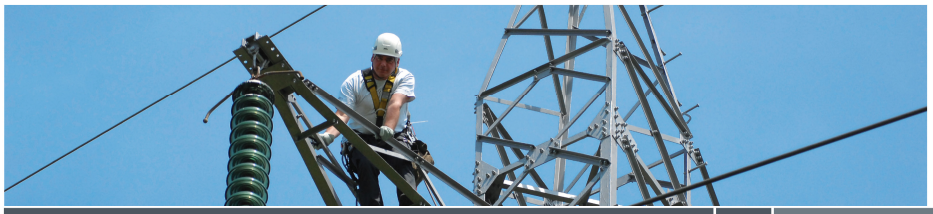

Taskforce - ‘Bid ladder’ Consultation

30-11-2012

30.11.2012 Carton Filip

Taskforce - ‘Bid ladder’ Consultation

► Agenda

- Introduction to this taskforce
- Practical aspects and Stakeholders presentation
- Context and challenges for balancing:
  - Plenty of challenges
  - Working priorities and key milestones for 2013
- Balancing philosophy for Belgian market
  - Overall market model
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- Bid Ladder project:
  - AS IS: Free bids via CIPU Contract
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  - Key design issues
  - Expectations – Constraints capted by Elia
  - Next steps

Taskforce - 'Bid ladder' Consultation

► Introduction to this taskforce

"Bid ladder"

Set up a simple and powerful "balancing platform" to create the opportunity for market players to offer, on top of centralized production units, balancing flexibility on load and decentralized production units.

Taskforce - 'Bid ladder' Consultation

► Introduction to this taskforce

Cfr presentation for the Plenary UG, Elia proposed to set-up an Ad Hoc taskforce under the WG System Operations, to consult and exchange ideas with stakeholders:

- ARP's; Producers; Industrial clients; Aggregators; Others : …

Topics to be discussed:

- Challenge of concept & framework for the bid ladder
- "EU Standard" balancing products (activation delay, duration, ramp rate, …)
- Contractual aspect, IT-Platform, Roll-out, Etc…

Response and interest is very positive, more then 25 stakeholders confirmed their interest:

- Producers (via FEBEG), Industrial clients (via Febeliec), Aggregators (individual)
- APX-Endex; Edora; GABE, SPF Economie; etc…

- The scope of this taskforce is "to consult and exchange idea's" so that stakeholders expectations can be integrated into our design and approach.
- We will give feedback to the UG about the progress of this taskforce, without requesting a formal validation however.
- Formal validation to be obtained from CREG via new version of the balancing rules.

Taskforce - 'Bid ladder' Consultation

► Proposal to extend as a Balancing Task Force

Elia will request on a the next UG (06-12) a confirmation to extend the scope of this task force, beyond the Bid Ladder project, rationale will be explained further.

Name: Balancing Task Force
Purpose: consult stakeholders on evolutions of balancing market design
Status: ad-hoc Task Force under Elia's Users' Group WG System Operations

Participants:

- Users' Group members (Producers, Industrial consumers, suppliers, DSOs, etc.)
- + Aggregators
- + CREG

Topics to be discussed:

- Bid Ladder project
- Evolutions of R3 products and contracts for 2014 and beyond
- Participation of load to AS
- Future vision for R1 and R2 procurement and resources
- Balancing publications
- XB balancing synergies
- …

Taskforce - 'Bid ladder' Consultation

► Practical aspects

- For the bid ladder topic, taskforces will be held with a frequency of +/- 6 weeks @ Elia EMP. The actual idea is that every taskforce we'll tackle one "key design issue" (see further), so that the participants know more or less what to expect in advance:
  - Taskforce 1 (30-11) : Introduction, Scope, Expectations, ... + list the "key design issues"
  - Taskforce 2 (11-01): Which contractual model to use for offering free bids
  - Taskforce 3 (end-february?): Portfolio and/or Unit bidding ⇔ link with congestions management
  - Taskforce 4 (mid-april): Standard product definitions
  - Tasforce 5 (end-may): Contractual implications, IT-platform, roll-out, ...
  - … // topics or meetings not to be excluded
- We'd like to capture feedbacks as much as possible via interaction (active and stable participation)
  - Preferably 1 person per stakeholder, delegation possible off course.
- Meeting minutes will be sent by Elia (via mail) after each taskforce.
  - Including a doodle for the second next Taskforce.
  - Comments in written, validation the next taskforce.
- Presentations, documentation, … in UK language.
- Suggestions / questions?

