Harmonised Ancillary Services, Other System Payments & System Charges

Consultation Paper Briefing Session

SONI/EirGrid

1st October 2008

Agenda

1. TSOs Introduction
2. Regulatory Authorities View
3. Consultation Paper - Structure
4. Ancillary Services
5. Other System Payments
6. Other System Charges
7. Generator Performance Incentives
8. Other items
9. Next Steps

Briefing Objective

To supplement the consultative process by providing an overview, to interested parties, of the designs and proposals set out in the current TSO consultation paper based on the RAs' policy principles for future harmonised ancillary services, as stated in their Decision Paper of February 2008

Briefing Opportunities

- To re-state the RAs policy decisions regarding future Harmonised Ancillary Services.
- For Market Participants and other stakeholders to seek clarity regarding the proposed designs to be implemented.
- For the TSOs to listen to and understand the views of stakeholders.
- To encourage consultation responses from stakeholders after the briefing session if not already submitted.

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Regulatory Authorities View

CER/NIAUR

1st October 2008

Commission for Energy Regulation
An Coimisiún um Rialáil Fuinnimh

Utility Regulator
ELECTRICITY GAS WATER

RA's Perspective

- The TSO consultation paper was developed in conjunction with the RAs
- It was approved for consultation by the SEM Oversights Committee
- It follows on from RAs decision paper in February 2008 and workshops in late April/early May

Consultation Process

- The consultation will conclude on Tuesday 28th October.
- Responses to be sent to TSOs for compilation and review (if possible please align these to the sections and subsections of the document)
- The TSO will submit the responses and their recommendations to the RAs

Decision Process

- RAs will develop a decision paper based on:
  - TSO paper,
  - Participant comments
  - TSO's subsequent recommendations
  - Implementation budget

- The Decision Paper will be presented to the SEM Committee in Dec 08/Jan 09.

Timetable for Implementation

- The time required for implementation will depend on the settlement systems solution chosen
- The objective is to have moved to the new mechanism for the core Ancillary Services by the start of the next tariff year
- Changes to the Grid Code to facilitate the charging regime will be undertaken in accordance with the constitution of the Joint Grid Code Review Panel

Harmonised Ancillary Services, Other System Payments & System Charges

Consultation Paper - Structure

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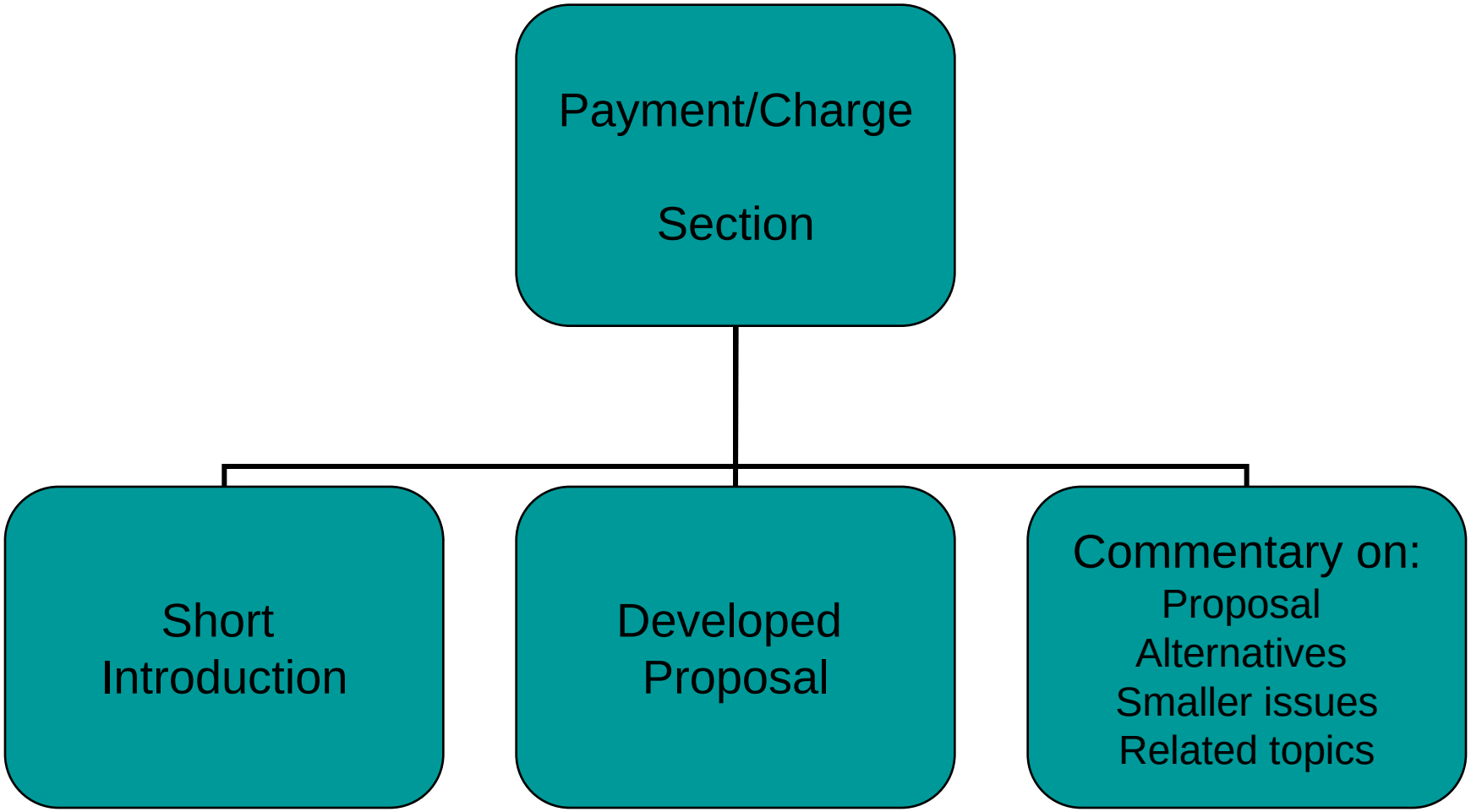
Paper Structure: Outline

