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Utilities Devolution Phase 2

Version 1.00

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**Version Control**

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| Version | Updated by | Key changes | Date |
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|  | **FRGC** | **Principles approved at FRGC** | **21/3/16** |
| 0.25 | Natalie Stone | Reviewed & update to periodic processes | 18/3/16 |
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**Background**

In the Delivery Plan for CP5, Network Rail made a commitment to the ORR that our carbon footprint would be reduced by 11.19% by the end of CP5.

To put this into perspective, in Year 5 CP4, Network rail used 440 GWh of non-traction Electricity within the Utilities arena and therefore it was agreed that in Year 5 CP5 our Electricity usage would be 390 GWh. In parallel with this our funding amount has also reduced, so it is imperative that we reduce Electricity (and Gas) consumption on a national level – and this reduction (without any increase in income) requires 17.1% efficiency, assuming we run all our efficiencies through consumption.

2015/16 saw the implementation of the first phase of budget devolution to the Routes. The effect was to transfer 75% of energy volumes to the Routes while the Centre retained the more complex retail and third party obligations with the aim of simplifying these so that they too could be transferred to the Routes at a later stage.

For real benefit and transparency it was decided to devolve Utility budgets in Year 2 of CP5 to enable routes to make decisions at a local level to assist in this carbon reduction. The Energy Management team have been running route workshops throughout the year, where a deep dive on usage at a meter level is conducted, and it is recognised that savings of up to 24% could be made. The forward contracts on prices have locked in approx. £20m of savings in the control period, and we have made greater strides to bill third parties for consumption, reducing the overall burden on Network Rail. However, there still lies a big opportunity to recover more.

For 2015/16 we used actuals relating to the base year, 2013/14 (CP4 Yr 5), to apportion the available cost budget over 8,000 meters and then rolled this up into Delivery Units and Managed Stations at each route. This did not take into account any out-of-year activity via invoicing of those meters still required for manual meter reads.

This year to get an even more accurate reflection of usage we are looking at the last 34 periods of Utility usage over the 8000 meters to re model any baseline assumptions that were made. We also have a greater proportion of meters on automatic meter reads (AMR) therefore giving much more accurate data – even to half hourly consumption.

We are looking at all interfaces to Projects and Property to ensure all budget is allocated to the end user of the supply. It has also been agreed that we will be devolving the income from the 3rd Party Tenants at Managed Stations. i.e. the income that is Non QX (Qualifying Expenditure), and EC4T.

**Phase 2**

In the continued spirit of devolving responsibilities and allowing costs to fall where they lie, the next stage to full budget devolution represents a pragmatic and sensible option. The pan route services workstream has laid a clear challenge to the centre that all costs incurred by the routes should be picked up by the routes, and that the role of the centre is supporting with expertise and assurance. The next stage of devolution falls in line with this.

The routes having a target for consumption is where the opportunity to unlock the further efficiencies can come in. The challenge is a tough one, but one we can only meet if the responsibility is with the right people.

If routes are able to see the positive effect in their P&L of managing energy, this will be a great incentive to manage our energy use effectively. We are starting from a particularly low baseline, so there is a large degree of unlocked opportunity.

Each Route has now received a bespoke workshop from which individual Routes Energy Efficiency Action plans have been produced. These plans represent realistic savings opportunities that do not rely solely on expensive capital outlays but instead are designed to harness behavioural change and identify simple actions to reduce consumption and identify where energy is being used inefficiently. Conservatively, the energy costs reductions identified across all the Routes vary between 13 to 24% and more savings opportunities are likely to be established as Routes work through their action plans.

From early discussions with routes, we have identified several opportunities to better off-charge so best to allow the costs to lie where they fall.

