



# All-island European Stakeholder Forum

11 October 2017

Belfast



# Agenda

## 10h30 Session 1: Network Codes update

- Welcome & Introductions
- RA update on regulatory developments related to the Network Codes and Guidelines
- TSO update on European Network Code Implementation
- DSO views
- NEMO update
- Clean Energy Package
- Q&A

## 12h30-13h30 Lunch

## 13h30 Session 2: *RfG parameters consultation*

- RfG update
- Feedback on first consultation (banding thresholds)
- Discussion on parameter consultation and process update
- Q&A



# Session 1: Network Codes update



# RA update – regulatory developments related to the Network Codes and Guidelines

# Third Energy Package

- Legislative package for an internal energy market in the Europe:

- Directive 2009/72/EC
- Directive 2009/73/EC
- Regulation (EC) No 714/2009
- Regulation (EC) No 715/2009
- Regulation (EC) No 713/2009


## OBJECTIVES



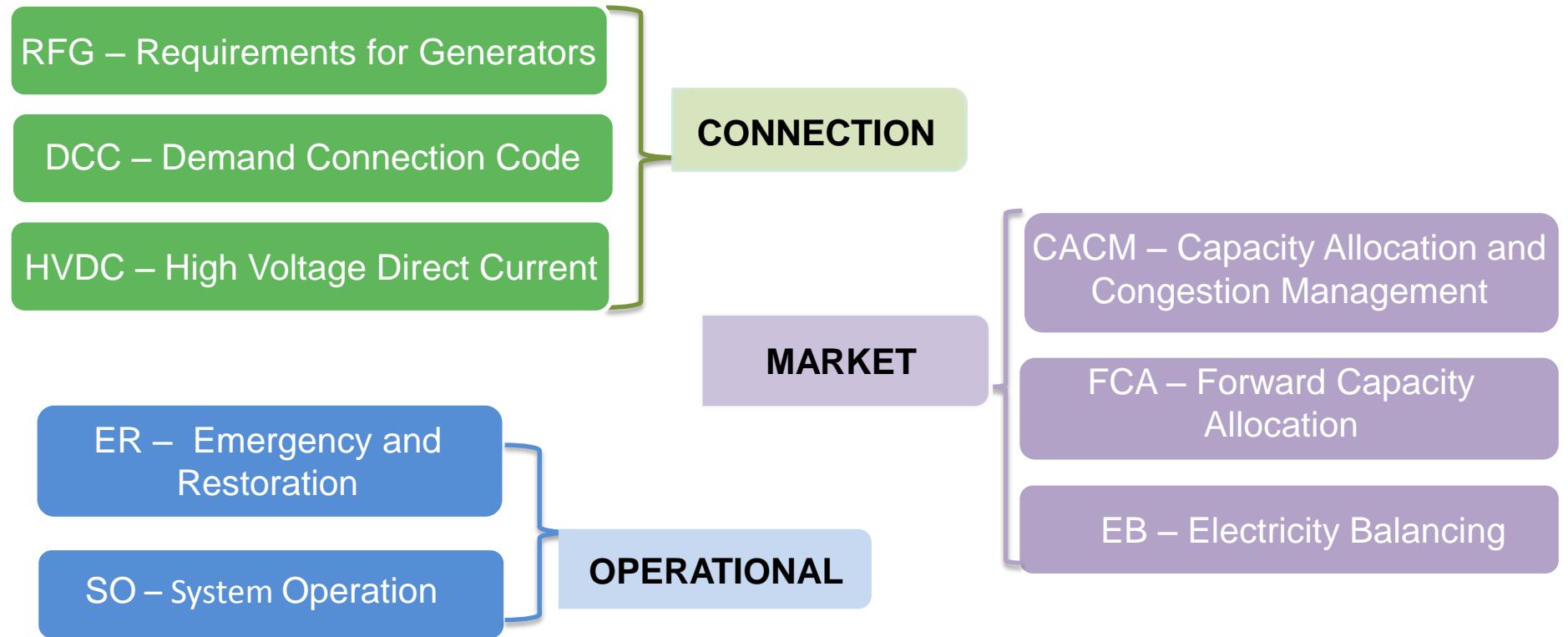
- Security in operation
- Low carbon generation
- Single European Electricity market

- Directive 2009/72/EC – concerning common rules for the internal market in electricity Member States
- Regulation (EC) No 714/2009 – on conditions for access to the network for cross-border exchanges in electricity – **Network Codes (NC)**

# Clean Energy Package

- Nov 16 – European Commission published the 'Clean Energy for All Europeans' Package focused on developing a more competitive, modern and cleaner energy system
- 8 legislative proposals which covers: 
  - Energy Union Governance
  - Renewable Energy
  - Electricity Market Redesign
  - Energy Efficiency
  - Security of electricity supply
- EU member states are engaging with the European Commission in terms of finalising text on the legislative proposals.
- EU ambitions to have decisions by Dec 2017

# Network Codes Families



# Network Codes Compliance

<b>RfG</b>	Apply to new power-generating facilities
<b>DCC</b>	Apply to all new demand (not storage devices) connections included new distribution networks connecting to the transmission system, new demand users connecting to the transmission system and new customers wanting to provide demand side response services
<b>HVDC</b>	Apply to all new long distance DC connections, new links between different synchronous areas (e.g. interconnectors) and new DC-connected generation (e.g. offshore wind farms)









<b>CACM</b>		Apply to all transmission systems and interconnections in the Union
<b>FCA</b>	Apply to MARKETS	Apply to all transmission systems and interconnections in the Union
<b>EB</b>		Apply to all transmission systems and interconnections in the Union

**ER** Apply to existing and new power generating modules classified as type B, C and D, existing and new transmission-connected demand facilities; existing and new t-c closed distribution systems; providers of redispatching of power generating modules or demand facilities by means of aggregation and providers of active power reserve; and existing and new high voltage direct current systems and direct current-connected power park modules

**SO** Apply to existing and new power generating modules that are, or would be, classified as type B, C and D; existing and new transmission-connected demand facilities; existing and new t-c closed distribution systems; existing and new demand facilities, closed distribution systems and third parties if they provide demand response directly to the TSO; providers of redispatching of power generating modules or demand facilities by means of aggregation and providers of active power reserve; and existing and new high voltage direct current systems



# Network Codes Status

NC	Status	Date of entry into force
CACM		15-Aug-15
RfG		17-May-16
DCC		7-Sept-16
HVDC		28-Sept-16
FCA		17-Oct-16
SO		14-Sept-17
EB		Jan 18
ER		2018?



