

TUoS Customer Workshop



31st May 2010

Conference Centre, EirGrid Offices



Agenda

10.30 – 11.00 Registration and Tea

11.00 – 11.05 Introduction and Welcome - Dermot Byrne

11.05 – 11.10 Workshop Agenda and Objectives - Sonya Twohig

11.10 – 11.20 Overview - Seán O Rourke

11.20 – 11.35 Statement of Charges-Tim Hurley

11.35 – 12.45 Demand Tariff Charges Philip Bourke /Seán O Rourke

12.45 – 1.30 Lunch

1.30 – 2.30 Generation Tariff Charges - Philip Bourke / Seán O Rourke

2.30 – 3.00 Invoice Types & Backup File - Seán O Rourke

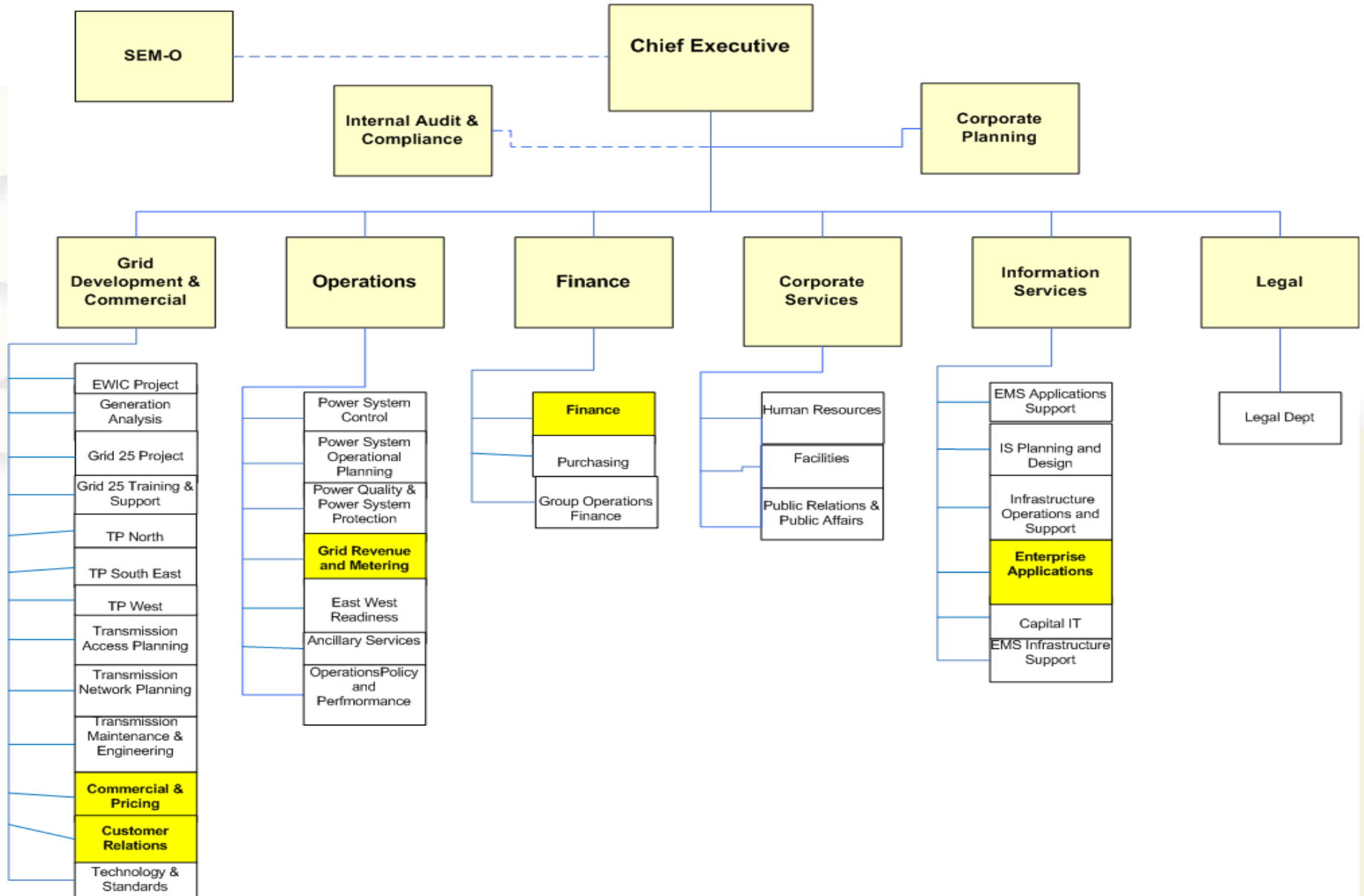
3.00 – 3.10 Tea/Coffee

3.10 – 3.20 Invoicing, Payments, Audit and Query Process - Kevin Boyle

3.20 – 3.30 Future Projects

3.30 – 4.00 Q&A Discussion

EIRGRID MANAGEMENT ORGANISATION CHART as of May 2010



TUoS Workshop Presenters

Sean O'Rourke - TUoS Team Lead



Philip Bourke - TUoS Business Analyst



Timothy Hurley – Commercial & Pricing



Kevin Boyle – Finance



Assisting:

Aoife Fogarty – TUoS Controller

Barry McGrath – TUoS Controller

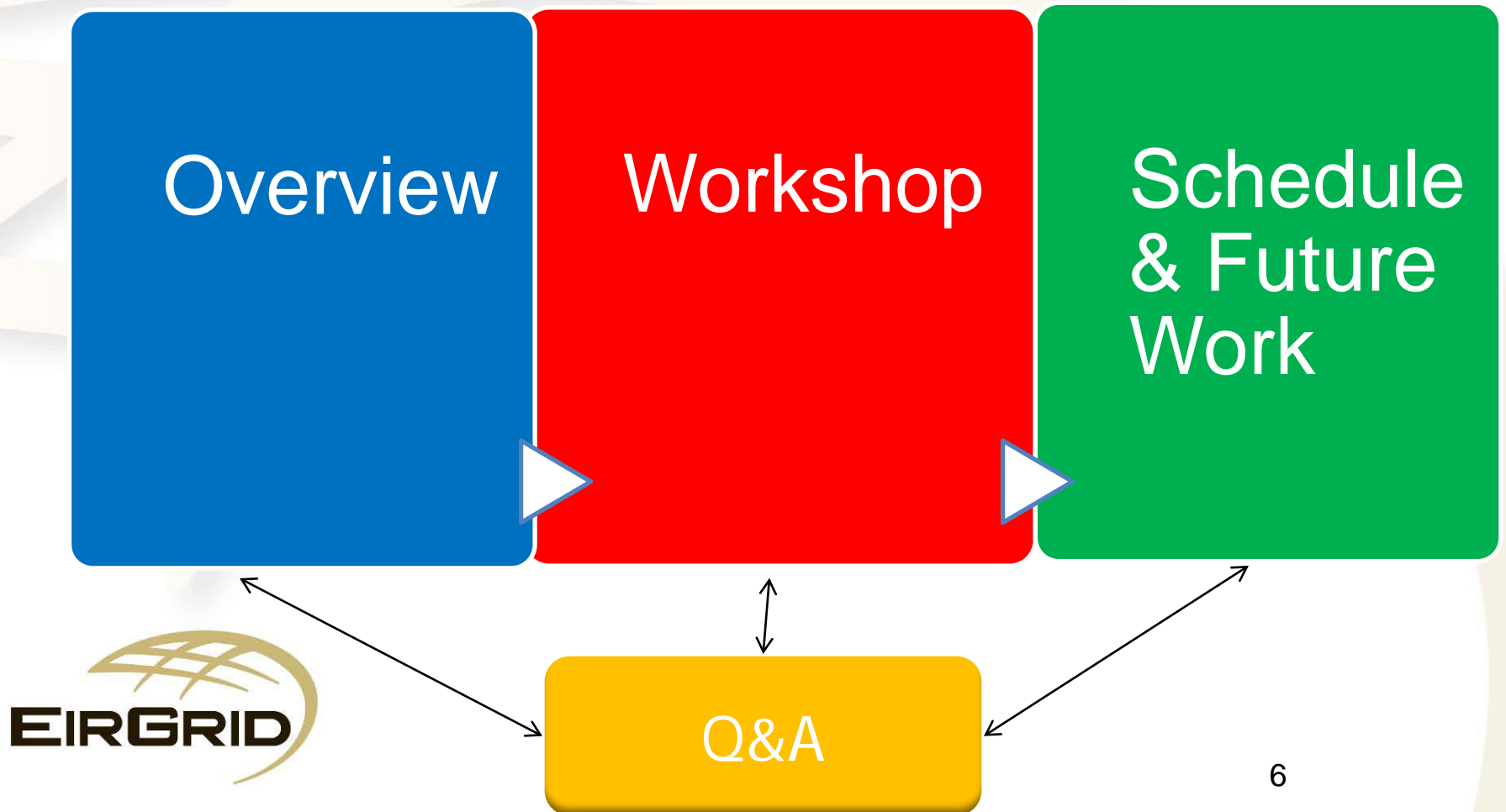
Clare Hennessy – Business Analyst



TUoS Workshop Objectives

- Introduction of TUoS Billing – the charges, the calculations, the process and the people
- Explain sample charges for all types of TUoS Customers e.g. Generation, Demand, Autoproducers
- Outline the billing calendar including the initial, rebilling and resettlement timelines
- Obtain feedback regarding the TUoS billing reports and areas of future development
- Provide an opportunity for TUoS customers to provide feedback

TUoS Workshop



Overview of TUoS Billing

Sean O' Rourke
TUoS Team Lead
Grid Revenue and Metering



Background to TUoS Billing

- First bills issued in 2000 with de-regulation
 - Billing system was MS Access database
- In 2003, billing system designed to manage
 - Account Maintenance; integration with RMDS
 - Formal reporting and sign-off
- Since 2007, there have been significant changes
 - New Reporting Tool (Business Objects)
 - Pre-billing validation of all meter and standing data
 - TUoS Business Process fully documented
 - Annual internal and external audits



TUoS Customers Evolution

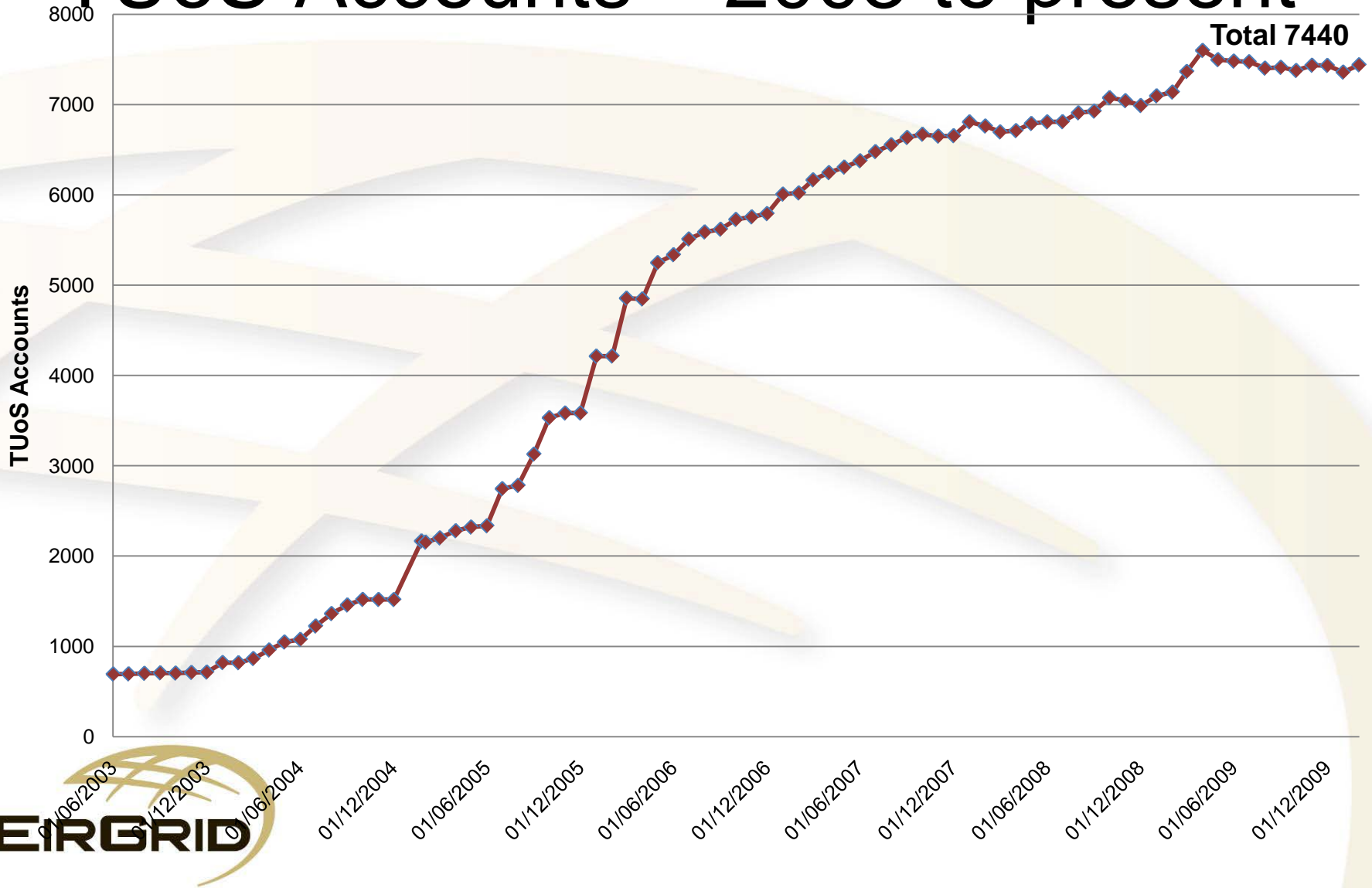
Demand customers have increased in:

- Number of accounts
- Switching of customers to other suppliers

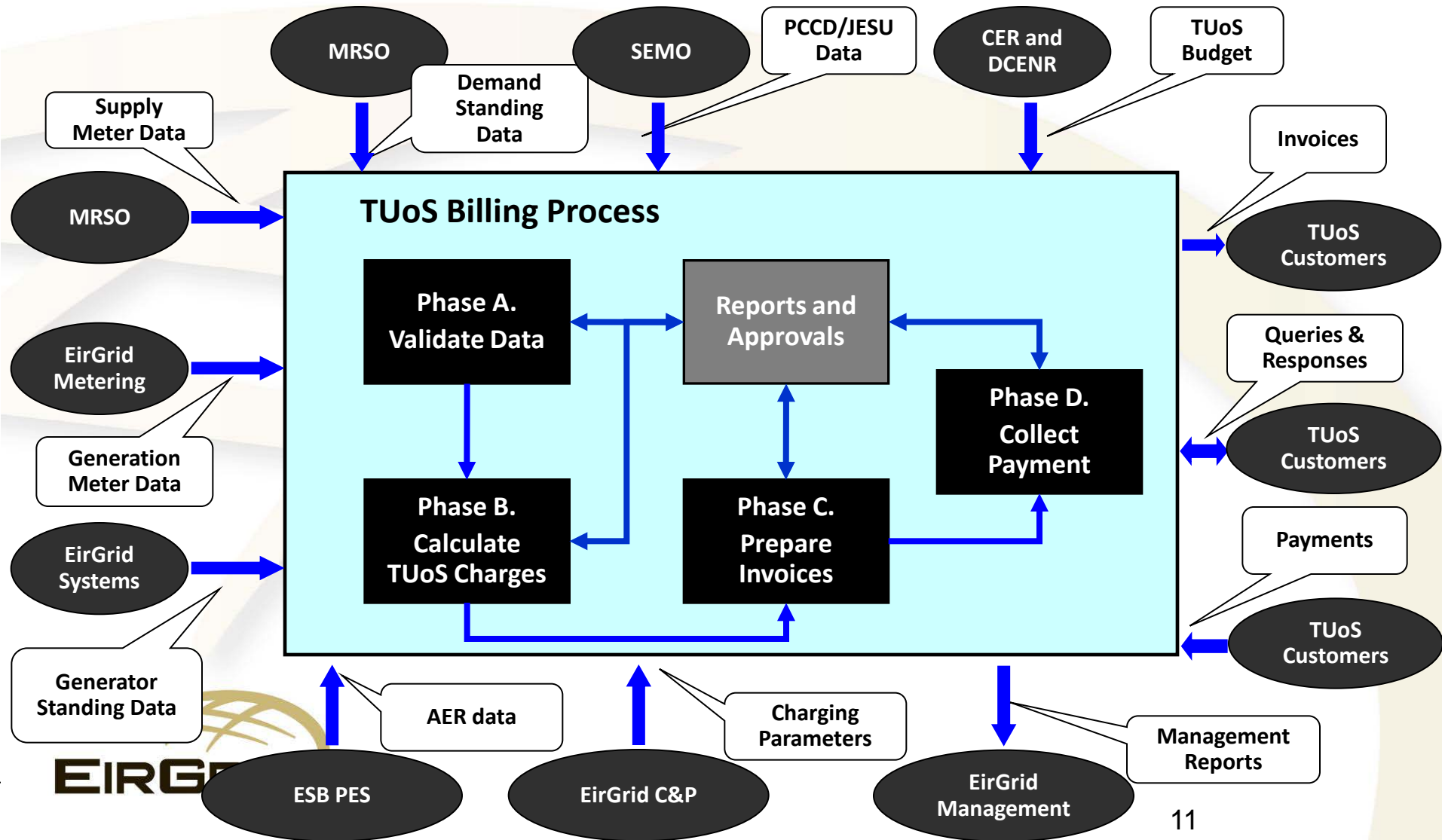
Generation account changes:

- Auto producers on Transmission and Distribution systems
- Generation on Distribution System (Wind farms)
- Non-firm charges is now a common feature

