

## Demand Side Opportunities

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# Agenda

## Managing system uncertainty

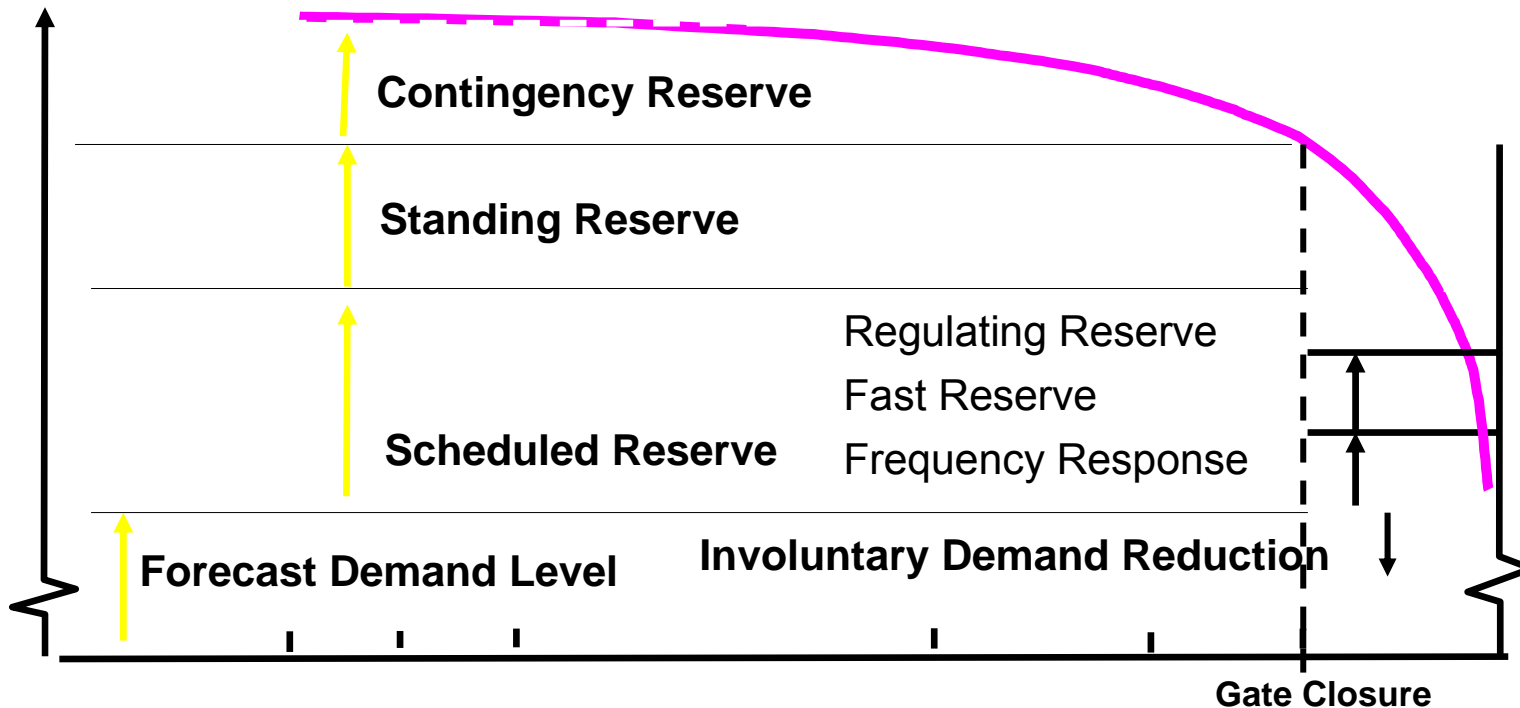
### Potential Ancillary Service Provision

- ◆ Short Term Operating Reserve (STOR)
- ◆ Fast Reserve
- ◆ Firm Frequency Response
- ◆ Frequency Control by Demand Management

