BRUNSWICK RESEARCH

ATTITUDES TO ELECTRICITY TRANSMISSION

Findings from a quantitative survey of domestic energy bill payers and decision makers

November 23rd 2011
(Fieldwork conducted 27th – 31st May 2011)

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OBJECTIVES AND METHODOLOGY

RESEARCH OBJECTIVES

The aim of this study was to better understand the attitudes of domestic bill payers towards energy transmission, and their appetite for a number of costed options relating to current and future service provision

National Grid identified three core areas for research, and several related objectives:

- **Knowledge of energy bill composition**
  - Discovering the extent of public knowledge of the composition of both gas and electricity bills
  - Establishing whether the current cost of transmission is considered good value
- **Undergrounding**
  - A better understanding of the public's willingness to pay for the undergrounding of new and existing electricity transmission lines
- **Reliability of the electricity transmission network**
  - Exploring public appetite for current levels of reliability in the network
  - Understanding the value energy users place on loss of supply

RESEARCH METHODOLOGY

The survey was completed by 1,000 people in England and Wales classified as energy bill payers or decision makers

- 1,000 energy bill payers or decision makers completed the full survey
  - **Bill payers** were defined as those who pay all (or something towards) the bill for mains gas or electricity
  - **Decision makers** make (or contribute to) the decision about which supplier of mains gas or electricity their household uses

- To reach 1,000 bill payers/ decision makers, a nationally representative survey of 1,049 individuals was conducted
  - All 1,000 **electricity** bill payers/ decision makers completed the sections of the survey relating to gas transmission
  - All 862 **gas** bill payers/ decision makers completed the sections of the survey relating to gas transmission
  - 49 respondents were neither gas nor electricity bill payers/ decision makers. These individuals were screened out of the main questionnaire, but completed the 'Sample Profile' section

SAMPLE AND FIELDWORK

Research was completed online, using a market research panel. Quotas were set to ensure the sample had a nationally representative profile

- Participants were selected from the online panel using stratified random sampling
- To achieve a nationally representative sample, target quotas were set on the following categories:
  - Age
  - Gender
  - Region
  - Settlement type
  - Socio economic group
- To ensure the final data accurately represented the profile of the population of England and Wales, weightings were applied to data collected
- Fieldwork was conducted between 27th and 31st May, 2011
  - The average time taken to complete the survey was 18 minutes

ABOUT THE METHODOLOGY 1

This survey was not designed as a pure 'willingness to pay' analysis, but was designed to address the three research objectives outlined above, covering attitudes to transmission more broadly

- Wide range of issues covered: e.g. gas *and* electricity; knowledge of bills *and* undergrounding
  - Decided to study only undergrounding, not other ways of mitigating visual amenity impact
- Short fieldwork period necessitated online research
  - Requirement of visual element and complexity of issues precluded telephone approach
  - Benefits and drawbacks to an online approach
- The aim of the research was not to produce an exact figure representing the additional amount the average energy bill payer/ decision maker would be willing to pay for the good
  - Chosen methodology was designed to understand participants' preferred option, from a range of costed options
- Given the chosen methodology – and it limitations – it was not felt that conducting further econometric analysis would be appropriate, or result in additional insight
- Stakeholders consulted on initial draft of the questionnaire

ABOUT THE METHODOLOGY 2

Our questionnaire included both an open-ended contingent valuation question, and a payment card method

- Version of the payment card method used to present participants with a realistic set of costed options to which they could respond
  - It also allowed people to say that they were not willing to pay any more
  - Bill payers were told what they would get for the money in terms of length of cable
  - *"The results for the prompted questions are best used as a measure of public sentiment on the options presented – not the precise amount consumers would be willing to pay for undergrounding"* p.5 Brunswick Research report

- The open-ended contingent valuation question results were given lower prominence in our initial report than the payment card question
  - This decision was taken when viewing the full set of findings
  - It was decided that while there are benefits to the open-ended question, there are also a number of drawbacks
  - E.g., for none of the open-ended questions asked does a majority provide a positive value. To derive an average amount people are WTP using the higher estimate (given that the majority don't give a monetary value) seems misleading

ABOUT THE METHODOLOGY 3

The survey was designed as a starting point for discussion on a highly complex set of issues, and we have drawn on the full range of data collected in the study

- Study is a starting point for discussion on visual amenity impact and undergrounding

- We took a holistic view of the full set of findings, given the complexity of the issue
  - Highly local: Research has shown that those directly affected are WTP large amounts to maintain current levels of visual amenity (e.g. research in Australia)
  - Low levels of knowledge: majority overestimate percentage of the total bill spent on transmission
  - Rising prices: consumer bills have increased significantly in recent times

- This presentation tries to put the findings on undergrounding in broader context
  - This presentation is focused purely on electricity transmission, not gas

ENERGY BILLS: KNOWLEDGE AND UNDERSTANDING

ENERGY BILLS: KNOWLEDGE AND UNDERSTANDING

Gaining insight into the level of knowledge of bill payers/ decision makers on the subject of electricity transmission was a key research objective

Several questions focused on knowledge and understanding:

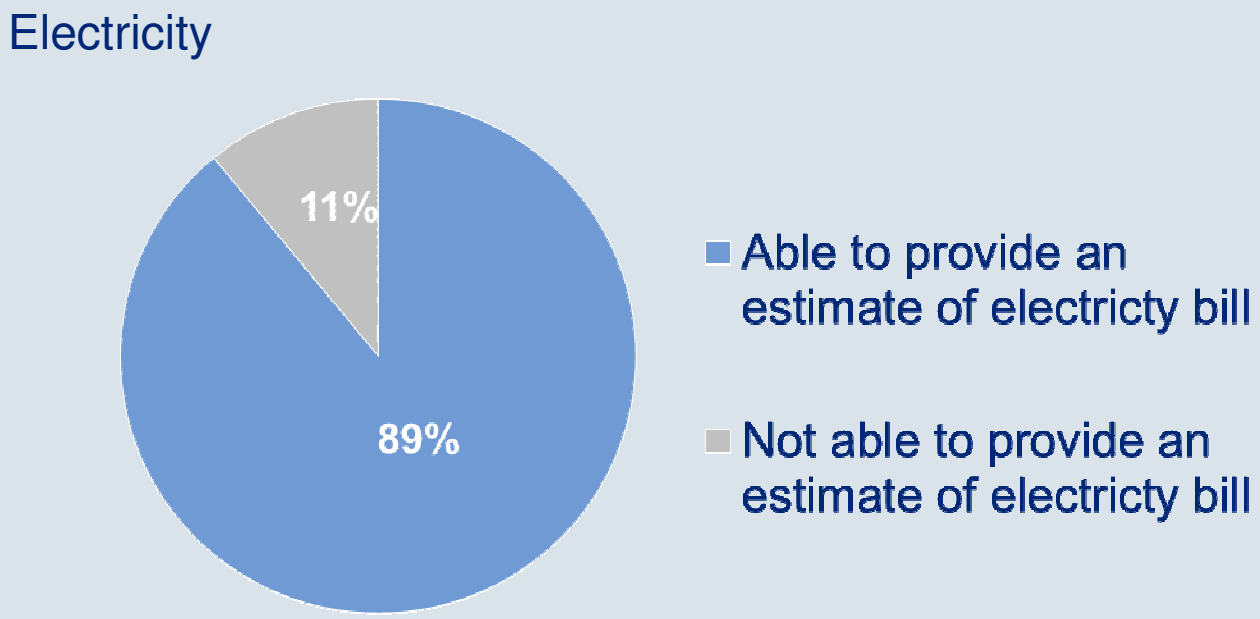
- The first questions related generally to energy bills and consumption
  - Bill payers/ decision makers were asked to provide estimates of their annual electricity and/ or gas bills
    - One aim of the question was to test the proportion who could provide an estimate of this total – and the proportion who could not

