

# **Reliability & Safety Working Group**

## **Health and Criticality Indices**

19 December 2012

## Working group arrangements

- This meeting will be minuted – including all views and actions
- We are proposing to attribute views and opinions expressed at the meeting
- The minutes will be published on Ofgem's website, only following circulation to attendees for comment/verification
- If there are any objections to this, please make this clear when commenting on minutes.

## Today's agenda

- Deliverables from the Criticality Working Group
  - Criticality and HI Principles Documents
  - Completed HI/Criticality Index Matrices and Bandings
  - Health and Criticality Questionnaire
- Health Index Traffic Lights

### LUNCH

- Development of HIs for civil asset populations
- Use of secondary deliverables in benchmarking
- Work going forward
- AOB

# Deliverables from Criticality Working Group

## Criticality Principles Document

### Ofgem Comments:

- Overall Consequence of Failure – (para 1.11) Will need to clarify how the overall consequence of failure, derived from consequence of failures in each consequence category is defined. For example, will we use a weighted average or the most severe consequence of failure.
- Consequence of Failure - Should stipulate that each DNO is required to make their methodology available to Ofgem
- Agreed that for July 2013 submissions, DNOs' existing HI approaches will be modified, with any criticality measures/data used in the calculation of Health being removed to ensure no duplication.

# Deliverables from Criticality Working Group

## Criticality Principles Document

### Ofgem Comments:

- Should we provide examples of additional consequence factors that might be considered (para 4.4)?
- Will need to establish the status of this document i.e. how binding information set out in it is. If we were to set out exact or indicative timings of future reviews, would these have to be met?
- Still to resolve question of whether criticality data should be locked down for a period of time, for ease of reporting and to form an audit trail. What would be an appropriate time frame for capturing significant changes?

# Deliverables from Criticality Working Group

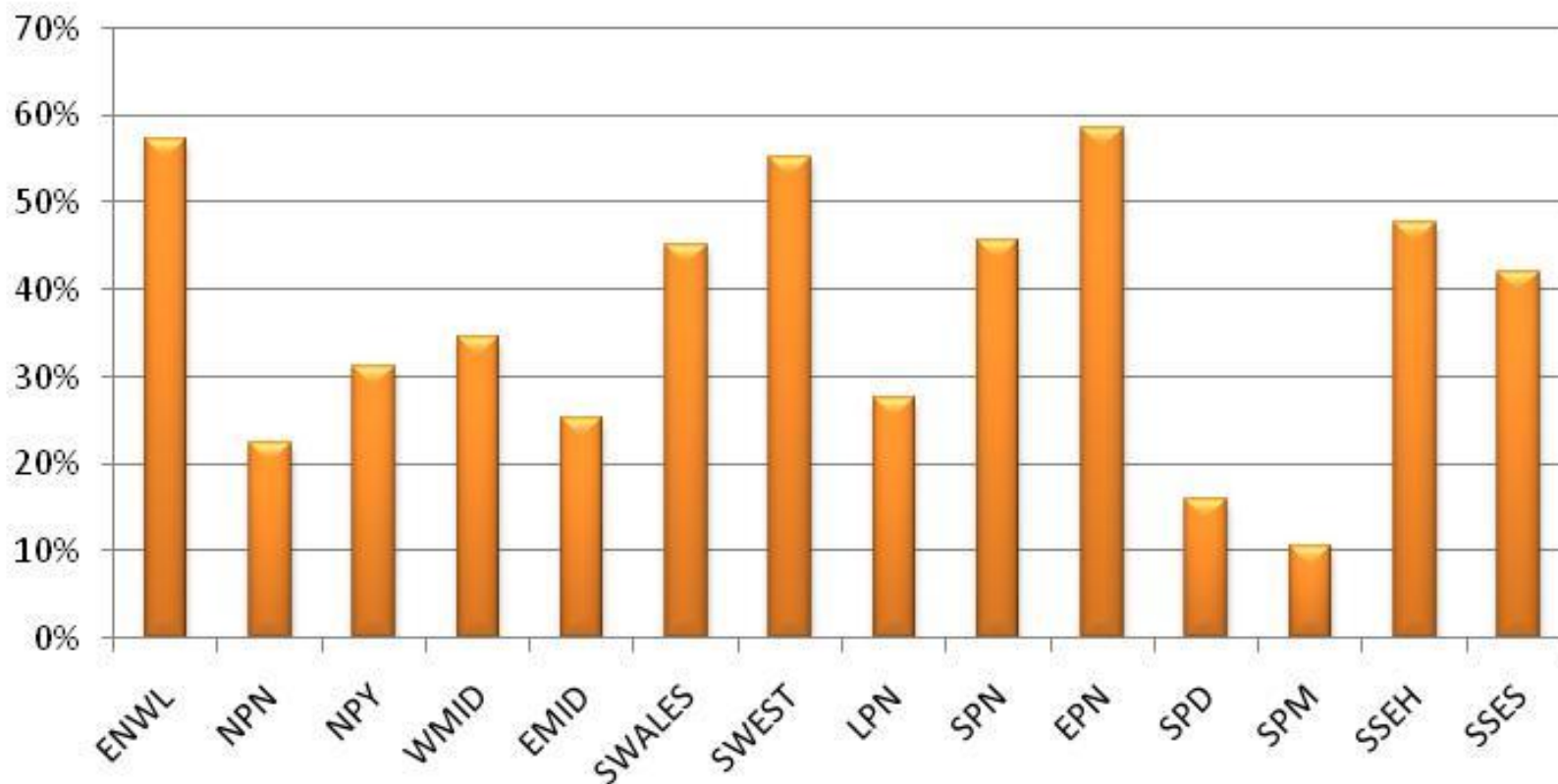
## HI and Criticality Data Templates/Questionnaire