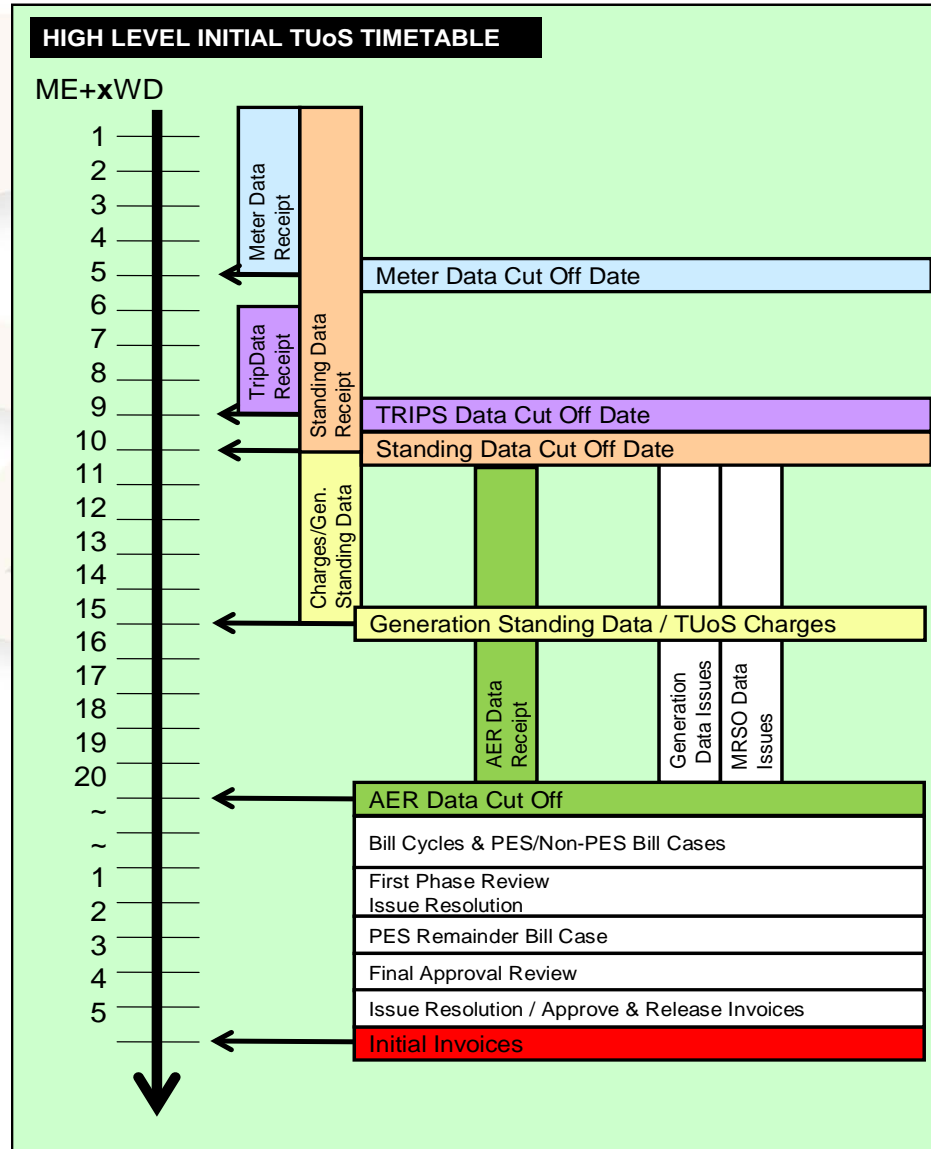
TUoS Accounts – 2003 to present



TUoS Billing Process – As Is



TUoS Billing Data Time-Line



TUoS Interactions with MRSO & RMDS

- Dependent on Retail Design and MRSO
 - QH and NQH Meter Data for demand sites
 - Standing data such as New Supplier, change of supplier, De-energisation.
- Participation at IGG
 - EirGrid raised two discussion requests since 2007
- Retail Market Releases
 - EirGrid is a participant as per suppliers

TUoS Initiatives

Improvements	Delivered	Measure
Completeness	<input type="checkbox"/> All accounts now billed <input type="checkbox"/> Detailed budget tracking <input type="checkbox"/> M+13 Resettlement	<input checked="" type="checkbox"/> 2-stage Management Review <input checked="" type="checkbox"/> Annual Audits <input checked="" type="checkbox"/> Full resettlement
Timing	<input type="checkbox"/> No invoice delays <input type="checkbox"/> No downtime of applications	<input checked="" type="checkbox"/> Tracking of all activities <input checked="" type="checkbox"/> On-Time KPI <input checked="" type="checkbox"/> Service levels with ESNB
Quality Control	<input type="checkbox"/> Detailed Variance Analysis <input type="checkbox"/> Breakdown to account level	<input checked="" type="checkbox"/> Tracking reports <input checked="" type="checkbox"/> Formal process with ESNB
Customer Service	<input type="checkbox"/> Query Management Process <input type="checkbox"/> Customer Notes with invoices	<input checked="" type="checkbox"/> Monitored weekly <input checked="" type="checkbox"/> New Management Reports



TUoS Quality Control – Sample Report

TPD03 Daily (D+4) QH Meter Data Statistics Report

Trading Date:	10/05/2010
Date Report Run	Tuesday, May 25, 2010
Report Run By:	Administrator

This report shows the daily metered D+4 QH Statistics.

Number of MPRNs Processed Successfully : 7186

Number of MPRNs with Estimated Reads : 43

Number of MPRNs with Actual Reads : 7143

Number of MPRNs which are active in EVE but received no Meter Data readings : 2

Number of MPRNs that have been received in Meter Data feed that have not yet been setup in EVE : 1

MPRNs which are active in EVE but received no Meter Data readings :

MPRN	Account Name
10000008684	
10000048578	

MPRNs that have been received in Meter Data feed that have not yet been setup in EVE :

MPRN
10305324642

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TUoS Statement of Charges

Timothy Hurley
Commercial and Pricing



TUoS Tariff Design

Definition of TUoS

Tariff Design Principles

Revenue Requirement

Tariff Categories and Calculation

Statement of Charges

What is TUoS?

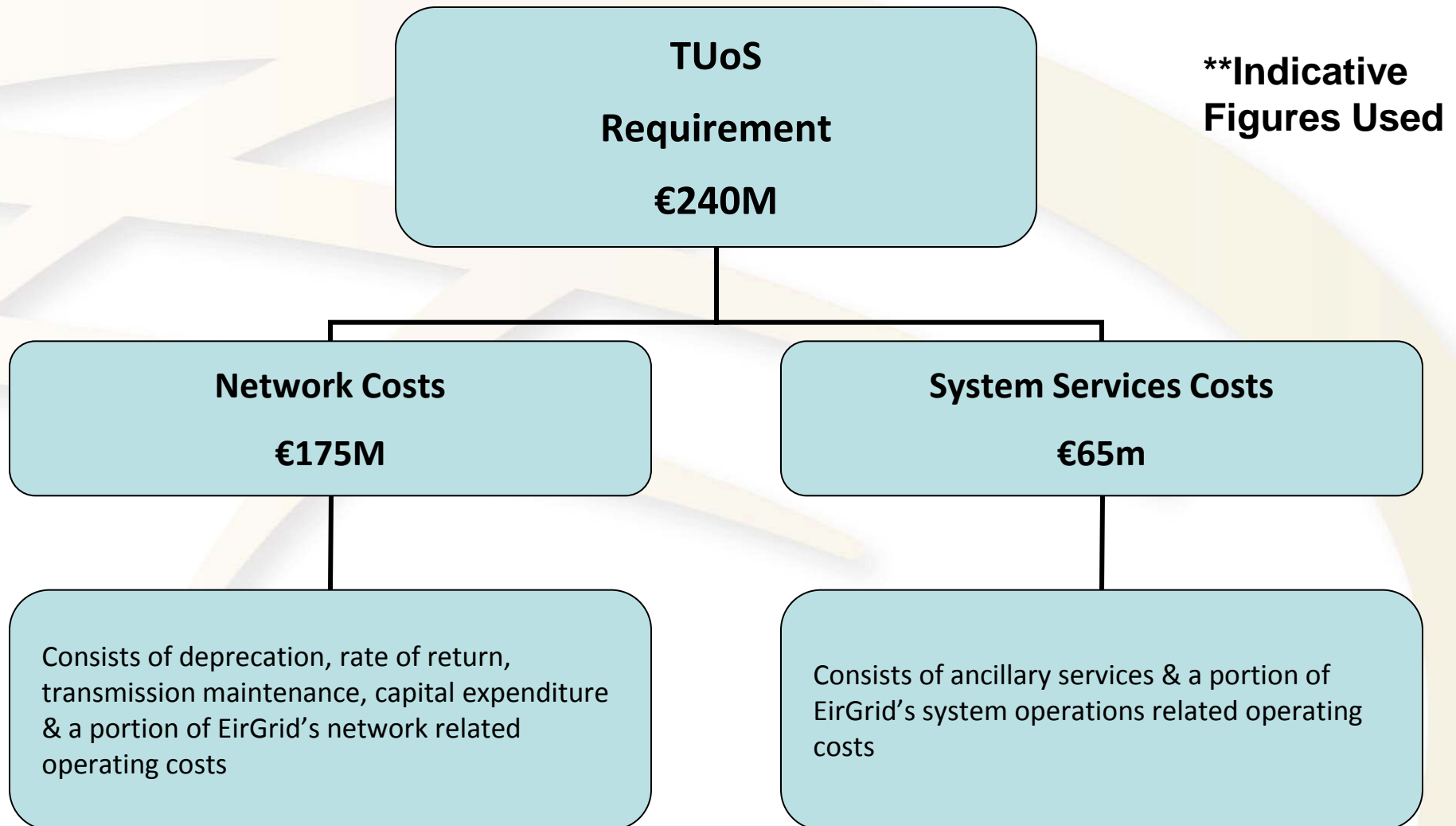
- Charges for provision of access to the transmission system to transfer energy
- Divided into two parts;
 - Network Charges: use of the transmission system for transportation of electricity (import & export)
 - System Services Charges: costs from operation & security of the transmission system

Tariff Design Principles

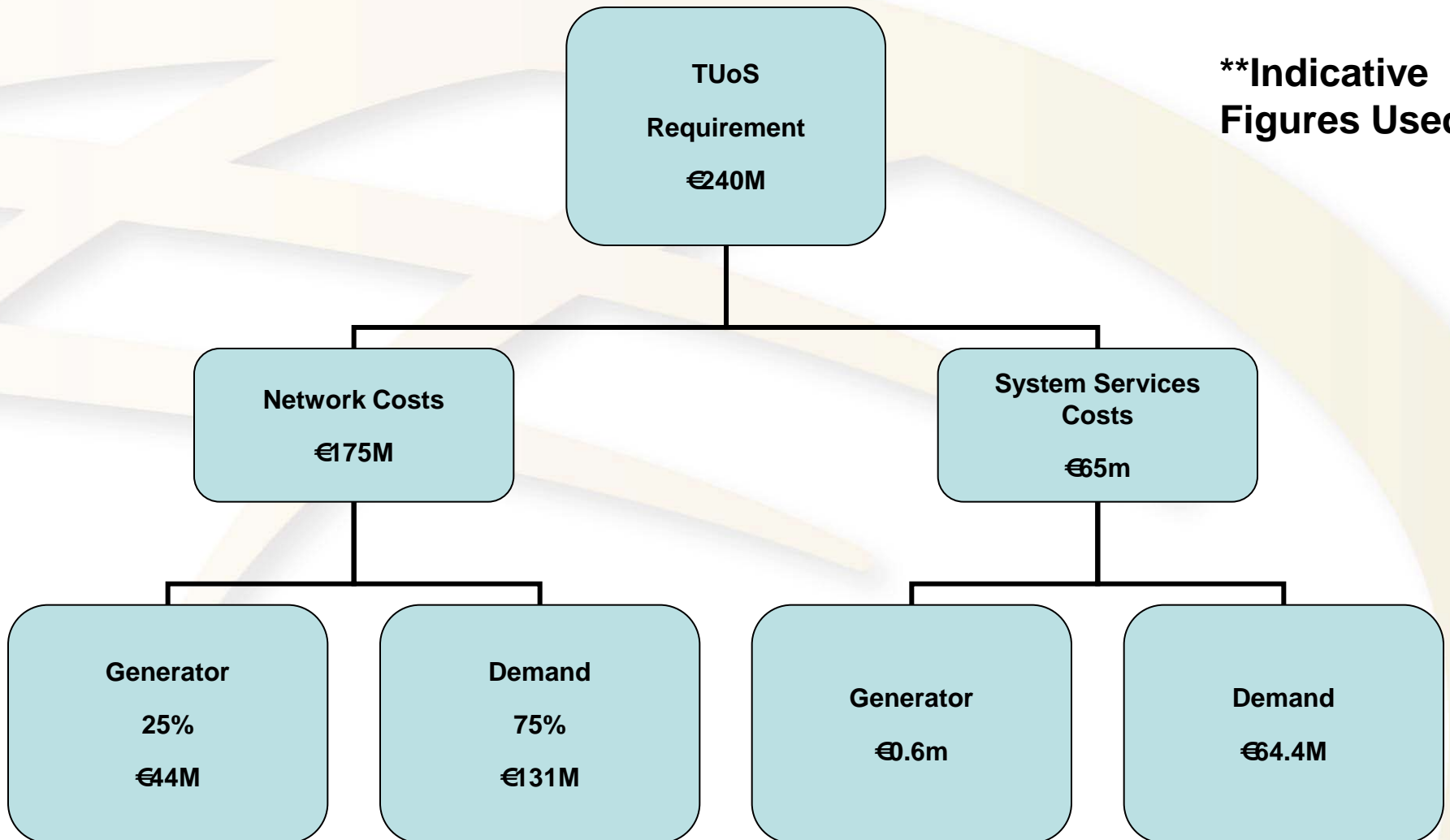
Transmission tariffs are designed to:

- Collect the TSO and TAO's allowed revenue
- Be cost reflective
- Promote efficient use of the transmission system
- Promote fairness and avoid undue discrimination
- Provide reasonable stability and predictability
- Be practical and reasonably simple to understand and administer

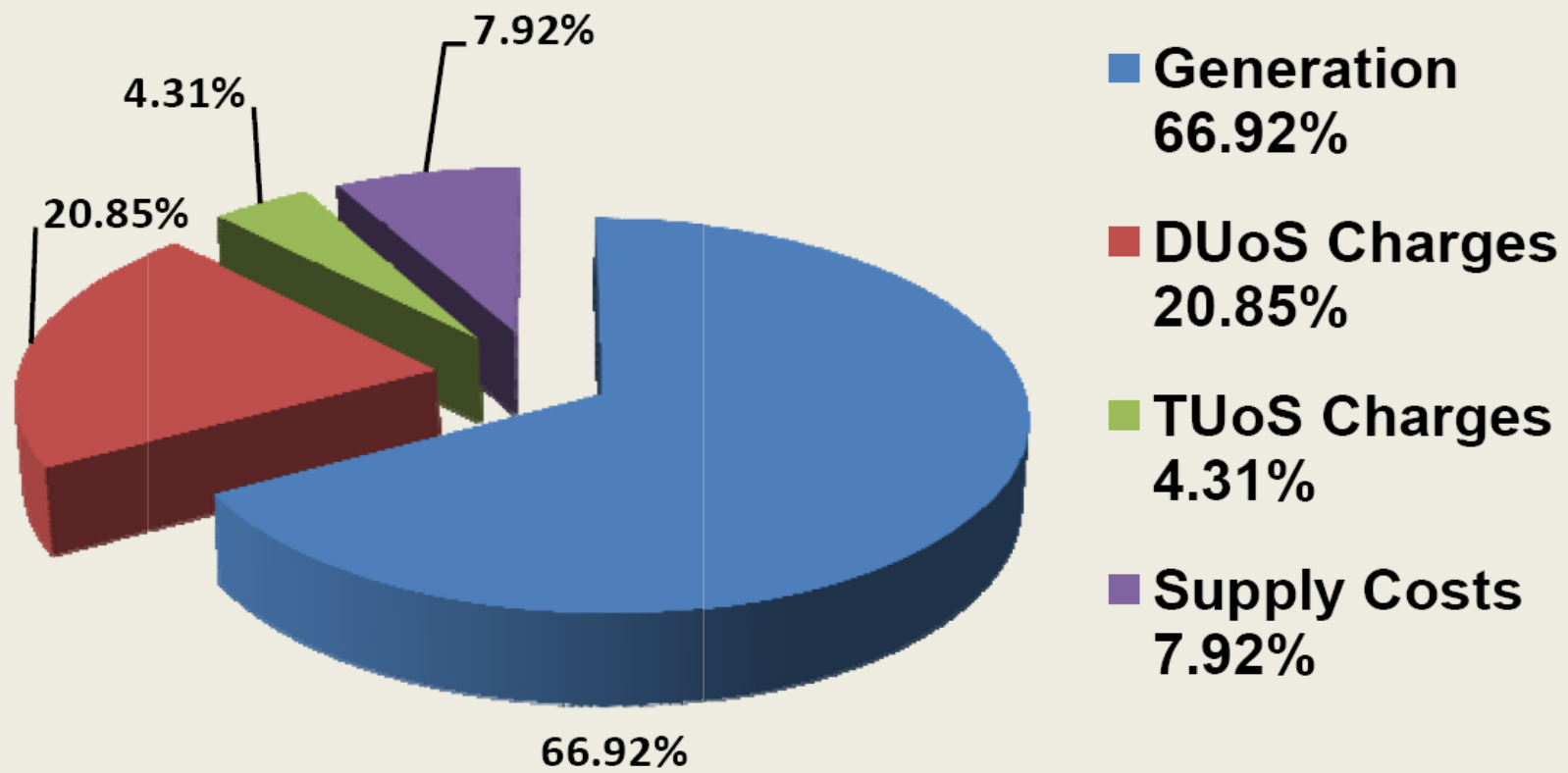
Transmission Revenue Requirement



Network/System Services Split



Domestic Retail Tariff Cost Components (2009)



Tariff Categories

Demand Transmission Service DTS

- DTS-T - connected directly to Tx System
- DTS-D1 - connected indirectly to Tx system via Dx system and MIC \geq 0.5MW
- DTS-D2 - connected indirectly to Tx system via Dx system and not served under DTS-T & DTS-D1 schedules

