Educating the Consumer and Peak Load Shifting: Lessons from the Wisconsin Mandatory TOU Experiments

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Design: Experiment 1

- 700 homes sampled at random
- mandatory participation
  - Not “Opt in” nor “Opt out”
- three peak periods 6hr, 9hr, 12 hour
- three price ratios 2:1 4:1 8:1
- 1 year baseline
- 3 year test period
Findings Published in

- Journal of Economic Psychology
- Journal of Consumer Research
- Consumers and Energy Conservation
- Energy
## Attitudes and the Three Fixes
(for reducing on Peak Consumption)

<table>
<thead>
<tr>
<th></th>
<th>Technological</th>
<th>Cognitive</th>
<th>Structural</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What Changes</strong></td>
<td>Environment</td>
<td>Human Behavior</td>
<td>Human Behavior</td>
</tr>
<tr>
<td><strong>How Change is Achieved</strong></td>
<td>Technology influences the environment</td>
<td>Information influences human behavior</td>
<td>Structure of the situation influences human behavior</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td>Direct Load Control</td>
<td>Educating the Consumer</td>
<td>Time of Use Pricing</td>
</tr>
<tr>
<td><strong>Role of Attitudes</strong></td>
<td>Technology must be consistent with dominant public attitudes and values</td>
<td>Attitudes must be changed and attitudes must influence behavior</td>
<td>Structural changes must be consistent with dominant public attitudes and values</td>
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</tbody>
</table>
Goals of Experiment 2

- To test the Structural Fix (price ratio) vs. The Cognitive Fix (information)
- Great promise for attitude variables in Experiment 1
- But we had not manipulated them
- Could they be manipulated to bring about attitude AND behavior change???
Design Experiment 2

- Mandatory Participation
- 4:1 and 8:1 price ratios
- 12 hour and 14 hour peaks
- Random Assignment to Cells
- Half got the Accelerated Information
- Two Year Trial
Basic Communications

• Rate notification letter
• Get to know your new rate brochure
  – Bill Insert new rate has begun
  – Bill message-first bill under new rate
• Brochure: How to take advantage of the new rate.
  – Rate change notices, Daylight Savings Time Notices
Accelerated Communications

- All 10 Basic plus 27 additional
- Letter from CAC emphasizing the importance of the study and communications
- Detailed Brochure--the more you know the more you save
- Brochure: How to read your new bill
- Self Monitoring Chart
• Winter Conservation Booklet (11 pages)
• Magnetic Price Ratio Signs
• CAC letter congratulating them for conserving
• Current knowledge quiz with prizes
• “Time of Use Times” Newspaper
  – 10,000 words, 24 stories
Accelerated

- Four months of bright labeled bill stickers remind of the peak ratio and the time periods
- Summer Conservation Brochure
- Heat alert notice mailed during August hot spell.
- Refrigerator/Freezer and Space heater Brochures
• Summer Saving Booklet--11 pages
• Energy Budget Chart for transferring Self Monitoring Info
• Second *Time of Use Times*
• CAC letter thanking participants for their efforts
• We use energy wisely decal to the 50% who used the least on peak
Accelerated

• Price Ratio reminder--red with number on front
• Newsletter 4 pages. Listed names of conserves. Set up an energy honor roll.
• Air conditioner and Dehumidifier Brochures
• Magnet listing 9 large use appliances
• Summer Brochure info on three big appliances-A/C, dehumidifiers, and dryers
• Heat alert notice
• Special Hints for Special Households-with older adults, children and renters
So, What Happened
Communication Increased Knowledge and Commitment

More accurate knowledge for Accelerated Group
- Peak Hours
- Price Ratio

• Higher levels of commitment to reducing on peak use
  - 83% Accelerated
  - 76% Basic
# Accelerated Communications had Positive Attitudes

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<tr>
<th>Comparison</th>
<th>Accelerated</th>
<th>Basic</th>
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</thead>
<tbody>
<tr>
<td>Satisfied with TOU</td>
<td>64%</td>
<td>54%</td>
</tr>
<tr>
<td>Willing to remain on</td>
<td>68%</td>
<td>58%</td>
</tr>
<tr>
<td>TOU is Fair</td>
<td>59%</td>
<td>51%</td>
</tr>
<tr>
<td>TOU is Inconvenient</td>
<td>31%</td>
<td>36%</td>
</tr>
</tbody>
</table>
But Behavior Was Not Affected

- Basic Communications
  - 30% On Peak
- Accelerated Communications
  - 29% on Peak
- Not Statistically Significant
The Structural Fix Was Effective

- On Peak Consumption Dropped Significantly
- 3% to 5% depending on the Treatment
- Compare with O-Power Conservation Drops of 1-3%
The Question(s)

- Experiment 1 ran from 1975-1978
- Experiment 2 ran 1983-1985
- Why after nearly 25 years have we failed to adopt a proven structural fix to reduce residential customer on peak load in Wisconsin?
- What should we do now?
Summary

• Mandatory Time of Use Pricing got significant shifts in behavior (3%-5% declines in off peak)
• Increased information
  – Changed attitudes in the positive direction
  – Increased knowledge and Increased commitment
  – BUT HAD NO EFFECT ON BEHAVIOR
• Lesson: Focus on Structural Fixes, not Cognitive Fixes
• Attitudes are important in All Three Fixes