# Managing the uncertainty

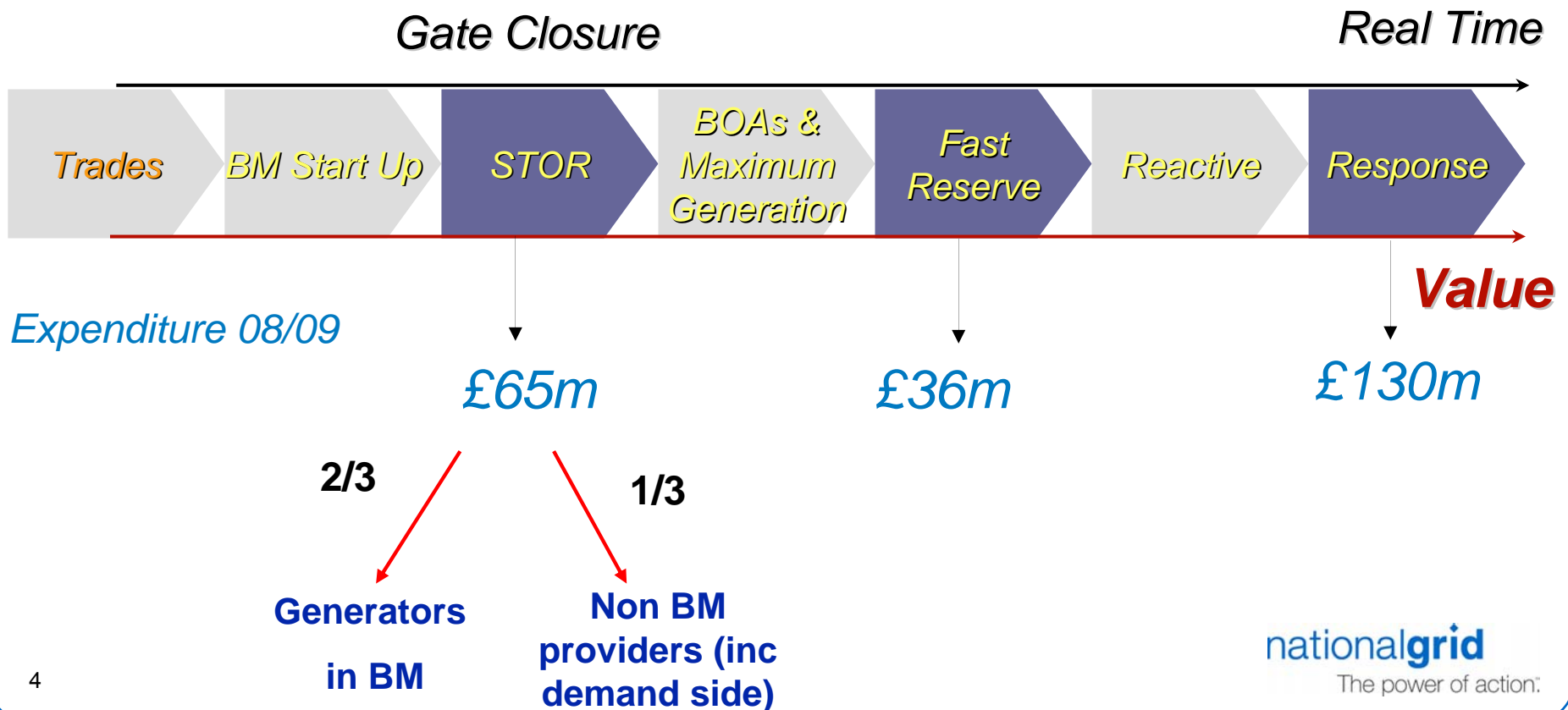
## Operating Reserve

### Types and Time-frames



# Balancing Services

Different services are used in different timescales:





## Short Term Operating Reserve (STOR)

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# Short Term Operating Reserve (STOR)

## What is it ?

- ◆ A manually instructed delivery of active power from generation and/or demand reduction

## Major Technical Requirements

- ◆ fully available within 240 minutes
- ◆ sustained for minimum 2 hours
- ◆ Minimum 3MW - but can comprise of smaller aggregated volumes
- ◆ Be able to delivery at least 3 times a week
- ◆ Proper communication and monitoring tool

# STOR - Forms of the service

## Two forms of service:

- 1) Committed Service - Open to BM and non-BM providers.
- 2) Flexible Service - Open to Non-BM providers