- The second pair of questions focused on knowledge of the composition of domestic electricity bills
  - Electricity bill payers/ decision makers were asked to estimate the proportion of their bills spent on each item

- Finally, bill payers/ decision makers were shown the actual composition of domestic electricity bills
  - They were asked whether or not they thought the transmission element represented value for money

LEVELS OF KNOWLEDGE OF ELECTRICITY BILLS

Nine in ten bill payers/ decision makers were able to provide an estimate of the amount their household spends on electricity. One in ten could not provide an estimate



Q. Overall, how much does your household pay each year for electricity/ gas?
Base: All electricity bill payers/decision makers (1000) / All gas bill payers/decision makers (862)

KNOWLEDGE OF ELECTRICITY BILL BREAKDOWN

Establishing the level of public knowledge and perceptions around the composition of gas and electricity bills was a key objective

- The aim was to understand the extent to which consumers understand how the amount they pay for electricity is distributed among the following items:

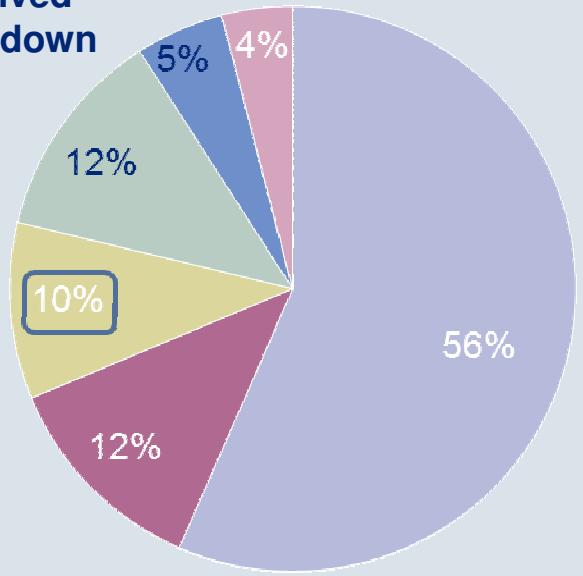
– Wholesale energy and supply costs	– VAT
– Distribution charges	– Meter provision
– Transmission charges	– Environmental costs

- It was anticipated relatively low levels of knowledge of the industry among the general public. Therefore, participants were provided with a short explanation of each of these items
  - For each item, they were asked to enter the proportion of their electricity bill is spent on this
  - Because of the question's difficulty, participants were asked to make their best estimation of the breakdown of the bill

KNOWLEDGE OF ELECTRICITY BILL BREAKDOWN

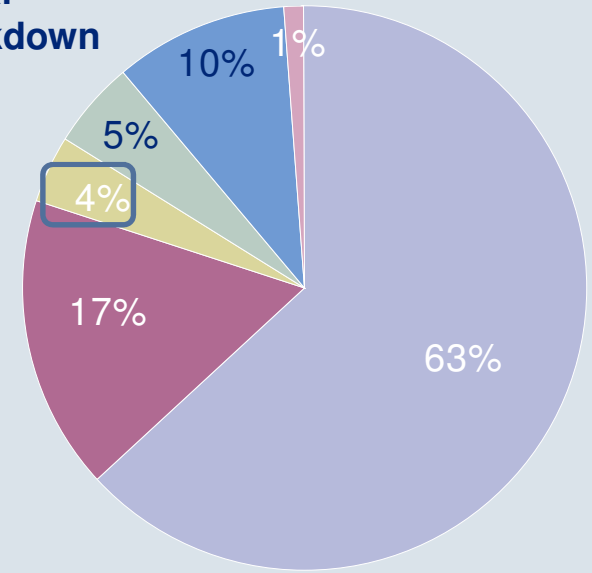
Bill payers estimate that 10% of their electricity bills are spent on transmission – double the actual proportion. The cost of VAT is also over-estimated

Perceived Breakdown



This chart is based on those who provided an answer. **31%** could not provide on answer

Actual Breakdown



- Wholesale energy and supply cost
- Distribution charges
- Transmission charges
- VAT
- Environmental costs
- Meter provision

