

# Smart Demand Response

ENA Energy UK

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# Outline

- Introduction
- Background
- Requirements & Drivers
- Market Models
- Early Assessment
- Next Steps

# Introduction

- Joint work with the ENA and Energy UK
- Included Good Energy and Ecotricity
- Working together prompted by a common recognition that load shifting will be of growing importance and that smart meters can be a great facilitator
- Joint work titled - Smart Demand Response in GB

# Background –

- Second year of working together
- Occasional meetings: we recognise the importance of this but in the background of smart metering work
- Focus in 2010 year was:
  - Understanding the same language
  - Benefits and barriers, areas of common interest and areas of potential conflict
  - Key message was that we do recognise a significant opportunity
- Demand response for all!

# And to now...

- Building on the work of 2010 but also stepping back to look more carefully
- Stress that we are not designing “the solution”, first - understand what the solution is to do
- Discussion document exists and on its way to approving groups
- We appreciate that the consumer offering is crucial – we don’t ignore this but need to understand the industry part first

# Progress to date

Don't underestimate –

Retailers, Transmission and Distribution

- In the same room
- Understanding the same issues and heading in the same direction
- Much work on Demand Response, internationally and in GB - our joint work is about how we make DR work to deliver the benefits for GB
- The hope is that our focus will complement other work

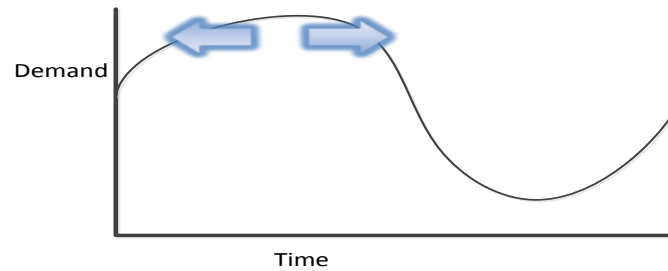
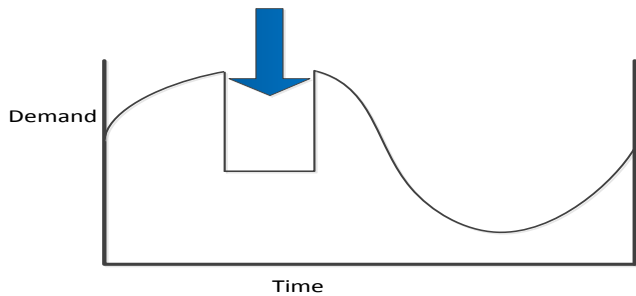
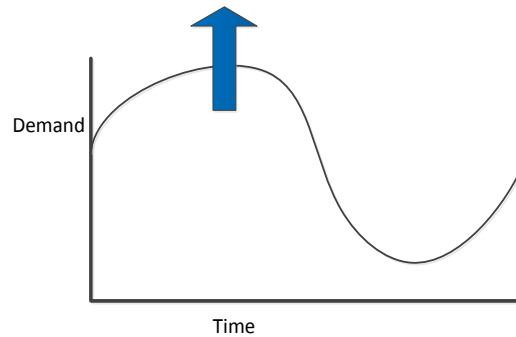
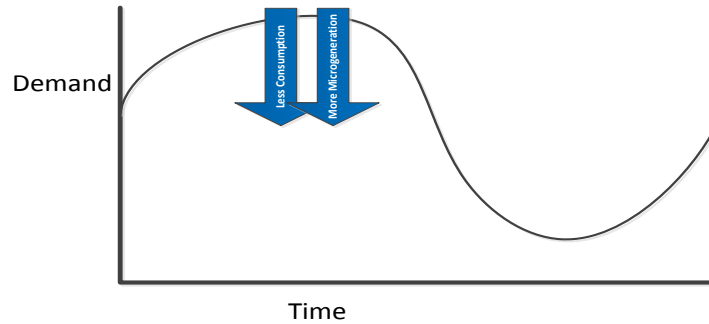
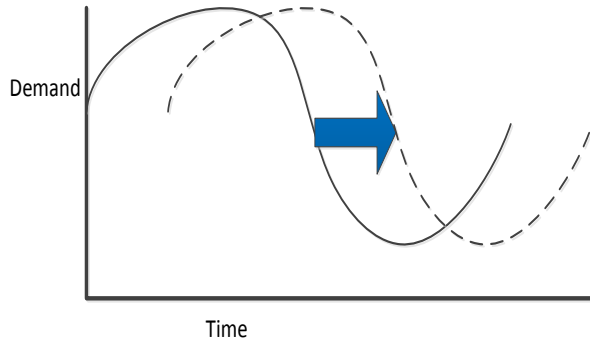
# Report Contents

