

# **National Smart Metering Programme in Ireland**

## **Presentation to Electricity Settlement Expert Group**

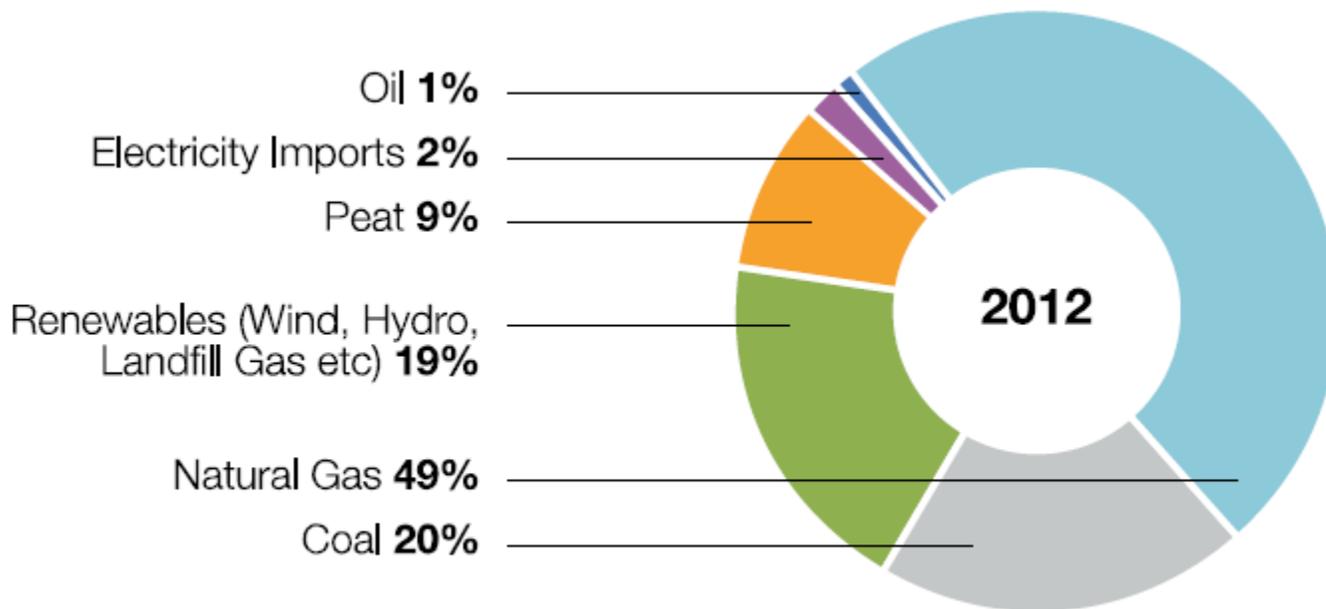
3<sup>rd</sup> September 2014



1. Background
2. Mandatory ToU
3. Settlement
4. Q&A

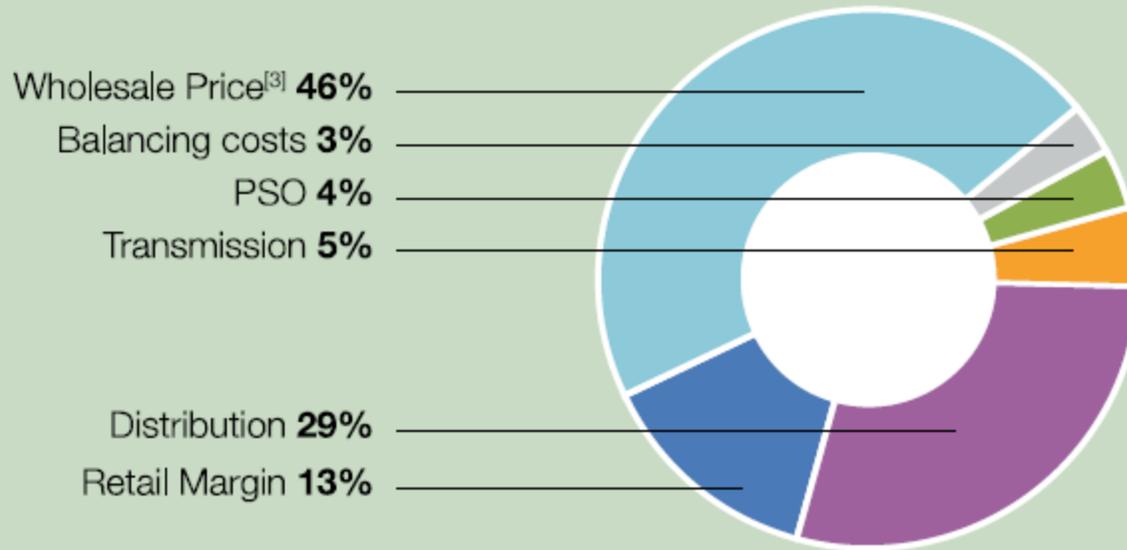
# 1. CONTEXT/BACKGROUND

# Electricity Generation Fuel Mix



Source - Department of Communications, Energy and Natural Resources - Green Paper on Energy Policy in Ireland

**Figure 5: Domestic Electricity Price, Relative Share of Component, 2011 (Band DC)**



Source - Department of Communications, Energy and Natural Resources - Green Paper on Energy Policy in Ireland



## Phase 1 Trials and CBAs

Electricity Smart Metering Customer Behaviour Trials Findings Report CER/11/080a



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An Coimisiún um Rialáil Fuinnimh

**Electricity Smart Metering Customer Behaviour Trials (CBT) Findings Report**

DOCUMENT TYPE:	Information Paper
REFERENCE:	CER11080a
DATE PUBLISHED:	16 <sup>th</sup> May 2011