**\*In addition, non-BM providers may provide an 'Optional Service' outside the Availability Windows.**

# Committed and Flexible Services

## Committed Service

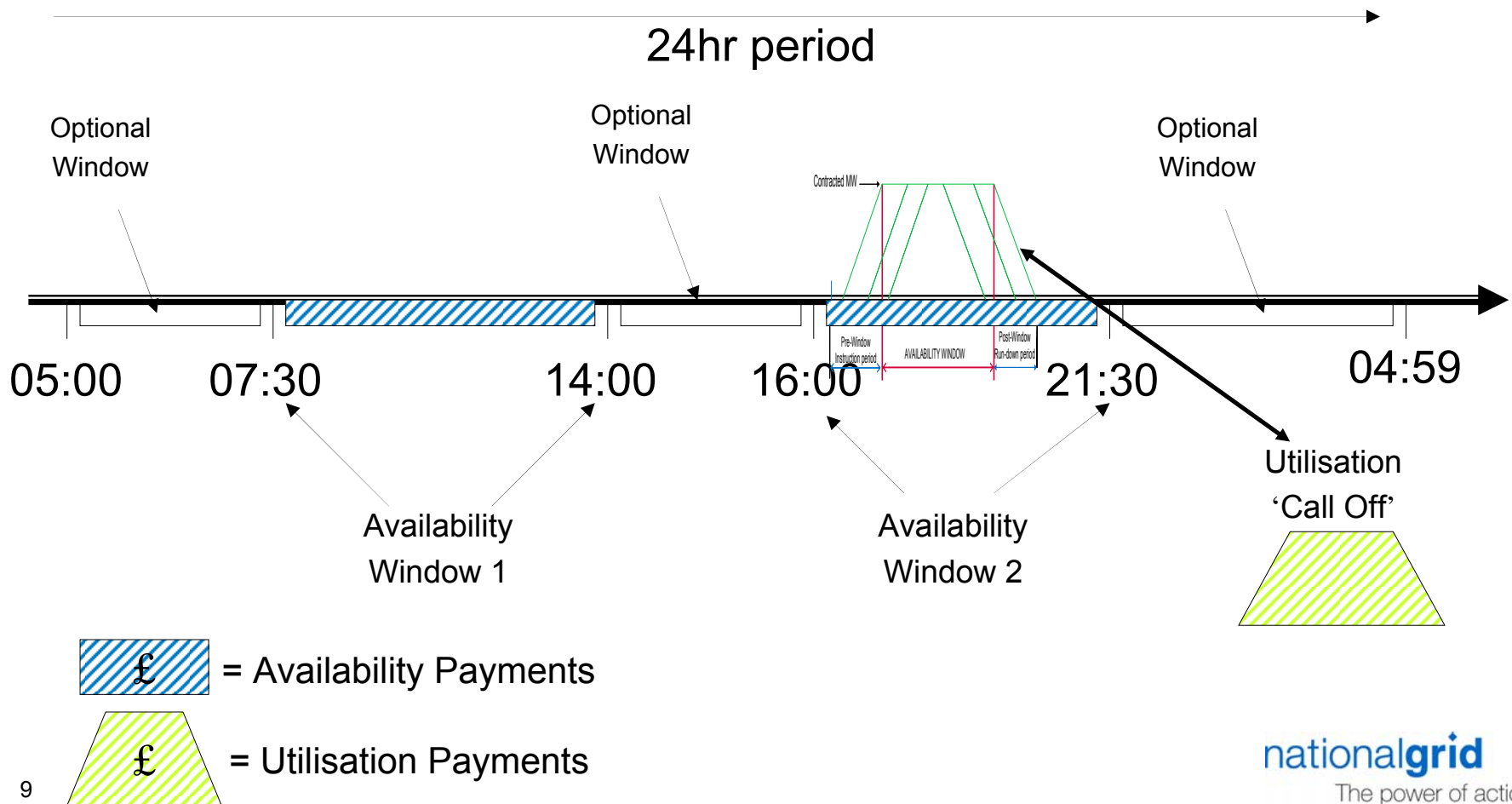
- ◆ Available in all Availability Windows with exceptions for technical or safety reasons
- ◆ National Grid is committed to paying for service availability throughout the contract term.