Developed Proposals
Ancillary Services
Other Charges

Outline Proposals
Other System Payments
Generator Performance Incentives

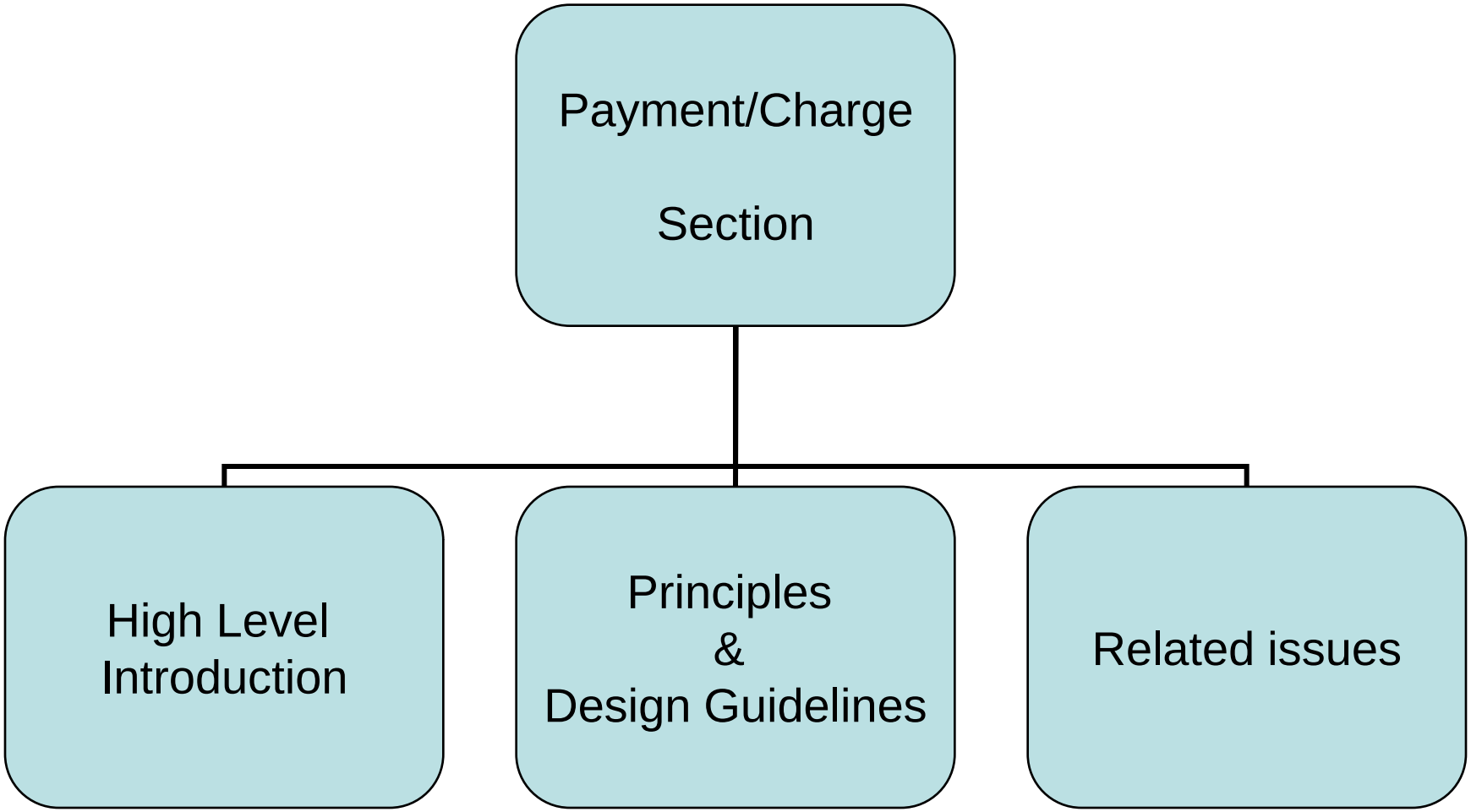
Paper Structure: Developed Proposals



Paper Structure: Developed Proposals

1. Reserve
2. Reactive Power
3. Black Start
4. Short Notice Re-declarations
5. Trips

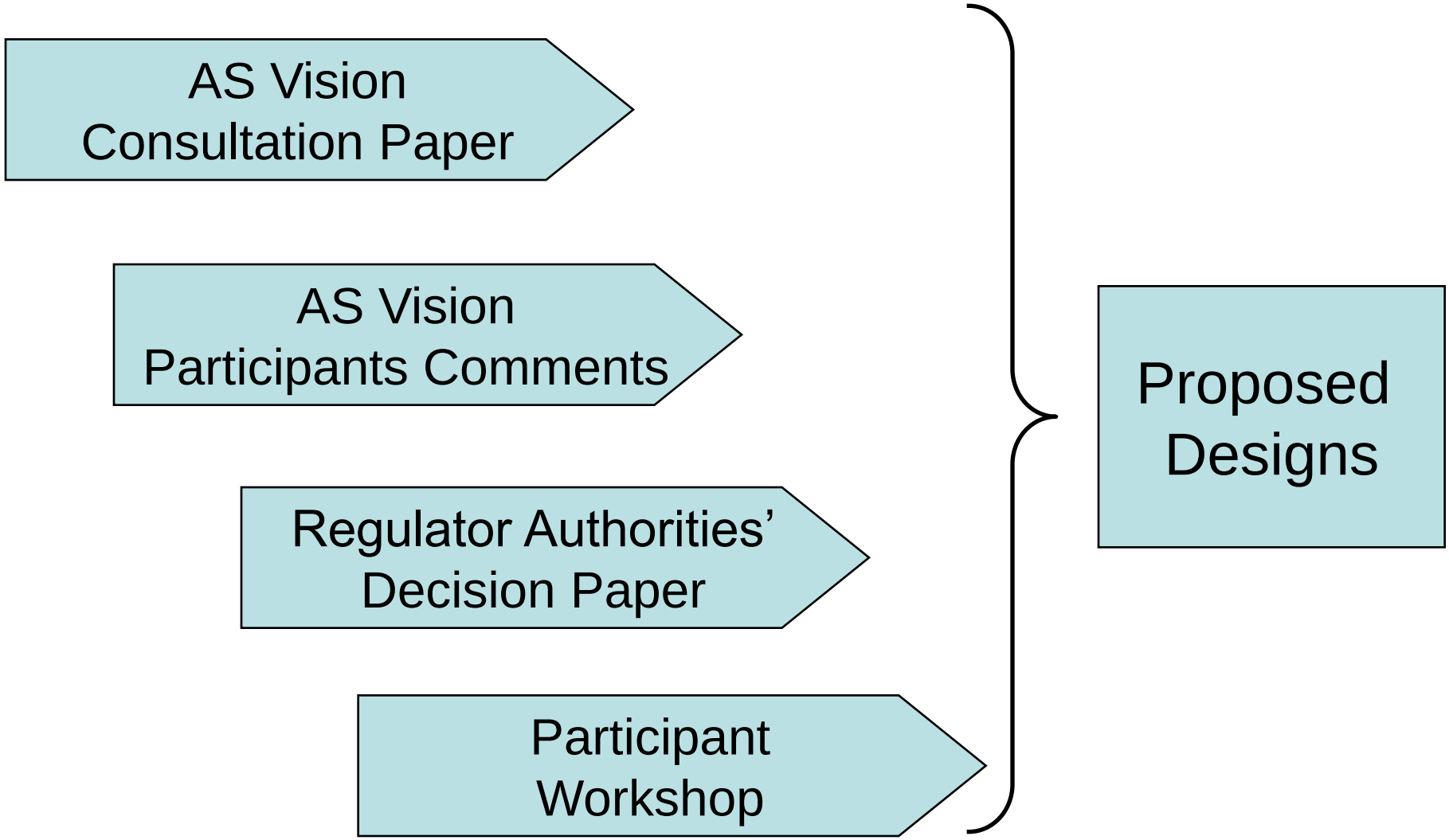
Paper Structure: Outline Proposals



Paper Structure: Outline Proposals

1. Potential New Ancillary Services
2. Alternative Fuel Payment
3. Generator Testing Charge
4. Generator Performance Incentives

Major Design Influences



Main Design Criteria:

1. Clarity, predictability, transparency and effectiveness.
2. Total AS allowance to remain broadly unchanged for harmonisation.

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Ancillary Services

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Ancillary Services– Principles (1).

- Procurement of services will be based on the **ability to deliver the service** required for Transmission system operation and will be independent of the technology used in providing the service.
- AS characteristics agreed for each service provider based on technical capabilities and system needs.
- Harmonised policies and rates.
- Charges apply for underperformance.

Ancillary Services – Design Guidelines (1).

- Current focus: Next few years.
- Predictable income, assuming good performance.
- Predictable financial outcomes of failure to fulfill the contract. Bigger impacts should incur higher charges.
- High performer: Rewarded
- Poor performer: Incentivised to improve
- Simple, transparent payment.

