

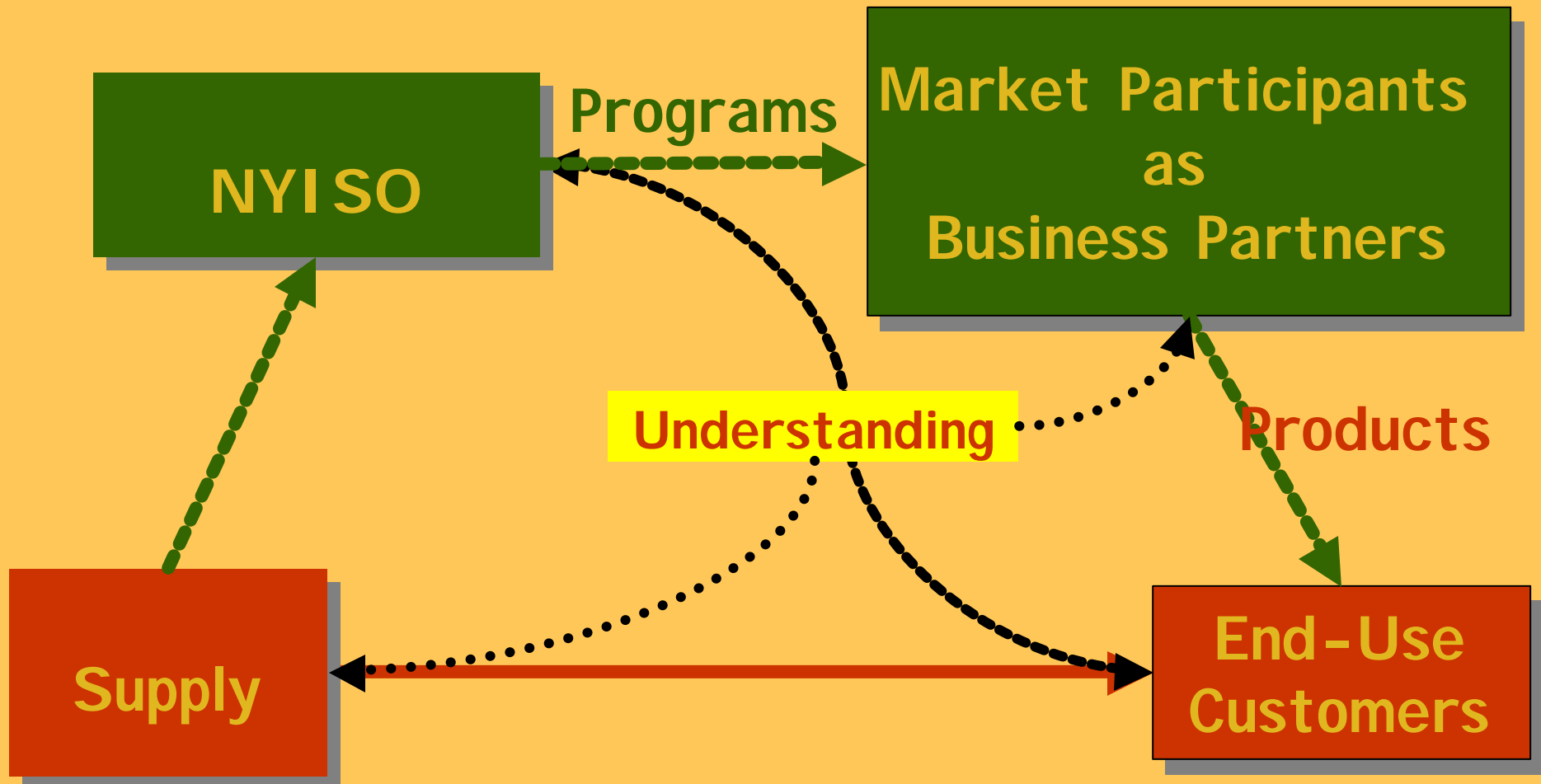
***Market Assessment:
QUANTIFYING CUSTOMER
PREFERENCES FOR PRICE
RESPONSIVE LOAD MANAGEMENT
PRODUCTS***

Ken Deal

Price Responsive Load Management

Focus on Reliability:
Facilitated by
Emergency and Economic
Solutions

Project Focus



Marketing Engineering

- Understand the problem
- Know where you want to go
- Design the tool
- Build the tool
- Set up the process
- Calibrate the process
- Run the process profitably and efficiently

Step 1

Step 2



Step 3

Step 1:

- Perspectives/ Preferences of market participants?

