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GDN Costs and Outputs Working group – RII0-GD1 regression rerun

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RIIO GD1 regression re-run

- a) RIIO-GD1 toolkit and its applicability to GD2
- b) RIIO-GD1 toolkit – methods of analysis
- c) Regional factors
- d) Top Down Modelling
- e) Bottom-Up cost category benchmarking / assessment

RIIO-GD1 toolkit and applicability for GD2

RIIO-1 improved the benchmarking toolkit and provided a balanced, broad based approach. There are some further refinements that would improve the analysis, which is important from customers' perspective

	RIIO-GD1	Comments re RIIO-GD2
Top Down / Bottom-Up (50/50)	Balanced the two approaches <ul style="list-style-type: none"> • Top-Down represented overall Totex • Bottom-Up granularity enabled cost drivers and regional factors to be better understood 	<ul style="list-style-type: none"> • Support continued balanced approach, although review of 50/50 weighting may be appropriate dependant on robustness of different approaches • Some drivers need review • But still limited / interrelated comparators
Historic / Forecast (50/50)	OLS panel regression <ul style="list-style-type: none"> • 2 year historic was reliable as actual • 2 year forecast reflected outputs GDNs proposing 	<ul style="list-style-type: none"> • Consider extending historic and future, as in ED1, to reflect richer historic data plus expectations of underlying changes impacting the future, including potentially different stakeholder driven outputs • Both Ofgem and GDNs will have to be comfortable with justification of forecast costs • But still limited / interrelated comparators
Regional Factors	<ul style="list-style-type: none"> • Costs normalised for some external differences • Also treated RPEs / Continuous improvement separately 	<ul style="list-style-type: none"> • London pay / productivity factors essential • Other factors including sparsity also require updating, but onus on GDNs to provide evidence • RPE indices need review for new approach
UQ	<ul style="list-style-type: none"> • Bottom-Up UQ applied after summing dis-aggregated analysis, excluding Business Support • Underlying uncertainty accepted, hence inclusion of 25% totex interpolation to business plan (adjusted for agreed workload changes) 	<ul style="list-style-type: none"> • Needs to include Business Support costs – a key area where accounting / reporting processes, work practices and business models result in differences (as in ED1) • 25% totex interpolation still applicable in any resulting developments of IQI (not all gap can be attributed to eff.)

RIIO-GD1 toolkit - methods of analysis

RIIO-1 cost assessment comprised Expert Review and Regression – with Regression covering most of totex, especially in the Top Down approach

RRP Activity	RIIO-GD1 analysis split	2016/17 Totex %	Bottom Up approach	In Totex regression
Opex	Emergency work ex'n	Other 4.7%	Regression	Yes
		SMART meter costs 0.1%	Expert review	
	Repair work ex'n	Other 5.9%	Regression	Yes
		Streetworks 0.4%	Expert review	
	Maintenance work ex'n	Other 6.3%	Regression	Yes
		MOBs surveys 0.1%	Expert review	
	Scottish Independents	0.4%	Expert review	
	Work Management	Other 7.6%	Regression	Yes
		Land remediation 0.3%	Expert review	
		Holder demolition 0.3%	Expert review	
		Streetworks 0.4%	Expert review	
		SMART meter costs 0.1%	Expert review	
	Other Direct Activities	Other 1.1%	Expert review	Yes
		Xoserve 1.3%	Expert review	
	Business Support	Training & Apprentices 1.8%	Expert review	
		Other 9.5%	Expert review	Yes
		40.3%		
	Repex	Mains & Services repex 38.2%	Regression	Yes
		MOBs replacement 1.3%	Expert review	
		Sub-deducts 0.0%	Expert review	
		Streetworks 0.8%	Expert review	
		40.4%		

