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Reliability & Safety Working Group

3 May 2012

Reliability and Safety Working Group

- Introduction to working group: working arrangements and background
- DPCR5 arrangements as a starting points
- DNO/ Ofgem thoughts on group's priorities for Load Index
- Terms of reference, meeting dates & membership
- Initial thoughts on areas for development for RIIO-ED1
- Interactions with FCWG
- Developing criticality
- Assessment process considerations

Working group arrangements

- This meeting will be minuted – views and actions
- The minutes will be published on Ofgem's website, after having been circulated to attendees for comment.
- We are proposing to attribute views and opinions expressed at the meeting.
- If there are any objections this, please make this clear when commenting on minutes.

The outputs-led framework

OBJECTIVES

Objective 1: Play a full role in the delivery of a sustainable energy sector

Objective 2: Deliver value for money over the long term for existing/future consumers

OUTPUT CATEGORIES

Environmental impact	Conditions for connections	Customer satisfaction	Safety	Reliability and availability	Social obligations

PRIMARY OUTPUTS

Indicators to determine performance in the output categories during the price control

SECONDARY DELIVERABLES

Intended to facilitate delivery of primary outputs in future price control periods

Considerations in setting primary outputs

Need to also consider the principles for setting primary outputs

Principles guiding the development of primary outputs

- **Material**
- **Controllable**
- **Measurable**
- **Comparable**
- **Applicable**
- **Compatible with the promotion of competition**
- **Legally compliant**

Primary Outputs & Secondary deliverables

- Primary Outputs:
  - Reflect the wants and needs of a network company's stakeholders
- Secondary Deliverables ("a means to an end"):
  - Managing network risk
  - Ability to deliver outputs in the future
  - Innovation

Potential Outputs R&S outputs framework

- Safety
  - Primary Output : compliance with HSE requirements.
- Reliability
  - Primary Output : Interruptions performance
  - Secondary deliverables : health and load Indices, resilience measure

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RSWG – Setting the scene & areas for potential development

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DPCR5 "Network Outputs" as a starting point

- Intended to ensure that investment of customer money is tied to a deliverable that is in line with customers' priorities and measurable within the price control period
  - Designed to help distinguish between companies that innovate and deliver and those that defer investment with IIS considered a lagging indicator of this behaviour

- Essentially the framework developed for Load Index in DPCR5 is largely appropriate for, and compatible with the RIIO principles
  - Completing the original vision (ie: criticality measure, HI interactions
  - Accounting for new challenges faced by the sector (ie: uncertain load growth, DRS, smart meters etc.)

KEY POINT: We intend to build on what is already in place for DPCR5

RSWG priorities – DNO responses

Load indices

- Incorporation of criticality / prioritisation
- Accounting for impact of DSM.
- Ensure relevance to ED1 issues.
- Need to recognise the pace of change for demand connections (investing ahead of need) and DG connections

Ofgem priorities

Arrangement	Proposed activity	Importance for Changes in ED1	Complexity of Changes
Health Index	Incorporation of asset criticality / consequence,	High	Medium
Load Index	Incorporation of criticality / consequence, DSM & investment ahead of need.	High	Medium
Safety	Develop and agree new primary output.	High	Low
Interruption Incentive Scheme (IIS)	Incentive rates, confirm unplanned target setting methodology, pre-arranged interruptions, short interruptions?	Medium	Medium
Resilience	Review need for measure of network resilience	Medium	Medium
Guaranteed Standards (SI 698)	Review thresholds and payment levels – including 18hr standard	Medium	Low
Worst Served Customers	Review allowance per customer and definition of WSC	Low	Low

Terms of reference / meeting arrangements

- Intention is to update the ToR following this meeting as/if required
- Group membership : HSE, DECC, Inexus and London First have expressed an interest in joining the group.
- Proposed meeting dates circulated:

