

# **The impact of carbon prices on Victorian and Australian households**

**A report for the  
Brotherhood of St Laurence**

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## 1. Introduction

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The objective of this paper is to assess the consequences of the adoption of a universal carbon pricing scheme as a core instrument in combating global warming. By universal is meant a common carbon price imposed on Victoria, the rest of Australia and the rest of the world. By carbon price is meant either a tax levied on the CO<sub>2</sub> content of any product, e.g. \$25 a tonne of carbon, or a cost of carbon that is imposed from the market clearing price of an emission's trading system.

In terms of direct macroeconomic costs, it does not matter whether the carbon price is determined from a tax determined by Governments, or by a market price with Government determining the CO<sub>2</sub> quotas that will drive the carbon price outcomes.

In terms of the effective distribution of the costs of carbon pricing throughout the economy, the mechanism selected for determining the carbon price is important. Under an emissions trading system, efficient energy producers benefit because they can sell CO<sub>2</sub> permits to less efficient producers. However, if Governments gave the initial CO<sub>2</sub> permits away, as is the case with the current European Emissions Trading Scheme, in perpetuity (with a global discount factor applied over time to reduce the stock of permits on issue to reach global CO<sub>2</sub> targets), then there would not be much net additional resources available to Governments to compensate those groups that were disproportionately/inequitably affected by the price of carbon.

If, on the other hand, a tax is the mechanism for pricing carbon, then Governments collect the revenue and will have far greater capacity to compensate those inequitably impacted by the scheme. The disadvantage of this is that Governments will have to make all the decisions in terms of the trade of economic efficiency (helping businesses to adjust to a lower carbon intensive world) and economic equity (helping households adjust to a lower carbon intensive world).

Clearly a compromise is required with the resources more evenly distributed between businesses and Governments with market decisions driving the businesses' efficiency agenda. One way of doing this is to price the initial issuing of permits at near the price that would result from the initial marginal carbon trades. Governments would collect this revenue. This has the drawback of imposing an initial up-front carbon cost on all businesses, which would be maintained by limiting the duration of a permit to a year.

Under a market mechanism, that is, CO<sub>2</sub> emissions trading scheme, solution the willingness of Governments to price the initial issuing of permits, or alternatively who are issued the permits (such as lower income households) will depend, in part, on the estimates of the resources required for social equity. The current design of the Australian State Government Emissions Trading System reflects a consideration of the issues.

The objective of this paper is not to design an optimal Emissions Trading System, but to provide part of the information that will influence its design.

This will be done by:

- (i) estimating the carbon content of different categories of expenditure that constitute household budgets;
- (ii) estimating the expenditure patterns of different household types; and
- (iii) combining (i) and (ii) to obtain estimates of the carbon consumption of different household types and, therefore, the impact of carbon taxes on different household types.

NIEIR's household database consists of 43 household types. The household types are overlapping. Hence, for this study 20 of the 43 household types have been selected to give a representative range of households across the spectrum. The overall average household is also included.

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## 2. Estimating the carbon content of expenditures in the Victorian economy – 2001

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This study takes off from the study NIEIR did for the Victorian Department of Sustainability and Environment, titled "*The total CO<sub>2</sub> emission content of Victorian industries – 2001*". This study used an input-output framework to develop estimates of the carbon content of industry output and expenditures for the Victorian economy. The methodology for doing this is reproduced in Appendix A.

The objective of the analysis was to estimate the direct and indirect carbon content of goods and services produced or sold into Victorian markets. Any good or service will have a direct carbon content from the petroleum, gas, electricity, etc. used in producing the good or service. However, any good or service will use other goods and services in its production. These other goods and services will have a carbon content of production that will be added to the direct carbon content of the good or service. Thus, the total carbon content of a good or service will be greater than the direct carbon content. This means that a carbon price will have a cascading impact through the industrial structure having the well known multiplier impact on final prices.

This study used the methodology of the Department of Sustainability and Environment study to estimate the direct and indirect carbon content of private consumption in Victoria. The resulting estimates are shown in Table 1. The industry classifications in the table are the industries of the input-output framework analysis that are based on the National Australian Bureau of Statistics Input-Output Table.

The bottom line is that in 2001 in Victoria 62 million tonnes of carbon were consumed by Victorian households via household consumption expenditures. Of this total 40 million tonnes were sourced from Victorian produced goods and services and 22 million tonnes from interstate and foreign sourced production.

Almost half, or 28 million tonnes, of carbon comes from the direct use of petroleum products, gas or electricity. The remaining 32 million tonnes come from the petroleum products, gas, electricity, coal, etc. embodied in the complete range of goods and services sold into the Victorian consumer household market. In 2001, the average carbon consumption of Victorian households from private consumption was 36.5 tonnes per annum if the CO<sub>2</sub> content of total consumption expenditure is divided by the number of occupied dwellings.