In force



Awaiting to enter into force

# CRU's role on the implementation of the Network Codes

- Developing derogation processes
- Derogations register submitted to ACER every 6 months
- Monitoring compliance
- Approval of Cost Benefit Analyses
- Approval of TSO methodologies and proposals
- Approval of TSO/DSO agreements
- Approval of discretionary provisions
- Approval of cost sharing methodologies
- Review of TSO notified decisions
- Participation at ACER Task Forces for NC implementation
- Coordination of TSO, DSO and industry participants
- Grid and Distribution Codes Changes
- Connection contracts changes

# Engagement Processes for the implementation of the Network Codes

## ❖ Existing Governance Processes for CRU/Sos

- Grid Code Review Panel  CRU/EirGrid/ESBN/SEMO/Industry Quarterly

- Distribution Code Review Panel  CRU/EirGrid/ESBN/SEMO/Industry Quarterly

## ❖ New Governance Processes:

- Ireland NC Implementation Group  CRU/EirGrid/ESBN Every 6 weeks

- ACER SOGC, EB, CACM and FCA Task Force  ACER/NRAs  
As required, generally monthly, at least quarterly

# Engagement Processes for the implementation of the Network Codes

- **New Governance Processes:**

- Joint GB-ISEM Implementation Group → Ofgem/CRU/UR/NGET/EirGrid/SONI/Moyle/EWIC  
As required. Generally, markets focused meeting
- All Island NC Implementation Group → CRU/UR/EirGrid/SONI  
Every 4 months and as required
- All Island Stakeholder Forum → RAs/TSOs/DSOs/Industry/Manufacturers/Demand Customers  
Every 4 months (three times a year)

# CRU Publications: operational & connection Network Codes

## RFG – Requirements for Generators

- 26 Oct 2016: Information paper regarding the RfG Emerging Technology Application Guidance ([CER/16/305](#)). *The CER shall make publicly available the cumulative capacity of the modules classified as an emerging technology (every 2 months)*
- 12 Jun 2017: Decision paper on the Generator Classification as an Emerging Technology ([CER/17/119](#)).
- 10 Feb 2017 Consultation paper on the Criteria for Granting Derogations pursuant to Articles 62 and 63 ([CER/17/013](#))
- 13 Apr 2017: Decision paper on the Criteria for Granting Derogations Pursuant to Articles 62 and 63 ([CER/17/084](#))
- Regular (2 monthly) updates on installed Emerging technologies

## DCC – Demand Connection Code

- 13 Apr 2017: Consultation on the Criteria for Granting Derogations pursuant to Articles 52 and 53 ([CER/17/083](#))
- 1 Jun 2017 Decision paper on the Criteria for Granting Derogations pursuant to Articles 52 and 53 ([CER/17/116](#))

# CRU Publications: operational & connection Network Codes

HVDC – High Voltage Direct Current

- 3 Aug 2017: Consultation paper on the Criteria for Granting Derogations pursuant to Articles 79, 80 and 81 ([CER/17/156](#))
- 5 Oct 2017 Decision paper on the Criteria for Granting Derogations pursuant to Articles 79, 80 and 81 of the HVDC ([CRU/17/289](#))

# CRU Upcoming papers: operational & connection Network Codes

**RfG**



- Banding Thresholds Decision (Before May 2019)
- Non-exhaustive and non-mandatory exhaustive Parameters

**SO**



- Approval of terms and conditions or methodologies (Before Aug 2020)

# Market Network Codes



Forward Capacity Allocation (FCA)  
Network Code



Capacity Allocation and Congestion  
Management (CACM) Network  
Code



# FCA Network Code: Consultation



The decision making authority for the Single Electricity Market on the island of Ireland

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## TSO Obligations under Forward Capacity Allocation

06 September 2017

[SEM-17-068 TSO Obligations under FCA Consultation \(PDF 321 KB\)](#)

[SEM-17-068a Annex 1 to Consultation Paper on I-SEM TSO Obligations \(PDF 289 KB\)](#)

Decision Due: 24<sup>th</sup> October 2017

<https://www.semcommittee.com/publication/tso-obligations-under-forward-capacity-allocation>



# FCA Network Code: Proposals and Methodologies

Article	Terms and conditions or methodology	Proposal by	Status
10	Capacity calculation methodology	Relevant TSOs	In Development with TSOs
16	Methodology for splitting long-term cross-zonal capacity	Relevant TSOs	In Development with TSOs
17	Generation and load data provision (GLDP)	All TSOs	NRAs decision process
18	Common grid model (CGM)	All TSOs	NRAs decision process
21	Operational rules for LT merging of individual grid models	Relevant TSOs	In Development with TSOs
21	Operational rules for LT operation of the coordinated capacity calculators	Relevant TSOs	In Development with TSOs
31	Regional design of long-term transmission rights (LTTRs)	Relevant TSOs	NRAs decision process
36	Nomination rules for electricity exchange schedules between BZs	Relevant TSOs	N/A
49	Set of requirements and for the establishment of the single allocation platform (SAP)	All TSOs	NRAs decision process
51	HAR for LTTRs	All TSOs	ACER decision process
57	Congestion Income Distribution methodology	All TSOs	NRAs decision process
59	Methodology for sharing costs related to the establishment and operation of SAP	All TSOs	NRAs decision process
61	Methodology for sharing costs incurred to ensure firmness and remuneration of LTTRs	All TSOs	In Development with TSOs

# CACM Network Code: ongoing Consultation



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## Day Ahead and Intraday Proposals for arrangements concerning more than one Nominated Electricity Market Operator (NEMO) in the SEM bidding zone

