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Options for assisting customers in energy hardship

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Our findings in one page

- Energy hardship is driven by the combination of income and *energy circumstances* (e.g. house location and condition, health, occupancy patterns etc). This means that the extent of energy hardship can vary significantly between two households on the same low-income. Therefore, general welfare support is unlikely to adequately address the problem.
- Measures to address energy hardship should seek to deliver support proportional to need, with those suffering the combination of low-income plus high energy requirement receiving the greatest support
- The low-fixed charge (LFC) regulations should be removed as a matter of priority, as they are causing outcomes which are directly contrary to the policy intent:
 - the level of financial support given to households is inversely-proportional with the level of need. i.e. those whose energy needs are least get the most support, whereas those with high energy needs get an *increase* in costs.
 - the higher variable charges
 - create an increased incentive for income-constrained households to under-heat their homes to save money, and also increase the size of winter bills relative to summer – making it harder for those households who struggle with budgeting
 - act as an impediment to the uptake of electric vehicles – arguably the technology with the greatest potential to cost-effectively decarbonise our economy.
- Policies and measures aimed at improving the energy efficiency of homes and appliances should continue to be pursued, but they will not be complete solutions, so other energy-related financial support measures are likely to continue to be required.
- The most promising approaches for delivering financial support are energy-related income supplements, and rebates based on a percentage of consumer bills. Their relative merits should be explored further, with the key trade-offs likely to be between:
 - delivering support proportional to need; but
 - delivering support in a way which does not cause
 - significant unintended consequences (e.g. as per the poor outcomes arising from the LFC regulations); and/or
 - significant implementation costs.
- With all these mechanisms, the devil is in the detail, with considerable inherent coordination and information challenges to overcome
- Funding measures via obligations on retailers or distributors (who then pass-on costs to their consumers) is likely to deliver adverse outcomes. Funding from general taxation is least likely to cause unintended consequences.
- Some form of deprivation-based metrics or indicators should form the basis of targeting (e.g. those already receiving welfare assistance), rather than relying on overly simple proxies (e.g. age, or amount of electricity consumed).
- Consider carefully the potential risks of a state-funded social retailer relative to alternative approaches to delivering desired outcomes

Executive summary

Energy hardship is not solely an income-related issue, therefore general welfare support is unlikely to adequately address the problem

Although having a low income is a significant driver of a household suffering energy hardship, the material variation in household *energy circumstances* means that the extent of energy hardship can vary significantly between two households on the same low-income.

Variations in house location, house condition, and personal circumstances (number of household members, health & employment status etc.), can substantially impact on heating and other energy service requirements – and hence energy costs. This observation is supported by analysis in Appendix A, which estimates that the current range in electricity bills for consumers in the most deprived decile is approximately \$3,700 per year. This cost variation is greater than that of most other basic goods and services (e.g. food, clothing).

The fact that energy requirements vary significantly during the year – i.e. twice as high in winter as in summer – makes it even more challenging for households on low, fixed incomes to manage during the winter months.

The fact that energy hardship is driven substantially by a household's energy circumstance indicates that general welfare income supplements will be insufficient to address the problem, as these do not differentiate support by energy circumstance.

Providing 'tailored' support to recognise difference in circumstance is analogous to variations in housing support which recognises the significant variation in housing costs around New Zealand.

However, given that the drivers of varying energy circumstance are multi-faceted in nature, no one single measure will adequately address the energy hardship problem.

Measures to address energy hardship should seek to deliver support proportional to need

General welfare mechanisms seek to provide varying degrees of income assistance according to degrees of income deficit need. There are strong policy rationales for seeking to give such proportional assistance, including: protecting human welfare for those most in need; minimising the tax burden on those funding the welfare payments; and, ensuring those receiving welfare do not fall into the 'welfare trap'¹.

Similar considerations apply to addressing energy hardship, with a growing international consensus from the literature that assistance measures should give energy assistance proportional to need.

The low-fixed charge (LFC) regulations should be removed as a matter of priority.

Although the LFC mechanism has helped some low-income consumers facing energy hardship, it is also hurting other low-income consumers – directly contrary to its social policy intent:

- By seeking to reduce bills for low-users, bills need to be increased for higher users in order that networks and retailers recover their costs. A significant number of low-income households fall into this higher-use category due to their individual circumstances, and are thus harmed by the LFC regime. Given that low-income-plus-high-consumption customers are acknowledged internationally to be the group which is in greatest need of energy assistance, this is considered to be a major failing of the LFC regime.

¹ The 'welfare trap' is where the effective marginal tax rate applying to individuals receiving welfare assistance but who then take paid employment is such as to make it more financially advantageous for the individual to continue to take welfare.

- By increasing variable charges for all consumers (large² and small), the regulations:
 - result in the level of financial support given to households being inversely-correlated with the level of need. i.e. those whose energy needs are least get the most support, whereas those with high energy needs get an increase in costs
 - create an increased perverse incentive for income-constrained households to under-heat their homes to save money
 - increase the size of winter bills relative to summer – making it harder for those households who struggle with budgeting
 - give rise to an artificial incentive for (generally wealthier, home-owning) households to install solar panels, which results in their avoidance of paying for some network and retail costs – with such costs ‘shifted’ onto non-solar owning households. The lowest income members of society are generally in the category of non-solar owning households.
- The higher variable charges arising from the LFC requirements act as an impediment to the uptake of electric vehicles – arguably the technology with the greatest potential to cost-effectively decarbonise our economy³, as well as frustrating the uptake of high-efficiency heat-pump based space & water heating rather than gas heating.

Furthermore, compliance with the LFC regulations is a significant barrier to the introduction of more efficient distribution pricing approaches, and an impediment to retail competition. These outcomes will increase costs for all consumers in the long-term.

These effects are contrary to the policy intent, and justify the repeal of the LFC regulations.

Some of the negative effects identified above are exacerbated due to the arbitrary setting of the threshold consumption level whereby consumers should be neutral between the LFC and ‘standard’ tariff options. This threshold – 8,000 kWh, or 9,000 kWh in the lower South Island – is higher than average residential consumption in New Zealand (7,050 kWh), and substantially higher than the average in some network areas.

However, lowering the threshold is not considered to be a solution:

- It would still be the case that consumers at or above the threshold will pay more as a consequence of the policy – including those most in need. Indeed, a greater number of consumers will be paying more, albeit not by as much.
- It would still result in over-variabilisation of bills, with the associated negative consequences identified above.

Policies and measures aimed at improving the energy efficiency of homes and appliances should continue to be pursued

Energy efficiency initiatives, particularly those targeted at households experiencing energy hardship, are important, and are one of the best approaches to address those situations where poor house condition or inefficient appliances are causing high energy costs.

² In order to recover the costs not recovered from small users, networks and retailers can increase bills for large users through increasing the fixed charges of their ‘standard’ tariff, rather than increasing the variable charges. While this is consistent with the mechanics of how LFC charges will be deemed to be compliant, it is contrary to the Objective set out in the Regulations – namely to “encourage energy conservation”. Accordingly, it appears that most retailers and networks have chosen to also increase their variable charges in their standard tariffs.

³ For example, see this recent report: http://www.pce.parliament.nz/media/1721/summary-report-energy-related-carbon-abatement_.pdf

However, the multi-faceted nature of poor energy efficiency outcomes will require multi-faceted solutions, with tricky design challenges to address in many cases. It is beyond the scope of this study to consider these issues in further detail.

Further, even after all cost-effective energy efficiency measures have been implemented (a multi-year task) it is likely that there will still be significant variations in energy costs faced by low-income households. As such, other energy-related financial support measures are likely to continue to be required.

The most promising approaches for delivering financial support are energy-related income supplements, and rebates based on a percentage of consumer bills. Their relative merits should be explored further

The key tension in delivering financial support to those suffering energy hardship relates to:

- delivering support proportional to need (in particular, proportional to variations in energy circumstance); but
- delivering support in a way which does not cause
 - significant unintended consequences (e.g. as per the poor outcomes arising from the LFC regulations); and/or
 - significant implementation costs.

Energy-related income supplements (e.g. winter fuel supplements on a means-tested basis) can be lower-cost to implement than other assistance measures, and have less risk of unintended consequences. However, they struggle to provide support proportional to energy circumstance need, with some households receiving materially less support than they require (and others receiving too much).

Requiring retailers and/or networks to offer specific concessionary ‘social tariffs’ may theoretically offer more ability to deliver support proportional to need. However, they carry substantially increased risk of unintended consequences (e.g. as has occurred with the LFC), and would be likely to have high implementation costs. Furthermore, because retailers and distributors do not have a good understanding of their customers’ personal circumstances, any social tariff may be poorly targeted compared to support offered through the welfare system.

Delivering support in the form of percentage rebates on bills may offer a reasonable balance between these two approaches – i.e. delivering support proportional to need, without the degree of risk of unintended consequences associated with social tariffs.

However, as with all these mechanisms, the devil is in the detail in terms of the specifics of how rebates are implemented. For example, there are options for which entities would administer the rebate, including:

- Social welfare agencies, having been provided information on bills from retailers; or
- Retailers, having been provided information on who qualifies for the social rebate from social welfare agencies.

Considerable coordination and information challenges are likely – including addressing the fact that welfare qualification and receipt is predominantly on an individual basis, whereas energy costs are incurred on a household basis.

Thus, even if percentage rebates on bills may generally be better than social tariffs and energy-related income supplements, it is possible that a poorly-designed rebate mechanism could deliver worse outcomes than a well-designed income supplement mechanism.

Further, as set out below, the nature of outcomes for all these financial mechanisms will also be heavily driven by the approach to funding and targeting the assistance measures.

Ensure that some form of deprivation-based metrics or indicators form the basis of targeting, rather than relying on overly simple proxies

Targeting is critically important to the success of all financial support mechanisms.

We recommend that deprivation indicators (e.g. those already receiving welfare assistance) form some of the basis for qualification for financial support, rather than solely relying on simpler proxies (e.g. age, or amount of electricity consumed). Support measures which have solely relied on crude proxies have generally resulted in the greatest unintended adverse outcomes – including increasing costs for some of those for whom support is intended.

It is beyond the scope of this report to consider which deprivation indicator, or combination of indicators, is most appropriate. However, national indicators which are already used to provide welfare support are considered more likely to:

- be cost-effective to implement as qualification criteria; and
- deliver results which are more consistent with other policy mechanisms aimed at providing assistance for those whose income circumstances justify support.

Where support is to be delivered via retailers – even if they are ‘just’ the conduit to administer percentage rebates on bills – there may be merit in having these qualifying indicators recorded in a central, ICP-based database, rather than in individual retailers’ billing systems. However, as noted above, there are likely to be information and coordination challenges with any approach which involves retailers.

Use broad base of general taxation to fund assistance

The cost of assistance payments will need to be met from taxation, or by raising power prices for other consumers.

We recommend that funding be raised from the widest base (general taxation) because this causes the least economic distortions, and lowest risk of inadvertently *increasing* costs for some of those for whom support is intended.

The next best alternative would be a broad national levy across all electricity consumers (residential, commercial and industrial):

- A national levy would limit the distortions caused by placing a funding obligation on individual distributors – noting that there are significant variations in average deprivation between different regions in the country, and thus significant variations in the extent to which consumers in an individual distribution network should be recipients or funders of a support mechanism.
- Including commercial and industrial consumers would limit the price increases for those paying increased bills to fund the subsidies for those receiving support.

The most distorting option, with the greatest risk of inadvertently harming some of those for whom support is intended, would be to place an obligation on individual electricity distributors or retailers to fund payments, with the funding to come from other residential consumers not in receipt of the support mechanism – i.e. the current approach of the LFC.

Consider carefully the potential risks of a social retailer relative to alternative approaches to delivering desired outcomes

It is not clear that developing a social retailer would be the best approach to managing energy hardship:

- depending on eligibility criteria, it could be a very large retailer
- It could cost a lot to develop and operate
- It risks ‘crowding out’ retailers (particularly new entrants) and distorting competition and innovation in the retail markets generally
- It may not be able to offer the best deals for its customers, given that it could be limited in its ability to offer ‘bundled’ products including gas, telecoms, internet etc.

Further, it is not clear why all of the stated objectives of a social retailer could not be achieved through retailers – i.e.

- Working with the industry to develop and monitor industry protocols around issues such as debt management, smooth pay options, and ensuring consumers facing budgeting challenges are not on inappropriate tariffs (e.g. those with high prompt-payment discounts) – noting that most retailers already have such measures in place to assist consumers who struggle to pay their bills
- Having retailers implement a social tariff and/or rebate mechanism (if either of these was deemed the best option to deliver energy hardship financial support)

That said, as with all energy hardship mechanisms, the devil is in the detail. The concept of a ‘social retailer’ means different things to different people, ranging from government facilitated collective switching arrangements (similar to the GreyPower deal with Pulse), through to a full-blown state-owned retailer. There is potentially a third option in which the Government contracts for social tariffs plus other support mechanisms from retailers who wish to participate in that part of the market.

These different incarnations and their variants will have varying pluses and minuses – with full consideration of their merits requiring detailed consideration of possible design issues, which is out of scope for this report.

Other price-based measures to assist budgeting and temporary hardship are important complements, not substitutes, to general financial support mechanisms

A number of other electricity price-based measures are insufficient on their own in addressing energy hardship, because they do not materially alter the underlying gap between household income and energy needs in an enduring manner. Instead, they assist low income households by helping to manage their budgeting and cashflow situation, thereby reducing extra costs (e.g. costs associated with late payments, disconnections, debt financing to pay bills and inappropriate pricing plans). These measures include:

- Credit management
- Temporary emergency payments
- Smoothpay
- Getting on the best plan

These measures are important complements, not substitutes, to general financial support measures such as rebates and energy supplements.

Introducing subsidies requires full and careful consideration, as once given, they can be very hard to take away

Subsidies, once introduced, can be difficult to remove, because to do so will generally disadvantage those receiving the subsidy. The recipients (and/or their advocates) are incentivised to lobby to retain the subsidy, or to have it replaced by something that makes them no worse off.

The LFC itself is an example of this: problems with the LFC regime, particularly its unintended adverse effects, have been discussed in the industry for some time, yet it has been difficult until recently to gain traction on removing the LFC. Government and industry acknowledge that its removal requires consideration of suitable replacement arrangements that address the issues the LFC was originally aimed at.

Other examples include subsidies for solar PV in Australia and Europe which were overly-generous, but became very hard to remove. They have created significant market distortions and negative impacts on those left funding the subsidies – with those poorest members of society generally being worst off as a result of their introduction.

Introducing any new subsidies to support vulnerable customers therefore requires full and careful consideration.

Explore what options for network pricing reform may deliver better social, as well as economic, outcomes

Network pricing reform will create some tensions due to bill shocks for some consumers – including some low-income consumers. However, it also raises potential opportunities to alter prices to deliver better social, as well as economic, outcomes.

These potential opportunities arise from possible alternative approaches for recovering the ‘residual’ network costs not driven by future consumer demand – of the order of 50% of network costs. Key issues which are worth exploring are:

- Increasing the proportion of bills recovered from fixed charges, rather than variable tariffs based on some measure of consumer demand. This could deliver improved
 - social outcomes, as it would reduce the burden on those suffering greatest energy hardship (i.e. low income + high energy requirements), plus would reduce summer / winter bill volatility
 - economic outcomes, by reducing the distortions to the investment decisions made by consumers, which generally cause higher economic costs in the long-run⁴

This increased recovery via fixed charges rather than variable charges should also apply to the recovery of retail cost-to-serve costs.

- Reconsidering whether existing allocations of residual network costs between residential and business customers are economically justified
- Reducing or removing rural / urban network pricing where there is no clear economic efficiency basis for its retention⁵

⁴ Examples of such distorted decisions include:

- Consumers purchasing rooftop solar, when utility-scale renewables (e.g. wind power) delivered over the grid is much cheaper
- Consumers purchasing an internal combustion-engine vehicle, when an electric vehicle would be cheaper.

⁵ While rural / urban pricing may be cost-reflective in an accounting sense, it does nothing to promote consumer decisions that will lower network costs in the long-term. i.e. unless rural communities are to be

However, these are complex and contentious issues, with the residential / business cost allocation issue also suffering from a lack of empirical data. Accordingly, progressing these approaches should be undertaken carefully, including requiring further research and analysis. Detailed consideration of these issues is beyond the scope of this report.

abandoned en masse, there will be no saving in the costs of providing networks to serve such communities. Instead, rural / urban pricing causes economic and social costs:

- It increases network and retailer cost-to-serve (paid for by consumers) and frustrates retail competition
- It increases the incentive for some consumers to invest in solar+batteries+diesel to disconnect from the grid, yet such disconnection by some will not reduce the need to maintain rural networks
- It exacerbates rural poverty – noting that welfare supplements generally don't distinguish between such variations in households' location.

1 Introduction

Addressing energy hardship and the energy needs of vulnerable consumers continues to attract significant regulatory and policy interest around the globe. Measures explored and adopted by overseas jurisdictions include social tariff options, rebates, subsidies and grants. Some focus on reducing electricity charges or boosting income, while others target energy efficiency or consumer education. Many have overlapping environmental and social objectives.