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**Electricity Smart Metering Technology Trials Findings Report**

DOCUMENT TYPE:	Information Paper
REFERENCE:	CER11080b
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Electricity Smart Metering Cost-Benefit Analysis CER/11/080c



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**Cost-Benefit Analysis (CBA) for a National Electricity Smart Metering Rollout in Ireland**

DOCUMENT TYPE:	Information Paper
REFERENCE:	CER11080c
DATE PUBLISHED:	16 <sup>th</sup> May 2011



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## National Trials into Technology and Customer Behaviour (c.6,000 electricity)

- Av. electricity usage savings of 2.5% overall & 8.8% peak reduction
- A range of viable technical solutions were tested



**Energy awareness**

Shows how you are doing against your daily budget

Typical cost of running various Main household appliances (excl. VAT)

Washing machine
Tumble dryer
Dishwasher
Immersion - 6 months only

\* Average usage 1 cycle per day, 5 days a week

**Hints and Tips**

- Money Down the Drain - During the peak period (5pm to 7pm) an instantaneous electric shower running for 15 minutes costs you €14.30 per year. At day rates it would cost you €80.01 per year.
- Remember! To make the greatest savings always try to be energy efficient when you use your appliances even when you shift to an Off-Peak time.

**Has your electricity usage changed?**

- 2.8% of your electricity for last month was used in the peak period. By using some of your appliances at day rate rather than at peak rate you could save money.

**Your average day of the week costs**

Indicates how much your electricity has cost this month (does not include standing charge and VAT)

**Further information**

Values given above may be slightly different to Page 1 due to rounding impacts. The correct final values are those displayed on Page 1 of the Bill.

Your goals help to meet your annual target. Reach your target in December and earn €50 AG WELL as any savings you make on your bill.





- c.€229m NPV benefit estimated from combined national electricity & gas rollout (Consumer, Network & Generation benefits)
- c.€800m - €1bn investment cost

## Quantitative

- Consumer Usage
- Generation
- Networks

## Qualitative Benefits

- Smart Grid
- Micro Generation
- Electric Vehicles
- Smart Home
- Synergies with Gas



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## Decision on the National Rollout of Electricity and Gas Smart Metering

DOCUMENT TYPE:	Decision Paper
REFERENCE:	CER12008
DATE PUBLISHED:	4 <sup>th</sup> July 2012
FURTHER INFORMATION:	Gary Martin <a href="mailto:gmartin@cer.ie">gmartin@cer.ie</a>

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## Key Policy Decisions

- Roll out smart meters – electricity & gas
- Mandating ToU Tariffs - all electricity customers
- Mandating energy usage statements
- Mandating IHD devices – all electricity customers
- Enabling broader and easier access to prepayment services

## Strategic Objectives of NSMP

1. Encourage Energy Efficiency
2. Facilitate Peak Load Management
3. Support Renewable & Micro Generation
4. Enhance Competition & Improve Consumer Experience
5. Improve Network Services

**Phase 1**  
Trials and  
CBAs

**Phase 2**  
High Level  
Design

CER Consultation Paper – NSMP Steady State Model – CER/13/151 19 July 2013



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**CER National Smart Metering Programme  
Steady State Model**

DOCUMENT TYPE:	Consultation Paper
REFERENCE:	CER/13/151
DATE PUBLISHED:	19th July 2013
CLOSING DATE:	6 <sup>th</sup> September 2013
RESPONSES TO:	<a href="mailto:smartmetering@cer.ie">smartmetering@cer.ie</a>

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**CER National Smart Metering Programme  
Time of Use Tariffs Mandate**

DOCUMENT TYPE:	Consultation Paper
REFERENCE:	CER/13/152
DATE PUBLISHED:	19 July 2013
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RESPONSES TO:	<a href="mailto:smartmetering@cer.ie">smartmetering@cer.ie</a>