1. Executive summary
2. Introduction
3. Demand Response Context
4. Drivers, benefits requirements and Barriers
5. Market Options for GB
6. Assessment of options
7. Recommendations and next steps

# Definition of Smart Demand Response

- *Demand Response: relates to any program which encourages shift of (demand) of energy by end consumers. The participation of the end customers is a response to factors such as incentive pricing, new tariff schemes, greater awareness and an increased sense of responsibility. The end consumers agree to involvement, but their participation may involve either active behavioural changes or passive responses, through the use of automation.*
- In initial source, Smart Energy Alliance report: <http://www.smart-energy-alliance.com/thought-leadership/demand-response-a-decisive-breakthrough-for-europe/>
- but we've built on this ...

# ...and what we really mean



# Timing is important

- In the context of challenges
- A plausible 2050 with DR playing a major role in balancing intermittent or inflexible generation
- Nearer to home a 2020 point with smart available and 2050 challenges becoming real
  - EVs, Heat Pumps, intermittent generation

# Requirements and Drivers

- Drivers Benefits and Requirements – published
- Summary of reasons for doing DR
- The requirements to operate DR
- AND what needs to be true for the market to provide and support DR:  
e.g. Confidence to invest in DR rather than an alternative

# Drivers

- Government energy policy includes:
- Deliver secure energy on the way to a low carbon energy future
  - Reform the energy market to ensure that the UK has a diverse, safe, secure and affordable energy system and incentivise low carbon investment and deployment

# Smart Demand Response Benefits

- Facilitate Consumer choice
- Manage Consumer Loading
- Deferment / Optimisation of investment
- Avoid local network overloading and deferment of investment
- Avoid regional and national network congestion and provide fault based network services
- Balance generation at national level through reserve or response services
- Balance the trading position of energy suppliers
- Facilitate cleaner energy / generation mix
- Future flexibility

# Smart Demand Response Requirements

Descriptions of:

