International Smart Meter Trials

Selected Case Studies

Smart Tariffs and Customer Stimuli

The following smart meter trials are summarised in this note :

1. **Ontario Energy Board Smart Price Pilot**
2. **Country Energy Smart Metering Trial, New South Wales, Australia**
3. **Energy Australia Strategic Pricing Study**
4. **California Statewide Pricing Pilot**
5. **Norway Trial**
6. **Tempo Tariff, EdF France**
7. **California Information Display Pilot**

The trial results are classified into **quantitative** results i.e. measurable, and the **qualitative** or intangible results.

The quantitative results have been further broken down into:

- Peak Load Reduction
- Overall Electricity saving

Peak Load Reduction can be defined as a measured reduction in the electricity used during peak or critical peak periods. This may either be a shifting of usage to other time periods, or may be an absolute saving.

Overall Electricity saving is where there has been an actual reduction in the overall electricity used, not just a shifting from peak periods.

Summary

Trial	Peak Load Impact
Ontario Energy	Ranged from 5.7% for TOU-only participants to 25.4% for CPP participants
Country Energy, Australia	Reduction of 30% across peak periods
EnergyAustralia	Reductions on days with a CPP event of between 5.5% and 7.8%
California Statewide	Reductions in demand ranging from 13-27%
Norway	8-9% reduction at peak

Trial	Meters and Tariffs	Quantitative Results	Stimuli Used	Qualitative Results
Ontario Energy Board Smart Price Pilot (OSPP)	Smart meters and Time Of Use (TOU) tariffs including Critical Peak Price (CPP) and Critical Peak Rebate (CPR)	Load shifting during critical peak hours ranged from 5.7% for TOU-only participants to 25.4% for TOU and CPP No significant load shifting from On-Peak periods as a result of the TOU price structure alone. A 6.0% average conservation effect across all customers - 6.0%, 4.7%, and 7.4% for TOU, CPP, and CPR customers, respectively.	Refrigerator magnet with TOU pricing tables Conservation brochure with conservation tips Monthly usage statements	Customers liked the monthly usage statement and refrigerator magnet Bi-monthly billing was not seen as adequate for smart meters Presenting TOU prices and periods in a clear, concise and durable format was important Participants often duplicated the magnet information near thermostats, where they would be making decisions about running major appliances
Country Energy, NSW, Australia	Smart meters and TOU tariffs including CPP	CPP events triggered up to 30% load decrease, though effect reduced over time. Load shifting, not conservation	LCD Display - hourly, weekly, monthly spend Display had LED 'traffic lights' to show the tariff level.	Positive customer feedback – liked traffic lights
EnergyAustralia	Smart meters and TOU	Reductions in total daily energy use on days with a	Connected display of Peak	None identified

Strategic Pricing Study	tariffs including CPP	CPP event of between 5.5% and 7.8% mainly due to a reduction in air conditioning.	Pricing info	
California Statewide Pricing Pilot	Smart meters and TOU tariffs including CPP	CPP rates produced reductions in demand ranging from 13-27% for CPP-V trials Little reduction in consumption for CPP-F customers. Load shifting reduced to almost zero in the ToU group by end of the second year	Web-based bill analysis Monthly scorecard of costs Mail reports for non-web customers	Customers that received information were seen to alter energy consumption patterns initially only.
SINTEF Energy Research, Norway	Smart meters and TOU tariff Automatic load control of water heaters	Average electrical peak-load reduction of 500 watts per customer	Hourly meter readings Discounts for auto load control	Customers appeared unresponsive to a spot price
Tempo Tariff, EdF, France	Smart meters and TOU tariff Automatic load control Demand subscription	None	Meter had 'traffic lights' display to show the tariff level. SMS alert option	None
California Information Display Pilot	Energy orb and CPP tariff	Residential customers using the energy orb reduced demand during critical events	Energy orb that changed colour with price Detailed Monthly usage Bill analysis report	Very small sample – 62 customers. Over two-thirds of the residential customers said the orb changed their behaviour, but not the commercial customers. Only two customers said they would pay over $25 for the orb.

1. Ontario Energy Board Smart Price Pilot (OSPP)

Trial design and key features

- Trial run by the Ontario Energy Board – the regulator;
- Ran from August, 2006 - February 28, 2007;
- Participants - 375 of Hydro Ottawa's residential electricity customers; plus a control group of 125 customers. All participants had smart meters that had been installed prior to August 2006;
- 90% of participants had air conditioning ; 82% gas heating; 9% electric heating;
- Customers were placed into one of three pricing groups or a control group:
- The existing RPP TOU prices (3.5c/kwh; 7.5c/kwh; 10.5c/kwh);
- Adjusted RPP TOU prices with a critical peak price (CPP – 30c/kwh, but off peak rate reduced to 3.1c/kwh);
- RPP TOU prices with a critical peak rebate (CPR) - a refund of 30¢ for every kWh reduction below their "baseline" usage during the critical peak hours.
- Control group - 125 customers who had smart meters but continued to pay regular tiered (non-TOU) prices.