22 September 2017

[SEM-17-073 Consultation paper MNA \(PDF 130 KB\)](#)

[SEM-17-073a Multiple NEMO Arrangements \(PDF 528 KB\)](#)

Consultation Closes: 2<sup>nd</sup> November 2017

<https://www.semcommittee.com/publication/day-ahead-and-intraday-proposals-arrangements-concerning-more-one-nominated-electricity>



# CACM Network Code: Proposals and Methodologies

Terms and Conditions or Methodology	Proposal by	Status
Algorithm (DA+ID)	All NEMOs	Amendment was requested from NEMOs. NRAs decision in process
Back-up Methodology (DA+ID)	All NEMOs	Amendment was requested from NEMOs. NRAs decision in process
Calculation of Scheduled Exchanges (DA)	Relevant TSOs	N/A
Calculation of Scheduled Exchanges (ID)	Relevant TSOs	N/A
Common Capacity Calculation Methodology	Relevant TSOs	In Development with TSOs
Common Grid Model	All TSOs	Approved by NRAs
Complementary Regional Auctions	Relevant TSOs & NEMOs	N/A
Congestion Income Distribution	All TSOs	ACER decision in process
Coordinated Redispatching and Countertrading	Relevant TSOs	In Development with TSOs;
DA Fallback Procedures	Relevant TSOs	Approved by NRAs
DA Firmness Deadline	All TSOs	Approved by NRAs
Determination of Capacity Calculation Regions	All TSOs	Approved by ACER
Generation and Load Data Provision	All TSOs	Approved by NRAs
ID Cross-Zonal Gate Opening/Closure Time	All TSOs	Amendment requested from NEMOs; NRAs decision in process
Maximum and Minimum Prices (DA)	All NEMOs	ACER decision in process
Maximum and Minimum Prices (ID)	All NEMOs	ACER decision in process
MCO Plan	All NEMOs	Approved by NRAs
Pricing of Intraday Capacity	All TSOs	NRAs decision in process
Products (DA)	All NEMOs	Amendment requested from NEMOs
Products (ID)	All NEMOs	Amendment requested from NEMOs
Redispatching and Countertrading Cost Sharing	Relevant TSOs	In Development with TSOs

## 1. Decision of 25<sup>th</sup> September 2017

- Approval of the SEM-GB Cross-Border Clearing and Settlement Arrangements (in accordance with CACM Article 77)
- <https://www.uregni.gov.uk/publications/approval-sem-gb-cross-border-clearing-and-settlement-arrangements>
- [https://www.cru.ie/document\\_group/decision-on-the-semopx-proposal-for-clearing-and-settlement-arrangements/](https://www.cru.ie/document_group/decision-on-the-semopx-proposal-for-clearing-and-settlement-arrangements/)

# FCA and CACM proposals NRAs decisions

TSOs consultations and proposals:

<https://www.entsoe.eu/news-events/entso-e-consultations/Pages/default.aspx>

NEMOs' consultations and proposals:

- [https://www.epexspot.com/en/pressmedia/news/details/news/All\\_NEMOs\\_Consultation](https://www.epexspot.com/en/pressmedia/news/details/news/All_NEMOs_Consultation)

NRAs' regional and pan-European decisions:

- CRU <https://www.cru.ie/professional/publications/> (still under revision due to the new website)
- UR <https://www.uregni.gov.uk/publications>

# Any Questions?



# TSO & NEMO update on implementation





# EirGrid Group engagement on CACM & FCA

## I-SEM

- Various I-SEM stakeholder groups dealing on day-ahead issues

## Ireland-UK Regional Group

- Regional TSO requirements

## ENTSO-E

- Market Committee
- Market Integration Working Group



## NEMO Committee



## Other EU fora

- Market European Stakeholder Committee
- CACM/FCA Coordination Group



# CACM & FCA – approved

## CACM

- Capacity Calculation Regions & subsequent amendment - All NRAs decision (09/17)
- Common Grid Model (05/17) & Generation and Load Data Provision - All NRAs decision (01/17)
- Fallback procedures - IU NRAs decision (06/17)
- Day-ahead Firmness Deadline - IU NRAs decision (06/17)
- MCO Plan - All NRAs decision (06/17)

## FCA

- Harmonised Allocation Rules - ACER decision (10/17)
- Single Allocation Platform – All NRAs decision (09/17)

# CACM & FCA – with NRAs/ACER

## CACM

- Capacity Calculation Methodology – IU TSOs submitted to NRAs (09/17)
- Intraday Capacity Pricing – TSOs submitted to NRAs (08/17)
- Intraday Gate Opening & Closure Times – TSOs submitted to NRAs (08/17)
  
- Congestion Income Distribution – NRAs submitted to ACER (06/17)
- Max & Min Prices – NRAs submitted to ACER (08/17)

## FCA

- Common Grid Model & Generation and Load Data Provision – TSOs submitted to NRAs (07/17)

# CACM & FCA – with TSOs/NEMOs

## CACM

- Algorithm requirements – NEMOs to resubmit (10/17)
- Backup methodology – NEMOs to resubmit (10/17)
- Products – NEMOs to resubmit (10/17)
- Scheduled Exchanges – NRAs request all TSOs proposal (09/17)

## FCA

- Under development, behind CACM in timeline

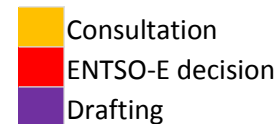
# XBID - update

- XBID planned go-live at end Q1 2018
- Shipping Module 2.0 planned for Q1 2019
- Second wave of LIPs planned for April 2019
- EirGrid/SONI are members of XBID Accession Stream
- I-SEM implementing interim Intraday solution for go-live

# Balancing Guideline Update

- All TSOs have candidates for or already endorsed EU implementation projects for all four processes:
  - IN - IGCC
  - aFRR – PICASSO (tbc)
  - mFRR – MARI (tbc)
  - RR - TERRE