**Key Features of Phase 2**

* TOC income and on/off charges, IP recharges and station tenant energy income devolved to the routes. Routes will be able to identify other areas for billing, but central support will remain to advise, calculate and bill on their behalf.
* Volume targets, including non -traction from traction, are devolved to the routes. The volume baseline of the current model takes into account a wider range of more accurate data and hence routes will have a baseline that will be recognisable to them.
* Unit rate accountability will be devolved to Route services (as is the case for materials and other services currently)
* EC4T stays in STE for another year to ensure transparent devolution of budget by route.
* Workplace management and Property budgets baselines and quantum yet to be confirmed by property, so their devolution will be deferred until later in the year as phase 3.
* An average national unit rate for all the routes will be used in 16/17 and, once it is established that the new system, EnergyLink, can provide cost data, there will be a drive to replace this with a route unit rate from 17/18. Once in place, Energy-Link will enable direct pass through of actual costs and information to create an accrual if necessary, rather than journal transfer calculated on actual volumes.

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| --- | --- | --- |
|  | Phase 1 | Phase 2 |
| Consumption | Routes | Routes |
| Income | HQ | Routes with HQ Support |
| Offcharging | HQ | Routes with HQ Support |
| Rate Risk | HQ | HQ |

**Development of the model – Gas and Electricity**

The energy consumption model was developed by the BRT Analysis Team and the Group Analyst, STE. It applies to gas and electricity consumption and takes historical and existing consumption and extrapolates forwards.

The energy consumption model is designed to:

* provide actual electricity usage in kWh for FY14, FY15 and FY16
* calculate electricity forecasts in kWh for the financial years FY17, FY18 and FY19

These forecasts are provided at Delivery Unit (DU) and Managed Stations level to be input as part of the business planning process for Control Period 5 (CP5).

The following are the assumption/caveats in the data provided:

Historic Data

* The Electricity data provided by the Energy Management team is a mixture of actual metered and estimated data. Where actuals are missing, an estimate is provided.
* Negative values are also included in the data to indicate an adjustment to reduce prior periods' consumption. The Electricity data for FY14 and FY15 does not show accurate period by period consumption.
* For a significant number of sites consumption for 2-4 periods hits in a single period due to irregular billing by suppliers, and the Energy Management team does not apportion the usage back to the relevant periods.
* By P01 of FY16, circa 87% of automatic meters were installed which ensured that accurate consumption was being captured and charged.
* The Energy Management team, however, does not have access to all the data from the automatic meters. Data from circa 76% meters is available.
* For meters where data is unavailable, multiple periods consumption may hit in a single period as data is taken from invoices received.
* This limited the ability to analyse data on a period by period basis. Hence a forecast based on moving averages was calculated and a seasonality trend applied to produce period on period consumption.

Data Cleansing

Managed Stations electricity meters

* In the data provided, some sites located at managed stations were pointing towards delivery units. E.g. Liverpool Street stn (elec1) is mapped to Romford DU (based on 2016 DU's assignment).
* In this model, all managed stations meters have been mapped to their respective managed stations and route. Route portfolios will be held in Energy Link and all included sites and meters will be visible to routes through an online energy portal. Routes will need to ensure that any anomalies are reported to the Energy Management Team to ensure correct alignment and apportionment of consumption.

Non Traction from Traction (NTFT)

* The model includes annual NTFT data split by DU for Non-Traction, TO Depot consumption, 3rd Party Non-Traction and Conrail heating (CRH).
* The data is available for each DU by location. Please note that information for CRH (Conrail Heating) is not available by location, hence CRH is split only at DU level.
* The data will be at location level going forward because CRH are now all metered.
* Since the data available is annual rather than period on period, this limits the ability to apply modelling techniques and forecast is kept constant in future years.
* Note that Managed Stations do not have NTFT data.
* The following DU's do not have any data for NTFT: Derby, Doncaster, Leeds, Sheffiled, York, Saltley, Edinburgh, Perth, Cardiff, Shrewsbury, Bristol, Plymouth, Reading, Swindon.
* No efficiencies have been assumed in the BAU version for NTFT however routes are required to liaise with Energy Management and propose efficiencies for FY17-FY19 in NTFT by DU sheet.