In New Zealand, a cornerstone policy has been the Low Fixed Charge (LFC) regime. Introduced first as a Government Policy Statement in 2000, and then put into regulations in 2004, the LFC regime requires distributors and retailers to make available to residential consumers a pricing option with low fixed charges, limited to 15c/day for distributors and 30c/day for retailers.

The stated policy intent was to assist low-income households, and to promote positive environmental outcomes, particularly through encouraging uptake of energy efficiency measures.

Although well-intentioned, the LFC regime is increasingly failing to meet its policy intentions – and, in some cases, is producing outcomes directly contrary to the policy intent:

- By reducing bills for low-users, bills need to be increased for higher users to recover total costs. A recent Concept study⁶ found that a significant number of low-income households fall into this higher-use category due to their individual circumstances⁷, and are thus harmed by the LFC regime. Given that low-income-plus-high-consumption customers are acknowledged internationally to be the group which is in greatest need of energy assistance, this is a major failing of the LFC regime.
- By increasing variable charges for all consumers (large⁸ and small), the regulations:
 - create an increased perverse incentive for income-constrained households to under-heat their homes to save money
 - increase the size of winter bills relative to summer – making it harder for those households who struggle with budgeting
 - result in the level of financial support given to households being anti-correlated with the level of need. i.e. those whose energy needs are least get the most support, whereas those with high energy needs get an increase in costs
 - give rise to an artificial incentive for (generally wealthier, home-owning) households to install solar panels, which results in their avoidance of paying for network and retail costs – with such costs ‘shifted’ onto non-solar owning households. The lowest income members of society are generally in the category of non-solar owning households

⁶ “*New Technologies Study - Part 3: Social impacts*”, March 2017, Concept Consulting Group Ltd. Available here: www.concept.co.nz/publications

⁷ Factors which may give rise to low-income households having high electricity consumption requirements include: living in a poorly insulated house; limited access to cheaper alternative fuels such as gas or wood; personal circumstances such as health and/or employment status giving rise to the need for the house to be heated to higher temperatures and/or for longer periods of the day.

⁸ In order to recover the costs not recovered from small users, networks and retailers can increase bills for large users through increasing the fixed charges of their ‘standard’ tariff, rather than increasing the variable charges. While this is consistent with the mechanics of how LFC charges will be deemed to be compliant, it is contrary to the Objective set out in the Regulations – namely to “encourage energy conservation”. Accordingly, it appears that most retailers and networks have chosen to also increase their variable charges in their standard tariffs.

- The higher variable charges arising from the LFC requirements act as an impediment to the uptake of electric vehicles – arguably the technology with the greatest potential to decarbonise our economy.⁹

Furthermore, compliance with the LFC regulations is often cited as a significant barrier to the introduction of more efficient distribution pricing, and an impediment to retail competition. These outcomes have been identified as significantly increasing costs for all consumers in the long-term.

This increasing recognition of the failings of the LFC is resulting in broader institutional and political focus, including:

- a recommendation from the International Energy Agency to review the regulations
- most of the major political parties acknowledging that the LFC regulations are not performing as intended, and suggesting that they either be amended or replaced. In particular, prior to the recent election:
 - the then (National) Minister of Energy asked for advice from officials about the LFC regulations
 - the Labour Party Manifesto 2017 included a “*review [of] the low user tariff to make it, or an alternative, fit for the purpose of addressing energy poverty*” as part of the energy policy.

However, while there is growing recognition of the LFC scheme’s problems, there is no clear view as to what could or should replace it to provide energy assistance to those members of society in greatest need.

Given this current situation, it is timely to explore some alternatives.

This report is the first phase in a study that explores alternatives to the LFC regulations for providing assistance to those suffering energy hardship. It consists of the following three elements:

- Development of a ‘performance framework’ for exploring energy hardship and options to alleviate it
- Desk-based research of measures in a variety of jurisdictions including the United Kingdom, Australia and parts of the USA. The purpose is to identify the range of measures implemented overseas, and to seek to determine their relative merits – particularly in the New Zealand context, and measured against the performance framework.
- Preliminary evaluation of the different options, including the existing LFC regulations, and identification of those options which appear to have greatest potential.

This report doesn’t address issues around the merits of providing social welfare to those suffering deprivation, including the issues around phenomena such as the ‘welfare trap’¹⁰ – although the authors do believe that a social welfare safety net is an important part of a modern society.

Rather, it comes from the proposition that if society decides that social welfare provision is desirable, what is the best way to provide welfare such that those suffering similar levels of deprivation obtain similar levels of basic goods and services (food, shelter, clothing, transport, etc), including *energy* services (heating, lighting, cooking, etc). As such, one of the first aspects of this report is to address whether energy has characteristics which require specific assistance measures over and above the general welfare measures.

⁹ For example, see this recent report: http://www.pce.parliament.nz/media/1721/summary-report-energy-related-carbon-abatement_.pdf

¹⁰ The ‘welfare trap’ is where the effective marginal tax rate applying to individuals receiving welfare assistance but who then take paid employment is such as to make it more financially advantageous for the individual to continue to take welfare.

2 Performance framework for exploring energy hardship and options to alleviate it

2.1 What is energy hardship?

Energy hardship, energy poverty, fuel poverty, vulnerable energy consumers – these and similar terms are variously used in the literature to describe households that cannot afford the minimum energy required to maintain a healthy home, that is, to heat their home environment adequately, and to maintain other basic energy services such as hot water, lighting, and electricity for essential equipment.

Such households are described by one of the following:

- they compromise their healthy home environment by using less than the minimum energy needed, in order to have income for other essential expenses
- they have insufficient income left for other essential expenses (accommodation, food, clothing, medical, etc) after paying for the minimum energy they need to maintain a healthy home.

In this study we have chosen to use the term ‘energy hardship’ to describe these households. Our rationale is that:

- the term ‘fuel’ inappropriately narrows the problem and the potential solutions: the difficulties these households face extend into other aspects of their energy needs beyond just fuel, and the range of measures to address these difficulties are not limited to fuel-based options
- the term ‘poverty’ has connotations of a line which households are either above or below, yet the situation is more a continuum than a binary condition: some households face extreme hardship, while for others their hardship, while material, is less severe or is intermittent
- although closely related to energy hardship, the term ‘vulnerable consumer’ has a specific meaning in the New Zealand energy context in the Electricity Authority’s ‘*Guideline on arrangements to assist vulnerable consumers*’¹¹

We note that Statistics NZ also adopted the term energy hardship in its recent publication ‘*Investigating different measures of energy hardship in New Zealand*’, September 2017.¹²

Under its various guises, energy hardship is the focus of researchers and policymakers in housing, energy and social policy around the globe. In essence, reducing energy hardship enables people on low incomes to be warm, comfortable and healthy in their home environment.

The concept first came to prominence with the publication of Brenda Boardman’s seminal 1991 book ‘*Fuel Poverty: From Cold Homes to Affordable Warmth*’. A household in fuel poverty in the UK at that time was defined as one whose fuel expenditure on all energy services exceeded 10% of their income. This was what the poorest 30% of UK households were then spending on fuel and, at twice the median expenditure, was a threshold above which spending was considered ‘disproportionate’.

¹¹ The Authority guideline <https://www.ea.govt.nz/dmsdocument/8565> defines a vulnerable consumer as a domestic consumer who: (a) for reasons of age, health or disability, the disconnection of electricity to that domestic consumer presents a clear threat to the health or wellbeing of that domestic consumer; and/or (b) it is genuinely difficult for the domestic consumer to pay his or her electricity bills because of severe financial insecurity, whether temporary or permanent.

¹² <http://www.stats.govt.nz/~media/Statistics/browse-categories/people-and-communities/households/energy-hardship/Investigating-different-measures-of-energy-hardship-in-New-Zealand.pdf>

Different jurisdictions have adopted different definitions, but almost all have at their core some measure of energy (or fuel) cost and household income.

This study focuses on possible options for reducing energy hardship. It does not attempt to define energy hardship in the New Zealand context. It does, however, explore the likely key drivers in New Zealand, because these are relevant to identifying possible options for addressing energy hardship and exploring their relative effectiveness, particularly their ability to target those in most need.

2.2 What is the size of the energy hardship problem?

'Fuel poverty' is often defined internationally as a situation where a household needs to spend more than 10% of its income on household fuel to achieve a satisfactory level of indoor warmth¹³ and provide other basic energy services such as lighting, cooking, and hot water for washing. Much of the data on the scale of energy hardship is based on this definition.

In their 2012 paper '*Tackling cold housing and fuel poverty in New Zealand: A review of policies, research, and health impacts*', Philippa Howden-Chapman et al estimated that around 25% of New Zealand households were in fuel poverty based on this definition. This assessment was based on 2008 data. The key estimates from that paper are reproduced here.

Climate Zone	Zone 1	Zone 2	Zone 3	New Zealand
<i>representative city for the zone</i>	Auckland	Wellington	average of Christchurch and Dunedin	
number of households	555,000	607,000	444,000	1,606,000
% of NZ households	35	38	28	100
Potential fuel poverty %	14	24	43	
Contribution to the national housing stock	5%	9%	12%	25%
Number of households in potential fuel poverty (rounded)	80,000	140,000	190,000	410,000

There are substantial regional variations, largely due to the increased heating energy needs in colder southern climates:

- in the South Island the rate of potential fuel poverty was estimated to be 40% in Christchurch and 47% in Dunedin
- by comparison, the estimated level in Auckland was 14% and Wellington was 24%

As noted in the paper:

- the percentages may be an over-estimate if cheaper forms of space heating are available (eg firewood) relative to electric resistive space-heating

¹³ This is based on living temperatures of 21°C and bedroom temperatures of 18°C (drawn from WHO guidelines).

- the calculations are based on an average 100 m² dwelling, which may be an under-estimate given the trend to large floor areas.

The paper also noted that the level of fuel poverty had grown from an estimated 10-14% in 2001, and surmised that this was mainly due to electricity prices increasing much faster than income levels over that period.

The United Kingdom has used a similar definition to the Howden-Chapman et al. In 2015, the proportion of households in fuel poverty in England was estimated at 11.0 % (approximately 2.50 million households)¹⁴. In Scotland, the estimate was 30.7 % (approximately 748,000 households). This regional difference within the UK may reflect differences in average wealth between England and Scotland, as well as climate differences.

However, there is growing recognition that whilst this measure of fuel poverty can be useful, it is not the only measure, and possibly not even the best measure.

For example, the UK Hills Fuel Poverty Review (2012)¹⁵ proposed a refined definition: a household should be considered fuel poor if they have required fuel costs that are above the median level, and, were they to spend that amount, they would be left with a residual income below the official poverty line.

Likewise, the recent Statistics NZ report¹⁶ identified that there were several possible indicators of energy hardship and ways to measure the scale of the issue. The study used several indicators from the New Zealand Household Economic Survey including cost-to-income/expenditure measures (objective measures):

- households that spent twice the median proportion of income on domestic energy (before and after housing costs)
- households that paid 10% or more of their income on domestic energy (before and after housing costs)
- households where domestic energy costs are in the highest quartile as a proportion of all expenditure.

The Statistics NZ study also explored some subjective measures based on self-reporting:

- the inability to pay utility bills on time (electricity, gas, water, or rates bills)
- the percentage of dwellings that were hard to heat or keep warm
- the percentage of dwellings that were damp or mouldy
- the number of people who put up with feeling cold a lot

Drawing on information from the Household Economic Survey, the Statistics NZ report estimated that, depending on which measure is used, between 1 in 4, and 1 in 22 New Zealand households

¹⁴ Annual Fuel Poverty Statistics 2017 (2015 data)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/639118/Fuel_Poverty_Statistics_Report_2017_revised_August.pdf

¹⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48297/4662-getting-measure-fuel-pov-final-hills-rpt.pdf

¹⁶ 'Investigating different measures of energy hardship in New Zealand', September 2017

<http://www.stats.govt.nz/~media/Statistics/browse-categories/people-and-communities/households/energy-hardship/Investigating-different-measures-of-energy-hardship-in-New-Zealand.pdf>

experienced an energy hardship indicator in 2015/16. Other key observations (2015/16 data) include:

- domestic energy costs exceeded 10% of household income for over 25% of low income households (households in the lowest quintile), compared to only 6% of all households
- over 60% of low income households spent twice the median proportion of income on domestic energy, compared to just under 20% for all households
- 52% of low income households had domestic energy costs in the highest quartile as a proportion of all expenditure, compared to just over 25% for all households
- nearly 13% of low income households reported “putting up with feeling cold a lot”, compared to just over 5% for all households
- nearly 9% reported “damp and mould is a major problem”, compared to just over 4% for all households
- nearly 13% reported “heating home or keeping it warm in winter is a major problem”, compared to just under 7% for all households
- nearly 11% reported they “could not pay utilities on time more than once in the last 12 months, compared to just under 5% for all households.

Research has found that different indicators may identify different groups of households experiencing energy hardship, although all were experiencing some kind of deprivation. A 2015 New Zealand study by Lawson et al¹⁷ found that a household's spending on fuel was only weakly related to self-reported fuel deprivation: the people that they estimated spend more than 10% of their annual household income on fuel are generally different from those people who admit to going without fuel because they say they cannot afford it.

Despite this range of different approaches to measuring energy hardship and the challenges of doing so, the key take-aways from these New Zealand and international studies:

- Energy hardship can vary significantly for households suffering similar other factors of deprivation. This is explored further in the next subsection of this report
- A large number of households in New Zealand are considered to suffer energy hardship, with the recent Statistics NZ report indicating, that depending on which measure is used, between 1 in 4 and 1 in 22 New Zealand households experienced an energy hardship indicator in 2015/16
- The proportion of households suffering energy hardship in New Zealand has grown over the last couple of decades.

This last point is because residential energy costs have risen significantly faster than inflation over the past few decades, whereas welfare payments have generally only moved in line with inflation.

Lastly, it should be noted that future moves to more cost-reflective prices may create new tensions, with some low-income consumers likely being in the group of ‘losers’ facing bill shocks – even if cost-reflective pricing results in lower electricity costs for New Zealanders generally (and low-income consumers particularly) over the long-term, and some low-income consumers also being among the ‘winners’ initially.

¹⁷ “Contrasting approaches to fuel poverty in New Zealand”, Rob Lawson, John Williams, Ben Wooliscroft, 2015 <https://ourarchive.otago.ac.nz/bitstream/handle/10523/6836/lawson%20et%20al%202015%20fuel%20poverty.pdf?sequence=1&isAllowed=y>

2.3 Likely key drivers of energy hardship in the New Zealand context

Drawing on the local and international studies discussed above, and our own analysis, we have identified what we consider are likely to be the drivers of energy hardship in New Zealand. We have collated these into income, energy costs, and other factors. This assists with identifying options and exploring the relative effectiveness for targeting different options to those in need later in the paper.

2.3.1 Low income

A low income reduces a household's ability to pay for the minimum energy needed to maintain a healthy home and provide basic energy services.

A household's income is affected by a range of factors, including in particular: wage rates, total hours worked by the adults in the household, social assistance (eg. income support benefits, accommodation supplement), returns on investment, personal income tax rates and tax credits (eg. for families with children).

2.3.2 High energy cost

The higher the energy costs for a household, the greater the chance that household may face energy hardship.

Certain household circumstances are likely to result in a higher energy cost to maintain a healthy home for the individuals in that household. These include:

- a) a poorly insulated and/or damp home
- b) a cold climate
- c) a part of New Zealand with relatively high energy prices due to one or more of:
 - i) high delivered electricity prices (due to electrical and/or geographic location)
 - ii) limited access to cheaper alternative fuels (such as reticulated gas, clean air restrictions on fireplaces/log burners, and/or living in a part of NZ with high wood prices)
- d) personal circumstances giving rise to the need for the house to be heated to higher temperatures and/or for longer periods of the day due to:
 - i) age (elderly or infants) or other health condition which makes occupants particularly vulnerable to poor heating; or
 - ii) households who spend most of their time at home (e.g. because they are retired or unemployed) rather than spend most of their time at work.

The analysis set out in Appendix A indicates that across New Zealand the variation in household circumstance gives rise to a range in electricity bills for consumers in the most deprived decile of approximately \$3,700 per year. i.e. some consumers in the lowest decile will face annual electricity bills \$3,700 per year more than other consumers in the lowest decile.

This is different to the cost of most other basic goods and services (e.g. food, clothing) which don't experience the same degree of variation in cost by consumer circumstance.

The most significant other household cost which does vary to this extent are housing costs. These exhibit significant regional variations – i.e. the costs of housing in Auckland are significantly higher than the costs of housing on the West Coast. However, housing costs exhibit less variation with household circumstance than electricity costs.

In addition to the above, the fact that energy requirements vary significantly during the year – i.e. twice as high, on average, in winter as in summer – makes it even more challenging for households on low, fixed incomes to manage during the winter months.