# Balancing Guideline Update



EB Guidelines: All/relevant TSOs and ENTSO-E tasks	2017				2018											
	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
ENTSO-E to update manual of procedures for the Transparency Regulation																
Proposal for activation purposes																
Each TSO to propose T&Cs for BSPs and BRPS																
Proposal for pricing method of all products																
Proposal for TSO-TSO settlement of intended exchanges of energy																
Proposal for TSO-TSO settlement of settlement of ramps and FCR and unintended exchanges within and between SA																
Proposal for harmonisation of certain features of imbalance calculation & pricing																
Cross Border Capacity Calculation																
ENTSO-E monitoring plan																
Proposal for implementation framework for European platform for replacement reserves																
Proposal for implementation framework for European platform for frequency restoration reserves with manual activation																
Proposal for implementation framework for European platform for frequency restoration reserves with automatic activation																
Proposal for implementation framework for European platform for imbalance netting																



<https://youtu.be/0bm4hqINTyI>

# The Integrated Grid Model (IGM) and Common Grid Model (CGM)



# Presentation Outline

- Background – why do we need to provide IGMs?
- Importance of cross-border capacity
- How the capacity calculation is used in the markets
- Functional outline of the players
- High level journey of the IGM/CGM
- IGM production within EirGrid / SONI
- Indicative daily process
- The calculation
- Allocation constraints
- Fallback – what happens if the calculation fails?

# General Background

- Several of the European Network Codes require TSOs to develop and submit forecasted representative models of their transmission systems in order to coordinate key processes for maximised societal benefit
- CGMES is the common format for these models
- Other supporting files describe how the models should be “stressed” to demonstrate secure transmission system operation

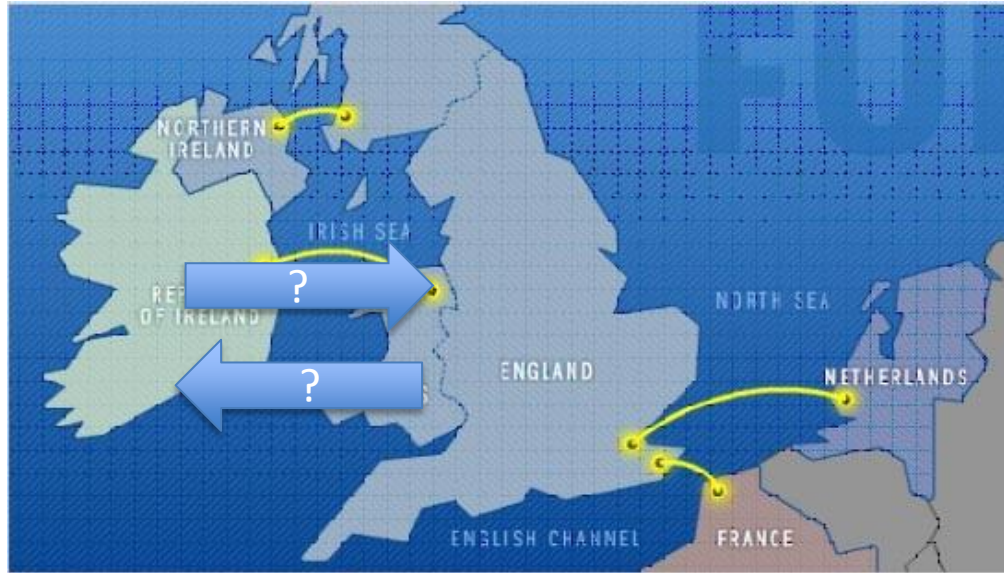
# Coordination between neighbours

- EirGrid and SONI are part of the Ireland-UK Capacity Calculation Region
- We have developed a Coordinated Cross-border Capacity Calculation Methodology
- Recently submitted to RAs for approval
- Coreso will undertake calculations on behalf EirGrid/SONI and National Grid using the IGMs supplied by the TSOs

# Other Requirement for IGMs

- This presentation is focused on the use of IGMs/CGMs for capacity calculation but these are also required for:
  - Outage coordination (year, month, week, day ahead)
  - Coordinated operational security analysis (year, month, week, day ahead)
  - Coordinated Availability Assessment

# Importance of cross-border capacity



Reduced interconnector capacity can frustrate energy markets since it may limit access to cheaper generation sources in another bidding zone.

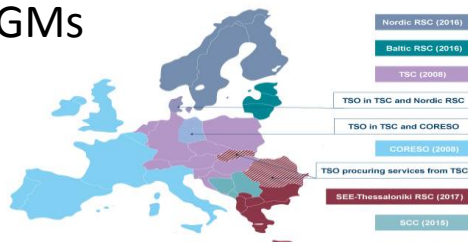
So it is vital to maximise interconnector capacity