Note: Perceived breakdown based on mean of answers given

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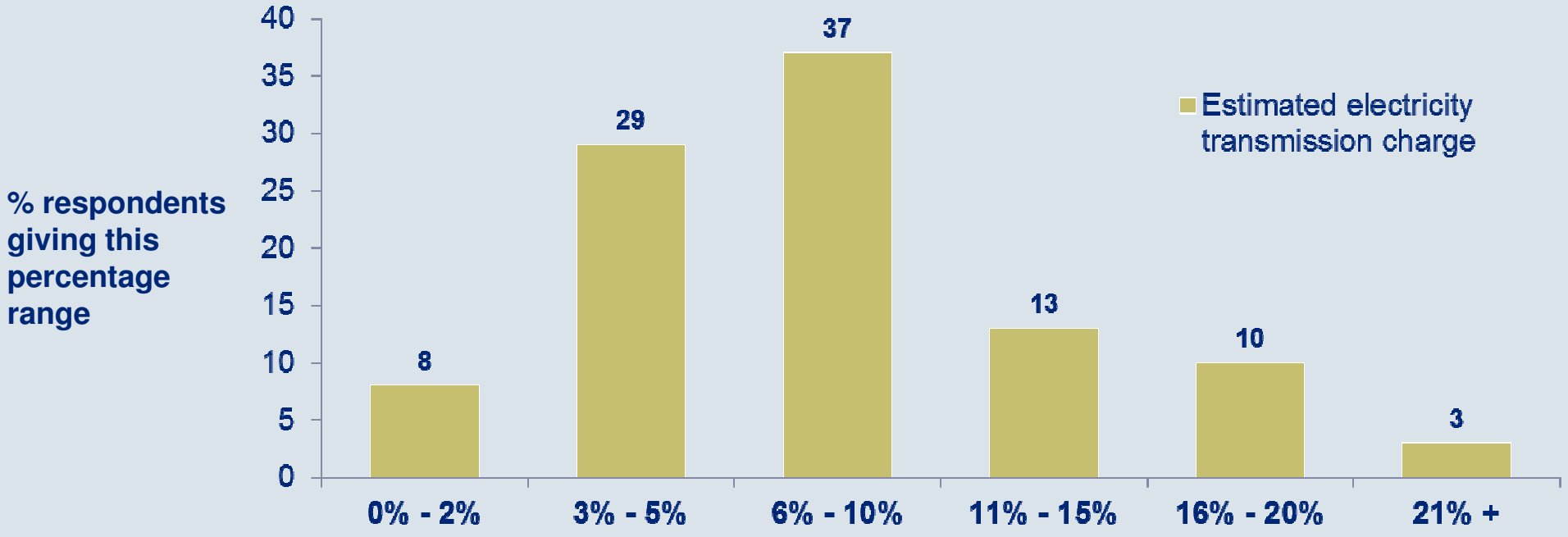
Q. Please indicate what proportion of the amount you pay for your electricity you think corresponds to each of the following items.
Base: All electricity bill payers/decision makers giving a value, and answering 'Electricity' block first (399)

ESTIMATED COST OF ELECTRICITY TRANSMISSION

The range of estimates for transmission charges show that 6 in 10 overestimated the proportion spent on electricity transmission. Just over a quarter (29%) were +/- 1 percentage point of the correct proportion: 4%



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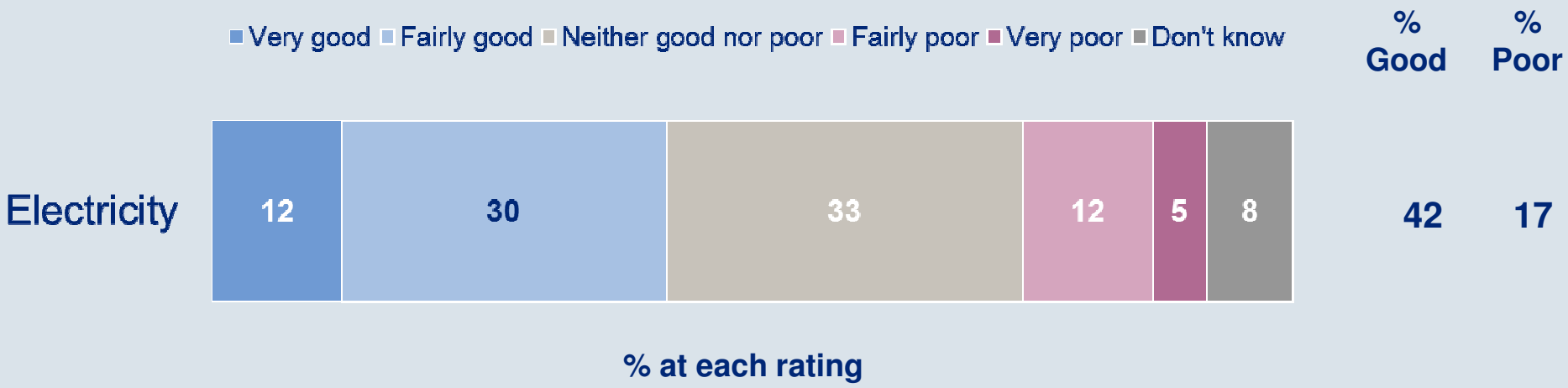
Q. Please indicate what proportion of the amount you pay for your electricity you think corresponds to each of the following items.
Base: All electricity bill payers/decision makers giving a value, and answering 'Electricity' block first (399)

ELECTRICITY TRANSMISSION: VALUE FOR MONEY?

Respondents were then shown the actual breakdown of electricity bills. Four in 10 stated transmission charges represent good value for money, compared to around 2 in 10 who believe it is poor value



Q. Bearing these figures in mind, to what extent do you feel that the current level of charges for electricty/ gas transmission represents value for money? Base: All electricity bill payers/decision makers (1000) / All gas bill payers/decision makers (862)

ATTITUDES TO UNDERGROUNDING OF TRANSMISSION LINES

ATTITUDES TO UNDERGROUNDING

Assessing public attitudes to the undergrounding of new and existing transmission lines was another key research objective

Questions on undergrounding covered the following issues:

- The **importance** of undergrounding new and existing transmission lines in: National Parks (NPs), Areas of Outstanding Natural Beauty (AONBs), other rural areas and urban areas
- **Who** should bear the cost of undergrounding new and existing transmission lines in NPs, AONBs and other rural areas
- The **amount** bill payers/ decision makers say they would be willing to pay for undergrounding new and existing power lines in NPs, AONBs and other rural areas. This was asked in two ways
  - As an **unprompted** question, with bill payers simply asked to enter an amount
  - As a **prompted** question, in which bill payers were asked to select from a range of costed options (each of which included the price and result of that price)
- The **total** amount that bill payers would be willing to pay for the undergrounding of new and existing lines across NPs, AONBs and other rural areas

UNDERGROUNDING TRANSMISSION LINES

The issue of undergrounding also presented several challenges which the questionnaire design sought to address

Issue	Action
It was felt likely that most members of the general public would struggle to differentiate between transmission and distribution pylons	To ensure all participants understood this distinction, pictures of the different pylon types were shown at the beginning of the Undergrounding section
Several questions made reference to National Parks (NPs) and Areas of Outstanding Natural Beauty (AONBs)	Participants were provided with short explanations of National Parks and AONBs
A single, straightforward question asking how much more bill payers would be willing to pay for undergrounding in each area does not provide sufficient information on this issue	A combination of unprompted questions and specific costed option questions were used to test appetite for undergrounding
When several parallel options are proposed in isolation, the combined cost of all individual responses may be greater than a bill payer would be willing to pay in total for undergrounding	Before participants confirmed their preferred price points for each of the costed options, they were asked to confirm that they would be happy to pay the **combined** amount they had entered for all their chosen options

