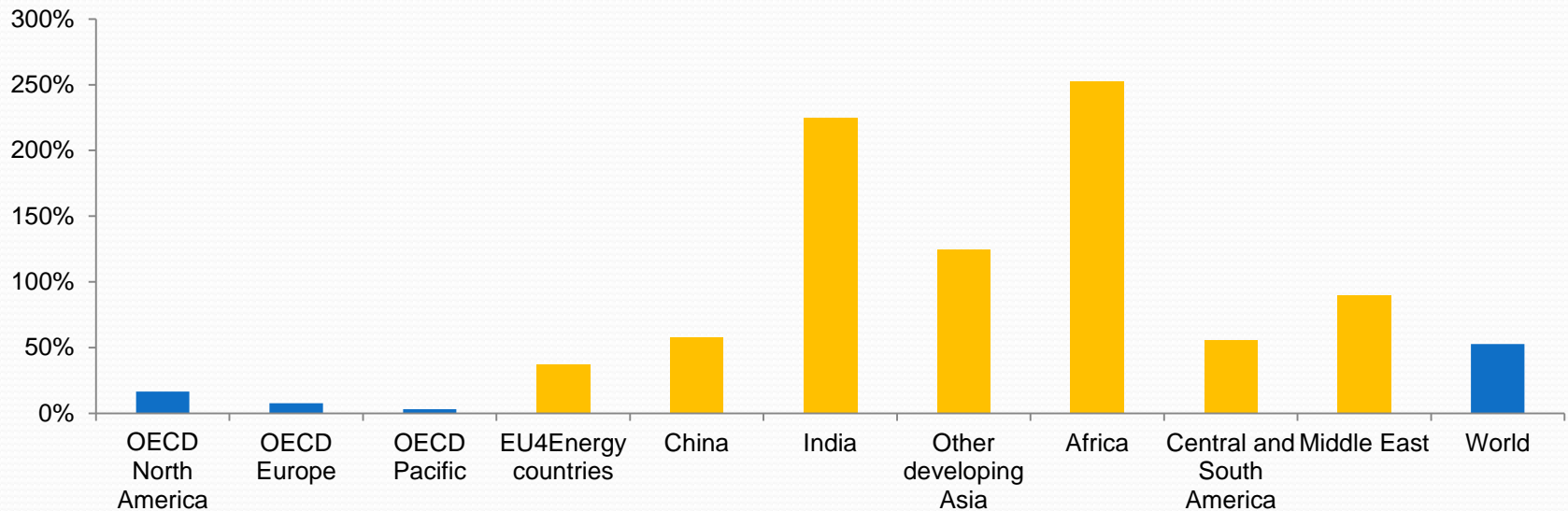


How can we mobilize consumers to save electricity in a hurry?