Efficiency Percentages

* For all sites, efficiency percentages have been set as defaults for illustration purposes.
* On each DU/Managed Stations sheet, the ORR Target % (variance vs FY14) for each year is also shown for comparator purposes.
* It is left to the DU/Managed Station's discretion to liaise with the Energy Management team and amend the year on year efficiencies for FY17 - FY19 as they see fit.

Seasonality Trend and Forecasting

To calculate the seasonality trend, the following data cleansing methodology has been applied to the last 13 periods of actual data (i.e. FY15 P10 - FY16 P9):

* For each period, only those sites with positive values have been included. Sites with negative values have been excluded from the trend analysis.
* This reduced the number of sites from circa 8,000 to circa 4,000 (i.e. the number of modelling points per period)
* Based on these data points a % proportion for each route is calculated per period.
* LNW and Wessex seasonality percentages were adjusted as they were showing a downward trend from P10 to P11 in comparison to other routes.
* An adjusted percentage is calculated using average period percentage change from P10 to P11 for all other routes. This change is 7.46%. This is applied to LNW & Wessex and the remaining period percentages are reapportioned to come back to 100% for the 13 periods.

Seasonality Trend Application

FY16 P11 - P13

* Actual data points for P1 - P10 are used to determine the proportion percentage usage for these periods. The remaining percentage is then applied to determine the usage for the last 3 periods (P11 - P13).
* e.g. Ashford MDU Depot (Electricity) site (sitecode: 2360662): At P10 Year total usage is 408,180 kWh. These 10 periods amounts to 68.43% of the total yearly usage for FY16.
* Using this percentage the FY16 full year total usage is calculated as 596,456 kWh. The remaining seasonality percentages of 11.57%, 11.12% and 8.87% were applied to P11-P13 respectively.

Moving Average

FY17

To determine period data for FY17, a moving average of 27 periods is applied. E.g. for FY17 P1, an average of FY14 P1 - FY16 P1 has been used. This is rolled over to calculate a moving average for remaining periods.

FY18

To determine period data for FY17, a moving average of 40 periods is applied. E.g. for FY18 P1, an average of FY14 P1 - FY17 P1 has been used. This is rolled over to calculate a moving average for remaining periods.

FY19

To determine period data for FY17, a moving average of 53 periods is applied. E.g. for FY19 P1, an average of FY14 P1 - FY18 P1 has been used. This is rolled over to calculate a moving average for remaining periods.

* The route seasonality trend was then applied to the total usage of FY17, FY18 and FY19 to calculate the period on period trend.
* This was applied to all modelled as well as non-modelled sites.

**Rates**

The tariff that will be charged out to the routes has been fixed from FY16 so to keep the routes neutral from rate risk. A large proportion of the energy cost has been locked in via hedging and so the remaining variable costs relate to the levies and through-charging relating to government policy. As this is not something the Routes (or, indeed, Network Rail) can control this has been kept centrally. There is currently work under way to quantify this rate risk and remove from Network Rail’s controllable costs base-line.

**Water**

As consumption data from water is unreliable, this element will just be apportioned on cost as per FY16 - with the same efficiencies applied as Gas and Electricity. It is expected that contracting strategy surrounding water will help NR realise significant efficiencies here which will be passed onto the routes.

**Income & Non Consumption**

Income & Non Consumption is currently made up of:

* The net of on-charging (NR paying operators for using their power supply) and off-charging (operators using NR’s power supply)
* Tennant billing at stations
* Corporate charges
* The Carbon Reduction Charge

This will continue to be billed by Energy Management as it currently is (see Offcharging), and the budget assumes the current rate continues to happen in the routes that they already do.

Therefore routes need not do any new activity to meet budget – provided existing consumption does not decrease.