2.3.3 Other exacerbating factors

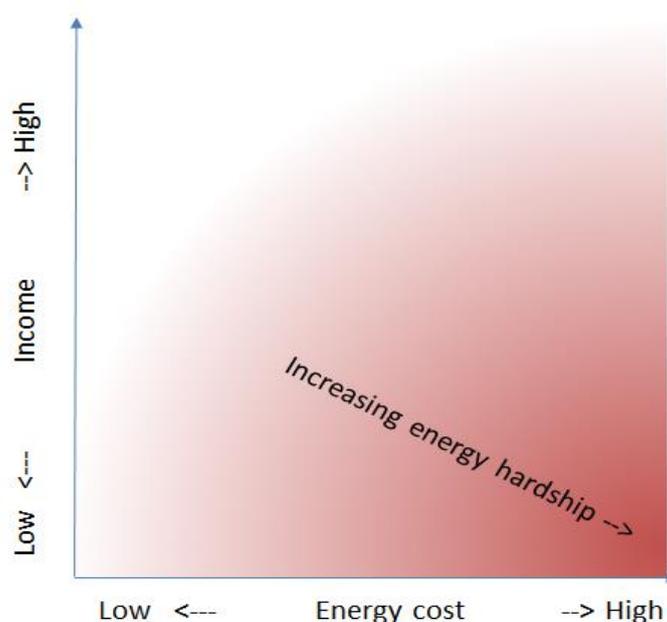
There are other factors which may exacerbate problems of energy hardship, or create further barriers to rectifying it. These include:

- renters do not own their own house and therefore face principal / agent barriers to improving the energy infrastructure of their house – i.e. landlords do not receive the direct benefits of reduced energy costs and/or improved healthy home environments from investing to improve the house condition, and such investments are generally not fully recognised through landlords being able to charge higher rents
- low income households tend to have limited access to capital to invest in improving the energy infrastructure of the house and/or the efficiency of their electrical appliances
- low income households may have a poor credit record with their energy company, making it difficult for such households to switch retailers or to take advantage of other aspects of retail competition
- the increasing range of energy choices (including technology choices, and retail choices) may make it difficult for some people to make good decisions, particularly around energy efficiency and smart technologies.

2.3.4 The *combination* of income and energy circumstance drives energy hardship

Increasingly, it is recognised that energy hardship is not a binary condition driven either by income circumstance or energy circumstance, but rather households sit on a continuum of energy hardship due to variations in the *combination* of income and energy circumstance.

This recognition of the *combination* of income and energy circumstance was one of the key outputs of the “Hills report” in the UK.¹⁸ It represented this by a simple two-dimensional graph showing how variations in income and energy cost would affect the extent of energy hardship faced by different households. A variation on this graphical representation is shown below.



¹⁸ “Getting the measure of fuel poverty – A report to the UK Department of Energy and Climate Change”, March 2012, John Hills, London School of Economics

One of the main recommendations of the Hills report was that a framework which recognised this combination of income and energy circumstance was critical for the purposes of both measuring and addressing the energy hardship problem.

This dynamic was also a key conclusion of a recent Australian study¹⁹, which identified that households existed along a *continuum* of energy vulnerability, driven by variations across both income and energy costs.

The fact that energy hardship is significantly driven by households' energy circumstance indicates that general welfare income supplements will be insufficient to address the problem, as these do not differentiate support by energy circumstance.

This 'tailored' support is analogous to variations in housing support which recognises the significant variation in housing costs around New Zealand.

2.4 Alleviating energy hardship requires interventions that address the key drivers

As discussed above, one of the most important aspects to appreciate about energy hardship is that it is not just an income issue. Rather, it is the combination of income and energy circumstance.

Thus, whereas general welfare supplements are appropriate for covering the cost of most other basic goods and services (e.g. food, clothing, telecommunications), for those experiencing poverty general welfare supplements will be inadequate to recognise the significant variation in cost faced by those in differing *energy circumstances*.

This will likely require assistance measures which recognise this variation in energy circumstance, and also, potentially address some of the underlying causes of such variation.

2.5 Evaluating the success of different assistance measures

We believe the success of assistance measures should be evaluated against three broad criteria:

1. Provides help to those in need
2. Is cost-effective
3. Has minimal unintended consequences

2.5.1 Success criterion 1: Help those in need

There are three sub-dimensions to this criterion where a measure may not achieve this purpose. In increasing order of seriousness, these are:

- Helps some consumers who don't need assistance.
 - Two examples of such outcomes are
 - The UK's winter fuel subsidies for all elderly people (refer Table 1 later in this report). This lowered bills for the wealthy elderly as well as the elderly suffering energy hardship.
 - New Zealand's low-fixed charge regime. This lowers bills for many wealthy households who happen to be low-use consumers, as well as those low-income households who are low-use consumers.

¹⁹ "Supporting Vulnerable Energy Customers", March 2015, HoustonKemp

- Helping some consumers who don't need the assistance is not a critical flaw of a measure, although it will reduce its cost-effectiveness.
- Misses some consumers who do need assistance
 - Measures which involve targeting can sometimes miss some households who require assistance. For example,
 - a measure can miss some low-income households if it relies on such households being aware of the assistance and applying for it
 - if qualification for support is based on poor proxies of need (e.g. being old) then that measure will also likely miss other consumers (e.g. being young but poor).
- Harms some consumers who do need assistance
 - Assistance measures which involve some form of subsidy for some consumers will tend to raise costs for other consumers if the subsidy is funded from electricity consumers.
 - This is acceptable if it raises costs only for those consumers who are not identified as needing assistance.
 - However, in some cases, the poor targeting of the measure can result in some consumers for whom the measure is intended to help actually facing *increased* costs, possibly by a considerable amount.
 - Outcomes which cause harm for a material number of consumers in need is considered a serious failing of an assistance measure, to the point where it should not be implemented.

2.5.2 Success criterion 2: Cost-effective

Assistance measures will inevitably result in costs associated with design, implementation, and ongoing operation. If these costs are material, they can significantly reduce the overall cost-effectiveness of the scheme.

Assistance measures which result in support being given to those who don't require it will also reduce the cost-effectiveness of the scheme.

2.5.3 Success criterion 3: Minimal unintended consequences

Any policy intervention has the potential to cause unintended consequences – including costly adverse outcomes. The main possible unintended consequences from measures to deliver assistance to those suffering energy hardship include:

- Hindering general operation of the energy market.
 - For example, constraints on tariff design and prices have the potential to increase operating costs, adversely impact on new entrant retailers, and stifle innovation.
- Distort price signals in a way which results in poor consumer decisions.
 - For example, by increasing variable charges and thus forcing non-cost-reflective pricing, the low-fixed charge regulations are incentivising uptake of some technologies which are higher costs than alternatives. (e.g. petrol vehicles rather than electric vehicles, rooftop solar rather than grid-scale wind).
 - In the case of rooftop solar, this is also resulting in poor social outcomes due to cost-shifting from the (generally wealthier) 'solar haves', onto the (generally poorer) 'solar have-nots'.

3 Exploring options for addressing energy hardship

We have canvassed the UK, USA and Australian jurisdictions to develop a range of options for addressing energy hardship. We have augmented this with our own thinking on possible options.

For the purposes of this report we have collated these into four categories, based on the defining characteristic of each option:

- income-based – supplementing household income to help consumers pay for their energy requirement
- electricity price-based – reducing the electricity price paid by some consumers to help them afford electricity
- energy efficiency – improving the energy performance of a house (e.g. through insulation) or household appliances (heaters, lights, etc.) to lower household energy bills
- information-based – making consumers aware of measures they can take, or support they may qualify for, to lower their energy bills.

Typically, overseas jurisdictions employ a package of options from most or all of the categories. On a more micro level, some options tend to be used in combination, for instance providing information on energy efficiency coupled with funding to improve the thermal efficiency of the house.

The set of measures adopted in overseas jurisdictions that have been described in this section is not exhaustive. Furthermore, some of the measures may have since been amended or discontinued. They nevertheless provide useful input to exploring the range of possible options in the New Zealand context.

3.1 Income-based options

There are a number of options that address energy hardship by supplementing household income. Income support can be generally available, or means-tested to better target households identified as being in need. Targeting is considered further in section 4.8 below.

Income-based options can be:

- general (not energy-related) income support
- energy-related income support
- temporary assistance such as emergency payments (which may, or may not, be energy specific)

The options are described in Table 1, together with some examples where the option has been implemented.

Table 1: Income-based options for addressing energy hardship

	Option	Description and comment	Some examples
general income options (not energy-related)	income support payments	<p>There are many forms of general income support including welfare payments, tax credits, benefits and income supplements.</p> <p>These are not specifically aimed at covering energy costs. Some linkage with energy costs is achieved through welfare payments generally being indexed to measures such as CPI – which typically includes electricity and gas among the basket of goods forming the index.</p>	<p>NZ: MSD provides income support through a range of benefits (unemployment, disability, seniors, students etc) and assistance with living expenses (accommodation, food etc).</p> <p>UK, USA and Australia all have general income support</p>
energy-related income options	a winter fuel payment	<p>A payment made in winter which is notionally towards the cost of fuel (energy) for home heating. The winter-only aspect recognises the special nature of energy costs, in terms of being significantly greater during winter months due to heating demands. This significant seasonal variation in costs can be hard for income-</p>	<p>NZ: currently part of Labour and Greens energy policies</p> <p>UK: Winter Fuel Payment is a non-means tested benefit paid directly to the bank account of all households with a member aged 60 or over. It is targeted at helping the elderly meet their fuel bills, and made in winter when fuel bills are highest. There is no obligation to spend it on energy. It is between £100 and £300 depending on circumstances.</p> <p>USA: for instance, Maine’s Keep Me Warm program</p>

		<p>constrained households to manage, as typically their incomes do not vary seasonally.</p> <p>Unlike energy payments or vouchers (see below), there is generally no requirement to use the money to pay for energy.</p>	
	energy payments or vouchers	<p>Energy payments or vouchers can be used by the household to:</p> <ul style="list-style-type: none"> - pay part/all of an energy bill - reconnect after disconnection - purchase blankets, curtains, heaters - top-up pre-payment meters - buy heating fuel <p>Many of these schemes use a voucher system, or direct payment from the welfare agency to energy retailers, which requires that the income supplement to be spent specifically on energy.</p>	<p>NZ: MSD offers up to \$200 to help with an outstanding energy bill, or to reconnect supply. This is means-tested, and may or may not need to be paid back. MSD can also assist with the cost of keeping families warm (bedding, curtains, heaters) in certain circumstances.</p> <p>Australia has several schemes that provide emergency payments to energy customers needing temporary assistance due to financial stress. For instance, the Energy Accounts Payment Assistance (EAPA) in NSW, Australia operates a voucher system: each voucher is worth \$50 and can be used for electricity and gas.</p> <p>USA: The Low Income Home Energy Assistance Program (LIHEAP) is a federally-funded block grant that assists eligible low-income households with their heating and cooling energy costs, bill payment assistance, energy crisis assistance, weatherization and energy-related home repairs. Funding is distributed to each of the fifty states, U.S. territories and tribal governments through the Department of Health and Human Services (HHS). Administration of the program is left up to state, territorial or tribal governments. In most states, the program is run on a first come-first served basis. In some states federal LIHEAP funds are supplemented by State funding, surcharges on consumers' bills or donations.</p>
temporary assistance	emergency payments	<p>There are many forms of emergency assistance, which may, or may not, be energy specific. Some take the form of a grants, while others are temporary advances which must be paid back.</p>	<p>NZ: MSD energy payments described above are also offered as emergency assistance.</p> <p>Other jurisdictions offer emergency income support</p>

		They are temporary in nature to assist households who are experiencing a sudden change of circumstance or other exceptional situation.	
	cold weather payments	Temporary income support given only during a period of extreme cold weather.	UK: Cold Weather Payments are paid directly to qualifying individuals when the temperature is predicted to be sub-zero for a week or more. It is designed as an emergency measure to enable them to heat their homes during extreme cold. Payment is £25 for each week.

3.2 Electricity price-based options

Electricity price-based options address energy hardship by reducing the electricity²⁰ price the household faces.

Here we have distinguished between options that reduce electricity *price* from those that reduce overall electricity *cost* – other options (particularly the energy efficiency options discussed in the next subsection) can reduce the overall cost by reducing the *quantity* of electricity the household consumes.

Electricity price-based measures can be generally available, or means-tested to better target households identified as being in need. Targeting is considered further in section 4.8 below.

The options are described in Table 2 together with some examples where the option has been used in practice.

Table 2: Electricity price-based options for addressing energy hardship

	Option	Description and comment	Some examples
general electricity price-based options (for all households)	electricity policy	General electricity legislation and policies aimed at keeping downward pressure on electricity prices.	NZ: legislative and regulatory regime (in particular the roles of the Electricity Authority and Commerce Commission) Increasingly around the world competitive wholesale and retail energy markets are being used to drive down long-term electricity costs. In some jurisdictions, various forms of retail price control remain. Some form of price control is generally imposed on the monopoly network businesses.
	rebalanced residential network cost allocation	A greater proportion of network cost recovery is allocated to business customers rather than residential customers.	This occurred in New Zealand in the 1970's and early '80s. This explicit cross-subsidy was unwound during the late '80s and 1990s, with revised approaches taken to network cost allocation.

²⁰ We have not considered energy prices more broadly (eg gas prices) as this study is focusing on the electricity sector.

	Option	Description and comment	Some examples
specific for certain types of customers	concessionary rates or 'social tariffs'	Discounted tariffs for designated customers who meet some type of means-test criteria. For instance: <ul style="list-style-type: none"> - generally lower tariffs - off-peak concession rate - pre-payment meter concession rate - waiving certain fees (late-payment fees, disconnection/reconnection) 	<p>NZ: Globug offers discounted rates for community service cardholders.</p> <p>Australia: Victoria has an off-peak concession rate for designated (vulnerable) customers.</p> <p>Australia: Tasmania has concessionary rates through pre-payment meters for designated (vulnerable) customers</p> <p>US: for example, Maine's Electricity Lifeline Program provides eligible customers with a modified electricity rate based on their household income and estimated electricity usage.</p>
	energy bill rebate	A rebate for designated customers, paid either as a fixed amount or a percentage of their bill.	<p>Australia: most states in Australia provide energy bill rebates for designated (vulnerable) customers. Eligibility is typically linked to those with government concession cards (eg pensioners, veterans, high health needs). This is generally an annual fixed amount (for instance \$340 AUD in Qld, and \$215 in SA). However, the Victoria rebate is a percentage (17.5%) of the total bill for the year. As well as general rebates, some states also provide rebates for special needs such as medical cooling/heating, life support and family energy.</p> <p>UK: Warm Home Discount is a Government initiative to help low income and vulnerable households with energy costs. It is an annual rebate off the electricity bills for low-income pensioners and customers who are fuel-poor or at risk of fuel poverty. For 2015/16 the rebate was £140.</p> <p>US: for instance, New Jersey's Universal Service Fund is a surcharge on gas and electricity bills that helps low income customers by applying a credit to the bills of eligible customers (linked to LIHEAP).</p>

	Option	Description and comment	Some examples
	low usage tariff / high variable charge	<p>A pricing plan structured with a low-fixed charge, rising block tariffs (or similar) to provide differentiation (e.g. progressive pricing)</p> <p>Progressive pricing is generally implemented to promote energy conservation through making it more expensive to consume larger amounts of electricity.</p> <p>A social justification is sometimes put forward that all households need a basic minimum amount of energy to provide energy services (with the implicit assumption that this basic minimum amount is similar for all consumers)</p>	<p>NZ: The Low Fixed Charge (LFC) regulations require distributors and retailers to make available to residential consumers a pricing option with low fixed charges, limited to 15c/day for distributors and 30c/day for retailers. To be eligible, the household must use less than 8000 kWh a year (or 9000kWh units in parts of the lower South Island). Holiday homes are excluded. The Regulations also require that the ‘average consumer’ must not be worse off on the low fixed charge tariff option and prohibit the use of tiered or stepped variable charges in low fixed charge tariff options.</p> <p>While not strictly progressive pricing, the LFC regulations have a similar macro effect in terms of reducing costs for low-users and increasing costs for higher-users.</p> <p>California and Japan: Both countries introduced progressive pricing in the 2000s to address energy shortages. No social policy rationale for these initiatives has been found in our literature search.</p>
	welfare agency as retailer	A welfare agency (such as the Ministry for Social Development (MSD) or a local organisation) could act as the retailer for designated low-income customers. The agency would contract with one or more parties (eg generators or another retailer) and on-sell to its customer base at a reduced tariff and/or other payment terms targeted at energy hardship.	UK: Scotland has just announced plans for a Not-for-profit Government owned retailer, with social policy objectives included in the rationale for this initiative