Ancillary Services – Common Features

- Annual Budget.
- Annual Expenditure
- Funding Flows
- Rates
- Interaction with the SEM
- Procurement.
- Legal & Contractual Framework
- Basis of Charges for Non-Fulfillment of Contract
- Settlement & Payment

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Reserve

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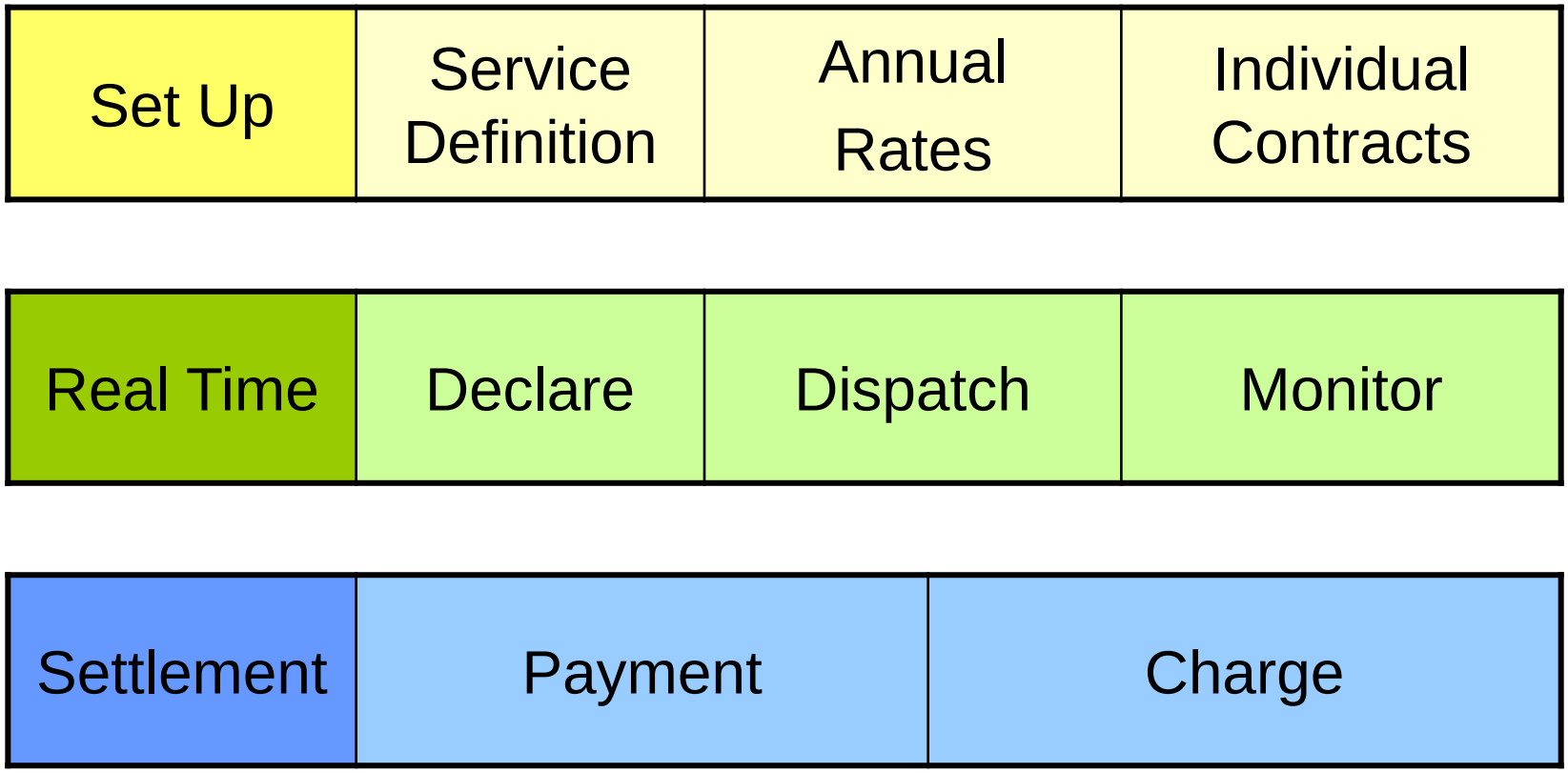
Developed Design – Reserve (1)

Incentivise:

1. High level of reserve availability
2. Accurate & timely declarations of availability
3. Encourage new providers

Developed Design – Reserve (2)

Developed Design Structure



Developed Design – Reserve (3)

Set Up

Reserve Services

- Primary Operating Reserve
- Secondary Operating Reserve
- Tertiary 1 Operating Reserve
- Tertiary 2 Operating Reserve
- Replacement Reserve

Annually-set fixed regulated payment rates for each service.

Units contract for each service for:

1. Capability level
2. Reserve characteristic curve

Developed Design – Reserve (4)

Real Time

- Each unit declares its Reserve availability to TSO for each Trading Period (TP) to a maximum of its contractual capability.
- Charges are applicable to units which fail to deliver the required level of performance.
- Each unit is scheduled and dispatched as per the common Grid Codes rules.
- Unit performance during low frequency events (e.g. a generator tripping) is monitored by reviewing the post event data.

Developed Design – Reserve (5)

Settlement (1of2)

Payment is calculated :-

- Separately for each category of Reserve for each TP.
- As **realisable availability** multiplied by the scaled payment rate.

Realisable availability is calculated :-

- Average MW generated by the unit over TP.
- Reserve characteristic curve of the unit, and
- Average declared availability of the unit over TP.

The scaled payment rate is % difference between declared & contracted capability.

Developed Design – Reserve (6)

Settlement (2of2)

Charge depends on the level of underperformance during low frequency events and testing.

The charge is proportional to the difference between the expected provision and the actual provision.

The charge is calculated as:

Underperformance x Payment rate x 30 days.

As a complement to the above scheme , the TSOs will be also be allowed to enter into contracts with market participants for reserve.

Reserve – Worked Example (1)

Payment Example *per Reserve Category*		Capability / Availability			Payment Rate Setting			½ h Trading Period Payment
		Contracted [MW]	Declared [MW]	Actual [MW]	Annual Rate [€/MW]	Declare/Contract Scaling Factor	½ h Trading Period Rate [€ / MW ½TP]	[€]
		A	B	C	D	E = B/A	F = D * E	G = C * F
OMP.1	Dispatched to max output	30	30	0	0.7	100%	0.35	0
OMP.2	Dispatched to max reserve	30	30	30	0.7	100%	0.35	10.5
OMP.3	Max Declared ≠ Contract	30	20	20	0.7	67%	0.2335	4.67
OMP.4	Declared off for Reserve	30	0	0	0.7	0%	0	0

Reserve – Worked Example (2).

Annual Payment Example *per Reserve Category*	½ h Trading Period Payment [€]	Number of Trading Periods (Unit always on)	Annual Payment [€]
	A	B=365*24*2	= A * B
OMAP.1	0	17,520	-
OMAP.2	10.5	17,520	183,960
OMAP.3	4.67	17,520	81,818
OMAP.4	0	17,520	-

Reserve – Worked Example (3)

Example of applicable charge for single failure to provide a generic category of Reserve

Charge Example	Declared Availability	Expected Provision	Actual Provision	Annual Rate	Charge
	[MW]	[MW]	[MW]	[€/MWh]	[€]
		A	B	C	= (A-B) * C *24 *30
OMC.1	0	0	0	0.70	0
OMC.2	30	30	30	0.70	0
OMC.3	30	20	20	0.70	0
OMC.4	30	20	10	0.70	5,040
OMC.5	30	20	0	0.70	10,080

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Reactive Power

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Developed Design - Reactive Power (1)

Incentivise:

1. High level of reactive power availability
2. Accurate & timely declarations of availability

Developed Design - Reactive Power (2)

Set Up

A fixed payment rate is set annually and approved by the RAs.