RRP Activity	RIIO-GD1 analysis split	2016/17 Totex %	Bottom Up approach	In Totex regression
Capex	LTS, Storage & entry	LTS & Storage 4.6%	Expert review	Yes
	Connections	Connections - other 4.4%	Regression	Yes
		Connections - Fuel Poor 1.1%	Expert review	
		Streetworks 0.2%	Expert review	
	Reinforcement	Mains 0.8%	Regression	Yes
		Growth governors 0.1%	Expert review	Yes
	Governor replacement	Governor replacement 0.8%	Expert review	Yes
	Other capex	IT capex 1.9%	Expert review	Yes
		Vehicles capex 1.1%	Expert review	Yes
		Xoserve 0.8%	Expert review	
		Physical Security (PSUP) 0.8%	Expert review	Yes
		Other 2.4%	Expert review	Yes
		19.0%		
	Controllable Totex	98%		
	Shrinkage opex	1.8%	Expert review	Yes
		1.8%		
	Totex	100%		
	Totex covered by regression		67%	91%
	Totex covered Expert review		33%	9%
			100%	100%

Totex Regression covers around 90% of spend - only 2/3 regression coverage in the Bottom Up analysis

Regional Factors

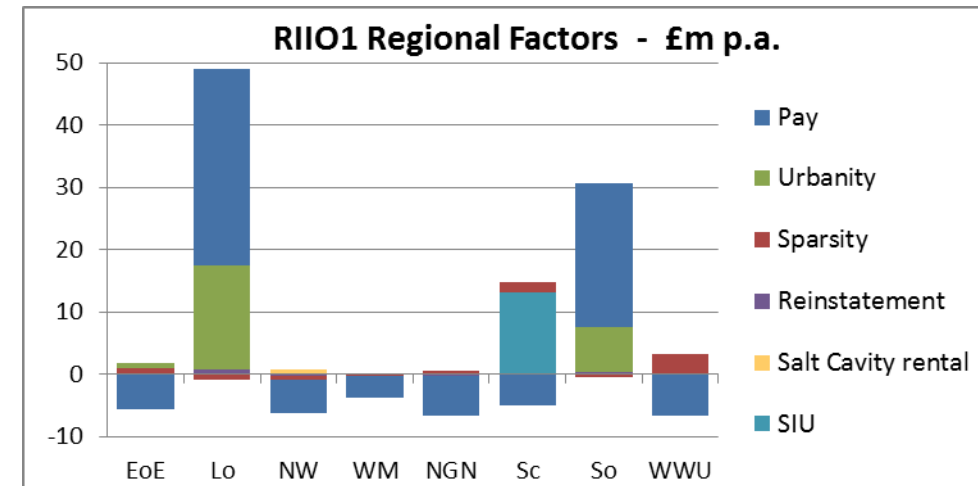
Regional factors need to be reviewed and updated across all GDNs, but are especially important for operations in London and Scotland

RIO-GD1

- London (within M25) and South East pay differential: Ofgem analysis based on ONS ASHE data – 3 digit SOC codes
- London productivity uplifts, Ofgem acknowledged our arguments, but used the lower figure from a Morrison report for SGN comparing productivity across depots
- The London factors also allowed in East of England for the Outermet (Tottenham) area
- Scottish Independent Undertakings (SIUs) a key Regional Factor for Scotland GDN
- Sparsity adjustment more important for WWU, Sc
- Salt cavity rental adjustment applied to NW

RIO-GD2

- Regional pay factor analysis needs refresh, but should also consider other sources closer to the industry
- GDNs need to provide evidence enabling Ofgem to assess potential new Regional Factors, and to review existing ones



Top-Down – Totex Modelling (50% weight)

Modelling was developed in RIIO-GD1 and can be used in RIIO-GD2 with a few modifications. Good regression fit

RIIO-GD1

- Developed methodology to move away from individual single scale drivers for regressions (eg customers, km),
 - ⇒ Used Bottom-Up regressions to identify make-up of a Composite Scale Variable
- Initially looked to modelling to identify ‘best fit’ weightings – unreasonable results.
 - ⇒ So set weightings using industry spend: Repex CSV (42%), MEAV if no regression driver (37%), remnant (21%) from five other bottom-up regression drivers