	Option	Description and comment	Some examples
other measures	rural / urban cross-subsidies	<p>The network pricing is adjusted such that rural or remote customers pay the same price as metropolitan customers.</p> <p>Such approaches can address issues around rural development, as well as rural poverty.</p>	<p>Australia: Queensland and South Australia, government policy requires an explicit rural/urban cross-subsidy:</p> <ul style="list-style-type: none"> - the Queensland government subsidises the electricity bills of regional and rural customers for the additional supply costs (Community Service Obligations payments) - SA Power Networks is required to price on a postage stamp basis for all customers below 160MW pa (ie a cross-subsidy between metropolitan and remote/rural SA customers) <p>NZ: Many NZ networks do not have different prices for supplying rural customers to urban customers – even though the average cost of supplying such customers can vary significantly. This is explored further in section 4.10 below.</p>
	best tariff obligation	A requirement on retailers to calculate the best tariff for a vulnerable customer and switch them to that tariff.	No examples found

	Option	Description and comment	Some examples
payment and credit management options	bill smoothing and payment plans	<p>Tailored payment plans designed to assist with cashflow management for customers struggling to pay their bills, including:</p> <ul style="list-style-type: none"> - bill smoothing to rebalance winter/summer bills - income redirection - shortened payment periods to match receipt of benefits or wages 	<p>NZ: Electricity Authority (voluntary) consumer guidelines for vulnerable and medically dependent consumers include guidelines for NZ retailers for this area.</p> <p>NZ: Many retailers offer 'smoothpay' options which allow consumers to spread their bills over the year</p> <p>NZ: Some retailers have weekly, rather than monthly payments</p> <p>Australia: retailers are required to operate hardship programs that typically provide eligible vulnerable customers options such as bill smoothing and payment plans.</p> <p>UK: retailers are required to operate programs for vulnerable customers that include a range of payment options</p> <p>US: for instance, Maryland's Utility Service Protection Program (USSP) reduces and smooths monthly energy bill payments (linked to LIHEAP).</p>

	Option	Description and comment	Some examples
	credit management	Arrangements for avoiding disconnection due to non-payment including: <ul style="list-style-type: none"> - payment plan for paying outstanding bill amounts - waiving of late payment fees - waiving certain fees (late-payment fees, disconnection/reconnection) 	<p>NZ: Electricity Authority (voluntary) consumer guidelines for vulnerable and medically dependent consumers include guidelines for NZ retailers for this area.</p> <p>Australia: retailers are required to operate hardship programs for eligible vulnerable customers that set out conditions for disconnection for non-payment and waive late payment fees.</p> <p>UK: suppliers are required to operate programs for vulnerable customers that include repayment plans. Suppliers are prohibited from disconnecting pensioners during winter. Suppliers must not disconnect anyone whose debt they have not taken all reasonable steps to recover first by using a pre-payment meter. The six largest suppliers have signed up to Energy UK's 'Safety Net' which includes a commitment to never knowingly disconnect customers in vulnerable situations at any time of the year, and to reconnect those subsequently identified as vulnerable as a priority and usually within 24 hours.</p>
	pre-payment	Pre-pay meters and similar technology that enable consumers to 'pay-as-you-go' Some jurisdictions use pre-pay meters to provide concessionary rates. (Conversely, others have had <i>higher</i> electricity prices for pre-payment meters – reflecting the higher costs of the meters and associated prepayment infrastructure.)	<p>All jurisdictions provide pre-pay options. Increasingly these involve smart technology.</p> <p>NZ: There are several pre-payment providers including Mercury (Globug), Powershop and WisePay. Globug offers discounted rates for community service cardholders. Genesis is retiring its prepayment service (InCharge) from December 2017.</p> <p>Australia: Tasmania has concessionary rates through pre-payment meters for designated (vulnerable) customers</p> <p>UK: obligations on retailers to ensure pre-payment meters are appropriate for the household (eg no medically dependent householders)</p>

3.3 Energy efficiency options

Energy efficiency options address energy hardship by reducing the quantity of energy needed to maintain a healthy home and provide basic energy services (lighting, water heating for washing, etc.).

Energy efficiency measures can be generally available, or targeted at particular types of households (such as owner-occupier, private rental, social housing). They can also be means-tested to target those in energy hardship. Targeting is considered further in section 4.8 below.

The options are described in Table 3, together with some examples in relevant jurisdictions.

Table 3: Energy efficiency options for addressing energy hardship

	Option	Description and comment	Some examples
thermal infrastructure	improve thermal insulation and/or improve efficiency of household heating infrastructure	<p>Financial assistance to improve:</p> <ul style="list-style-type: none"> - thermal insulation of the house structure (floors, ceilings, walls, windows) - thermal insulation of the household (curtains, draft-stoppers, cylinder wraps, gap sealers) - efficiency of a household’s heating infrastructure (appliances for space and water heating, fuel source) - efficiency of appliance usage through use of energy saving/efficiency devices (thermostats, standby power controllers, usage monitors, timers) <p>The assistance could be in the form of:</p> <ul style="list-style-type: none"> - grants or rebates - no-interest, or low-interest, loans - reverse equity loans (typically suited to the elderly) - paying extra through energy bills as saving accrue - cost added to rates bills 	<p>NZ: EECA's Warm Up New Zealand: Healthy Homes programme offers grants for insulation retrofits in houses built before 2000. Grants of 50% of the cost of insulation are now available for low-income home owners and landlords with low-income tenants. The grants are limited and will finish by the end of June 2018.</p> <p>NZ: Some local councils offer homeowners (ratepayers) a loan (a rates advance), which goes towards the cost of insulation and/or heating. The ratepayer repays the money, plus interest, in instalments over a number of years on top of their normal rates payments. Some banks offer a similar scheme as part of their mortgage facility.</p> <p>NZ: Curtain banks, run by community organisations, receive donated curtains. They repair and line them with thermal backing and install them in low-income households and for people with chronic health conditions.</p> <p>Australia: State-funded energy efficiency and no interest loan schemes (generally not just for vulnerable customers):</p> <ul style="list-style-type: none"> - no interest loans for energy efficient appliances or measures (eg insulation) - rebates for energy efficient appliances (and for removal of inefficient second fridges)

		<ul style="list-style-type: none"> - free or discounted energy saving/efficiency devices 	<ul style="list-style-type: none"> - free or discounted energy efficiency devices (eg standby power controllers) <p>Australia: Low Income Energy Efficiency Program (LIEEP) was a competitive merit-based grant program established by the Commonwealth Government to provide grants to consortia of government, business and community organisations to trial approaches to improve the energy efficiency of low income households and enable them to better manage their energy use. The program closed in June 2016.</p> <p>UK: Green Deal Finance allows householders (not just vulnerable customers) to upgrade thermal efficiency of their home at no up-front cost, paid back through electricity bills as savings accrue (Green deal 'golden rule' is that expected financial savings must be at least equal to the cost attached to the energy bill).</p> <p>UK: Energy Company Obligation (ECO) is a Government policy that places two obligations on suppliers, recovered through higher energy prices (est £1.3b pa cost):</p> <ul style="list-style-type: none"> - CERO (carbon emission reduction obligation) requiring suppliers to make specified carbon savings in household sector by delivering energy efficiency measures (eg insulation), likely to be met by suppliers co-financing using the Green Deal Finance - affordable warmth obligation (the Home Heating Cost Reduction Obligation, HHCRO) on suppliers to make a specified energy bill reduction in a set of low income vulnerable households by reducing the costs of meeting a specified level of thermal comfort (likely to be achieved by suppliers providing full-subsidised heating and insulation) <p>US: The Weatherization Assistance Program provides grants to states, territories, and some Indian tribes to improve the energy efficiency of the homes of low-income families. These governments, in turn,</p>
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			contract with local governments and non-profit agencies to provide weatherization services to those in need.
building standards	minimum thermal insulation standards for residential properties	<p>Minimum thermal insulation standards for residential properties to reduce the quantity of energy needed to maintain a healthy home. These could:</p> <ul style="list-style-type: none"> - be enforced through central/local government regulation, or be voluntary - be for all households, or a subset (such as rental properties, state housing) - apply only to new housing stock, or also require existing stock to be brought up to standard over time - cover a variety of aspects of thermal insulation including ceiling, floor, walls, windows 	<p>NZ: Current building standards have minimum requirements for thermal insulation for new homes</p> <p>NZ: Ceiling and underfloor insulation will be compulsory in all rental homes from 1 July 2019, where it is reasonably practicable to install.</p> <p>UK: Green Deal Government policy sets minimum energy efficiency standards for private rental sector</p>
appliance standards	minimum efficiency ratings for residential appliances	<p>Minimum efficiency ratings for residential appliances to reduce the energy they consume. These could:</p> <ul style="list-style-type: none"> - be enforced through central government regulation, or be voluntary - apply to a range of appliances 	<p>All developed economies have appliance standards, but there are variations as to the level of efficiency required.</p> <p>For example, some jurisdictions (e.g. Australia) have banned incandescent light bulbs due to their very low efficiency, whereas others continue to allow them to be sold.</p>

3.4 Information-based options

As the name suggests, information-based options provide consumers with information that can help them make better decisions about their energy usage, supply, and payment, as well as helping them with general welfare advice.

It is important to note that information-based options only address energy hardship to the extent that consumers access that information, understand it and make better decisions.

The options are described in Table 4, together with some examples in relevant jurisdictions.

Table 4: Information options for addressing energy hardship

	Option	Description and comment	Some examples
best type of tariffs and/or cheapest retailer	expert advice	Expert advice on best retailer and/or best tariff customised to the household, provided through: <ul style="list-style-type: none"> - call centres - citizens advice bureau - welfare agencies 	NZ: Citizens Advice Bureau and other agencies offer independent advice on retailers and tariff options. Often this advice is provided in conjunction with online tools and calculators provided by other parties (see next row). Retailer call centres provide (non-independent) advice on tariffs. UK: Energy Best Deal are face-to-face sessions run by regional experts aimed at groups of consumers who are in fuel poverty (or are at risk of fuel poverty), and also at the frontline workers and volunteers who support these vulnerable consumers. The sessions make people aware of savings available by switching providers or negotiating with existing providers, provide information about help available for those struggling to pay their bills, and give tips on energy saving and energy efficiency. Initially government-funded, it is now funded by voluntary contributions from five energy suppliers. Other jurisdictions offer advice through various channels.
	tools and calculators	Tariff comparison tools available online or for download that enable a household to identify the cheapest retailer and/or tariff for their situation	NZ: Online calculator “Powerswitch” (Consumer NZ and Electricity Authority) allows consumers to see how much they may be able to save on their power bills by switching retailers. Users can then click through to the Consumer Powerswitch website to see details of the different offers available and decide whether to switch. Another tool,

			<p>“SwitchMe” is an independent non-government funded energy switching site.</p> <p>Other jurisdictions offer state and/or privately run electricity price comparison tools. Some jurisdictions (eg UK) operate an accreditation service to regulate the independence and quality of comparison tools.</p>
	best tariff advice	A requirement on retailers to calculate the best tariff for a customer	UK: the Cheapest Tariff Message obligation, introduced in April 2014, obliges suppliers to inform their customers whether they are on the cheapest tariff or whether they could save money by switching to another one of their tariffs. This information tool prompts consumers to engage and make informed choices. Suppliers are not obliged to actually switch the customer to the cheapest tariff.
managing energy consumption	energy use education	<p>Education for householders on:</p> <ul style="list-style-type: none"> - efficient energy usage - appliance purchase decisions - fuel choice decisions - improving thermal infrastructure of the house <p>Education could be:</p> <ul style="list-style-type: none"> - generic, and provided in print, online, media campaigns - targeted at particular groups, and provided through channels that reach those groups (community centres, community leaders) - individualised, and provided in-home or through call centres 	<p>NZ: EECA EnergyWise website provides comprehensive energy usage/efficiency advice, supplemented with ad campaigns.</p> <p>NZ: retailers offer energy usage/efficiency advice on their websites, as do agencies such as Consumer NZ</p> <p>Other jurisdictions offer education and advice through various means.</p>
	tools and calculators	Energy use tools available online or for download that enable a household to better understand their energy consumption and investment options	<p>NZ: EECA EnergyWise website has tools and calculators to help understand the costs of different space/water heating options, appliances etc</p> <p>NZ: retailer tools such as Mercury Energy’s GEM which is an energy tracking and reporting tool that provides greater visibility of household</p>

			<p>energy usage and the opportunity to reduce energy consumption and cost</p> <p>Australia: as well as various tools run by retailers and/or agencies, the Victorian State Government offers a tool where users enter simple details about their electricity use to compare themselves against similar households and receive energy saving tips.</p> <p>Other jurisdictions offer various energy usage tools and calculators.</p>
	in-home real-time energy use displays	Smart devices and on-line tools that show real-time energy use and pricing	NZ: Mercury Energy's GEM offers daily and half-hourly usage details for smart meter customers. Other smart meter providers also offer various tools.
general welfare assistance	benefit entitlement checks	Households are given assistance to determine if they are claiming all the benefits they are entitled to.	<p>NZ: agencies such as Citizens Advice Bureau assist with benefit entitlements</p> <p>UK: organisations such as Warm Front and energy companies use benefit entitlement checks to help customers increase their household income</p>

3.5 Inter-relationship between options

Generally, the assistance measures set out in 3.1 to 3.4 are not mutually exclusive – i.e. they can be implemented in conjunction with each other. Indeed, the information options can be complementary with other options, improving their cost-effectiveness.

Likewise,

- energy efficiency options can reduce the size of the problem in terms of the level of financial support required in the form of income subsidies or price-based measures.
- payment and credit management options, and temporary assistance options, can be implemented alongside income subsidies or price-based measures.

However, in terms of the main forms of financial assistance, the main choice is between energy-related income supplements, or price-based measures which give specific support for certain types of customer.

4 Assessment of options

This section draws together the learnings from the review of international mechanisms identified in section 3, and Concept's own analysis.

In reviewing the merits of the various options, this section seeks to evaluate them based on the key success criteria set out in section 2.5:

- Provides support proportional to need
- Cost-effective to implement
- Minimal unintended consequences.

4.1 General principles for addressing energy hardship

Energy hardship is not just an income-related issue, therefore general welfare support alone is unlikely to adequately address the problem

Although having a low income is a significant driver of a household suffering energy hardship, the material variation in household *energy circumstances* means that the extent of energy hardship can vary substantially between two households on the same low-income.

As set out in 2.3.2, variations in house location, house condition, and personal circumstance (health and employment status), can significantly vary the cost of providing the basic minimum level heating and other energy service requirements. Appendix A sets out analysis which estimates that the range in electricity bills for consumers in the lowest deprivation decile is approximately \$3,700 per year.

This is different to the cost of most other basic goods and services (e.g. food, clothing, mobile phones) which don't experience the same degree of variation in cost by consumer circumstance.

The fact that energy hardship is significantly driven by households' energy circumstance indicates that general welfare income supplements will be insufficient to address the problem, as these do not differentiate support by energy circumstance.

Measures to address energy hardship should seek to deliver support proportional to need

General welfare mechanisms seek to provide varying degrees of income assistance according to degrees of income deficit need. There are strong policy rationales for seeking to give such proportional assistance, including: protecting human welfare for those most in need; minimising the tax burden on those funding the welfare payments; and, ensuring those receiving welfare do not fall into the 'welfare trap'²¹.

Similar considerations apply to addressing energy hardship, with a growing international consensus (as previously referenced in section 2.3.4) that the best measures should give energy assistance proportional to need, including energy circumstance as well as income circumstance.

However, given that the drivers of varying energy circumstance are multi-faceted in nature, no one single measure will adequately address the energy hardship problem.

This section considers the merits of the different assistance measures identified in section 3 previously, including discussing how the options for funding such measures, and targeting their delivery, will have a bearing on the overall success of the schemes.

²¹ The 'welfare trap' is where the effective marginal tax rate applying to individuals receiving welfare assistance but who then take paid employment is such as to make it more financially advantageous for the individual to continue to take welfare.

4.2 Energy efficiency

Done well, energy efficiency measures can achieve the ‘win-win’ of delivering assistance proportional to need, without materially causing adverse unintended consequences.

However, as with most interventions, the devil is in the detail, with poorly-designed interventions causing a range of issues and/or costing more than is required.

Further, the range of situations giving rise to adverse energy efficiency outcomes, likely requires a range of different measures. This is most likely to include:

- Building and appliance standards to address the efficiency of future houses and appliances
- Targeted subsidy mechanisms aimed at improving the efficiency of existing buildings and appliances
- Information mechanisms, including energy labelling as well as general energy advice

It is beyond the scope of this study to address all the different options and their various sub-options, including possible targeting approaches to address tenant / landlord issues.

Box 1: Energy efficiency measures will likely play an important role, but will not be sufficient to solve the energy hardship problem

In the context of delivering assistance measures to those suffering energy hardship, the key conclusions of this study are:

- Energy efficiency measures are likely to be an important component of addressing the problems of energy hardship, and that a range of different measures are likely to be necessary; but
- Energy efficiency initiatives will not be sufficient to ‘solve’ the energy hardship problem
 - Some energy efficiency measures will not be cost-effective (e.g. adding double-glazing or insulating the walls of existing properties) meaning that there will continue to be a significant variation in the energy performance of the NZ housing stock
 - Variations in personal situation (employment status, health, age) will continue to give significant variations in energy need
 - Energy efficiency will not address the significant variation in the cost of electricity and other fuels around the country.
 - It will take a long time to implement those energy efficiency measures that are cost effective.

