

## International Examples of Efforts to Save Electricity in a Hurry

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## Temporary Electricity Shortfalls

- Many recent examples
- Conservation programs
  - ◆ “saving electricity in a hurry”
  - ◆ “saving electricity slowly”
- Results
- Will shortfalls occur more often?



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## Temporary Power Shortfalls

### Power Shortage

Duration: 1 day – 1 year

Advance warning: 1 day – 1 year

#### Supply reduced

- ❖ Drought
- ❖ Loss of transmission
- ❖ Loss of power plant

#### Demand increased

- ❖ Heat wave
- ❖ Cold wave



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## Saving in a Hurry is Different

- Temporary
- Must rely on changes in behavior
  - ◆ Technological improvements cannot deliver savings fast enough
  - ◆ Sacrifice may be acceptable
  - ◆ Strategies change with longer advance warning time or expected duration
- Can't rely solely on higher prices to cut demand
  - ◆ Technical and political obstacles



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## Drought in Brazil (2001)

- Brazil is 100% hydro and highly integrated
- Drought caused 20% shortfall in supplies
  - ◆ coupled to failure to build new capacity and uncertain market liberalization
- Treated as a national crisis
  - ◆ Emergency committee run by president's chief of staff



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## Conservation Actions in Brazil

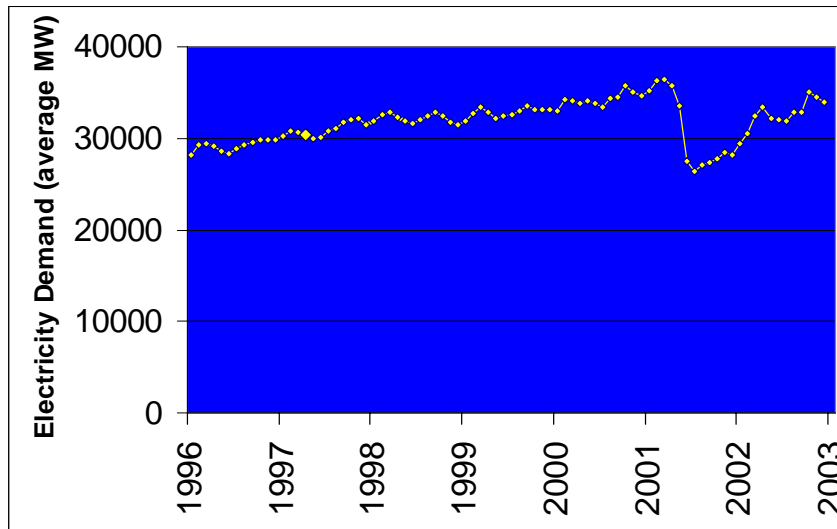
- 20% *mandatory reduction in electricity use vs. last year*
  - ◆ *disconnections* for those who fail
- **HUGE media campaign**
  - ◆ *Contests, comparisons between towns*
  - ◆ *Symbolic actions*
- **Technical**
  - ◆ Millions of CFLs
  - ◆ Freezers unplugged
  - ◆ Industries re-sold firm power
- *Little or no price hikes for residential customers*



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## Brazil Results: 20% reduction



- No blackouts, economy survived, savings continued

## Droughts in New Zealand (2001 and 2003)

- NZ mostly reliant on hydro with little storage capacity
  - ◆ “100 -year” drought happened twice
- Conservation campaign relied on media
- Achieved goal of 10% savings goal both times
  - ◆ Program halted when 10% savings achieved
  - ◆ Reduction achieved sooner the 2nd time
- Residential prices unchanged





## Sweden: Results

- Demand reduced 4% compared to original forecast -- Blackout avoided
  - ◆ Actual Monday temperatures were colder than expected
  - ◆ Large savings surprised utility
- Residential prices not changed
  - ◆ Spot prices rose sharply
  - ◆ Some electricity traders burned
- Vattenfall decided to use this “tool” more carefully in the future



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## Tokyo: Nuclear Plants Shut Down

- 2003: TEPCO forced to close all nuclear plants after it falsified safety reports
  - ◆ Nuclear = 40% of capacity
  - ◆ Summer peaking
- Conservation program started slowly
  - ◆ A public relations challenge
    - Nuclear power tied to national policies
    - Little humor



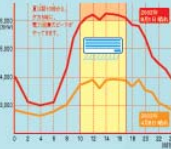
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# 社員みんなで、節電宣言!

電力消費が増加する夏がやってきました。節電にご協力をお願いします。

本特別は夏の訪れとともに、電力消費がピークを込めます。その中で、関東圏の電力の4割以上を供給している新潟県、福島県の電力が関東圏の電力の4割以上を供給しているため、電力の安定供給に努めています。電力の安定供給に努めています。電力の安定供給に努めています。電力の安定供給に努めています。



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オフィスでできる節電のコツ

エアコンの設定温度は28℃

約10%の節電

照明は自然光を上手に活用

約10%の節電

約10%の節電

約10%の節電

電力供給に関するさまざまなこと、私たちは真摯に受け止め、深く考えています。経済産業省 資源エネルギー庁

Japanese government advertisement urging consumers to conserve electricity, explaining peak power, and suggesting measures



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Tokyo Electric Power Company spokesperson explaining power situation in July 2003



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## Tokyo: Results

- 4.5% savings & no blackouts
  - ◆ Unusually cool summer major reason for no blackouts -- lucky!
  - ◆ Conservation probably prevented a blackout in one week
  - ◆ Actual savings may have been higher



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Critical Week



QuickTime™ and a  
TIFF (LZW) decompressor  
are needed to see this picture.

Actual demand  
(cool summer)

## Other Examples of Shortfalls

- Transformer fire in Arizona
- Slow recovery after blackout in Ontario
- A cold Monday in France
- A drought plus cold winter in Norway
- A flooded power plant in Michigan

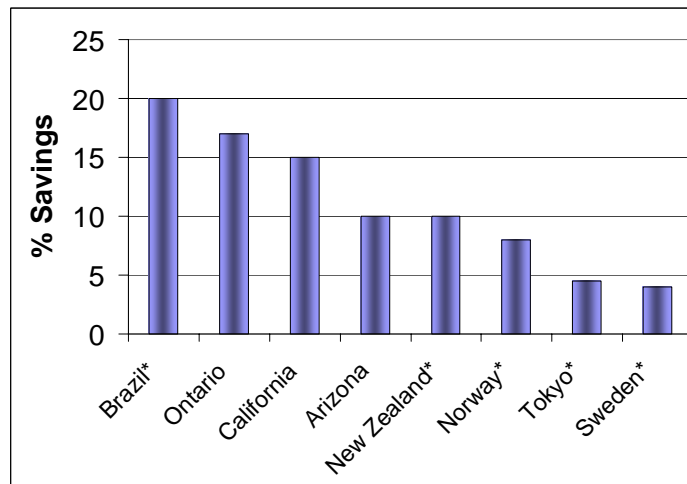
*Diverse reasons for shortfalls, but many have connections to extreme weather*



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## Summary of Savings



\* No significant blackouts occurred



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## Conclusions

- Rapid, temporary, reductions in demand are achievable without damaging economy
- Effective use of the media is critical
  - ◆ Humor works
- Many short-term reductions were achieved without raising prices
- Are shortfalls likely to happen more often?
  - ◆ Market liberalization reduces reserves
  - ◆ Climate change increases weather variation
- Links to “saving electricity slowly”



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For More Information,  
see the book:  
*"Saving Electricity in a Hurry"*

[www.iea.org](http://www.iea.org)



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