# CCM/CGM Functional Description

1. TSOs forecast the near time status of their network using IGMs and supporting data



2. RSC/CCC aligns and merge the IGMs from across Europe to create CGMs



3. Regional Security Coordinators analyse the CGMs to calculate maximum cross border capacity for each interconnector

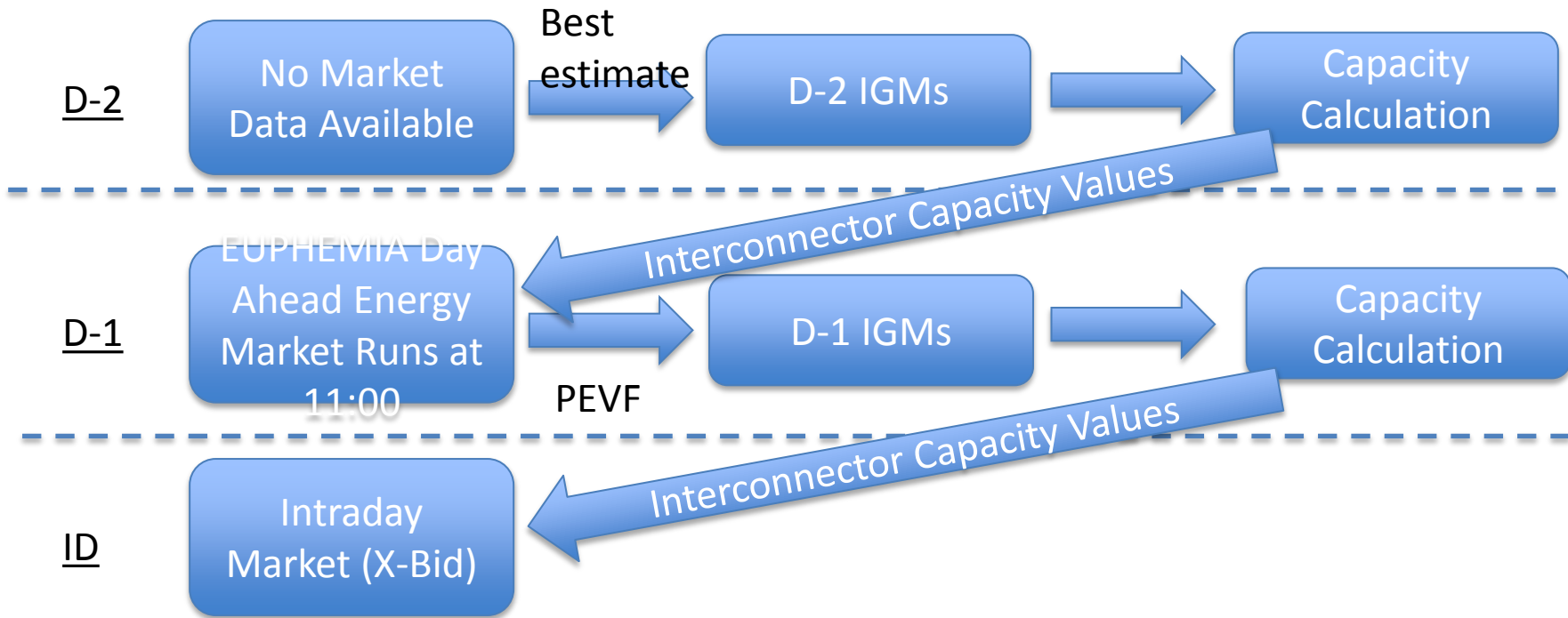


4. Subject to TSO validation, the calculated cross border capacity values are deployed in the electricity markets platforms



RSC = Regional Security Coordinator  
CCC = Coordinated Capacity Calculator  
Coreso will fulfill these roles for EirGrid and SONI.

# Capacity Calculation and the Market?

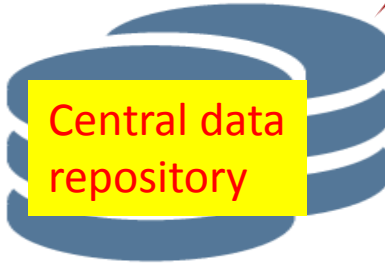
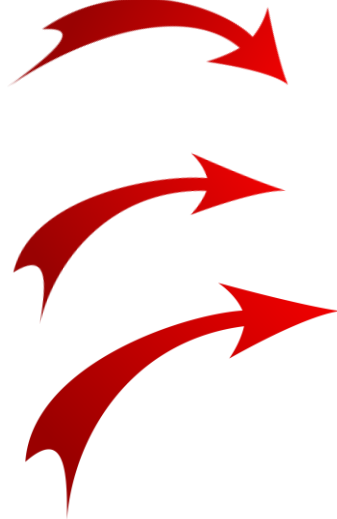


# High Level Journey of the CGM

TSOs



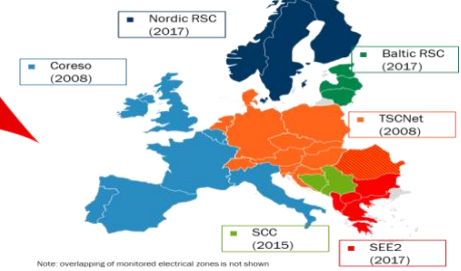
TSO IGMs



Market Platforms

IGM → Alignment/Merging → CGM

RSC/CCC



Capacity Calculation



# Data and Communications

## Central Data Repository

- Operational
- Planning
- Data
- Environment (OPDE)

## Communications

- All
- TSO
- Operational and
- Market-Operations network
- Atom

Alignment process – pre-processing for D-2 only (no market data available!)

# IGM Production

Supporting files

CRAC file

GSK file

Delivered by I-SEM

MMS

HVDC File

Generation File

Forecast Demand (load) File

Modify Hourly timepoints and target day settings

Modify Slack handling, power flow solution, contingency analysis and diagnostics options settings

IGMG

D-1/D-2 IGM

Quality Check

Convert IGM to CGMES Format

Saved locally and Upload to OPDE

Quality Issues Identified – edit IGM or rerun process

RSCI Compliance Check

Validation Issues Identified by RSCI – edit IGM or rerun process

IGM Ok to Proceed for Use in Creation of CGM

End

EMS

Outage Database

Outage File

Network Topology File

Constraints Schedule File

Voltage and Flow Regulations File

DLR Circuits Ratings Forecast File

IGMG is an EMS module (developed by GE)