## Flexible Service

- ◆ The provider provides in the tender the indicative total hours of service availability across a season.
- ◆ Actual availability to be declared on a week by week basis
- ◆ Weekly declaration of availability in entirety at providers' discretion
- ◆ Despatched via SRD System

# STOR Daily Availability

- ◆ Typical Working Day STOR Format
  - ◆ 2 x Availability Windows (typically)
  - ◆ Remainder of time classed as Optional Windows



# STOR Longer Term Service

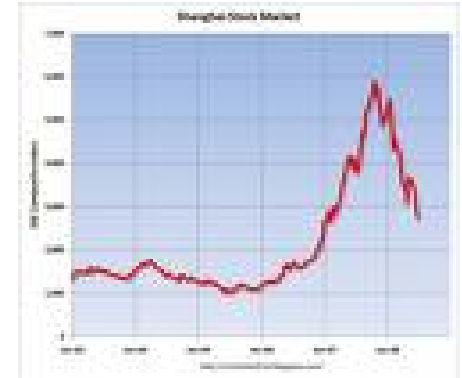
- ◆ Enhancement of the current STOR service
- ◆ Take effect from 1<sup>st</sup> April 2009
- ◆ Three Tender Rounds per year as per 1 yr tender
- ◆ *But providers can tender in for up to 10 year committed service from TR8*

# STOR Longer Term - Payment Arrangements

## Fixed Firm Prices or Indexation

### Price indexation methodology

- ◆ Removes risks with long term tenders
  - Uncertainty against fuel costs
  - Limited options to hedge against risk
- ◆ Not mandatory
- ◆ Can be applied to contracts of >12months
- ◆ Separate methodology document
- ◆ Publish agreed indices (e.g. RPI, fuel) – transparency
- ◆ [http://www.nationalgrid.com/NR/rdonlyres/4EE80022-544B-40C3-AD74-A716F15F933E/30838/Indexation\\_Principles\\_Final.pdf](http://www.nationalgrid.com/NR/rdonlyres/4EE80022-544B-40C3-AD74-A716F15F933E/30838/Indexation_Principles_Final.pdf)



# STOR Contractual Process

## Negotiate STOR Framework Agreements

- Indexation methodology
- Work Progress Programme

## Tender Process

- Submission of Tender
- Tender Assessment (Assessment Team)
- Tender Accept/Reject

# STOR Projected Revenues

## 10 MW Committed Contract\*

Availability Revenue: £220k (6 seasons yr 1) Firm Revenue

Utilisation Revenue: £120k-£180k (50-80 1 hr utilisations in yr 1) Variable Revenue