RIIO-GD2

- Overall approach still applicable
- Need to develop MEAV to include MOB and Embedded Entry points (data being collected in RIIO-GD1 in RRP)
- Other drivers may need updating reflecting Bottom-Up reviews
- Review weightings for RIIO-GD2 industry spend

Costs taken from bottom-up regressions (c67% of totex) plus:

- Other Direct opex
- Business Support opex
- Shrinkage opex
- Governor replacement
- LTS capex
- Other capex (incl IT, vehicles)

Regional factors £m from bottom-up analysis

Bottom-Up – Repex

Synthetic costs should be updated, but secondary cost drivers for weighting of insertion rates and verge & pavement/road will need evidencing.

RIIO-GD1

- Maintained use of synthetic unit costs by diameter band and service replacement type across all three tiers as in GDPCR1.
- Workload based on new Tier 1 to 3 approach with a new CBA threshold
- Separate review of MOBs and specific London MP replacement project (driven by security of supply)

RIIO-GD2

- Appropriate to update the synthetic unit costs profile, over 10 years old, but secondary drivers will need to be factored in, including future changes in
 - Insertion rates, and
 - Verge & pavement / road
- Review Regional factors

Costs exclude:

- Streetworks
- MOBs & Subdeducts

Regional factor adjustments for:

- Pay: London, S.East regions
⇒ Lo 22%, So 13%, EoE 1%
- Urbanity: 15% labour within M25
⇒ Lo 11%, So 4%, EoE 1%

Bottom-Up – Emergency

This cost category has an appropriate driver, the activity linked to a 97% level of service

RIIO-GD1

- Driver based on 80% Customer number, plus 20% number of external condition reports
- This reflects the call balance of internal and external PREs

RIIO-GD2

- Good CSV, as reflects workload differences of internal and external escapes
- Customer numbers appropriate as internal escapes (not on our equipment) variable and 97% threshold whatever the weather
- Need to review Sparsity factor
- Will seek new regional factor for London/Scotland where higher workload due to 4% internal escapes per customer (consistently over the last four years), whereas 3% elsewhere

Costs exclude:

- Smart meter costs
- Streetworks

Regional factor adjustments for:

- Sparsity: labour for all GDNs
⇒ WWU 20%, Sc 16%,
EoE 8%, NGN 7% v Lo
- Pay: as repex

Bottom-Up – Repair

This cost category has a reasonable driver, but needs to be developed for diameter bands (alternatively London regional factor adjustments). The associated outputs also need review

RIIO-GD1

- Regression driver based on external condition reports

RIIO-GD2

- Consider either building synthetic u/c by diameter band (as repex) to reflect differences in asset make up or a London factor
- Issue will grow given limited T2/T3 replacement volumes
- Repair risk calculated very differently across companies
- Need to review Regional factors

Costs exclude:

- Smart meter costs
- Streetworks

Regional factor adjustments for:

- Reinstatement productivity: as Pay but for reinstatement costs (c30% of Lo, 20% So Repair)
- Sparsity: as Emergency
- Pay: as Repex

Bottom-Up – Maintenance

Maintenance regression needs further development, including broadening its CSV driver, merging in costs from non load related LTS expenditure

RIIO-GD1

- Based on MEAV, excluding mains, services and MOB assets.
- It combined routine and non-routine maintenance
- Adjustments made to reflect capex / opex trade-off between LTS asset integrity capex and maintenance opex.