Sara Bryan Pasquier

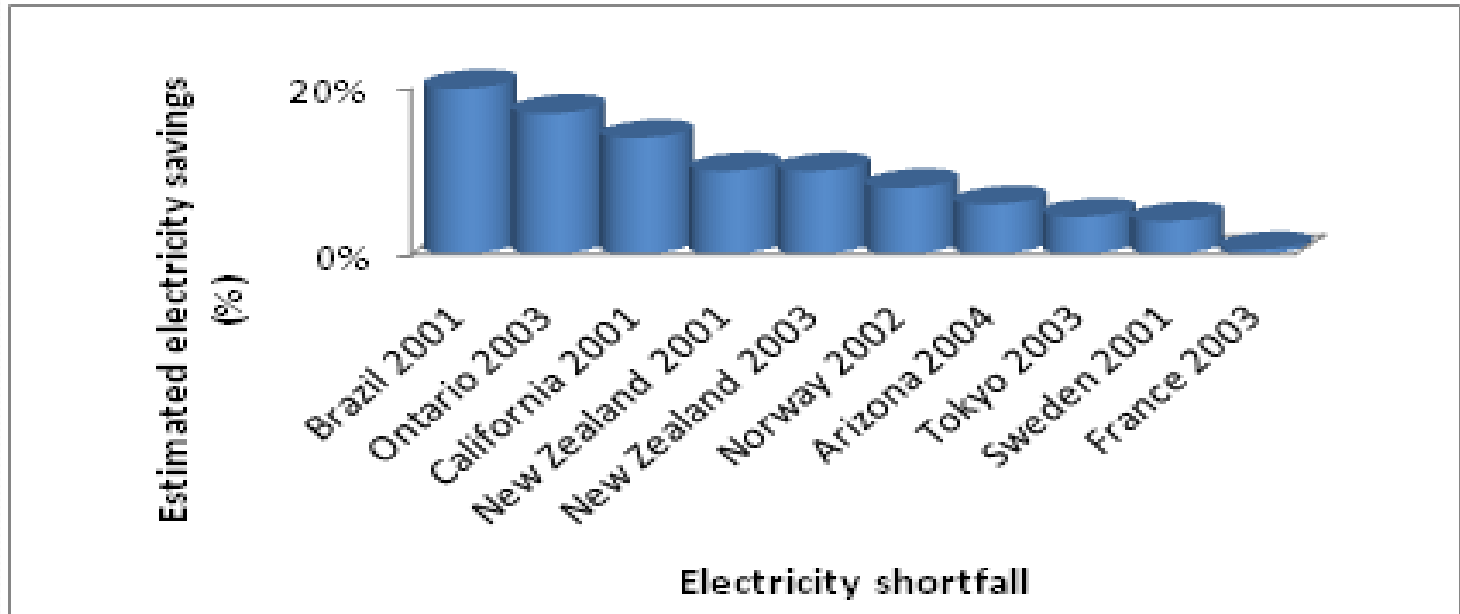
**June 27, 2018
15:30-16:45**

Accommodating electricity demand growth is a challenge around the globe



- Continuing and rapid electricity demand growth
- Vulnerability to weather-induced shortfalls
- Governments and industry are hard-pressed to finance new supply
- Siting and technology choices are politically sensitive

Benefits of an electricity shortfall communications strategy



- Minimizes economic and social impacts
- Mobilizes support from stakeholders and civil society
- Increase awareness of the need for energy efficiency



Our session today

A crisis is looming, what do you do?

1. Identify lead agency
2. Identify possible shortfall scenarios
 - Cause
 - Severity
 - Duration
3. Understand patterns of customer electricity use
4. Evaluate potential energy savings measures
 - Costs, benefits, social impacts

1. Identify lead agency

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2. Identify possible shortfall scenarios

Cause

Severity

Duration

3. Understand patterns of customer electricity use

4. Evaluate potential energy savings measures

Costs, benefits, social impacts

2. Identify possible shortfall scenarios

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2. Possible causes

Energy Constrained Systems – lack of MWh

- Low rainfall in hydro-system – Brazil, Norway, New Zealand (2001), East Africa (2006), the Kyrgyz Republic
- Poor operations planning & reservoir management – Tanzania, Brazil
- Conflicting uses for the water: Lake Victoria, Bonneville Power Authority
- No money to buy fuel (Ethiopia)
- Curtailment in fuel supply (e.g. Chile, importing gas from Argentina)

Capacity Constrained Systems – lack of peaking MW

- Unplanned maintenance and engine failure – the Gambia (ongoing)
- Insufficient generation capacity to meet peak load (Kenya)
- Low reserve margins or susceptibility to generation outages (SA)
- Unsustainable peak demand growth & low load factors (MENA countries)

2. Possible severity and duration

- Entire country? Certain region(s)?
- Hours, days, weeks, months, years?

	Capacity Constraints	Energy Constraints	Capacity and Energy Constraints
Short-lived Crisis	Non-firm rates Dynamic pricing Load control	Voluntary rationing	Voluntary rationing
Long-duration Crisis	Thermal storage Load control Dynamic pricing	Mandatory rationing Fuel switching Energy efficiency Self-generation	Mandatory rationing Fuel switching Energy efficiency Self-generation

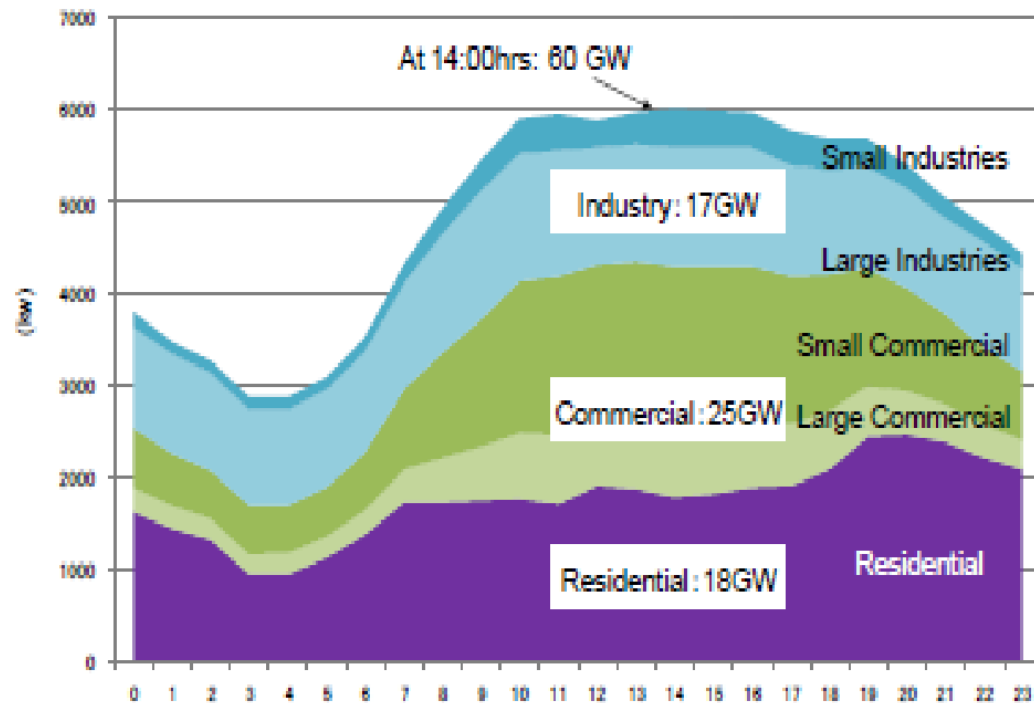
3. Understand patterns of customer electricity use

