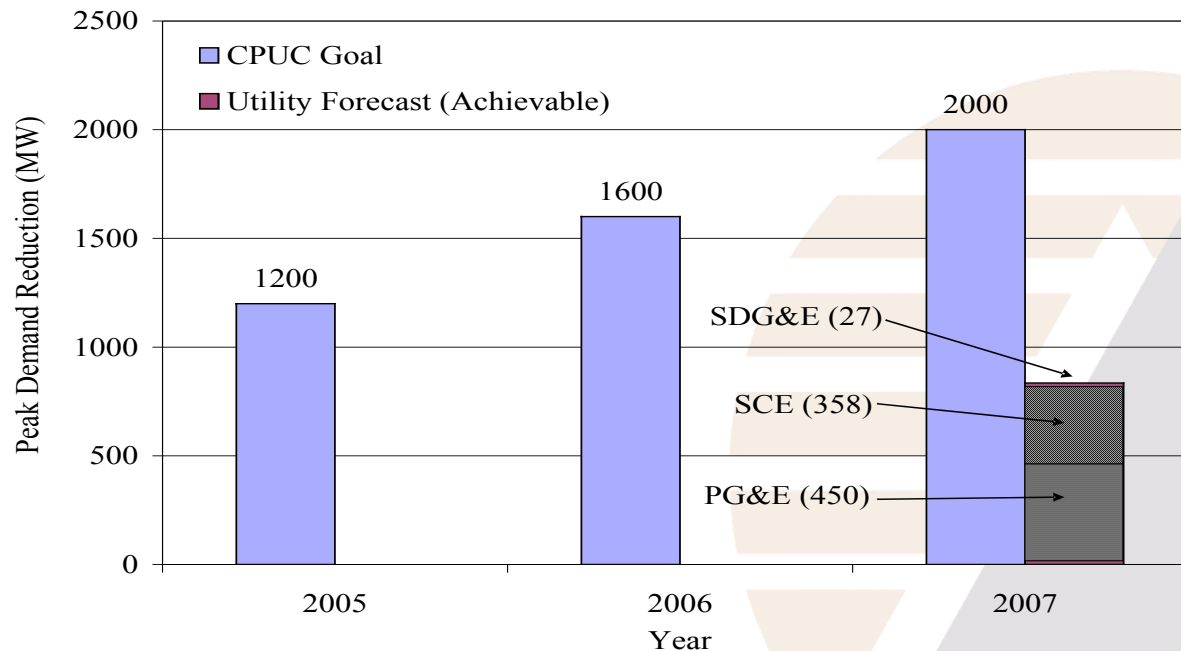


**ERCOT
2005
ancillary
services
DR
payments
= \$35
million**

Cumulative Payments made to participants by 3 ISOs
(2001-2004):

- Emergency DR Pgm: \$18.1 M
- Economic DR Pgms: \$5 M

California Long-Term Resource Procurement Policy includes “Price- Responsive” DR Goals