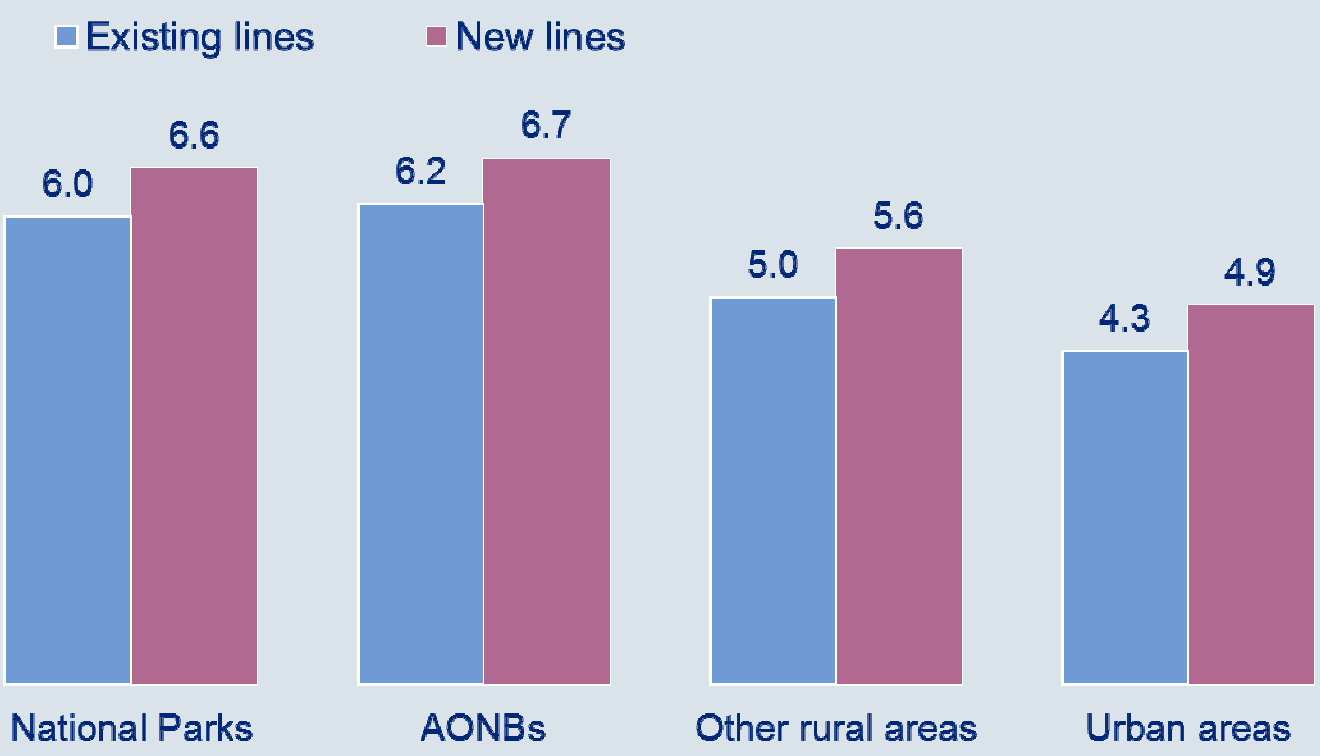
RELATIVE IMPORTANCE OF UNDERGROUNDING

Undergrounding new lines is considered marginally more important than existing lines. Undergrounding in National Parks and AONBs is considered more important than in other rural areas. Undergrounding in urban areas is least critical

Mean Importance

1 – Not at all important

10 – Extremely important



47% of bill payers give undergrounding new lines in National Parks an score of 8-10 out of 10 for importance. **49%** say the same for AONBs.

However, only **20%** give undergrounding new lines in urban areas a score of 8-10 out of 10.

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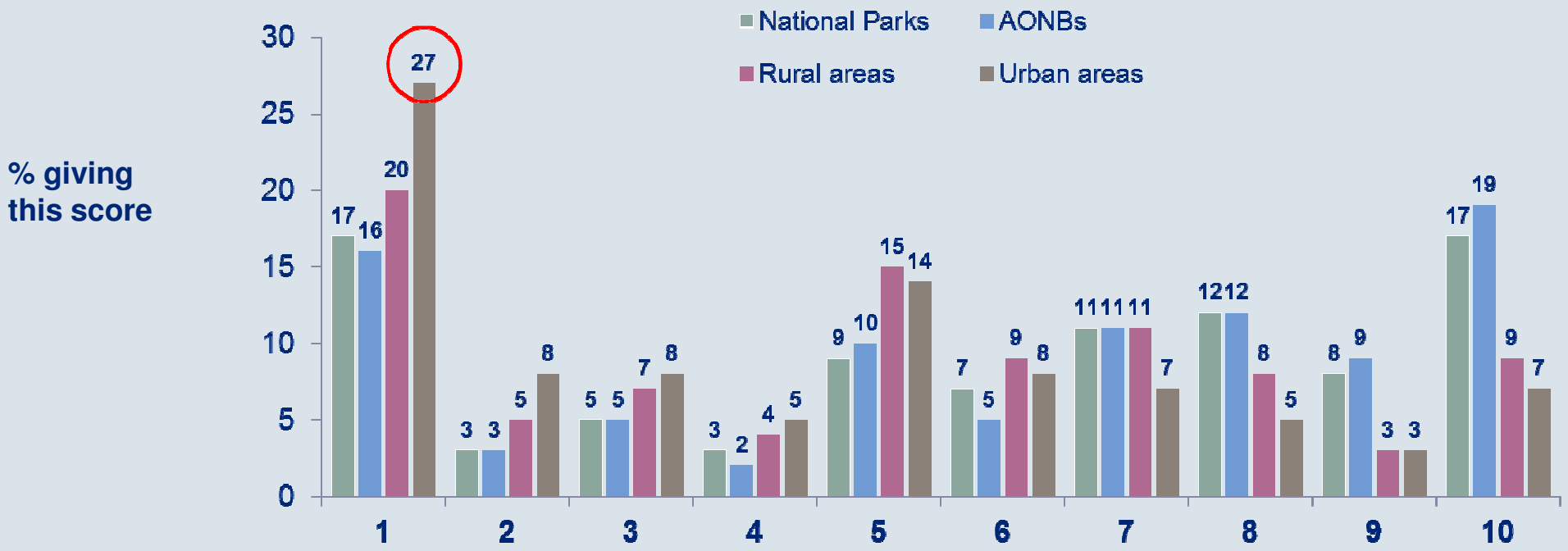
Q. On a scale of 1 to 10, how important to you is it that existing/new electricity transmission lines are put underground in the following areas? Base: All electricity bill payers/decision makers (1000)