Trial objectives

Ontario Energy Board had three main objectives for the trial:

- To assess the extent to which various time-sensitive pricing structures cause a shift of electricity consumption to off-peak periods as measured by the reduction in peak demand;
- To assess the extent to which each price structure causes a change in total monthly electricity consumption;
- To investigate the understandability of and acceptability by residential consumers of each pricing structure and the communications associated with each.

Stimuli Provision

- Customers received monthly Electricity Usage Statements in addition to their bi-monthly electricity bills. Upon enrolment, participants were provided with a refrigerator magnet, and a PowerWise electricity conservation brochure;
- Refrigerator magnet - provided a table of the prices, times, and seasons for the participant's price plan;
- PowerWise brochure - provided a variety of conservation tips for electricity consumers during peak times or anytime;

- Monthly Electricity Usage Statements - showed electricity supply charges on their respective pilot price plan. These statements emphasized the amount of electricity consumed (in each pricing period) and the TOU price of electricity (in each period by day).

Quantitative results

Peak Load Reduction

- A statistically significant shift in load away from peak periods was measured during On-Peak periods on two critical peak days called in August for all three price groups. No statistically significant shift was detected during the critical peak days declared in September or January;
- The load shifting during critical peak hours across all four summertime critical peak days ranged from 5.7% for TOU-only participants to 25.4% CPP participants;
- Load shifting away from the On-Peak period for all days in the pilot, not just critical peak days, was also analyzed. These results showed no applicable statistically significant load shifting from On-Peak periods as a result of the TOU price structure alone.

Overall Electricity Saving

- The analysis compared the usage of the price message and control groups before the pilot, then after going on the pilot;
- These results show a 6.0% average conservation effect across all customers. 6.0%, 4.7%, and 7.4% for TOU, CPP, and CPR customers, respectively. All of the results are statistically significant.

Qualitative results

- Survey and focus groups were conducted to assess participants' views of the pilot.
- Participants particularly valued the monthly usage statement and refrigerator magnet as the most useful resources to help understand the TOU prices, overshadowing the fact sheet, brochure, or any other pilot communications materials;
- There was a consensus among participants that bi-monthly billing frequency was not adequate within the context of smart meters and TOU pricing;
- The focus groups underscored the importance of presenting TOU prices and periods in a clear and concise format, and a durable and reproducible form - virtually all participants found the prices understandable "because of the magnet";
- Participants often duplicated the information on the magnet to post in kitchens, laundry rooms, and near thermostats, where they would be making decisions about running major appliances such as dishwashers, laundry machines, and air conditioners.

2. Country Energy Smart Metering Trial (NSW, Australia)

Trial design and key features

- Energy Efficiency trial started in 2004;
- Voluntary participation - Residential sector - 200 homes;
- Smart meters + in-house displays + time of use tariffs;
- LCD Display provides customers with information about the amount of electricity they are using, and how much it is costing (hourly, weekly, monthly);
- Display also had LED 'traffic lights' to show the tariff level;
- A beeping sounds alerts customers to the start of a critical peak period;
- Designed to test customer response to tariffs that reflect system costs;
- Off-peak (green - 7.03c/kwh), shoulder (green - 12.7c/kwh), on-peak (amber - 18.87c/kwh) and critical peak (red - 37.74c/kwh) rates;
- Critical peak may occur a maximum of 12 times a year; customers given 2 hours notice;
- In winter the peak period was from 7 am to 9 am and 5 pm to 8 pm to coincide with the period of maximum use of domestic space heaters;
- Households who responded to price signals saved money;
- Three surveys and a focus group to obtain feedback1. Also a 'Trial Helpline'.

Trial objective

The main objective of the trial was to understand the customers' willingness to change their electricity consumption patterns if provided with information about consumption patterns and costs at different periods throughout the day.

Stimuli Provision - in-house displays

- Each participant was supplied with a smart meter, a powerline interface module with GSM capability, a home energy monitor, and a back office software system capable of managing the data provided;

[1] Interval Meter Technology Trials and Pricing Experiments - Issues for Small Consumers. Institute for Sustainable Futures. University of Technology, Sydney, for Consumer Utilities Advocacy Centre. July 2006

- The home energy monitor was equipped with an LCD display with traffic light signalling to indicate high, medium and low price periods and was also capable of displaying real time costs and consumption information;
- Quarterly bills also provided additional information on comparative usage and consumption;
- During the trial participants were informed of critical peak pricing events via email SMS text messaging and via the home energy monitor;
- These events were indicated via a red LED and an audible warning on the home energy monitor.