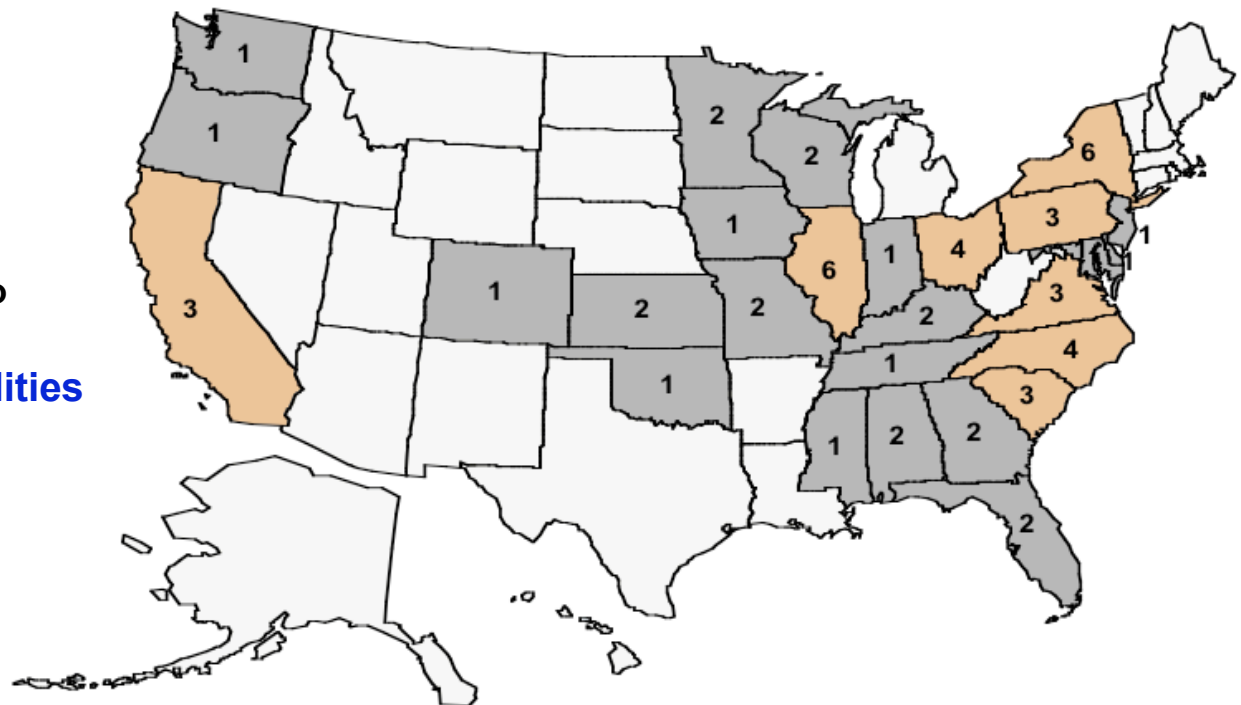


- CA investor-owned utilities must file and CPUC approves long-term plans to procure resources adequate to serve forecasted demand and maintain a 15-17% reserve margin
- CPUC established aggressive goals for “Price-Responsive” DR programs
 - ▲ 2005: 3%, 4% and 5% of system peak demand by 2005, 2006 and 2007
 - ▲ Goals are over and above “emergency” DR programs (1500 MW)
 - ▲ Current Situation: ~520 MW enrolled in 2004

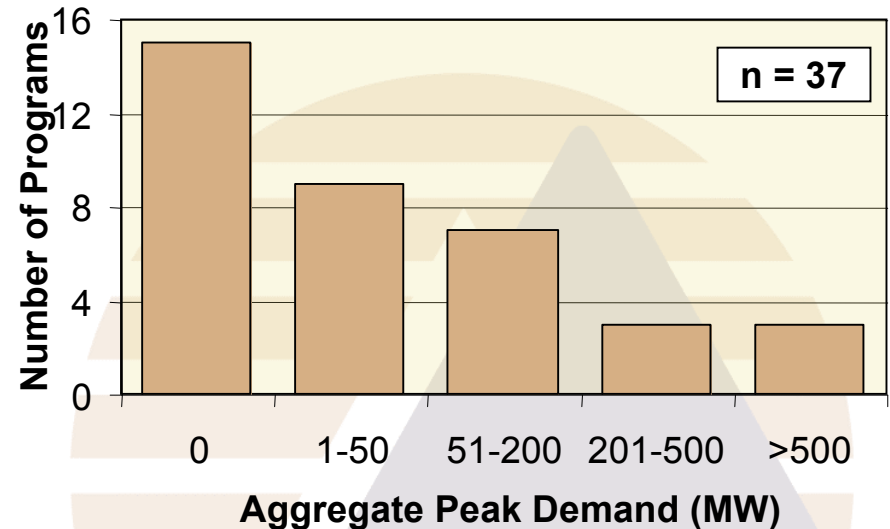
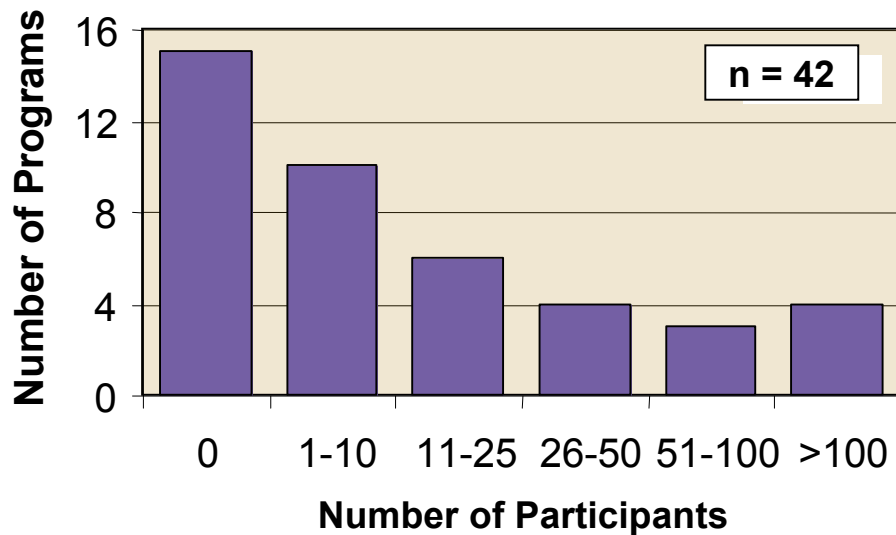
Geography of RTP as an Optional Tariff