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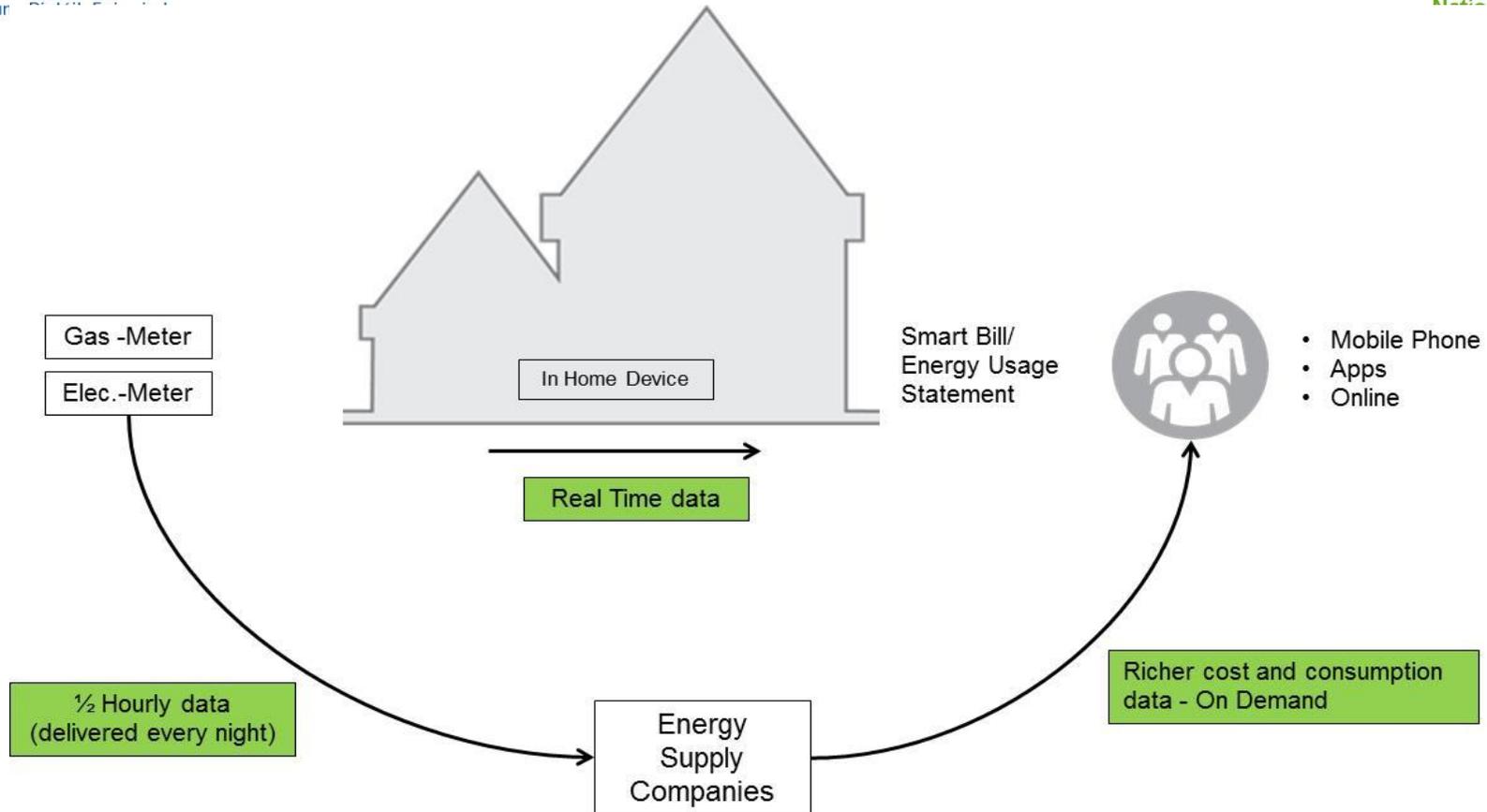


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**CER National Smart Metering Programme  
Smart Metering High Level Design**

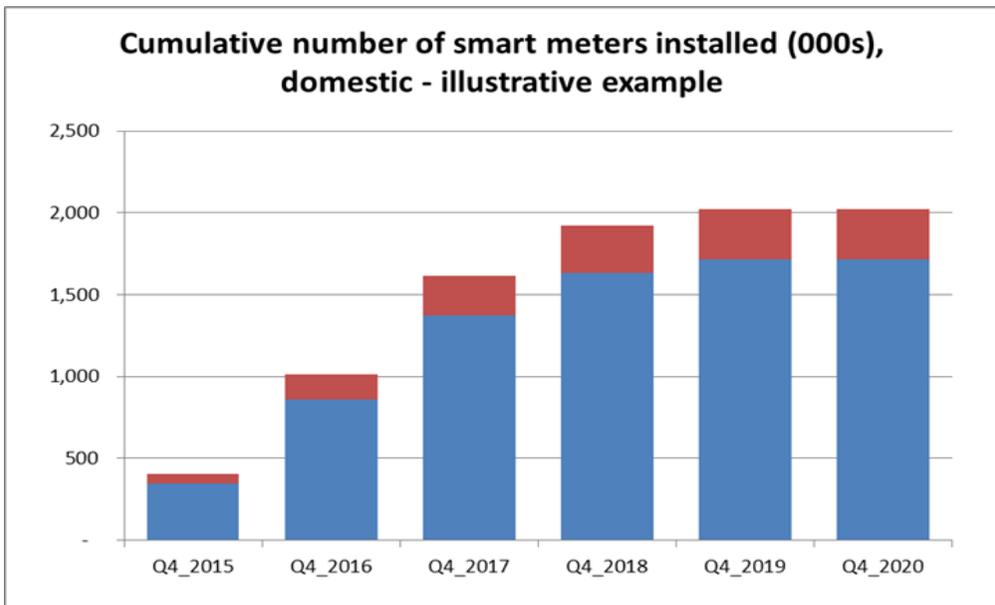
DOCUMENT TYPE:	Proposed Decision Paper
REFERENCE:	CER/13/286
DATE PUBLISHED:	17 <sup>th</sup> December 2013
CLOSING DATE:	24 <sup>th</sup> January 2014
RESPONSES TO:	<a href="mailto:smartmetering@cer.ie">smartmetering@cer.ie</a>