Step 1: Focus Groups with Market Participants

To:

- Understand members' preferences for Emergency and Economic measures
- Determine best position for NYISO in PRL market
- Garner information for non-member end-user focus groups

Step 1: Focus Groups with Market Participants

- **To:**
- Understand members' preferences for Emergency and Economic measures
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Step 1: Focus Groups with Market Participants

Methodology

- **6 Focus Groups** **#**
 - Other Suppliers: **2**
 - Generation Owners: **5**
 - Coalition: **6**
 - End Users (members): **3**
 - Public Power: **3**
 - Transmission Owners: **6**
- **Sept 27 & Oct 4**
- **Albany area**

Step 1: MP Focus Groups

Key Findings

1. Base Requirements
2. Necessary Conditions
3. Likely Product Offerings
4. Challenges / Constraints / Negatives
5. Market Organizational Issues
6. Measurement Issues
7. NYISO Market Position

Key Finding: Base Requirements



**Existing
Programs**

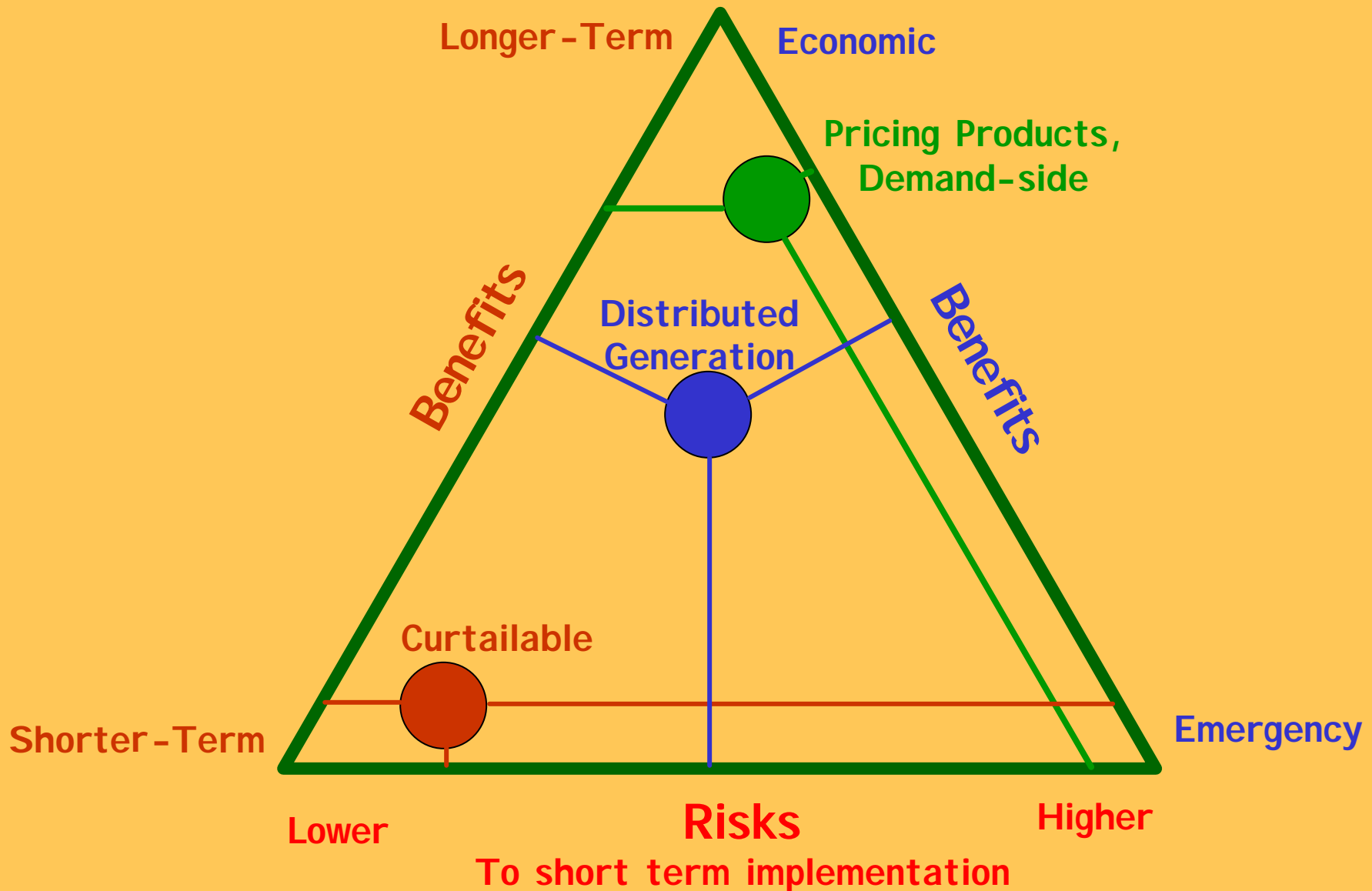
**NYS
Emergency
Solution**

**True Economic
Demand-Side PRL
Programs for All
Customer Classes**

Necessary Conditions for PRL

- Identify achievable savings
- Pricing products that motivate highly desirable behavior
- Communicate & Educate
- Verify behavior
- Direct rewards:
 - Reward/penalize exact response
 - Communicate response & reward
 - Quickly pay reward
- Tariff accommodations
- Satisfy EPA

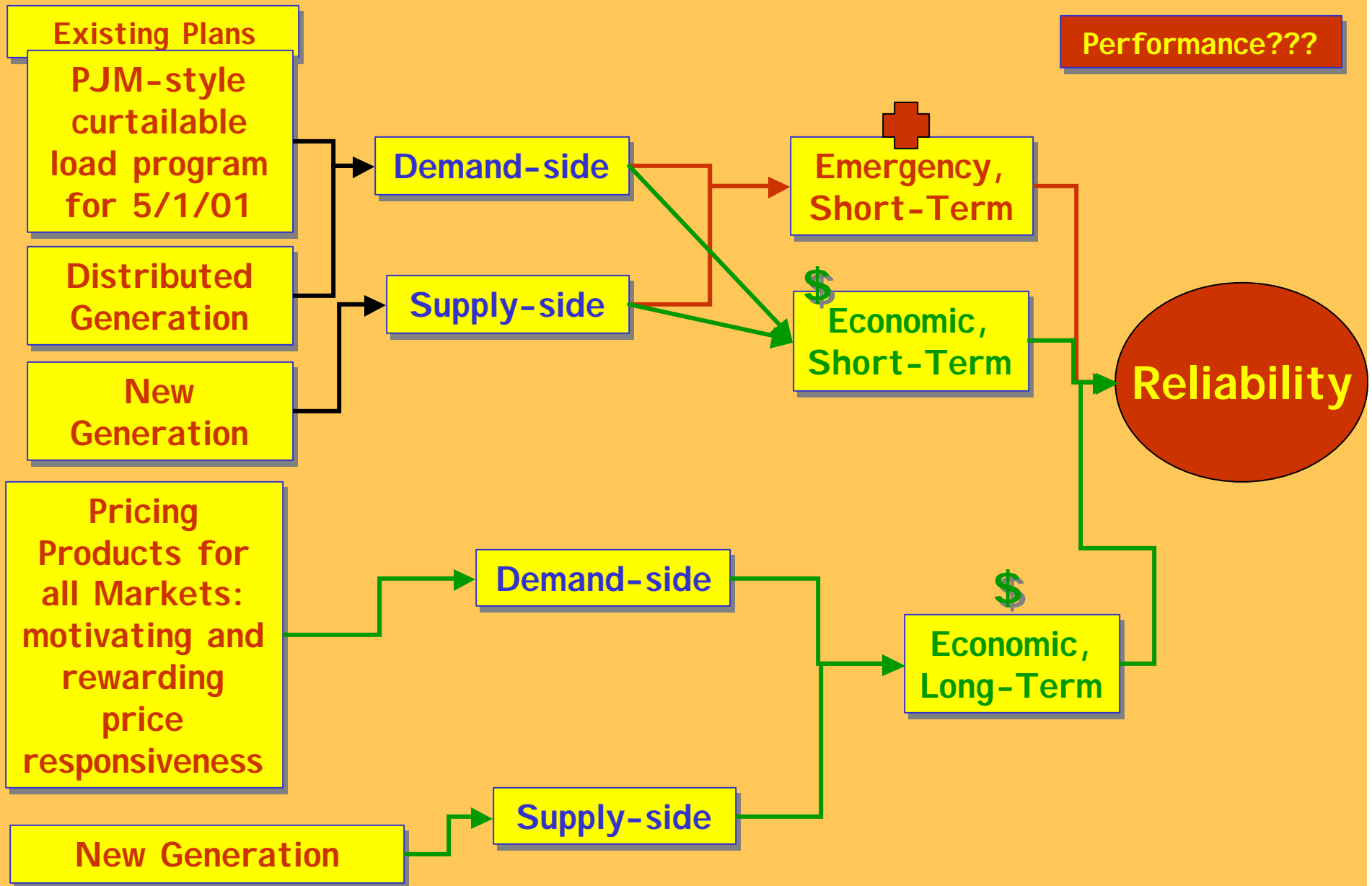
Relative Benefits/Risks of Load Relief Strategies