ENTSOE/RSC

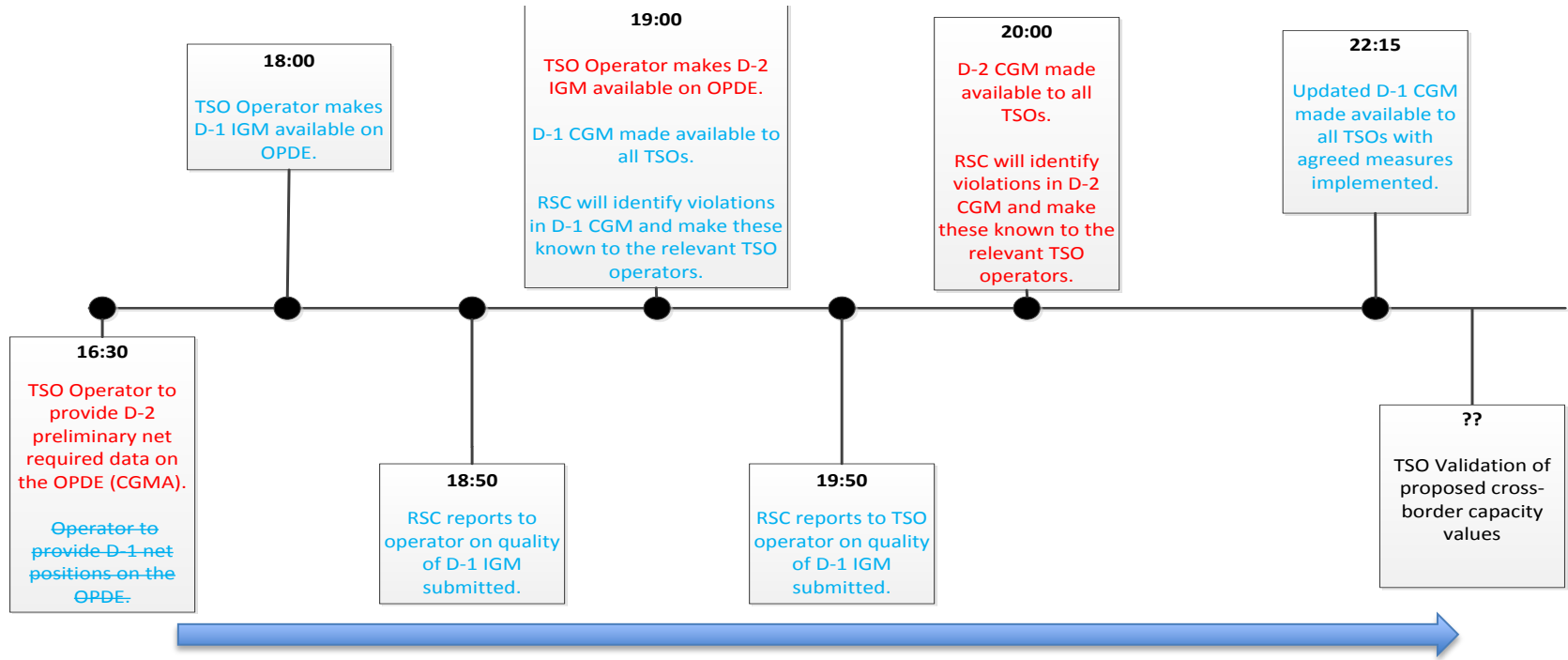
# Other Processes and Data required to facilitate Capacity Calculations

- CGMA Process
  - At D-2, no market data will be available, so each TSO must forecast generation, demand and cross-border transfers.
  - Need a process to align cross-border transfers.
  - CGMA pre-processing data advises the RSC/CCC of each TSOs' proposed interconnector flows and their flexibility.
  - RSC/CCC will align using agreed algorithm and advise TSOs of the results.
  - May be possible to agree the forecast with UKNG before CGMA

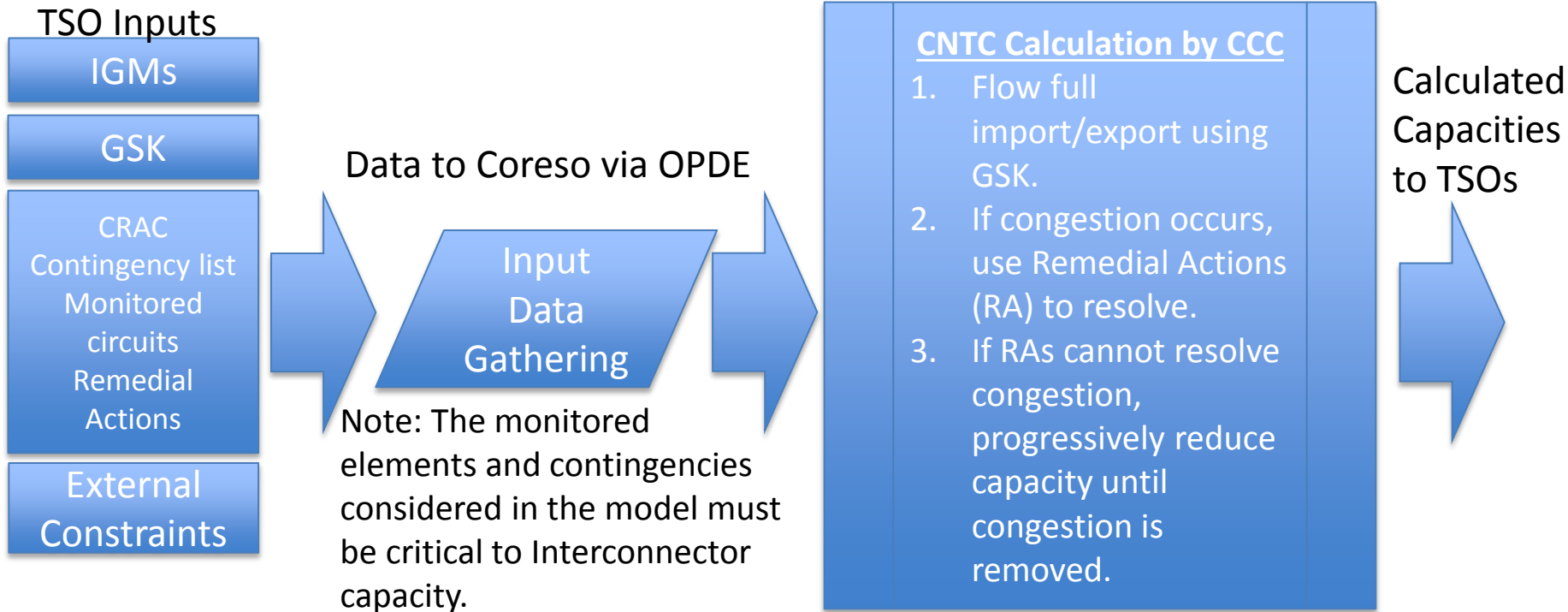
# Other Processes and Data required to facilitate Capacity Calculations

- GSK File (Generation Shift Key)
  - How generation output is adjusted to alter interconnector flows
- CRAC File
  - List of Contingencies that may result in cross border congestion
  - List of circuits that could be congested and need to be monitored as a consequence
  - Remedial Actions that potentially relieve congestion if it occurs
  - Other system Constraints not related to congestion (e.g. voltage, stability)

# Indicative High Level TSO Daily Timeline

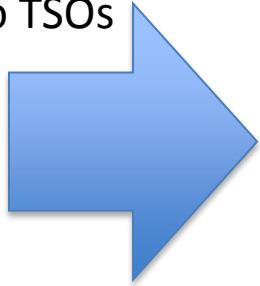


# The Calculation Process



# The Calculation Process

Calculated Capacities to TSOs



Per Interconnector Direction Timestamp

## Validation

1. Each TSO will consider the calculated NTC results.
2. TSOs may reassess computed NTCs (if unforeseen circumstances occur).
3. TSOs may decide not to validate NTCs.
4. Report non-validation issues to CCC (and NRAs)

CCC shall issue a global acceptance message

Yes

Global acceptance ?