- Mechanisms for Demand Response
- Preconditions
  - What needs to have happened

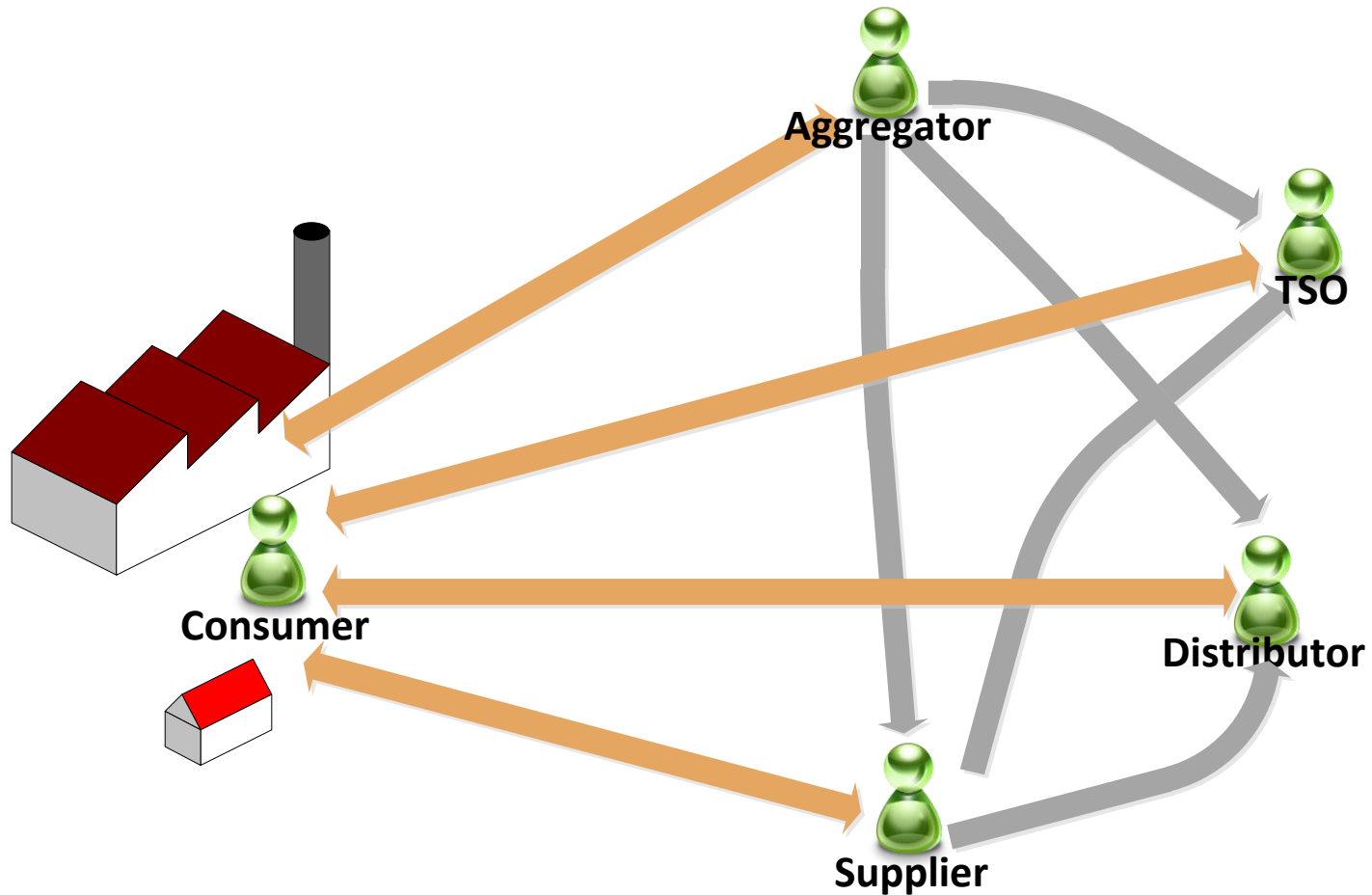
# DR Market Models

- Rather than try to design a solution, we have looked at:
- 3 High level market descriptions
  - Existing market
  - Enhanced Supplier Hub
  - Demand Response Market Operator
- Keeping to functions rather than who does them
- Do these markets work?
- Is there an evolutionary path? (is there a need for one?)

# Existing Market

- NOT not doing demand response
- But says no additional coordination measures to deliver Demand Response - Market forces are enough
- Can call this the reference case.
- does current market deliver?