Quantitative results

Peak Load Reduction

- The first critical peak event March 2005 yielded a 30% reduction in load;
- Demand decreased significantly during the CPP periods, but increased after the end of the periods;
- Overall results showed a reduction of 30% across peak periods.

Overall Electricity Saving

- Overall results indicated that participants reduced their energy consumption by an average of 5%.

Qualitative results

- The majority of customers achieved a saving on their electricity bill;
- The conclusion was mixed, but mainly positive results – but load shifting rather than conservation;
- Customer feedback largely positive – all participants keen to continue use of trial equipment; 80% welcomed / tolerated critical peak;
- Customers who claimed little knowledge about energy efficiency at the start, claimed high/very high understanding by the end;
- Traffic lights worked well to inform customers of different tariff periods;
- No specific information on impact of in-home displays.

3. Energy Australia Strategic Pricing Study

Trial design and key features

- Took place in 2006-07;
- Covered 750 residential customers and 550 business customers;
- All have a smart meter; some have an in-house display connected to the meter;
- The experimental groups comprise:
  - a control group;
  - a group provided only with information about peak load reductions;
  - a group placed on a seasonal TOU tariffs;
  - one group placed on a medium critical peak pricing tariff with an in-house display; and
  - two groups placed on a high critical peak pricing tariff with and without an in-house display.
- Critical peak prices were particularly high - $1 or $2/kwh.

Trial objectives

The main objectives of the Energy Australia research were to:

- Measure peak load reductions from price signals - to estimate capital and maintenance deferral, lower energy costs;
- Measure elasticity (own price, cross price and substitution) within consistent and acceptable ranges;
- Test new tariff products, assess take-up potential;
- Gain experience in managing customer communications;
- Examine effect of education and information, no price signal;
- Compare customer response:
  - Between business and domestic customers;
  - Between different price points;
  - Between customers with and without in-house displays.

Stimuli Provision - in-house displays

The trial was divided in to three groups:

- One trial group received information via in-house displays that received peak pricing information;
- A further trial group were placed on a seasonal pricing plan; and
- The third trial group received information only.

Quantitative results

Peak Load Reduction

- Demand decreased significantly during CPP periods, but increased after the end of the periods;
- In summer, CPP tariffs achieved reductions in consumption during critical peak periods equivalent to reductions in total daily energy use on days with a CPP event of between 5.5% and 7.8%;
- Much of this saving came from reduced use of air conditioning;

Overall Electricity Saving

- There was not a great deal of shifting of consumption from the critical peak period to shoulder, off-peak or non peak periods, so the majority of the reductions in CPP periods seen, resulted in electricity conservation;
- The trial also found that energy consumption during the critical peak period was between 21% and 25% of the total average daily consumption on non-critical peak day.

Qualitative results

- There is no information on the differences between the groups or the impact of the displays.

4. California Statewide Pricing Pilot

Trial design and key features

- Ran from July 2003 to December 2004;
- 2,500 customers;
- Several different rate structures were tested:
  - a traditional time-of-use rate (TOU), where price during the peak period was roughly 70 percent higher than the standard rate and about twice the value of the price during the off-peak period;
  - two varieties of critical peak pricing (CPP) tariffs, one that had fixed CPP and day ahead pricing (CPP-F) and one that had variable CPP and day of notification(CPP-V). The peak period price during a small number of critical days was roughly five times higher than the standard rate and about six times higher than the off-peak price;
- An information only group was included in the pilot - customers were given educational material on how to reduce loads during peak periods, and were notified when critical days were called but were not placed on time varying rates.

Trial objectives

The main objectives of the California State Wide pilot were:

- to research the impact of ToU programmes alongside two variances of Critical Peak Pricing (CPP);
- to determine customers' responses to time varying rates and impact on energy consumption by rate period; and
- to develop models that allow these impacts to be predicted under different pricing models.

Stimuli Provision – web based billing information

- Participants on the pricing pilot were provided with a Web-based energy bill analysis system;
- Based on customer provided survey information and hourly meter data, customers received a monthly bill "Scorecard" with a personalized examination of the costs of air conditioning, lighting and other appliances during critical peak periods, and what could be saved by managing how those appliances are used;
- The information group had a personalised Web page for each participant, as well as monthly e-mails and notices the evening before a "Critical Peak" day, when rates are especially high from 2 to 7 p.m.;
- Customers without Internet access received mail reports.

