NMPC RTP FACT SHEET

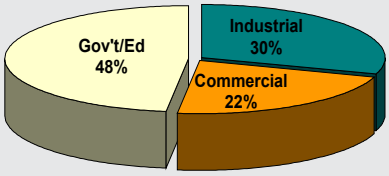
# Customer Adaptation to RTP as Standard Offer Electric Service

## *A Case Study of Niagara Mohawk's Large Customer RTP Tariff*

## Study Objectives

- Characterize how customers adapted to the first competitive RTP program
- Quantify price response by business activity and customer circumstances
- Compare response to RTP and to ISO-based demand response programs

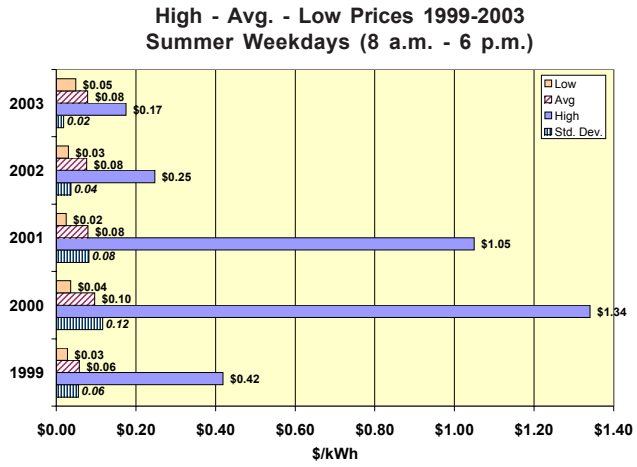
## Study Population

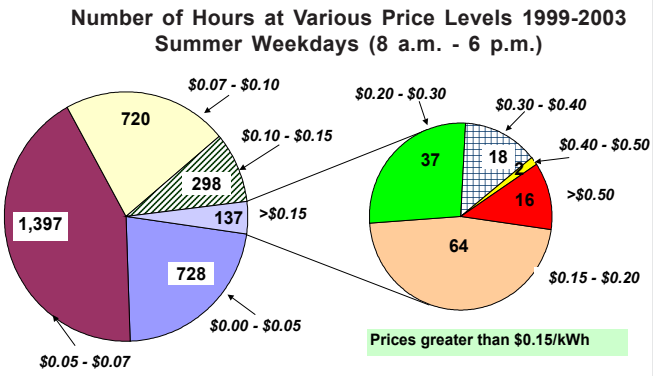



- 141 Commercial & Industrial Customers > 2 MW
- Average monthly peak demand of 4.9 MW
- 55% bought commodity from an alternative supplier at some point between 1998 and 2003
- By summer 2003, only 40% bought commodity from an alternative supplier
- 18% chose NMPC's Option 2 (take-or-pay) contract, typically for 60% of their peak load
- Customers were generally satisfied, but one-sixth would have preferred two-part RTP

Niagara Mohawk Power Corporation implemented real-time pricing (RTP) as the default service for its largest customers (over 2 MW) in the fall of 1998. The revision to the SC-3A tariff was accomplished as part of its electricity market restructuring initiative. Hourly SC-3A commodity prices are indexed to NYISO Day-Ahead Market prices, and are therefore subject to wholesale market volatility.

These customers also had a one-time opportunity, in the fall of 1998, to sign up for an alternative TOU-based commodity service, for some or all of their load. Thereafter customers could also purchase commodity service from competitive suppliers, and/or enter into financial hedges. Starting in 2001, NYISO demand response programs have offered additional inducements to curtail load under specific conditions, not necessarily coincident with high commodity prices. Understanding how these customers adapted to these new and diverse circumstances will help policy makers in other states plan the transition to competitive electricity markets.




## SC-3A Commodity Prices*

- Between 1999 and 2003, the average peak SC-3A commodity price increased, while the volatility of prices decreased.
- There were 73 peak hours, all prior to 2003, when the SC-3A commodity price was above $0.20/kWh.
- There were only 16 peak hours, all prior to 2002, when the SC-3A commodity price was above $0.50/kWh.

