

Annex 1- Targeted Charging Review (TCR) Principles

Introduction

- 1.1 Throughout the TCR, three principles have guided our work and decision-making. These principles were developed and refined through consultation to incorporate stakeholder concerns, and ensuring our definitions are consistent. Ofgem has statutory duties which must be adhered to when making decisions of this nature and these principles align with those duties. The three TCR principles are:
- a) Reducing harmful distortions; such as inefficient investment in generation for the purposes of reducing residual charges;
 - b) Fairness; particularly with respect to improving the fairness of residual charges, and primarily for domestic users; and
 - c) Proportionality and practical considerations; achieving changes in a proportionate and practical manner.

The TCR principles are explained in the sections below. A summary of the analysis we conducted is presented in table 1 which shows the principle, the assessments for which the principles were primarily applied, and the evidence which contributed to that assessment.

Table 1 Analysis, principles and evidence for change

Relevant Principles	Analysis Type	Evidence description
Fairness	Distributional impacts	Modelling implications for a range of different representative domestic, commercial and industrial profiles, informed by public source data and information from stakeholders
	Stakeholders & academic research	Literature Review, engaging with academics
	Stakeholders and research: consumer panel	Gathering consumer views on fairness via consumer panels
	Vulnerability assessment	Assessment of impacts on vulnerable consumers
Proportionality and Practical Considerations	Distributional impacts	Modelling implications for a range of different representative domestic, commercial and industrial profiles, informed by public source data and information from stakeholders
	Stakeholders & academic research	Literature Review, engaging with academics
Reducing Harmful Distortions	Behavioural analysis	Assessment of whether static impacts can lead to user behavioural changes
	Stakeholders & academic research	Literature Review, engaging with academics
	Stakeholders & research: Large users	Survey of large users
	Vulnerability assessment	Assessment of impacts on vulnerable consumers
	Wider systems impact analysis	Modelling of impacts on wider electricity system over time (dynamic assessment)

Reducing harmful distortions

- 1.2 The current arrangements that recover residual network charges encourage user behaviour that leads to harmful distortions in the market. They create incentives for some network users to take actions that reduce their residual charges and can increase the overall network system costs. Residual charges are intended for revenue recovery and are not meant to incentivise specific actions by network users.
- 1.3 There are two types of network charges, the 'residual' charges that contribute to the long-term expenditure required to efficiently maintain and operate the national network infrastructure from which all connected users benefit. The other is a 'forward-looking charge' or 'cost-reflective charge' which is designed to encourage efficient use of the network by users.
- 1.4 Residual charges that are based on measures of network usage incentivise load reduction, reducing the share of the charge paid for by that user, but increasing the share paid by other network users.¹ This in turn increases the incentive for other users, who then pay an increased proportion of the residual charge, to reduce their load as

¹ Shittekatte, T., Momber, I. and Meeus, L 2017. "Future-proof tariff design: recovering sunk grid costs in a world where consumers are pushing back" EUI Working Paper RSCAS 2017/22

they are exposed to even higher charges. This harmful distortion not only impedes a level playing field for competition but also encourages users to invest in technologies to reduce their demand from the network and to generate on-site. In many cases, this generation may only be economic when avoidance of residual network and policy costs are taken into consideration and the generation has no effect in reducing the overall network costs themselves.