UNDERGROUNDING EXISTING LINES: RESPONSE RANGE

The importance placed on undergrounding in existing areas varies considerably. A quarter say undergrounding in urban areas rates only 1 out of 10 in terms of importance

EXISTING LINES



Importance: 1 – Not at all important; 10 – Extremely important

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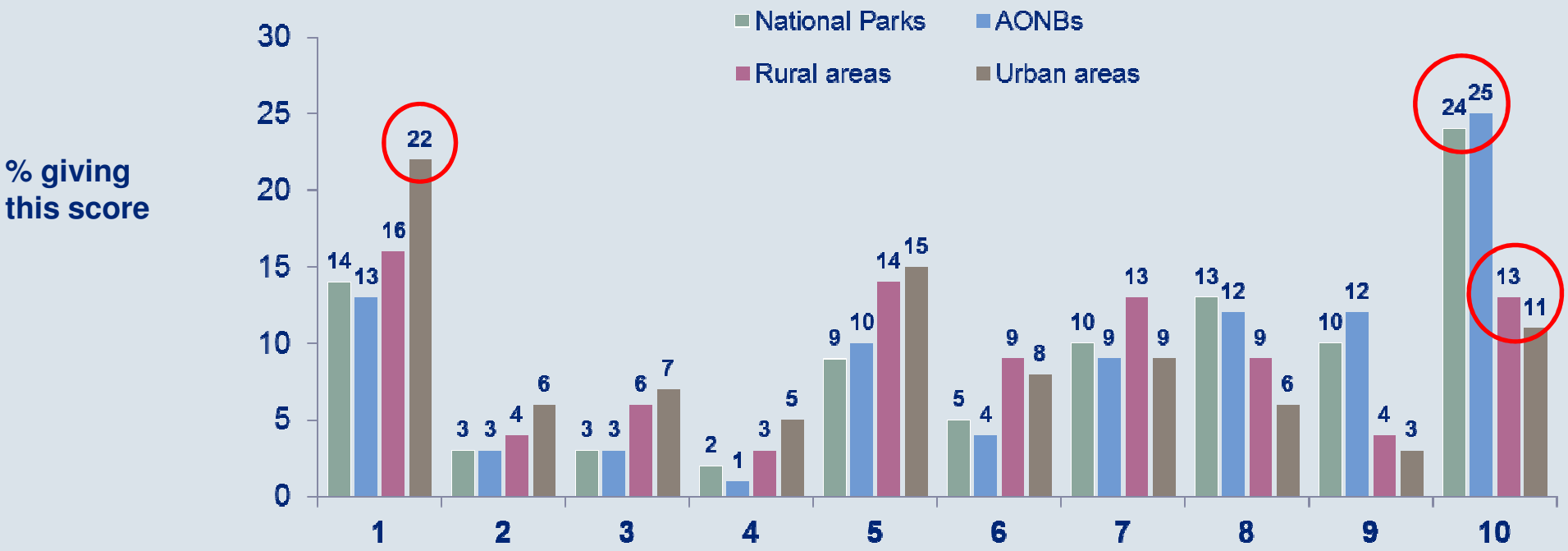
Q. On a scale of 1 to 10, how important to you is it that existing/new electricity transmission lines are put underground in the following areas? Base: All electricity bill payers/decision makers (1000)

UNDERGROUNDING NEW LINES: RESPONSE RANGE

The importance placed on undergrounding in new areas varies considerably among respondents. Undergrounding in National Parks and AONBs are considered highest priority

NEW LINES



Importance: 1 – Not at all important; 10 – Extremely important

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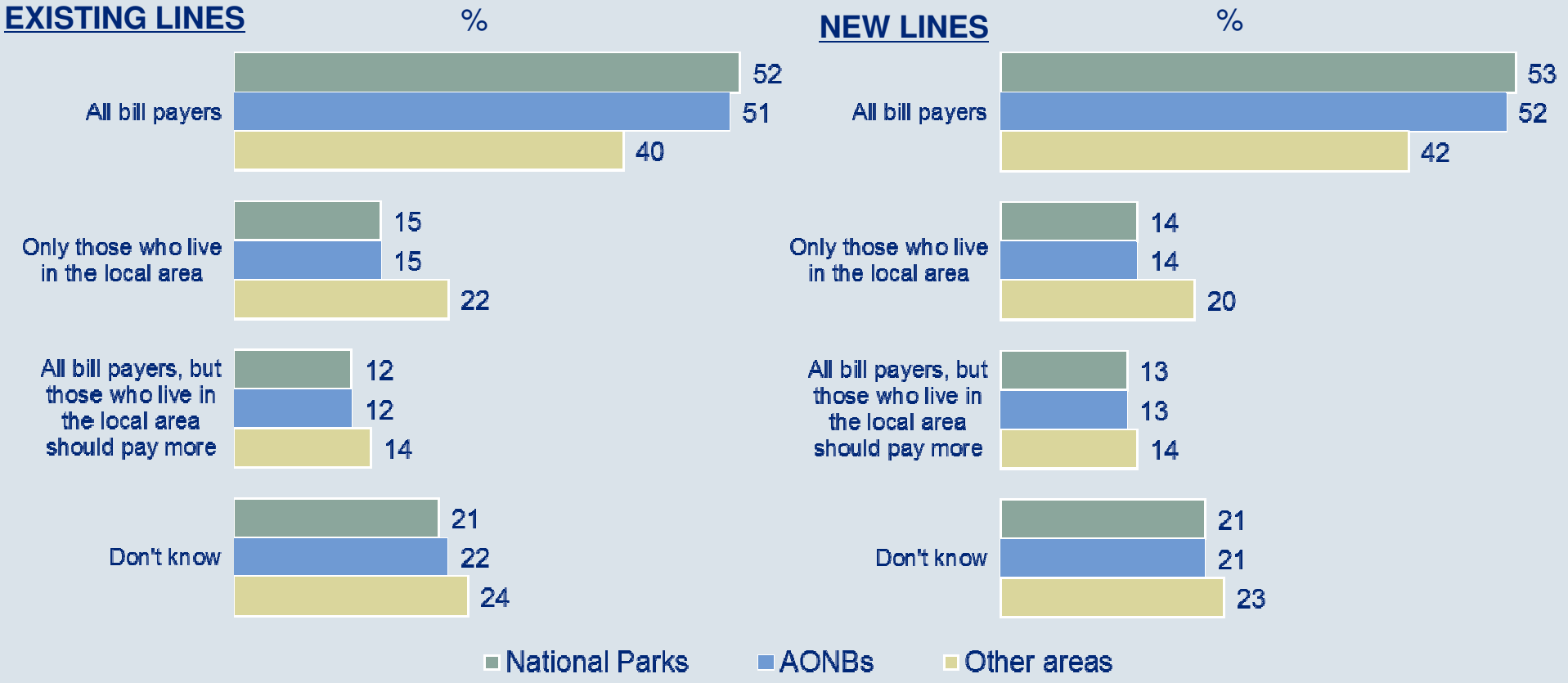
Q. On a scale of 1 to 10, how important to you is it that existing/new electricity transmission lines are put underground in the following areas? Base: All electricity bill payers/decision makers (1000)