No

CCC shall issue a global rejection message

Silence will be interpreted as a “Yes”!

# Allocation Constraints

## CACM Requirement

- Although not part of the capacity calculation, CACM requires allocation constraints to be addressed in the capacity calculation methodology.
- These constraints are normally applied within the allocation process.

## Specifics

- Loss factors: Each Interconnector Owner to define an annual single loss factor.
- Ramping limitations:
  - EUPHEMIA currently imposes hourly ramping constraints if required.
  - But EirGrid/SONI apply ramp rates per minute.
  - Modification request submitted.



# Fall Back Position

- If the Capacity Calculator fails.....
  - Use the results of the previous calculation.
  - If this isn't available, assume the Maximum Permanent Technical Capacity.
  - Capacity available to market is still subject to TSO validation.
- The TSO always has the ultimate say.....
  - But should be prepared to give a good reason for reducing capacity.

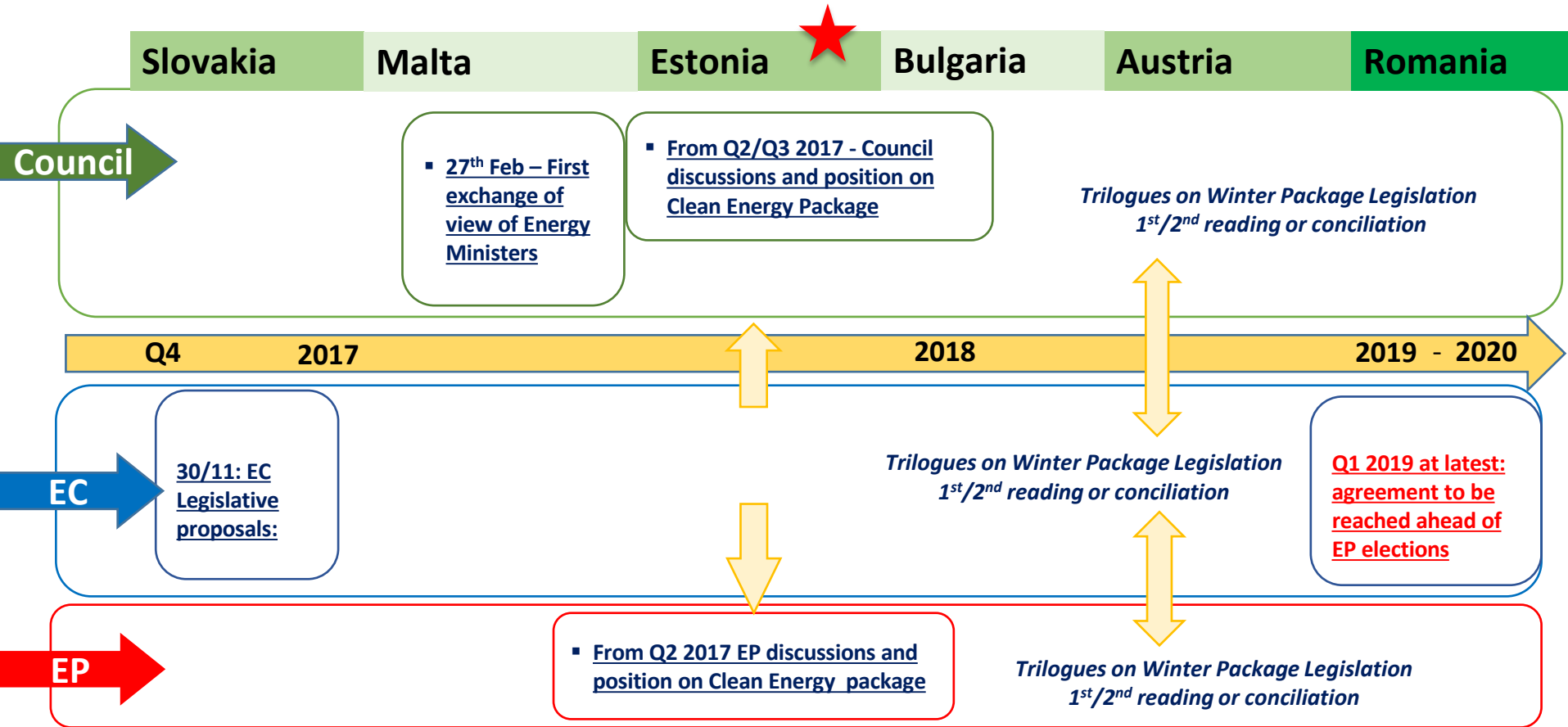
# Any questions?