Taskforce - 'Bid ladder' Consultation

► Stakeholders presentation

Stakeholders presentation:

- Name
- Company
- Your role in the project Bid Ladder?

Taskforce - 'Bid ladder' Consultation

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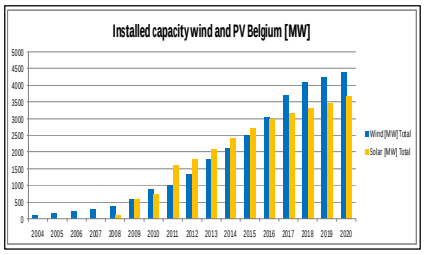
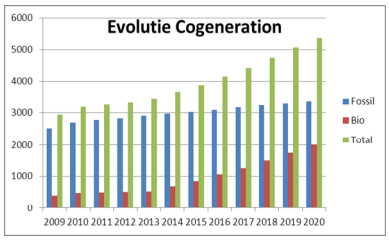
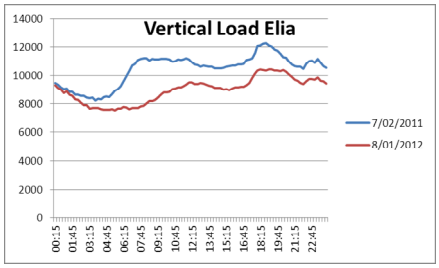
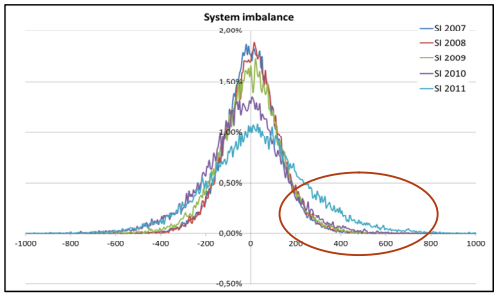
Context and challenges for Balancing:
► Plenty of challenges…









Context and challenges for Balancing
► Working priorities for 2013

Facilitate balancing by BRPs < real-time => minimise residual needs

- 2012: Single marginal imbalance tariff 1/1/12; new website; publication of Wind and Solar Forecasting
- 2013:
  - **Enhancement of balancing publications (infeed, improved merit order information, Solar forecasting v2)**
  - ***NB: market integration continued (NWE Day-Ahead and Intraday in 2013)***

Diversify resources providing balancing services; in particular, facilitate participation of load.

- 2012 for 2013: major evolutions to R1 and R2 products to enable participation of a variety of assets; several concrete initiatives of load participation (R1, ICH, Pilot project R3 from decentralised load).
- **2013 for 2014…and later:**
  - **Bid Ladder platform**
  - **Evolutions of R3 products**
  - **Contractual model for participation of load and distributed resources to AS**
  - **Vision and requirements for R1 and R2 diversification and procurement**

Realise XB synergies

- 2012: Framework Guidelines on Balancing; participation BE in I-GCC (imbalance netting with 6 countries incl. Germany, 1/10/12); provision of R1 from France 1/1/2013; enhancement of mutual assistance contracts.
- **2013**
  - **NC Balancing**
  - **NC LFC&R**
  - **Study on potential BE-NL XB synergies in balancing (with Tennet)**
  - **Further investigations of XB procurement for R1/R2 and further modules of GCC**

Context and challenges for Balancing

► Zoom: demand participation: new developments

Until 2012 the majority of AS has been offered by ARPs with a CIPU contract with production units covered by this contract. Elia wishes to extend participation to new resources and new players. This is encouraged by CREG. **Three concrete initiatives achieved for 1/1/2013.**

1. **R1 Load**: partially investigated back in 2008; task force R1 Load with 3 industrial consumers in 2011/2012.

   ⇒ **30MW R1 DOWN will be provided by industrial consumers in 2013**

2. **ICH 2013**: the possibility to offer the service from a pool of several Elia-grid access points lead to new offers from aggregators.