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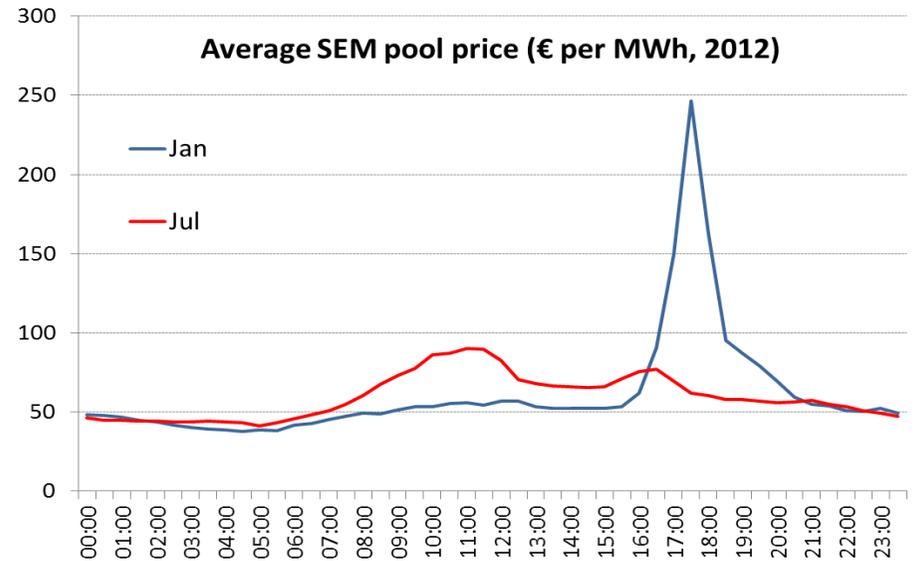
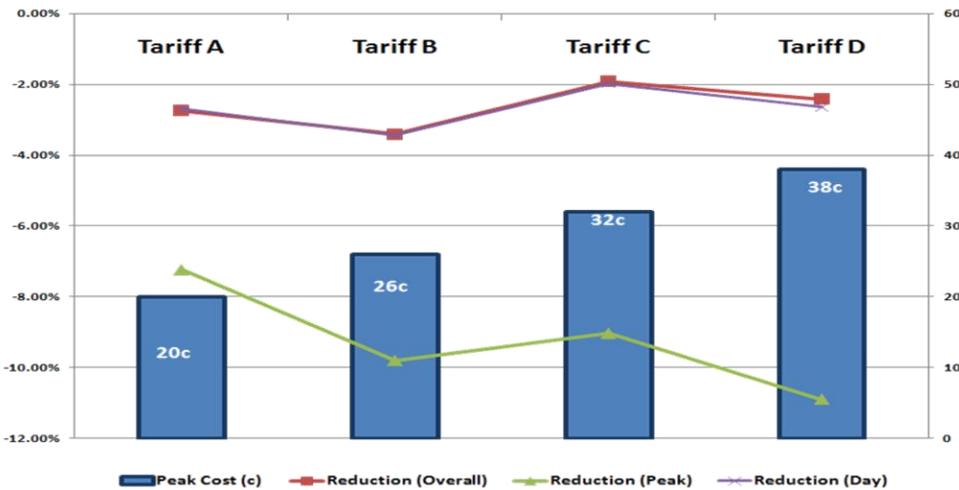
ToU Mandate for residential electricity customers supports the business case. The programme is built on the concept that a large number of users making small changes in behaviour will reduce their individual energy bills and also reduce the national electricity/gas infrastructure spend

## 2. MANDATORY TOU



**We are rolling out smart meters to all customers**

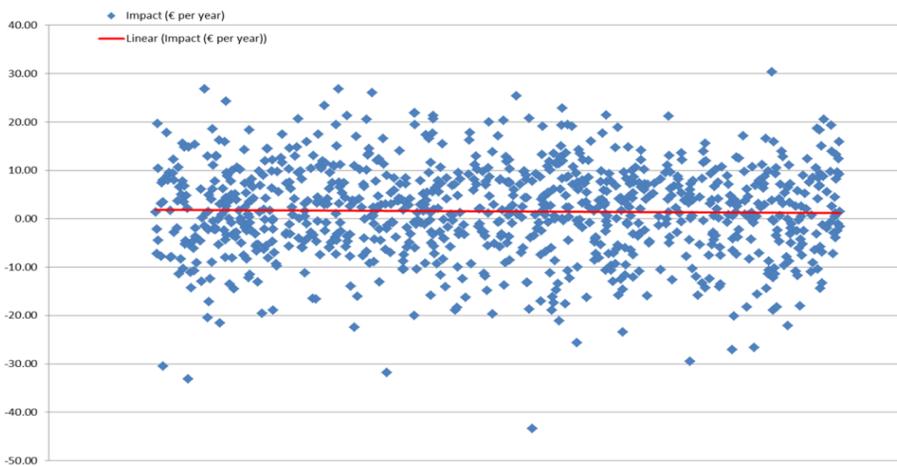
**..and mandating time-of-use tariffs as the norm**



**Because ToU has been demonstrated in trials and focus groups to be engaging and beneficial to consumers**

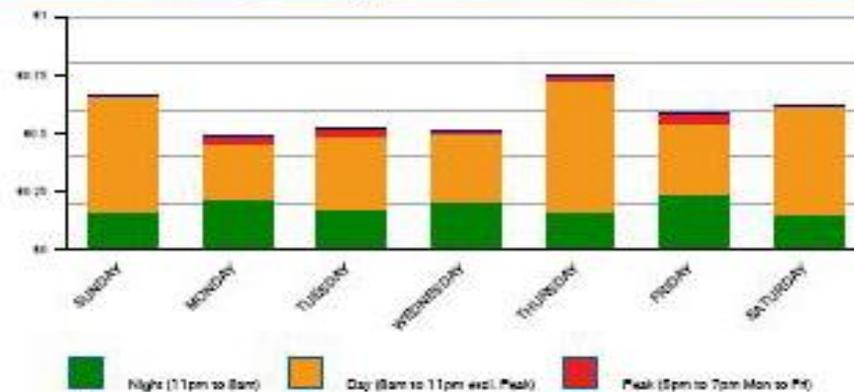
**..and will radically strengthen the link between wholesale and retail markets**

Change in bill resulting from a move to a cost-reflective Day/Night/Peak tariff (€ per year, assuming consumption of 4,400 kWh, and no behavioural response)