# Existing Market



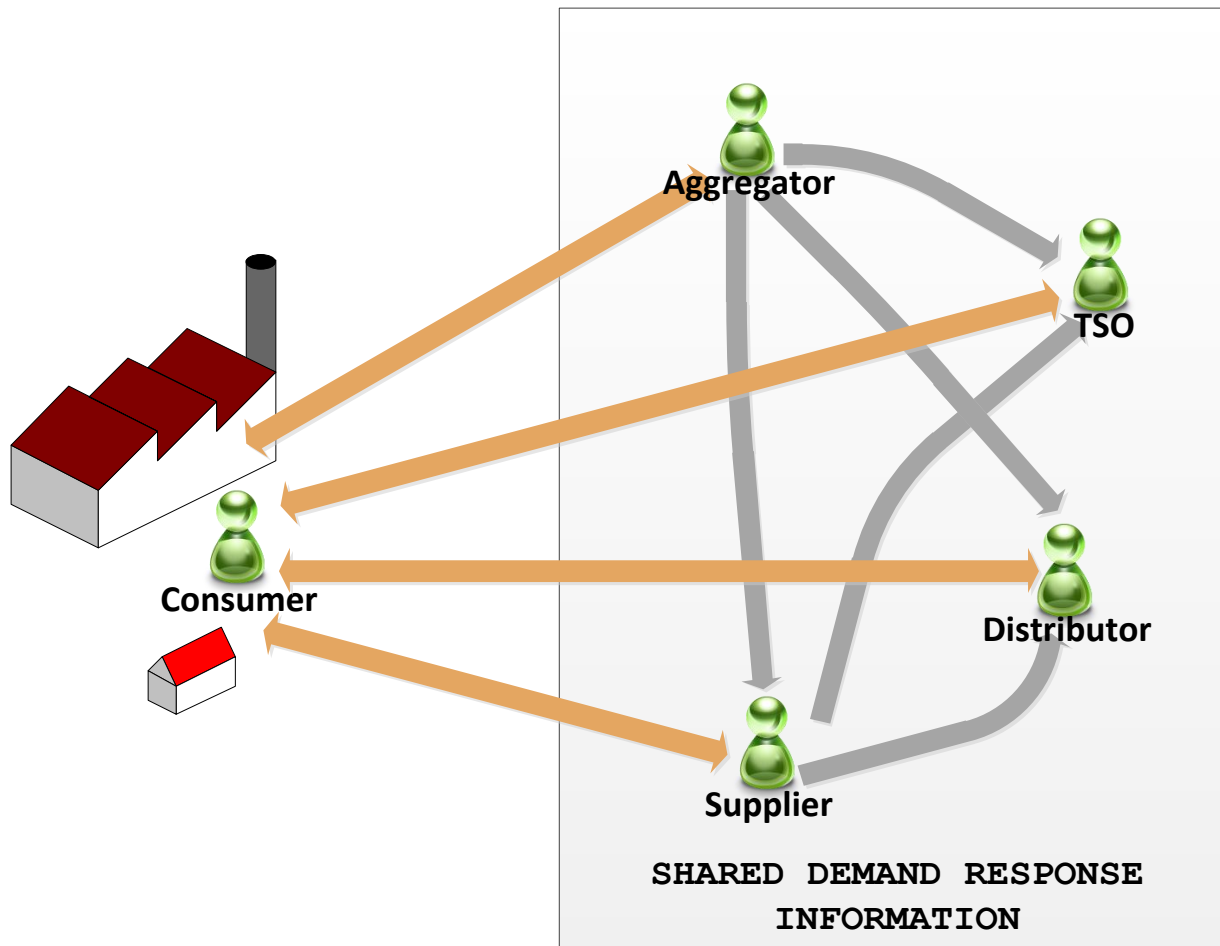
# Enhanced Supplier Hub

- Suppliers or aggregators may contract with the consumer for demand response

(Pure Supplier Hub the supplier would contract)

- Information Flows Required:
  - Supplier needs to be aware of the contract and calls: ToU, Dynamic or Calls on DR
- Suppliers obliged to provide offer/sell to networks