Provision of Reactive Power service to the transmission system is contracted for based on an Mvar capability range.

Each unit contracts for its capability range and where appropriate its Reactive Power characteristic curve and its Automatic Voltage Regulator (AVR) capability.

Developed Design - Reactive Power (3)

Real Time

For each TP, a unit declares its capability range independent of output to the TSO. For a unit that cannot declare its capability range, its capability range is assumed to follow from the unit's actual MW output and its characteristic curve. The maximum capability range is equal to its contractual capability range.

Each unit indicates the status of its AVR.

Charges apply to units who do not deliver to their set capability range.

Each unit is called upon to provide RP by TSO dispatch/set point.

Unit performance is monitored in real time operation and by post real time review.

Developed Design - Reactive Power (4)

Settlement (1of2)

Payment is made to units which are synchronised or have a separate Reactive Power device.

Payment is calculated for each trading period.

Payment = Capability range x Scaled payment rate.

Scaled payment rate = Annual payment rate x $\frac{\text{Declared capability range}}{\text{Contracted capability range}}$.

Developed Design - Reactive Power (5)

Settlement (2of2)

The scaled payment rate is doubled if the AVR is active.

The charge is equal to 30 days worth of contractual capability range payments.

The TSOs will be allowed to enter into long-term contracts with market participants for Reactive Power in order to take into account longer-term system requirements.

Reactive Power – Worked Example (1)

Example of payment for ½ Trading Period

Not Synchronised => No payment
Declared/Calculated to zero => No payment

Example				RP.B	RP.C	RP.E
				Base case	AVR Off	Declare ≠ Contract
Synchronised				Yes	Yes	Yes
Contracted Range	Lead	[Mvar]	A	70	70	70
	Lag	[Mvar]	B	90	90	90
Declared/ Calculated	Lead	[Mvar]	C	70	70	40
	Lag	[Mvar]	D	90	90	60
AVR Status		[On or Off]	E	On	Off	On
Payment Rate Setting	Annual Rate	[€/Mvarh]	F	0.15	0.15	0.15
	Declare/Contract Scaling F	[%]	G = (C+D)/(A+B)	100%	100%	63%
	AVR Factor	[2 or 1]	H from E	2	1	2
	½ h Trading Period Rate	[€Mvar/ ½TP]	I = F*G*H	0.15	0.075	0.094
½ h Trading Period Payment		[€]	=(C+D)*I	24	12	9.38

Reactive Power – Worked Example (2)

Example of annual payment estimate (ex charges)

Annual Payment Example		Contracted Range	Average Declared/Calculated Range	% AVR On	Payment Rate	Time Sync'ed	Annual Payment
		[Mvar]	[Mvar]		[€/Mvarh]		[€]
RPAP.A	Regular Service, Regular Sync	160	150	85%	0.26	40%	136,738
RPAP.B	High Service, Regular Sync	160	160	95%	0.29	40%	163,987
RPAP.C	High Service, High Sync	160	160	100%	0.30	95%	399,456
RPAP.D	Low Service, High Sync	160	100	0%	0.09	95%	78,019
RPAP.E	Low Service, Low Sync	160	100	100%	0.19	20%	32,850

Reactive Power – Worked Example (3)

Example of applicable charge for single failure

Charge per Confirmed Failure	Contracted Values		Charge Rate Setting			
Example	Consumed	Produced	Annual Rate	AVR Factor	½ h Trading Period Rate	Charge
	[Mvar]	[Mvar]	[€Mvar/h]	[@ Max]	[€Mvar/ ½TP]	[€]
RPC.A	70	90	0.15	2	~~0.3~~ 0.15	~~69,120~~ 34,560

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Black Start

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Developed Proposal – Black Start (1)

Incentivise:

1. High level of black start availability
2. Performance during tests and events

Developed Proposal – Black Start (2)

Set Up

- The provision of the Black Start service to the transmission system is contracted for based on a number of technical requirements on a site-by-site basis.

- A fixed payment rate for the service is set individually and adjusted annually in accordance with the contract.

- *Each site contracts through long-term contracts for its capability to Black Start local areas on the transmission system including other generator sites.*

Developed Proposal – Black Start (3)

Real Time

For each TP, an applicable unit declares its Black Start status in accordance with the Grid Codes.

Each site is required to carry out three levels of Black Start tests.

Test 1: Black start unit test (planned and scheduled by the service provider)

Test 2: Local Black Start site test (e.g. Energise dead busbar)

Test 3: Black start path test (e.g. Provide supply to remote generation site)

Tests 2 & 3 will be called by the relevant TSO. Site performance is monitored for Tests 2 & 3 by the relevant TSO.

Developed Proposal – Black Start (4)

Settlement

Payment is calculated for each TP.

Payment is due when both the generator site and the Black Start facility are declared available.

Payment per TP is equal to the half the contracted hourly rate.

A charge is applicable for failure of either Tests 2 or Test 3.

Two levels of charges apply:

Charge 1: Partial failure where a site fails to meet some contractual element incurs a charge equal to 30 days maximum payment

Charge 2: Outright failure incurs a charge = 90 days max payment.

Black Start – Worked Example (1)

Example of payment for ½ hr Trading Period

Payment Example	Generator Site Availability	Black Start Facility Availability	Contracted Black Start Rate	Half Hour Trading Period Payment
			[€/h]	[€]
			A	= A * ½ hour
BSP.1	Yes	Yes	50	25
BSP.2	No	Yes	50	0
BSP.3	Yes	No	50	0

Example of charge for single failure

Charge Example	Failure Type	Contracted Black Start Rate	Charge
		[€/h]	[€]
		A	Partial =24*30*A Outright=24*30*A*3
BSC.1	Partial Failure	50	36,000
BSC.2	Outright Failure	50	108,000

Black Start – Worked Example (2)

Example of annual payment estimate (including charges)

Annual Payment Example	Contracted Black Start Rate	Combined Unit & Black Start Facility Availability	Number of Failures	Annual Payment
	[€/h]	[%]		[€]
	A	B		=365*24*90%*A - Charge
BSAP.1	50	90%	0	394,200
BSAP.2	50	90%	1 Partial	358,200
BSAP.3	50	90%	1 Outright	286,200
BSAP.4	50	90%	4 Outright	(37,800)

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Other System Charges

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Short Notice Re-Declarations Charges

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Developed Design – Short Notice Re-Declarations (1)

Incentivise:

Avoid units changing declarations at short notice or at least provide max notice

Developed Design – Short Notice Re-Declarations (2)

Set Up

- SND Charge = f (MW reduction, notice time, SND charge rate)
- SND charge rate is set to a single value and reviewed annually.
- SND charge applies for downward availability declarations within a 12-hour period.
- There is a minimum threshold of 10 MW. SND charges apply to larger re-declarations.
- Re-declarations below the 10MW threshold more than three times in one hour are subject to a SND charge. The charge is calculated as the MW difference between the availability prior to the first declaration and availability after the last declaration; the notice provided will be set to zero.

Developed Design – Short Notice Re-Declarations (3)

Real Time

Each unit makes declarations in accordance with the TSC.

The relevant TSO schedules and dispatches the unit in accordance with the Grid Codes, the TSC and the unit's declarations.