Range of Solutions

NEENAN

Performance???



Challenges/ Constraints/ Negatives

Day ahead obligation -- real time sell

Bus / Zonal Pricing

Verification

Emerg. Curtailment 2001, No? environmental fight if long term economic demand side solutions are implemented

direct credit for cutting back

Communication

Externalities

Environmental Requirements

Penalties

TO Plans

ISO Timely Settlement

Ancillary services

LSE Plans

energy credit or capacity credit

Retail Tariffs

LSE Identities

ICAP

Differential responses to stabilize the system

PSC "Blockage"

Aggregation of Customers

Diesel Emissions/ EPA

Interval metering

Market Organizational Issues



Measurement Issues

Estimated
Performance

Verification

ISO Payments

Strike Prices

LSE Identities

Estimated mW
back-downs

Externalities

Metering

Environmental
Requirements

Segmentation

Measurement of Solutions

Emergency,
Short-Term

Overriding Focus: Reliability of the System

Economic,
Long-Term

NYS-Adapted
PJM-style
curtailable
load program
for 5/1/01

Pricing
Products for
ALL Markets:
motivating and
rewarding
price
responsiveness

Reliability

Design:
Estimated
Responses

Actual
Response

Design:
Estimated
Responses

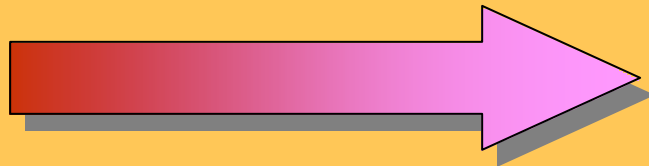
Actual
Response

Actual:
Prices &
Outages

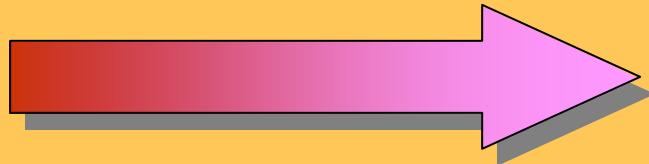
Simulations with Increasingly More Real Information

Key Research Question:

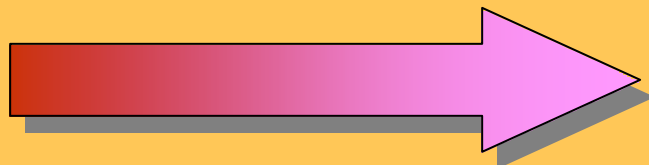
What is meant, specifically, by ... ?