## 25 MW Committed Contract\*

Availability Revenue: £550k (6 seasons yr 1) Firm Revenue

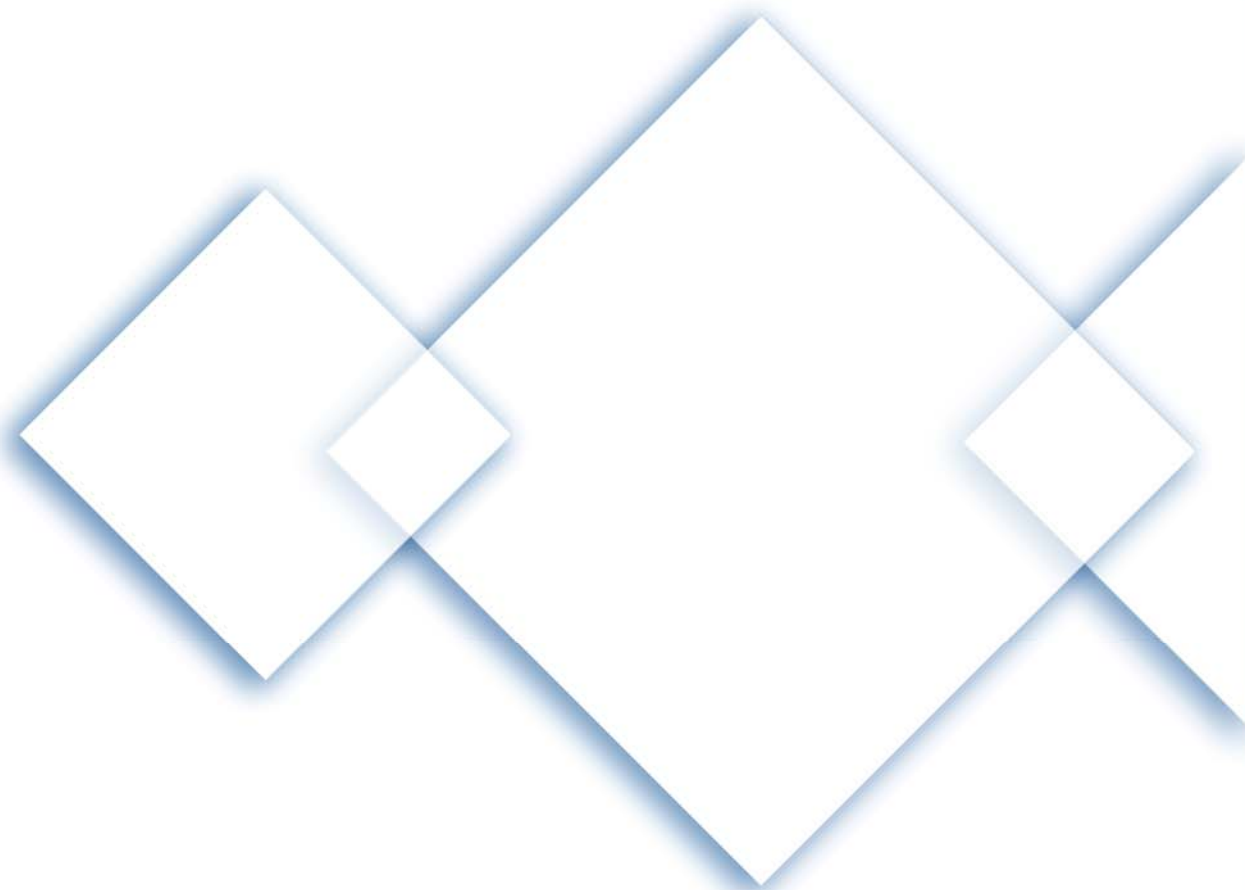
Utilisation Revenue: £300k-£450k (50-80 1 hr utilisations in yr 1) Variable Revenue

## 50 MW Committed Contract\*

Availability Revenue: £1.1m (6 seasons yr 1) Firm Revenue

Utilisation Revenue: £600k-£900k (50-80 1 hr utilisations in yr 1) Variable Revenue

\*based on 100% availability and service delivery (utilisations)



## Fast Reserve

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# Fast Reserve

## What is it ?

- ◆ A manually instructed rapid & flexible change in active power output or demand.

## Technical Requirements

- ◆ Deliver in 2 mins
- ◆ Delivery rate greater than or equal to 25MW/min
- ◆ Sustain for minimum 15 mins
- ◆ Minimum volume of 50MW

# Fast Reserve

## How is it procured?

- ◆ Competitive monthly tender process
- ◆ Bilaterally where service capability may not fully meet tender process requirements
- ◆ Providers can offer on an Optional and/or Firm Service
  - Optional Service: Enter into a framework agreement (FA) but no obligation on parties, but allows dispatch of Fast Reserve when available
  - Firm Service: Enter same FA but have opportunity to participate in monthly tender. Need to provide guaranteed availability of plant to be in state of readiness.

# Fast Reserve

## Payment Arrangements:

### Optional Service

- ◆ Receive an enhanced rate availability Fee (£/h) where they can provide (following despatch) enhanced MW run-up & run down rates

