ofgem Promoting choice and value for all gas and electricity customers

Reliability & Safety Working Group

31 May 2012

Actions from previous meeting

- Publication of DNO presentations
- Sharing / publication of action responses

Objectives for RIIO-ED1

- As a minimum, we would expect to have in place at the commencement of ED1 an asset criticality index akin to that currently proposed in the GD1 and T1 price controls.

- The methodology for the assessment of asset criticality should be as consistent between DNOs as is reasonably achievable.

- The methods through which DNO performance will be assessed during the price control should be, to the fullest extent possible, set out and understood up front:
  - The terms of the 'contract'
  - Criteria for success and failure

Objectives for RIIO-ED1

- There should be a clear understanding of:
  - What has been agreed
  - How the outputs are set
  - The types of activity that will count towards the agreed outputs

- Arrangements for the over- and under-delivery of the agreed package of outputs should be established.

- Interactions between any potential uncertainty mechanisms (or other elements of the and the agreed outputs should be set out up front

Strategy consultation document (September 2012)

- In this document, we would, as a minimum expect to set out in this document:
  - An outline of proposals for the introduction of criticality assessments.
  - Proposals for dealing with under or over delivery of outputs.
  - Proposals for the extension of health and criticality indices to new asset types (if applicable).
  - Areas where we would expect DNOs to work together (on a common methodology, for example)

- Depending on progress between then and now, we may choose to include a greater level of detail in the document.