- 1.5 Our preferred option of Fixed Charges will reduce the distortion discussed above, because it is very difficult to avoid the charge without disconnection from the network. This ensures that all users contribute fairly to residual charges. Avoiding these charges does not lead to corresponding reductions in cost for the networks. Instead, the cost-reflective or forward-looking charges are used to encourage efficient usage on the network. It is these charges that users should respond to and can take account of short-term circumstances, whereas the residual charges are for the maintenance and investment in the infrastructure for the longer term.
- 1.6 Residual charges that are based on a fixed or agreed capacity basis may incentivise users to reduce their agreed capacity or disconnect from the grid entirely. This is of concern because, as the number of connected users declines, the residual charges are increased for the users who remain connected. Work undertaken for this review suggested disconnection was unlikely for most users.²
- 1.7 We noted in our November 2017 working paper that we believed that residual charges levied on generators would ultimately be passed onto demand consumers and therefore increase the potential for distortions between different types of generator.³ To reduce the potential for distortion and improve competition between different types of generator, we think network residuals should be charged directly to final demand consumers, as reported in our update last November.
- 1.8 Some charges and payments, collectively known as 'embedded benefits', which are paid to smaller embedded generators come about from the charging arrangements for residual, and other, charges. In 2017, we removed one of these embedded benefits and committed to keeping the remaining ones under review.⁴ The three remaining embedded benefits, that we consider to cause the most harmful distortion, are the transmission generator residual, and two balancing services charges. These are discussed in more detail in annex 5.
- 1.9 Recent analysis, in the context of our approval of code modification 261, has shown that the average level of transmission charges for generation is below the level required by EU law, meaning a negative transmission generation residual charge is not required to reduce the level of generation charges. We have taken the decision to set the transmission generator residual charges to zero to remove residuals from generation entirely. This will be accomplished by recovering residual charges from final demand consumers only, which will ensure that all generators are competing on as equal a basis as possible. Removing transmission generation residual payments or

² Annex 6 – Large Users Report

³ <https://www.ofgem.gov.uk/publications-and-updates/targeted-charging-review-update-approach-reviewing-residual-charging-arrangements>

⁴ <https://www.ofgem.gov.uk/publications-and-updates/embedded-benefits-impact-assessment-and-decision-industry-proposals-cmp264-and-cmp265-change-electricity-transmission-charging-arrangements-embedded-generators>

charges for transmission generators, ensures transmission connected generators do not receive additional payments or charges that would affect their competition with small embedded generators.

- 1.10 We have also considered two balancing services charges. The first is the payments that small embedded generators receive from suppliers for supplying them electricity through the distribution network to help reduce the suppliers 'net' demand at the grid supply point or GSP (where the distribution network connects to the transmission network). The reduced balancing services payments this affords suppliers are often passed to the relevant small embedded generators through contractual arrangements, placing them at an advantage to larger generators. The second distortion arising from balancing services charges which we think should be reformed, arises from small embedded generators who do not pay distribution balancing services payments, compared to larger generators who do pay transmission balancing services payments.
- 1.11 These differences between larger and smaller generators effectively allows smaller generators to offer services to the market at lower cost than larger generators, because of the 'embedded benefits' that they receive. This is despite the fact that when the payments and distortive effects of the embedded benefits are considered, these generators are a more expensive option for the system overall.
- 1.12 The analysis suggests that there are consumer and system savings from removal of these benefits. We are consulting on whether the transmission generation residual charge and payments for reducing suppliers' exposure to balancing services should be removed only, or that they should be removed and smaller embedded generators should pay balancing services charges. This is discussed in more detail in annex 5.

Our approach to assessing harmful distortions

- 1.13 Our analysis focused on three areas:
- a) *Static distributional impacts comprising a static quantitative assessment of the implications of alternative reform options on a set of representative user groups.* This work allowed us to see the extent to which charges varied between users that could and could not manage their exposure to charges, and also the impacts of change to alternative residual charging arrangements;
 - b) *Behavioural changes due to changed incentives resulting from the potential reform options.* We assessed the behavioural responses likely from the existing arrangements, and those that might be expected from the potential reform options. We also focused particularly on the impact for large users, who have very diverse characteristics and behavioural responses. Our work suggests that there are a number of factors that may increase the likelihood of disconnection, but that the overall likelihood for most users is low; and
 - c) *Wider system impacts of the reform options in the longer term.* This included assessment of the implications for consumer costs, system costs, energy market

dynamics and effects on generation. This work focused on the system and consumer benefits due to the reduction of the current distortions.