- **RTP offered by:**
 - ▲ Most investor-owned utilities (IOU) in Southeast and TVA
 - ▲ All IOU in Illinois and NY (statutory/ regulatory requirement)
 - ▲ First Energy-owned utilities in OH (4) and PA (3)
 - ▲ Other Midwestern utilities (Cinergy, Xcel, KCPL)
 - ▲ All CA IOUs in 2003, but two programs since cancelled
- **RTP not offered by many utilities in:**
 - ▲ The West
 - ▲ New England

Number of Utilities in Each State with RTP as Optional Tariff (2003)

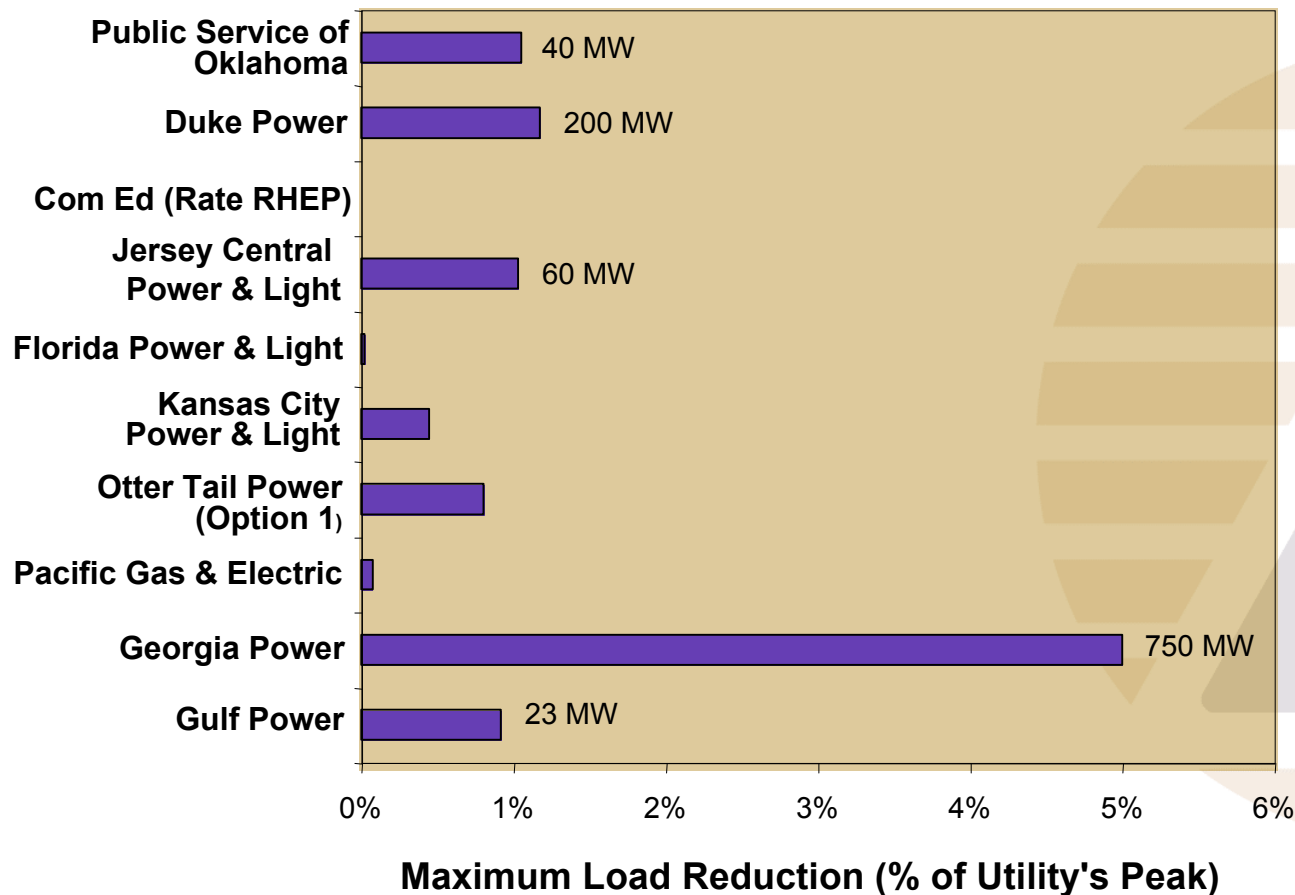


RTP: Participation Levels



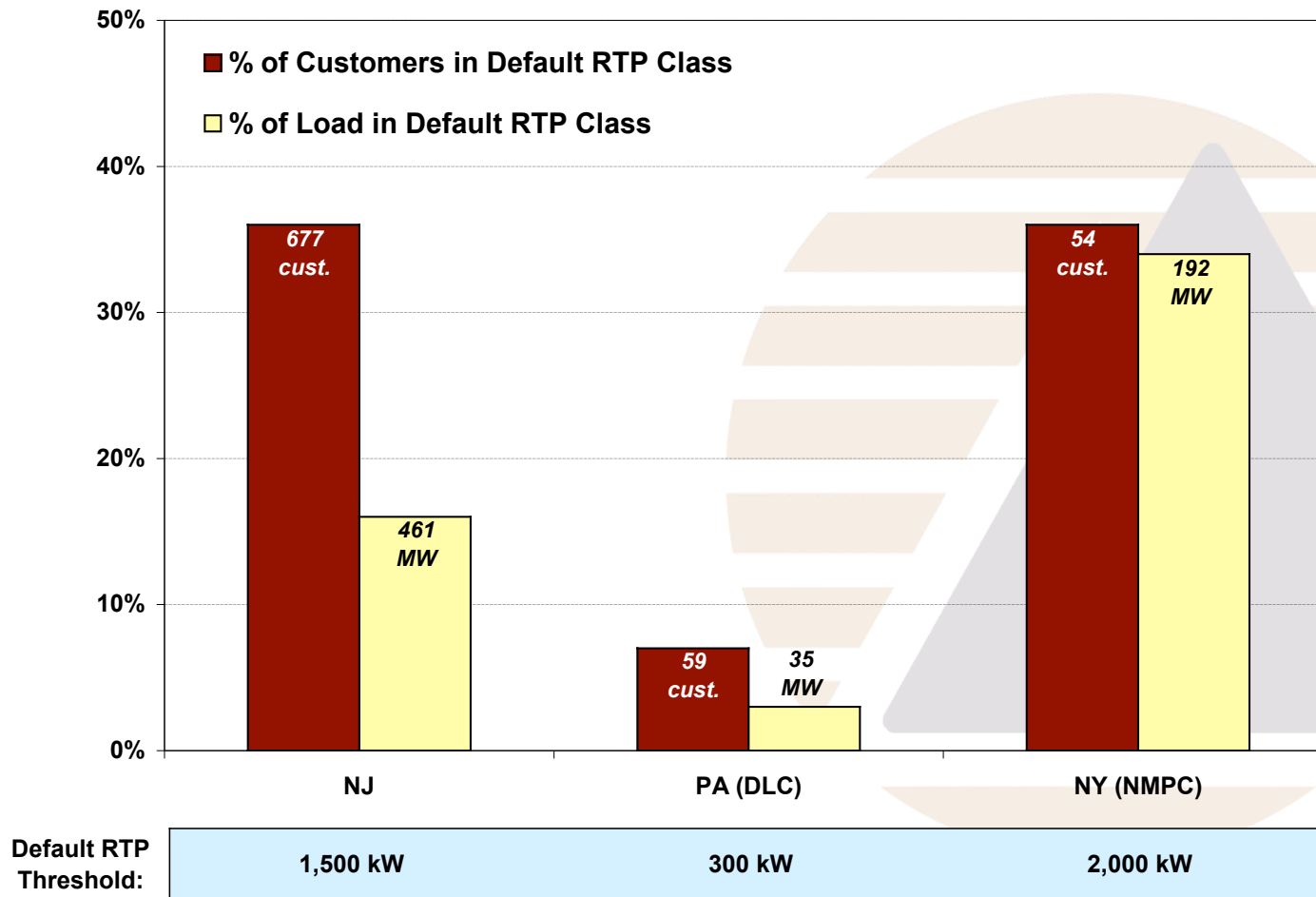
- **2,700 non-residential customers and 11,000 MW enrolled in 2003**
- **Although several programs have achieved a significant level of participation, most have not.**
 - ▲ **Three programs account for 80% of customers and 80% of load enrolled (GA Power, TVA, Duke Power)**
- **Modest participation levels due to enrollment caps, limited marketing, and customer attrition**