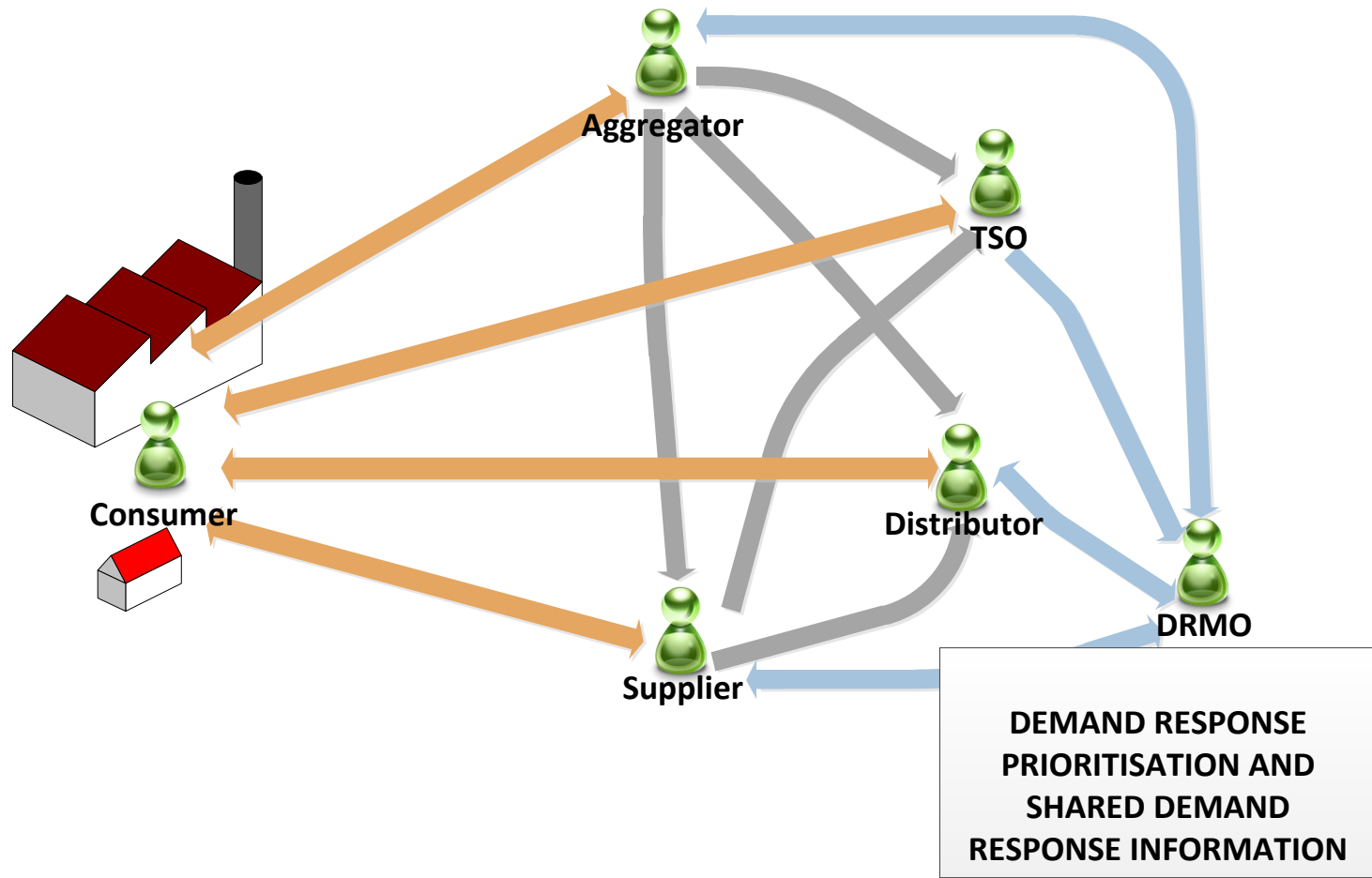
# Enhanced Supplier Hub



# DR Market Operator

- One or more coordinating parties  
regional / national
- A number of parties may contract with  
consumer
- DR operator co ordiates:
  - Information
  - calls on response
  - (but lots to be defined here)

# Enhanced Supplier Hub



# Summary

- We see a route to get smart DR benefits that can potentially involve all consumers
- The existing market can go so far but will not be enough
- We will need to agree/obligate cooperation
  - sophistication added to market to cope with the complexity
- Any sophistication can grow in steps as the need grows
- This needs to be done carefully or you can get unintended effects
- DR is a tool, not the end in itself – we have to understand the benefits we are going for and how the benefits get distributed
- Any change will have cost and needs to be justified

# Initial Assessment

Taking the high level models in turn:

- Does it deliver DR?
- How does it fail?
- Is there a step to the next model?
- What would make the next step happen?
- There will be a need to appreciate which benefits are targeted the value of the benefits may change...  
2012, 2020, 2050
- What might be required for price control submissions?

# Next Steps

- Publish Discussion Document
- Present Widely
- Pause, Collect and Consider responses
- The work will continue in some form
- We are keen for this work to be used