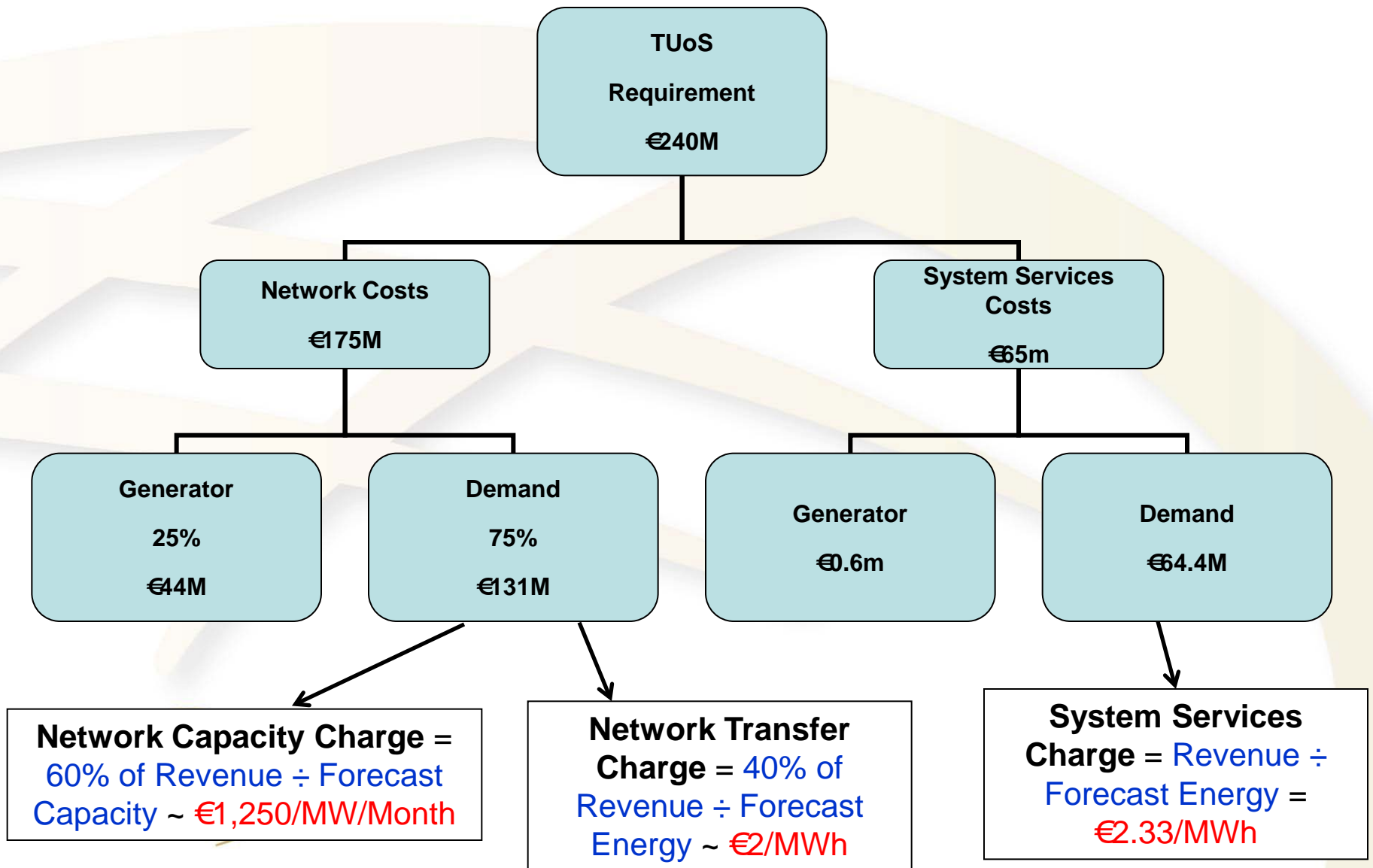
Generator Transmission Service GTS

- GTS-T - connected directly to Tx System
- GTS-D - connected indirectly to Tx system via Dx system

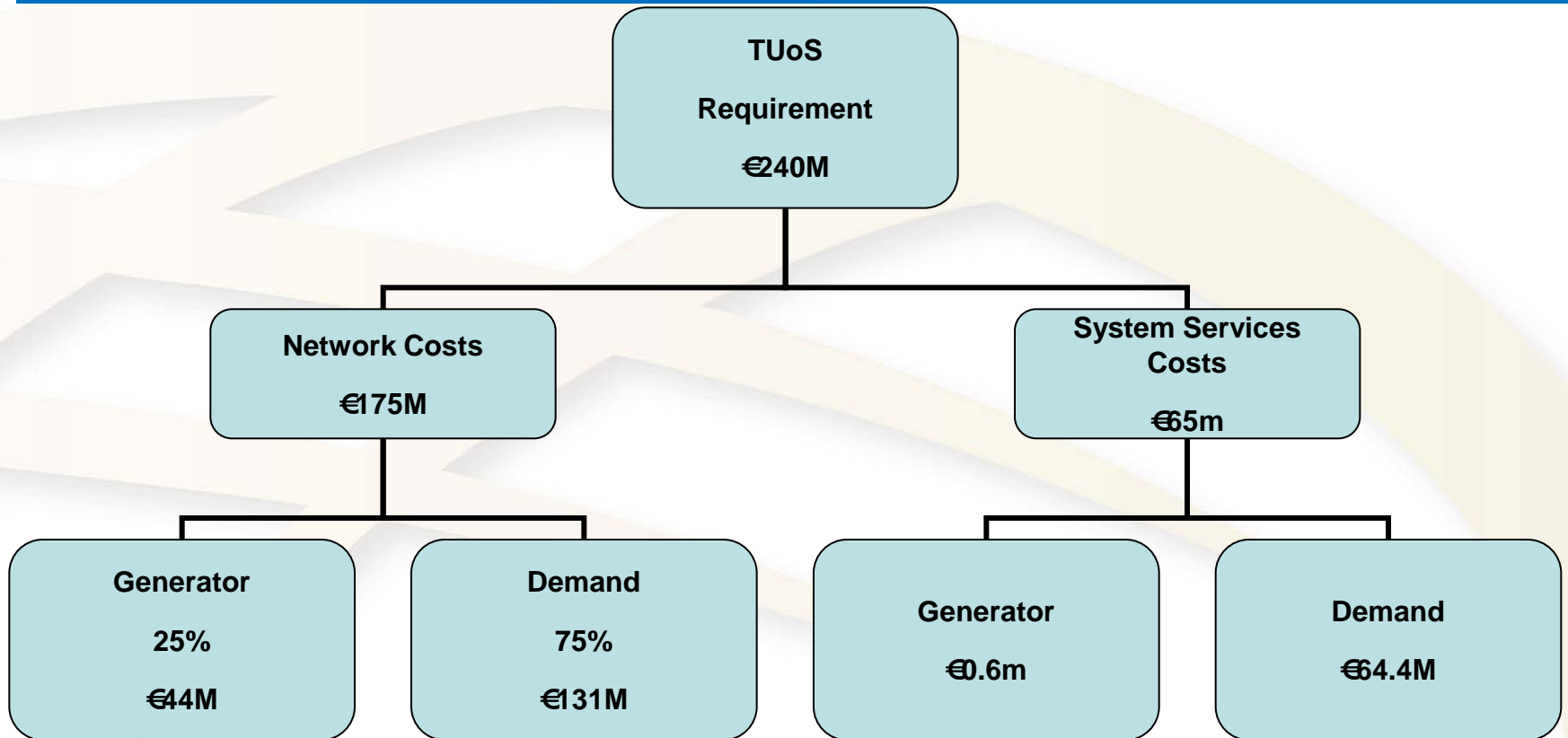
Autoproducer Transmission Service ATS

- ATS-T - connected directly to Tx System
- ATS-D - connected indirectly to Tx system via Dx system

Demand Tariff Calculation



Generator Tariff Calculation



Network Capacity Charge (Locational charge): Revenue allocated using the Reverse MW mile methodology (load flow model)

Statement of Charges (SoC)



Statement of Charges

Applicable from 1st February 2010 to 30th September 2010

Version: v1.1

Published: 01/02/2010

CER Approved Demand & Generation Tariffs

TARIFF SCHEDULE DTS-T

Demand Transmission Service Tariff - Transmission Connections

TARIFF SCHEDULE DTS-D1

Demand Transmission Service - Distribution Connections
with Maximum Import Capacity agreements

TARIFF SCHEDULE DTS-D2

Demand Transmission Service - Distribution Connections
not served under Tariff Schedule DTS-D1

TARIFF SCHEDULE GTS-T

Generation Transmission Service - Transmission Connections

TARIFF SCHEDULE GTS-D

Generation Transmission Service - Distribution Connection

TARIFF SCHEDULE ATS-T

Autoproducer Transmission Service - Transmission Connections

TARIFF SCHEDULE ATS-D

Autoproducer Transmission Service - Distribution Connections

TARIFF SCHEDULE DSMC

Demand Side Management Charge (formerly Capacity Margin Charge)

Recent Tariff Developments

- Introduction of SEM (Nov 2007)
 - Recovery of some costs through SEMO
- Realignment of Tariff Year (Nov 2007)
 - Calendar year to Oct – Sept
- Ancillary Services Harmonisation (Feb 2010)
 - SNDs and Trip Events now charged through AS Settlement
 - No change to billing date (Month end + 25 Working days)

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Demand TUoS Charges

Philip Bourke / Seán O' Rourke

TUoS Team

Grid Revenue and Metering



Tariff Introduction

- Hierarchy of Charging
- TUoS Tariff Category Types
- Charging Interval Period (CIP)
- Calculation Work Flow

TUoS Invoicing Hierarchy

Supplier/Customer – Invoiced for TUoS Charges
(For example Airtricity, BGas, ESB PES)

Account – Calculate Charges
(For example Intel, Dunnes, ESB Residual etc)

Meter – Interval Data
(12345678911,S07SU_123480A etc)

Tariff Categories

Demand Transmission Service DTS

- DTS-T - connected directly to Tx System
- DTS-D1 - connected indirectly to Tx system via Dx system and MIC \geq 0.5MW
- DTS-D2 - connected indirectly to Tx system via Dx system and not served under DTS-T & DTS-D1 schedules

Generator Transmission Service GTS

- GTS-T - connected directly to Tx System
- GTS-D - connected indirectly to Tx system via Dx system

Autoproducer Transmission Service ATS

- ATS-T - connected directly to Tx System
- ATS-D - connected indirectly to Tx system via Dx system

TUoS Charges by Tariff Category

Charge	DTS-D2	DTS-D1	DTS-T	GTS-T	GTS-D	ATS-T	ATS-D
Demand Capacity (MWh)	Y	N	N	N	N	N	N
Demand Capacity (Capacity)	N	Y	Y	N	N	Y	Y
Demand Unauthorised Usage	N	N	Y	N	N	Y	N
Demand Network Transfer	Y	Y	Y	N	N	Y	Y
Demand System Services	Y	Y	Y	N	N	Y	Y
Demand Side Management	Y	Y	Y	N	N	Y	Y
Generator Capacity – Firm	N	N	N	Y	Y	Y	Y
Generation Capacity – Non-Firm	N	N	N	Y	Y	Y	Y

Charge Interval Period (CIP)

- Meter Reading Period = 15 or 30 minutes
- Settlement Period (Trading Period) = 30 minutes
- Charging Interval Period (CIP) = One or more complete days within a Charging Period
- Charging Period = Complete Calendar Month*

* 3 Exceptions ; Mid Month Change of Supplier; New Account and De-energisation/Re-energisation.

CIP Example

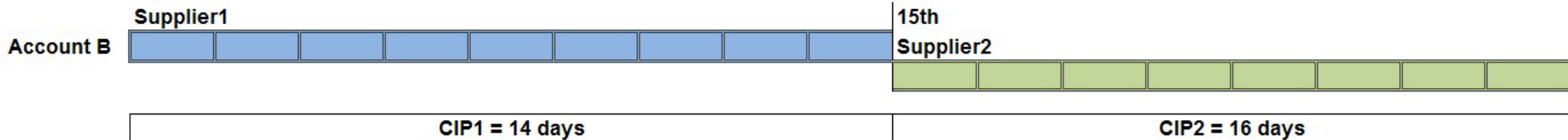
$$\text{Number of Days in CIP} = [\text{CIP_END} - \text{CIP_START}] + 1$$

CIPs for Account "A" where there are no changes in a month

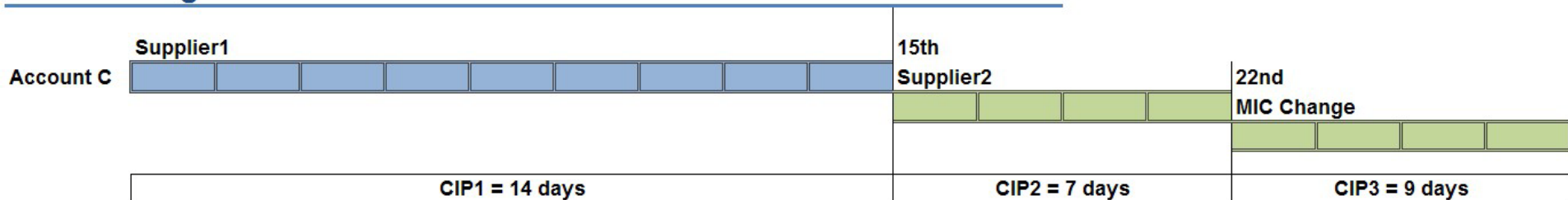
Charging Period (Month) = 30 days



CIPs for Account "B" where there is a CoS on the 15th of the month and no other changes



CIPs for Account "C" where there is a CoS on the 15th of the month and a change of MIC on the 22nd of the month



Summary Invoice



Invoice Date:

07/05/2010

Bill Date

Invoice Number:

TUOS

Eirgrid plc VAT Reg. No:

IE 635 8522H

Transmission Services Invoice

Supplier A
1 Main St.
Dublin 1
Ireland

Please remit payment to:

EirGrid Plc

The Oval

160 Shelbourne Road, Ballsbridge

Dublin 4, Ireland

Attention:

Finance Department

Phone + 353 1 237 0000

Fax + 353 1 237 0040

Email:

Invoice Months

Attention: **J Bloggs**

M+13 Resettlement

	From	To	Total before VAT	VAT Rate	VAT	Total
Generation Transmission Service (GTS)	01-Feb-2009	28-Feb-2009	(€2,144,333.58)	21.0%	(€450,309.98)	(€2,594,643.56)
Demand Transmission Service (DTS)	01-Feb-2009	28-Feb-2009	(€114,081.31)	21.0%	(€23,957.06)	(€138,038.37)
Demand Transmission Service (DTS)	01-Feb-2009	28-Feb-2009	€114,081.31	21.0%	€23,957.06	€138,038.37
Generation Transmission Service (GTS)	01-Feb-2009	28-Feb-2009	€2,144,333.58	21.0%	€450,309.98	€2,594,643.56

Current Month

	From	To	Total before VAT	VAT Rate	VAT	Total
Demand Transmission Service (DTS)	01-Mar-2010	31-Mar-2010	€192,678.77	21.0%	€40,462.52	€233,141.29
Generation Transmission Service (GTS)	01-Mar-2010	31-Mar-2010	€2,078,283.68	21.0%	€436,439.51	€2,514,723.19

37

Total Payment Due

€2,270,962.45

€476,902.03

€2,747,864.48

Detail Invoice



Private and Confidential

M+13 Resettlement Invoice

Transmission Charging Account Detail

User Name

Invoice Number TUOS8403

Charging Period 01-Nov-2008 To 30-Nov-2008

Invoice Type Rebill

Account Description DTS-D1 Account

TSO Account Number T200301401

MPRN(s) 12345678910

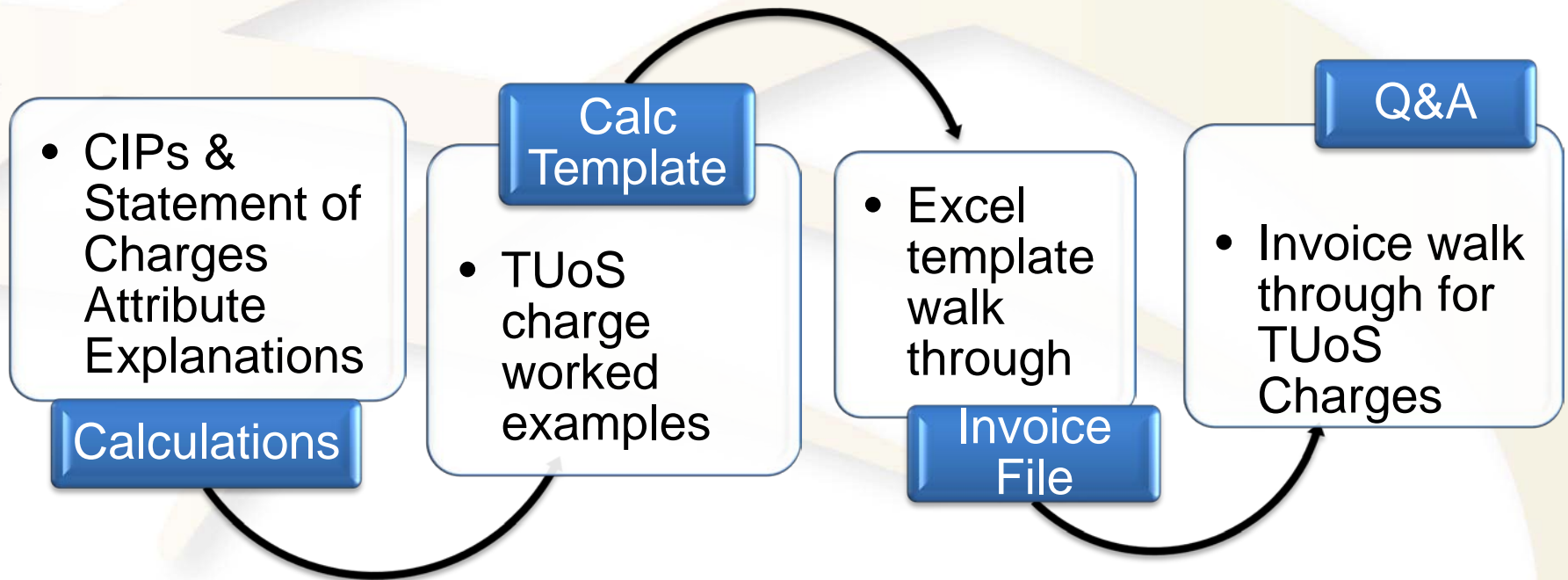
Account Type DTS-D1

Voltage MV

Charging Interval 17-Nov-2008 To 30-Nov-2008

Tarriff Type DTS-D1

TUoS Charges – Work Flow



DTS Tariffs

Demand Transmission Service DTS

- DTS-T - connected directly to Tx System
- DTS-D1 - connected indirectly to Tx system via Dx system and MIC ≥ 0.5 MW
- DTS-D2 - connected indirectly to Tx system via Dx system and not served under DTS-T & DTS-D1 schedules