WHO SHOULD PAY FOR UNDERGROUNDING?

Socialisation of the costs of undergrounding among all bill payers is the most popular option for both new and existing lines. For National Parks and AONBs, socialisation is around twice as popular as differential charging

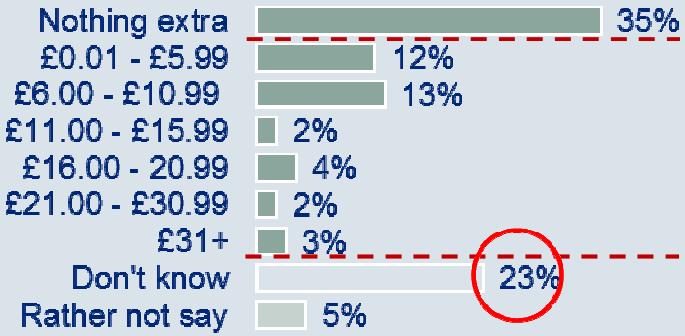


Q. Who do you feel should be responsible for paying to put existing/new transmission lines underground in the following areas?
Base: All electricity bill payers/decision makers (1000)

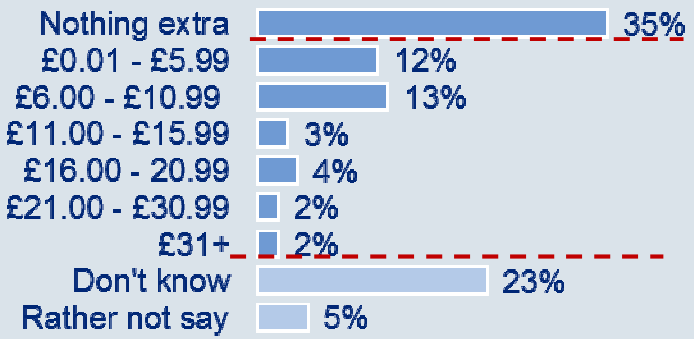
PAYING FOR UNDERGROUNDING EXISTING LINES: UNPROMPTED

A significant minority would pay nothing more for the undergrounding of new or existing lines in any area. More people would be willing to pay something extra for undergrounding in AONBs and National Parks than in other rural areas

EXISTING LINES: NATIONAL PARKS

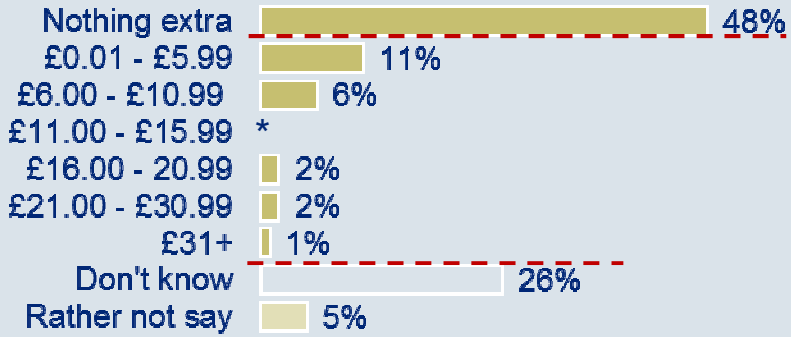


EXISTING LINES: AONBs

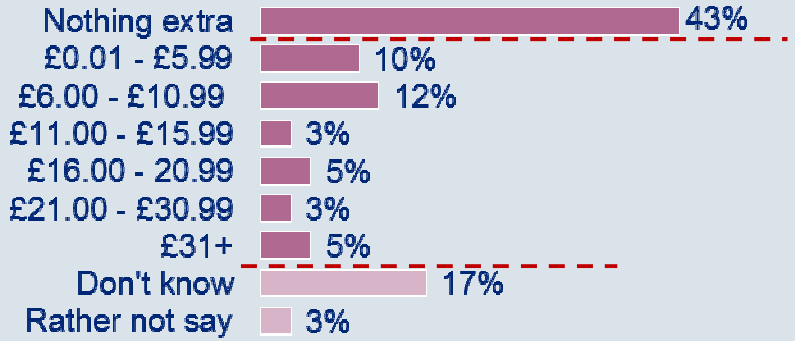


These amounts represent what respondents would pay **on top of the existing average bill**

EXISTING LINES: OTHER RURAL AREAS



NEW LINES: ALL AREAS



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Q. How much more, if anything, would you be prepared to pay each year from now on to put existing electricity transmission lines underground in each of the areas listed? / How much more, if anything, would you be prepared to pay each year from now on to put new electricity transmission lines underground?
Base:All electricity bill payers/decision makers (1000)