   ⇒ **<15MW ICH will be provided by Energy Pool from a pool of 5 access points in 2013**

3. **Pilot project « R3 from Decentralised Load »**: as part of its R&D effort and with support from CREG, Elia decided to contract an offer from *Restore* for 5 to 10 MW of interruptible power from the distribution grid, as a pilot project. Objective: test the technical performance of interruptible load in d-grid; gain experience on control modalities and contractual pre-requisites.

   ⇒ **Tests will be performed in 2013 for provision of 5 to 10 MW of interruptible power from a pool of >10 access points connected to the distribution grid and contracted by *Restore*.**

Context and challenges for Balancing

► Key milestones 2013

Renewal of Tertiary Reserve Contracts

- Current contracts expire end 2013.

Continuation of consultations on Balancing initiated by CREG in 2012

- A “Phase 1” (lead by CREG) took place in Q1 2012, involved current providers of R1 and R2 in Belgium, and was dedicated to R1 and R2 evolutions for 2013.
- It was agreed to foresee a “Phase 2” for evolutions after 2013, lead by CREG or Elia (tbc), extended to all reserve types, extended to all market actors (other producers, industrial clients, aggregators,…).

Requirement from the new Electricity Law (art. 8 §1)

- « (15) établir au plus tard dans les dix-huit mois suivant l’entrée en vigueur de la loi (…) (=> 8/7/2013), un rapport en étapes sur les conditions nécessaire à assurer l’équilibre de la zone de réglage. Après concertation avec les acteurs de marché concernés, il adresse ce rapport à la Fédération belge pour les entreprises d’électricité et de gaz, à la commission et au ministre en y déterminant explicitement les conditions de faisabilité préalables à la mise sur pied de la plateforme visée ci-dessus au point 2° du présent alinéa. »
- « (2) Pour l’activation des moyens de production nécessaire à assurer l’équilibre de la zone de réglage, le gestionnaire du réseau privilégie le recours à une plateforme de marché transparente »

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Reminder - Balancing responsible party (ARP)

► Responsibility

- Within control zone: TSO "outsources" balance responsibility to Balance Responsible Parties ("ARP")
- Every sale/purchase; import/export and injection/off-take must fall within perimeter/portfolio of ARP
- Obligation for ARPs to deliver balanced day head programs
- ARP portfolio must be balanced on Qh base: Once all metering is known, TSO calculates imbalances
- All activation requests of reserves by Elia are considered into the imbalance volume calculation
- Imbalances are invoiced at imbalance tariffs

		NRV	
		Négatif (réglage net à la baisse)	Positif (réglage net à la hausse ou zéro)
Déséquilibre du Responsable d'Accès	Positif	MDP - α_1	MIP - β_1
	Négatif	MDP + β_2	MIP + α_2

MDP=Marginal Decremental Price = Lowest downwards activation price

MIP = Marginal Incremental Price = Highest Upwards activation price

Niet-gevalideerde data voor 03/01/2012

03/01/2012

Kwartier	POS (€/MWh)	NEG (€/MWh)
00:00 > 00:15	38,67	38,67
00:15 > 00:30	36,60	38,67
00:30 > 00:45	35,75	38,67
00:45 > 01:00	33,98	38,67
01:00 > 01:15	-5,69	0,00
01:15 > 01:30	-9,11	0,00
01:30 > 01:45	-12,68	0,00
01:45 > 02:00	-3,14	10,28
02:00 > 02:15	-28,94	-15,02
02:15 > 02:30	-29,02	-15,02
02:30 > 02:45	-29,83	-15,02
02:45 > 03:00	-30,24	-15,02
03:00 > 03:15	-30,22	-15,02
03:15 > 03:30	-28,48	-15,02
03:30 > 03:45	-26,71	-15,02
03:45 > 04:00	-26,82	-15,02
04:00 > 04:15	-27,40	-15,02
04:15 > 04:30	-26,71	-15,02
04:30 > 04:45	-25,25	-15,02
04:45 > 05:00	-23,46	-15,02
05:00 > 05:15	2,27	10,28

TSO's possible measures to resolve residual imbalances
► Explicit activation of flexibility

Explicit activations of balancing energy offered by Balancing Service Providers

Secondary control (140 MW)

Incremental or decremental bids (non-contractual R3) => Scope Bid ladder

Contractual tertiary reserves production (400MW)