Thus, even after significant energy efficiency initiatives, it is likely that there will continue to be significant variation in the cost of providing adequate energy services to households suffering deprivation.

This means that some additional financial support will likely be required in the form of energy-related income supplements, or electricity price interventions.

4.3 Income supplements

The most significant problem with energy-related income supplements is that they struggle to give support proportional to need: generally they are in the form of lump sum payments which don’t recognise the variation in energy circumstance and consequential variation in need.

In theory, income supplements could be more targeted through seeking to get sufficient information about a household's energy circumstance to enable supplements to be better-scaled to need. However, this can be costly to implement, and hard to put into practice in relation to gathering good information about some aspects of a consumer's energy situation (e.g. house condition, occupancy pattern, electricity network pricing region, etc.)

Further, because income supplements are generally linked to movements in indexes such as CPI, they are less able to respond quickly to dramatic energy price rises - e.g. in the case of the significant natural gas price rises recently experienced in Australia.

On the plus side, income supplements provided by welfare agencies:

- have less risk of resulting in unintended consequences than price-based mechanisms (set out further in the next sub-section)
- can be lower cost to implement than price-based mechanisms – particularly if they piggy-back on existing welfare systems and processes. However, the devil is in the detail, with poorly-designed approaches potentially introducing significant costs to implement.

4.4 Price-based mechanisms

Poorly-designed price based mechanisms risk significant unintended consequences

Price-based mechanisms involve reducing the price paid for electricity below cost for those consumers receiving the support – and generally²² increasing the price paid for electricity to above cost for those consumers not receiving the support.

The fundamental problem with this is that if prices no longer equal cost, consumers are more likely to take inefficient consumption decisions which will tend to increase the overall cost of providing energy services, and which can result in other adverse outcomes.

The low-fixed charge mechanism is the classic example of the scale of bad outcomes which can occur. By increasing consumers' variable prices this mechanism has:

- Incentivised consumers to invest in higher cost technologies (particularly solar PV, and petrol-fuelled vehicles), rather than technologies which could deliver the same energy service at lower cost (e.g. wind power delivered over the grid, and electric vehicles). If this situation continues, the scale of economic inefficiency has been variously estimated to cost between several hundred million to \$5 billion.
- Resulted in cost-shifting between consumers:
 - Between those lower-users who are shifting their costs onto higher-users. This has particularly hurt those suffering the greatest degree of energy hardship – i.e. those who have the combination of low income and high energy consumption requirements. Indeed, by increasing variable charges and reducing fixed charges, the level of support given to consumers is anti-correlated with need. i.e. those low-income consumers with the lowest energy consumption requirements get the greatest support, but those low-income consumers with the greatest energy consumption requirements get penalised.
 - Solar-PV-owning consumers are shifting their costs onto non-solar-PV-owning consumers. This has a particularly regressive element because low-income households are much less

²² This increase in cost to those not receiving the support is a consequence if the funding comes from energy consumers, rather than general taxation. Section 4.7 below discusses the issues of funding source, and highlights the problems of funding social payments from energy consumers. However, we observe that generally around the world, price-based interventions tend to be funded from energy consumers.

likely to live in a house with a solar panel – in large part because they are much more likely to rent the property, but also because of their lower levels of disposable income.

- Created a perverse incentive on at-risk consumers to try and save money by under-heating their homes because the variable charge is so high
- Increase the size of winter bills relative to summer – making it harder for those households who struggle with budgeting
- Created a barrier to the uptake of energy technologies which have the greatest potential to decarbonise our economy – namely electric vehicles.²³

In addition, the requirements on networks and retailers to offer LFC compliant tariffs which must meet narrow criteria in relation to comparison with standard tariffs, has:

- Imposed extra operating costs on the industry (which are paid for by consumers through higher cost-to-serve recovery), and
- Constrained the development of more innovative tariff and supply offerings. Over time, constraints on innovation will also be ultimately be paid for by consumers as they will not have the benefit of a greater range of value-enhancing services.

While the specific design of the LFC in terms of increasing variable charges has caused some severe outcomes, price-based interventions in the form of ‘social tariffs’ generally have an increased risk of unintended consequences in terms of:

- Distorting consumer consumption decisions leading to higher cost outcomes
- Imposing costs on networks and retailers which can increase cost-to-serve, stifle innovation, and interfere with the functioning of the market.
- Sometimes limiting consumers’ ability to get the best benefits from energy and related markets. For example, consumers in receipt of a social tariff provided by a retailer may be less able to
 - get bundled deals (e.g. dual fuel offerings, or bundled with internet or telecoms)
 - switch between retailers

²³ For example, see this recent report: http://www.pce.parliament.nz/media/1721/summary-report-energy-related-carbon-abatement_.pdf

Box 2: Can the LFC mechanism be 'fixed'?

Some of the negative effects identified above are exacerbated due to the arbitrary setting of the threshold consumption level whereby consumers should be neutral between the LFC and 'standard' tariff options. This threshold – 8,000 kWh, or 9,000 kWh in the lower South Island – is higher than average residential consumption in New Zealand (7,050 kWh), and substantially higher than the average in some network areas.

However, lowering the threshold is not considered to be a solution:

- It would still be the case that consumers at or above the threshold will pay more as a consequence of the policy – including those most in need. Indeed, a greater number of consumers will be paying more, albeit not by as much.
- It would still result in over-variabilisation of bills, with the associated negative consequences identified above.

Rebate approaches may offer the best balance between giving support proportional to need, and resulting in unintended consequences

The key tension in all financial support mechanisms, is between giving support proportional to need, and distorting the operation of the market in a way which delivers unintended consequences.

Giving support in the form of percentage rebates on qualifying consumers' bills may achieve the best balance in this respect. This was one of the recommendations of a recent Australian study.²⁴

Rebate approaches have the potential to be implemented in a lower-cost fashion than requiring retailers and/or networks to offer social tariffs. And by not directly altering tariffs, rebate approaches may potentially reduce the scale of inefficiency arising from distorting consumers' price signals that can occur with options which alter consumers tariffs generally (e.g. the low-fixed charge approach).

However, as with most things, the devil is in the detail. In particular, how it is funded, and the targeting of who receives the rebate will be important. These are addressed further in sections 4.7 and 4.8.

In addition, the mechanics of how a rebate is applied to consumers bills will have a significant bearing on how much it would cost to implement, and whether it would result in other unintended consequences. For example, which agency would deliver the rebate:

- Social welfare agencies, having been provided information on bills from retailers; or
- Retailers, having been provided information on who qualifies for the social rebate from social welfare agencies.

Significant coordination and information challenges are likely – including addressing the fact that welfare qualification and receipt is predominantly on an individual basis, whereas energy costs are incurred on a household basis.

²⁴ "Supporting Vulnerable Energy Customers", March 2015, HoustonKemp

4.5 Social retailers

One option that has been mooted is the development of a ‘social retailer’ that would specialise in providing service to consumers in energy hardship.²⁵

The stated potential benefits of such a retailer include:

- The ability to give a discounted social tariff to qualifying customers
- Offering ‘smooth-pay’ options which allow consumers to spread the costs of electricity over the course of the year, rather than face much higher bills in winter, and much lower in summer.
- Improved, and potentially lower-cost, debt management processes – with this being a core specialism of such a retailer.
- Not providing tariffs which are unsuitable for some consumers. For example, tariff plans with very high prompt-payment discounts (PPDs) are particularly unsuitable for consumers who find budgeting challenging, with such high PPD plans generally being regressive.

However, offsetting these potential benefits, are a number of potential draw-backs:

- There would be significant costs from setting-up and running a retailer – costs which would inevitably fall on taxpayers and/or energy consumers.
- If such a social retailer were to start servicing a very large number of consumers, it would risk ‘crowding out’ retailers (particularly new entrant retailers) – with potential long-term adverse consequences in terms of reduced innovation and competition.
 - Conversely, if it were limited to retailing to a small number of consumers suffering energy hardship, its cost-effectiveness would be affected (given that there are a significant amount of fixed costs associated with energy retailing), and there would be greater risk of missing consumers for whom support is intended.
- While a social retailer may offer qualifying customers ‘good deals’ for electricity, they may not be able to offer bundled offerings (and the associated potential benefits) through inclusion of other products such as gas, telecoms and internet.

Further, it is not clear why the stated objectives of a social retailer could not be achieved through administering through retailers – i.e.

- Requiring that retailers offer smooth-pay mechanisms – noting that many already do
- Working with the industry to develop and monitor industry protocols around debt management (which is already happening), and prompt-payment discounts for consumers facing budgeting challenges
- Having retailers implement a social tariff (if that was deemed the best option to deliver energy hardship financial support – noting that this report considers this option to be less good than alternatives)

That said, as with all energy hardship mechanisms, the devil is in the detail. The concept of a ‘social retailer’ means different things to different people, ranging from government facilitated collective switching arrangements (similar to the GreyPower deal with Pulse), through to a full-blown state-owned retailer. There is potentially a third option in which the Government contracts for social

²⁵ This is similar to some of the recently proposed state-owned retailers for jurisdictions such as Scotland and Queensland – although it is understood that these have broader policy rationales in relation to dissatisfaction with their energy markets generally, as well as some specific social objectives.

tariffs plus other support mechanisms from retailers who want to participate in that part of the market.

These different incarnations and their variants will have varying pluses and minuses – with full consideration of their merits requiring detailed consideration of possible design issues and options, which is out of scope for this report.

4.6 Other price-based measures and information-based measures

Other price-based measures to assist budgeting are important complements, not substitutes, to general financial support measures

A number of other electricity price-based measures are insufficient on their own in addressing energy hardship, because they do not materially alter the underlying gap between household income and energy needs in an enduring manner. Instead, they assist low income households by helping to manage their budgeting and cashflow situation, thereby reducing extra costs (e.g costs associated with late payments, disconnections, debt financing to pay bills and inappropriate pricing plans). These other measures include:

- Credit management
- Temporary emergency payments
- Smoothpay
- Getting on the best plan

These measures are important complements, not substitutes, to general financial support measures such as rebates and energy supplements.

Pre-payment meters can be a partial solution – but need to be implemented well, and can create further issues

Pre-payment meters can help some consumers with budgeting. However, they are not appropriate for all consumers, and may limit consumers' ability to switch to alternative retailers offering better deals – including bundled products such as dual-fuel offerings.

Further, in some cases, the prices charged for pre-payment electricity are *higher* than standard prices – due to the cost of installing and administering such metering and payment solutions being higher than general metering and payment mechanisms – whereas in others they have been used to give a targeted subsidy.

In addition, prices are generally completely variabilised, which creates problems for those on energy hardship identified above, including:

- creating an incentive for households to under-heat their home to save energy
- making it harder to give support proportional to those in need.

Assessment of the relative merits of pre-payment meters is a topic in its own right, including distinguishing between principle and practice. Consideration of such issues is beyond the scope of this report.

Information-based measures are important complements to other measures

Lack of information is often a major factor for those in energy hardship – information-based options provide information that can help them make better decisions about their energy usage, supply and payment, as well as helping them with general welfare advice. However, information-based measures on their own will not address energy hardship, because the fundamental issue for such households is a combination of energy and income circumstance. They nevertheless have an

important role to play as complements to other measures, and are likely to improve the effectiveness of targeting and delivery.

4.7 Funding

There are three broad options for funding measures, and the overseas jurisdictions we researched typically employ a combination of all of these:

- **General taxation funding:** measures funded by government (federal, state or local) out of taxes and/or rates
- **Consumer funding:** measures that electricity consumers fund, directly or indirectly, through one or more of the following:
 - industry levies imposed by statute on retailers/networks or at the consumer level (on electricity bills)
 - obligations on networks and retailers, the costs of which are then passed through to some, or all, consumers as higher prices
 - voluntary hardship funds that retailers/network companies contribute to
- **Community funding:** measures that are funded by donations and not-for-profit community organisations

The funding mechanism can affect the success of a measure. In particular, some funding/measure combinations could actually harm some customers in energy hardship.

No mechanism will provide support to all those who for whom support is regarded as justified. Inevitably some consumers will not receive support who 'should'. While good targeting can help minimise undesirable outcomes, the method of funding also strongly influences the nature of outcomes.

If funding for these measures is from electricity consumers (via an industry levy, or from some form of obligation on networks and/or retailers), this is much more likely to result in inadvertent regressive outcomes – i.e. where some of those in-need are actually worse off – than funding from general taxation. This is because those who missed out will be in the group of consumers who are funding those who receive the support. This can be a material increase in electricity bills in some situations.

These regressive outcomes will generally not happen to the same extent if the support mechanisms are funded by taxation. This is for two reasons:

- First, general taxation is from a very broad base (i.e. income tax, corporation tax, GST, oil royalties, etc.). Thus, the average effect on individual income tax from funding these mechanisms will be very small in the scheme of things.
- Further, income tax is a progressive mechanism – i.e. the wealthy pay significantly more than the poor. Given that those who should have received support but missed out are likely to be those who pay little tax²⁶, they are unlikely to face a material increase in their costs from funding those who do receive support.

Politically, however, it is much easier to introduce an energy-consumer-funded mechanism, than it is to increase general taxation.

If energy-consumer-funded measures are implemented, this risk of regressive outcomes means that:

²⁶ Even those who pay no income tax will pay some tax in the form of GST on goods and services they purchase.

- good targeting of support to all that require it is even more important, plus
- funding should come from the least regressive energy-consumer-funding approach.

In respect of this second point, general taxation seeks to minimise distortions and adverse outcomes through collecting taxes from as broad a base as possible. However, mechanisms funded by energy consumers will be from a much narrower base.

In particular, mechanisms funded via obligations on energy suppliers – whether they be energy efficiency obligations, or obligations to implement specific prices (e.g. the low-fixed charge regulations) – will be from a very narrow base. This is because they are not funded by the supplier’s shareholders, but from passing-through costs to consumers through increasing prices for those not receiving the support.²⁷

In most cases this will be between different groups of the network’s or retailer’s *residential* customers – an extremely narrow base. This will tend to significantly increase the impact on those residential customers who aren’t in receipt of the support. This not only magnifies the economic inefficiency of price distortions, but if the mechanism is poorly targeted will materially harm those in-need residential consumers who are unfortunate enough not to need the support.

An additional dynamic emerges when applying an obligation on individual network companies. This is because there is significant variation in the customer composition of different network companies – including the mix between residential and business customers, and the relative wealth of consumers in those different network companies. For example, the average wealth of Top Energy’s customers in the Far North, is significantly lower than the average wealth of Wellington Electricity’s consumers. Having obligations on individual networks will materially reduce the effectiveness of delivering support proportional to the degree of need across New Zealand.

If funding is to come from energy consumers rather than general taxation, a broad national industry levy on all consumers (residential, and business) would significantly reduce the adverse effect from funding support measures from a narrow, and ill-targeted base.

4.8 Targeting

A critical aspect of an energy hardship support mechanism is how successful it is at targeting support to those for whom assistance is intended.

As set out in section 2.3, there are a variety of drivers of energy hardship. This has implications for:

- Designing assistance measures which give support proportional to need – including, in some cases through addressing the underlying driver
- Designing approaches to determine eligibility for support

This latter point can be challenging to implement in a low-cost way which accurately *targets* support to those who need it, but excludes those who don’t.

Table 5 sets out a list of drivers of energy hardship under various household attributes, plus possible indicators for each driver which could potentially be used to target assistance at those in need (i.e. as some form of qualification criteria).

²⁷ This pass-through to consumers is considered appropriate, because appropriation of funds from companies is not sustainable in the long-run as it will tend to stifle investment – to consumers’ long-term detriment.

Table 5: Targeting energy hardship assistance to those in need

Household attribute	Driver of possible energy hardship	Possible indicators which could be used as targeting / qualification criteria
income status	low income households	Those receiving existing welfare support, such as: <ul style="list-style-type: none"> - unemployment benefit - sickness/disability benefit - NZ Super - Community Service Card - Working for Families Referral from agencies such as budgeting services, Citizens Advice Bureau, food banks
number of income-earning occupants	having only one income-earner can exacerbate the effects of low-income ²⁸	Those receiving existing welfare support related to single-income status Referral from agencies such as budgeting services, Citizens Advice Bureau, food banks
employment status	those not in full-time employment will likely spend significantly more time at home, with associated increases in energy costs (in addition to possible low income status addressed above)	Those receiving existing welfare support for being out of work, such as: <ul style="list-style-type: none"> - unemployment benefit - sickness/disability benefit - NZ Super Referral from agencies
health status	those with ill-health or some other vulnerability due to health or disability	Those receiving existing welfare support related to health status, such as: <ul style="list-style-type: none"> - sickness/disability benefit - Community Services Card Referral from GP, hospital, specialist, District Health Board agencies, ACC or similar Identification from retailers' records of medically dependent customers
age of occupants	households with: <ul style="list-style-type: none"> • elderly • very young 	Those receiving existing welfare support related to age, such as: <ul style="list-style-type: none"> - NZ Super - Working for Families tax credits - Child Hardship Package Referral from agencies such as Plunket, Ministry for Vulnerable Children, District Health Board agencies
household location	locations that have high energy costs due to a combination of:	Street address ICP number on electricity bill

²⁸ The report 'Investigating different measures of energy hardship in New Zealand', Statistics NZ, Sept 2017 notes that households experiencing an energy hardship indicator tend to be poorer, and to have a higher proportion of single-adult households or sole-parent households.