- Any additional issues faced by DNOs in completing these in general and/or for any specific asset classes?
- Ofgem will need to review these to establish degree of commonality/comparability

## Health Index Traffic Lights

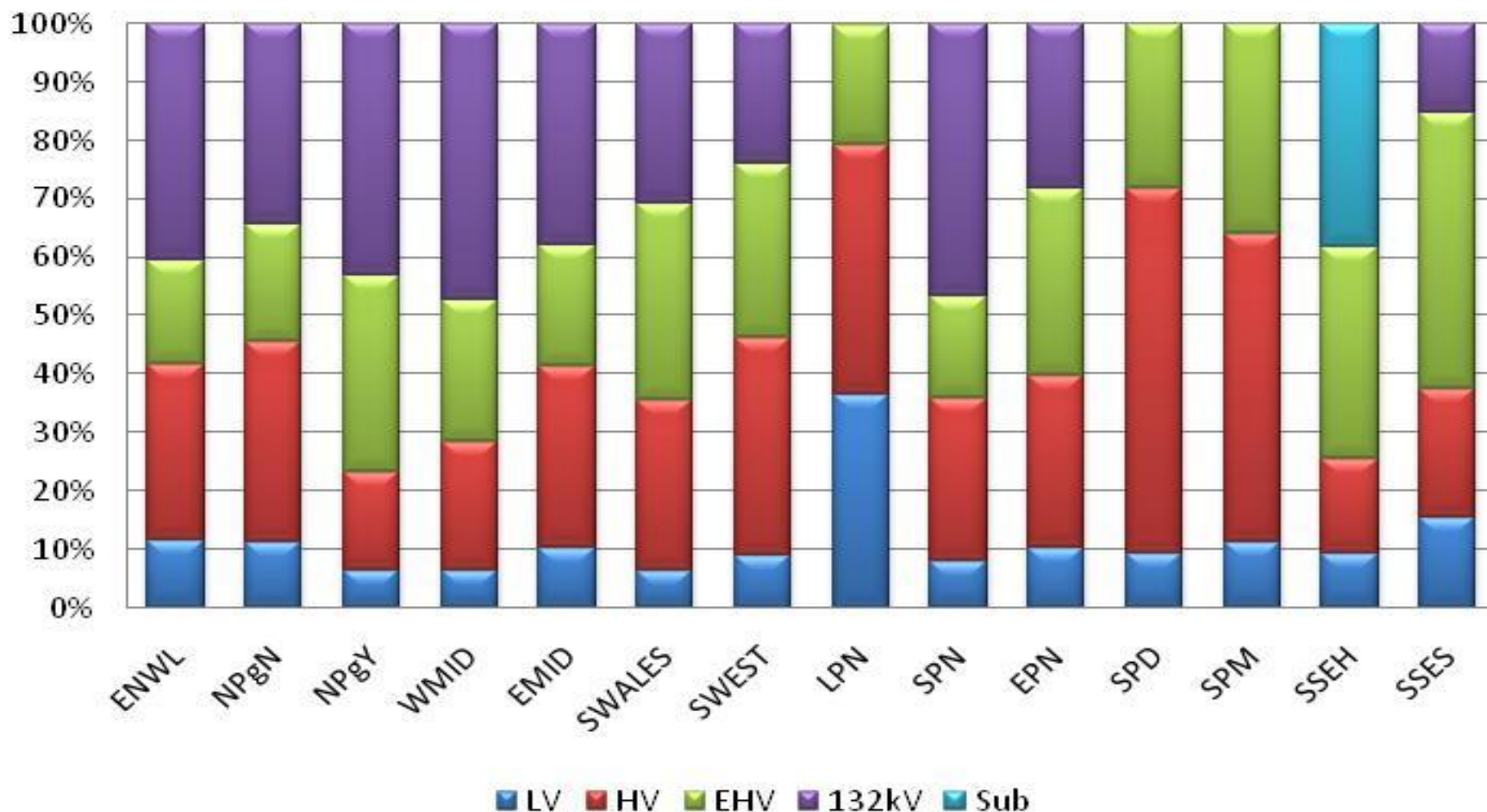
	Asset register movements for Asset Replacement	Health Index movements due to Refurbishment activity	DR5 to date HI Delta from Refurbishment & Replacement	Rank
DNO				
ENWL	30%	27%	57%	2
NPN	16%	6%	23%	12
NPY	19%	12%	31%	9
WMID	30%	4%	35%	8
EMID	21%	4%	25%	11
SWALES	41%	4%	45%	6
SWEST	41%	15%	55%	3
LPN	28%	0%	28%	10
SPN	42%	4%	46%	5
EPN	37%	22%	58%	1
SPD	16%	0%	16%	13
SPM	11%	0%	11%	14
SSEH	39%	9%	48%	4
SSES	30%	12%	42%	7

## DR5 to date HI Delta from Refurbishment & Replacement





## Composition of HI delta movement to date



# Development of HIs for Civil Assets

## Potential Civil Asset Categories for HIs

- Cable Tunnels (incorporating access buildings)
- Cable Bridges
- Buildings for Grid & Primary Substations(incorporating roof & structure)
- Outdoor Support Structures for electrical assets
- Cable Pits
- Any others to add to above?

## Development of HIs for Civil Assets

### General DNO Impacts/Issues (from UKPN's presentation):

- Improve current data availability
- Increased volume of inspections
- DNOs will most likely require specialist civil asset inspectors or civil asset specific training for current inspectors
- How much work is required in order to produce meaningful analysis?
- Sensible timescale needs to be agreed
- Will need to consider how initial datasets can be used to drive appropriate modelling

## Use of secondary deliverables in benchmarking

### Interactions between CV15 and CV3

- Interaction between CV15 and CV3 – covered in the asset replacement “Betterment” memo table.
- Asset repair costs considered to be operating expenditure, with any additional costs recorded in betterment memo table.
- Ahead of further work on business plans, Ofgem will need to know where fault replacement feeds into HIs.
- Striving to ensure that faults that lead to betterment are reported in the same manner by all DNOs. Needs to be fixed for DPCR5 ideally and in place for RIIO-ED1 in particular.