Quantitative results

Peak Load Reduction

- The CPP rates produced reductions in demand ranging from 13-27%;
- The 27% response was achieved where direct load control (mainly for air conditioning) was used (in these cases two thirds of the response is due to load control and one third to behavioural response);
- Within the CPP-F trial group load shifting was observed with a shift in energy usage of 13.1% from peak periods on critical days, it also concluded that no overall reduction in energy consumption occurred on an annual basis within this trial group;
- TOU responses were much lower – 0-6%;
- Load shifting was also initially observed in the ToU group, however, in the second year of the trial this effect was seen to reduce to almost zero. If these results are accurate (sample sizes were small) then they are potentially important for informing the ToU rates that will need to be put in place to have any sustainable impact;
- The greatest load shifting was observed in the CCP-V customers. It was concluded that this was a result of the up-take of enabling technology. This group were offered three enabling technologies electric heater controls, pool pump controls, or smart thermostats;
- CCP-V customers were split into two further groups ones that were offered the choice of technology (Track A) and ones that had smart thermostats fitted in a previous trial (Track C). The load shifting observed in track A customers equated to 16% the load shifting observed in track C customers was 27%.

Overall Electricity Saving

- No overall reduction in energy consumption occurred on an annual basis within the CPP-F trial group.

Qualitative results

- The customers that received information/education were seen to alter energy consumption patterns initially, however there was no response in the second year of the trial;
- Households with central air conditioning were more price responsive and produced greater absolute and percentage reductions in peak-period energy use than did households without air conditioning;
- Demand response impacts were lower in the winter than in the summer;
- There was essentially no change in total energy use across the entire year based on average prices. That is, the reduction in energy use during high-price periods was almost exactly offset by increases in energy use during off-peak periods;
- No information is available about the effectiveness of the bill information, comparing the participating customers to a control group of similar customers on the same rate.

5. Norway Case Study – Time of Day Tariff with Automated Load Control, SINTEF Energy Research, Norway – plus very small pilot (41 households) with fridge magnets

Trial design and key features

- A three-year study of over 10,000 customers in two Norwegian network areas, (over 75% households), from 2001 – 2004;
- Main features were:
  - hourly meter reading;
  - two-way communication;
  - time-related tariffs[2]; and
  - 50% of households to be given automated load-control of electric water heaters via the two-way meter communications link.

Trial objectives

The objective of this trial was to evaluate different incentives to stimulate flexibility in electrical load-shifting and consumption, linking to both network and to power-market prices.

Stimuli Provision – fridge magnets

- A small selection of the pilot (41 households) were each given a fridge magnet as a reminder about when it was high-cost to run appliances such as the dish-washer and washing machine;
- Automated load control of water heaters.

Quantitative results

Peak Load Reduction

- In the pilot, observed demand-response reflected an average electrical peak-load reduction of 500 watts per customer (600 when network losses included). This represented an 8-9% reduction at peak, mainly assumed to be via automatic load control of water heaters;
- Customers with a time-differentiated network tariff and / or spot-price-related power products registered a reduction in consumption of up to 1

[2] Tariffs incorporated: a fixed element ; a network loss element ; and, a variable time-of-use element activated only in peak hours (weekdays 9-11 and 17.00h – 19.00h). The time-of-use element contained a peak-network element for households (0.15 eurocents per kWh) and a 10 euros per KW for industrial consumers only. In addition, suppliers piloted different options of an hourly spot price ; a fixed price with a discount for automatic load control at times of high spot price ; and a combination of a fixed price and spot price.

kWh/hour in high price periods;

- Without automated load-control, customers appeared unresponsive to a spot price;
- The study concluded that there was a potential for generating peak-load reduction across Norway of 600 MW, based on scaling up the pilot to the 2 million household customers in Norway.

Overall Electricity Saving

- In a separate, very small (41 households) Norwegian pilot, with automated load control of water heaters, customers also reduced consumption of their 'responsive' electrical appliances.

Qualitative results

- Customers responded better to predictability, in respect of load reduction (i.e. known and understood price-periods);
- The four Norwegian pilots experienced more technology-related problems than anticipated at the outset.

6. Tempo Tariff – EdF, France – Critical Peak Price Tariff with SMS and Traffic Light System

Trial design and key features

- This combined a demand subscription, a ToU background tariff, and CPP with automated load control;
- Customer subscribed to a demand level of 9kVA or more. (This is the norm - all residential and small commercial consumers in France subscribe to a pre-agreed demand level which they cannot exceed);
- EdF communicated price level by sending signal to home – 300 blue non-critical days ; 45 white semi-critical days ; 22 red critical days. Weekends – always blue;
- Signal sent at 20.00h one-day ahead to a meter / display plugged into socket because signal sent by power-line carrier – meter showed traffic light system display. (Customer also had option of SMS alert);
- Display capable of showing both current and cumulative consumption;
- Customer was able to programme space and water heating controls in response to the electricity price for a given colour and time of day.

Trial objectives

The objective of this trial was to evaluate the impact on consumption of a demand subscription in combination with ToU and CPP tariffs.