1.14 The summary of our approach regarding reducing harmful distortions is summarised in Table 2 below:

Table 2 Summary of our approach to reducing harmful distortions

Evidence	Evidence description	Where you can find out more
Stakeholders and research	Literature review, engagement with the academics to build our understanding of the potential implications of designing and implementing a new residual network charging framework.	Annex 2
Stakeholders and research: Large users	Survey of large users regarding their views on residual charges, how the changes will affect their network costs, likelihood of disconnection.	Annex 6 Ofgem's Large Users Report
Behavioral analysis	Assessment of whether static impacts can lead to user behavioral change	Annex 4 and the Frontier / LCP distribution and wider modelling
Distributional impacts	Modelling of distributional impacts of options on a set of representative user groups	Annex 4 and the Frontier / LCP 'Distributional and wider system impacts of reform to residual charges' report
Wider systems modelling	Modelling the impacts on the wider electricity system over time (dynamic assessment). This included assessment of the implications for consumer costs, system costs, energy market dynamics and effects on generation.	Annex 4 and the Frontier / LCP 'Distributional and wider system impacts of reform to residual charges' report

Fairness

- 1.15 In line with our principle objective duty to protect the interests of existing and future energy consumers, we have considered 'fairness' as it applies to, and among, end-consumers. We have considered fairness with respect to domestic and microbusinesses, consumers in general and particularly consumers in vulnerable situations.^{5,6} Ofgem has a duty to consider the impact of our work on certain vulnerable groups (Electricity Act 1989 S.3A (3)(a-d)). In particular, we take account of impacts on demand users who are more price-sensitive and less able to respond to any changes in the residual charges that they pay, particularly if charges increase. As part of our assessment, we have also considered the wider implications of changes made to charges which affect the rest of the electricity supply industry and the environment.
- 1.16 Our aim is to design a charge that does not discriminate unduly against any particular user of the network and means that users with certain similarities (network access, location etc.), pay similar levels of residual charges.
- 1.17 If a means of revenue recovery results in actions by network users that do not add value to the system, but significantly increases costs for consumers, it is unlikely to be consistent with our principle of fairness. We think that a fair outcome will be one that minimises the potential for the most harmful distortions in the long run, even if this comes with short-term consequences that are seen as unfair by some users.
- 1.18 We recognise that there is no single 'best' approach to assess fairness. Unlike cost-reflectivity and distributional impacts, fairness cannot be clearly defined and is subjective in its interpretation. It requires a justified, transparent and clear approach to varying types of qualitative analysis to promote acceptability to consumers. It also requires us to consider trade-offs.
- 1.19 We commissioned consultants, 'Revealing Reality', to explore and engage with consumers regarding their perceptions of fairness and how they felt it applied to residual charges. We also explored academic literature around ideas of energy justice.⁷ Our fairness assessments have been shaped by this research and helped to define the components of fairness we used.
- 1.20 We worked with academics and consumers to develop a detailed framework for accessing fairness as it applied to residual network charges.

⁵ A microbusiness employs fewer than 10 employees (or their full time equivalent) and has an annual turnover or balance sheet no greater than £2 million, or consumes not more than 100,000 kWh of electricity per year, or consumes not more than 293,000 kWh of gas per year.

⁶ For larger consumers, we do not think that "fairness" needs to be considered in the same way, with these users having distinct characteristics and concerns when compared to smaller users.

⁷ Energy justice aims to provide all individuals, across all areas, with safe, affordable and sustainable energy

Academic panel

- 1.21 We sought a steer from the academic panel to test our initial thinking on the proposed approach to assess fairness. Engaging with the panel at the early stage of our policy development enhanced our strategic thinking and improved our wider knowledge.
- 1.22 The panel is made up of twelve academics with experience in a wide range of areas including regulation, competition, behavioural economics, statistics, econometrics, and economic evaluation. The panel highlighted a series of relevant academic literature and case studies for us to consider as part of our fairness assessment.

Consumer focus group

- 1.23 We were eager to seek consumer views on our approach to fairness and residual charges recovery, to ensure our policy is informed by the views of Britain's energy consumers. Our Consumer First research programme helped us to understand the priorities, views and experiences of a wide range of consumers, including business consumers and groups that are more vulnerable. We met with a group of domestic customers recruited from four locations across Britain and commissioned independent qualitative consumer research, to test our positions.
- 1.24 Samples of consumers told us that they generally recognised the need for change in residual charges and were prepared, in principle, to face higher charges, as long as the change was justified and explained to them. Consumers generally indicated a preference for the concept of paying towards network costs proportionally, according to their usage. That said, many saw the merits of a fixed charge, recognising the method of payment already exists in other services, such as telecoms. They also acknowledged that consumption patterns change over a lifetime and can even out over time.