Developed Design – Short Notice Re-Declarations (4)

Settlement

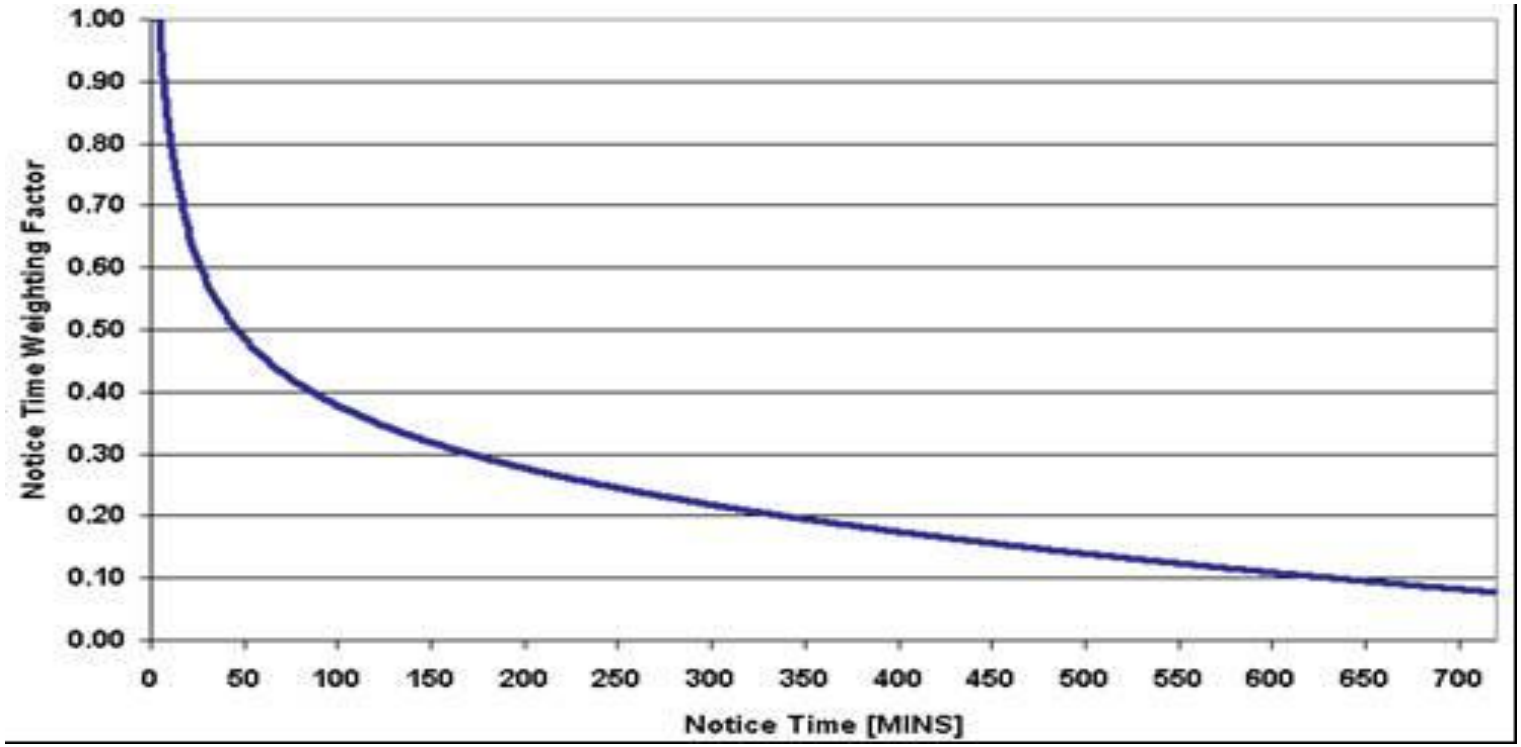
The SND charge is calculated as follows:

SND Charge = MW Reduction * SND Charge Rate * Notice Time Weight

The Notice Time Weight is an empirical weighting corresponding to the relative importance of notice time from 12 hours up to real time.

Developed Design – Short Notice Re-Declarations (5)

SND Charge = MW Reduction * SND Charge Rate * Notice Time



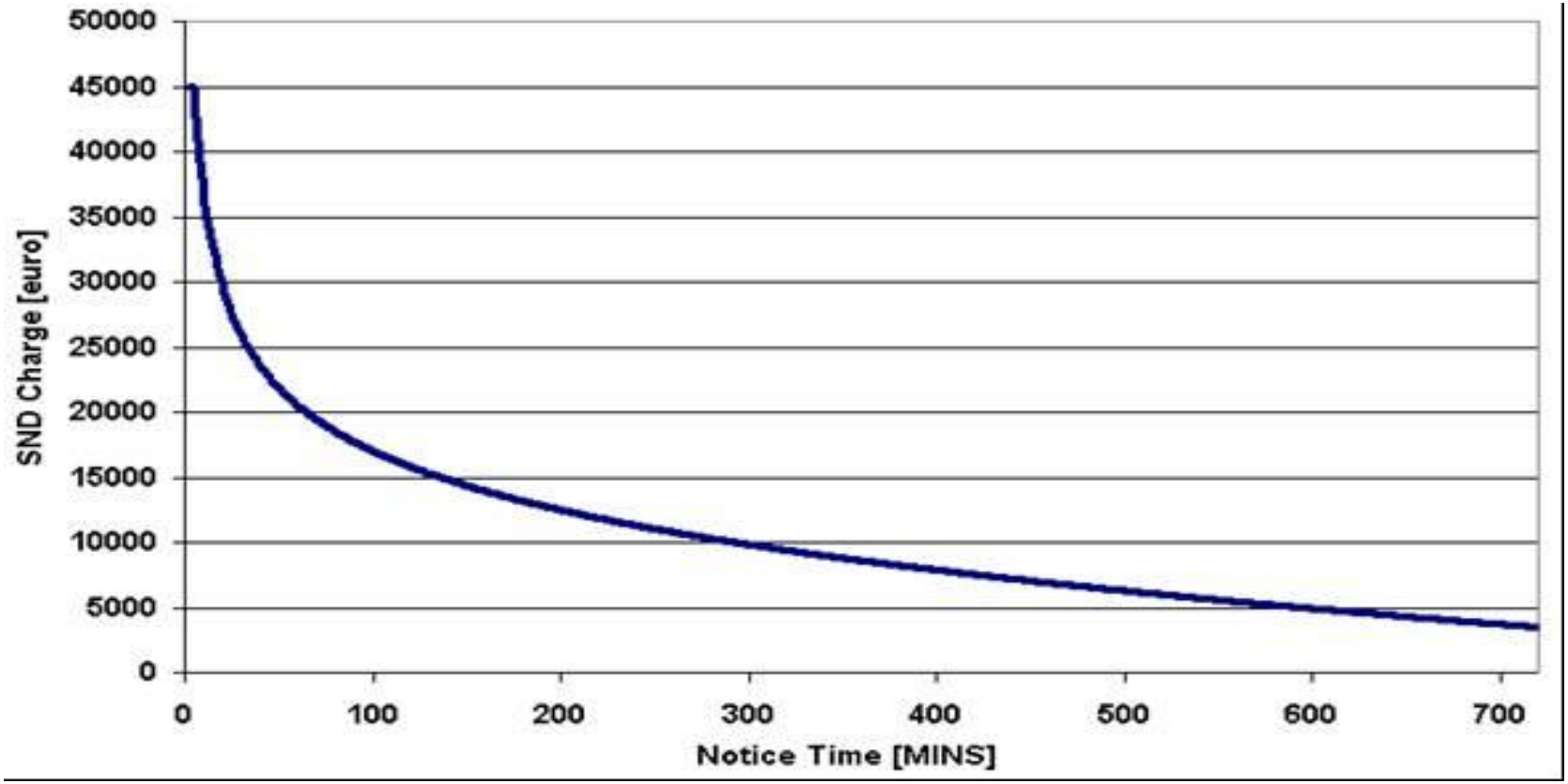
Developed Design – Short Notice Re-Declarations (6)