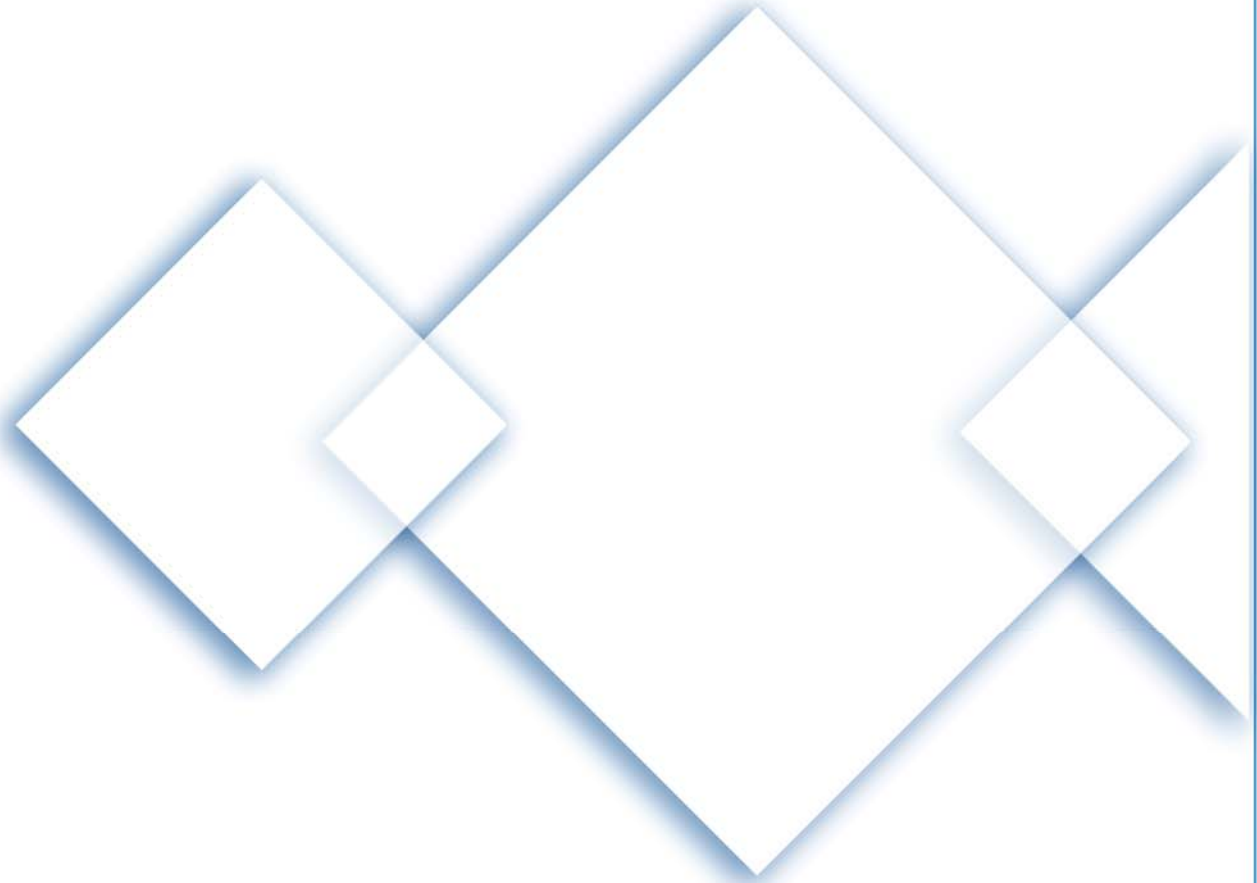
### Firm Service

- ◆ Availability Fee (£/h) – each hour in tendered service period where the service is available
- ◆ Positional Fee – Providers can specify a fee for putting plant in a position to be able to provide fast reserve

Both services are entitled to a utilisation fee (£/Mwh) for energy delivered. For BMU participants this is via a bid/offer acceptance. For the firm service the utilisation fee will be capped by the tender parameters submitted.