1. Identify lead agency
2. Identify possible shortfall scenarios
 - a. Cause
 - b. Severity
 - c. Duration

3. Understand patterns of customer electricity use

4. Evaluate potential energy savings measures
Costs, benefits, social impacts

3. Understand patterns of electricity use – by sector and end-use



Source: ANRE/METI, 2011⁶

4. Evaluate potential energy savings measures

1. Identify lead agency
2. Identify possible shortfall scenarios
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4. Evaluate energy savings measures

- a. Price signals
- b. Information campaigns
- c. Technology replacement
- d. Rationing

4 a. Price signals

- Time-of-use (TOU) pricing, in which price varies according to a preset schedule, e.g. time of day, day of week and season.
- Real-time pricing (RTP), in which the end-user price is linked directly to hourly spot prices in a wholesale market.
- Critical-peak pricing (CPP), a hybrid of TOU and RTP in which a TOU rate is in effect all year except for a contracted number of peak days (exact dates unknown) during which electricity is charged at a higher price.

4 b. Information campaigns

- Analyze what consumer behavior to change
- Identify the target group
- Choose effective communications channels
- Convey urgency while keeping an upbeat tone

Before and after “Setsuden”

Electricity Saving in Japanese

From “Cool Biz” (June 2005) to

“Super Cool Biz” (May 20



No more ties for men
in the summer means
no more blanket for
ladies in the office



夏、男性がネクタイを
はずせば、女性の
ひざ掛けがいら
ないオフィスにな
ります。



Look at their Smile !

Cabinet Meeting



COOLBIZ

Police Station



COOLBIZ

Local Government Office



環境省の服装はこう変わる

	今年のスーパークールビズ (6月1日)	昨年までの クールビズ
○ ...可		
△ ...節度あれば可		
× ...原則不可		
ポロシャツ	○	×
アロハシャツ	○	×
Tシャツ	△	×
ランニングシャツ	×	×
ジーンズ	△	×
短パン	×	×
スニーカー	○	×
サンダル (ビーチサンダルは不可)	△	×

The Diet



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.	>1%	5W	<input type="checkbox"/>
	Reduction by either one of the two			
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 ④ ⑦ ⑧ & ⑩ measures even when you are away from home.

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

! 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).