**NYS Emergency
Solution**



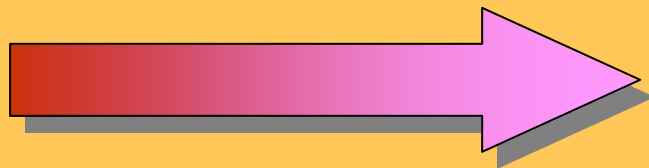
**Existing Programs
(LSEs & TOs)**



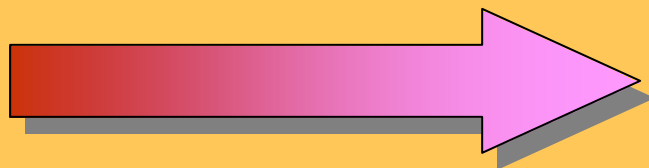
**True Economic Demand-
Side PRL Programs for
All Customer Classes**

Key Research Question:

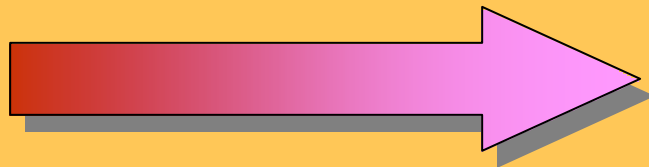
What are the strike points & key attributes for each proposed product ?



**NYS
Emergency
Solution**

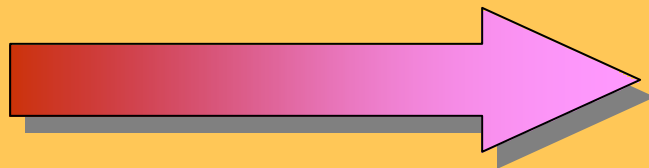


**Existing
Programs
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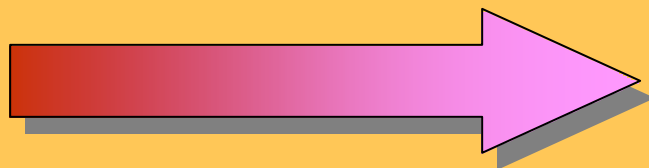


**True Economic Demand-Side PRL
Programs for All Customer Classes**

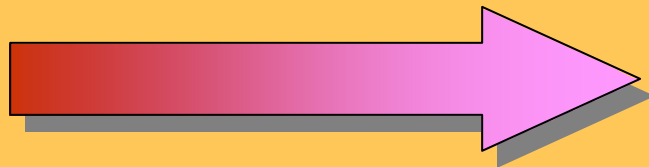
Key Research Question: How much will each solution produce ?



**NYS
Emergency
Solution**



**Existing
Programs
(LSEs & TOs)**



**True Economic Demand-Side PRL
Programs for All Customer Classes**

Example, Research Questions

1. Notice needed: Day Ahead or RT?
2. Strike point (\$/mWh)
3. Amount of load available/offered for reduction (mW)
4. Time ahead notice to curtail, minutes.
5. Number of times per period?
6. Technology: Master metered, Sub-metered, Interval metered?

**How can these answers
be found?**

Step 2:

- End-User Focus Groups

Step 3:

- End-User Survey

Stage 2:

End-User Focus Groups

End-User Focus Groups

- What products will be most effective in promoting PRL?
- How will they react to price variations?

Research Questions

Amount of load
available/offered
for reduction (**mW**)

Time ahead
notice to
curtail, **minutes**.