Customer Response to High Prices in RTP Programs

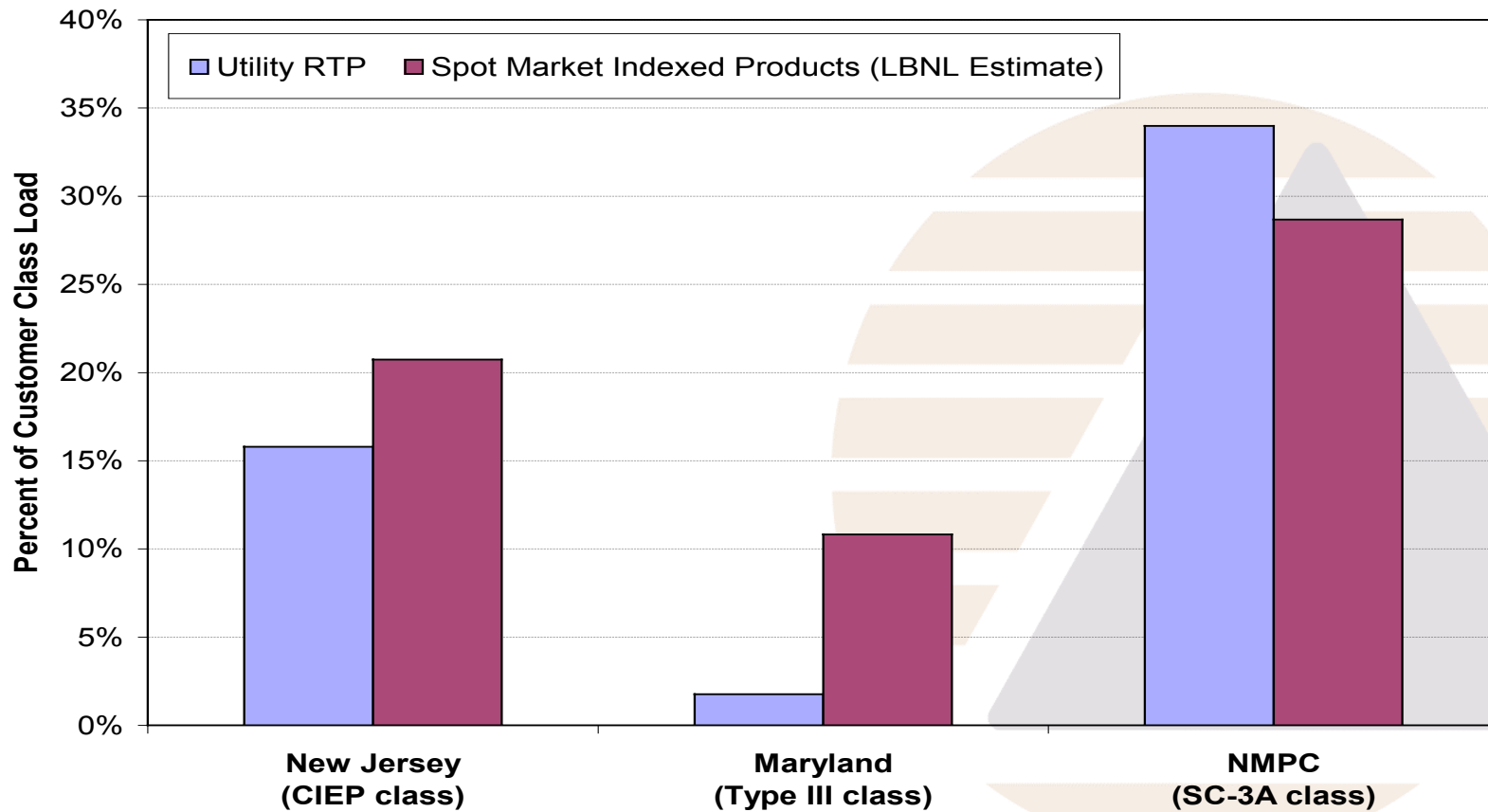


- **Aggregate load reductions are modest for nearly all RTP programs (<1% of utility peak)**
 - ▲ Only two utilities (Duke & Georgia Power) reported load reductions greater than 100 MW
 - ▲ All other programs with load reduction data had < 60 MW enrolled