Contractual tertiary reserves load (261 MW)

Inter-TSO emergency reserves

Month/Year	R2 +	R2-	Bids+	Bids-	R3 Prod	R3 Load	InterTSO Import/Export
Jan-11	58.888	-10.513	46.828	-497	15.077	0	0
Feb-11	34.096	-21.159	17.740	-4.034	3.771	0	600
Mar-11	19.693	-45.940	4.166	-33.773	760	0	-1.900
Apr-11	20.521	-39.369	5.603	-14.618	1.295	0	-1.275
May-11	16.550	-48.744	2.794	-23.760	1.173	0	-2.450
Jun-11	23.363	-38.484	5.773	-10.027	708	771	-750
Jul-11	24.377	-36.902	3.253	-6.732	229	0	-1.400
Aug-11	30.956	-33.866	10.637	-7.145	2.600	0	-4.975
Sep-11	28.596	-28.842	7.964	-5.151	2.610	0	-1.000
Oct-11	19.510	-40.925	6.399	-19.155	624	369	-5.150
Nov-11	23.074	-36.117	10.215	-17.763	1.123	0	-1.325
Dec-11	17.441	-48.833	11.022	-25.130	1.860	817	-4.975
Total	317.065	-429.696	132.395	-167.786	31.830	1.958	-24.600

TSO's possible measures to balance the area
Real time price signals ~"implicit activation" of flexibility

Real time publication of adequate imbalance price signals may trigger:

- For centralised power plants (>75 MW) having signed a CIPU

  Adaptation of scheduled production programs– IDPCR

  Deviation from scheduled production programs –reject or only partially perform activation requests by Elia (but Elia has the right to force the producer to go back to his program)

  => Real time optimization of balancing: most efficient power plants will react if interesting

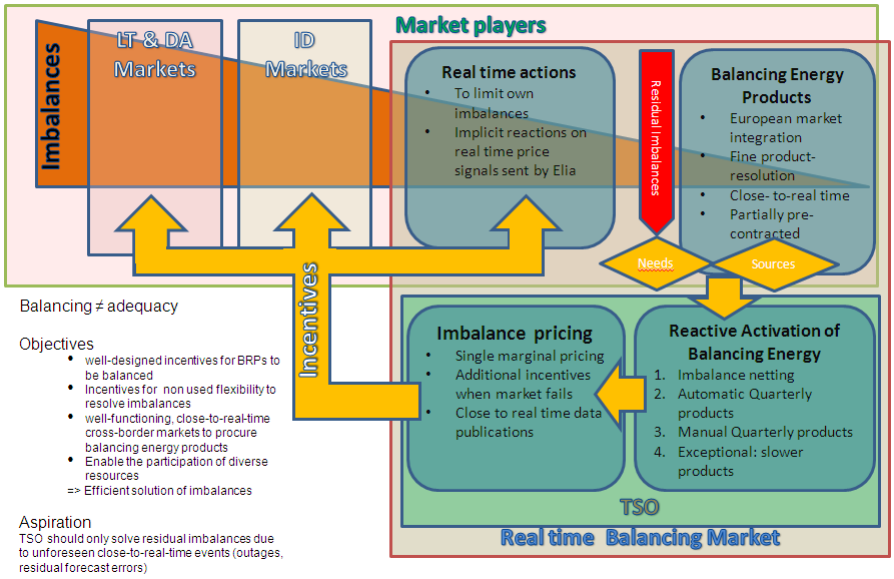
- For other flexibility

  Reaction on imbalances prices: adaptation of production & load level

  => It is not feasible for all available flexibility to send explicit balancing offers (complex, firmness issues, not core business)

  ⇒ Price signals allow supplementary flexibility (DSM, RES) to participate to the balancing market

Balancing philosophy for Belgian market



Balancing ≠ adequacy

Objectives

- well-designed incentives for BRPs to be balanced
- Incentives for non used flexibility to resolve imbalances
- well-functioning, close-to-real-time cross-border markets to procure balancing energy products
- Enable the participation of diverse resources

=> Efficient solution of imbalances

Aspiration

TSO should only solve residual imbalances due to unforeseen close-to-real-time events (outages, residual forecast errors)