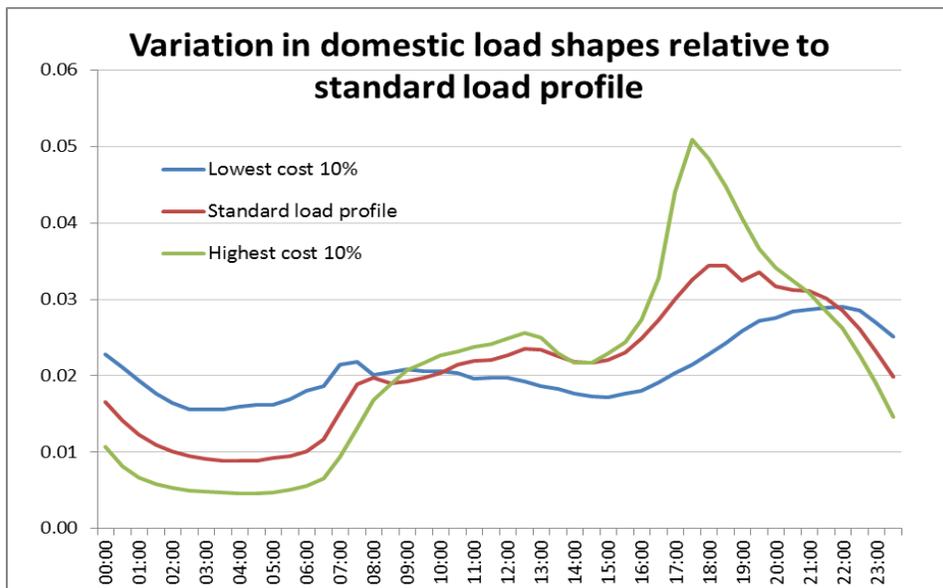


**But it is important to understand the potential distributional impacts**

Your average day of the week costs



**..and focus on how to make it relevant to consumers, and to retailers**



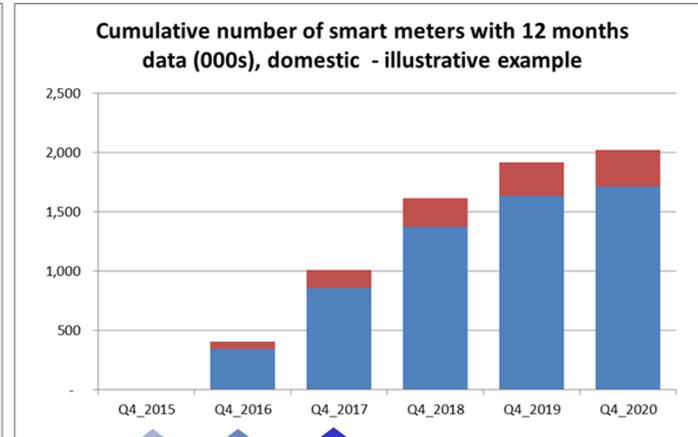
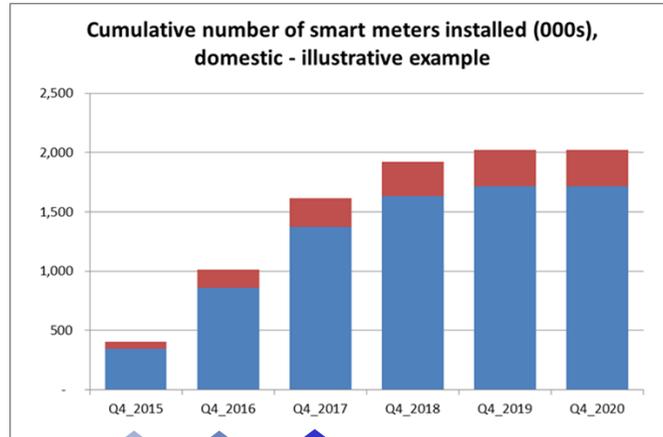
**Wholesale settlement using interval data is needed if you want to incentivise retailers to reduce peak consumption**

Shows how you are doing against your daily budget



**..and a range of tools to help all consumers understand new tariffs and navigate new tariff choices**

## Understanding the Journey



### By the end of Year 1:

- Only 1:5 customers have smart meters
- TOU not possible for majority
- No customer has 12 months data history
- No more than tens of thousands of smart customers per supplier

### By the end of Year 2:

- Around 1:2 two households has a smart meter
- But only 1:5 households have 12 months data history
- A supplier with around 15% of the market would have 150,000 smart customers

### By the end of Year 3:

- Only 1:5 households do not have a smart meter
- And 1:2 have a 12 month data history
- A supplier with around 15% of the market would have 240,000 smart customers

More controlled environment appropriate?

Environment amenable to small scale trialling?

Environment amenable to mass-market commercial tariff choices?

# A regulatory framework that support both consumers & retailers

## Domestic suppliers:

- Standard Day/Night/Peak structure
- Minimum winter peak premium
- Minimum summer night discount

## Non-domestic suppliers:

- Day/Night/Peak structure

## On-going review and monitoring

## Wholesale Settlement:

- Settle using interval data

## Tariff comparison

- Standard metrics?
- Standard forms of presentation?