- Examples of SND Charges based on the SND Charge Rate of €100/MW

Notice Time	MW Reduction	Weight	Charge	
[min]	[MW]	[-]	[€]	[£]
0	10	1	1,000	788
0	200	1	20,000	5,754
0	450	1	45,000	35,447
100	10	0.378	378	298
100	200	0.378	7,560	5,955
100	450	0.378	17,010	13,399
240	10	0.25	250	197
240	200	0.25	5,007	3,944
240	450	0.25	11,266	8,874
720	10	0.076	76	60
720	200	0.076	1,524	1,200
720	450	0.076	3,430	2,702

Developed Design – Short Notice Re-Declarations (7)

- Graph of SND charges for 450 MW unit with increasing notice time



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Trip Charges

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Developed Design – Trips (1)

Incentivise:

1. Minimise number of trips
2. Slow tripping, when trip is unavoidable

Developed Design – Trips (2)

- A trip charge is levied on all forms of generation including conventional generation, wind farms, demand side units, distributed connected generator units and future generator technologies.
- The higher the MW loss, the higher the trip charge.
- The faster the trip, the higher the trip charge.
- A charge is levied for full trips (i.e. trip to zero) and partial trips (e.g. loss of Steam Turbine)
- The charge rates are reviewed annually.

Developed Design – Trips (3)

- Three categories of trips are defined as follows based on the rate of MW loss:
  - Direct Trip Rate of MW Loss >= 15 MW/s
  - Fast Wind-down Rate of MW Loss >= 3 MW/s & < 15 MW/s
  - Slow Wind-down Rate of MW Loss < 3 MW/s

- The TSOs monitor generator units as they run on the power system and can identify that a trip has occurred through analysis of SCADA.

Developed Design – Trips (4)

Application of charges:

- A charge applies for all full trips.
- A charges applies for partial trips for MW losses of 100 MW and greater.

Calculation of charges:

- Trip charge is a function of MW loss and speed of loss of output.
- The charge is calculated from the following formulae:
  - Direct Trip Charge = 5000 * EXP(0.007 * MW Loss)
  - Fast Wind Down Charge = 4000 * EXP(0.006 * MW Loss)
  - Slow Wind Down Charge = 3000 * EXP(0.005 * MW Loss)

Trips – Direct Trip – Worked Example

Typical frequency dip associated with a Direct Trip

Trips – Direct Trip – Worked Example

The Direct Trip charge is calculated as follows:

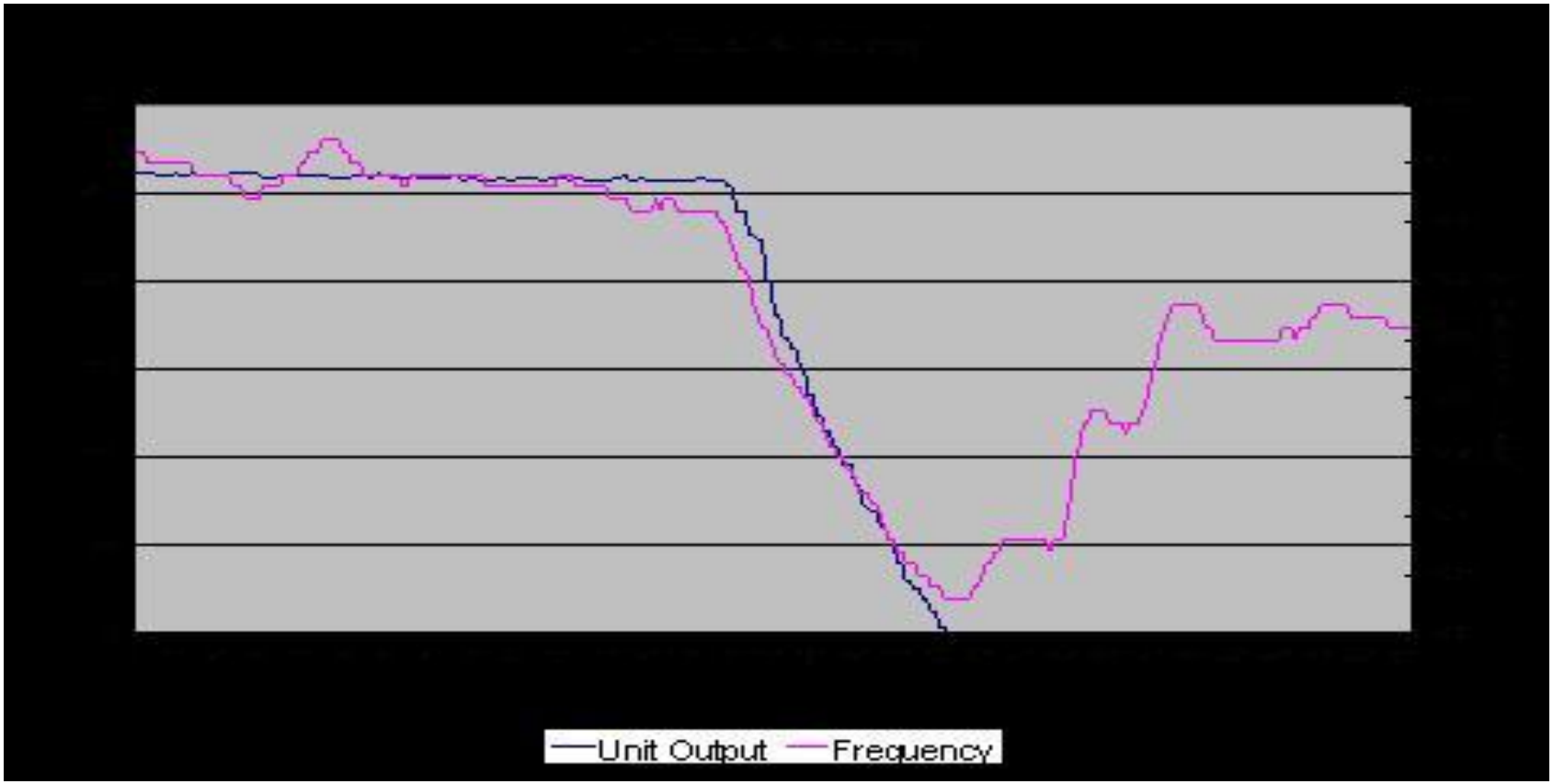
The MW Loss = 408.42 MW

Rate of Loss = 102.1 MW/s which is a Direct Trip

The Direct Trip Charge = 5000 * EXP(0.007 * MW Loss)
= 5000 * EXP(0.007 * 408.42)
= € 87, 215.14
= £ 68, 700 (approximately)

Trips – Fast Wind Down – Worked Example

Typical frequency dip associated with a Fast Wind Down.