Strike point
(**\$/mWh**)

Number of
times per
period?

Day
Ahead
or RT?

metering



Level 1: Which product?

Curtailable

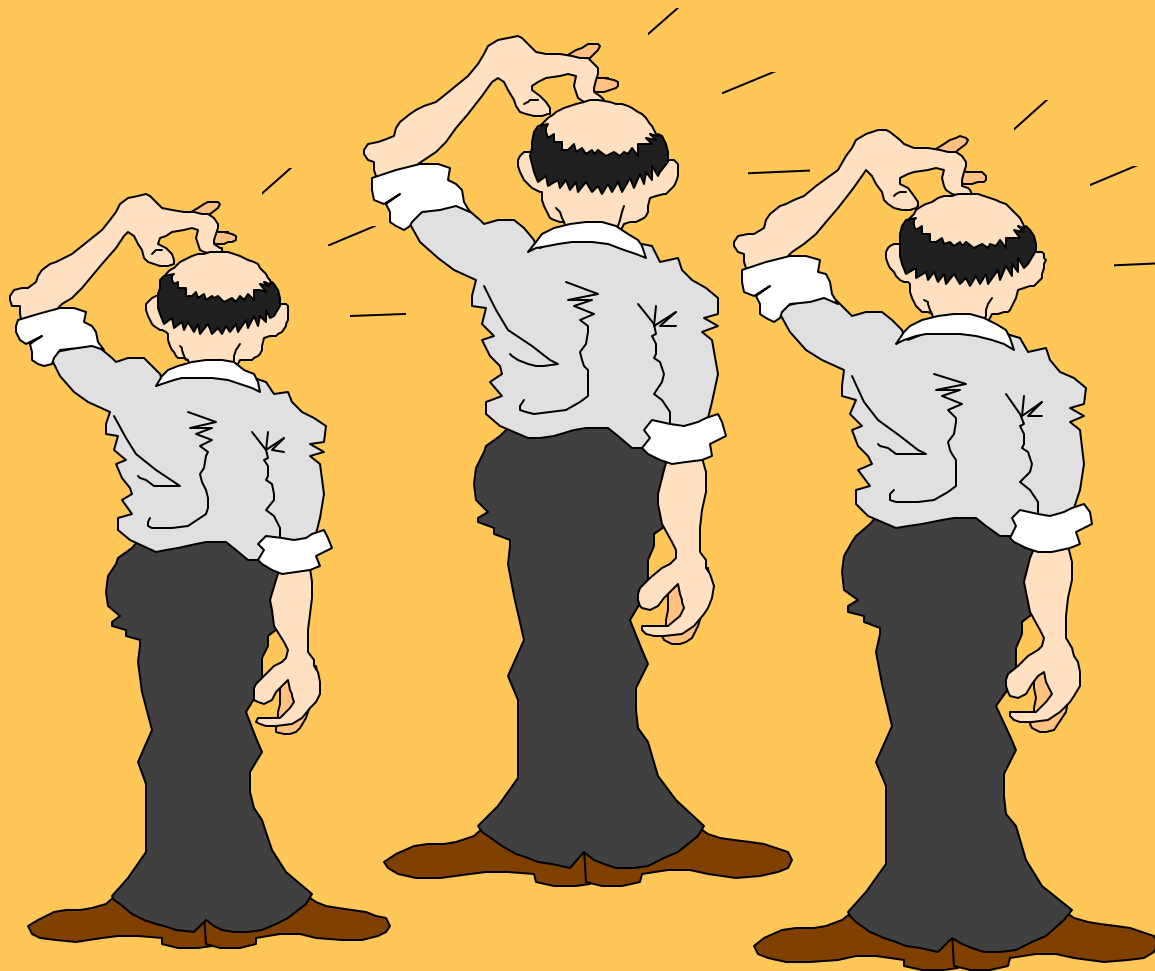
Current

TOU

Block & Swing

RTP

Flat Rate



Which price? Attribute levels?