Stimuli Provision – traffic light system / SMS

- The customer was provided with a meter/display that showed traffic light system display;
- Customer also had option of SMS alert.

Quantitative results

Trial discontinued.

Qualitative results

None.

7. California Information Display Pilot - Energy Orb together with Detailed Monthly Usage and Bill Analysis[3]

Trial design and key features

Energy Orb

- Feedback device produced by Ambient Technologies – a small glass ball that changes colour as prices change. (Developed for stock-market portfolio management originally);
- California Information Display Pilot4 - energy orb used with CPP rates;
- Orb changed colours as the tariff increased – and flashed for four hours prior to a critical peak;
- 62 customers in pilot. Small sample size - not statistically significant.

Detailed Monthly Usage and Bill Analysis Report / Newsletter

- In addition to measuring orb impact, California Information Display Pilot measured impact of monthly 'newsletter' for customers with AMI. The 'newsletter' was sent by mail, e-mail or via web-access;
- The newsletter provided:
  - Detailed breakdown of customer usage pattern for previous month;
  - Suggestions for reducing energy bills'
- Newsletter drew from bill inputs and pre-pilot customer survey information to give comparisons in 'report-card' format against customer's prior month's usage - and to compare customer usage with other customers;
- Newsletter provided customer-specific information about critical peak consumption and benefits of load-shifting.

California Bill Analysis Pilot, 2005 – Web-based Information[5]

- Nexus Energy Software trial in 2005 of web-based feedback on the demand impact from bill-analysis for customers on residential CPP tariffs;
- 152 customers in the trial with 118 in the control group;
- Bill analysis presented customized content to participants via a website based on their home energy survey data and monthly bill data. It also provided personalized recommendations for achieving energy savings.

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[3] Edison Electric Institute. Quantifying the Benefits of Dynamic Pricing in the Mass Market. Brattle Group (Faruqui A and Wood L). Jan 2008

[4] Nexus Energy Software, Opinion Dynamics Coroporation and Primen 'Information Display Pilot, Final Report' January 2005.

[5] Council of Australia Government and Australia Ministerial Council on Energy. Federal CBA Report. March 2008. NERA Report for Workstream 4 on Consumer Benefits and Appendix. p 135. NERA source cited as presentation by NEXUS. 18 April 2006.

Trial objectives

The objective of the trial was to assess the change in customer behaviour of the energy orb in conjunction with web-based or mailed bill analysis.

Stimuli Provision

- An energy orb that changed colours as the tariff increased;
- Bill analysis either by mailed report or via the web.

Quantitative results

Peak Load Reduction

- Residential customers using the energy orb reduced demand during critical event – and also during prior-4 hour period;
- However, the average load reductions across the peak-period of customers receiving bill analysis were not found to be statistically significant.

Overall Electricity Saving

None identified.

Qualitative results

Energy Orb

- 70% residential customers said the orb changed their behaviour – but not commercial customers;
- Only two customers said they would pay over $25 for the orb;
- Customers indicated that the energy orb was a more effective tool than the newsletter for inducing behaviour change.

Detailed Monthly Usage and Bill Analysis Report / Newsletter

- 30% of customers (residential and commercial) said that the newsletter led to changes in their behaviour. The remaining customers said it did not change their behaviour, or even did not recall the newsletter.

California Bill Analysis Pilot, 2005 – Web-based Information[6]

- 77% of participants visited the website at some point. (Nexus suggest that for comparable utility websites offering bill information around 1-3% of a population visits a website on their own when informed of its benefits);
- 46% of survey respondents said they took actions during the critical peak periods that they would not have if they had not received the bill analysis;
- 49% of respondents stated that they took additional actions during regular peak periods because of the bill analysis.

[6] Council of Australia Government and Australia Ministerial Council on Energy. Federal CBA Report. March 2008. NERA Report for Workstream 4 on Consumer Benefits and Appendix. p 135. NERA source cited as presentation by NEXUS. 18 April 2006.

Appendix A - Advantages of Potential Stimuli in conjunction with Time-Varying Tariffs

The table below compares the cost, ease (to customer and supplier) and likely benefit of the various stimuli used in the trials.