Trips – Fast Wind Down – Worked Example

The Fast Wind Down charge is calculated as follows:

The MW Loss = 259.55 MW

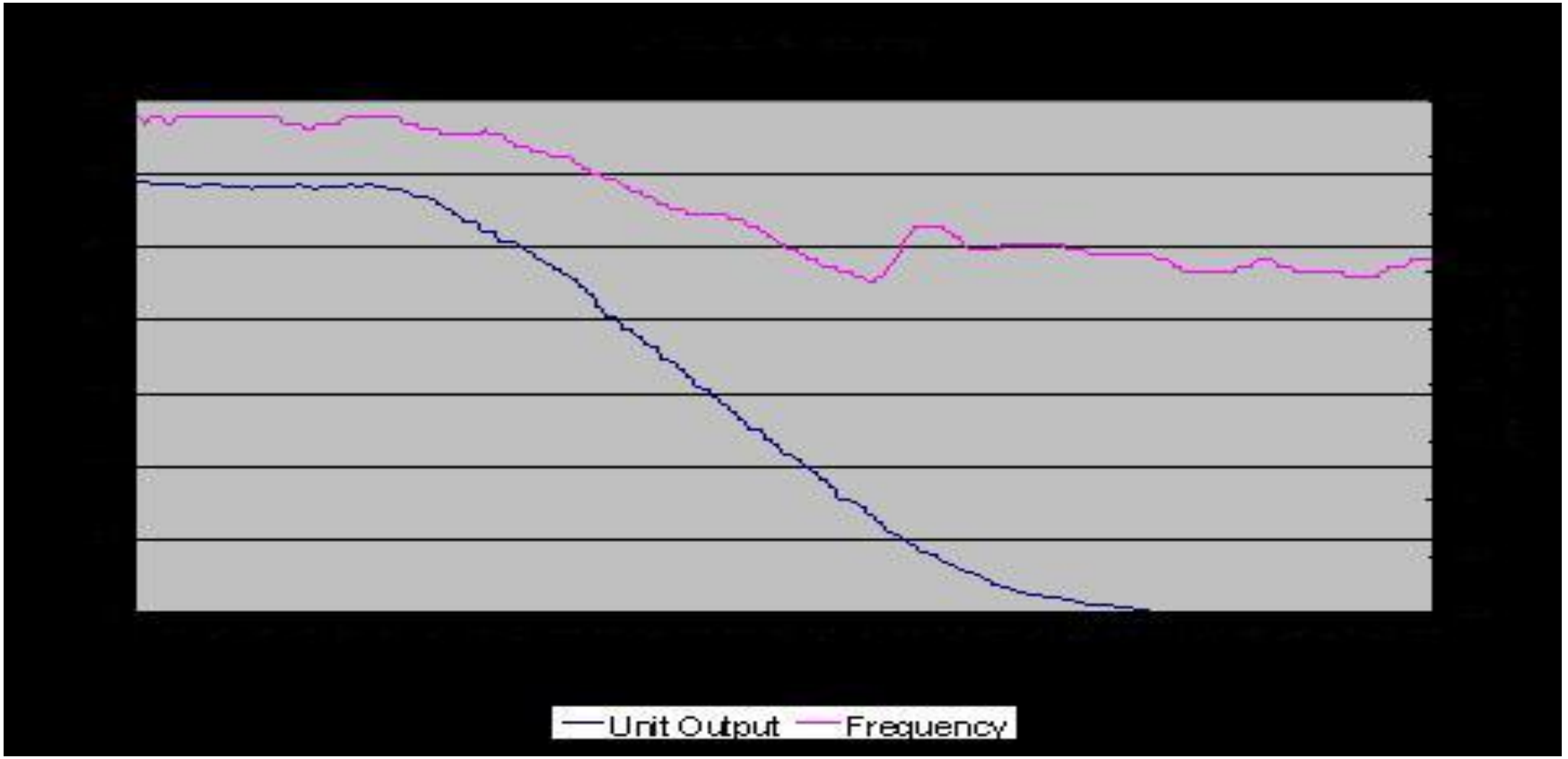
Rate of Loss = 3.415 MW/s which is a Fast Wind Down

The Fast Wind Down Charge = 4000 * EXP(0.006 * MW Loss)

= 4000 * EXP(0.006 * 259.55)
= € 18, 983.96
= £ 14, 950 (approximately)

Trips – Slow Wind Down – Worked Example

Typical frequency dip associated with a Slow Wind Down



Trips – Slow Wind Down – Worked Example

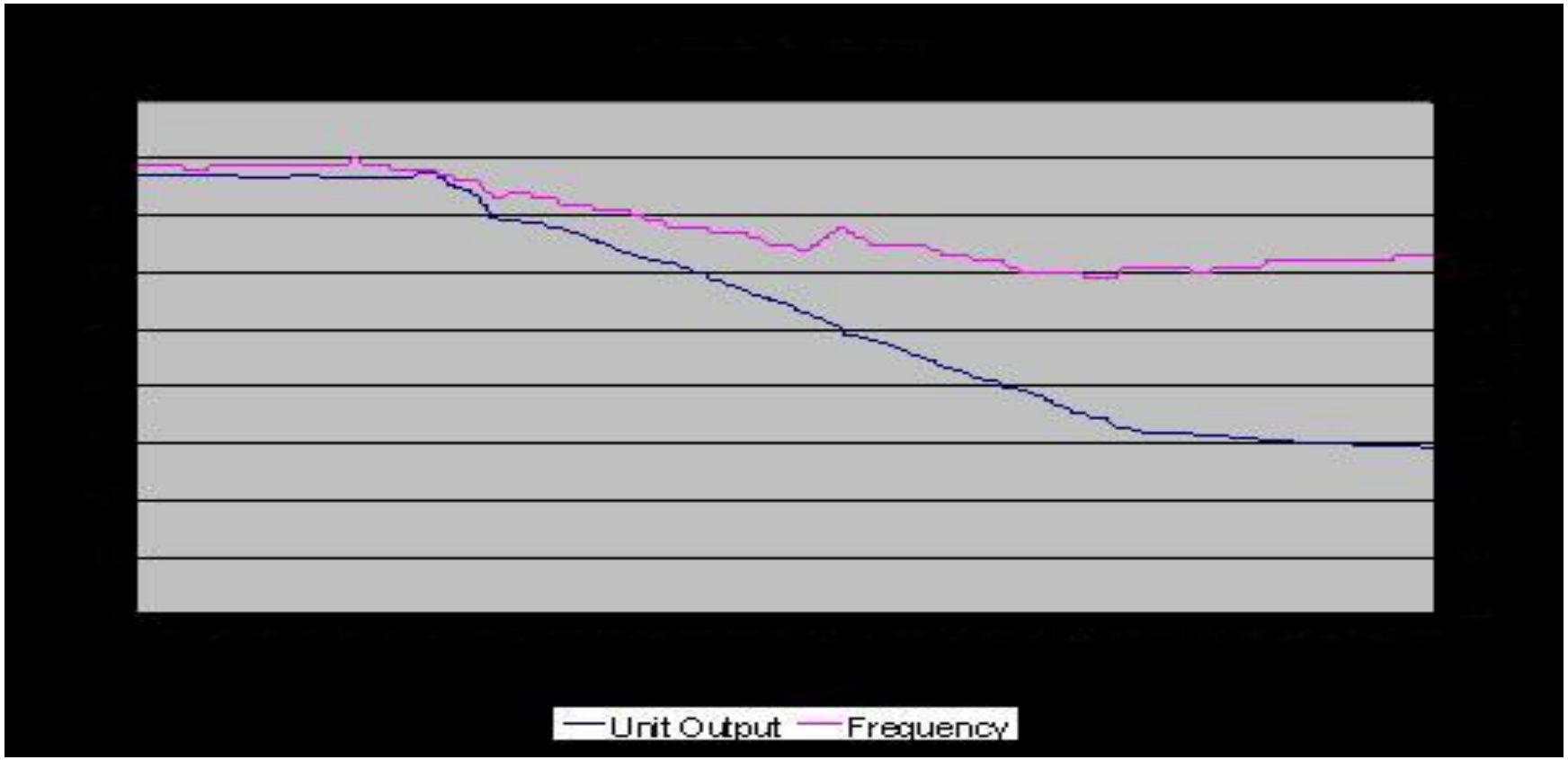
The Slow Wind Down charge is calculated as follows :