ATTITUDES TO UNDERGROUNDING: PROMPTED QUESTIONS

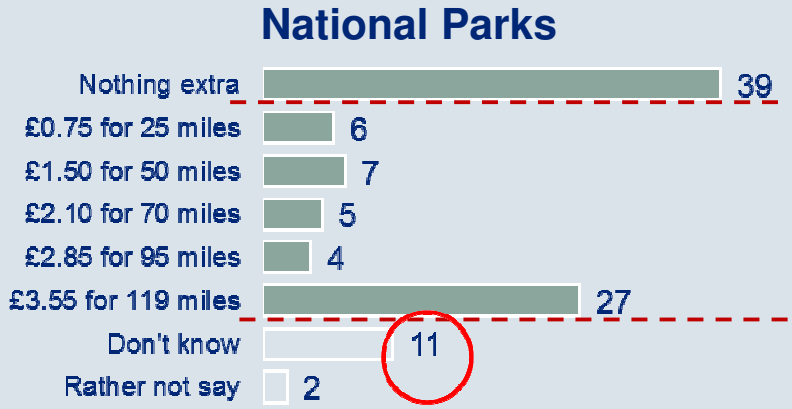
As well as being asked a number of unprompted questions on undergrounding transmission lines, respondents were also presented with a series of costed options

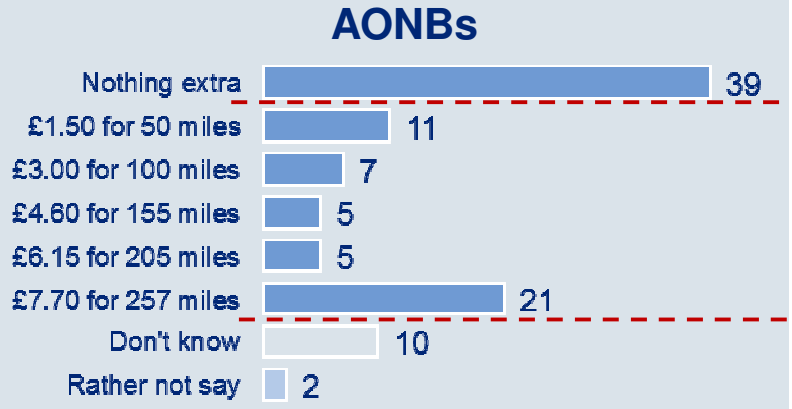
- Separate questions focussed on new and existing lines
  - The undergrounding of existing lines was subdivided into the following types of area: AONBs, National Parks and Other Rural Areas
- For each question, bill payers were given a range of costed options, as well as the opportunity not to pay anything more
  - Each option included:
    - The cost (based on the increased monetary cost to the average bill)
    - The distance of line which would be undergrounded in that area
    - The undergrounded distance as a percentage of all overhead lines in the area
- While each of these questions was asked separately, the responses were subsequently combined to give the total amount all selected options would cost the average bill payer.
  - Respondents then had the option to revise their responses, if they felt the total was more (or less) than they would be willing to pay (though very few did). The following tables are based on the final amounts people would be willing to pay for each option

PAYING FOR UNDERGROUNDING EXISTING LINES: PROMPTED

When provided with a range of costed options, the amounts individuals say they would be willing to pay reveals some polarisation on the issues of undergrounding in AONBs and NPs

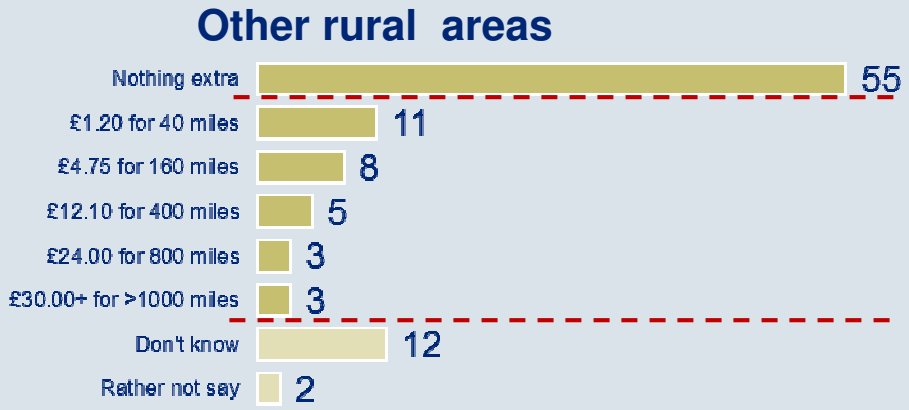
EXISTING LINES





On undergrounding in NPs and AONBs, opinion is split – half would be willing to pay something more, and half either wish to pay nothing extra or don't know.

For Other Rural Areas, a majority (55%) do not wish to pay anything more, suggesting that undergrounding protected areas is valued more highly



% Willing to pay amount per **year on top of average electricity bill**

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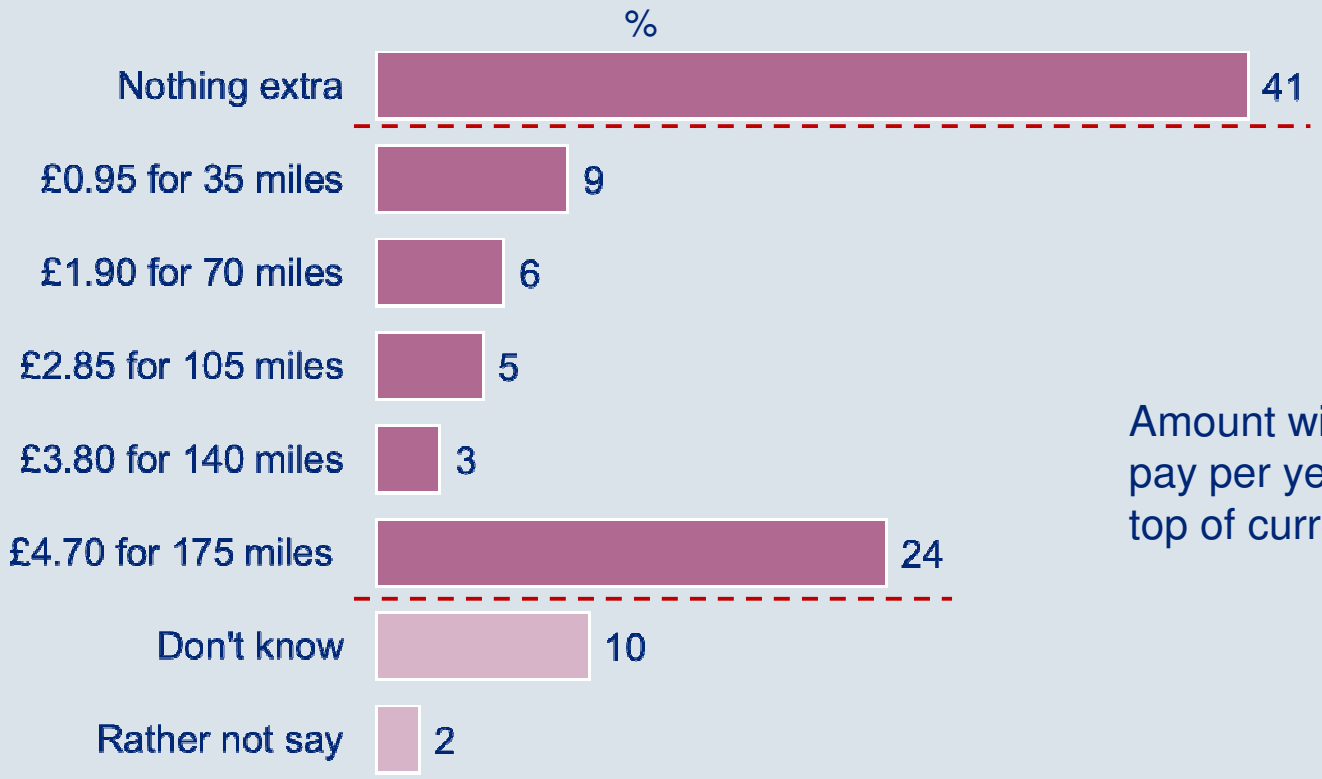
Q. How much more, if anything, would you be prepared to pay each year from now on to put existing electricity transmission lines underground in each of the areas listed? Base: All electricity bill payers/decision makers (1000)