## Potential Revenue (indicative):

- ◆ Availability/Holding £44k per MW p/a
- ◆ Utilisation £6k per MW p/a
- ◆ Total £50k per MW p/a



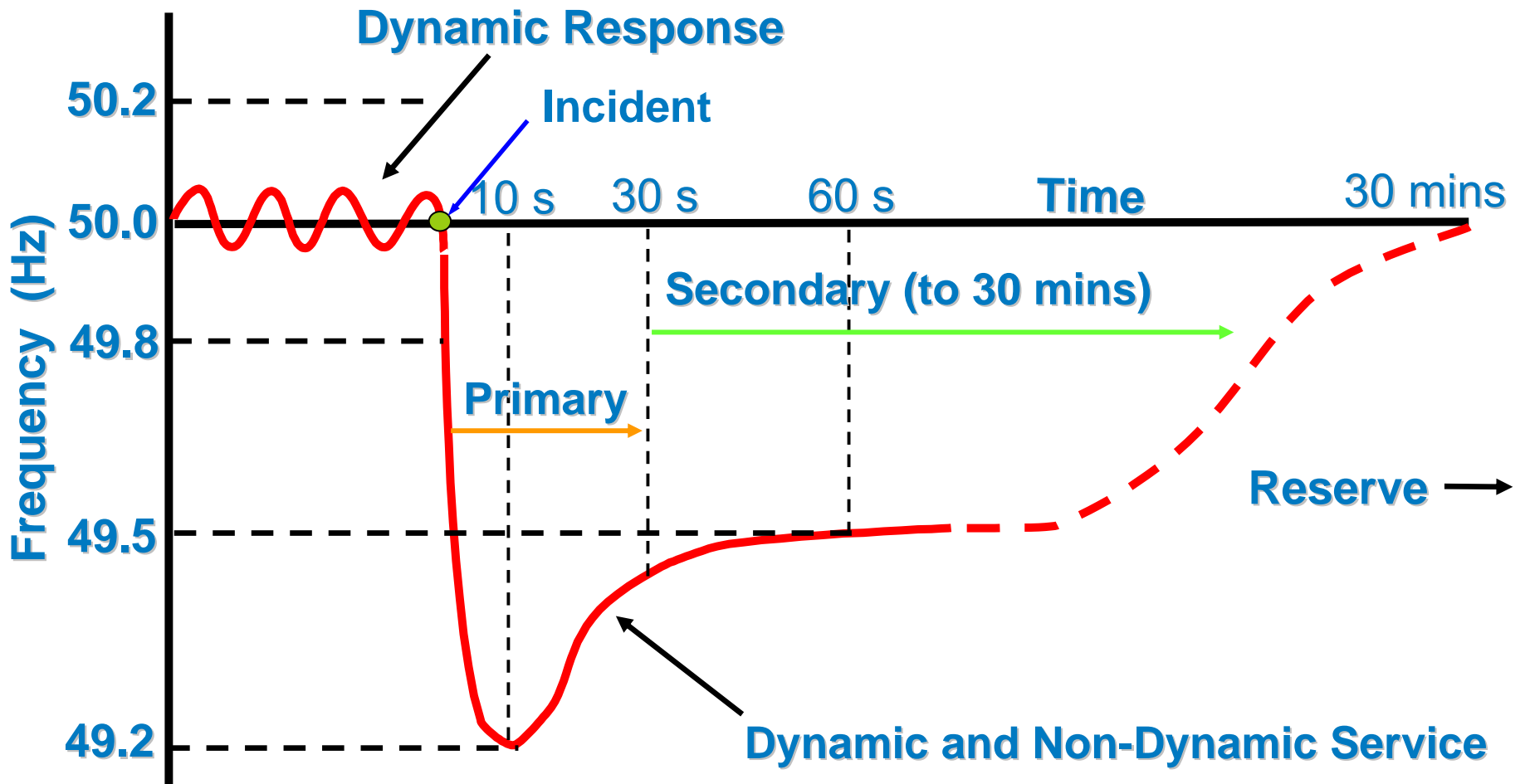
## Frequency Response

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# Frequency Control Phases



# Frequency Response

## What is it?

- ◆ An **automatic** change in active power output or demand in response to a frequency change

## Why do we need it?

- ◆ To maintain system frequency within statutory and operational limits

## Frequency Response Costs in 2008/9 - £130m

- ◆ Mandatory Frequency Response £74m
- ◆ Commercial Frequency Response £56m

# Firm Frequency Response (FFR)

- ◆ **What is FFR?**

- ◆ Firm Frequency Response is the firm provision of Dynamic or Non-Dynamic Response
- ◆ Procured via a GB-wide tender
- ◆ Open to BM and Non-BM providers