Date	Indicative principal area for discussion	Location	Main Ofgem contact
Thursday, 3 May	Load Indices	Ofgem, Millbank	Thomas Johns
Thursday, 17 May	QoS	Ofgem, Millbank	Karl Hurley
Thursday, 31 May	Health Indices	Ofgem, Millbank	Tom Wood
Thursday, 14 June	Load Indices	UKPN, Elephant & Castle	Thomas Johns
Thursday, 28 June	QoS	Ofgem, Millbank	Karl Hurley
Thursday, 12 July	Load Indices	Ofgem, Millbank	Thomas Johns
Tuesday, 24 July	Health Indices	Ofgem, Millbank	Tom Wood

Extension of Load Index to LV/HV Substations

Prevailing DNO View (prior to smart meter roll out):

- Limited scope for applying LI to distribution and, in particular, individual feeder level at present.
- Network load data not available on secondary network in the same way as on the primary network.
- Developing measure would be very resource intensive; secondary networks are more complex to model.
- Some other uncertainties to consider, e.g. value of assets at secondary voltages, impact of new industry arrangements, usefulness of thermal loading measure.

Extension of Load Index to LV/HV Substations

Alternative views:

- Extension of LIs could be feasible but would more likely be based on count of overloaded HV and LV feeders and overloaded substations.

- Output is likely to be a volume count based on demand forecast.

Extension of Load Index to LV/HV Substations

Alternative views:

- Feasible to develop measure of LIs to that used at major substations by comparison of maximum demand at the substation against substation **firm** capacity.

- Some issues to consider if doing this:
  - Determination of Maximum Demand
  - Concept of firm capacity not relevant for LV/HV substations
  - Scope for forecasting change in LIs

Extension of Load Index to LV/HV Substations

Possible impact of Smart Meters:

- Will facilitate collection of data on individual customer demands.
- Should improve accuracy of DNOs' analysis.

However:

- Actual data collected by smart meters still to be clarified.
- Unlikely to provide full visibility of loading on LV networks.
- Some data manipulation will be required to aggregate smart meter data. Not straightforward.
- Accurate measures of HV/LV substation demand would require installation of metering at substation itself.

Suitability of LIs to reflect impact of DG

Key issues raised by DNOs:

- Existing LI unlikely to remain meaningful as DG levels rise:
  - Maximum demand element of LI a measure of maximum load supplied by substation, not maximum usage by generation
  - Capacity element of LI represents available capacity at substation to secure load under 'n-1' events.
- Not all generation has export metering installed e.g. CHP schemes
- Voltage control and fault level capacity will affect ability to connect DG.

Suitability of LI to reflect impact of DG

Possible approaches:

- LI table to clearly indicate whether network or plant is demand or DG dominant.
- May be simpler to develop separate measures for the ability of networks to connect load and DG.
- System wide load growth model used at DPCR4/5 could be expanded.
- Three index measures could be made to work in most cases.

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SSE/ WPD - Update on developments in Flexibility & Capacity working group

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Accounting for uncertain growth in the Load Index

- Is there scope for widening the scope of the Load Index (e.g. build for LV/ include all types of reinforcement)
  - Building flexibility/ removal of boundary issues vs. polluting outcome with incomparable data/ clouding aims of primary output for little gain

	Applicable voltages		FBPQ value		
Voltage	DPCR5	RIIO-ED1	DPCR5 - £m	DPCR5 - % of forecast expenditure	RIIO-ED1
132kV	√	√	520.4	35%	?
EHV	√	√	637.2	43%	?
HV	√	√	243.2	17%	?
LV	X	?	65.4	4%	?

Accounting for uncertain growth in the Load Index – clarifying materiality (1)

- DNO forecast view of LV reinforcement in DPCR5 & year 1 actuals (> 1% of total value of price control)

	General reinforcement & LvHc conns BASELINE	Total LV reinforcement forecast - DPCR5	Total LV reinforcement forecast - 2010.11	Total LV reinforcement 2010-11 Actual
WMID	145.9	6.0	1.1	0.3
EMID	230.4	5.2	1.0	0.7
ENWL	118.0	2.7	0.5	0.5
NEDL	59.6	7.5	1.4	0.8
YEDL	53.1	9.0	1.6	1.0
SWALES	23.4	1.1	0.2	0.3
SWEST	27.6	1.1	0.2	0.5
LPN	219.9	7.1	1.3	1.1
SPN	109.3	8.1	1.5	1.2
EPN	161.0	8.6	1.6	1.9
SPD	78.5	6.0	1.1	0.4
SPMW	108.3	3.8	0.7	0.6
SSEH	31.4	1.6	0.3	0.3
SSES	149.3	3.3	0.6	0.2
GB	**1,515.8**	**71.0**	**13.0**	**9.7**