# DSO views

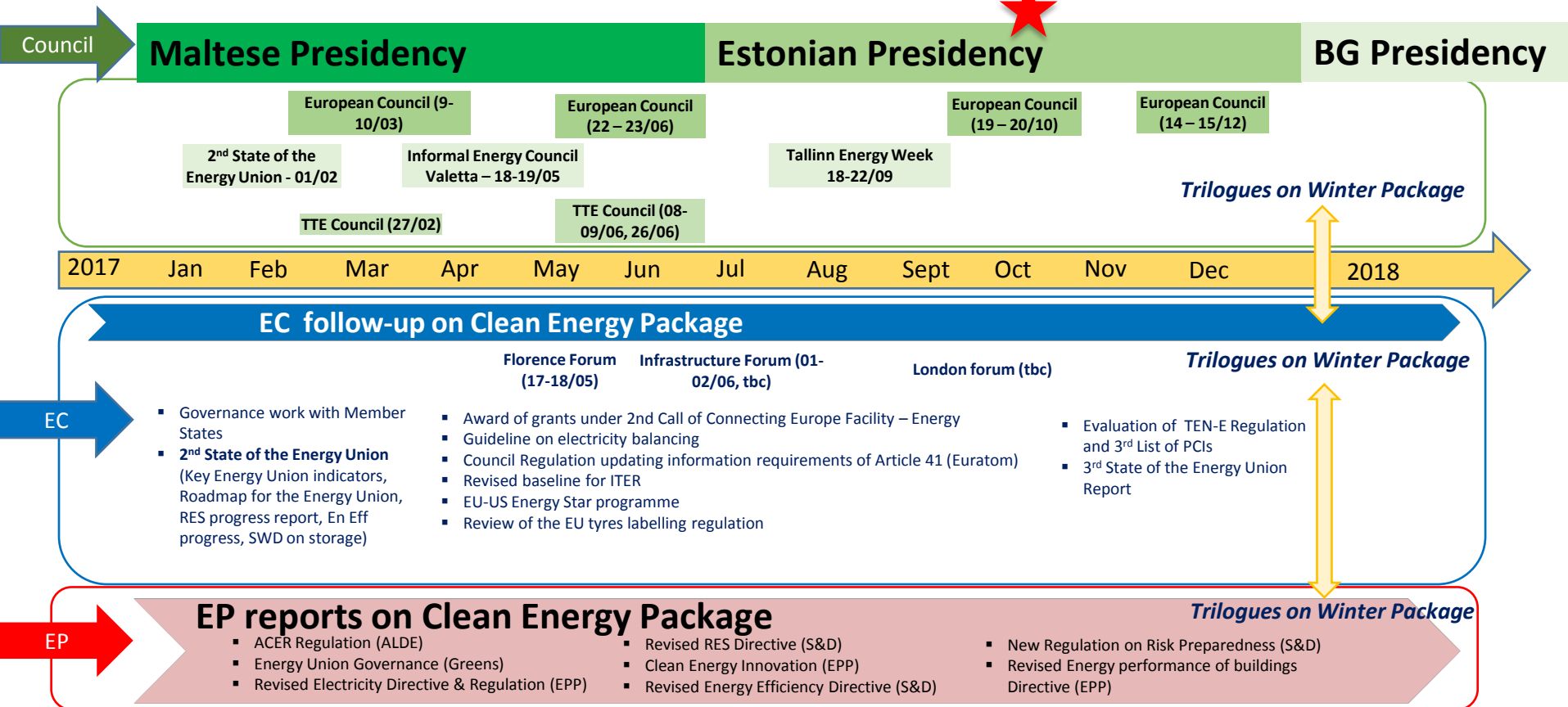
# Clean Energy Package

- The **Clean Energy Package (CEP)** is a set of proposed measures to keep the European Union competitive as the clean energy transition is changing global energy markets.
- The proposals were submitted by the European Commission in November 2016.
- ...and are being commented on by the EP & Council.
- There will be a vote by the European Parliament (ITRE) by end 2017.
- Following amendment, the legislation will likely enter into European law by 2020.

# 2016 - 2019 Overview Clean Energy Package



# 2017 Overview



# Clean Energy Package

There are eight main policy documents:

## Proposed text from European Commission

[REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a European Union Agency for the Cooperation of Energy Regulators](#)

recast

[draft report](#)

Morten Helveg Petersen

[REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on risk-preparedness in the electricity sector](#)

new

[draft report](#)

Flavio Zanonato

[DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on common rules for the internal market in electricity](#)

recast

[draft report](#)

Krišjānis Kariņš

[REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the internal market for electricity](#)

recast

[draft report](#)

Krišjānis Kariņš

[REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the Governance of the Energy Union](#)

new

[draft report](#)

Michèle Rivasi, Claude Turmes

[DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the promotion of the use of energy from renewable sources](#)

recast

[draft report](#)

José Blanco López

[DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2012/27/EU on energy efficiency](#)

new

[draft report](#)

Adam Gierek

[DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2010/31/EU on the energy performance of buildings](#)

new

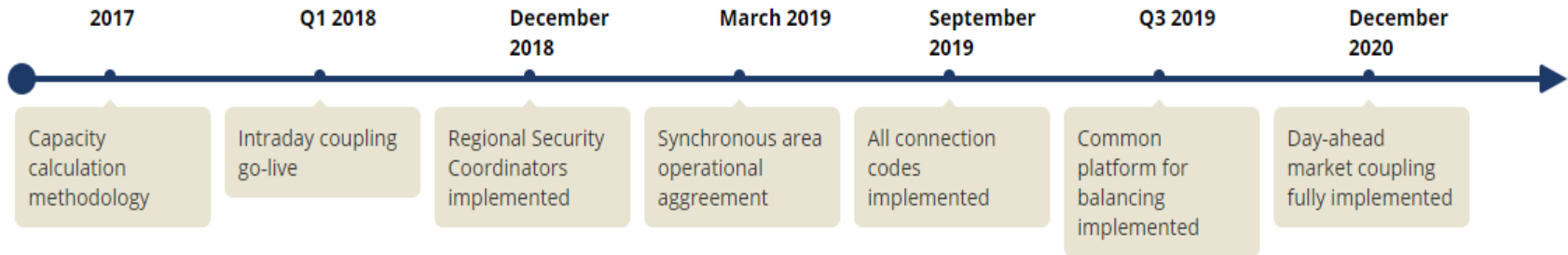
[draft report](#)

Bendt Bendtsen

# More information

- <http://www.eirgridgroup.com/customer-and-industry/european-integration/>
- [https://electricity.network-codes.eu/network\\_codes/](https://electricity.network-codes.eu/network_codes/)

## Key milestones





# Q&A



# Lunch

Reconvene @ 12:30?