TUoS Charges by DTS Tariff Category

Charge	DTS-D2	DTS-D1	DTS-T	GTS-T	GTS-D	ATS-T	ATS-D
Demand Capacity (MWh)	Y	N	N	N	N	N	N
Demand Capacity (Capacity)	N	Y	Y	N	N	Y	Y
Demand Unauthorised Usage	N	N	Y	N	N	Y	N
Demand Network Transfer	Y	Y	Y	N	N	Y	Y
Demand System Services	Y	Y	Y	N	N	Y	Y
Demand Side Management	Y	Y	Y	N	N	Y	Y
Generator Capacity – Firm	N	N	N	Y	Y	Y	Y
Generation Capacity – Non-Firm	N	N	N	Y	Y	Y	Y

Demand Network Capacity Charge (DNCC) MWh

DNCC (MWh) = €4.3337/MWh for all Metered Consumption Energy transferred during Day Hours in the Charging Period

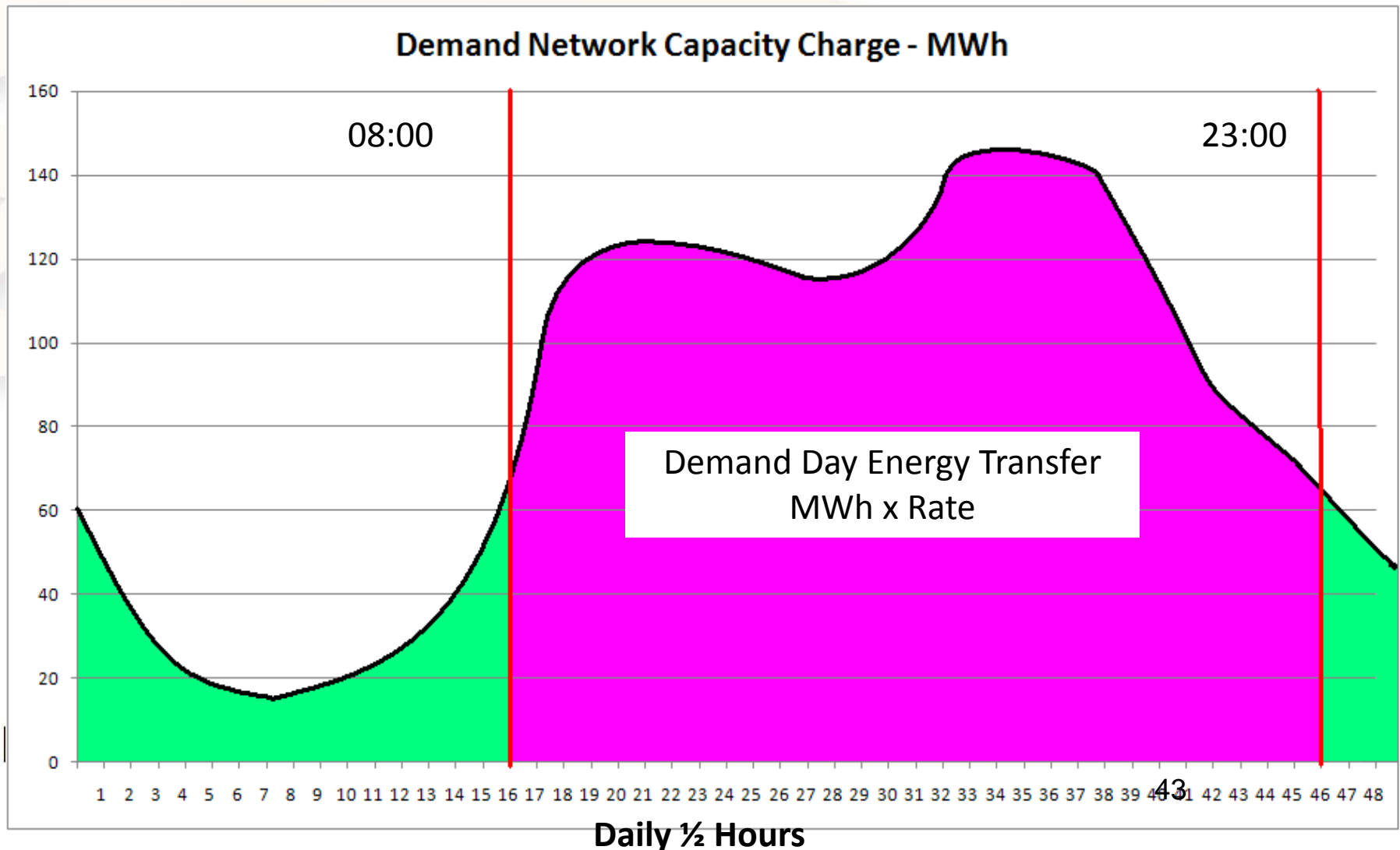
Metered Consumption Energy = 30 minute interval in MWh, adjusted for Distribution loss Adjustment Factors

Day Hours = 08:00 to 23:00 hours GMT

Winter months = 08:00 - 23:00

Summer months = 07:00 – 22:00

DNCC (MWh) – Night/Day Split



DNCC Calculations

$$\text{DNCC_MWh}_{a,u,m} = \sum_{p \in \text{UM}} \text{DNCC_MWh}_{a,p}$$

where:

- $\text{DNCC_MWh}_{a,p} = \text{DNNCR}_m \times \text{DDMWh}_{a,p}$
- $\text{DNNCR} = \text{DNCC rate}$
- $\text{DDMWh}_{a,p}$ (Demand Day Energy Transfer) = $\sum_{h \in P, h \in D} \text{MCE}_{a,h}$
- $\text{MCE}_{a,h} = \text{MCEU}_{a,h} \times \text{DLAF}_{a,h}$

MCEU = Unadjusted MWh (1/2 hr) supplied directly from MRSO.
Missing readings are substituted with a “0”.

DLAF = Distribution Loss Adjustment Factor for an account related to the DLAF Group applicable.

Worked Examples

Please go to Page 2
Example – DTS-D2 DNCC



DNCC (MWh) Example – Page 2

Total Demand Energy Transfer: $MCE_{a,h} = MCEU_{a,h} \times DLAF_{a,h}$

**A) $MCE(01/01/2010 \ 08:00) = 0.003312 \text{ MWh} \times 1.043$
 $= 0.003454 \text{ MWh}$**

B) Sum of DDMWh for CIP = 2.746010 MWh

C) $DNCC_MWh_{a,p} = 4.3337 \times 2.746010 = \text{€}11.90$

$DNCC_MWh_{a,u,m} = \sum_{p \in UM} DNCC_MWh_{a,p} = \text{€}11.90$

DNCC (MWh)

MPRN(s)	12345678910	Account Type DTS-D2
		Voltage MV
Grand Total Before VAT	€32.60	
VAT	€6.85	
Total For Charging Interval Period	€39.45	
Charging Interval 01-Jan-2010 To 31-Jan-2010		Tarrieff Type DTS-D2

CHARGING PARAMETERS

Demand Day Energy Transfer *	2.746010 MWh
Demand Night Energy Transfer *	1.817336 MWh
Demand Total Energy Transfer *	4.563346 MWh
Highest Metered Demand *	0.000000 MW
Maximum Import Capacity	0.095000 MW
Monthly Charge Proration Demand	1.000000

DDMWh →

RATES

Demand Network Capacity Charge Rate	4.3337 Euro/MW
Demand Network Transfer Charge Rate	1.9959 Euro/MWh
Demand Side Management Charge Rate	0.3563 Euro/MWh
Demand System Services Charge Rate	2.330 Euro/MWh
VAT Rate	0.210

DNCCR →

CHARGES FOR ACCOUNT IN CHARGING INTERVAL

(a) Demand Network Capacity Charge	€11.90 Euro
(b) Demand Network Transfer Charge	€9.10 Euro
(c) Demand System Services Charge	€10.63 Euro
(d) Demand Side Management Charge	€0.97 Euro
VAT Charge	€6.85 Euro

DNCC_MWh →

Subtotal Before VAT	€32.60
VAT	€6.85
Total For Charging Interval Period	€39.45

Demand Network Capacity Charge (DNCC) Capacity

DNCC (Capacity): €1254.9800/MW for each MW of Charging Capacity in the Charging Period

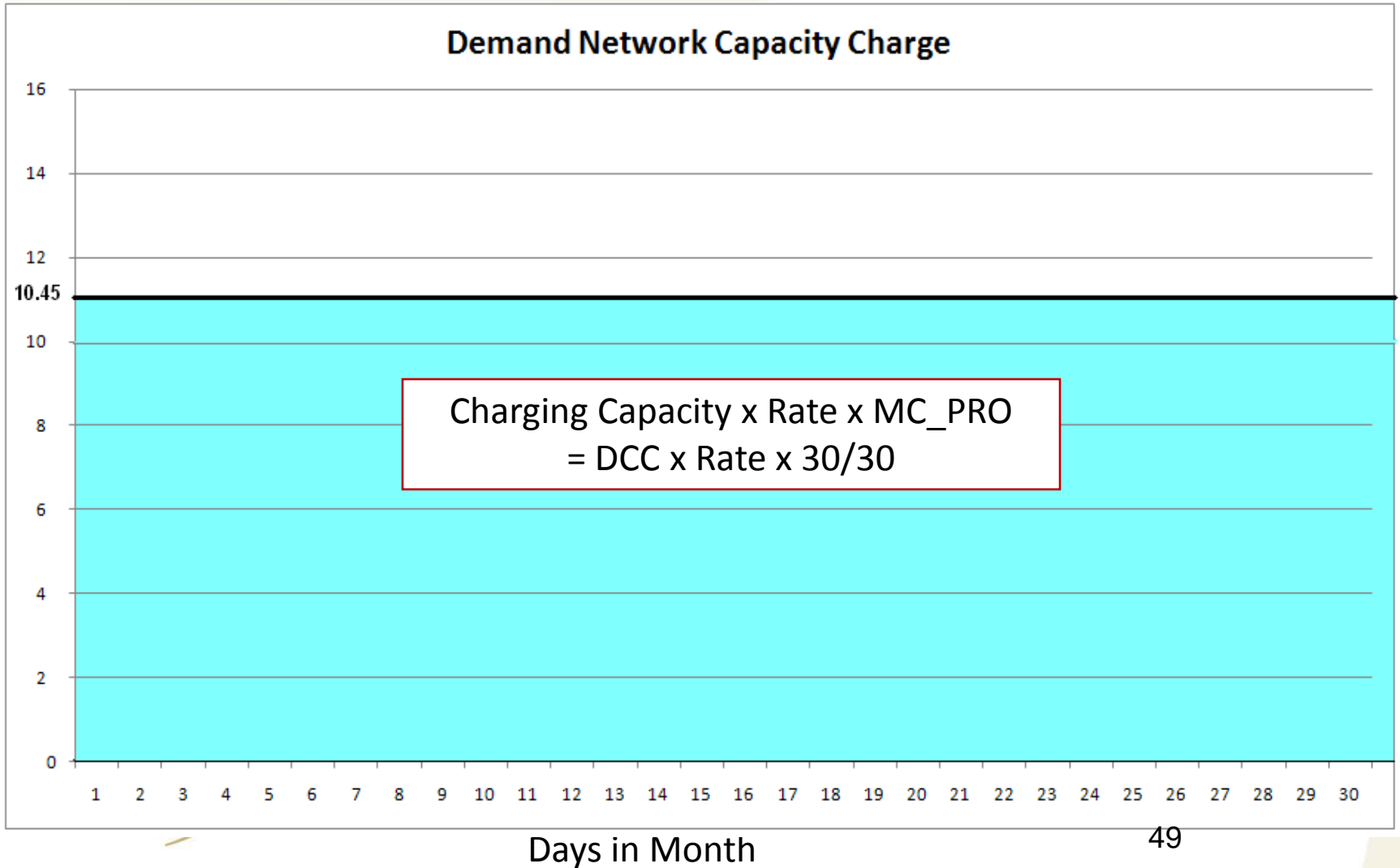
Where **Charging Capacity** is the lesser of:

- the Customer's Maximum Import Capacity, or
- the greater of the Minimum Charging Capacity and the Highest Metered Consumption Demand of the Customer in the Charging Period

Where the **Minimum Charging Capacity** is the greater of:

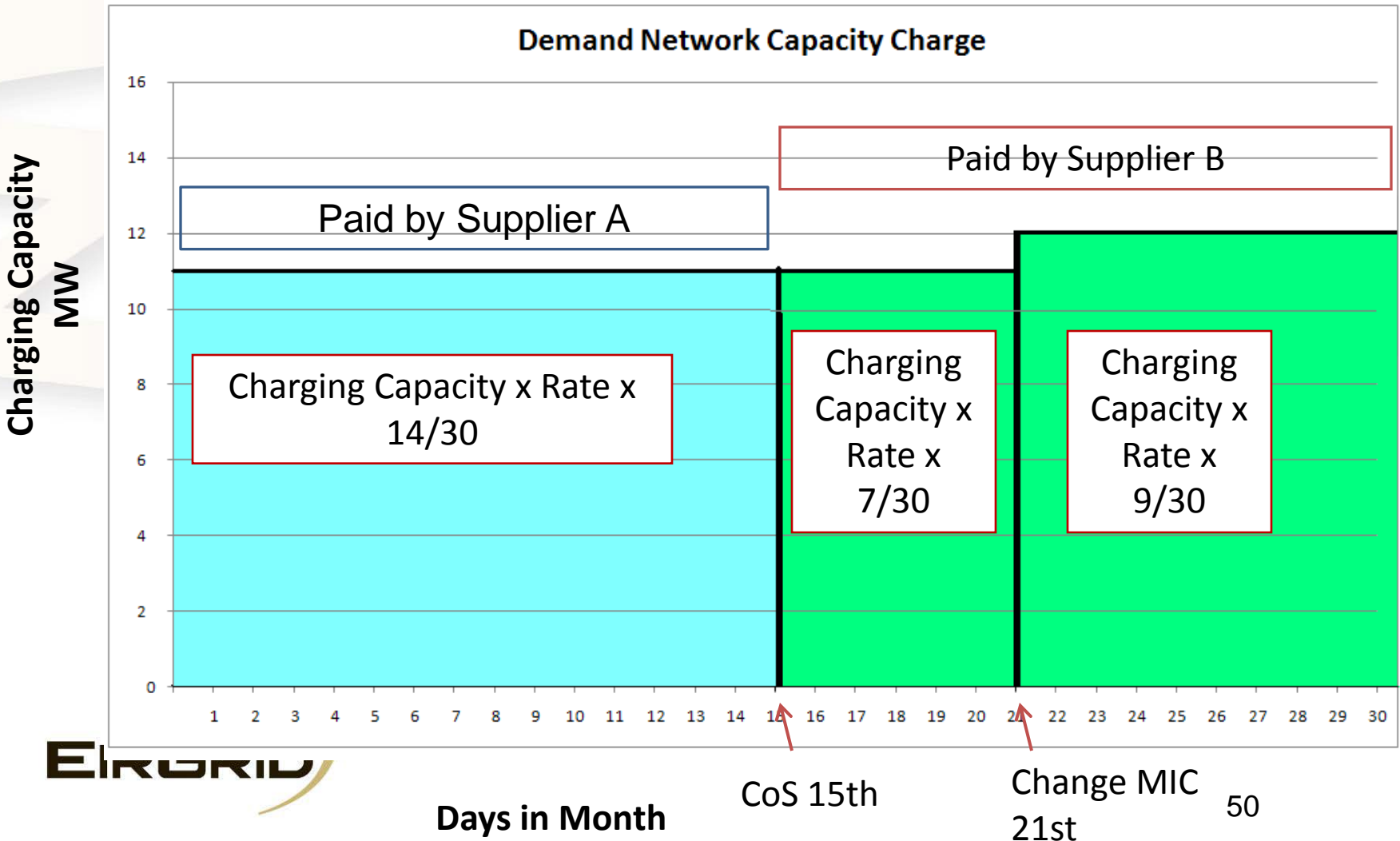
- 80% of the Customer's Maximum Import Capacity, or
- the Customer's Maximum Import Capacity less 4 MW

DNCC (Capacity) – One CIP



DNCC (Capacity) – Multiple CIPs

Demand Network Capacity Charge



Worked Example

Refer to Handout Example
DTS-T DNCC Capacity - Page 3



DNCC Capacity Calculation

Demand Network Capacity Charge: €1254.9800/MW for each MW of Charging Capacity in the Charging Period

Where Charging Capacity is the lesser of:

- the Customer's Maximum Import Capacity, or
- the greater of the Minimum Charging Capacity and the highest Metered Consumption Demand of the Customer in the Charging Period

Where the Minimum Charging Capacity is the greater of:

- 80% of the Customer's Maximum Import Capacity, or
- the Customer's Maximum Import Capacity less 4 MW

Minimum Charging Capacity

Example: DTS-T account, 11MVA = 10.45 MW
(11MVA*0.95)

$$\text{MINCAP}_{a,p} = \max [0.80 \times \text{MICA}_{a,p}, \text{MICA}_{a,p} - 4]$$

– MICA = MIC Adjusted to MW = 11*0.95 = 10.45 MW

where

$$\text{MINCAP} = \max [10.45 * 0.8, 10.45 - 4]$$

$$\text{MINCAP} = \max [8.36 , 6.45] = 8.36 \text{ MW}$$



DNCC (Capacity)

Demand Network Capacity Charge: €1254.9800/MW for each MW of Charging Capacity in the Charging Period.

Where Charging Capacity is the lesser of:

- the Customer's Maximum Import Capacity, or
- the greater of the Minimum Charging Capacity and the highest Metered Consumption Demand of the Customer in the Charging Period

Where the Minimum Charging Capacity is the greater of:

- 80% of the Customer's Maximum Import Capacity, or
- the Customer's Maximum Import Capacity less 4 MW

Charging Capacity

$$\mathbf{DCC_{a,p} = \min [MICA_{a,p} \times MAXDLAF_{a,p} , \max(MINCAP_{a,p} , MCDMAX_{a,p})]}$$

where

MICA = MIC Adjusted = 10.45 MW

MAXDLAF = Maximum DLAF = 1

MINCAP = Minimum Charging Capacity = 8.36 MW

MCDMAX = Highest Metered Demand - Max ½ hr reading in
MW = 11.663 MWh x 2 = 23.326

$$\mathbf{DCC = \min[10.45 \times 1 , \max(8.36 , 23.326)]}$$

$$\mathbf{DCC = \min[10.45 , 23.326], DCC = 10.45}$$



Demand Network Capacity Charge (Capacity)

c) (a) Demand Network Capacity Charge:
€1254.9800/MW for each *MW of Charging Capacity* in the Charging Period.