RIIO-GD2

- MEAV needs to include MOB's and Distribution mains & services categories as includes work on these assets
- Weighting by category to reflect industry spend overcomes concerns over replacement value not being main driver
- Including all LTS capex non-load (except diversions)
- Consideration also given to
 - Using aggregate historic regression, like reinforcement
 - Including workload drivers for asset health NOM activities

Costs exclude:

- MOB's surveys
- Streetworks

Regional factor adjustments for:

- Reinstatement productivity: as Pay but for reinstatement costs (c10% of Lo, 2% So Mntce)
- Pay: as Repex

Bottom-Up – Work Management

May be appropriate to review the CSV for this activity

RIIO-GD1

- Used MEAV as appropriate size variable
- In RIIO1 the structural/accounting differences were recognised by Ofgem and the methodology developed to apply the UQ on the sum of the regressed activities (rather than summation of UQs)

RIIO-GD2

- Cadent considers this as an activity where structural and accounting differences are a significant part of the regression differences, leading to the poor fit and so need for UQ as calculated in ED1
- MEAV a reasonable size variable, but Operational Management is a major element so may consider creating a CSV based on MEAV and the work execution drivers.

Costs exclude:

- Land remediation
- Holder demolition
- Streetworks
- Smart meter costs

Regional factor adjustment for:

- Pay: as Repex except only 40% of work covered as assumed done locally

Bottom-Up – Connections

Good driver, but we believe fuel poor should be included in regression with a different synthetic u/c reflecting nature of work.

RIIO-GD1

- Synthetic u/cs used as regression driver
- Regression applied to gross costs, with then company specific gross to net ratios applied
- Fuel poor costs treated separately

RIIO-GD2

- Appropriate to include fuel poor in the CSV with its own synthetic u/cs (higher mains, lower service u/cs than other existing housing, given nature of work)

Costs exclude:

- Fuel Poor connections costs
- Streetworks

Regional factor adjustment for:

- Pay: as Repex
- Urbanity: as Repex

Bottom-Up – Reinforcement

We support the use of four year historic data and a synthetic unit cost driver, but may need to consider using more diameter bands

RIIO-GD1

- Regression used synthetic cost drivers for above and below 180mm
- Given 'lumpy' nature of this work, Ofgem used an average of four years historic data for this historic regression
- Assessment excluded mains reinforcement associated with upsized mains replacement, such as London MP which was assessed individually
- After regression an allowance was given for associated reinforcement governors

RIIO-GD2

- Use of multi year historic average is still appropriate
- Need to consider if synthetic u/c's could be derived for more diameter bands (similar to repex), or look at regional factors if can demonstrate proportionately higher diameter within the two bands (eg within London)
- May also be appropriate to look at gross as for connections
- London MP reinforcement regional factor is required to be evidenced

Costs exclude:

- Reinforcement governors
- Streetworks

Regional factor adjustment for:

- Pay: as Repex
- Urbanity: as Repex

Bottom-Up – Business Support

GD1 approach was new, including external comparison. Given cost reductions in GD1 across networks, may be appropriate to move to ED1 approach

RIIO-GD1

- Wider approach, looking at comparative position of energy networks UQ with external companies based on Hackett Group benchmarking source (materially the same)
- Used a composite driver based on Hackett Group's methodology
- Did apply some normalisations, key item being to look at gross rather than opex costs. Also added an uplift to reflect Regulation
- Insurance and Stores & logistics considered separately

Note: ED1 an alternative MEAV u/c approach taken by Ofgem to benchmark DNOs over years together with external review

RIIO-GD2

- Some reservations in detail (comparability, drivers), but accept appropriateness of external benchmarking this element of costbase
- May need to consider Cadent's networks combined as we operate a centralised service for these activities (and our apportionment drivers likely to be different to benchmark drivers)
- The main area where we see development is in IS, where we see merit in the approach taken in ED1, to combine opex and capex elements of IS, especially given the continued developments in cloud computing
- May also be appropriate to move to ED1 approach, given GDN business support costs have reduced during GD1
- Business Support is another clear example where GDNs structure/capitalisation lead to inherent differences
⇒ need for combined UQ calculation