TOU

? ¢ /kWh

On-
Peak

midnight

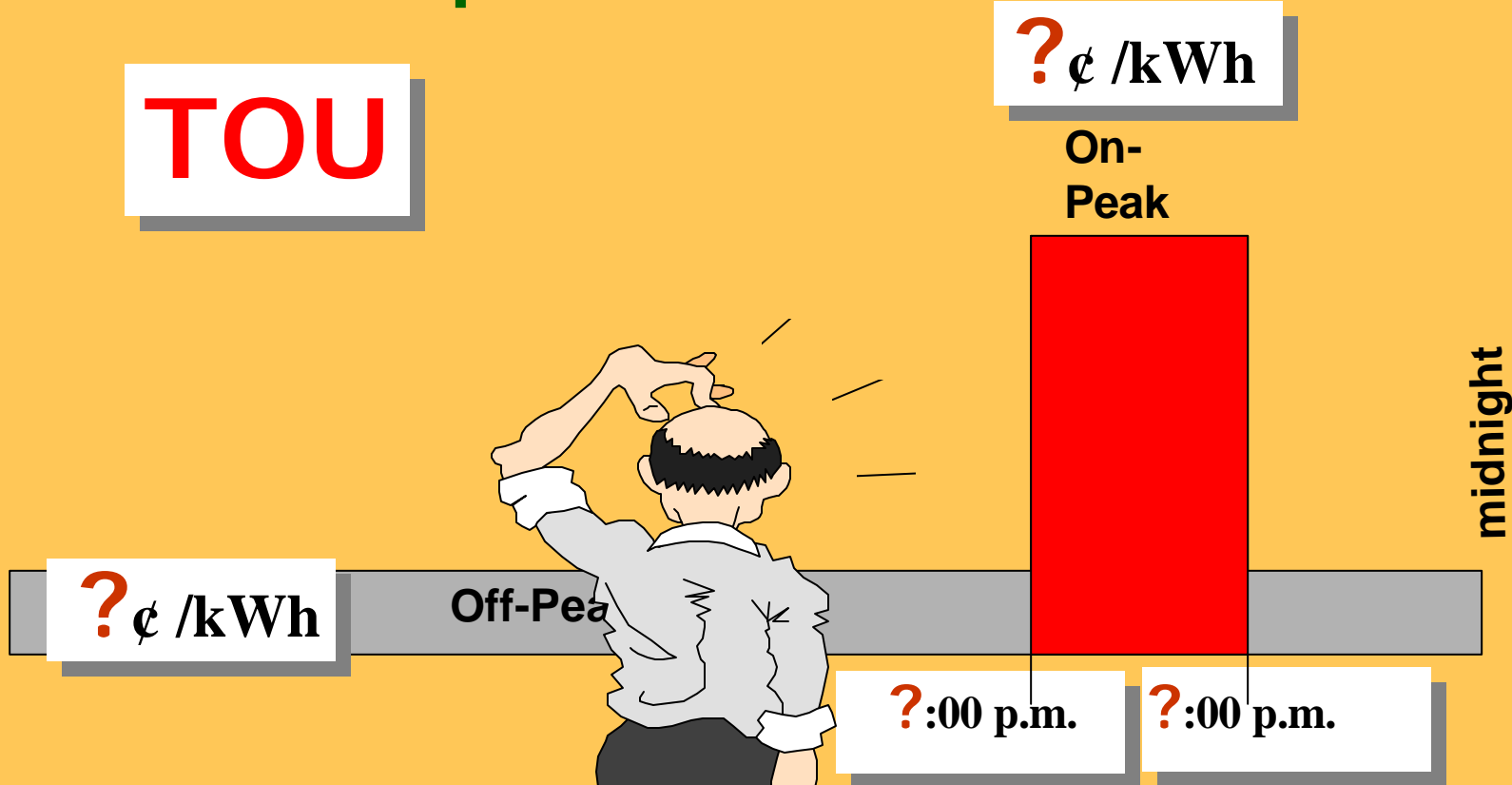
? ¢ /kWh

Off-Pea

? :00 p.m.