**Based on Transmission Level prices in Capital Zone*

This study was conducted by Lawrence Berkeley National Laboratory (LBNL) and Neenan Associates (Neenan). The study was funded by the California Energy Commission through its Public Interest Energy Research (PIER) Program and coordinated by the Consortium for Electric Reliability Technology Solutions (CERTS). The complete report is available at http://eetd.lbl.gov/EA/EMP/

Niagara Mohawk made the study possible by providing customer data and supporting the design and implementation of customer surveys. The New York State Energy Research Authority provided funding for a study abstract to be distributed to customers.

Study data include customer, load and price data provided by NMPC, demand response program data provided by NYISO, and customer characteristic and preference data collected through a survey and interviews, representing 64 SC-3A accounts (45%), administered by the study team.

This Fact Sheet was prepared by LBNL and Neenan, who are responsible for any errors, misrepresentations and/or omissions. Address inquiries to cagoldman@lbl.gov or bneenan@bneenan.com

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## Hedging Actions

- Roughly 25% of survey respondents were hedged with physical supply contracts in 2003, down from 35% in 2001.
- About 30% of the remaining respondents were hedged with a financial product in 2003.
- Some customers report receiving few or no offers from retail suppliers and many report that hedging options are too expensive or unattractive relative to indexed price offerings.

## Hedging Option Preferences

**(Results of Conjoint analysis)**

Many customers are interested in hedging price risks but are unwilling to pay large premiums, given expectations about prices in New York. Customers' revealed preferences for hedge features:

- Hedge 75% of their peak demand, not the whole amount
- Cover the summer afternoon hours only
- Cap the price at about 5% higher than the average SC-3A commodity price

## Participation in NYISO Demand Response Programs

- About 28% in the NYISO Emergency Demand Response Program (EDRP)
- Less than 10% in the Installed Capacity program (ICAP/SCR)
- Very few in the Day-Ahead Demand Response Program (DADRP)

## The Nature of Price Response is Complex:

- About half of customers indicate they cannot curtail load, yet 30% participated in NYISO emergency DR programs.
- About 15% of customers report shifting load from peak to off-peak periods.
- About 35% of customers report simply foregoing usage when undertaking load curtailments.
- An empirical analysis shows that most SC-3A customers respond to prices with a combination of shifting and foregoing.

## *Load Shifting in Response to Price*

The overall elasticity of substitution value (a measure of shifting from peak to off-peak) is 0.14. This is comparable to reported estimates for two-part RTP pilots in regulated markets.

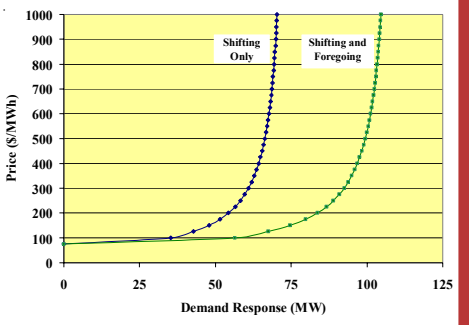
- The Government/Education sector was the most price-responsive (average elasticity of 0.30), followed by the Industrial sector (0.11); the Commercial sector was the least price responsive (0.00).
- Electricity intensive firms and those who peak in the early afternoon are far less price-responsive.
- EDRP participants are less responsive to SC-3A prices alone than non-participants.
- However, Industrial EDRP participants are nearly twice as price-responsive during EDRP events than when seeing only SC-3A prices.
- Industrial customers enrolled in DADRP and ICAP/SCR are considerably more price-responsive, irrespective of event days.

## *Foregoing Load in Response to Price*

- Customers reduce load throughout the day - they don't just shift to off-peak periods. Between 80% and 90% of proportional peak load reductions are also observed in the off-peak period.
- Commercial customers' curtailments are dominated by reductions in both the peak and off-peak periods, more so than Industrial or Government/ Education customers.
- EDRP participants are more inclined to forego electricity throughout the day, while DADRP and SCR participants are more likely to shift electricity use off-peak.

## *Peak Load Curtailment Potential*

- At $0.50/kWh, peak load reductions of about 70 MWs are projected from SC-3A customers shifting load to the off-peak period.
- An additional 30 MW reduction is predicted in both the peak and off-peak periods as customers also forego electricity.
- EDRP events elicit an additional 14% in peak load reductions.




**Projected Peak Load Reductions in Response to SC-3A Prices**