Feedback / Stimulus	**Ease to Deploy**	**Cost**	**Ease for Consumer**	**Examples –Annex A for Detail**	**Customer Experience / Feedback**	**Potential Energy Saving Impact**
Basic Printed Information **(leaflets, bills)**	✓✓✓	Low	Easy to understand / retain.	California Pricing Pilot – had info only sub-group Ontario	D/K	California – no change shown in info-only group
In-Home Display – can give info to customer about : -Consumption -Price of electricity in real-time -Messages from supplier to customer	✓✓	UK estimate (Sustainability First Report 2007) – c. £25 per display – plus possible installation cost – if not installed at same time as meter – or if not self-installed.	Small consumer electronics sometimes not user-friendly. Could be a tendency to over-complicate (KWh, carbon, cost-info, daily, weekly, monthly).	Limited pilot experience with time-varying tariffs -Country Energy. NSW - Energy Australia - UK Energy Demand Reduction Research	D/K D/K Not yet	Country Energy - Load-shifting rather than conservation

Feedback / Stimulus	Ease to Deploy	Cost	Ease for Consumer	Examples –Annex A for Detail	Customer Experience / Feedback	Potential Energy Saving Impact
Printed Consumption Reports	Investment in new processes to generate individual printed report & mail-out –& link to individual meter data	Could be material	Likely to be easy to understand / retain – ongoing reminder.	-Ontario – monthly Electricity Usage Statements as well as bi-monthly electricity bill. -California – only when customer did not have web-access.	D/K	Ontario – both peak and conservation effect.
Web-based Information / Feedback	Considerable experience in I&C sector – increasing off-the-shelf packages.	May be more economic than printed monthly consumption reports.	Highly dependent on: - internet access – pre-defines customer profile in sample - customer willingness to engage	California Pricing Pilot Denmark – Electricity Saving Trust Scheme - Elsparefonden (see their website).	California – Nexus report suggests that – almost three-quarters of sample visited web-site at some point. - around half took action during critical peak as a result.	California – load-shift not conservation
Tariffs – Visual Reminders –eg fridge magnets	✓✓✓ clear concise, visible, durable eg magnet 'Clock-face' display of	Low	✓✓✓	Ontario Norway – 41	Focus groups – very positive on magnet Norway - Positive feedback on magnet	Ontario – conservation effect. Norway – conservation effect exceeded automatic load-control of

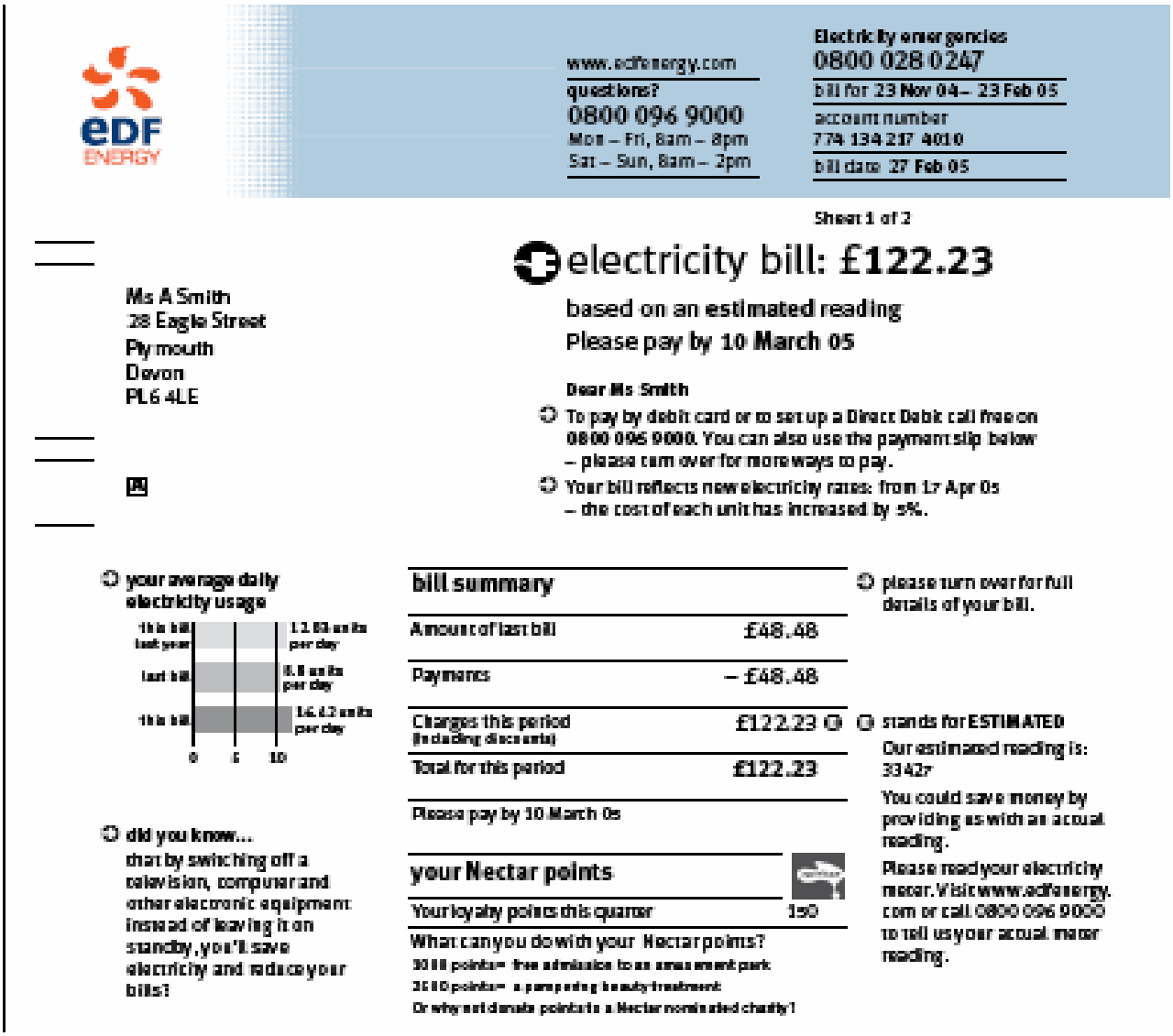
Feedback / Stimulus	Ease to Deploy	Cost	Ease for Consumer	Examples –Annex A for Detail	Customer Experience / Feedback	Potential Energy Saving Impact
	prices, times (Norway)			electrically heated homes		electric heating / hot water
Pilot Helpline	♩♩♩	Low	♩♩♩	Country Energy	D/K	D/K
CPP Alerts **- SMS** **- Email** **- Traffic-lights on meter/IHD** **- Colour-Changing Orb**	Some form of alert – or combination of alerts – necessary to advise customer of critical event.			Country Energy CPP – traffic lights France – Tempo tariff – included SMS-text plus traffic light system on meter. California Info Display Pilot.		California CPP – included automatic load control.