Where Charging Capacity is the lesser of:

- i) the *Customer's Maximum Import Capacity*, or
- ii) the greater of the Minimum Charging Capacity and the highest *Metered Consumption Demand of the Customer in the Charging Period*

Where the Minimum Charging Capacity is the greater of:

- i) 80% of the *Customer's Maximum Import Capacity*, or
- ii) the *Customer's Maximum Import Capacity less 4 MW*

Demand Network Capacity Charge

- **C) $DNCC_{a,p} = DCC_{a,p} \times DNCCR_m \times MC_PRO_p$**
 - $DCC = 10.45\text{MW}$
 - $DNCCR = \text{€}1,254.9800/\text{MW}$
 - $MC_PRO = \text{Monthly Charge Proration}$
= Number of Days in CIP/Number of Days in Month
= $31/31 = 1$

$$DNCC_{a,p} = 10.45 \times 1254.9800 \times 1$$

$$DNCC_{a,p} = \text{€}13,114.54$$



$$DNCC_{a,u,m} = \sum_{p \in UM} DNCC_{a,p}$$

Demand Network Capacity Charge

Grand Total Before VAT	€186,236.68
VAT	€39,109.70
Total For Charging Interval Period	€225,346.38

Charging Interval 01-Jan-2010	To 31-Jan-2010	Tarriff Type DTS-T
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CHARGING PARAMETERS	
Charging Capacity *	10.450000 MW
Demand Day Energy Transfer *	1047.765000 MWh
Demand Night Energy Transfer *	771.572000 MWh
Demand Total Energy Transfer *	1819.337000 MWh
Highest Metered Demand *	23.328000 MW
Maximum Applicable DLAF	1.000000
Maximum Import Capacity	10.450000 MW
Minimum Capacity *	8.360000 MW
Monthly Charge Proration Demand	1.000000
Unauthorised Usage Demand *	238.382000 MWh

RATES	
Demand Network Capacity Charge Rate	1254.980 Euro/MW
Demand Network Transfer Charge Rate	1.9950 Euro/MWh
Demand Network Unauthorised Usage Rate	691.657 Euro/MWh
Demand Side Management Charge Rate	0.3563 Euro/MWh
Demand System Services Charge Rate	2.330 Euro/MWh
VAT Rate	0.210

CHARGES FOR ACCOUNT IN CHARGING INTERVAL	
(a) Demand Network Capacity Charge	€13,114.54 Euro
(b) Demand Network Unauthorised Usage Charge	€104,878.57 Euro
(c) Demand Network Transfer Charge	€3,631.21 Euro
(d) Demand System Services Charge	€4,239.05 Euro
(e) Demand Side Management Charge	€373.31 Euro
VAT Charge	€39,109.70 Euro
Subtotal Before VAT	€186,236.68
VAT	€39,109.70
Total For Charging Interval Period	€225,346.38

DCC

MCDMAX

MAXDLAF

MICA

MCC

MC_PRO

DNCCR

DNCC

Demand Network Unauthorised Usage Charge (DNUC)

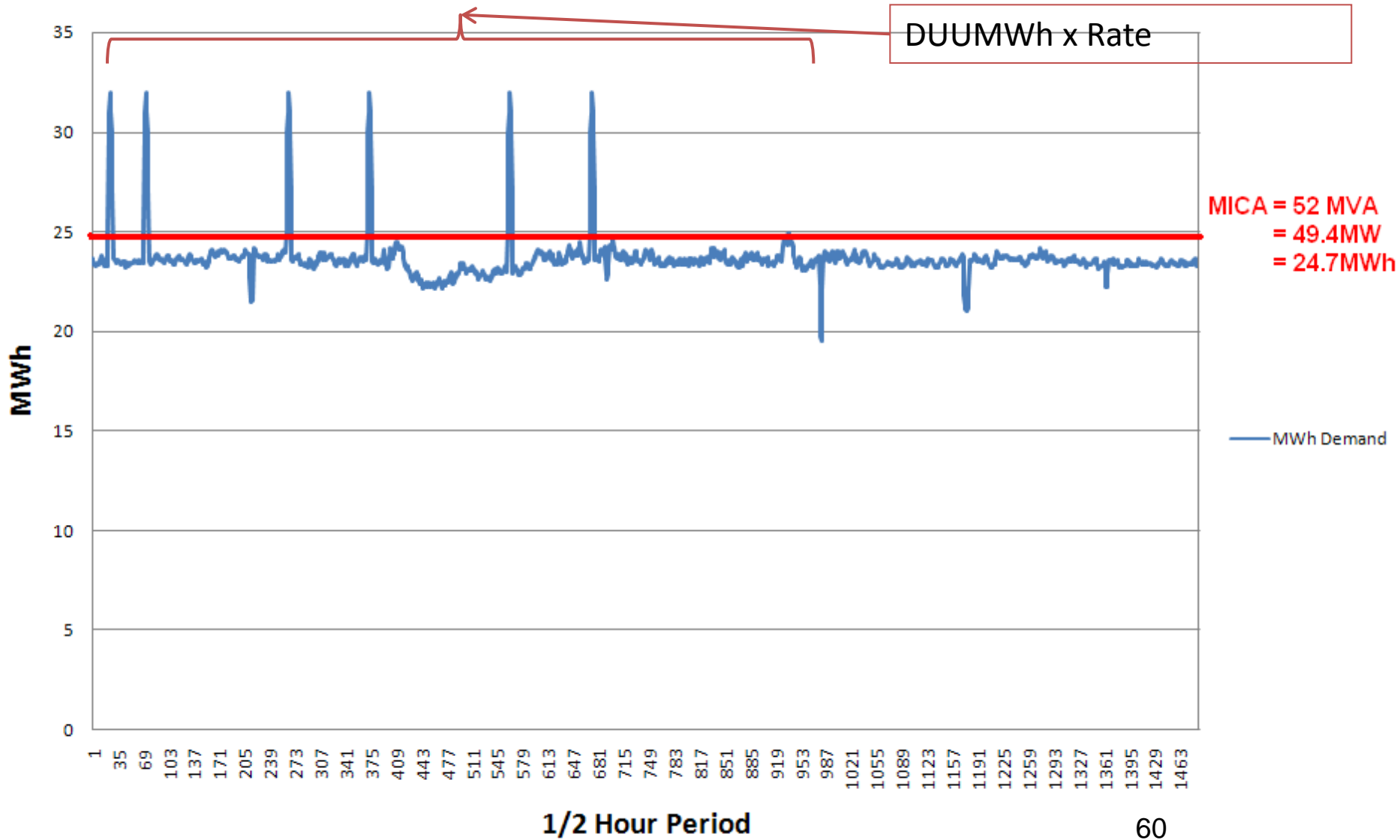
Demand Network Unauthorised Usage Charge:
€691.6570/MWh for Metered Consumption Energy transferred in excess of the Customer's Maximum Import Capacity in the Charging Period.

Metered Consumption Energy = 30 minute interval in MWh, adjusted for Distribution loss Adjustment Factors

Maximum Import Capacity = MIC in MW

DUUC

Demand Unauthorised Usage Charge



Demand Network Unauthorised Usage Charge (DUUC)

$$\text{DUUC}_{a,u,m} = \sum_{p \in \text{UM}} \text{DUUC}_{a,p}$$

Where:

- $\text{DUUC}_{a,p} = \text{DUUR}_m \times \text{DUUMWh}_{a,p}$
- $\text{DUUR}_m = \text{DUUC Rate}$
- $\text{DUUMWh}_{a,p} = [\sum_{h \in p} \text{DUUMWh}_{a,h}]$

$\text{DUUMWh}_{a,h}$ = Unauthorised Usage in excess of the Maximum Import Capacity of account a, in Settlement Period h

$$\text{DUUMWh}_{a,h} = \max[\text{MCE}_{a,h} - (\text{MICA}_{a,p} \times \text{SPD} \div 60), 0]$$

SPD = 30 minutes

Worked Example

Refer to Handout Example
DTS-T DUUC – Page 4



DNUUC Example – DTS-T

A) DUUMWh (03/01/2010 06:00)

$$= \max[\text{MCE}_{a,h} - (\text{MICA}_{a,p} \times \text{SPD} \div 60), 0]$$

$$= \max[5.382 - (10.45 \times (30/60)), 0]$$

$$= \max[5.382 - (5.225), 0]$$

$$= \max[0.157, 0] = 0.157 \text{ MWh}$$

B) Sum of DUUMWh for Month = 238.382 MWh

C) $\text{DUUC}_{a,p} = \text{DUUR}_m \times \text{DUUMWh}_{a,p}$

$$\text{DUUC}_{a,p} = €691.657 \times 238.382 \text{ MWh} = €164,878.58$$

$$\text{DUUC}_{a,u,m} = \sum_{p \in \text{UM}} \text{DUUC}_{a,p} = €164,878.58$$

DUUC Invoice

MPRN(s) 12345678911

Account Type DTS-T
Voltage 110kV

Grand Total Before VAT	€186,236.68
VAT	€39,109.70
Total For Charging Interval Period	€225,346.38

Charging Interval 01-Jan-2010 To 31-Jan-2010 Tarriff Type DTS-T

CHARGING PARAMETERS

Charging Capacity *	10.450000 MW
Demand Day Energy Transfer *	1047.765000 MWh
Demand Night Energy Transfer *	771.572000 MWh
Demand Total Energy Transfer *	1819.337000 MWh
Highest Metered Demand *	23.326000 MW
Maximum Applicable DLAF	1.000000
Maximum Import Capacity	10.450000 MW
Minimum Capacity *	8.360000 MW
Monthly Charge Proration Demand	1.000000
Unauthorised Usage Demand *	238.382000 MWh

RATES

Demand Network Capacity Charge Rate	1254.980 Euro/MW
Demand Network Transfer Charge Rate	1.9959 Euro/MWh
Demand Network Unauthorised Usage Rate	691.657 Euro/MWh
Demand Side Management Charge Rate	0.3563 Euro/MWh
Demand System Services Charge Rate	2.330 Euro/MWh
VAT Rate	0.210

CHARGES FOR ACCOUNT IN CHARGING INTERVAL

(a) Demand Network Capacity Charge	€13,114.54 Euro
(b) Demand Network Unauthorised Usage Charge	€164,878.57 Euro
(c) Demand Network Transfer Charge	€3,631.21 Euro
(d) Demand System Services Charge	€4,239.05 Euro
(e) Demand Side Management Charge	€373.31 Euro
VAT Charge	€39,109.70 Euro

Subtotal Before VAT	€186,236.68
VAT	€39,109.70
Total For Charging Interval Period	€225,346.38

DUUMWh

DUUR

DUUC



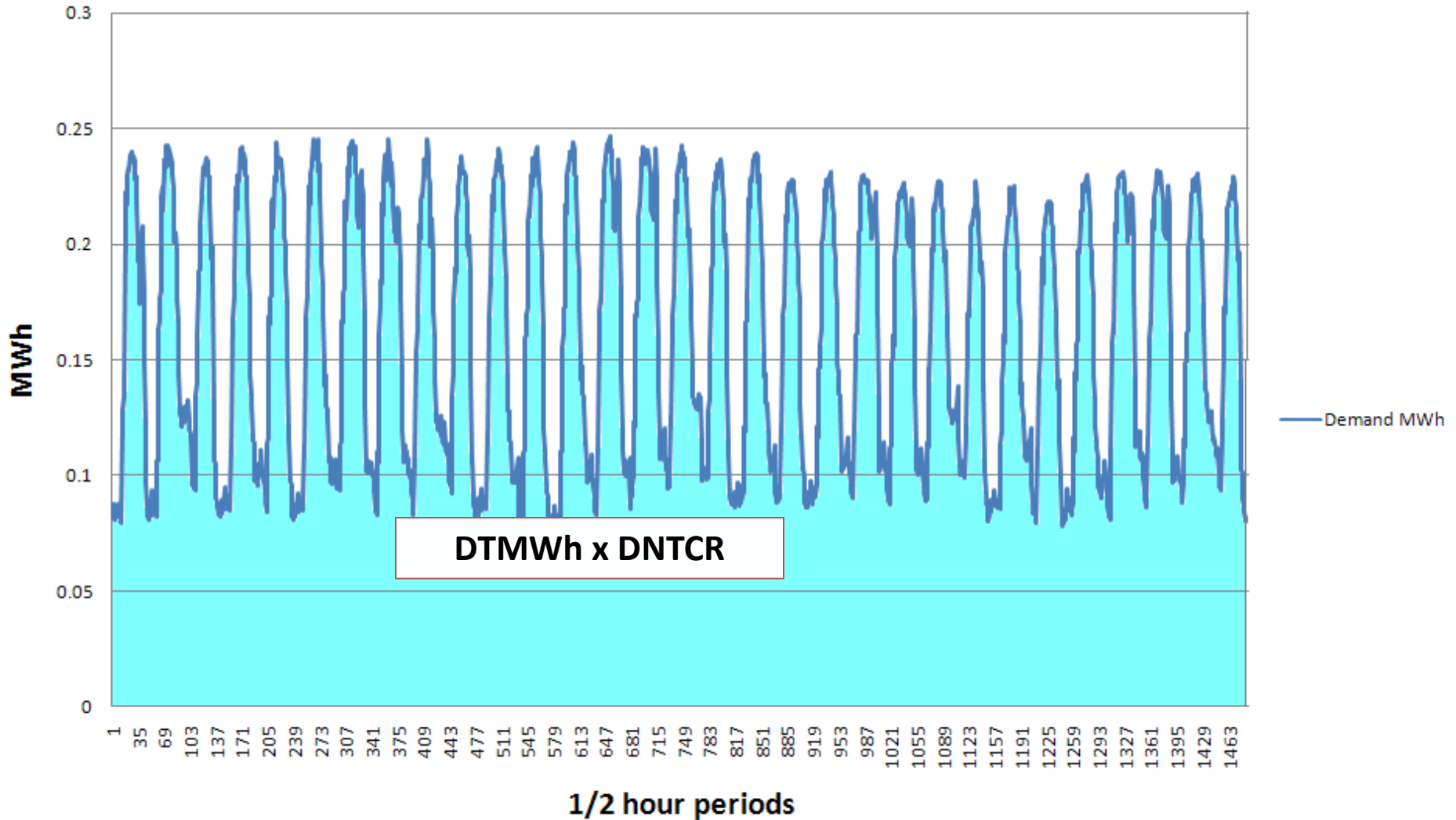
Demand Network Transfer Charge

Demand Network Transfer Charge: **€1.9959/MWh**
for *Metered Consumption Energy transferred in
the Charging Period*

Metered Consumption Energy = 30 minute
interval in MWh, adjusted for Distribution loss
Adjustment Factors

DNCC

Demand Network Capacity Charge



Demand Network Transfer Charge (DNTC)

$$\text{DNTC}_{a,u,m} = \sum_{p \in UM} \text{DNTC}_{a,p}$$

where

- $\text{DNTC}_{a,p} = \text{DNTCR}_m \times \text{DTMWh}_{a,p}$
- **DNTCR** = Demand Network Transfer Charge Rate
- **DTMWh** (Demand Total Energy Transfer) = DTMWh_a ,
 $p = \sum_{h \in P} \text{MCE}_{a,h}$
- $\text{MCE}_{a,h} = \text{MCEU}_{a,h} \times \text{DLAF}_{a,h}$

Worked Example

Refer to Handout Example
DTS-D2 DNTC – Page 5



DNTC Example – DTS-D2

$$\text{MCE}_{a,h} = \text{MCEU}_{a,h} \times \text{DLAF}_{a,h}$$

$$\begin{aligned} \text{A) MCE (01/01/2010 00:00)} &= 0.003168 \times 1.036 \\ &= 0.003282 \text{ MWh} \end{aligned}$$

$$\text{B) DTMWh} = 4.563346 \text{ MWh}$$

$$\begin{aligned} \text{C) DNTC}_{a,p} &= \text{DNTCR}_m \times \text{DTMWh}_{a,p} \\ &= \text{€ } 1.9959 \times 4.563346 \text{ MWh} \\ &= \text{€ } 9.10 \end{aligned}$$

$$\text{DNTC}_{a,u,m} = \sum_{p \in \text{UM}} \text{DNTC}_{a,p} = \text{€ } 9.10$$

DNTC Invoice

Voltage MV

Grand Total Before VAT	€32.60
VAT	€6.85
Total For Charging Interval Period	€39.45

Charging Interval 01-Jan-2010 To 31-Jan-2010 **Tarriff Type** DTS-D2

CHARGING PARAMETERS

Demand Day Energy Transfer *	2.748010 MWh
Demand Night Energy Transfer *	1.817336 MWh
Demand Total Energy Transfer *	4.563346 MWh
Highest Metered Demand *	0.000000 MW
Maximum Import Capacity	0.095000 MW
Monthly Charge Proration Demand	1.000000

DTMWh →

RATES

Demand Network Capacity Charge Rate	4.3337 Euro/MW
Demand Network Transfer Charge Rate	1.9959 Euro/MWh
Demand Side Management Charge Rate	0.3563 Euro/MWh
Demand System Services Charge Rate	2.330 Euro/MWh
VAT Rate	0.210

DNTCR →

CHARGES FOR ACCOUNT IN CHARGING INTERVAL

(a) Demand Network Capacity Charge	€11.90 Euro
(b) Demand Network Transfer Charge	€9.10 Euro
(c) Demand System Services Charge	€10.63 Euro
(d) Demand Side Management Charge	€0.97 Euro
VAT Charge	€6.85 Euro

DNTC →

Subtotal Before VAT	€32.60
VAT	€6.85
Total For Charging Interval Period	€39.45

EIRGRID

Demand System Services Charge (DSSC)

Demand System Services Charge: € 2.33/MWh for Metered Consumption Energy transferred in the Charging Period