? :00 p.m.

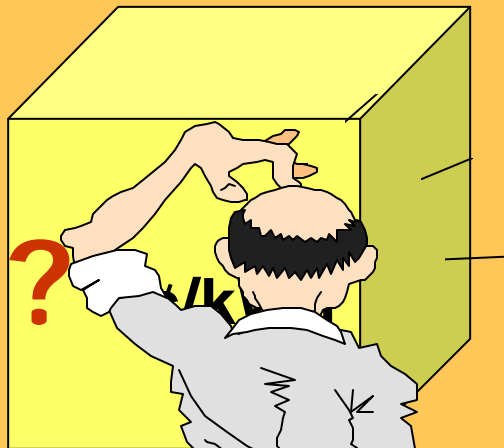
Summer weekdays, June - September



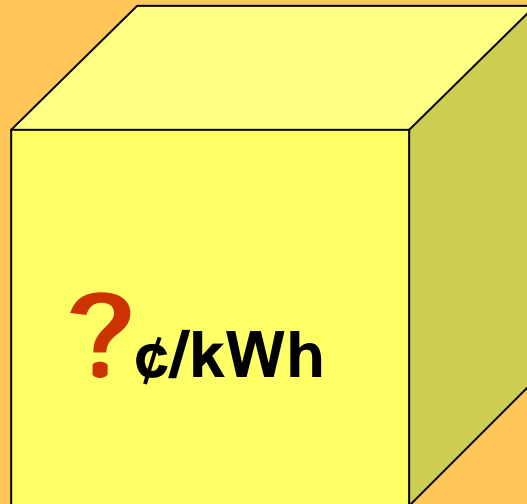
Your historic
average usage or

C

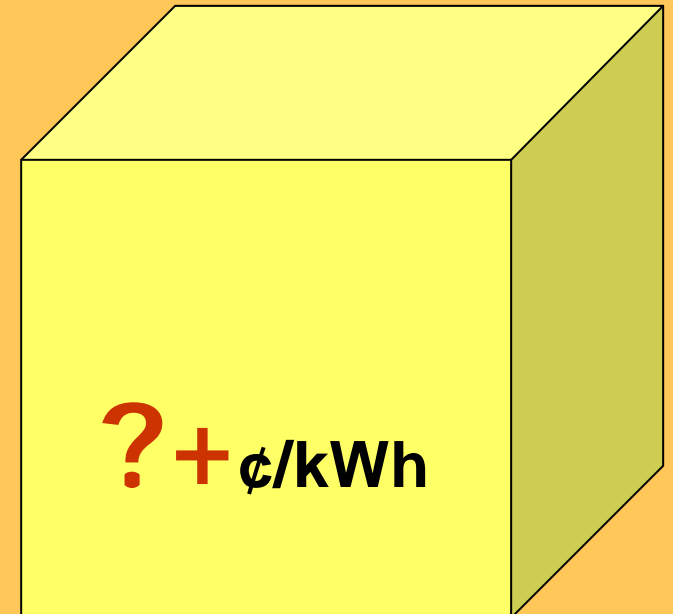
Base



8,000



10,000 kWh



12,000 kWh

- Pay **2x?**¢ for each additional kWh

Process

- commercial groups
- residential groups
 - NYC
 - Long Island
 - Albany
 - Buffalo

Recruiting and Timing

- Non-Residentials selectively recruited
- Residentials randomly recruited
- Nonresidentials at 6:00 pm
- Residentials at 8:00 pm
 - Noon possible if more desired

Market Participants & End-Users

- MPs for design basis.
- End-Users for reactions to proposed products.
- Design for the survey.

NYISO Function?

- **To facilitate a market where:**
 - **NYISO and Market Participants understand how end-use customers react to price and other factors**
 - **PRL products can be developed and offered to end-use customers by MPs**

Step 4:

- What does NYISO want to do?

Thanks folks!