Appendix B - Samples of Bills and Statements

This appendix shows two examples of electricity bills and the consumption information that can be provided.

1) The first bill includes basic information about daily use and comparison of this with the customer's previous bill and with the same time last year. It also includes nectar points which are used as an incentive/stimulus for reducing consumption.

2) The second bill contains more sophisticated analysis including day by day analysis of usage and consumption by time of day including CPP usage / rebates.



EDF ENERGY

www.edfenergy.com
questions?
0800 096 9000
Mon – Fri, 8am – 8pm
Sat – Sun, 8am – 2pm

Electricity emergencies
0800 028 0247
bill for 23 Nov 04 – 23 Feb 05
account number
774 134 217 4010
bill date 27 Feb 05

Sheet 1 of 2

electricity bill: £122.23

based on an estimated reading
Please pay by 10 March 05

Ms A Smith
28 Eagle Street
Plymouth
Devon
PL6 4LE

Dear Ms Smith

- To pay by debit card or to set up a Direct Debit call free on 0800 096 9000. You can also use the payment slip below – please turn over for more ways to pay.
- Your bill reflects new electricity rates from 17 Apr 05 – the cost of each unit has increased by 5%.

- your average daily electricity usage

- did you know...
that by switching off a television, computer and other electronic equipment instead of leaving it on standby, you'll save electricity and reduce your bills?

bill summary

Amount of last bill	£48.48
Payments	– £48.48
Charges this period (including discounts)	£122.23 E
Total for this period	£122.23