Customers Participation Rates on Default RTP (Early 2005)



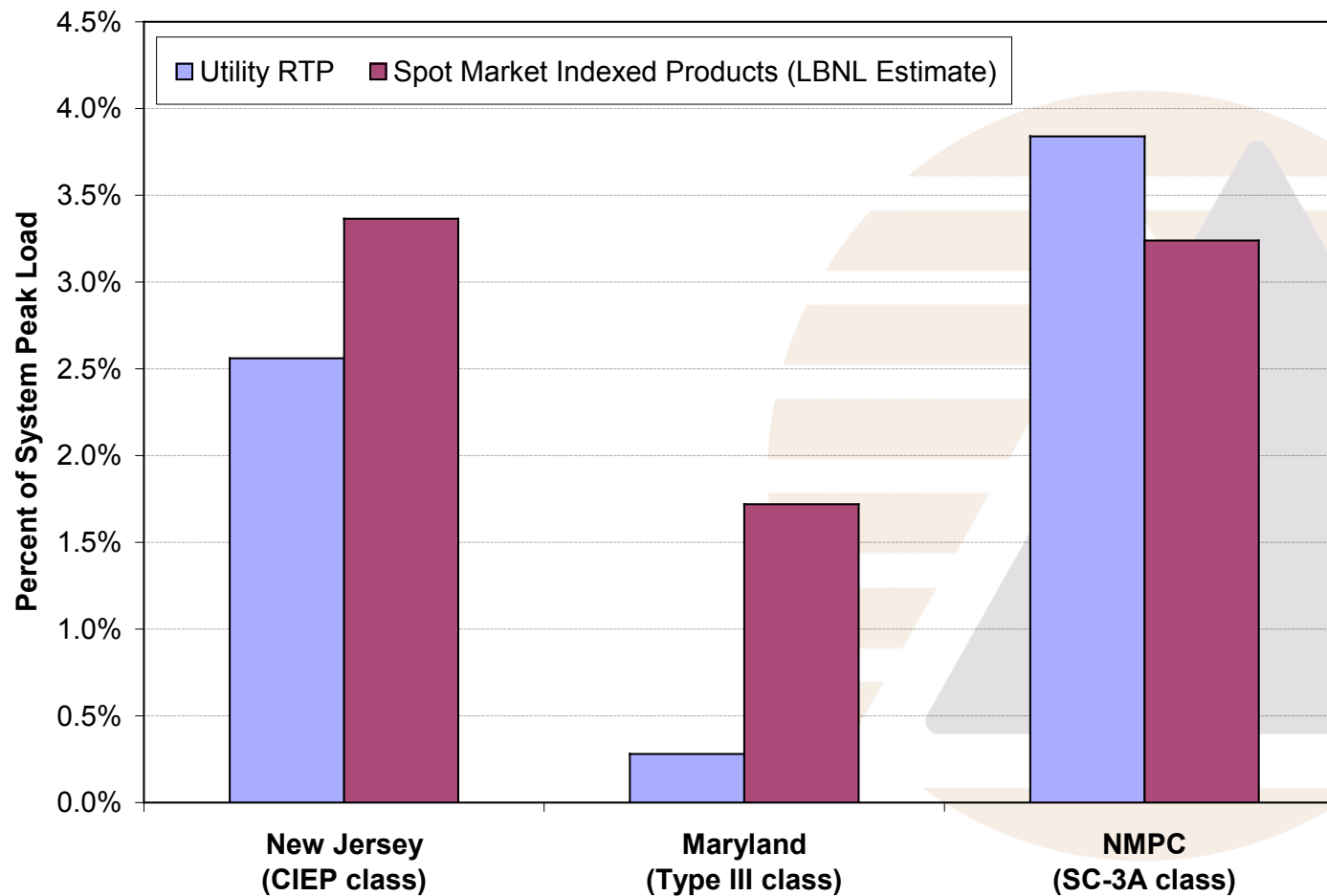
Customer Exposure to Spot Market Prices in Competitive Retail Markets



Percentage of customers on spot market indexed products is comparable or higher than customers on default RTP

37

Customer Exposure to Spot Market Prices in Competitive Retail Markets-



Thank you

UtiliPoint International, Inc.

**6000 Uptown Blvd. NE, Suite 314
Albuquerque, NM 87110
(505) 244-7612**

**Please direct any questions to
Bernie Neenan at
(315) 478-9974**

**126 N. Salina St. , Suite 405
Syracuse, NY 13202**

or bneenan@utilipoint.com