SP ENERGY NETWORKS

Reliability and Safety Working Group

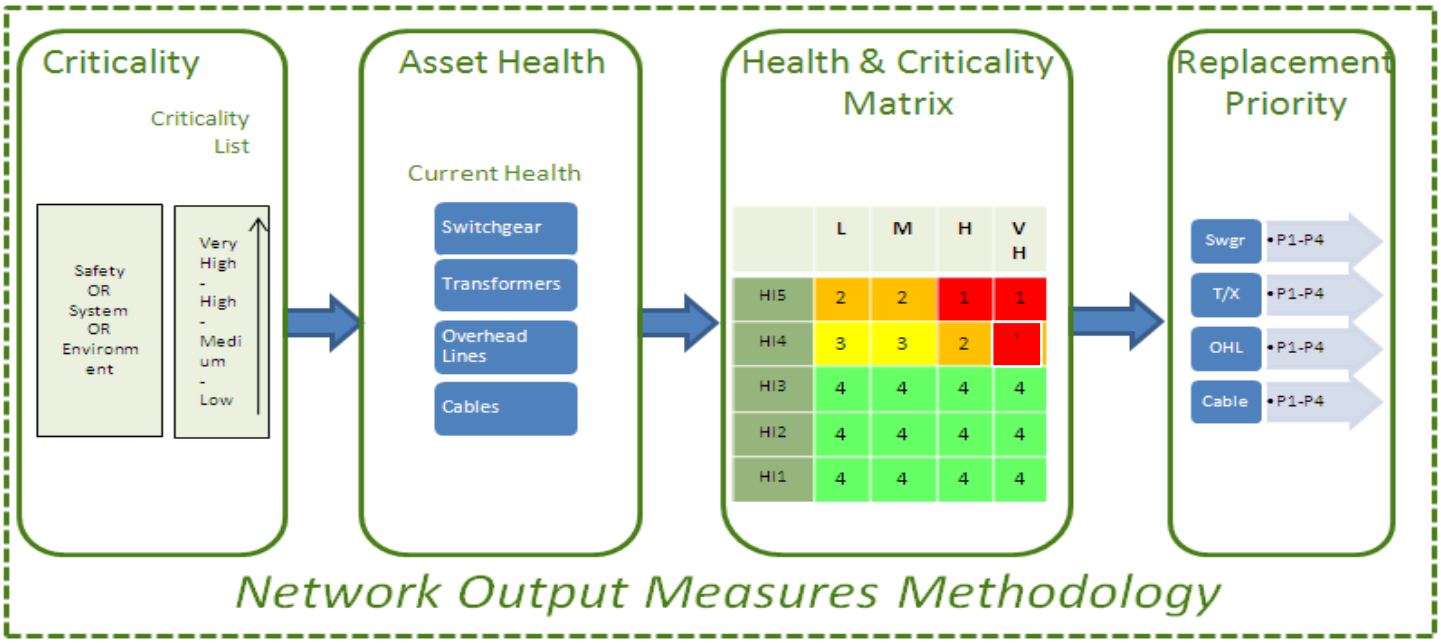
Health & Criticality

31st May 2012

Health & Criticality

Failure Risk = Probability of Failure x Consequence of Failure

Failure Risk ≈ Health Index x Asset Criticality



- Under DPCR5 Health Indices are already reported with the intention of extending the HI categories prior to/during RIIO-ED1
- Criticality is relatively undefined at Distribution voltages and would need to be developed
- For RIIO-T1 these two factors were combined via a matrix to provide a Replacement Priority, a proxy for risk

Criticality Scoring for Distribution Assets

Criticality can be assessed through three main consequence criteria

System	Safety	Environment
Factors • Customer numbers • Customer sensitivity • Interconnection • Connected Generation	Factors • Proximity to public • Mitigation measures • Impact of failure	Factors • Environmental concerns (e.g. Oil filled cable) • Mitigation measures

- Each of the criteria above are scored Very High, High, Medium, Low based on a function of the driving factors
- Assets should be treated proportionally e.g. System criticality can be more complex for 132kV CBs than say an LV Pillar
- 132kV and 33kV assets could be reported on substation level however it would be more appropriate to provide a volume by criticality for HV and LV assets

Reporting requirements

Using a similar model to the RIIO-T1 reporting tables

Asset categories		Criticality	Units	Estimated Asset Health and Criticality Profile 2015/16					Asset Register
				Asset health index					
				AH1	AH2	AH3	AH4	AH5	31-Mar-15
LV Network									
	LV Switchgear and Other	Low	No. SWGR						0
		Medium	No. SWGR						0
		High	No. SWGR						0
		Very High	No. SWGR						0

Multiple views would be submitted to evaluate output delivery

Start of RIIO ED1

Mid/End ED1 No Investment

Mid/End ED1 With Investment

- Table can be set-up to auto-calculate Replacement Priorities based on agreed mapping
- Draft table submitted to Ofgem including a separate Criticality table

Benefits of a Risk Based approach

- Investment can be targeted to address criticality issues in addition to condition issues
- Introduction of an output measure that provides clarity and transparency of targeted investments to address risk
- Ensures DNOs address the consequences of asset failure in addition to the asset condition

Next Steps

- Consensus that Health and Criticality is the correct way to move forward with Risk based approach
- Develop common approach to Criticality evaluation based on this proposal
- Agree reporting requirements

Overhead Line Wood Pole circuits

The current Health Index only covers the health of wood poles with conductor improvements being measured through the Fault Rate output measure. SPEN are currently developing a methodology for combining all the component parts of a wood pole overhead lines to provide an overall view of health for a given circuit.

This will involve utilising condition information for the following components:-

- Poles
- Conductor
- Steel-work
- Insulators

This information will then be combined to provide an overall health scoring by circuit. Other factors may be used to help prioritise this list. E.g. Resilience factor, tree proximity

The reasoning behind this proposal is that investment is targeted based on the overall health of a circuit as opposed to the health of individual poles which are a contributing factor to the overall overhead line circuit condition.

Consistency of health & criticality assessments

- Potential benefits of moving towards a consistent methodology:
  - Assist comparison/ benchmarking of DNO asset data
    - Efficiency in the management of risk
  - Help to understand differences in overall risk levels across DNOs
  - Use in setting future price control revenue allowances

Consistency of health & criticality assessments

- What level of consistency is realistically achievable?
- What stands in the way of achieving greater levels of consistency?
- (And what is achievable within the time we have available for RIIO- ED1?)

Consistency of health & criticality assessments

- What level of consistency is it appropriate for Ofgem to specify?
- We have touched on these questions in the past – we would like to get your responses on file.

Criticality assessments

- WPD circulated a spreadsheet requesting views on the level at which criticality assessments could be applied :
  - Individual assets,
  - Asset types (V1 categories)
  - Groups of asset types – current network outputs groupings or otherwise
- All DNOs have now provided data.
- Starting assumption that Asset type is the most appropriate level

Criticality assessments

- Where it is thought that this level of detail will not provide sufficiently robust assessment, criticality considered

- There are a number of blank / N/A entries in the sheet – assume this is where a criticality assessment not thought to be appropriate?