The MW Loss = 294.21 MW

Rate of Loss = 1.592 MW/s which is a Slow Wind Down

Slow Wind Down Charge = 3000 * EXP(0.005 * MW Loss)
= 3000 * EXP(0.005 * 294.21)
= € 13, 061.41
= £ 10,300 (approximately)

Trips - Partial Trip – Worked Example



Trips – Partial Trip – Worked Example

Partial Trip Charge example is calculated as follows:

The MW Loss = 241.13 MW

Rate of Loss = 1.048 MW/s which is a Slow Wind Down

Slow Wind Down Charge= 3000 * EXP(0.005 * MW Loss)

= 3000 * EXP(0.005 * 241.13)

= € 10, 016.79

= £ 7, 900 (approximately)

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Outline Proposals

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Potential New Ancillary Services

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Ancillary Services – Potential New Services

1. Warming Contracts and Maintenance of Heat State for Off load Plant
2. Combined Cycle Gas Turbines (CCGT) Multimode Operation
3. Pre-Emptive Response

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Generator Testing Charges

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Other System Charges - Generator Testing Charges (1)

- **<u>Existing SEM Testing Charge Design Features (No change proposed)</u>**

- TSC Testing tariffs is reviewed annually.
- A SEM testing charge applies to all units under test in accordance with the TSC.
- The generator unit goes under test in the SEM and supplies data in accordance with the TSC and Grid Codes.
- The generator unit is dispatched by the relevant TSO in a manner to facilitate the specific test.
- The charge is calculated by the SEM system in accordance with the TSC

Other System Charges - Generator Testing Charges (2)

Proposed TSO Commissioning Charge Design Features

- A commissioning tariff is set annually.
- The rates vary based on both unit size, an assessment of the risk of trip.
- Three major cost components are considered when calculating the TSO commissioning tariffs.

1. Reserve Constraint: Cost of providing additional operating reserve.
2. Additional Run Hours: Extra run hours of generator units run to cover the instability of a unit under test.
3. Trips & Fast Wind-downs: Cost associated with the tripping of units under test.

The TSO commissioning charge applies to new units being commissioned.

Other System Charges - Generator Testing Charges (3)

Proposed TSO Commissioning Charge Design Features

- Generator unit goes under test in the SEM and supplies data in accordance with the TSC and Grid Codes.
- Generator unit is dispatched by the relevant TSO to facilitate test.

1. Generator unit is charged a testing charge through the SEM.
2. Generator unit is charged a TSO commissioning charge by the TSO.

- The TSO commissioning charge is calculated by the relevant TSO once all testing phases are complete.
- The commissioning charge is calculated from meter readings, commissioning tariff based on unit size, system alert state and commissioning test

Harmonised Ancillary Services Other System Payments & System Charges Briefing

Other System Payments

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1st October 2008

Other System Payments – Alternative Fuel

- Issues relating to alternative fuel are being progressed separately in Ireland and Northern Ireland.
- Alternative fuel arrangements and the accompanying testing regime are not harmonised across jurisdictions at present.
- CER and NIAUR, through the JSG Sub-Committee on Security of Electricity and Gas Supply, will consider the common arrangements, procedures and recovery mechanism that may be required in the event of an emergency.
- This paper proposes costs which should be remunerated through the AS mechanism. The design is set out here in a way that may accommodate both developments.

Other System Payments – Alternative Fuel – Design (1)

- Compensation payment for alternative fuel follows from requirements within licenses and the Grid Codes.
- The relevant TSO schedules the tests for each eligible unit.
- The relevant TSO monitors each test to assess its success.
- No payment is made in the event of a failed test.
- Payment for a test is only made where a test of the use of alternative fuel is executed on instruction from the relevant TSO.
- In addition in Northern Ireland, payment is also made when a generator unit changes fuel in a circumstance where SONI instructs the use of alternative fuel (or would have been reasonably expected to dispatch the change. SONI judge the reasonableness of this circumstance.)

Other System Payments – Alternative Fuel – Design (2)

- A payment is made monthly for any month for which alternative fuel operation is instructed.
- The payment period is defined by the instructions issued by the relevant TSO. Start and finish times are based on the technical characteristics of individual units.
- The payment covers up to three phases: change to alternative fuel; operation using alternative fuel; change back from the alternative fuel.
- The payment is based on the incremental fuel and running costs incurred by the generator unit in using the alternative fuel.

Harmonised Ancillary Services Other System Payments & System Charges Briefing

Implementing Generator Performance Incentives

SONI/EirGrid

1st October 2008

Generator Performance Incentives - Principles

- Grid Code requirements are important and any proposed exceptions should be robustly challenged.
- All new users of the transmission system should be able to meet the requirements; some old units built before the Grid Code came into force may not be able to achieve Grid Code standards (but should maintain the standards they were built to).
- All exceptions to Grid Code standards should be encapsulated in RA approved derogations.
- An approved derogation relaxes a Grid Code requirement and reduces it to a new standard. Consequently, any charges for underperformance apply to the derogated standards rather than the base Grid Code values.
- Charges for Grid Code underperformance are separate from, and in addition to, any charges for non-delivery under an AS contract.

Generator Performance Incentives - Design

- Performance of units against standards are be observed by TSOs.
- If appropriate, TSOs may require a unit to demonstrate that it can meet a particular requirement.
- *Charges will be applied to generator units that fail to meet their obligations under the Grid Code.*
- The charges are proportionate to the costs that the underperformance imposes on the TSOs and, consequently, on other users of the transmission system.
- Charges are banded to reflect the severity of the deviation from the requirement in the Grid Code.
- Monies collected through these charges are used to reduce constraints

Generator Performance Incentives - Charges

Parameter	
Minimum Load (Min Generation)	Ramp Up Rate
Operating Reserve	Ramp Down Rate
Frequency Regulation	Min synch time hot
Fault Ride Through	Min synch time warm
Reactive Power lagging	Time to synchronise
Reactive Power Leading	Time from Synchronising to min load
Minimum Down Time	Time to deload from min load
Minimum Up Time	Max number of starts in 24hr period

Generator Performance Incentives – Design Example (1)

Proposed Late Synchronisation Design Features

- If a unit has not achieved synchronisation more than 5 minutes after the instructed time, then a late synchronisation charge applies.

- The late synchronisation charge is proportional to the availability of the unit (in MW) prevailing at the instructed synchronisation time.

- The late synchronisation charge increases linearly dependent on the length of delay in synchronising, up to a maximum of a one hour delay.If a unit does not achieve synchronisation within one hour of the instructed dispatch time, then the unit is deemed unavailable from the instructed dispatch time, with a deemed notice of 5 minutes.

Generator Performance Incentives – Design Example (2)

Proposed Late Synchronisation Design Features

•The unit is therefore liable for a Short Notice Declaration Charge as defined in Section 5.1.

•If a unit synchronises with the system more than 15 minutes earlier than instructed by the TSO, then an early synchronisation charge applies.

•The early synchronisation charge is proportional to the availability of the unit (in MW) prevailing at the instructed synchronisation time.

•The early synchronisation charge increases linearly dependent on how far in advance of the instructed time that synchronisation takes place.

Next Steps

- Consultation concludes 28th October 2008
- TSOs review comments received and submit final proposals to the SEM Committee for approval.
- SEM Committee publishes decision paper – December 2008.
- 2009 TSOs implement decisions.

Next Steps

THANK YOU

&

SAFE JOURNEY HOME