Household attribute	Driver of possible energy hardship	Possible indicators which could be used as targeting / qualification criteria
	<ul style="list-style-type: none"> • geography (heating requirement due to climate) • network region (differences in electricity pricing) • location (access to other forms of heating fuel such as reticulated gas, clean-air laws restricting solid fuel) 	
housing stock	houses that have: <ul style="list-style-type: none"> • a poor level of insulation • inefficient appliances, particularly for heating 	Self-referral and referral from agencies
housing ownership	whether the household is: <ul style="list-style-type: none"> • owner-occupier • renting from private landlord • renting/living in social housing (ownership structure may exacerbate problems of energy hardship, or create further barriers to rectifying it – refer section 2.3.3)	Various property databases in local government, central government and the private sector. Self-referral and referral from agencies
size of electricity bill	high monthly electricity costs	Retailers' databases
late and/or manual bill payment	persistent late bill payment and/or bad credit history, or manual payment (paying late, or not paying by electronic means, generally results in the household paying a greater amount for their electricity than consumers who pay on-time and via mechanisms such as direct debit)	Retailers' databases

As can be appreciated, one of the inherent challenges is having qualification arrangements which appropriately address the fact that energy hardship:

- is a combination of individual circumstance (e.g. income) and house / household circumstance (e.g. location, level of insulation, number and type of fellow occupants, level of energy prices, etc.).
- can vary over time due to changes in individual and household circumstance (e.g. getting employment, or the house having been insulated)

There is no single database which has up-to-date values for all these different factors, and which maps them appropriately between the individual and household dimensions.

There will need to be trade-offs between finding indicator values which are relatively easy / low-cost to operationalise, and seeking to deliver outcomes which most closely give assistance to those in need and in proportion to their need.

One key learning from existing schemes is that poorly designed targeted mechanisms can cause material adverse harm to some parties for whom assistance is required, particularly where funding for these support mechanisms comes from increasing electricity prices.

Examples of these outcomes include:

- Discounted prices given to consumers who consume less than average. This is based on an assumption that consumption is a proxy for those in need, or that there is a common level / cost of energy required to provide basic energy services. However, as set out in Appendix A, while the average consumption of low-income households is less than the average consumption of wealthier households, there are also a significant number of low-income households whose circumstances mean their energy consumption is materially higher than average. Indeed, these are the group which has been identified as being *most* in need of support, yet the LFC actively increases costs for them.
- Fuel subsidies given only to elderly people will increase costs for non-elderly consumers, including low-income non-elderly consumers. The scale of problem is most significant when fuel subsidies are given to all elderly people, as has been the case in the UK. Limiting fuel subsidies only to those elderly who are identified as being in need would significantly limit, but not eliminate, this problem

We make the following observations about targeting those in need and assessing the extent of assistance required:

- Household income should be the primary component of targeting and assessing if/how much energy hardship assistance is needed. Conversely, not using an income indicator as a basis for qualification of support:
 - is likely to result in support being provided to those who don't need it
 - will increase the risk of not providing support to those who need it; and
 - may, depending on the funding mechanism, actively harm some of those who need support
- Poor house/appliance condition is a poor indicator of energy hardship, and the difficulty in accessing information makes it unsuitable as a means of targeting assistance for those who are in need. Poor house/appliance condition is best addressed through energy efficiency measures, potentially with specific measures aimed at addressing tenant/landlord problems.
- Variations in energy circumstance (geographic location, house / appliance condition (to the extent that can't all be resolved by energy efficiency measures), personal situation (employment situation, health status, age) should ideally be addressed by delivering support proportional to these variations in circumstance. Financial support measures which give support proportional to the cost of energy seem to be some of the best means of achieving such outcomes.
- The presence of large electricity bills can assist with identifying households that *might* be in energy hardship when combined with other indicators (such as household income), but it is a poor proxy on its own. For instance, some households may have very high electricity use (e.g for heated pools, EV vehicle charging), but not be in energy hardship.
- Persistent late bill payment and/or bad credit history is a good means of identifying households that *might* be in energy hardship, but should not be sufficient to qualify for assistance. For

instance, some households (e.g. some student flats) may have a poor credit history due to poor administrative arrangements for bill payment but not be in energy hardship. Basing eligibility for assistance on persistent late bill payment could create a perverse incentive to make late payments, particularly if the assistance available was greater than a prompt payment discount.

- Ensuring that those who are eligible, actually receive the support is best achieved through mechanisms which automatically give support, without individuals having to apply for it.

These outcomes are most likely to occur where qualification for energy-related support is based on an existing welfare mechanism. However, it relies on systems and processes being developed to automatically deliver the energy-related support mechanism through linking in some way to the databases of welfare provision. This is easier said than done, particularly where welfare support is given to an individual, whereas energy support is best given to a household living in a physical property.

4.9 Delivering energy hardship measures

A range of different parties overseas deliver and administer energy hardship measures. Drawing on this, the options for New Zealand would include:

- electricity retailers or networks (under a voluntary or mandatory regime)
- government agencies:
 - general welfare agencies (such as MSD, Ministry for Vulnerable Children)
 - energy-specific agencies (such as MBIE, EECA, Electricity Authority)
 - health-specific agencies (such as Ministry of Health, District Health Boards)
 - housing-specific agencies (such as MBIE, Housing New Zealand)
 - local government
 - other central or local government agencies
- community organisations, including for instance:
 - Citizens Advice Bureaux
 - churches and city missions
 - not-for-profit organisations, advocacy groups and charities

Overseas these different types of organisations are involved in different ways, ranging from helping identify those in need, through to delivering the assistance. Often, combinations of organisations are involved with particular measures.

This range of organisations and roles reflects the fact that there is unlikely to be a one-size-fits all. Rather, the choice will depend on funding and the nature of the energy hardship measure. Some measures will be better suited to certain delivery mechanisms than others. For instance:

- Income-based energy hardship measures are more likely to be suited to delivery through welfare agencies as they specialise in income assistance and may already be providing general welfare assistance to those in energy hardship
- General welfare agencies are unlikely to have the specialist expertise to effectively deliver measures that focus on improving energy efficiency and thermal infrastructure – these would be better suited to retailers or to agencies that have a focus in housing or energy efficiency (such as EECA).

We make the following observations about delivering energy hardship measures:

- Multi-agency involvement is inevitable given the multi-faceted nature of the energy hardship problem and that the solution is likely to involve a package of different measures
- Coordination across agencies is important to ensure appropriate energy hardship measures are delivered efficiently and effectively to those in need without gaps or unnecessary overlap, and that there are no adverse consequences of multiple agencies delivering multiple measures
- It is not clear that there is any inherent role for networks in delivering financial support measures. (There is potentially a role in delivery of some energy efficiency measures – but that is out of scope for this study).
- Retailer involvement is likely to be required for delivery of energy-specific financial measures, and/or income-based support measures which are proportional to need. However, retailer involvement is unlikely to be necessary if support is simply in the form of an income supplement.
- Retailers may also play an important role in:
 - Identifying customers who may be suffering energy hardship as evidenced by persistent late payment of electricity bills (although, as noted above, this on its own is not sufficient to indicate energy hardship)
 - Assisting customers with budget management, including protocols around debt management, offering Smoothpay, and similar arrangements.
- Non-energy specific agencies operating in the community (such as social housing providers, citizens advice bureaux, health agencies, churches, missions, advocacy groups and charities) are likely to have face-to-face contact with households in energy hardship. They will therefore have an important role to play in referring those in (actual or potential) energy hardship to the relevant agency for follow up.
 - Depending on the measure, some such agencies may also provide an effective delivery mechanism (e.g. some energy efficiency initiatives).
 - However, involvement of such organisations is not a substitute for government-designed and mandated energy hardship interventions.

4.10 Network pricing reform

Network pricing reform will create some tensions due to bill shocks for some consumers – including some low-income consumers. However, it also raises potential opportunities to alter prices to deliver better social, as well as economic, outcomes.

These potential opportunities arise from possible alternative approaches for recovering the ‘residual’ network costs not driven by future consumer demand – of the order of 50% of network costs. Key issues which are worth exploring are:

- Increasing the proportion of bills recovered from fixed charges, rather than variable tariffs based on some measure of consumer demand. This could deliver improved
 - social outcomes, as it would reduce the burden on those suffering greatest energy hardship (i.e. low income + high energy requirements), plus would reduce summer / winter bill volatility

- economic outcomes, by reducing the distortions to the investment decisions made by consumers, which generally cause higher economic costs in the long-run²⁹

This increased recovery via fixed charges rather than variable charges should also apply to the recovery of retail cost-to-serve costs.

- Reconsidering whether existing allocations of residual network costs between residential and business customers are economically justified, noting that there is variation in approach between networks to allocating such residual costs without a clear justification for such differences, but which are resulting in variations in the proportion of costs borne by residential and business consumers.
- Reducing or removing rural / urban network pricing where there is no clear economic efficiency basis for its retention³⁰

However, these are complex and contentious issues, with the residential / business cost allocation issue also suffering from a lack of empirical data. Accordingly, progressing these approaches should be undertaken carefully, including requiring further research and analysis. Detailed consideration of these issues is beyond the scope of this report.

²⁹ Examples of such distorted decisions include:

- Consumers purchasing rooftop solar, when utility-scale renewables (e.g. wind power) delivered over the grid is much cheaper
- Consumers purchasing an internal combustion-engine vehicle, when an electric vehicle would be cheaper.

³⁰ While rural / urban pricing may be cost-reflective in an ‘accounting’ sense, it does nothing to promote consumer decisions that will lower network costs in the long-term. i.e. unless rural communities are to be abandoned en masse, there will be no saving in the costs of providing networks to serve such communities. Instead, rural / urban pricing causes economic and social costs:

- It increases network and retailer cost-to-serve (paid for by consumers) and frustrates retail competition
- It increases the incentive for some consumers to disconnect from the grid by investing in solar+batteries+diesel, yet such disconnection by some will not reduce the need to maintain rural networks
- It exacerbates rural poverty – noting that welfare supplements generally don’t distinguish between such variations in households’ location.

For some very remote rural properties, it may be cost effective to remove the distribution wires and provide electricity services via solar+battery+diesel solutions. However, this is not considered to be best achieved through highly granular (and often extreme) versions of rural / urban pricing.

5 Recommendations

1) Remove the low-fixed charge (LFC) regulations as a matter of priority.

This is because the LFC regulations are causing harm to those in greatest need, and resulting in other significant undesirable social and economic outcomes.

2) Policies and measures aimed at improving the energy efficiency of homes and appliances should continue to be pursued

Energy efficiency initiatives, particularly those targeted at households experiencing energy hardship, are important, and are one of the best approaches to address those situations where poor house condition or inefficient appliances are causing high energy costs.

However, the multi-faceted nature of poor energy efficiency outcomes will require multi-faceted solutions, with tricky design challenges to address in many cases. It is beyond the scope of this study to consider these issues in further detail.

Further, even after all cost-effective energy efficiency measures have been implemented (a multi-year task) it is likely that there will still be significant variations in energy costs faced by low-income households. As such, other energy-related financial support measures are likely to continue to be required.

3) The relative merits of energy-related income supplements, and rebates based on a percentage of consumer bills, should be explored further as the most promising approaches for delivering financial support

The key tension in delivering financial support to those suffering energy hardship relates to:

- delivering support proportional to need (in particular, proportional to variations in energy circumstance); but
- delivering support in a way which does not cause
 - significant unintended consequences (e.g. as per the poor outcomes arising from the LFC regulations) and/or
 - significant implementation costs.

Energy-related income supplements (e.g. winter fuel supplements on a means-tested basis) can be lower-cost to implement than other assistance measures, and have less risk of unintended consequences. However, they struggle to provide support proportional to energy circumstance need, with some households receiving materially less support than they require (and others receiving too much).

Requiring retailers and/or networks to offer specific concessionary 'social tariffs' may theoretically offer more ability to deliver support proportional to need. However, they carry significantly increased risk of unintended consequences (e.g. as has occurred with the LFC), and would be likely to have high implementation costs.

Delivering support in the form of percentage rebates on bills may offer a reasonable balance between these two approaches – i.e. delivering support proportional to need, without the degree of risk of unintended consequences associated with social tariffs.

However, as with all these mechanisms, the devil is in the detail in terms of the specifics of how rebates are implemented. For example, which agency would deliver the rebate:

- Social welfare agencies, having been provided information on bills from retailers; or
- Retailers, having been provided information on who qualifies for the social rebate from social welfare agencies.

Significant coordination and information challenges are likely – including addressing the fact that welfare qualification and receipt is predominantly on an individual basis, whereas energy costs are incurred on a household basis.

Thus, even if percentage rebates on bills may generally be better than social tariffs and energy-related income supplements, it is possible that a poorly-designed rebate mechanism could deliver worse outcomes than a well-designed income supplement mechanism.

Further, as set out below, the nature of outcomes for all these financial mechanisms will also be heavily driven by the approach to funding and targeting the assistance measures.

4) Use broad base of general taxation to fund assistance

The cost of assistance payments will need to be met from taxation, or by raising power prices.

We strongly recommend that funding be raised from the widest base (general taxation) because this causes the least economic distortions, and lowest risk of inadvertently *increasing* costs for some of those for whom support is intended.

If, due to political expediency, general taxation funding is not pursued, the next best alternative would be a broad national levy across all electricity consumers (residential, commercial and business).

The most distorting option, with the greatest risk of inadvertently harming some of those for whom support is intended, would be to place an obligation on individual electricity distributors or retailers to fund payments – i.e. the current approach of the LFC.

5) Ensure that some form of deprivation-based metric or indicators form the basis of targeting, rather than simply relying on overly-simple proxies

Targeting is critically important to the success of all financial support mechanisms.

We recommend that deprivation indicators (e.g. community service cards, etc) form some of the basis for qualification for financial support, rather than solely relying on simpler proxies (e.g. age, or amount of electricity consumed). Support measures which have solely relied on crude proxies have generally resulted in the greatest unintended adverse outcomes – including increasing costs for some of those for whom support is intended.

It is beyond the scope of this report to consider which deprivation indicator, or combination of indicators, is most appropriate. However, national indicators which are already used to provide welfare support are considered more likely to:

- be cost-effective to implement as qualification criteria; and
- deliver results which are more consistent with other policy mechanisms aimed at providing assistance for those whose income circumstances justify support.

Where support is to be delivered via retailers – even if they are ‘just’ the conduit to administer percentage rebates on bills – there may be merit in having these qualifying indicators recorded in a central, ICP-based database, rather than in individual retailers’ billing systems. However, as noted above, there are likely to be information and coordination challenges with any approach which involves retailers.

6) Consider carefully the potential risks of a social retailer relative to alternative approaches to delivering desired outcomes

It is not clear that developing a social retailer would be the best approach to managing energy hardship:

- It could cost a lot to develop and operate
- It risks 'crowding out' new entrant retailers and distorting competition and innovation in the retail markets generally
- It may not be able to offer the best deals for its customers, given that it could be limited in its ability to offer 'bundled' products including gas, telecoms, internet etc.

Further, it is not clear why all of the stated objectives of a social retailer could not be achieved through administering through retailers – i.e.

- Working with the industry to develop and monitor industry protocols around issues such as debt management, smooth pay options, and ensuring consumers facing budgeting challenges are not on inappropriate tariffs (e.g. those with high prompt-payment discounts) – noting that most retailers already
- Having retailers implement a social tariff and/or rebate mechanism (if either of these was deemed the best option to deliver energy hardship financial support)

7) Further work on measuring the problem is likely to assist design of appropriate solutions

It is considered that better understanding of the drivers and scale of energy hardship, will better inform the design of approaches to address energy hardship and how to ensure appropriate targeting and delivery. There are a number of initiatives underway, including from agencies such as Stats NZ, which are providing valuable insights in this respect.

8) Inter-agency coordination is important

The multi-faceted nature of energy hardship – in particular, the combination of income, health, and energy circumstance – means that there are likely to be multi-faceted aspects to the solution. This will likely require involvement of different private and public agencies in the energy and social sectors.

9) Explore what options for network pricing reform may deliver better social, as well as economic, outcomes.