Each supplier has a standard TOU domestic tariff of a prescribed form

Suppliers can offer variants of the standard domestic tariff

Complementary reforms

Suppliers can also trial tariffs of any design

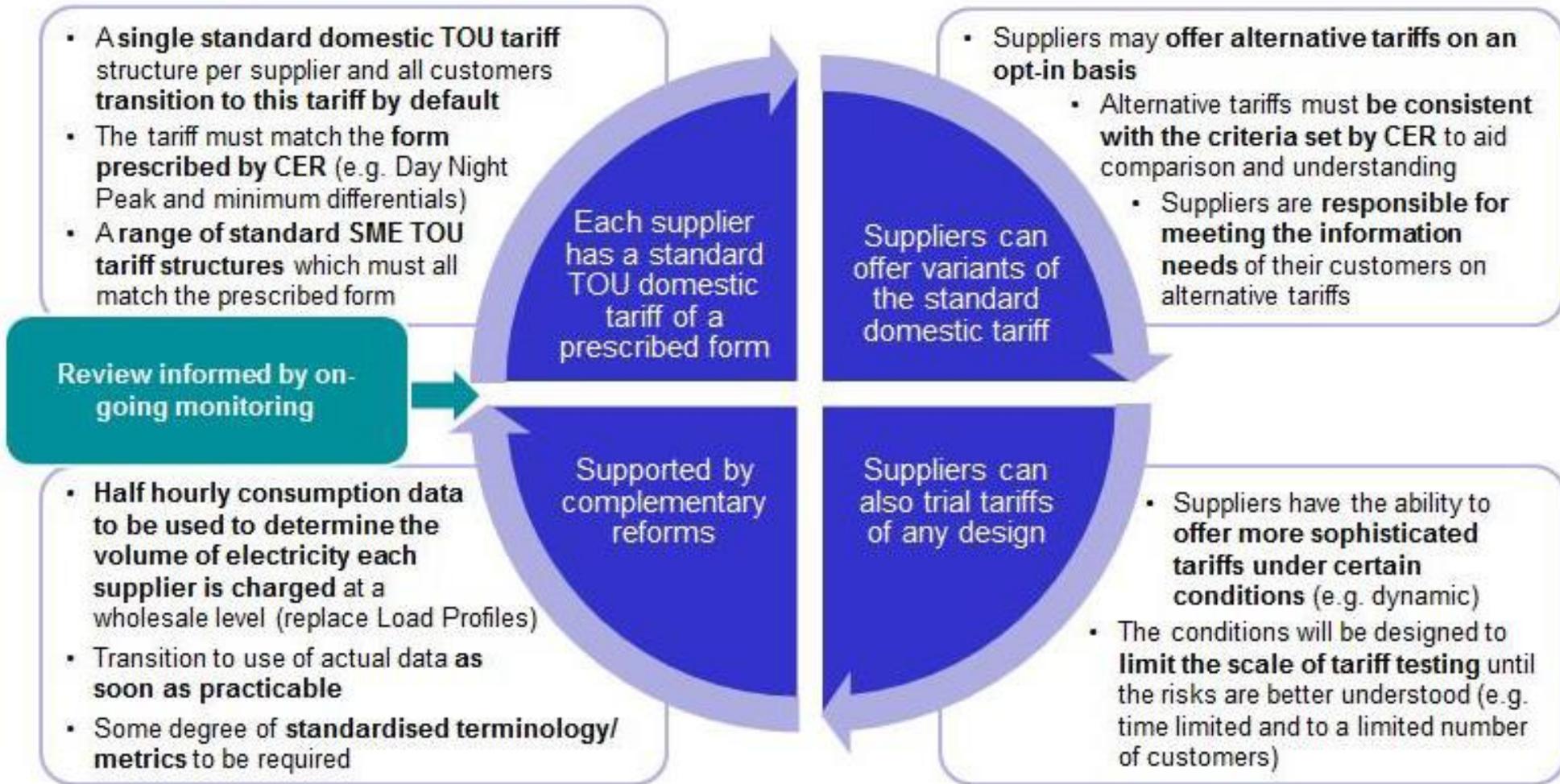
## Other tariffs if:

- Retain comparable D/N/P structure
- Consumers opt in
- Subject to customer info needs being met
- Should flat rate tariffs being permitted?

## Trials are on:

- An opt-in basis only (customers must know they are on a trial)
- Maximum customer numbers
- Time-limited
- Subject to meeting customer info requirements

# A regulatory framework that support both consumers & retailers



## 3. SETTLEMENT



- |  |
|--|
| 1. Encourage Energy Efficiency                       |
| 2. Facilitate Peak Load Management                   |
| 3. Support Renewables & Micro-Gen                    |
| 4. Enhance Competition & Improve Customer Experience |
| 5. Improve Network Services                          |

- |                                     |
|-------------------------------------|
| A. Consumer Focussed                |
| B. Consistent & Integrated solution |
| C. Scalable & Future Proofed        |
| D. Cost Efficient                   |
| E. 'Best-fit' for the Irish market  |