Accounting for uncertain growth in the Load Index – clarifying materiality (2)

- Case study: All else being in line with baselines, uplift in LV reinforcement required to trigger DPCR5 Reopener:

£m	General reinforcement & LvHc conns BASELINE	Assumed relevant DPCR5 expenditure excluding LV forecast **(ie: baseline - LV forecast)**	Load related reopener threshold **(20% above baseline)**	LV spend required to reach +20% threshold **(threshold - assumed relevant expenditure)**	Materiality threshold for expenditure above 20% threshold **(1% base rev threshold / IQI)**	Minimum spend on LV to trigger reopener **(required LV spend)**	required LV spend as % of DPCR5 forecast LV spend
WMID	146	140	175	35	7	42	711%
EMID	230	225	276	51	7	58	1130%
ENWL	118	115	142	26	8	34	1239%
NEDL	60	52	72	19	5	24	323%
YEDL	53	44	64	20	6	26	287%
SWALES	23	22	28	6	4	10	889%
SWEST	28	27	33	7	5	12	1066%
LPN	220	213	264	51	7	58	823%
SPN	109	101	131	30	5	35	433%
EPN	161	152	193	41	9	50	577%
SPD	78	73	94	22	9	30	508%
SPMW	108	104	130	25	6	32	829%
SSEH	31	30	38	8	5	13	777%
SSES	149	146	179	33	9	42	1303%
GB	**1,516**	**1,445**	**1,819**	**374**	**92**	**466**	**656%**

Accounting for uncertain growth in the Load Index – clarifying materiality (3)

- Do any of the areas of uncertainty have the scope to become material enough within the Price Control as a whole to require a separate reopener?
  - If so, is there a specific trigger point or an immediate issue?
  - If not, is it something that we need to build into the Load Index criticality?
  - Or, is it something that can be accounted for in the assessment process?

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UKPN presentation- Load Priority Index

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Thoughts on building in criticality for ED1

- In RIIO-T1 and GD1 we established three broad areas that would form part of a criticality assessment :
  - **Safety** – direct harm to personnel or public
  - **Environmental** - impact caused by asset unreliability or failure, taking into account the geographical area in which the asset lies.
  - **Network** – impact on customers, vital infrastructure and security of supply caused by failure of network to deliver energy
  - **Asset Health** – interaction between HI & LI in terms of prioritising replacement/ reinforcement
- Companies were free to use own support tools to quantify criticality within these categories. Where applicable some of the areas of uncertain load growth could be built into these categories

Thoughts on building in criticality for ED1

	Environmental		Safety		Reliability		Asset Health Interaction?		Risk
S-station type	Probability	Consequence	Probability	Consequence	Probability	Consequence	Probability	Consequence	Combination of areas to left
S-station A									
S-station A									
etc									
Total									Sum of all S-station types

Ofgem expectations for September Paper

- Existing framework provides a good starting point towards the development of appropriate HI/LI secondary deliverables for RIIO-ED1
  - In comparison to TI/ GD1, perhaps less distance to travel for September paper equivalent. However, there are some specific ED1 issues that are already on our radar
- Ultimately working towards having core structure of LI mechanism in place in time to allow DNOs to account for developments in business plan
  - Looking to progress work as far as possible

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RSWG – Assessment

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SSE presentation – Totex efficiency

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Bridge between Price control periods, Evaluation & reward/ penalty

- Further thought required on treatment of DPCR5 delivery failure:
  - Impact on DPCR5 revenues
  - Impact on required delivery in ED1
- DPCR5 arrangements – no reward for over delivery
  - Symmetrical approach more in keeping with RIIO principles


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