**Efficiencies**

As previously discussed, the ORR has set NR a challenging target (11.19% by the end of CP5) and the year 2 target is already being missed. This puts a significant burden on the Routes to reduce efficiencies.

However the following principles will apply to aid efficiencies:

* A consistent efficiency challenge is to be set across all routes as all routes are believed to be able to meet the targets even though some may be more advanced in their plans than others. Route action plans have been provided to each route by Wendi Wheeler following the first round of Opportunities Workshops, and these show a full list of opportunities categorised as behavioural, costed (i.e. investment required) and Analysis (desktop energy management) in order to support this.
* The targets will be devolved at route level and then the route can split this further as they see fit – the model that has been created allows for tradeoffs at meter level. It is advised that this is done in collaboration with the Energy Management Team in order to assign realistic and achievable targets at individual meter level.
* There is an overall Network Rail carbon reduction target which must be met, but by giving routes income targets as well, they are not just restricted to consumption reduction.

What is being asked of the routes is a challenge but not a step change. The efficiency profile being given is that which leaves the routes with the highest possible exit position in CP5 with the funding available.

The energy consumption model takes a longer set of periodic values than the FY16 budget did and hence there is more of an allowance for cold weather in the baseline. If, however, the mild winter of FY16 continues this will represent a large part of the efficiency challenge.

Note – this target is on the above the line consumption – however, this gap can also be closed by reducing NTFT costs or increasing income. The reason the focus is on above-the-line consumption is to keep focus on the ORR targets.

These are the following efficiencies that it is believed that can be realised – from easiest to realise (low hanging fruit) to hardest:

* Income target assumes no extra billing to operators & third parties – routes can identify opportunities
* Income target assumes no charges to IP; IP willing to take charges
* Target doesn’t include any positive action taken in FY16 to reduce consumption
* Target doesn’t include efficiencies that will appear from previous investment
* No efficiency target for below the line consumption, we can make savings here and encourage Group to allow it
* EnergyLink system will provide decision support, including automated warning on unnecessary consumption
* Workshops have identified a 16-20% efficiency on consumption overall
* However a small number of opportunities identified in the workshops require capital outlay
* Opportunity to reopen several commercial contracts with operators and third parties
* Cultural changes to reduce consumption of energy
* Winters better than the past three year average provide natural efficiencies

**Periodic Processes**

Process outline:

1. Pre-Devolution
2. Phase 1
   1. Costs
   2. Income
   3. Debt
3. Phase 2
   1. Costs
   2. Income
   3. Debt
4. Phase 3
5. Pre-Devolution

All accounting was processed in cost centre 338752 and thus, both budget and actual costs were booked against 338752.

The account codes used were as follows:

520000 Gas

521000 Sewerage and Water

522000 Electricity

523000 Fuel and Services

524000 Oil

525000 Other Utility Costs

Purchase orders were raised by the Energy Management team for suppliers and allocated to cost centre 338752 and the account code relating to the utility type (e.g., Electricity 522000).

2.1. Phase 1 - Costs

Phase 1 Utilities devolution commenced in FY15 and flexed year 2 CP5 financial costs relating to Utilities for the financial year FY16 to the Routes.

Phase 1 devolved only Utility costs; no income streams relating to usage from tenants at Managed Stations or from energy use by TOCs, FOCs and third parties were devolved. This income and budget was kept in the Energy Management P&L.

The cost budget was flexed to the routes on three new account codes:

520500 Route Recovery Gas

521500 Route Recovery Water

522500 Route Recovery Electricity

All accounting relating to payment of suppliers is still processed on cost centre 338752. Energy Management conducts bill validation (via Optima Energy) and locks rates for energy supply.

A purchase order is raised against 338752 and suppliers present invoices to Accounts Payable following approval from Energy Management who book these costs to their P&L. (Debit)

Each period (one period in arrears) route utilities usage (volume) is calculated and multiplied by a blended rate. The cost (credit) is recharged to routes on the account codes to which Route budgets were devolved (see above)

Routes hold budget and actuals per the hierarchy in RED (Railway Energy Database) which is at a Delivery Unit and Managed Station level. This is the summary level of 8500 metres that supply the facilities.