Criticality assessments – response summary

- Consensus that assessments could be carried out at the individual asset level in respect of:
  - Transformers at EHV and above
  - Circuit breakers at EHV and above
- Majority thought individual asset level appropriate for 132kv Poles and Towers
- This would mean individual assessments of 60,000 assets.

Criticality assessments – response summary

- There appeared to be less consistency in respect of:
  - Cable and Overhead lines (at all voltage levels)
  - Towers and Poles (<132kV)
  - HV Switchgear

- Where Asset Type / Group thought to be the most appropriate level for assessment, should the criticality values be consistent for all DNOs?

Criticality assessments – response summary

	ENWL	NP	SP	SSE	UKPN	WPD
Individual Asset	21	49	25	28	15	15
Asset Type	35	10	22	0	8	53
Asset Group	8	14	33	64	38	22
N/A or blank	37	28	21	9	40	11
	101	101	101	101	101	101

Safety Outputs

GD1 & T1 approach to Safety Outputs

- Recognition that HSE is the relevant safety authority – Ofgem's arrangements must be consistent with HSE obligations
- No output measures above and beyond the obligations set by the HSE
- No financial rewards or penalties as deemed "not reasonable or necessary for us to impose additional penalties or reward companies for outperforming safety requirements"

GD1 & T1 approach to Safety Outputs

- Responsibility for compliance and enforcement action rests primarily with the HSE.
- We will require the companies in their regulatory submissions to demonstrate compliance with the HSE obligations and the safety case they have agreed with the HSE.

GD1 & T1 approach to Safety Outputs

- For example, in respect of the Electricity Transmission licensees, we specifically refer to:
  - The Electricity Safety Quality and Continuity Regulations 2002 (ESQCR)
  - The Health and Safety at Work etc. Act 1974 (HSWA)
  - The Electricity at Work Regulations 1989 (EAWR)

- TOs will be required to manage the condition of assets with dangerous failure modes within their asset management frameworks.

Possible ED1 approach to Safety Outputs

- 'Default position' likely to be to follow gas and electricity transmission stance - primary output for electricity distribution of complying with their legal safety requirements, with no financial penalty/reward mechanism applied.
- Secondary deliverables of asset health criticality and replacement priorities/risk which have implications for the safety of DNOs' networks may be subject to a penalty mechanism where outputs are under delivered.
- Development of a metric using, for example, lost time accidents?
- SSE have provided views on an alternative mechanism.

How should Safety feature in RIIO ED1?

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Background

- RIIO ED1 represents a different approach to regulation in the UK – should we also think differently about how we treat safety?
- “Great safety performance is intrinsically linked to great business performance” – DuPont
- Sustainable business success requires more than a robust bottom line
- Opportunity for Ofgem to help drive great safety and business performance in RIIO ED1

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Options for including Safety in RIIO ED1

- **Do nothing – an opportunity missed?**
- **Count and annually report lagging and leading indicators through RRP submissions – not a powerful driver for DNOs to improve**
- **Incentivise DNOs to improve staff safety through**
  - Targeting robust measures of performance through incentives
  - Encourage DNOs to share benchmark performance initiatives through discretionary reward.

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Possible Safety Incentive Mechanisms (1)

- **Total Recordable Incident Rate (TRIR) –**
  - Internationally used measure that can be compared across companies/countries/worldwide
  - Uses an incident rate per 100 employees that is normalised, is fair to all and balanced
  - Good performance can be rewarded and poor performance penalised
  - Will reduce suffering of employees over time and result in improved business performance

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Possible Safety Incentive Mechanisms (2)

- **Discretionary Reward for Leading Safety Initiatives**
  - DNOs should be encouraged to innovate in the safety field
  - Innovation will drive better performance
  - DNOs should look towards leading indicators for good safety
  - Similar to existing Customer Service Discretionary Reward and could be judged by HSE/Other relevant safety related stake holders
    - Public safety initiatives
    - Contractor safety initiatives
    - Staff safety initiatives

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