

**South Africa-IEA Energy Efficiency Policy Dialogue**  
**Presentation of:**  
***Saving Electricity in a Hurry – Update 2011***

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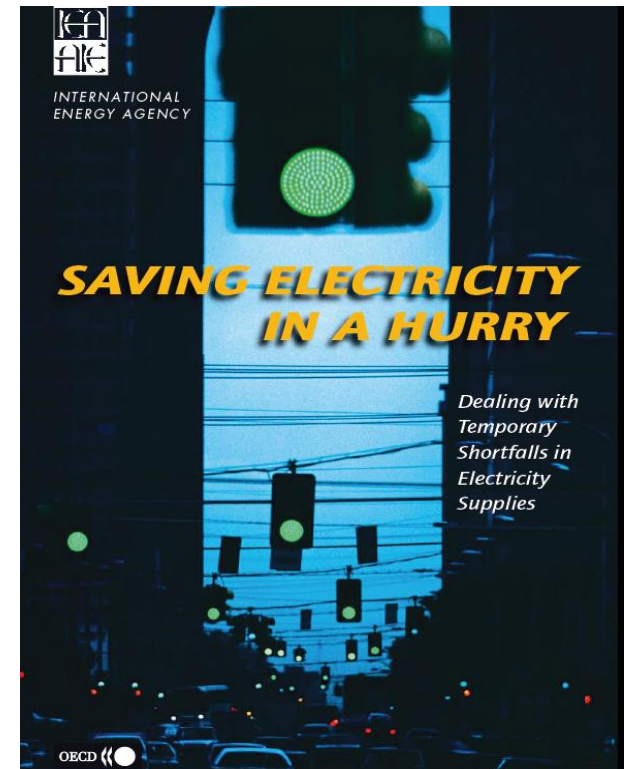
International  
Energy Agency

# Topics

- The original *Saving Electricity in a Hurry*
- Why this message resonates today
- Developing a shortfall management strategy
- Additional considerations from the case studies
- Recommendations for governments

# The original *Saving Electricity in a Hurry*

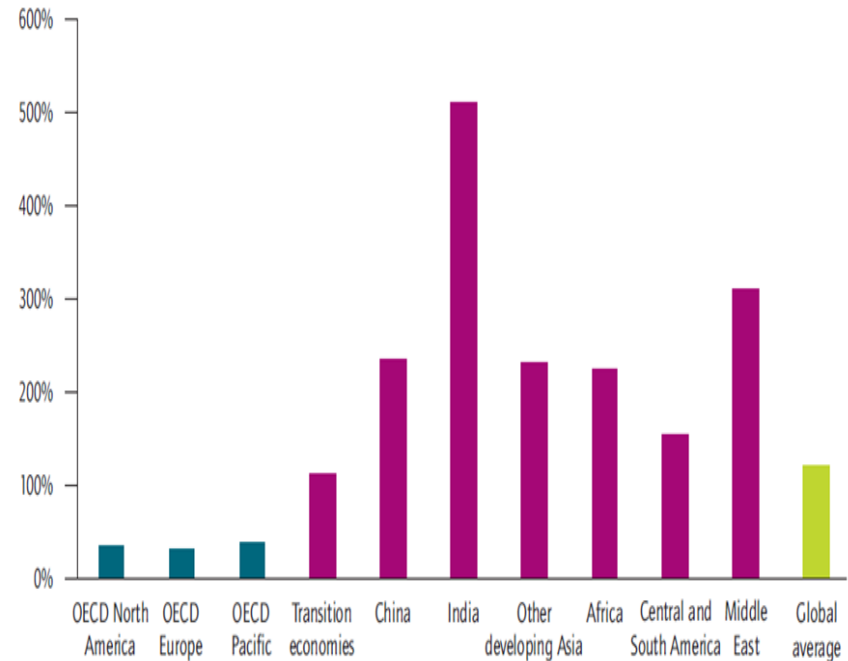
- Based on IEA research
- Described the problem of temporary but serious shortfalls in electricity supply
- Case studies described:
  - Brazil's 2001 power crisis
  - California's 2001 power crisis
  - Europe's 2003 long hot summer
  - New Zealand's double drought
  - Norway's 2003 dry, cold winter
  - TEPCO's 2003 nuclear shut down
- Highlighted coping strategies that relied on customers for energy and demand savings





# Why this message resonates today

- Continued rapid demand growth
- Vulnerability to weather-induced shortfalls
- Adding new supply is costly and time-consuming
- Political consequences of inexpert shortfall management
- New technologies for saving energy and managing demand



% increase in electricity demand by region, 2030 compared to 2010

# Energy and demand savings measures

- Price signals
- Information campaigns
- Technology replacement
- Rationing
- Market mechanisms