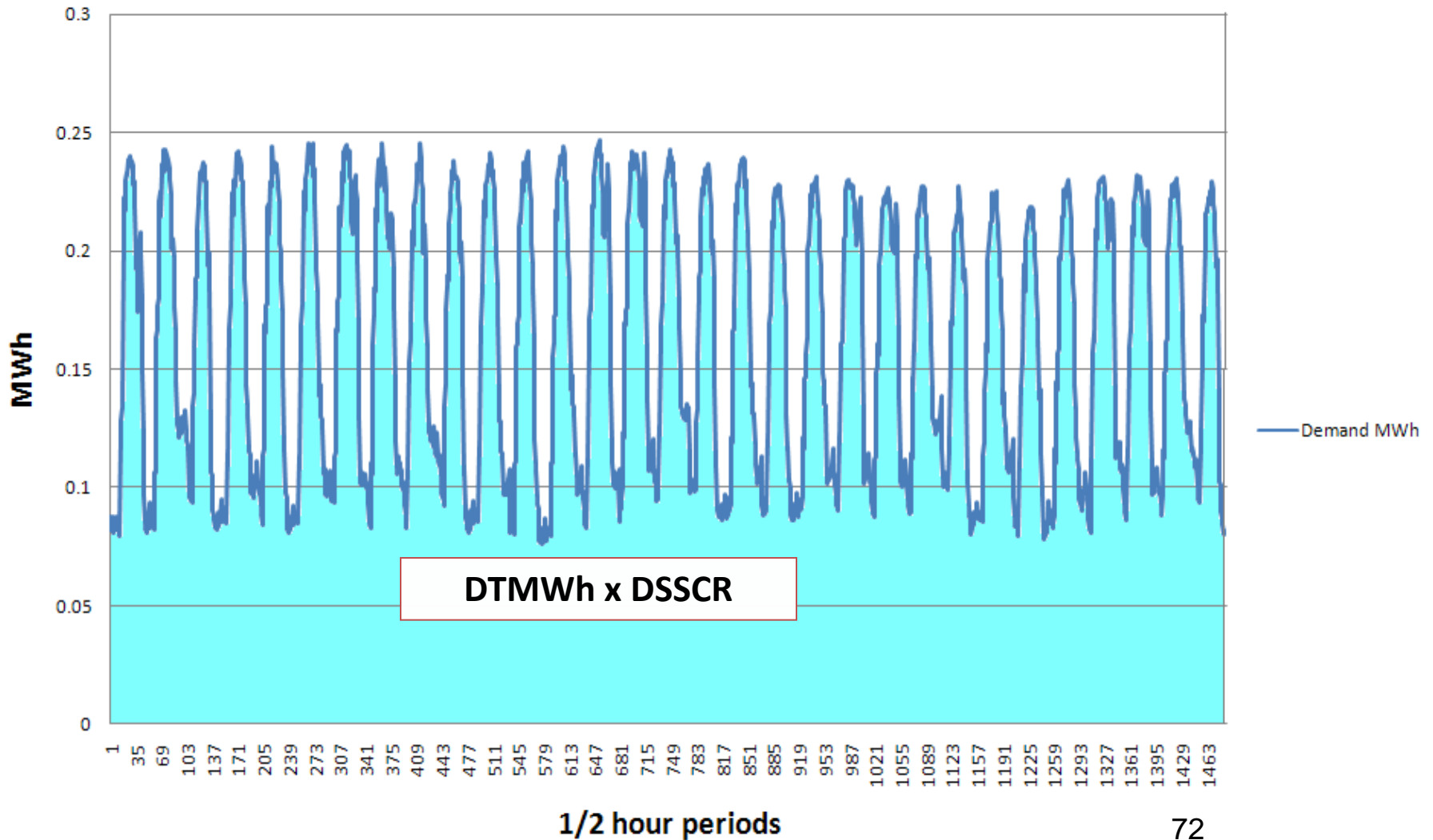
$$\mathbf{DSSC}_{a,u,m} = \sum_{p \in UM} \mathbf{DSSC}_{a,p}$$

where

- $\mathbf{DSSC}_{a,p} = \mathbf{DSSCR}_m \times \mathbf{DTMWh}_{a,p}$
- \mathbf{DSSCR} = Demand System Services Charge Rate
- \mathbf{DTMWh} = Demand Total Energy Transfer

DSSC Graph

Demand System Services Charge



Worked Example

Refer to Handout Example
DTS-D2 DSSC – Page 6

DSSC Example – DTS-D2

$$MCE_{a,h} = MCEU_{a,h} \times DLAF_{a,h}$$

$$\begin{aligned} \text{A) } MCE (01/01/2010 \ 00:00) &= 0.003168 \times 1.036 \\ &= 0.003282 \text{ MWh} \end{aligned}$$

$$\text{B) } DTMWh = 4.563346 \text{ MWh}$$

$$\begin{aligned} \text{C) } DSSC_{a,p} &= DSSCR_m \times DTMWh_{a,p} \\ &= \text{€ } 2.3300 \times 4.563346 \text{ MWh} \\ &= \text{€ } 10.63 \end{aligned}$$

$$DSSC_{a,u,m} = \sum_{p \in UM} DSSC_{a,p} = \text{€ } 10.63$$

DSSC Invoice

Grand Total Before VAT	€32.60
VAT	€6.85
Total For Charging Interval Period	€39.45

Charging Interval 01-Jan-2010 To 31-Jan-2010 Tarriff Type DTS-D2

CHARGING PARAMETERS

Demand Day Energy Transfer *	2.746010 MWh
Demand Night Energy Transfer *	1.817336 MWh
Demand Total Energy Transfer *	4.563346 MWh
Highest Metered Demand *	0.000000 MW
Maximum Import Capacity	0.095000 MW
Monthly Charge Proration Demand	1.000000

RATES

Demand Network Capacity Charge Rate	4.3337 Euro/MW
Demand Network Transfer Charge Rate	1.9959 Euro/MWh
Demand Side Management Charge Rate	0.3563 Euro/MWh
Demand System Services Charge Rate	2.330 Euro/MWh
VAT Rate	0.210

CHARGES FOR ACCOUNT IN CHARGING INTERVAL

(a) Demand Network Capacity Charge	€11.90 Euro
(b) Demand Network Transfer Charge	€9.10 Euro
(c) Demand System Services Charge	€10.63 Euro
(d) Demand Side Management Charge	€0.97 Euro
VAT Charge	€6.85 Euro

Subtotal Before VAT	€32.60
VAT	€6.85
Total For Charging Interval Period	€39.45

DTMWh

DSSCR

DSSC



Demand Side Management Charge

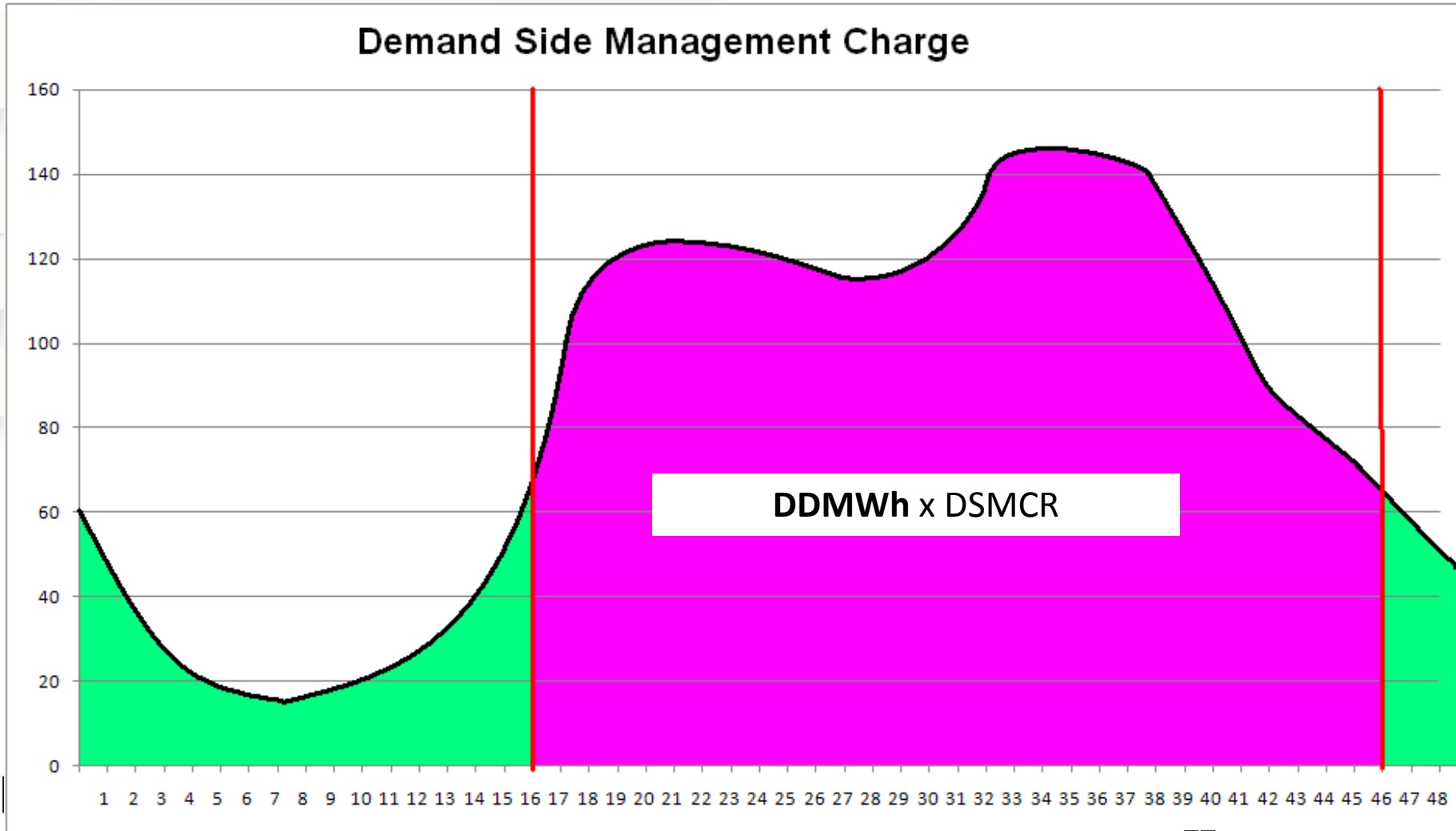
Demand Side Management Charge: € 0.3563/MWh for all Metered Consumption Energy transferred during Day Hours in the Charging Period.

Metered Consumption Energy = 30 minute interval in MWh, adjusted for Distribution loss Adjustment Factors

Day Hours = 08:00 to 23:00 hours GMT

- Winter months = 08:00 - 23:00
- Summer months = 07:00 – 22:00

Demand Side Management Charge



Demand Side Management Charge

$$\text{DSMC}_{a,u,m} = \sum_{p \in \text{UM}} \text{DSMC}_{a,p}$$

where

- $\text{DSMC}_{a,p} = \text{DSMCR}_m \times \text{DDMWh}_{a,p}$
- $\text{DSMCR} = \text{DSMC rate}$
- $\text{DDMWh} = \text{Demand Day Energy Transfer}$

Worked Example

Refer to Handout Example
DTS-D2 DSMC – Page 7



DSMC Example

$$\mathbf{MCE}_{a, h} = \mathbf{MCEU}_{a, h} \times \mathbf{DLAF}_{a, h}$$

$$\text{A) } \text{MCE (01/01/2010 08:00)} = 0.003312 \times 1.043 \\ = 0.003454 \text{ MWh}$$

$$\text{B) } \text{DDMWh for CIP} = 2.746010 \text{ MWh}$$

$$\text{C) } \text{DSMC}_{a, p} = \text{DSMCR}_m \times \text{DDMWh}_{a, p}$$

$$\text{DNCC_MWh}_{a, p} = 0.3563 \times 2.746010 = \text{€}0.97$$

$$\text{DSMC}_{a, u, m} = \sum_{p \in \text{UM}} \text{DSMC}_{a, p} = \text{€}0.97$$

DSMC Invoice

Grand Total Before VAT	€186,236.68
VAT	€39,109.70
Total For Charging Interval Period	€225,346.38

Charging Interval 01-Jan-2010 To 31-Jan-2010 Tarriff Type DTS-T

CHARGING PARAMETERS

Charging Capacity *	10.450000 MW
Demand Day Energy Transfer *	1047.765000 MWh
Demand Night Energy Transfer *	771.572000 MWh
Demand Total Energy Transfer *	1819.337000 MWh
Highest Metered Demand *	23.326000 MW
Maximum Applicable DLAF	1.000000
Maximum Import Capacity	10.450000 MW
Minimum Capacity *	6.360000 MW
Monthly Charge Proration Demand	1.000000
Unauthorised Usage Demand *	238.382000 MWh

RATES

Demand Network Capacity Charge Rate	1254.980 Euro/MW
Demand Network Transfer Charge Rate	1.9959 Euro/MWh
Demand Network Unauthorised Usage Rate	691.657 Euro/MWh
Demand Side Management Charge Rate	0.3563 Euro/MWh
Demand System Services Charge Rate	2.330 Euro/MWh
VAT Rate	0.210

CHARGES FOR ACCOUNT IN CHARGING INTERVAL

(a) Demand Network Capacity Charge	€13,114.54 Euro
(b) Demand Network Unauthorised Usage Charge	€164,878.57 Euro
(c) Demand Network Transfer Charge	€3,631.21 Euro
(d) Demand System Services Charge	€4,239.05 Euro
(e) Demand Side Management Charge	€373.31 Euro
VAT Charge	€39,109.70 Euro

Subtotal Before VAT	€186,236.68
VAT	€39,109.70
Total For Charging Interval Period	€225,346.38

DDMWh

DSMCR

DSMC

EIRGRID



Agenda

10.30 – 11.00 Registration and Tea

11.00 – 11.05 Introduction and Welcome - Dermot Byrne

11.05 – 11.10 Workshop Agenda and Objectives - Sonya Twohig

11.10 – 11.20 Overview - Seán O Rourke

11.20 – 11.35 Statement of Charges-Tim Hurley

11.35 – 12.45 Demand Tariff Charges Philip Bourke /Seán O Rourke

12.45 – 1.30 Lunch

1.30 – 2.30 Generation Tariff Charges - Philip Bourke / Seán O Rourke

2.30 – 3.00 Invoice Types & Backup File - Seán O Rourke

3.00 – 3.10 Tea/Coffee

3.10 – 3.20 Payment Schedule and Query Process - Kevin Boyle

3.20 – 3.30 Future Projects

3.30 – 4.00 Q&A Discussion

Generation TUoS Charges

Philip Bourke
TUoS Business Analyst
Grid Revenue and Metering



Generator Transmission Service GTS

Generator Transmission Service GTS

- GTS-T - connected directly to Tx System
- GTS-D - connected indirectly to Tx system via Dx system



TUoS Charges by GTS Tariff Category

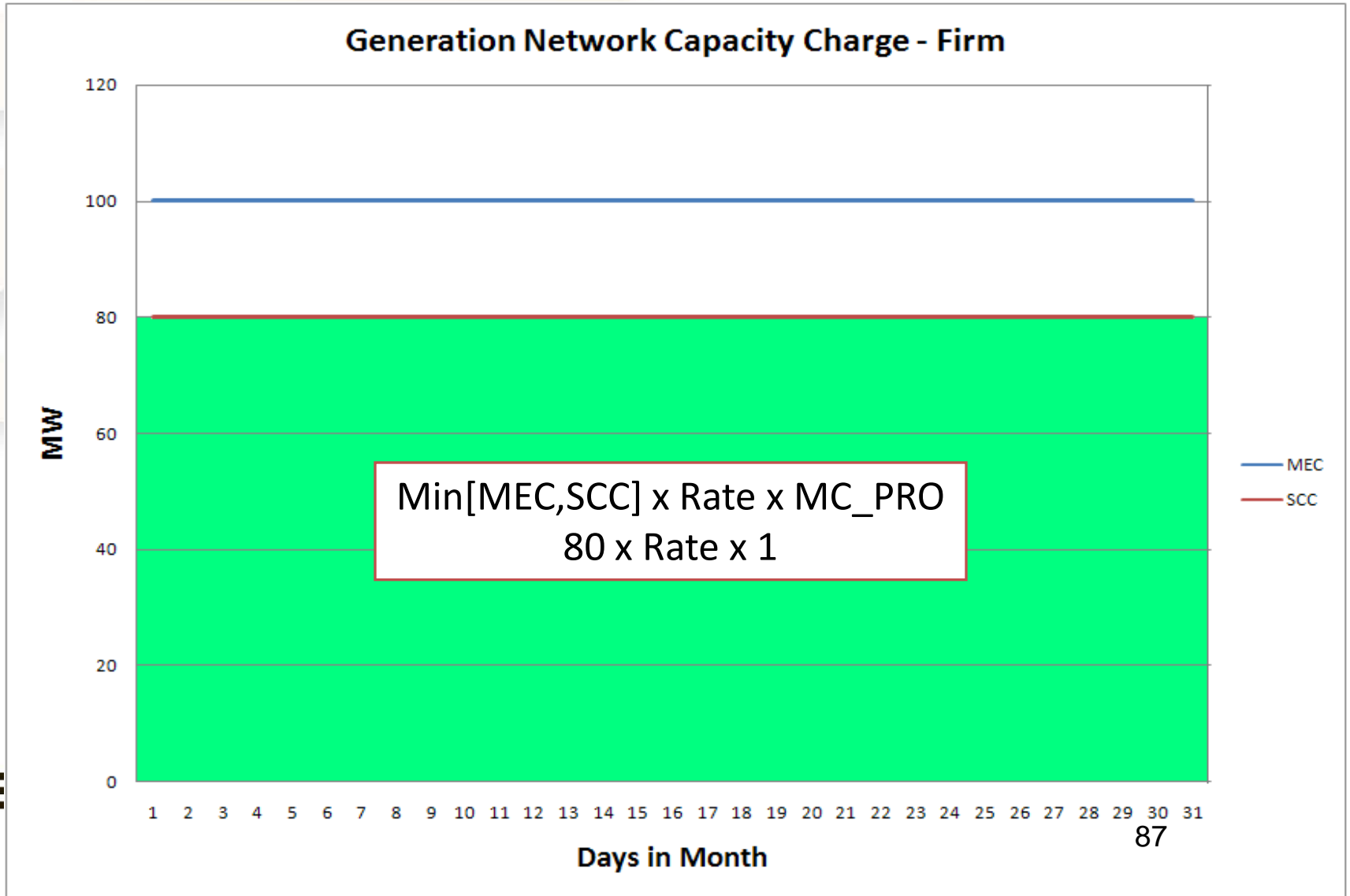
Charge	DTS-D2	DTS-D1	DTS-T	GTS-T	GTS-D	ATS-T	ATS-D
Demand Capacity (MWh)	Y	N	N	N	N	N	N
Demand Capacity (Capacity)	N	Y	Y	N	N	Y	Y
Demand Unauthorised Usage	N	N	Y	N	N	Y	N
Demand Network Transfer	Y	Y	Y	N	N	Y	Y
Demand System Services	Y	Y	Y	N	N	Y	Y
Demand Side Management	Y	Y	Y	N	N	Y	Y
Generator Capacity – Firm	N	N	N	Y	Y	Y	Y
Generation Capacity – Non-Firm	N	N	N	Y	Y	Y	Y