Network pricing reform will create some tensions due to bill shocks for some consumers – including some low-income consumers. However, it also raises potential opportunities to alter prices to deliver better social, as well as economic, outcomes. Key issues which are worth exploring are:

- Increasing the proportion of network (and retail) supply costs recovered via fixed charges, rather than variable tariffs.
- Reconsidering whether existing allocations of residual network costs between residential and business customers are economically justified
- Reducing or removing rural / urban network pricing where there is no clear economic efficiency basis for its retention

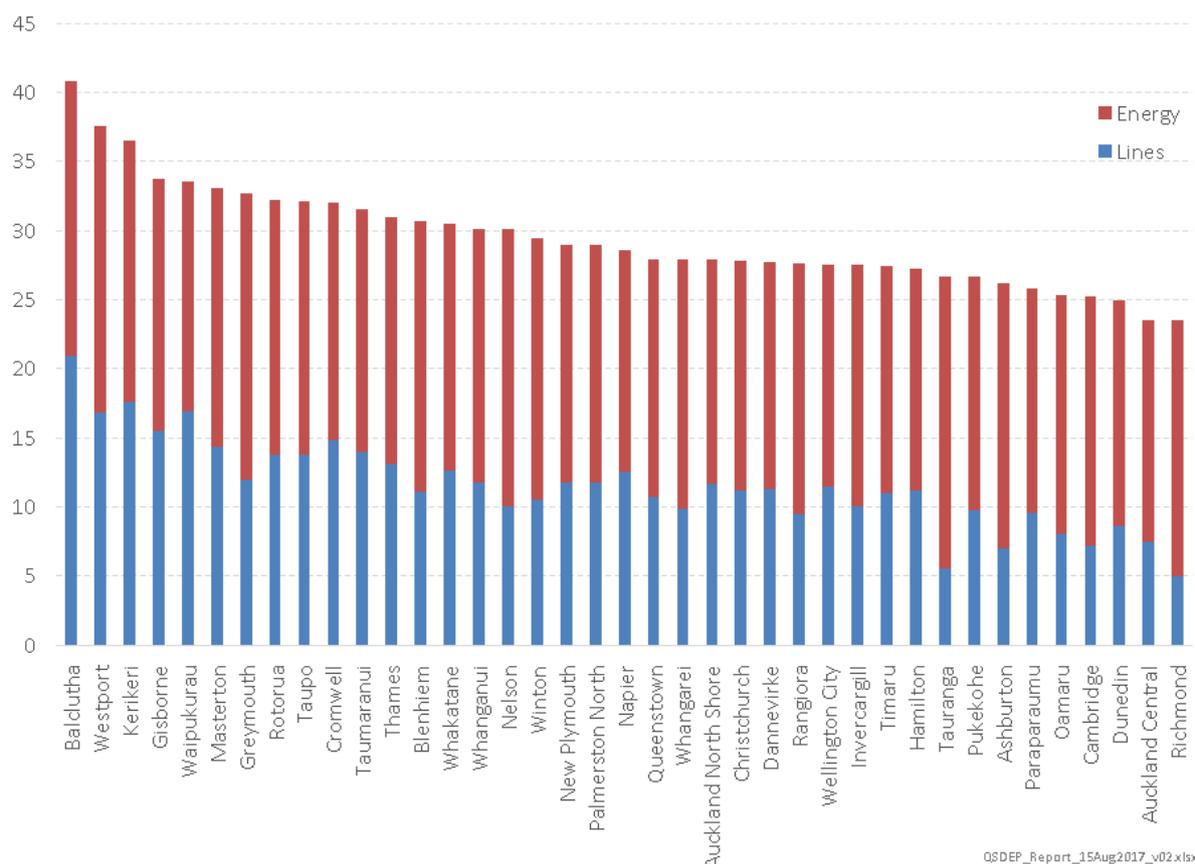
However, these are complex and contentious issues, with the residential / business cost allocation issue also suffering from a lack of empirical data. Accordingly, progressing these approaches should be undertaken carefully, including requiring further research and analysis.

Appendix A. Analysis of the range of energy costs faced by low-income households

General regional variations in electricity price and average residential consumption

Figure 1 shows that there is significant regional variation in the price of electricity faced by residential electricity consumers.

Figure 1: Average residential electricity prices (c/kWh, incl. GST)³¹



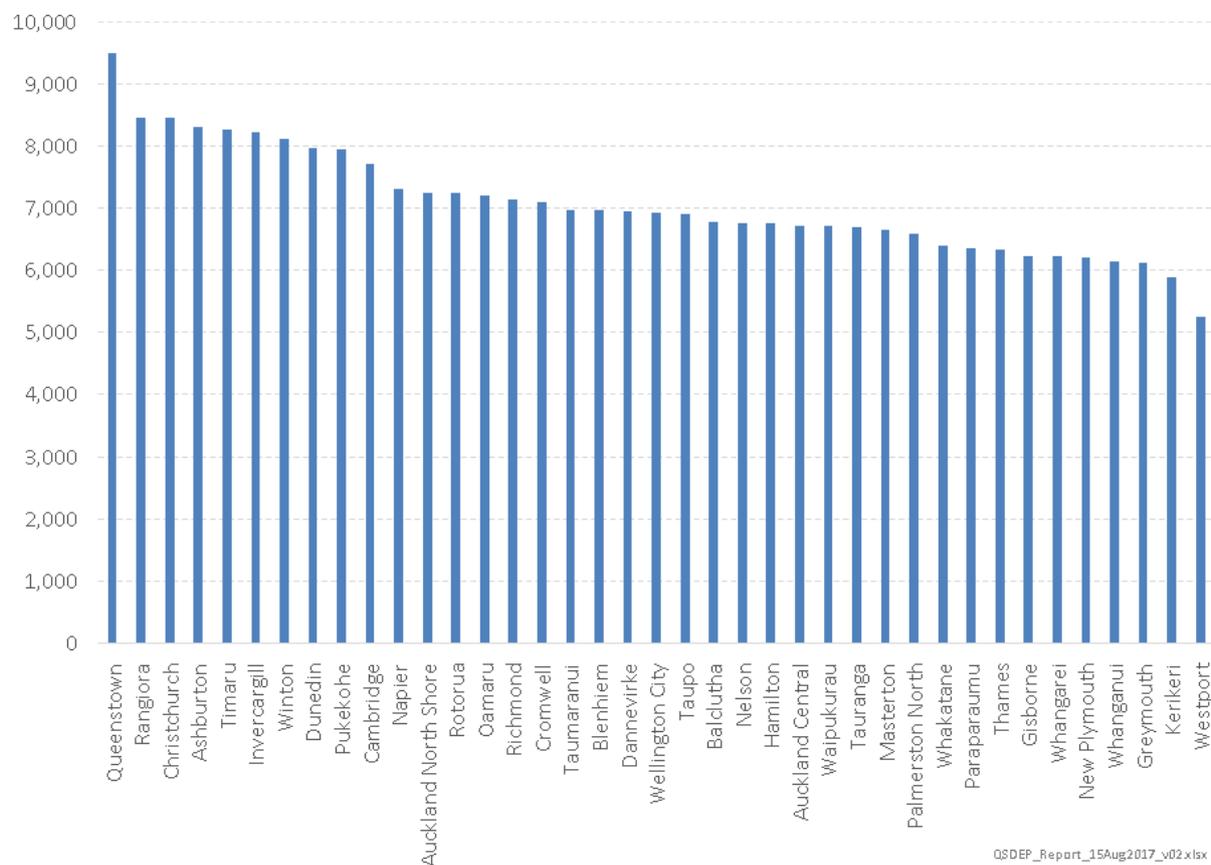
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³¹ Source: 15 August 2017 Quartely Survey of Domestic Electricity Prices, MBIE. As set out by MBIE these figures represent prices for “a typical New Zealand household ... which has the following attributes:

- They consume an average of around 22 kWh per day. This equates to an annual consumption of 8000 kWh.
- They choose the lowest publicly advertised retail plan available with each retailer without a fixed term contract. For a customer using 8000 kWh in a year, this is always a ‘low user’ plan with low fixed charges.
- They pay their bill on time and receive any available prompt payment discounts (including electronic or online only discounts).
- They solely use electricity for their water heating and have a ripple controlled electricity meter.
- They are on the most common, controlled, retail metering configuration in each town and city we monitor.

Figure 2 shows that there is significant regional variation in the amount of electricity consumed by the average residential household. This reflects factors such as climate, access to alternative fuels (e.g. natural gas or wood), and average age and type of housing stock (houses, apartments, etc.).

Figure 2: Average residential electricity consumption (kWh/yr)



Source: Concept analysis based on Electricity Authority data

Relationship between deprivation and total consumption

A recent Concept study³² analysed consumption data provided for over 100,000 ICPs and compared with census data on deprivation. The results for five network areas (Auckland, Wellington, Christchurch, Hawkes Bay, Dunedin) are shown below.

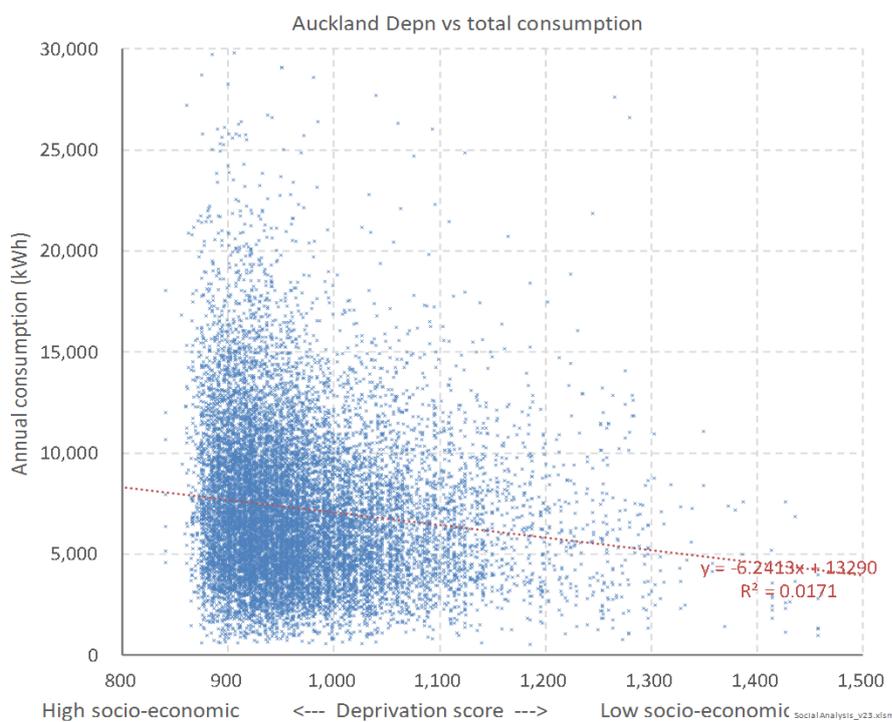
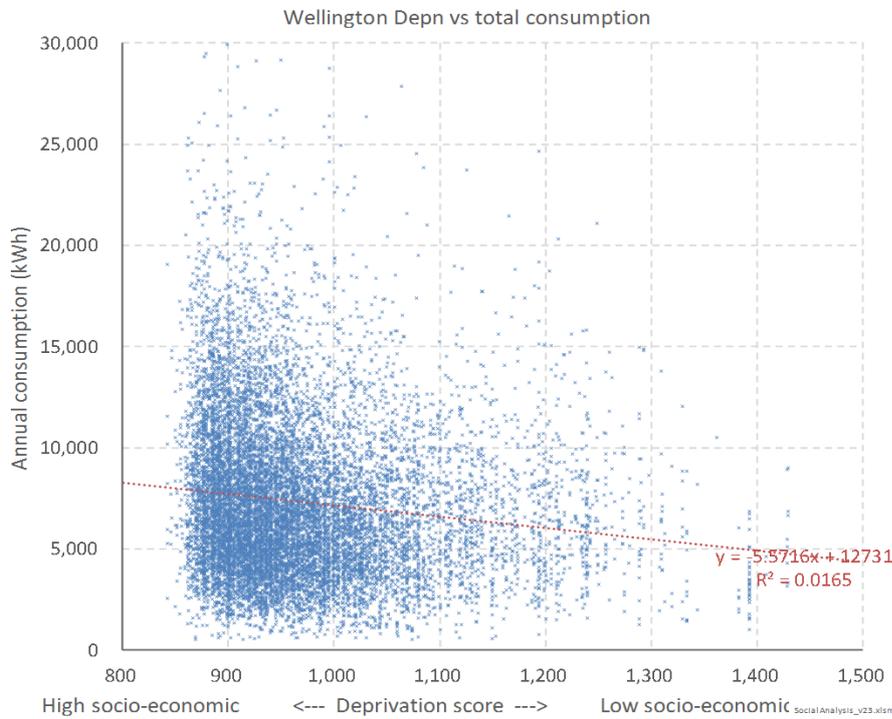
They indicated that there is some positive correlation with socio-economic status and electricity consumption. i.e. in *general* higher socio-economic households consume more than lower socio-economic households. This is shown in the figures below which expresses this relationship as being an *inverse* correlation between deprivation score and consumption – noting that the higher the deprivation score, the lower the socio-economic status.

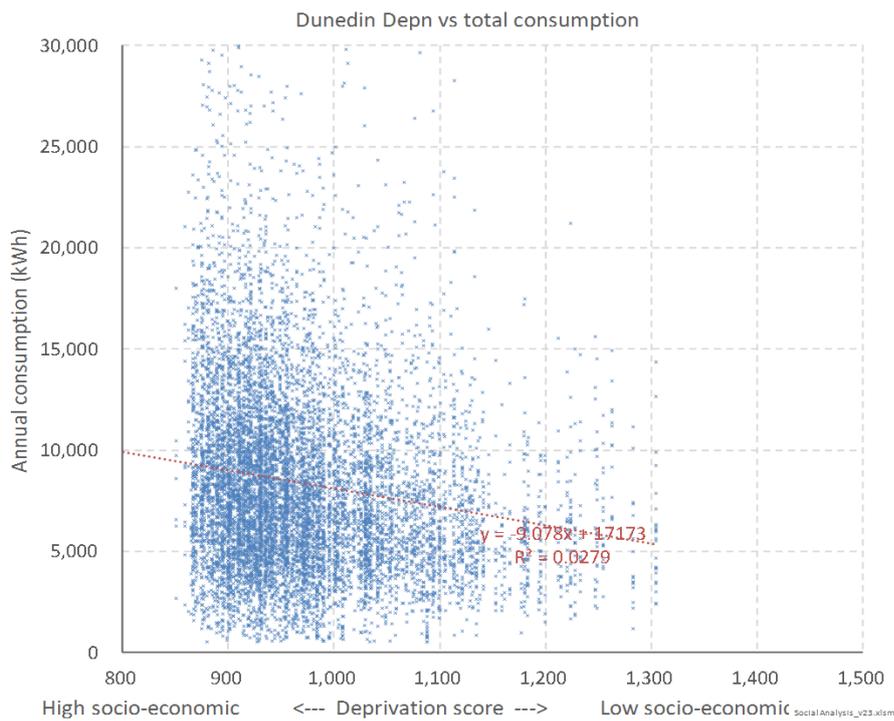
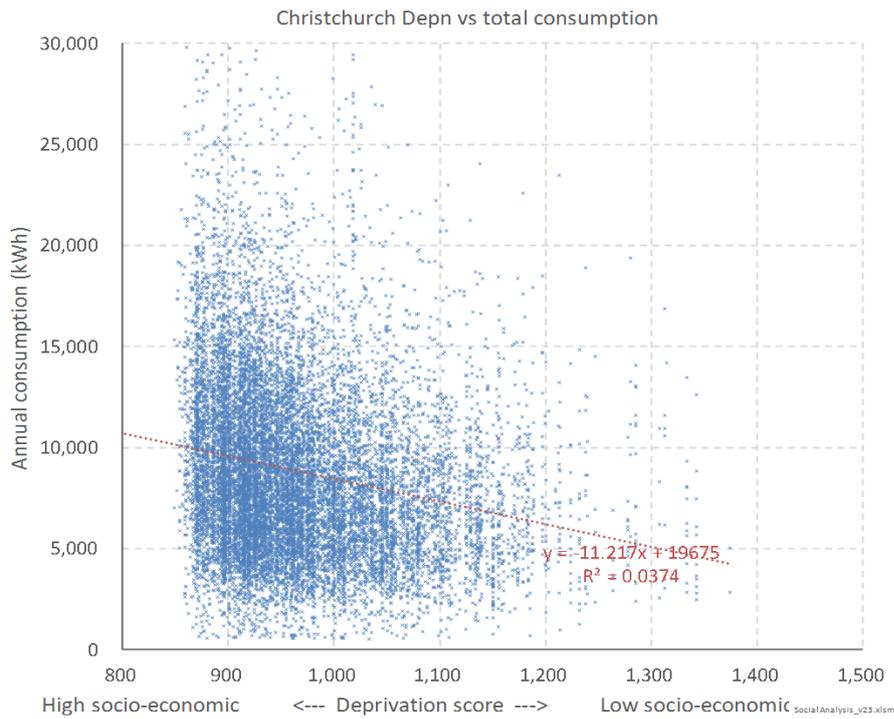
However, crucially in the context of considering the effect of the low-fixed charge regulations, this correlation is not very strong. There are a significant number of consumers in the most deprived decile who have consumption that is considerably above the average, and likewise some very affluent consumers who have much lower than average consumption.