Please pay by 10 March 05

your Nectar points

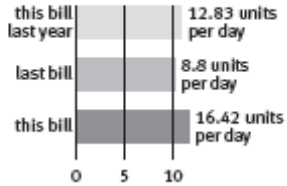
Your loyalty points this quarter	150

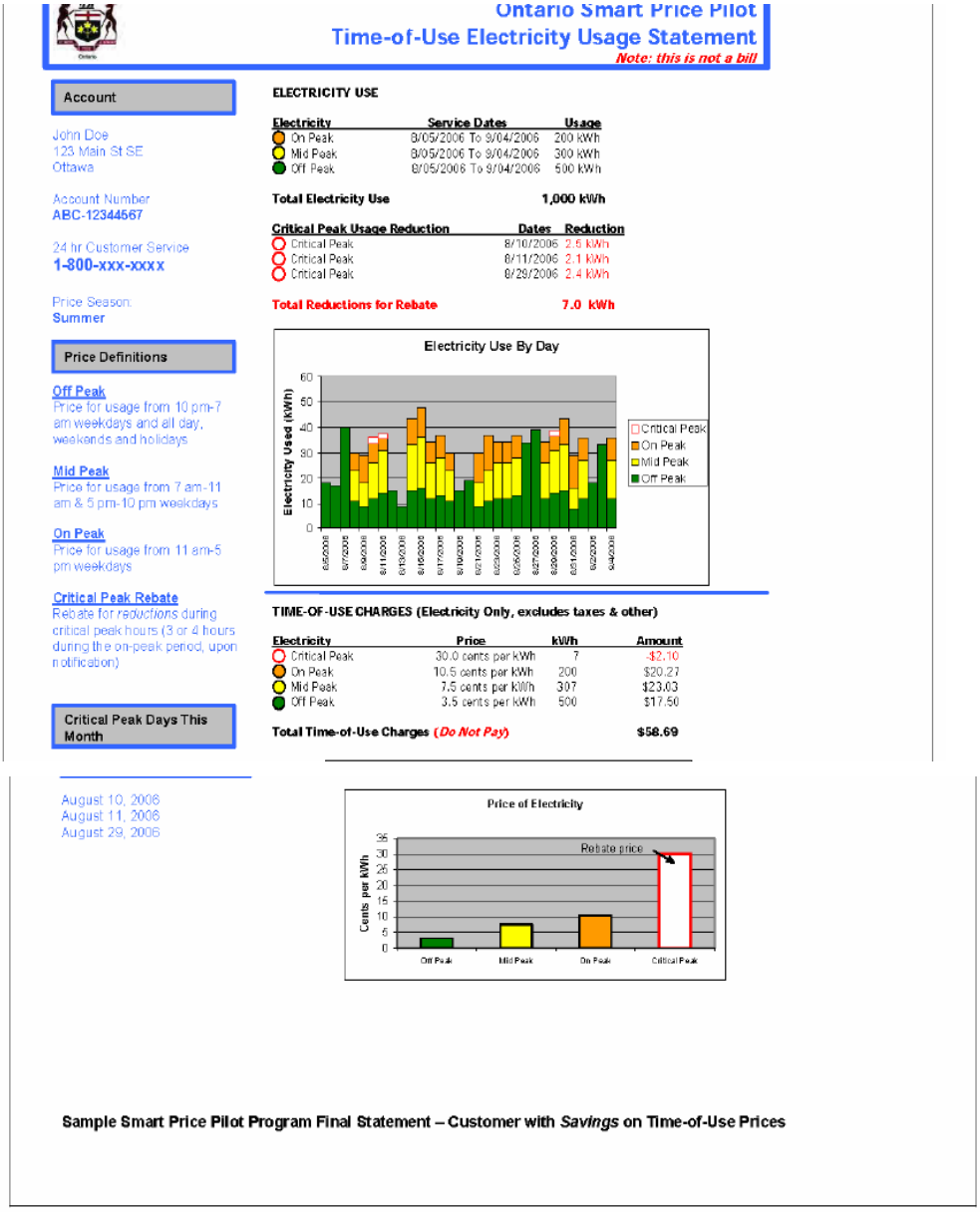
What can you do with your Nectar points?
3000 points= free admission to an amusement park
2500 points= a pampering beauty treatment
Or why not donate points to a Nectar nominated charity?

- please turn over for full details of your bill.

E stands for ESTIMATED
Our estimated reading is: 33427
You could save money by providing us with an actual reading.
Please read your electricity meter. Visit www.edfenergy.com or call 0800 096 9000 to tell us your actual meter reading.

- your average daily electricity usage





Ontario Smart Price Pilot
Time-of-Use Electricity Usage Statement
Note: this is not a bill

Account

John Doe
123 Main St SE
Ottawa

Account Number
ABC-12344567

24 hr Customer Service
1-800-xxx-xxxx

Price Season:
Summer

Price Definitions

Off Peak
Price for usage from 10 pm-7 am weekdays and all day, weekends and holidays

Mid Peak
Price for usage from 7 am-11 am & 5 pm-10 pm weekdays

On Peak
Price for usage from 11 am-5 pm weekdays

Critical Peak Rebate
Rebate for *reductions* during critical peak hours (3 or 4 hours during the on-peak period, upon notification)

Critical Peak Days This Month

August 10, 2006
August 11, 2006
August 29, 2006

ELECTRICITY USE

Electricity	Service Dates	Usage
On Peak	8/05/2006 To 9/04/2006	200 kWh
Mid Peak	8/05/2006 To 9/04/2006	300 kWh
Off Peak	8/05/2006 To 9/04/2006	500 kWh

Total Electricity Use **1,000 kWh**

Critical Peak Usage Reduction	Dates	Reduction
Critical Peak	8/10/2006	2.5 kWh
Critical Peak	8/11/2006	2.1 kWh
Critical Peak	8/29/2006	2.4 kWh

Total Reductions for Rebate **7.0 kWh**

TIME-OF-USE CHARGES (Electricity Only, excludes taxes & other)

Electricity	Price	kWh	Amount
Critical Peak	30.0 cents per kWh	7	-$2.10
On Peak	10.5 cents per kWh	200	$20.27
Mid Peak	7.5 cents per kWh	307	$23.03
Off Peak	3.5 cents per kWh	500	$17.50

Total Time-of-Use Charges ***(Do Not Pay)*** **$58.69**

Sample Smart Price Pilot Program Final Statement – Customer with *Savings* on Time-of-Use Prices