Generation Network Location-Based Capacity Charge

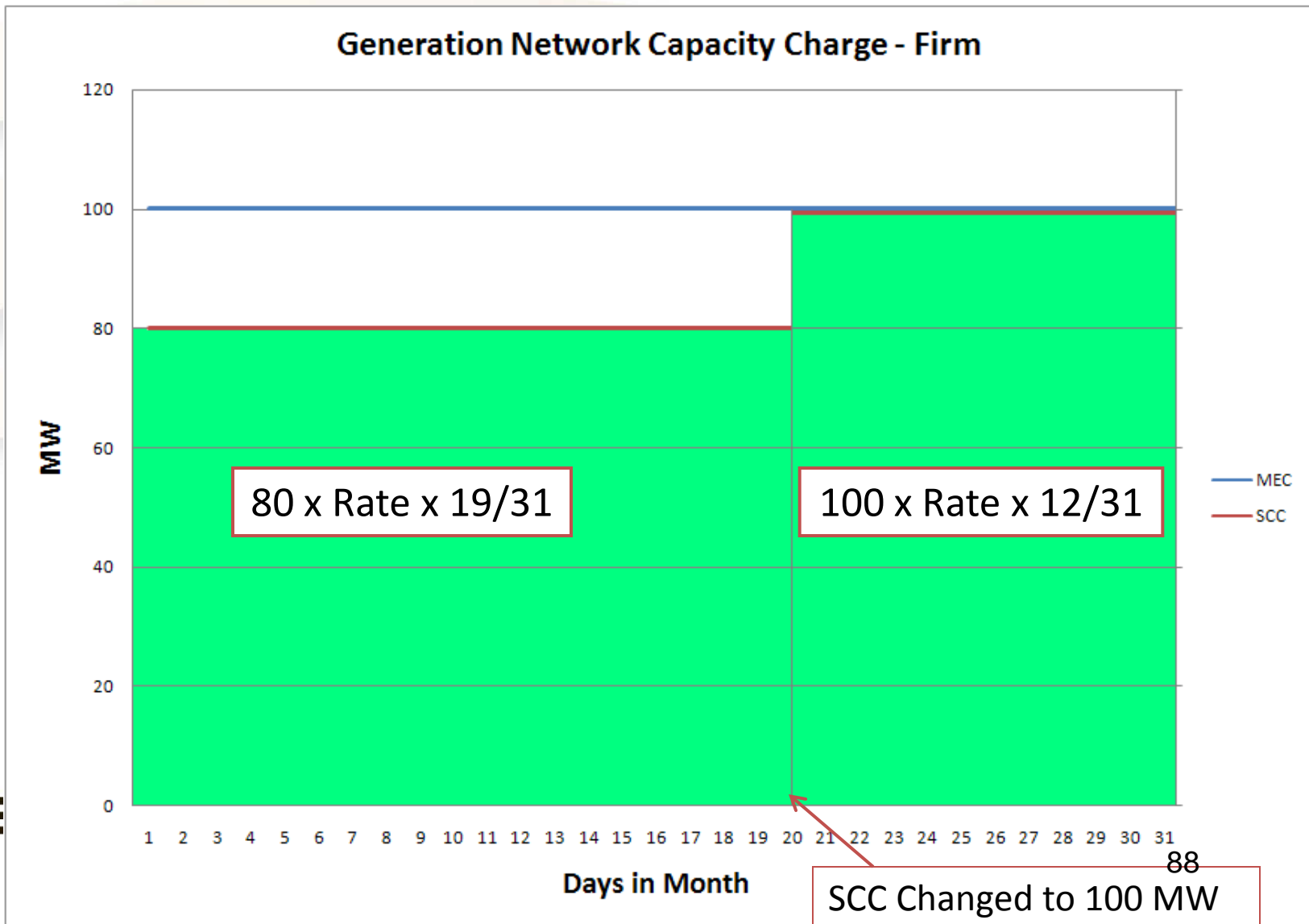
Defined as the Network Location-Based Capacity Charge Rate, as specified in Schedule 1, for each MW of the lesser of the Maximum Export Capacity or the Shallow Connection Capacity (SCC) at the Entry Point, as set forth in Schedule 1, for the Charging Period

GTS-D: Where the Maximum Export Capacity is less than "10" (ten) MW the Generation Network Location-Based Capacity Charge Rate will be "0" (zero).

Generation Network Location-Based Capacity Charge



Generation Network Location-Based Capacity Charge - Multiple CIPs



Generation Network Location-Based Capacity Charge (GNCC)

$$\mathbf{GNCC}_{a, u, m} = \sum_{p \in \mathbf{UM}} \mathbf{GNCC}_{a, p}$$

$$\mathbf{GNCC}_{a, p} = \mathbf{Min} [\mathbf{MECA}_{a, p}, \mathbf{SCC}_{a, p}] \times \mathbf{GNCCR}_{a, m} \times \mathbf{MC_PRO}_p$$

- MECA = Maximum Export Capacity MW
- SCC = Shallow Connection Capacity MW
- GNCCR = GNCC Rate €/MW
- Monthly Charge Proration

Worked Example

Refer to Handout Example
GTS-T GNCC – Page 8

GNCC Example

MEC = 86

SCC = 86

GNCCR = 179.7501 €/MW

GNCC = min [MECA, SCC] × GNCCR_{a, m} × MC_PRO_p

• **GNCC = min [86, 86] × 179.7501 × 31/31**

• **GNCC = 86 × 179.7501 × 1**

• **GNCC = €15,458.50**

GNCC_{a, u, m} = Σ_{p ∈ UM} GNCC_{a, p} = €15,458.50

GNCC Invoice

MPRN(s) XXXXXXXX Account Type GTS-T
Voltage 110kV

Grand Total Before VAT €15,458.50
VAT €3,246.28
Total For Charging Interval Period €18,704.78

Charging Interval 01-Jan-2010 To 31-Jan-2010 Tarriff Type GTS-T

CHARGING PARAMETERS

SCC	→	Generation Non-Firm Energy in MWh	0.000000 MWh
MEC	→	Generation Shallow Connection Capacity	86.000000 MW
		Maximum Export Capacity Generation	86.000000 MW

RATES

GNCCR	→	Generation Network Capacity Charge Rate	179.7501 Euro/MW
		Generation Network Non-Firm Capacity Charge Rate	0.000 Euro/MWh
		System Services Direct Trip Charge Rate	1.3775 Euro/MW
		System Services Fast Wind Down Trip Charge Rate	0.6887 Euro/MW
		VAT Rate	0.210

CHARGES FOR ACCOUNT IN CHARGING INTERVAL

GNCC	→	(a) Generation Network Capacity Charge	€15,458.50 Euro
		(b) System Services Generator Direct Trip Charge	€0.00 Euro
		(c) System Services Generator FWD Trip Charge	€0.00 Euro
		(d) Generation Commissioning Charge	€0.00 Euro
		(e) Generation Network Non-Firm Capacity Charge	€0.00 Euro
		VAT Charge	€3,246.28 Euro

Subtotal Before VAT €15,458.50
VAT €3,246.28
Total For Charging Interval Period €18,704.78

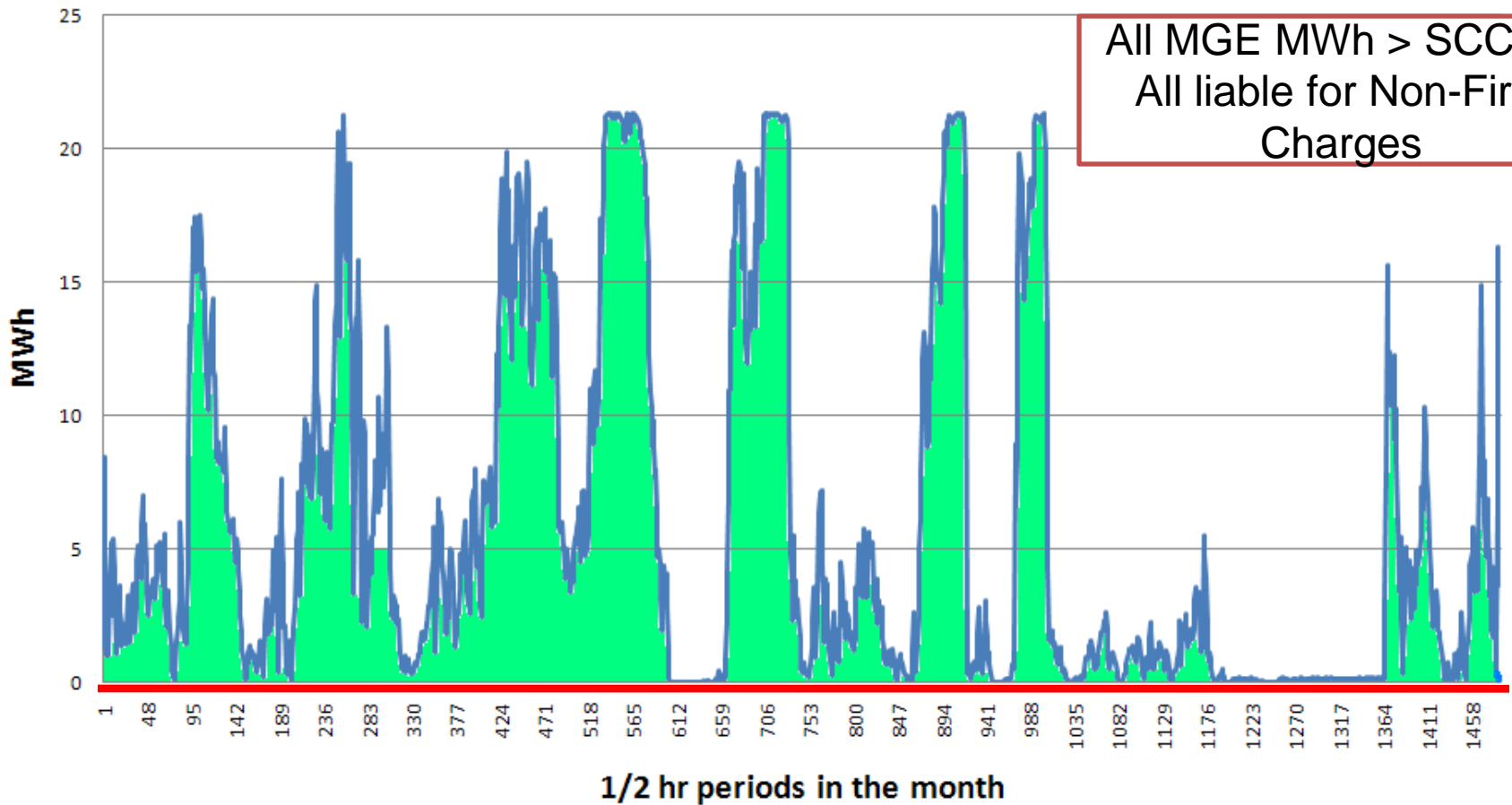


GNCC - Non-Firm Charge

- Defined as the Network Location-Based Non-Firm Capacity Charge Rate for all Metered Generation Energy exported in excess of the Shallow Connection Capacity (SCC) at the Entry Point during the Charging Period.
- Non-firm charges that exist for any generator are published in Schedule 1 of SoC
- GTS-D with MEC < 10MW => Charge Rate = 0

GNCC Non-Firm SCC = 0

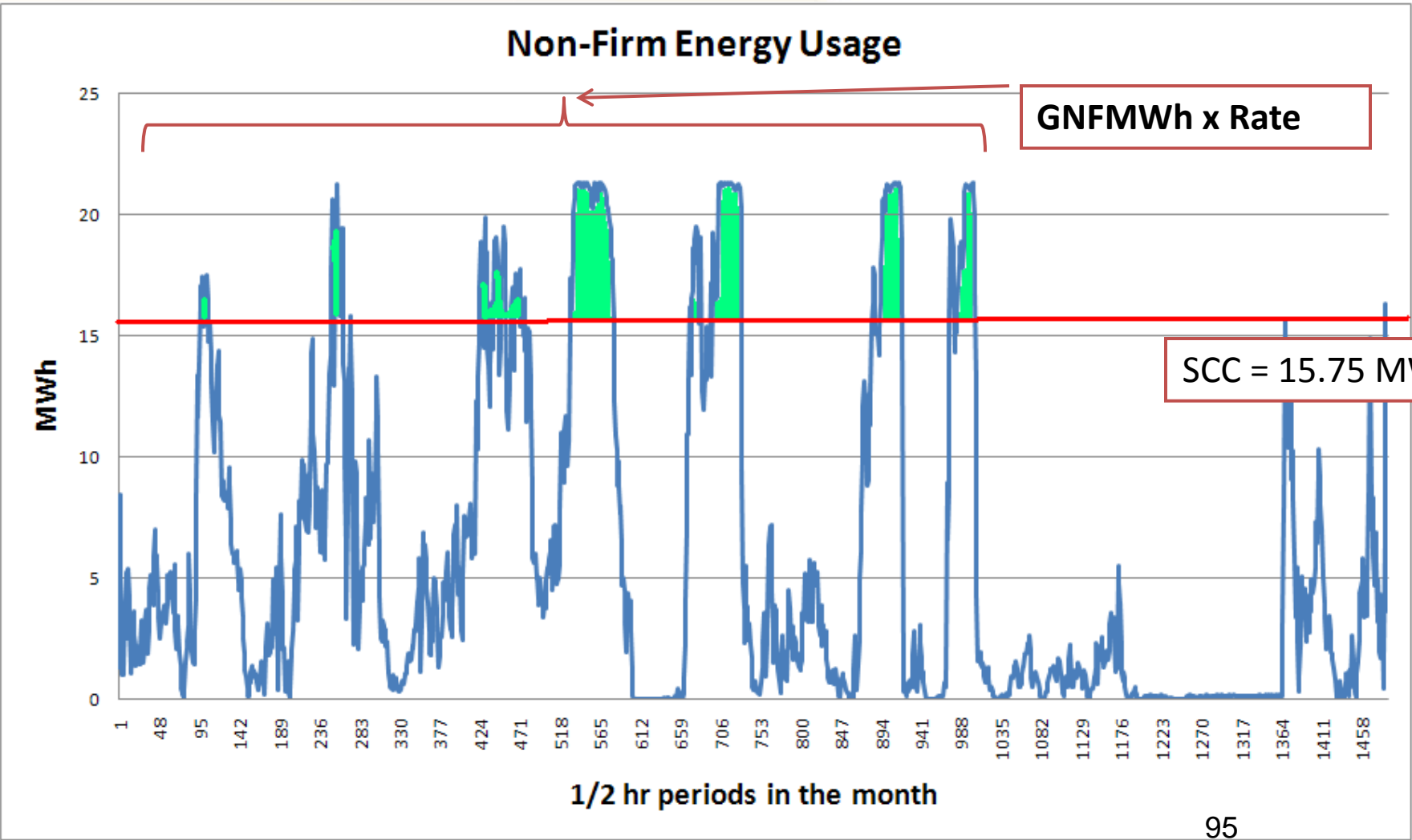
Non-Firm Energy Usage



All MGE MWh > SCC =>
All liable for Non-Firm
Charges

SCC=0

GNCC Non-Firm SCC > 0



GNCC Non-Firm Charge

$$\mathbf{GNNFCC}_{a, u, m} = \sum_{p \in UM} \mathbf{GNNFCC}_{a, p}$$

$$\mathbf{GNNFCC}_{a, p} = \mathbf{GNNFCCR}_{a, m} \times \mathbf{GNFMWh}_{a, p}$$

- $\mathbf{GNNFCCR}_{a, m}$ = Generation Network Non-Firm Capacity Charge Rate
- $\mathbf{GNFMWh}_{a, p}$ = Total non-firm network usage in excess of the Maximum Export Capacity

$$\mathbf{GNFMWh}_{a, p} = [\sum_{h \in P} \mathbf{GNFMWh}_{a, h}]$$

- $\mathbf{GNFMWh}_{a, h}$ = Sum of Generation Network Non-Firm Usage

$$\mathbf{GNFMWh}_{a, h} = \max[\mathbf{MGE}_{a, h} - [\mathbf{SCC}_{a, p} \times \mathbf{SPD} \div 60], 0]$$

- $\mathbf{GNFMWh}_{a, h}$ = non-firm network usage in excess of the Maximum Export Capacity
- \mathbf{MGE} = Metered Generation Energy

Worked Examples

Refer to Handout Example
GTS-D GNNFCC – Page 9



GNNFCC Example

$$A) \text{GNFMWh} = \max[\text{MGE} - [\text{SCC} \times \text{SPD} \div 60], 0]$$

$$\text{GNFMWh} = \max[16.305 - [31.5 \times 30/60], 0]$$

$$\text{GNFMWh} = \max[0.555, 0]$$

$$\text{GNFMWh} = 0.555 \text{ MWh}$$

$$B) \text{Sum of GNFMWh} = 765.877$$

$$C) \text{GNNFCC}_{a, p} = \text{GNNFCCR}_{a, m} \times \text{GNFMWh}_{a, p}$$

$$\text{GNNFCC}_{a, p} = 765.877 \times 0.9724 = \text{€}744.73$$

$$\text{GNNFCC}_{a, u, m} = \sum_{p \in \text{UM}} \text{GNNFCC}_{a, p} = \text{€}744.73$$

GNNFCC Invoice

Charging Period	01-Jan-2010	To	31-Jan-2010	Invoice Type	Initial Bill
Account Description	Windfarm 1			TSO Account Number	
MPRN(s)	XXXXXXXXXX			Account Type	GTS-T
				Voltage	110kV

Grand Total Before VAT	€8,123.31
VAT	€1,705.89
Total For Charging Interval Period	€9,829.20

Charging Interval	01-Jan-2010	To	31-Jan-2010	Tariff Type	GTS-T
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CHARGING PARAMETERS