# Suggested contingency planning

- **Identify possible shortfall scenarios**
  - Cause
  - Severity
  - Duration
- **Understand patterns of customer electricity use**
- **Evaluate potential energy savings measures**
  - Costs, benefits, social impacts
- **Put in place standby arrangements**
  - Identify lead agency
  - Authority for rationing and other measures

# The cases

	Japan 2011	Juneau 2008	New Zealand 2008	South Africa 2008/09	Chile 2007/08
<b>Energy savings</b>	15% for most sectors	25% to 40%	3.6% to 6.7% for households	20%, primarily for industry	No demand growth
<b>Duration</b>	Since March 2011	6 weeks	June-July 2008	January 2008-2009	Several months
<b>Electricity shortage management measures</b>					
<b>Price increases</b>		X	X (industry)	X	X
<b>Information campaigns</b>	X	X	X	X	X
<b>Technology replacement</b>	X	X (CFLs only)	X	X	X
<b>Rationing</b>	X	X		X	X
<b>Market mechanisms</b>			X	X	

# 2011 Japan earthquake & tsunami

- 15-25 GW of TEPCO's total 70 GW capacity knocked out of service from March 11
- 9 days of black-outs caused confusion and hardship
- Transport, hospitals, businesses hit hard
- Emergency Response entity developed plans for the summer peak period
- In late May a 15% reduction target was released
  - 15% obligatory rationing for large users
  - Prizes for households reducing more than 15%
- Japanese community spirit and innovation in gear
- *Most consumers are ready to respond to a crisis. They just need some guidance to contribute.*



# Japanese energy saving innovation

## Web site for households to check energy use

Household Power Saving Menu **Agency of Natural Resources & Energy**  
Check the actions below and prepare measures of your household.

Suggested Menu for Household Power Saving Actions		Power Saving Effect		Check
		Reduction Rate	Power Reduction	
A/C	① Set room temperature at 28°C.	10%	130W	<input type="checkbox"/>
	② Use "sudare" or "yoshizu" (Japanese shades made of rattan and reed) to decrease sun exposure.	10%	120W	<input type="checkbox"/>
	③ Turn off A/C and use electric fan.	50%	600W	<input type="checkbox"/>
※ Avoid Dry mode operation and frequent switching on/off as they increase power usage.				
Refrigerator	④ Change the refrigerator temperature setting from powerful to medium, minimise opening doors and limit amount of food kept inside.	2%	25W	<input type="checkbox"/>
Lighting	⑤ Turn off lights during the day and reduce lighting in the evening.	5%	60W	<input type="checkbox"/>
T V	⑥ Use energy savings mode, decrease brightness, and switch off when not in use.	2%	25W	<input type="checkbox"/>
※ Change mode from "standard" to "energy saving" mode and reduce hours of watching by 1/3.				
Toilet heater /warm shower	⑦ Switch off seat-heating & hot-water functions.	Reduction by either one of the two >1%	5W	<input type="checkbox"/>
Rice cooker/jar	⑧ Cook rice for the day and store it in the refrigerator rather than keeping it warm in the rice cooker.	2%	25W	<input type="checkbox"/>
Standby Power	⑨ Unplug unused appliances.	2%	25W	<input type="checkbox"/>

Apply ④⑦⑧&⑩ measures even when you are away from home.

Save power by more than 15%  
(sum of power reductions)

! Beware of heat stroke. Save power with flexibility and comfort.

※Numbers listed for power saving effect are estimated as reduced power consumption and their % changes from the average daytime power consumption of about 1200W at 14:00 when family member(s) is(are) at home (ANRE estimation).