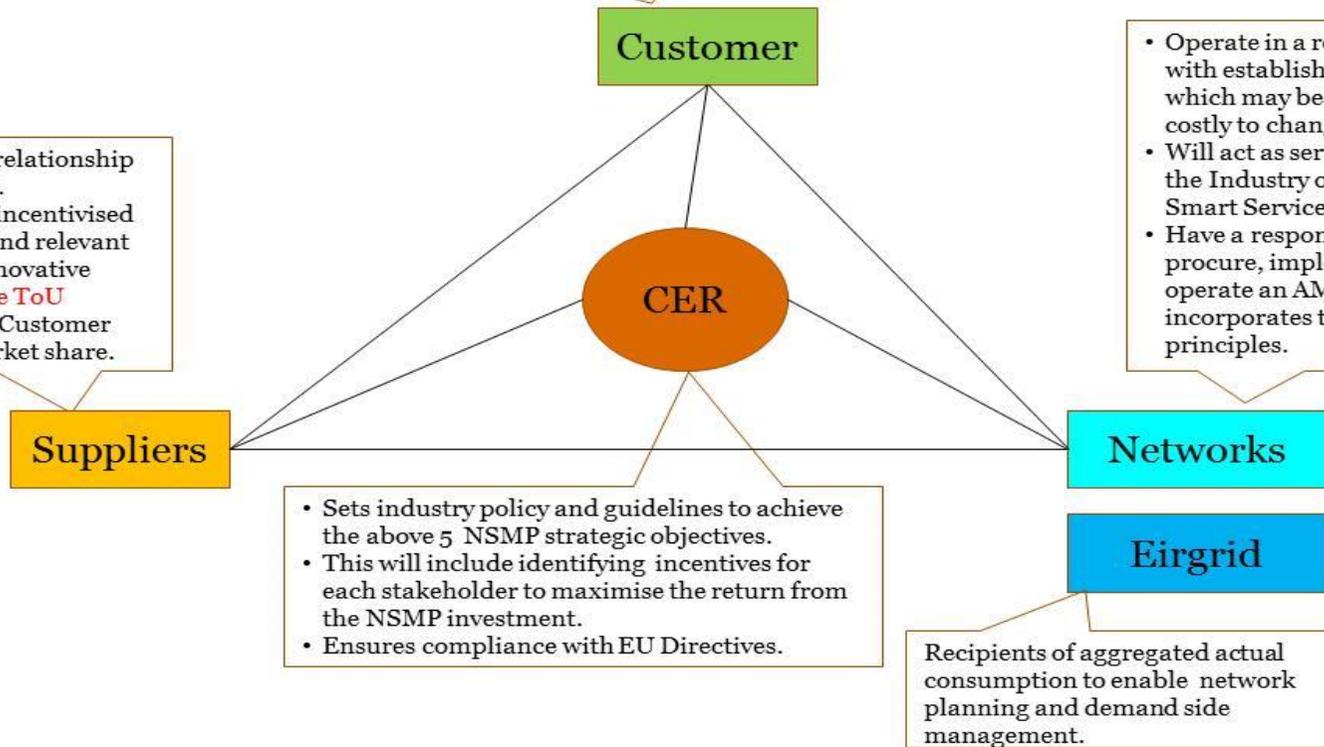
- Demands timely and relevant information to affect their behaviour
- Demands an experience/solution from the industry which incorporates the above 5 design principles.
- (Industry expects) the Customer to be an engaged participant

- Have the primary relationship with the Customer.
- Are commercially incentivised to provide timely and relevant information via innovative products to **achieve ToU shifting**, maintain Customer loyalty & grow market share.

- Operate in a regulated market with established processes which may be complex and costly to change.
- Will act as service providers to the Industry of a defined set of Smart Services via the AMI.
- Have a responsibility to procure, implement and operate an AMI solution which incorporates the above 5 design principles.

- Sets industry policy and guidelines to achieve the above 5 NSMP strategic objectives.
- This will include identifying incentives for each stakeholder to maximise the return from the NSMP investment.
- Ensures compliance with EU Directives.

Recipients of aggregated actual consumption to enable network planning and demand side management.



# Empirical Relationship between costs and prices

Non-interval data  
Supplier tariff design – what supplier hedge for consumers  
Regulation

**Loss of accuracy/granularity**

Actual costs incurred in  
dispatching generation  
and managing flows  
across transmission  
and distribution  
networks