## Use of secondary deliverables in benchmarking


### Interactions between CV15 and CV3

Questions/issues still outstanding:


- Is there clarity on what should be reported in the CV15 (Betterment) memo tab or should there be more guidance provided?
- What rules should be in place regarding how the HI position for faulted assets is recorded? Should reactive as well as proactive work be credited with HI points?  
(e.g. If a fault results in a large number of HI2 and HI3 assets being replaced and this does not significantly improve the overall risk delta)
- Is there agreement on the need for an additional tab (e.g. CV3a) to match incident volumes with the volume of assets replaced to address faults?
- Will need to discuss application of this to each asset category.

# Cost Benefit Analysis

# Approach in Gas – Northern Gas Networks

- Used to support additional replacement of mains
    - Gas mains replacement had significant cost reduction outcomes
    - Significant part of gas investment programme
    - Considered methane emissions reductions
  - Use in other areas limited
    - Not used for other asset replacement driven by health
    - Limited application on reinforcement (DSM justification)
  - We understand Ofgem had issues with more complex applications by other GDNs
  - Volume of assessments still significant
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# Application in Electricity

- Use
    - Positive benefit v least 'expensive' intervention?
    - Limited instances where expenditure leads to large cost savings
  - Scope
    - Needs to be manageable and value adding for Ofgem
    - Focus on material increases from historic spend
  - Need to agree up front how benefits will be valued
    - Don't want disputes over assumptions
  - Have built our own approach based on Gas but need final Ofgem version
- 



# Benefits

- Propose using the following benefits
- Fault repair
- Maintenance
- Lost load (value using VOLL)
- Oil / SF6 leakage
- Safety – CBA not used with safety in gas. Equipment failure not always the root cause of incidents




# Scope – Reinforcement

- Traditional interventions driven by compliance (P2/6)
- Hard to value additional capacity benefit
  - Difficult to value investment ahead of need in CBA – use other justification inc WTP
- Smart v traditional likely to be least NPV cost assessment
  - CBA can be applied but might be least –ve solution eg CBA can be used to support DSM payments in lieu of reinforcement



# Scope - Replacement / Refurbish

- Gas did not use CBA on Health Index driven work
  - CBA should not be used on safety / compliance activities eg ESQCR
  - If used - should focus on areas of expenditure which are increasing over historic spend
  
  - Protection asset replacement (BT21) is another significant investment cost but may not be suitable for CBA (it is a must do to maintain system operation rather than having any new performance benefit)
  
  - The most significant categories of Asset Replacement Expenditure are
    - EHV Switchgear
    - EHV Transformers
    - EHV Cable (not fluid filled)
    - Fluid Filled Cable replacement
    - 11kV Switchboard Replacement
    - Tower Lines
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# Scope - Replacement / Refurbish

- Need to agree approach on fault rate degradation
  - Typical asset management models use non-linear models (eg 'bathtub' curve)
  - Gas and water (PR09) used linear assumptions for CBA (simpler)
- Do not apply to legal and safety and ESQCR compliance investments




# Scope - QoS

- QoS improvements should be driven by IIS savings
- Only additional improvements requiring ex ante allowances need be supported by CBA and/or Willingness to Pay



# Use in Assessment Process

- Volumes have to be well justified
    - Asset management tools using Health Criticality
    - Overall programme of work
    - Supported by appropriate use of CBA
  - Cost benchmarking – are the costs of the programme appropriate
  - Programme of work then generates the HCI output metric against which delivery is measured
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# Health and Criticality Work Going Forward

## Transmission Approach

- NOMs targets are binding secondary deliverables in the licence. TOs will be obliged to deliver these targets or an equivalent for consumers.
- Proposed to link the NOMs condition with the NOMs methodology condition, such that the targets will need to be rebased should significant changes be made to the NOMs methodology.
- TOs can trade-off between asset categories in order to deliver an equivalent or better outcome to the NOMs target and Ofgem will not limit these trade-offs.
- For TOs to justify why they need to over-deliver in one asset category and under-deliver in another.