Generation Non-Firm Energy in MWh	785.877000 MWh
Generation Shallow Connection Capacity	31.500000 MW
Maximum Export Capacity Generation	42.000000 MW

RATES

Generation Network Capacity Charge Rate	234.2409 Euro/MW
Generation Network Non-Firm Capacity Charge Rate	0.9724 Euro/MWh
System Services Direct Trip Charge Rate	1.3775 Euro/MW
System Services Fast Wind Down Trip Charge Rate	0.6887 Euro/MW
VAT Rate	0.210

CHARGES FOR ACCOUNT IN CHARGING INTERVAL

(a) Generation Network Capacity Charge	€7,378.58 Euro
(b) System Services Generator Direct Trip Charge	€0.00 Euro
(c) System Services Generator FWD Trip Charge	€0.00 Euro
(d) Generation Commissioning Charge	€0.00 Euro
(e) Generation Network Non-Firm Capacity Charge	€744.73 Euro
VAT Charge	€1,705.89 Euro

Subtotal Before VAT	€8,123.31
VAT	€1,705.89
Total For Charging Interval Period	€9,829.20

GNF MWh →

SCC →

GNNFCCR →

GNNFCC →

EIRGRID

Autoproducer Transmission Service - ATS

- Same Charges for ATS as GTS
- Differences:
 1. Generation + Demand Charges calculated for one Account
 2. Autoproducer Rule
 3. Generation MWh netted with Demand MWh and vice versa



TUoS Charges by ATS Tariff Category

Charge	DTS-D2	DTS-D1	DTS-T	GTS-T	GTS-D	ATS-T	ATS-D
Demand Capacity (MWh)	Y	N	N	N	N	N	N
Demand Capacity (Capacity)	N	Y	Y	N	N	Y	Y
Demand Unauthorised Usage	N	N	Y	N	N	Y	N
Demand Network Transfer	Y	Y	Y	N	N	Y	Y
Demand System Services	Y	Y	Y	N	N	Y	Y
Demand Side Management	Y	Y	Y	N	N	Y	Y
Generator Capacity – Firm	N	N	N	Y	Y	Y	Y
Generation Capacity – Non-Firm	N	N	N	Y	Y	Y	Y

Autoproducer Rule

Where $MIC \geq MEC$ then;

Generation Network Capacity Charges (Firm & Non-Firm) = 0

Where $MEC > MIC$ then Demand Network Capacity Charges = 0

Example 1: $MIC = 50 \text{ MW}$, $MEC = 40 \text{ MW}$
 $\Rightarrow \text{GNCCs} = 0$

Example 2: $MIC = 50 \text{ MW}$, $MEC = 60 \text{ MW}$
 $\Rightarrow \text{DNCC} = 0$

Netting MWh for Demand and Generation

- Generation Charges: Autoproducer Metered Generation Energy (AMGE) has the Metered Consumption Energy (MCE) netted off
 - E.g. $AMGE = \max[MGE - MCE, 0]$
- Demand Charges: Autoproducer Metered Consumption Energy (AMCE) has the Metered Generation Energy (MGE) netted off
 - E.g. $AMCE = \max[MCE - MGE, 0]$

Worked Example

Refer to Handout Example
Autoproducer MWh – Page 10

Autoproducer Example

$$A) \text{ AMGE} = \max[\text{MGE} - \text{MCE}, 0]$$

$$\text{AMGE} = \max[80.419 - 21.420, 0]$$

$$\text{AMGE} = 58.999 \Rightarrow \text{AMCE} = 0$$

$$B) \text{ AMCE} = \max[\text{MCE} - \text{MGE}, 0]$$

$$\text{AMCE} = \max[21.370 - 19.273, 0]$$

$$\text{AMCE} = 2.097 \Rightarrow \text{AMGE} = 0$$

AutoProducer Invoice - Example

CHARGING PARAMETERS

Charging Capacity *	42.550000 MW
Demand Day Energy Transfer *	70.153000 MWh
Demand Night Energy Transfer *	36.808000 MWh
Demand Total Energy Transfer *	106.961000 MWh
Generation Non-Firm Energy in MWh	172.357000 MWh
Generation Shallow Connection Capacity	130.000000 MW
Highest Metered Demand *	7.366000 MW
Maximum Applicable DLAF	1.000000
Maximum Export Capacity Generation	130.000000 MW
Maximum Import Capacity	46.550000 MW
Minimum Capacity *	42.550000 MW
Monthly Charge Proration Demand	1.000000
Unauthorised Usage Demand *	0.000000 MWh



AutoProducer Invoice - Example

RATES

Demand Network Capacity Charge Rate	1254.980 Euro/MW
Demand Network Transfer Charge Rate	1.9959 Euro/MWh
Demand Network Unauthorised Usage Rate	691.657 Euro/MWh
Demand Side Management Charge Rate	0.3563 Euro/MWh
Demand System Services Charge Rate	2.330 Euro/MWh
Generation Network Capacity Charge Rate	583.4417 Euro/MW
Generation Network Non-Firm Capacity Charge Rate	0.000 Euro/MWh
System Services Direct Trip Charge Rate	1.3775 Euro/MW
System Services Fast Wind Down Trip Charge Rate	0.6887 Euro/MW
VAT Rate	0.210



AutoProducer Invoice - Example

CHARGES FOR ACCOUNT IN CHARGING INTERVAL

(a) Demand Network Capacity Charge	€0.00 Euro
(b) Demand Network Unauthorised Usage Charge	€0.00 Euro
(c) Demand Network Transfer Charge	€213.48 Euro
(d) Demand System Services Charge	€249.21 Euro
(e) Demand Side Management Charge	€24.99 Euro
(f) Generation Network Capacity Charge	€75,847.42 Euro
(g) Generation Network Non-Firm Capacity Charge	€0.00 Euro
(h) System Services Generator FWD Trip Charge	€0.00 Euro
(i) System Services Generator Direct Trip Charge	€0.00 Euro
(j) Generation Commissioning Charge	€0.00 Euro
VAT Charge for Demand	€0.00 Euro
VAT Charge for Generation	€0.00 Euro

Subtotal Before VAT

€76,335.10



Agenda

10.30 – 11.00 Registration and Tea

11.00 – 11.05 Introduction and Welcome - Dermot Byrne

11.05 – 11.10 Workshop Agenda and Objectives - Sonya Twohig

11.10 – 11.20 Overview - Seán O Rourke

11.20 – 11.35 Statement of Charges-Tim Hurley

11.35 – 12.45 Demand Tariff Charges Philip Bourke /Seán O Rourke

12.45 – 1.30 Lunch

1.30 – 2.30 Generation Tariff Charges - Philip Bourke / Seán O Rourke

2.30 – 3.00 Invoice Types & Backup File - Seán O Rourke

3.00 – 3.10 Tea/Coffee

3.10 – 3.20 Invoicing, Payments, Audit and Query Process - Kevin Boyle

3.20 – 3.30 Future Projects

3.30 – 4.00 Q&A Discussion

Invoice Type Examples

- Initial Invoice – Refer to Invoice Types Handout – Page 1
- M+13 Invoice - Refer to Invoice Types Handout – Page 2,3,4,5
- Backup File - Refer to Invoice Types Handout – Page 6,7,8
- Estimated Data - Refer to Handout



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Invoicing, Payments and Audit

Kevin Boyle
Finance

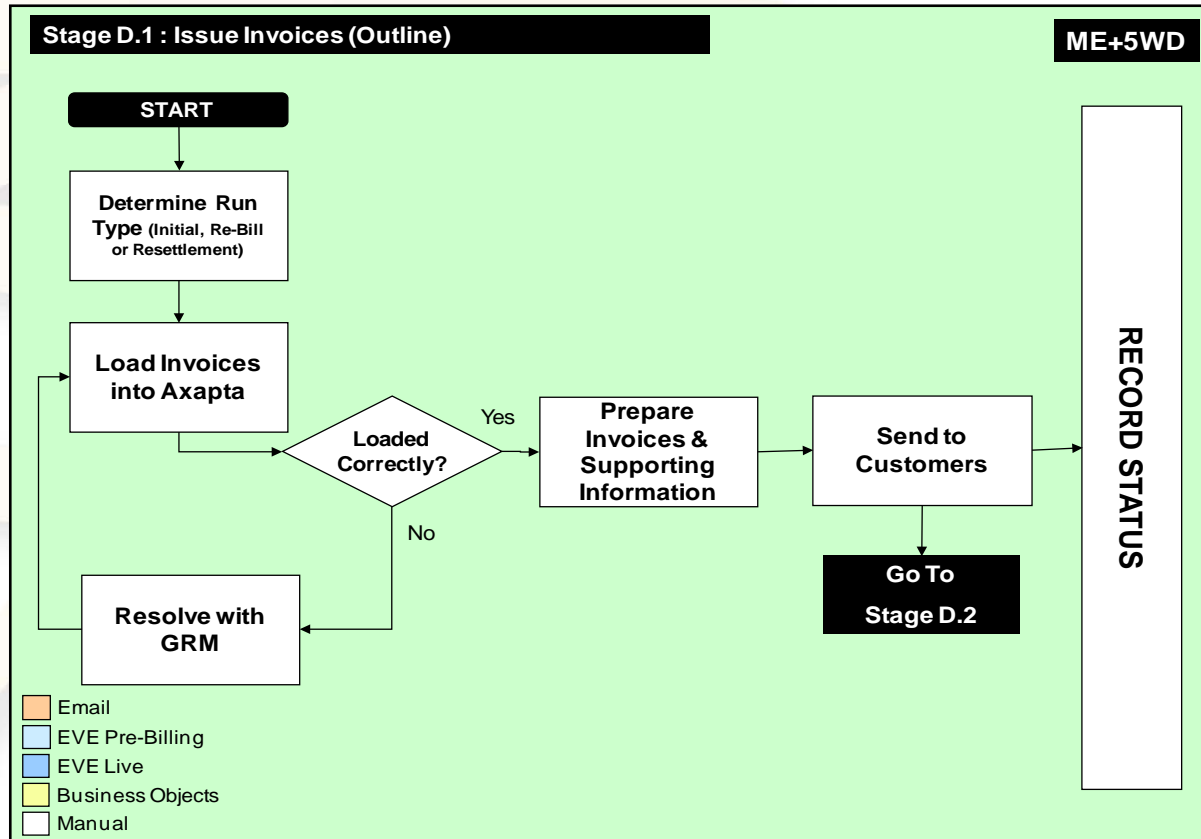


TUos Invoicing and Payments

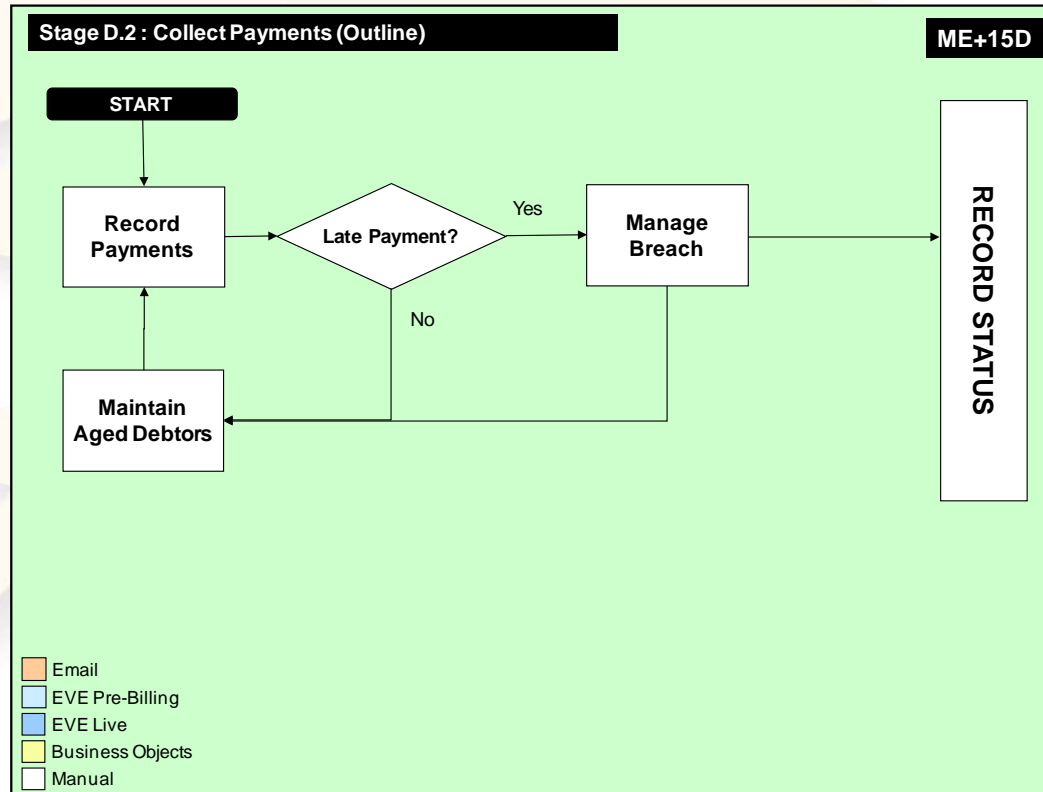
- Invoice Issue Date
 - Month end + 25 Business Days
 - Single TUoS invoice per month, includes Initial, Re-bills and Resettlement invoices
- Invoice Payment
 - Month end + 35 Business Days
- Tracking
 - Late payments are tracked and followed up immediately
- Issuing of invoices
 - By email
 - Plan to create web reporting



Invoice Release Process



Invoice Payment Process



Audit and Compliance

Annual Audit of TUoS Billing

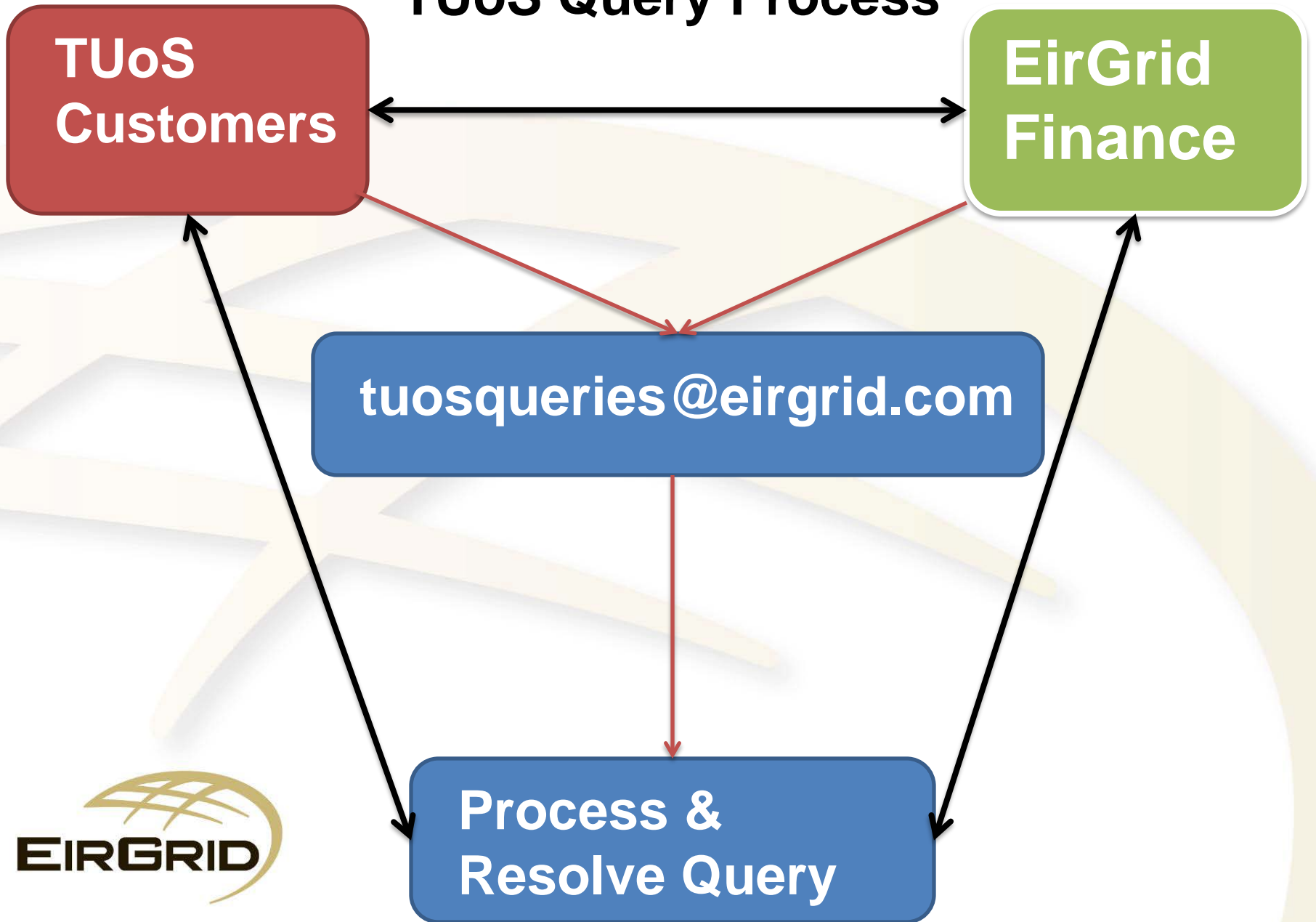
- EirGrid External Auditors
- Internal Audit and Compliance

Monthly checks required by Management

- Completeness - Is there 100% data coverage? Why not?
- Accuracy - Verify that correct tariff categories are assigned; Verify accuracy of invoices and that there is evidence of review
- Exceptions -Explanation of exceptions; Log and summary of exceptions; Clear responsibilities assigned for resolving issues
- Process Improvements - Evidence of actions taken to address recommendations from previous audits; outcomes



TUoS Query Process



TUoS Query Process

Quarter	Raised	Resolved	Carried
Q3 2009	30	28	2
Q4 2009	40	39	1
Q1 2010	23	23	0
Q2 2010	33	32	1

% queries which are carried for x months:

Not Recorded (NR)

<1 month	1 month	2 months	3 months	6 months	12 months
50%	50%	20%	3%	0%	0%
67%	33%	10%	5%	0%	0%
61%	39%	0%	0%	0%	0%
82%	18%	6%	3%	3%	0%

Future Work

Tariff Rebalancing

Web Reporting

Global Aggregation

East West Interconnector

Q & A





Feedback?