The Gambia





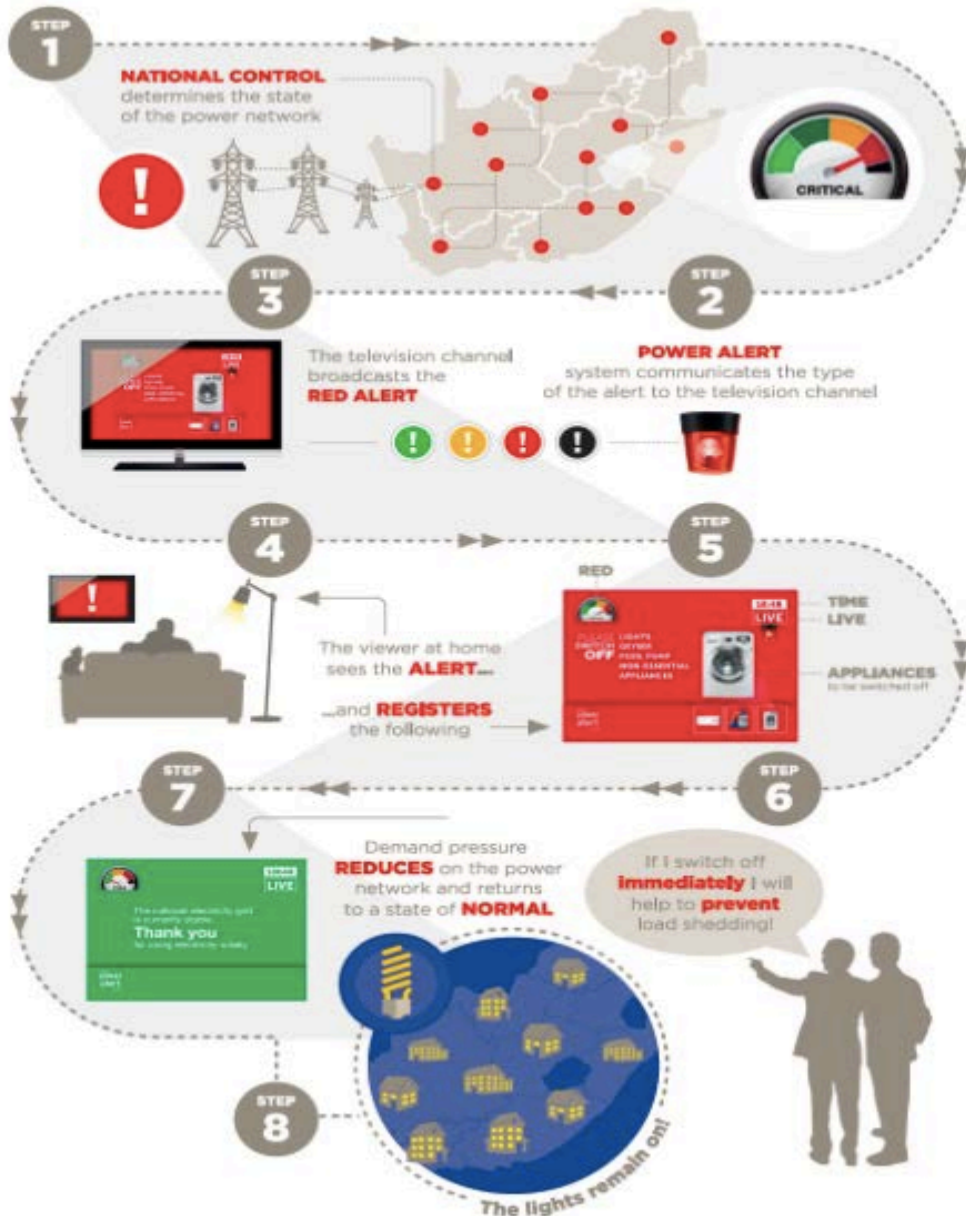
South Africa 2008: a familiar opening gambit to an electricity shortfall

- 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

- Power Conservation Program (PCP) = Social contract with electricity users
- Set 10% energy savings target for all sectors
- Phased-in rationing, beginning with the largest users
- Back-up plans to extend rationing if needed

Power Alert: How it works in eight easy steps



South African Power Alert scheme for households

49 million households

<https://www.youtube.com/watch?v=rcRa9eBjbKY>

Large Group Exercise

Watch the following videos

Who is the target audience?

Who is the messenger?

Why were they selected?

In your opinion, are they effective?

What is the message? Is it clear, actionable?



The videos

4 c. Technology replacements

- deploy energy-efficient lighting, especially compact fluorescent lamps (CFLs) and light-emitting diodes (LED);
- replace old equipment (ranging from refrigerators to traffic signals) with new, more-efficient technology;
- retrofit and/or adjust existing equipment to make it more efficient;
- install load-control devices on selected appliances and equipment.

d. Rationing and market instruments

- Block load shedding
- Consumption rationing via quotas or entitlements
- Market-based rationing (quota and trade)
- Incentive/reward schemes (e.g. California's 20/20 rebate programme)

Recommendations

- 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

Group exercise

Choose a country in your region and pretend like you are facing an electricity crisis/shortage.

- Who is in charge of mitigating the crisis?
- What is the cause of the crisis?
- How severe is it? Is everyone impacted? Only some people? All the time or just during parts of the day?
- How long will it last?
- Create a load curve and break it down by sector and energy use (cooling, heating, lighting, etc.)
- Which energy saving measures will you put in place? Behaviour change campaign, rationing? technology replacement, market mechanisms? Why? Are some measures not available for you?
- What messages will you use to get people to save energy?

Выберите страну в вашем регионе и допустим, вы столкнулись с острым кризисом/нехваткой электричества в этой стране.

1. Кто ответственен за меры по смягчению кризисной ситуации?
2. Какова причина кризиса?
3. Насколько серьёзен кризис? На всех ли оказал воздействие кризис? Или только на какую-то часть населения? Нехватка электричества наблюдается всё время в течение суток или же время от времени?
4. Как долго он будет продолжаться?
5. Создайте кривую нагрузки и дайте разбивку по секторам и потреблению энергии (охлаждение, отопление, свет и т.д.)
6. Какие меры по сбережению энергии вы бы применили? Кампанию по изменению поведения/использования электроэнергии или нормирование? Замена технологий? Какие-то рыночные механизмы?
7. Обоснуйте почему? Есть ли какие-либо меры, которые вы не можете задействовать?
8. Какие обращения/призывы вы пошлёте населению, чтобы оно начало экономить электроэнергию?