Currently usage is posted to routes one period in arrears with a calculation being made at P13 (a type of wash up) taking into account the P01 entry, which would have been P01 budget.

2.2. Phase 1 – Income

TOC/FOC, 3rd Party & tenant off-charging are initiated by the Energy Management team; invoices are process by Accounts Receivable. The current system relies on billing relating to utility offtake schedules on an annual basis and is cumbersome and open to regular challenge.

2.3. Phase 1 - Debt

Any debt – i.e. invoices not paid after 6 months is currently debited to the Energy Management P&L. This will in future be allocated to routes now receiving the income stream, via Financial Shared Services.

Income and debt is current processed against cost centre 338752 on the following account codes:

093110 Util Recov-Electric

093120 Util Recovery - Gas

093130 Utility Recov - Water

093140 Util Recovery – Oil

1. Phase 2 – foreword

When EnergyLink is introduced, purchase order numbers and cost centres will be held within the system and received utility invoices will be validated, accepted and passed directly into Oracle for payment against the relevant cost centre. This will remove the lag time between actual charges and costs being allocated to Route cost centres. However, Routes will be responsible for ensuring that Energy Management are updated with any cost centre changes to ensure that mis-posting does not occur. Through an online platform, Routes will be able to access utility consumption and cost information at different levels of granularity, from route total down to individual invoice level if required. Reporting within the system can be tailored to meet specific requirements.

EnergyLink will go live on 1st April 2016. However the pass through cost functionality will not be ready at that time. It is envisaged that this will be implemented 2-4 months after go-live, for ease of accountancy and transparency, the reconciliation and commencement of pass-through costs will occur either at the end of Q1 or Q2 of FY17.

An updated process note will be submitted to FRGC prior to roll out of EnergyLink capabilities.

In the interim, the cost accounting method outlined above will be adhered to.

**Senior Management Accountant, STE** will be responsible for accounting for energy and posting the journals to the routes

**Management Accountants, Routes/Areas** will be responsible for monitoring energy consumption and accruing where necessary

3.1. Phase 2 – costs (to be updated following EnergyLink go-live)

The process of apportioning costs for energy consumption is dependent on the EnergyLink functionality and interface with Oracle.

With 87% of the 8500 metres being supported by half hourly data it will be feasible to move away from a period lag to a couple of days. Billing will be automated through EnergyLink when live, with direct interface in Oracle via Accounts Payable. Invoices will be approved and validated by the Energy Management team. Issues flagged during validation that cannot be resolved centrally will be highlighted to routes.

**Management Accountants, Routes/Areas** will be responsible for monitoring energy consumption and accruing where necessary

In the interim invoices will still be processed centrally as in Phase 1, costs will be allocated to routes via a journal.

3.2. Phase 2 – income

The process for income is not expected to change following EnergyLink go-live, but it will be improved by better quality data. The actual process for off-charging will be done by the Energy Management team, but will be reliant on the routes identifying opportunities. Routes will be responsible for making sure that commercial relationships are in place to avoid bad debt risk.

3.2. Phase 2 – debt

Any debt – i.e. invoices not paid after 6 months is currently debited to the Energy Management P&L. This will in future be allocated to routes now receiving the income stream, via Financial Shared Services.

Income and debt is current processed against cost centre 338752 on the following account codes:

093110 Util Recov-Electric

093120 Util Recovery - Gas

093130 Utility Recov - Water

093140 Util Recovery – Oil

This will be transferred to routes with the new process.

1. Phase 3

Phase 3 of the budget will also seek to involve:

* Workplace management billing
* Commercial tenant billing
* Improved water devolution
* EC4T
* Automatic charging to IP cost centres

Appendix 1 – Posting locations