Transposed into a set  
of costs that individual  
suppliers see

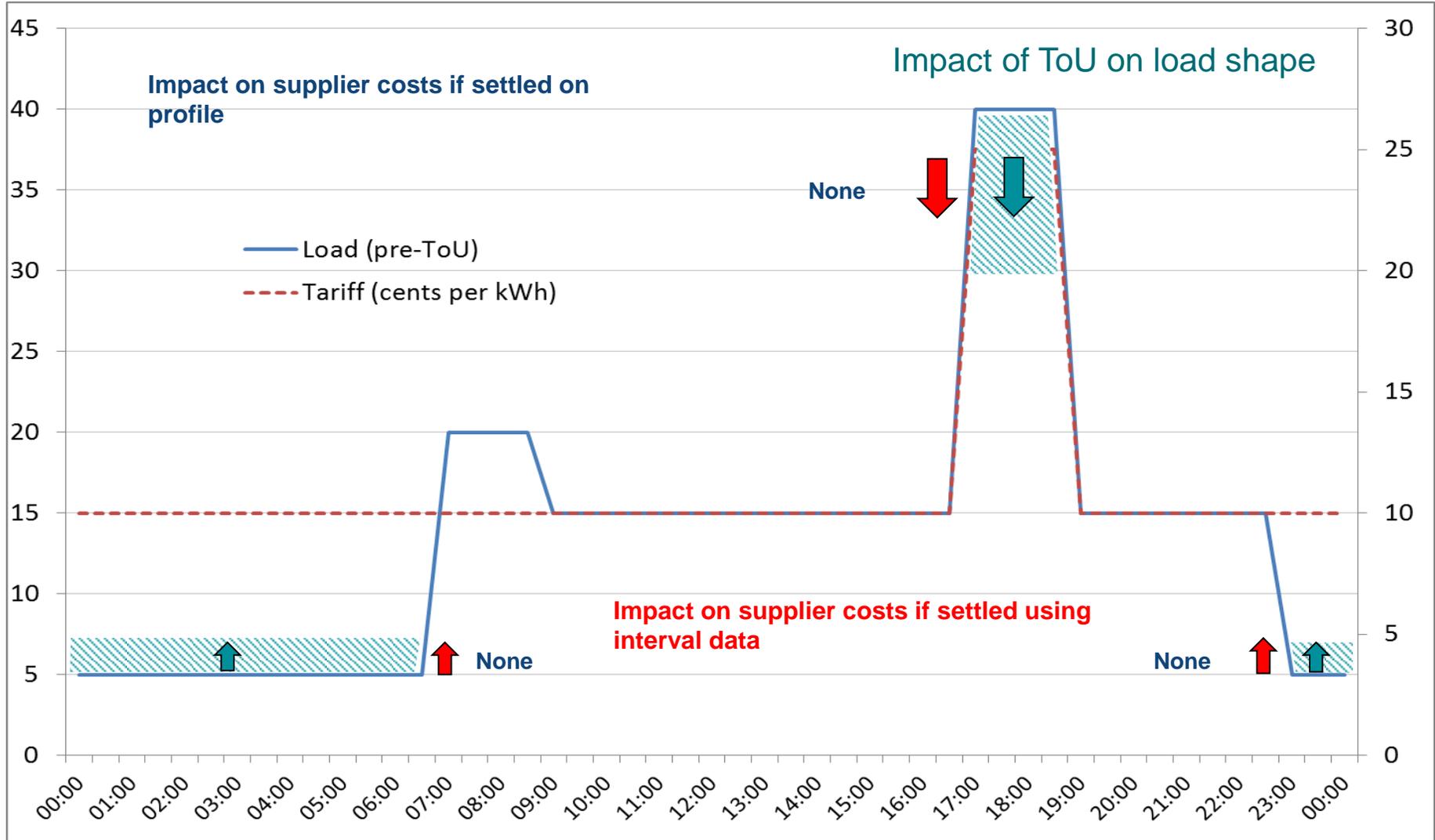


Transposed into a tariff  
that a customer sees

**Loss of accuracy/granularity**

Wholesale market settlement rules  
Network connection and use of system charges

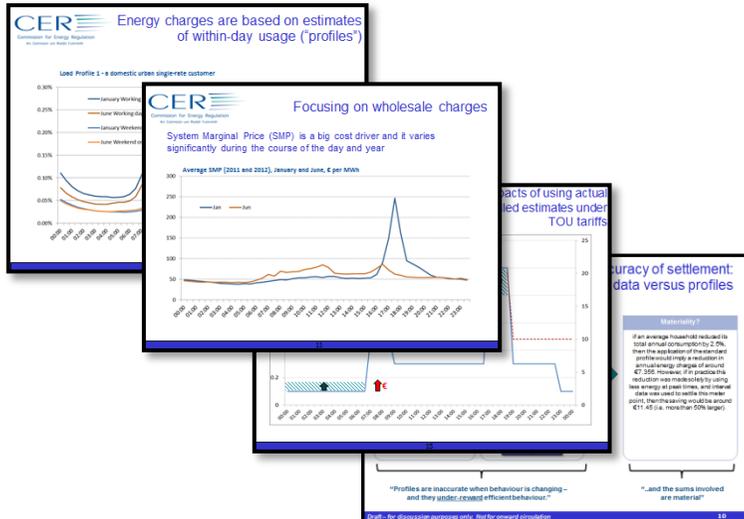
# Wholesale costs with or without profiles



## Current settlement arrangements

The current arrangements are inaccurate and limit the incentives on suppliers to offer cost reflective tariffs, because:

- Using profiles means that we fail to correctly allocate the cost of electricity to each customer/site (and hence supplier) on a half-hourly basis
- It can take several months to get an actual read, and estimated data is often incorrect



## High level solution

These issues could be resolved by:

- Using **actual data rather than estimates** (timeliness)
- **Removing profiles**, and using half hourly metered data for all smart metered sites

**This represents a significant change to the settlement arrangements, and consideration needs to be given to how we might transition**

**Possible causes of distortions to the competitive market**

The proposed solution would give suppliers a number of new risks to manage, and our proposed approach to transition would seek to minimise any systematic differences between suppliers in exposure to this risk and their ability to manage it.

Cause	Description	Appropriate / Unacceptable
<b>Forecast risk change</b>	Suppliers currently use the load profiles to forecast their customers energy use, and to hedge their settlement risk. This will need to change as customers are settled on actual HH reads.	A
<b>Customer billing changes</b>	Changes will be required to the way that customers are billed to account for TOU charging and HH settlement	A
<b>Settlement of microgen sites</b>	Consideration may need to be given to the settlement of microgeneration, so that it matches the accuracy of import settlement	U
<b>Policy exceptions/ exemptions</b>	It is very likely that some vulnerable customers may be eligible for exemptions from TOU or smart metering. Suppliers will have differing numbers of this types of customer, which may be higher cost to serve.	U
<b>Business readiness</b>	Some supplier businesses may be able to adapt their existing systems more quickly – allowing them to gain ‘fish-mover’ benefits and learn faster	A

**Market distortion**

Potential for an unacceptable level of market distortion if transition isn’t carefully managed, due to:

- The rollout approach resulting in some suppliers having more customers with smart meters than others during transition
- Suppliers ‘cherry-picking’ which customers to settle based on the most advantageous approach to them

**Possible causes of a detrimental effect on consumers during transition**

The proposed solution would unwind an existing cross subsidy between customers, and there are a number of new risks that consumers would be subject to, particularly during transition:

Cause	Description	Appropriate / Unacceptable
<b>Reduced security of supply</b>	Security of supply could be compromised if the SMP becomes highly volatile as suppliers learn to manage their new hedging arrangements	U
<b>Increased bills due to usage pattern</b>	Some customers may see an increase in their bill as the result of HH settlement, because they use more electricity in peak times than the average profile	A
<b>Increased bills due to HH settlement</b>	Suppliers may use the switch to HH settlement as a reason to increase standing charges or tariff rates	U

**Adverse customer impact**

Less risk for consumers, but transition approach will need to ensure that:

- Settlement, and SMP remains stable throughout to ensure that security of supply is not compromised in any way
- Consumers don’t face bill increases specifically linked to the approach used to settle their meter

## 4. Next Steps/Q&A

- Publish the High Level Design



- Develop the detailed regulatory framework/policy to support the NSMP