PAYING FOR UNDERGROUNDING NEW LINES: PROMPTED

Prompted responses relating to the undergrounding of new lines shows a similar pattern of polarisation: 41% would not pay any more, while 24% would pay the top amount (£4.70) which would see all new transmission lines undergrounded

NEW LINES



Amount willing to pay per year on top of current bill

£4.70 would be enough to underground all proposed new transmission power lines

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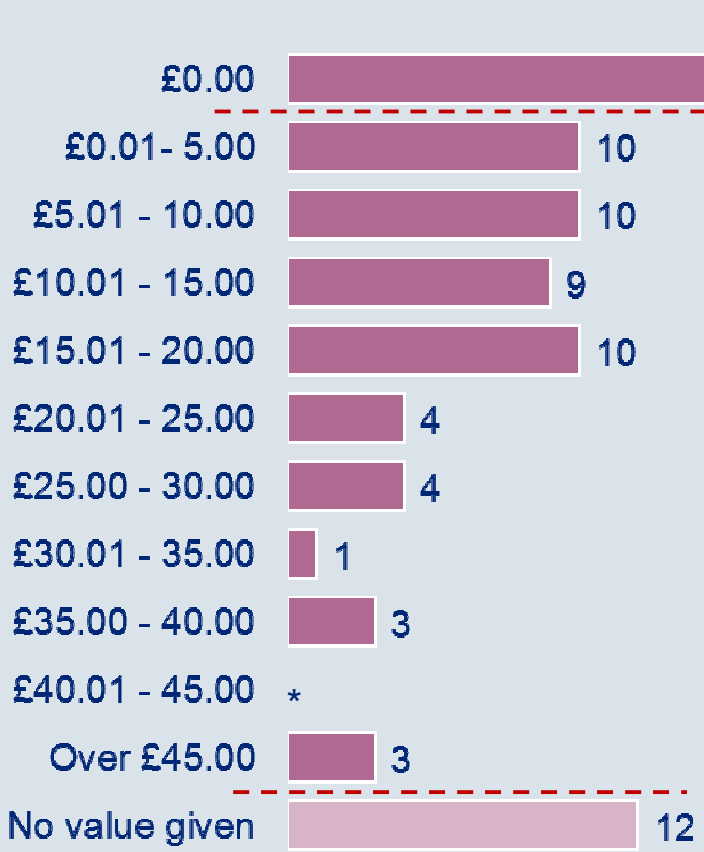
Q. How much more, if anything, would you be prepared to pay each year from now on to put new electricity transmission lines underground? Base: All electricity bill payers/decision makers (1000)

TOTAL AMOUNT: PROMPTED RESPONSES

The combined amount bill payers would be willing to pay for undergrounding varies significantly among bill payers. A third would not be willing to pay anything extra

NEW/ EXISTING LINES: TOTAL

Amount willing to pay per year on top of current bill



Average type	Amount
Mean	£9.24
Mode	£0.00
Median	£4.54

These averages include all bill payers giving a value (incl. those saying 'Nothing extra'), but do not include those who did not give an answer.

Q. How much more, if anything, would you be prepared to pay each year from now on to put existing/new electricity transmission lines underground? Base: All electricity bill payers/decision makers (1000)

EXECUTIVE SUMMARY: KNOWLEDGE AND UNDERSTANDING

- **Knowledge of the make up of energy bills is somewhat varied**
  - A third of all bill payers do not feel able to estimate the breakdown of their gas or electricity bills

- **Bill payers who do feel able to estimate the breakdown of domestic bills overestimate the relative cost of transmitting gas and electricity**
  - 6 in 10 of electricity bill payers overestimate the proportion of domestic electricity bills spent on transmission by at least 2 percentage points
  - 9 in 10 of gas bill payers overestimate the proportion of domestic gas bills spent on transmission by at least 2 percentage points

- **Bill payers are twice as likely to say that the cost of transmission is good value for money, than say it represents poor value**
  - 42% say electricity transmission is very or fairly good value; 17% say it is fairly or very poor value
  - 43% say gas transmission is very or fairly good value; 18% say it is fairly or very poor value

EXECUTIVE SUMMARY: UNDERGROUNDING

- **Undergrounding is a complex issue which can polarise opinion**
  - For National Parks and AONBs, half would be willing to pay something more to underground existing lines
    - But half either wish to pay nothing extra or are don't feel able to answer the question
  - For new lines, 41% don't want to pay anything extra, but 24% would pay £4.70 extra – enough to underground all proposed new transmission lines
- **Undergrounding in National Parks and AONBs is considered most important**
  - Around half of bill payers give undergrounding new lines in National Parks and AONBs a score of 8-10 out of 10 for importance
  - But only a quarter give undergrounding in other rural areas a score of 8-10 out of 10
  - More bill payers would pay something extra towards undergrounding in "protected areas" – AONBs and National Parks
- **Sharing the cost of undergrounding equally among all bill payers is the most popular option**
  - For National Parks and AONBs, socialisation is supported by around 50% of bill payers. It is twice as popular as charging those living nearby more
  - But the issue is not clear cut: a quarter of people are unsure how it should be funded

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