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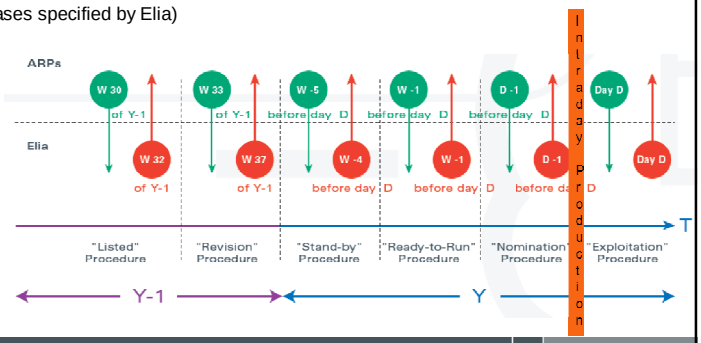
Real-Time Balancing Platform / Bid ladder:
► AS IS - Free bids via CIPU contract

Who has to sign a CIPU-Contract?

The ARP responsible for Injection of a Production Unit (PU), designated in Access contract by access holder, when the Production Unit is:

- ≥ 25MVA ***or***
- connected to the Elia grid ***or***
- connected in distribution having an impact on the Elia grid ***or***
- providing Ancillary Services to Elia ***or***
- others (special cases specified by Elia)

6 Procedures:



Real-Time Balancing Platform / Bid ladder:
► AS IS - Free bids via CIPU contract

In day-ahead = Procedure « Nomination »

- Every day (before 14hrs) the ARP responsible for injection of CIPU Power Units submits:
  - an « Access Program » detailing per quarterly hour of day D the power output per PU **and**
  - a « Coordination Program » detailing per quarterly hour of day D the remaining capacity
    - with fixed price quotation for I/D bids valid for execution on day D-1 (congestion)
    - and free I/D bids valid for day D (balancing)
  - Time unit : quarterly hour

Real-Time Balancing Platform / Bid ladder:
► AS IS - Free bids via CIPU contract

In Realtime = Procedures « Intraday» and « Exploitation »

- "Exploitation": D-1 Nomination is the reference but the ARP has the right to deviate from his Nomination, via Set Point Requests, with prior permission from ELIA and for as long as ELIA agrees with such a deviation.
- "Intraday": Since above deviations are not firm (ELIA has the right to request an ARP to return to his last program) via Intraday Production Change Requests (IDPCR) ARP's are allowed to change their D-1 programs in a firm way.
  - Neutralization delay of 1hr.
  - flexibility on status, configuration, power program and I/D bid prices.
  - transparency on ELIA website wrt constraints.

=> A complex process of implicit bidding (activation prices) where volumes are determined by Elia based on Pmax, Pmin, Program, Configuration, RampRate, …

Real-Time Balancing Platform / Bid ladder:
► AS IS - Free bids via CIPU contract

Attention - CIPU data and process is not only used for balancing purposed:

- Load flow calculations on different horizons (Long Term => Short Term)
- Both balancing and congestion bids are based on CIPU nominations
- Cross-check with reserve nominations (R1/R2/R3)
- Cross-check with XB and HUB nominations for inconsistencies
- Balancing publications on internet
- Calculation of reserve margins (for loss of largest unit)
- # reporting and monitoring (system adequacy)
- Etc…

Real-Time Balancing Platform / Bid ladder:
► TO BE - Goal and Scope

TO BE (new flexibility):

Set up a simple and powerful "balancing platform" to create the opportunity for market players to offer, on top of centralized production units, balancing flexibility on load and decentralized production units.

- As a minimum via the ARP to start with. Contractual model for other participants to be defined taking into account all contractual relationships.
- Incremental and/or Decremental bids, offered, on generation **or** load.
- Connected to the Elia **or** distribution grid, taking into account DSO constraints.
- With a certain degree of geographical information for congestion management.
- Without absolute guarantees for Elia that volumes would be offered, but activation prices will be free.
- The actual (CIPU) offers have to remain available for activation (legal obligation to offer) but via the new platform, meaning any new type of volumes offered would create additional liquidity compared to today.