Internal fairness assessments - components of fairness

- 1.25 In the context of this project, 'fairness' was used very specifically to talk about the allocation of residual network charges. When we assessed fairness, we reviewed the trade-offs between a range of concepts used to assess different aspects of fairness.⁸
- 1.26 We established a set of five components of fairness to assess the residual recovery options. They were:
- a) Equity and equality;
 - b) simplicity;
 - c) transparency;

⁸ Defined as equity, equality and need in the literature

- d) justifiability; and
- e) predictability.

1.27 When considering fairness, we recognised that there is overlap between all of the assessment components. Due to these established links between each assessment component, we decided not to conduct a mechanistic assessment of fairness, but a collective and qualitative assessment. As such, when undertaking our fairness assessment, we qualitatively assessed each residual recovery option against our five assessment components.

1.28 The components of fairness are not all weighted the same. We gave a higher weighting to both equitability and simplicity. In terms of equitability, we do not believe it is fair for all users to pay the same. We do not think it is fair for users who are connected at a higher voltage, and use more, to pay the same as a low using domestic consumer. Due to this, we have given equitability a greater weighting so that this can be factored into our decision. Additionally, from the consumer and academic research we conducted, we found that domestic consumers value simplicity within the charging framework. We therefore saw merit in giving a greater weighting to simplicity.

1.29 As part of our assessment, we carefully considered the distributional impact of each option against the five assessment components. We gave particular consideration to consumers in vulnerable situations, and based on vulnerable profiles, used the distributional analysis to understand if any redistribution of charges has a significant impact on any vulnerable profile group. Our assessment indicated that vulnerable consumers are present in most domestic consumption groups. This means that many would benefit from the changes we are proposing. We are, however, concerned about the effect on those who consume the least electricity, in volume. Most options considered lead to a redistribution of charges across and within user segments.

Components of Fairness

Equity and equality

1.30 We used the principles of equity and equality to shape our assessment framework. The equity concept relates to the idea that charges should be linked to the degree to which different individuals or groups of users make use of the network. The costs and/or benefits that users bring to the network are based on the degree to which they make use of it, so those who use more should pay more. The equality concept is linked to one of Ofgem's TCR principles; residual charges should be set in a way that reduces any distortions to user behaviour. Charges set based on the equality principle (i.e. all users face the same residual charges) are likely to reduce distortions. Consideration was also given to potential distortions that may arise from such a change, relative to what users currently pay.

1.31 When considering the Fixed Charge and Agreed Capacity Charge options, we explored whether it is fair for all users to face the same cost even if behaviour differs, or if it is fairer to have a capacity or volumetric based charge that allows for varying changes in consumption or system use.

Simplicity

- 1.32 Simplicity is an assessment of the perceived level of complexity to users. Through consultation we know it is a key element of fairness to many. Any reform options is more likely to be accepted and deemed fair, if the user can understand what the new charge is for and if it has been justified, relative to the previous framework. There is a prevailing view that consumers highly value simplicity in tariff design and that complex charges promote uncertainty.
- 1.33 As far as possible, charges should be easy to understand and implement. The simpler the charges are, the easier it is for users to understand what the charges represent, fundamentally making it fairer for all users.

Transparency

- 1.34 When assessing fairness, it is important that we consider transparency. The method for calculating network charges should be transparent and accessible to all network users to ensure that market participants understand the signals network charges (where relevant) send, and budget for them with reasonable accuracy. Users need sufficient information to make decisions. Ensuring stakeholders are engaged and understand the framework promotes good practice and facilitates comprehension. Lack of transparency can easily lead to poor process, which leads to outcomes that lack fairness in some dimension and eventually to lack of legitimacy. This can lead to non-compliance.