## Super Cool Biz Summer 2011 office fashion ideas

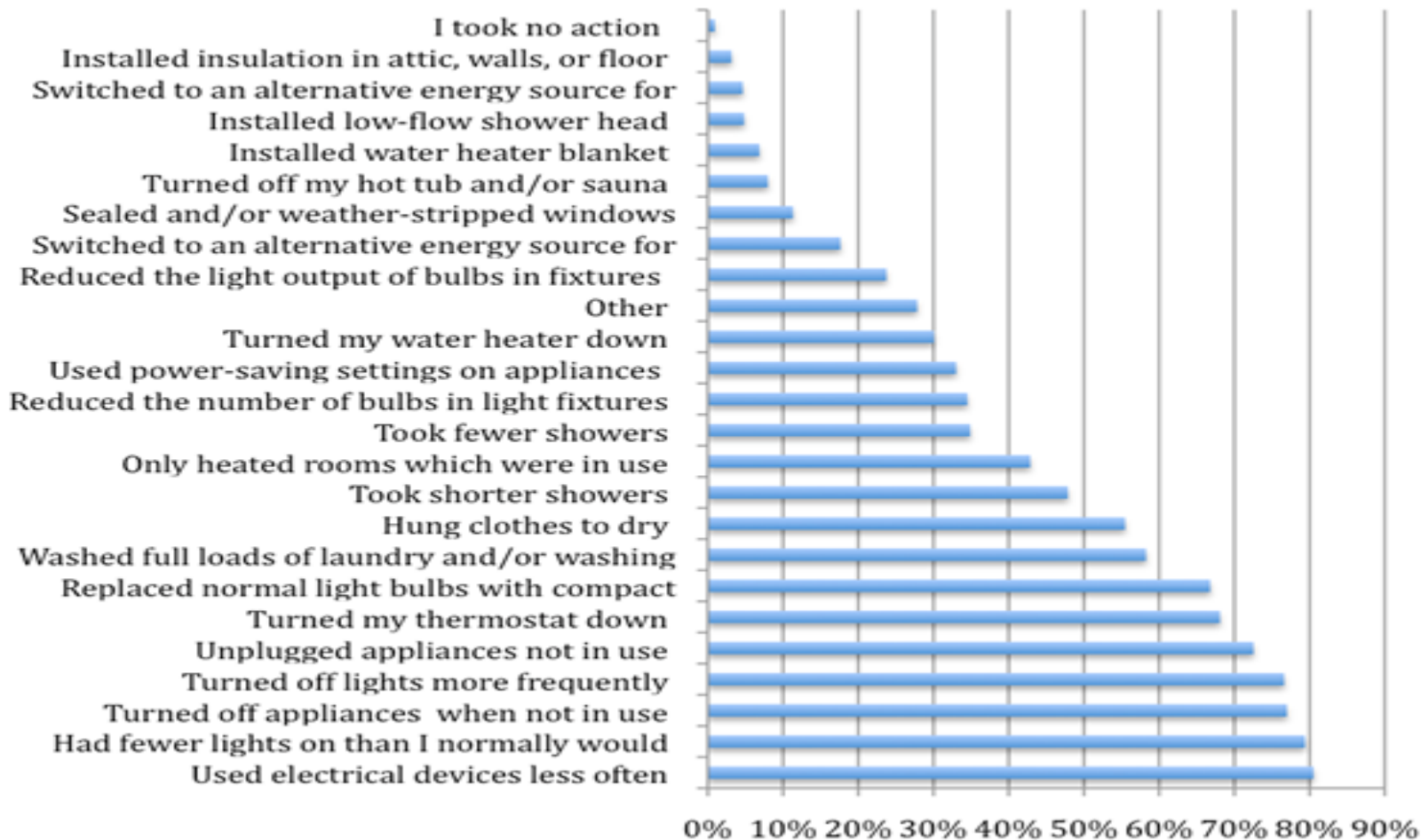
# Juneau Alaska

- Small, isolated community
- Electricity shortfall by avalanche brought on a quick response
- *Juneau Unplugged* campaign reduced demand by 40%
- Fuel switching provided the most savings
- An NGO proved effective in mobilizing the community



# What a little behaviour change can do

## Which actions did you take?



# **South Africa 2008: a familiar opening gambit to an electricity shortfall**

- **Chronic underinvestment in new capacity plus demand growth combine to degraded reserve margins and create power system vulnerability**
- **Unusual weather and fuel/plant availability conditions combine to create a crisis**
- **System operators resort to load shedding to prevent system collapse, which in turn creates economic, social, and political convulsions**



# Getting it right: Power Conservation Program

- PCP as a social contract with electricity users
- Creation of a PCP coordination committee
- Looking at electricity shortfall approaches used elsewhere
- Settling on the 10% energy savings target for all sectors
- Phasing-in rationing, beginning with the largest users
- Back-up plans to extend rationing if needed
- Communications activities
  - Power Alert scheme for households
  - 49 million households
- Other initiatives:
  - Solar water heater initiative
  - Smart metering trials
  - Eskom's DSM program - 5000 MW over 20 years

# Snapshots of the other case studies

## ■ New Zealand

- Hydro-dominated systems are prone to shortfalls
- Wholesale markets prices deliver scarcity pricing mostly for larger users
- Repetitive shortfalls call for mechanisms that reward energy saving consumers
- Triggers are useful. They provide advance notice of a shortfall –before the blackouts come

## ■ Chile

- Wholesale markets do work to dampen demand, but will not do the job alone
- Existing energy efficiency programmes can be scaled-up to delivery savings in a hurry
- Take special care of vulnerable customer groups during shortfalls

# Recommendations for Governments and Regulators

- Evaluate whether your power sector is exposed to electricity shortfalls, and if so make contingency plans
- Designate responsibility for planning and implementing shortfall management strategies
- Make sure energy providers collect data on electricity usage patterns, to identify energy savings measures
- Consider the full range of energy savings measures in any electricity shortfall strategy
- Anticipate and resolves any regulatory or other barriers to your energy savings measures
- Clearly articulate a trigger point that defines when a shortfall is imminent, and when shortfall management should commence



Questions?

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