- ◆ **Service Description - Minimum requirements :**

- ◆ Measurable - Operational metering or equivalent
- ◆ Reliable - Proven delivery capability
- ◆ Minimum 10MW Response Energy
- ◆ Open to all

# Firm Frequency Response (FFR)

## Payment Arrangements?

Indicative **3-part payment structure** :

- ◆ Availability Fee £/hour (tendered)
- ◆ Nomination Fee (tendered) - £/hour
- ◆ Response Energy Fee (£/MWh)
  - as per CUSC for BM Providers (Dynamic)
  - tendered parameter for Non-BM Providers (Non-Dynamic)

## Potential Revenue Indicative?

- ◆ Availability Fee = £34K per MW per year
- ◆ Positional Fee = £22K per MW per year
- ◆ Response Energy Fee/ Utilisation (£/MWh)
  - as per CUSC for BM Providers (Dynamic)
  - tendered parameter for Non-BM Providers (Non-Dynamic)



## FCDM (Frequency Control by Demand Management)

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# Frequency Control by Demand Management

## What is it?

The Provision of Frequency Response through interruption of demand customers.

Automatically interrupted when the system frequency goes below the low frequency relay setting on site.

## Why do we need it?

To maintain frequency within our statutory limits and provide National Grid's static provision.

# Frequency Control by Demand Management

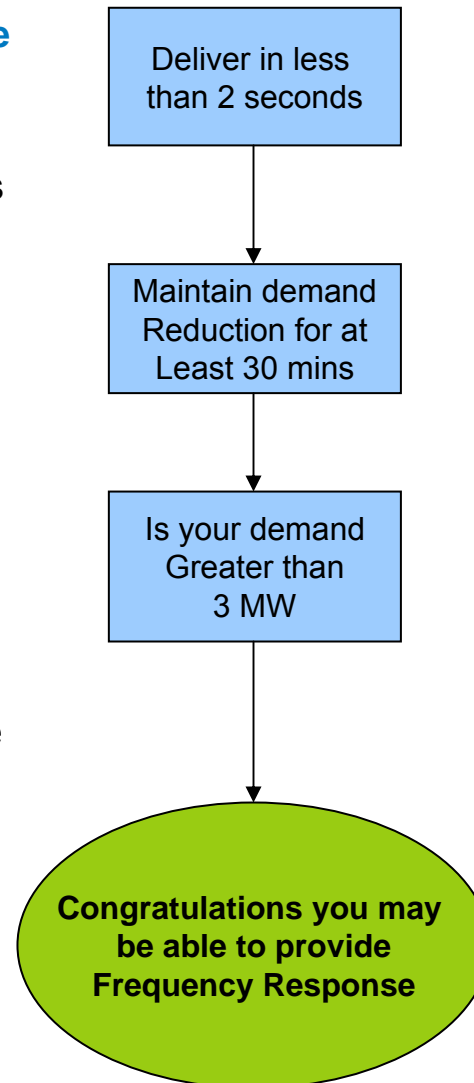
## Service Description

- ◆ Available 24 hours a day
- ◆ Provision of service within 2 seconds of instruction, i.e. relay measurement
- ◆ Deliver for a minimum of 30 minutes
- ◆ Deliver minimum of 3 MW, can be aggregated loads from same site
- ◆ Have suitable operational metering

# Static Response Requirement

## National Grid has a requirement to procure more Static Frequency Response in the near future

- ◆ Procurement through existing FFR contract terms
- ◆ Tender rounds conducted on a monthly basis
- ◆ Statistically likely to be tripped between 10 & 30 times a year due to a low frequency event
- ◆ Requires operational metering
- ◆ Requires a trip relay
- ◆ Majority of payment made through Availability fee
- ◆ Further Details of FFR tender can be found at:
- ◆ <http://www.nationalgrid.com/uk/Electricity/Balancing/services/>



# Routes to market / next step

**Service Provider can deal directly with National Grid if their service size meets the minimum requirement**

**Service Providers can also choose to use an Agent or Aggregator**

**The following companies offer this service**

- ◆ Flexitricity
- ◆ GDF Suez
- ◆ NPower Cogen