**Table 2.1 – Financial incentives on NOMs**

Incentives	Justified	Unjustified
<p style="text-align: center;"><b>Over delivery</b></p>	<ul style="list-style-type: none"> <li>• Costs of over delivery are included in the RIIO-T2 allowance.</li> <li>• A TO would benefit from the reduced network risk compared to the NOMs target.</li> <li>• A TO would be allowed to recover the financing cost of the earlier investment.</li> <li>• An additional reward is applied.</li> </ul>	<ul style="list-style-type: none"> <li>• Costs of over delivery are included in the RIIO-T2 allowance.</li> <li>• A TO would benefit from the reduced network risk compared to the NOMs target.</li> <li>• A TO would take the financing cost of the earlier investment.</li> <li>• No additional penalty is required.</li> </ul>
<p style="text-align: center;"><b>Under delivery</b></p>	<ul style="list-style-type: none"> <li>• Avoided costs associated with under delivery are excluded from the RIIO-T2 allowance.</li> <li>• A TO would be exposed to the increased network risk compared to the NOMs target.</li> <li>• A TO would benefit from the financing cost of the delayed investment.</li> <li>• No additional reward is required.</li> </ul>	<ul style="list-style-type: none"> <li>• Avoided costs associated with under delivery are excluded from the RIIO-T2 allowance.</li> <li>• A TO would be exposed to the increased network risk compared to the NOMs target.</li> <li>• The benefit of the financing cost of the delayed investment would be clawed back from a TO.</li> <li>• Additional penalty is applied.</li> </ul>



# Health and Criticality Work Going Forward

## Transmission Approach

- Propose to set a fixed level of rewards and penalties in order to provide strong incentives for TOs to deliver the NOMs target while protecting them from financial stress relating to the non-delivery.
- The value of any penalty or reward will be 2.5 per cent of the value of the additional or avoided costs.
- If there is substantial unjustified under delivery Ofgem may consider whether it is appropriate also use powers relating to enforcement of licence conditions.
- **Scope to justify a different approach for distribution due to the greater potential for changes in secondary deliverables.**

# Health and Criticality Work Going Forward

## Future Reporting Requirements including Business Plans

- Have circulated the first version of the Business Plans and received DNO comments on these.
- Currently processing comments and building tracking sheets
- Question as to whether we create separate blocks for existing asset replacement and refurbishment lines.
- Are DNOs happy to share their HI and Criticality tracking sheets (recently completed)?

# Health and Criticality Work Going Forward

## One Day Workshop on Current and Future Asset Management Best Practice

- 24<sup>th</sup> January 2013, Conference Room 9 at Millbank has been booked for the day (09:00 – 17:00)
- Aim is to provide a forum for members of the RSWG and CHWG to share experiences, best practice and views over DPCR5 and proposed RIIO-ED1 regulatory regimes regarding management of asset risk

### Actions:

- Need to finalise list of selected attendees beyond DNO colleagues and get invitations sent ASAP (HSE, DECC, Consumer Focus)
- Agree format of the day and receive confirmation from DNOs of the topic they intend to cover in their 20 minute presentations

The background of the slide is a composite image. On the left, there are rows of solar panels under a bright sun. On the right, a hand is shown holding a white document. In the bottom left corner, a blue gas burner is visible. The overall theme is energy and customer service.

*ofgem*

Promoting choice and value  
for all gas and electricity customers