Justifiability

- 1.35 We also considered how 'justifiable' a new option was when considering system wide changes. Any charging option we introduce must be justified and have strong logic to support any new regime implemented, in order for it to be widely accepted. If a new charging regime is well justified, users are likely to consider any redistribution of charges towards certain groups to be fair. This links to the concepts of procedural fairness, with users exhibiting behaviours or reciprocity and perceptions of fairness more if they have been included within the decision making process.⁹
- 1.36 For a charging option to be considered 'fair' any differences in residual charges between users should have a clear justification. To the extent charges differ among users and/or with user's behaviour, there should be an understandable link from these differences in charges to the differences in the benefits they receive from the network (due to differences in total use or from the 'insurance' benefit of being connected to the grid). For example, different charges for different distribution system areas may be justified on the basis of differences in underlying costs between the relevant distribution network operators.

Predictability

⁹ A call for equitable procedures that engage all stakeholders in a non-discriminatory way.

- 1.37 The predictability of a charge is crucial for the user to understand the cost and the frequency with which they will receive the charge so that they can easily forecast their charges over time. It is important that network users can effectively estimate the costs of their use on the distribution system, therefore facilitating efficient long-term investment by network users.

Proportionality and practicality

- 1.38 In our TCR launch document, we stated that we would consider proportionality and practical considerations when assessing possible reform options for residual charging. We further reiterated this in our November TCR working paper, where we provided three categories we would consider; proportionality, predictability and practical considerations.¹⁰ This section focuses on why we have assessed proportionality and practical considerations as part of the TCR. Predictability is covered in our assessment of fairness.

Proportionality

- 1.39 The assessment of proportionality considered all of the relevant areas of assessment, including cost, practicality, fairness and the distributional assessment/systems modelling. In order to assess proportionality, we had to understand whether a solution would deliver the policy reform benefits, and whether this could be done with minimum disruption for industry and the relevant stakeholders. If the same level of reform could be delivered with lower disruption or at a lower cost, then it could be argued that this was a more proportionate response.
- 1.40 Due to the difficulty of monetising the implementation cost of the reform options, the assessment of proportionality in this area was a qualitative one and done by identifying the practical changes which would have to occur in order for the reform option to be implemented, and then qualitatively assessing the relevant options against one another. In our assessment, we made the assumption that greater levels of practical change would in-turn, generally lead to higher costs.
- 1.41 In addition to the above, the Electricity Act 1989, sets out Ofgem's requirement to consider proportionality when making regulatory changes, such as those in the TCR. Section 3A(5A) of the Electricity Act 1989 states, in relation to our principle objective and statutory duties:

In carrying out their respective functions under this Part in accordance with the preceding provisions of this section the Secretary of State and the Authority must each have regard to—

- a) *(a) the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed; and*

¹⁰ https://www.ofgem.gov.uk/system/files/docs/2017/11/tcr_working_paper_nov17_final.pdf

- b) *(b) any other principles appearing to him or, as the case may be, it to represent the best regulatory practice.*

1.42 This set the basis of our assessment. We then used the three stage test below, to test the different reform options against one another and to try and understand the impact this would have on the relevant stakeholders:

- a) Is the measure suitable to achieve the desired end;
- b) Is the measure necessary to achieve the desired end; and
- c) Does the measure impose a burden on an individual that is excessive to the objective sought to be achieved?

1.43 According to these criteria, generally an option that achieves the TCR objectives at least cost, with least disturbance, generally scored best when assessed against the principle of proportionality. As such, under the proportionality assessment criteria, the Fixed Charge option generally scored highest, with the Agreed Capacity Charge option, with deemed values for domestic users, scoring second best.

1.44 We did also consider whether the principle of proportionality could be extended beyond the objectives of the TCR, to give consideration to how work carried out as part of the TCR might benefit other work streams (for instance the work on the forward-looking charges, under the Access project). We decided that this was out of scope for the purpose of this assessment.

1.45 Overall, proportionality is difficult to assess as a standalone category. Our assessment was taken in the round with consideration being given to the level of change that would have to occur for the implementation of a policy reform option, and alongside the other TCR principles and areas of analysis. When assessing the reform options against each other, the proportionality principle generally led to those options that had the least industry change, whilst still delivering the TCR objectives, however, it also provided criteria against which we could develop our refined policy options in order to minimise industry disruption.