Real-Time Balancing Platform / Bid ladder:
► AS IS - APP via CIPU contract

- **Short term work around: Aggregated Power Plant within CIPU framework:**
  - Creation of a Virtual power plant in CIPU contract composed of an aggregation of load and/or small injections of their perimeter.
  - using existing CIPU tools/procedures/contracts to allow ARPs to offer, on top of classical CIPU production units, balancing flexibility from any other source in their perimeter.
  - Such APP implies that, the ARP has signed a CIPU contract and has at its disposal an interface that communicates with Elia's bidding interface Probid.
- **In Practice**
  - ARPs is offering aggregated flexibility to Elia; 1 volume & 1 price per quart-hour per APP
  - List of access points required; locational information +estimated flexibility
  - Elia sends activation request to ARP
  - ARP transfer activation request to concerned access points
  - Elia considers activation of APP in imbalance volume calculation
- **Status**
  - ARPs with CIPU contract were contacted the 29th of October by mail.
  - Interested ARPs are invited to contact Elia in order to discuss practical modalities.
  - Currently one APP active

Real-Time Balancing Platform / Bid ladder:
► Key design issues – entso-e

Link with the European Network code for balancing:

- On September 14th ACER published the definitive Framework Guidelines for balancing, which are setting the framework in which the future Network Code for balancing should be written.
- The core goal of the Framework Guidelines is to establish a European-wide multilateral TSO-TSO market for balancing and reserves.
- On the long run harmonized balancing energy products should be shared without margins on a common platform.

Relevant stipulations for project bid ladder:

- One year after the Network Codes enters into force (+/-2014) TSOs shall submit to ACER;
  - A common proposition for standard balancing energy products
  - A proposal for a pricing method to settle activated balancing energy
- Objective: Facilitating wider participation of demand response and renewable sources of energy
- The Network Code on Electricity Balancing shall require that locational information of balancing resources is used to further optimise the balancing of the system and perform security analysis to avoid internal and cross-border congestions

Real-Time Balancing Platform / Bid ladder:
► Key design issues – entso-e

Energy from:	Manual reserves	
2 years after NC	TSO-TSO CMO with margins for RR	(Currently not used by Elia)
3 years	CBA for 6yr target	
4 years after NC	TSO-TSO CMO with margins for RR & mFRR	(CIPU Bids – R3 - ICH)
6 years after NC	EU-wide TSO-TSO CMO w/o margins for RR & mFRR	(CIPU Bids – R3 - ICH)

CMO = Common Merit Order RR = Replacement Reserves (>15 minutes)
FRR = Frequency Restoration Reserves (<15 minutes activation) a=automatic m=manual

Real-Time Balancing Platform / Bid ladder:
► Key design issues – Principles (1)

- **Pricing mechanism; pay-as-bid vs. pay-as-cleared**

  The bid ladder platform will be developed in such a way to allow both pricing mechanisms.

  Discussion possible; however definitive decision dependent on other projects

  Reason:

  final pricing proposition by ENTSOe done 1 year after the NC balancing enters into force.

  Cross border TenneT project; which pricing mechanism is feasible/optimal for cross-border collaboration

  Link to product definition

- **Definition of products;**

  The bid ladder platform will be developed in such a way to allow modifications of product characteristics.

  Possible characteristics are; schedules vs. continuous, ramping rate, activation time, etc…

  Definitive product definition dependent on ENTSOEs proposition for standardized balancing energy products (1 Year after NC enters into force)

Real-Time Balancing Platform / Bid ladder:
► Key design issues – Principles (2)

•Firmness

All offered bids should be firm. (once activated price & volume cannot be changed anymore by bidder)

Identify key requirements for providers to guarantee firmness

Reason: In the future TSOs should share in a firm way balancing energy products with other TSOs.

•Congestion management:

Elia will not activate balancing bids which are causing congestions on DSO and TSO grids.

Therefore information will be required per access point; location + amount of flexibility

Reason:

Elia should activate balancing energy in cost efficient way without putting grid security at risk.

Moreover on the long run it is difficult to defend to sell cross-border cheap balancing energy which is creating locally congestion costs

• Which contractual model to use for offering free bids

Only allowed for ARPs (current model)

Also other market parties ? Under which conditions?

Real-Time Balancing Platform / Bid ladder:
► Next steps – questions

- Did this first taskforce meet the expectations?
  - Strong points? Weak points? Suggestions?
- Elia will send mintutes, incl Doodle for next taskforces.
- Next tastforce = 11-01-2012.
- Other questions