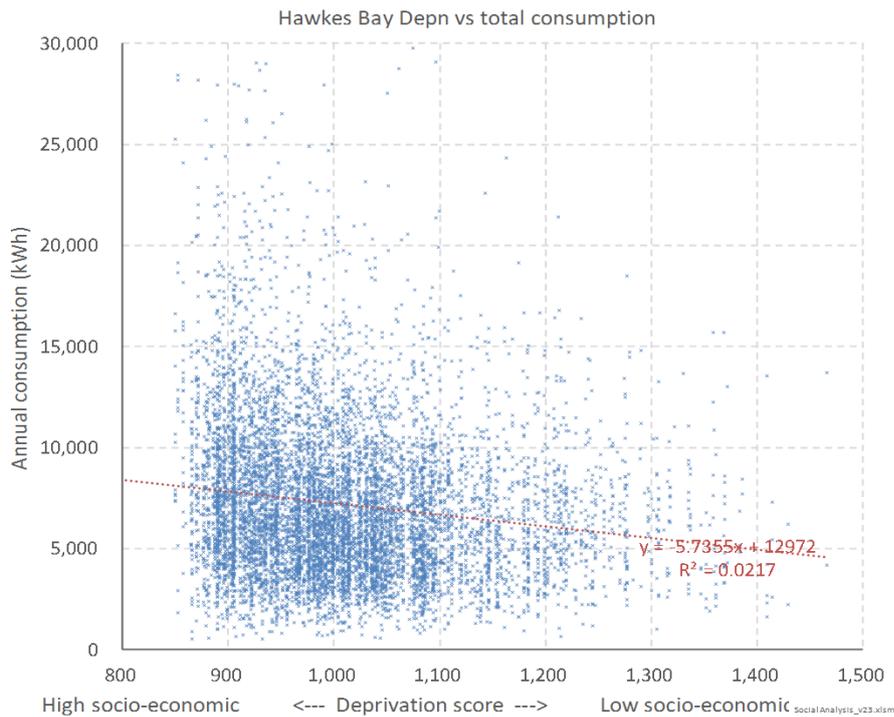
³² *New Technologies Study - Part 3: Social impacts*, March 2017, Concept Consulting Group Ltd. Available here: www.concept.co.nz/publications

Section 2.3.2 sets out why factors such as house condition and personal circumstance can give rise to households facing the same degree of deprivation having such a large difference in energy consumption requirements.

Figure 3: Scatter plot relationships between household deprivation and electricity consumption

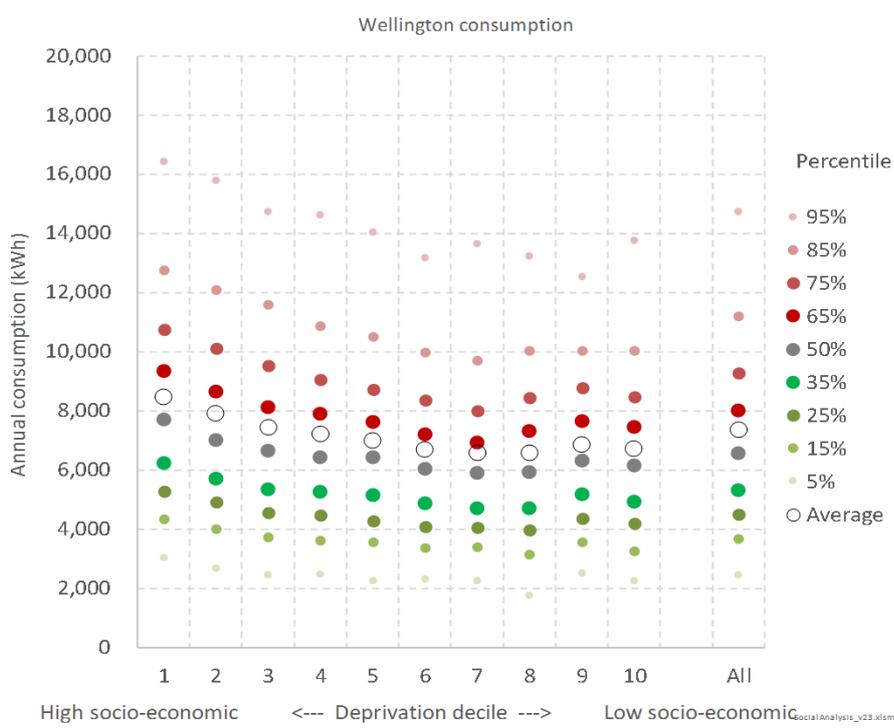


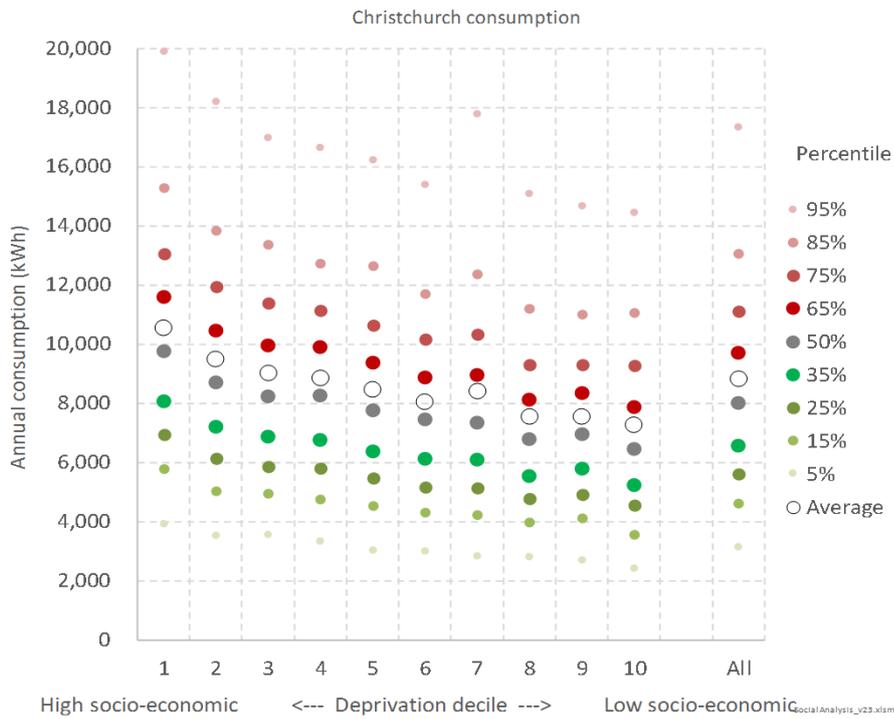
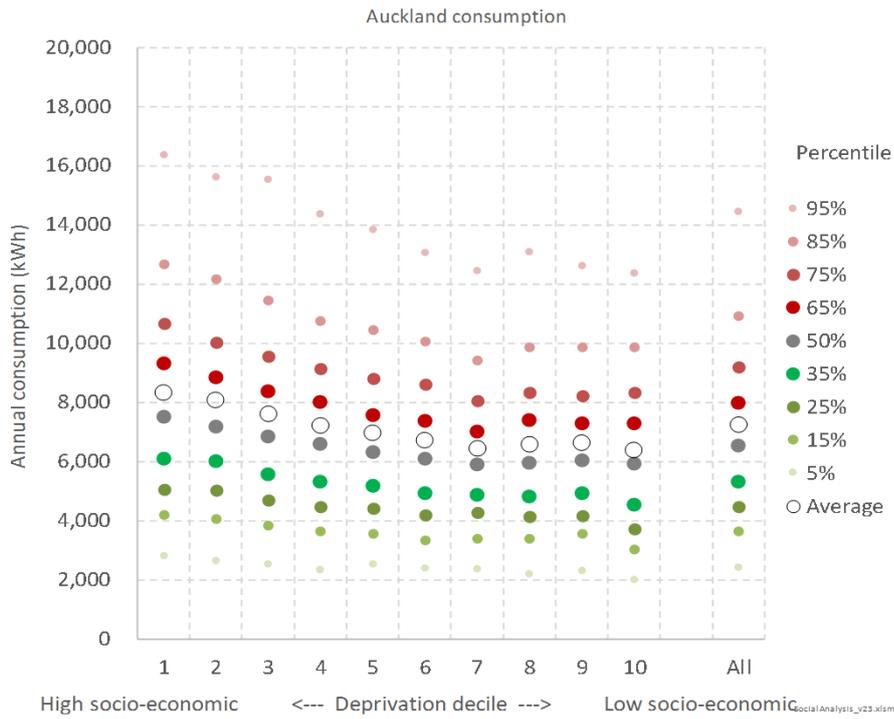


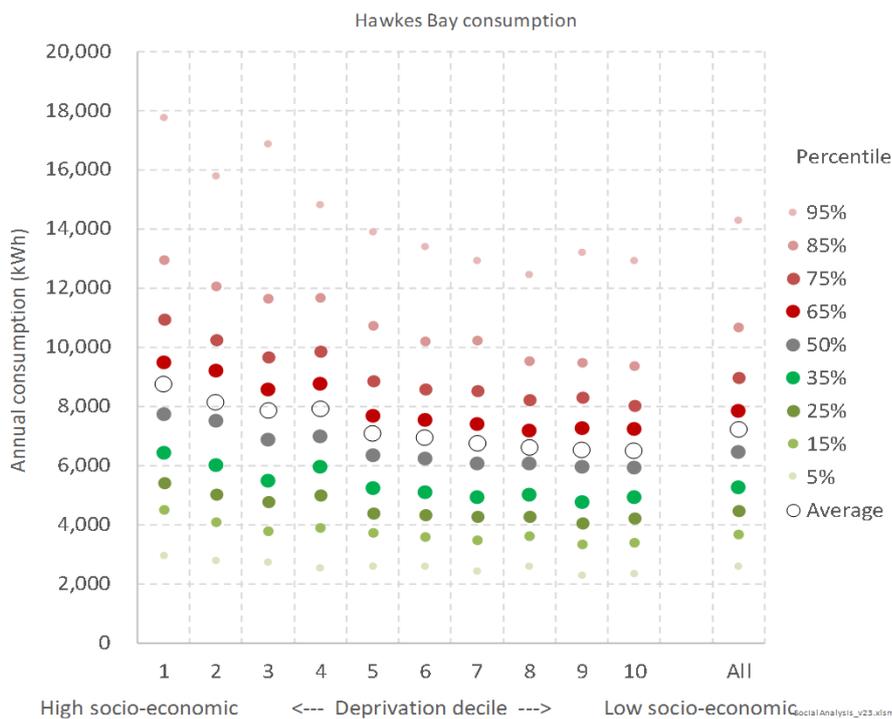
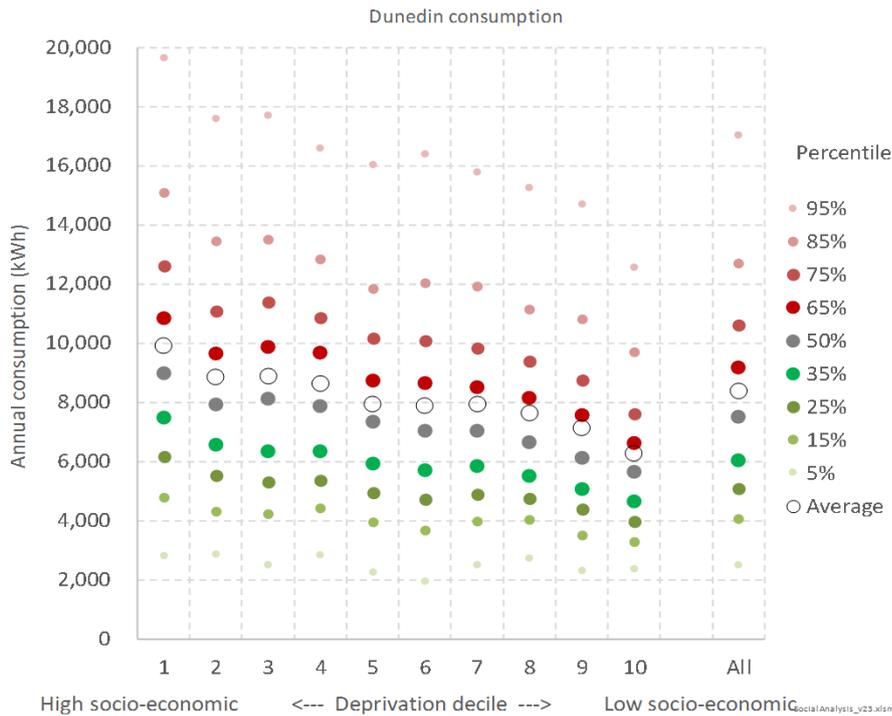


This data is shown in a different form, focussing on the different deprivation deciles, in the following graphs.

Figure 4: Summary relationships between household deprivation and electricity consumption







Analysis on range of electricity costs faced by households in the lowest deprivation decile

Concept has undertaken some simple modelling which

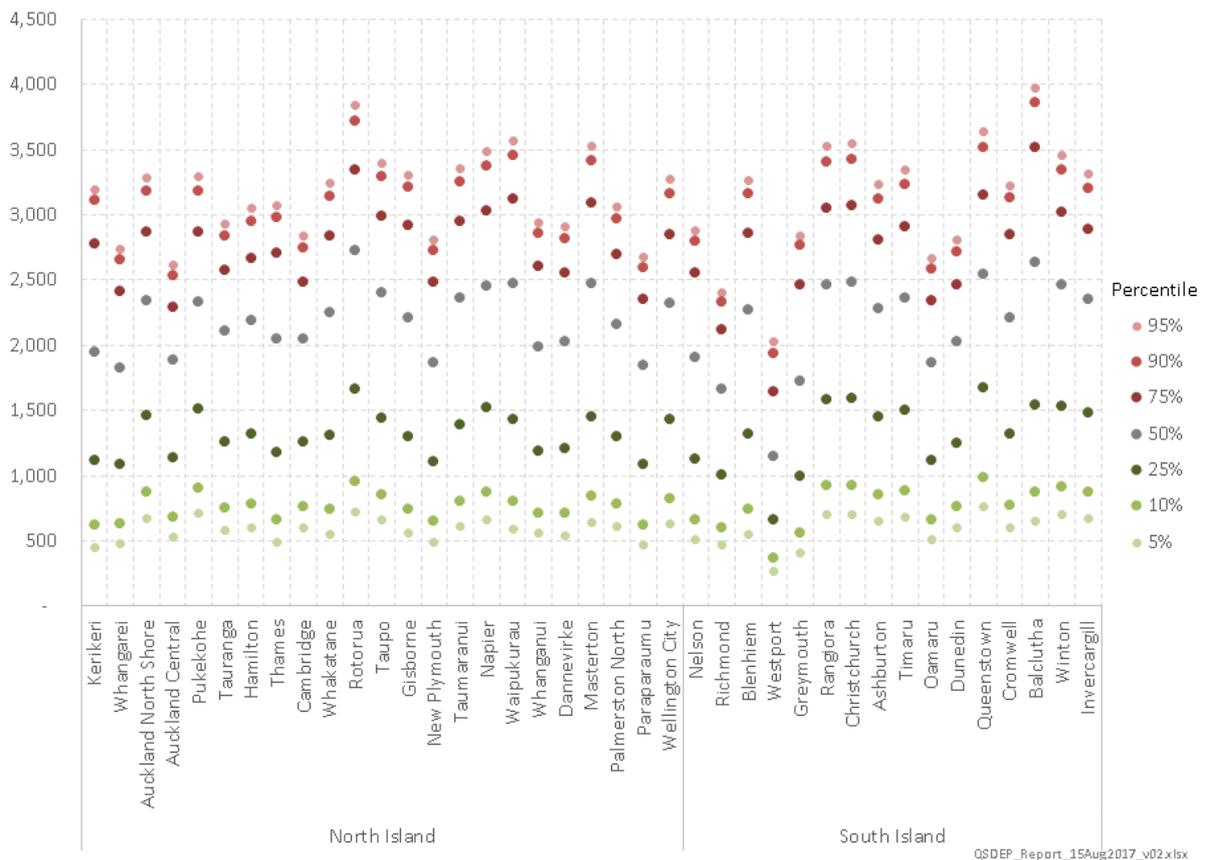
- Uses the electricity price data set out in Figure 1³³

³³ The analysis converted the totally variablised MBIE price data, into fixed + variable tariff structures for LFC and 'standard' tariffs.

- Develops distributions of electricity consumption for households in the lowest income decile for the different regions in New Zealand, using the data set out in Figure 2 and Figure 4
- Combines the above data to produce distributions of annual electricity bills for different households

The results of the analysis are shown in Figure 5.

Figure 5: Simple estimates of variation in electricity bills faced by households in the lowest deprivation decile



This analysis indicates that across New Zealand the range in electricity bills for consumers in the lowest deprivation decile is approximately \$3,700 per year. i.e. some consumers in the lowest decile will face annual electricity bills \$3,700 per year more than other consumers in the lowest decile.