1.46 The resulting preferred policy option in this consultation provides the overall consumer benefits whilst using existing industry methods where possible, minimising disruption and providing transparency.

Practical considerations

1.47 When assessing the practical considerations of the reform options, we wanted to identify the steps in the charging process that might have to change to allow implementation. We could then use this to qualitatively assess the potential cost of the policy change, and help us to minimise industry upheaval, where appropriate.

- 1.48 The list below sets out the areas that we have focused on for our assessment of practical considerations. It is not an exhaustive list, but is intended to try and capture the key points at which changes would have to occur to implement the reform:
- a) **Metering** – This can include the requirement to install new/replacement metering
 - b) **Data collection** – This can include additional meter reads, the collection/aggregation of additional data or new data (capacity for instance) or the requirement to hold the data in a different format (centrally for instance).
 - c) **Data processing** – This can include the aggregation of new data or the requirement for the data to be passed through in a different format (individual half-hourly data for instance).
 - d) **Charge calculation** – The requirement for parties who calculate the charges (distribution network operators/Electricity System Operator) to update their charging methodology or models.
 - e) **Billing and calculation systems** – This can include changes to the billing systems of the distribution network operators/Electricity System Operator, but is extended to where we thought changes might have to occur for other key stakeholders involved in the charge process (Elexon/Suppliers).
 - f) **Settlement** – Where a charging option requires reconciliation, we had to understand the extent to which this might affect the categories above.
- 1.49 To assess the areas above, we identified the parties affected, the changes we thought might have to occur to allow implementation, and how this varied across the 'vanilla and refined options.
- 1.50 The costs of the different reform options were not calculated in detail but assessed qualitatively. This is due to the fact that multiple assumptions would have to be made on relatively broad policy choices, which would not be robust. There is also a lack of available public data that could be used to assess the cost to some of the categories above. Representative calculations were made, however, using evidence from previous studies such as the smart meter roll-out and the Balancing and Settlement Code (BSC) modification P272, accepting the fact that the costs submitted as both of these projects were highly specific and unlikely to be full representative of the costs involved in the TCR.¹¹
- 1.51 Using the assessment described above, we were able to rank the different options being developed according to their practicality and potential relative cost. This allowed us to discard some options which we felt did not meet the practicality, proportionality or other principles, and to further develop those we thought we were appropriate.

¹¹ <https://www.ofgem.gov.uk/publications-and-updates/balancing-and-settlement-code-bsc-p272-mandatory-half-hourly-settlement-profile-classes-5-8-%E2%80%93-draft-impact-assessment-consultation>

- 1.52 Throughout the assessment and policy development period, we also consulted with stakeholders, through industry workshops (such as the Charging Futures Forum), the Charging Delivery Body (CDB) and with individual stakeholders where we required specific information on their internal systems or processes. It was through these forums that the use of Line Loss Factor Classes (LLFCs) were proposed as a means to segment different users, due to them being previously defined and already used to allocate tariffs.
- 1.53 Through the practicality and proportionality assessment, and our assessment against the other TCR principles, we were able to refine the choice to our final preferred options and concluded that:
- a) Fixed Charge and Agreed Capacity Charge options are the easiest to implement within current systems. It should be noted, however, that this is based on the assumption that a deemed capacity value is used for domestic users. Using a fixed with net volumes approach, as well as using LLFCs to segments users, would utilise current data, meaning less industry changes are required.
 - b) Ex-post options are harder to implement due to the lack of half hourly usage data for the majority of users, the requirement for individual charges and the requirement for data to be stored and processed for individual users. Any ex-post charge option would only be appropriate for larger half-hourly metered users, due to them already being half hourly settled. There are also questions around data privacy, which would have to be resolved if individual charges were implemented.
 - c) Gross options score low on both practicality and proportionality, due to the fact that it is hard to implement for the majority of users (in terms of customer numbers) and due to the number of additional meters and data points required for the charging calculation. There are also questions, which would have to be resolved, on the privacy of obtaining and billing on individual data usage, depending on who required access to it.