One issue of interest is, how much of this carbon comes from Victorian sources of carbon. This will not be the 39.8 million tonnes since Victorian produced goods and services will include interstate and foreign sources of carbon. The average rule is that excluding the direct use of petroleum, gas and electricity, approximately two thirds of the carbon in Victorian produced goods comes from Victorian sourced carbon. This would mean that the 39.8 million tonnes is reduced to 34 million tonnes in terms of Victorian sourced carbon. Thus, 55 per cent of the total carbon content of Victorian household consumption expenditure is sourced from Victorian based energy production.

In order to estimate the interstate carbon content of expenditures it was necessary to duplicate the Victorian analysis at the national level. The national analysis results were used below to estimate the CO<sub>2</sub> content of expenditures for all Australian households.

**Table 1 Carbon content of Victorian private consumption expenditure ('000 tonnes) – 2001**

	Victorian sources of carbon	Interstate and foreign sources of carbon	Total carbon content	CO <sub>2</sub> content in tonnes per \$ of consumption expenditure
Sheep	1.1	0.4	1.5	0.00029
Grains	0.0	0.0	0.0	0.00000
Beef cattle	2.4	0.0	2.4	0.00020
Dairy cattle	0.2	0.1	0.3	0.00051
Pigs	0.3	0.2	0.5	0.00038
Poultry	19.3	10.3	29.6	0.00034
Other agriculture	205.5	156.9	362.3	0.00032
Services to agriculture; hunting and trapping	2.2	0.0	2.2	0.00024
Forestry and logging	1.2	0.7	1.9	0.00029
Commercial fishing	49.7	130.2	180.0	0.00058
Coal; oil and gas	0.0	2358.7	2358.7	0.01386
Iron ores	0.0	0.0	0.0	0.00000
Non-ferrous metal ores	0.0	0.0	0.0	0.00000
Other mining	0.4	0.0	0.4	0.00128
Services to mining	0.0	0.0	0.0	0.00000
Meat and meat products	337.5	134.6	472.1	0.00051
Dairy products	471.7	22.8	494.5	0.00064
Fruit and vegetable products	346.9	133.2	480.0	0.00052
Oils and fats	119.9	25.3	145.2	0.00043
Flour mill products and cereal foods	36.8	156.7	193.6	0.00050
Bakery products	150.0	121.2	271.2	0.00038
Confectionery	55.4	35.3	90.7	0.00033
Other food products	140.1	278.3	418.4	0.00044
Soft drinks, cordials and syrups	189.0	222.7	411.8	0.00064
Beer and malt	175.1	23.2	198.3	0.00031
Wine and spirits	3.0	72.8	75.8	0.00024
Tobacco products	111.5	28.0	139.4	0.00031
Textile fibres, yarns and woven fabrics	48.0	26.8	74.8	0.00062
Textile products	141.9	120.5	262.4	0.00069
Knitting mill products	0.2	225.9	226.1	0.00149
Clothing	127.0	566.7	693.8	0.00071
Footwear	1.9	104.4	106.2	0.00041
Leather and leather products	1.1	2.4	3.5	0.00043
Sawmill products	0.2	0.0	0.2	0.00064
Other wood products	0.0	69.5	69.5	0.00078
Pulp, paper and paperboard	43.1	65.4	108.5	0.00218
Paper containers and products	92.5	121.2	213.8	0.00105
Printing and services to printing	118.3	69.9	188.2	0.00085
Publishing; recorded media etc	122.4	111.5	233.9	0.00042
Petroleum and coal products	1482.4	5929.5	7411.8	0.00487
Basic chemicals	34.5	656.0	690.5	0.00223

<b>Table 1 Carbon content of Victorian private consumption expenditure ('000 tonnes) – 2001 (continued)</b>				
	<b>Victorian sources of carbon</b>	<b>Interstate and foreign sources of carbon</b>	<b>Total carbon content</b>	<b>CO<sub>2</sub> content in tonnes per \$ of consumption expenditure</b>
Paints	0.5	0.0	0.5	0.00093
Medicinal and pharmaceutical products, pesticides	14.7	226.5	241.2	0.00033
Soap and detergents	29.5	129.0	158.4	0.00071
Cosmetics and toiletry preparations	26.9	275.8	302.7	0.00085
Other chemical products	15.6	3.7	19.3	0.00067
Rubber products	6.0	29.4	35.4	0.00050
Plastic products	75.7	118.8	194.5	0.00095
Glass and glass products	3.6	7.4	11.0	0.00081
Ceramic products	0.0	83.8	83.8	0.00221
Cement, lime and concrete slurry	0.0	0.0	0.0	0.00000
Plaster and other concrete products	0.0	0.0	0.0	0.00000
Other non-metallic mineral products	0.0	0.0	0.0	0.00000
Iron and steel	0.0	0.0	0.0	0.00000
Basic non-ferrous metal and products	11.3	13.9	25.2	0.00347
Structural metal products	0.0	0.0	0.0	0.00000
Sheet metal products	13.3	11.6	24.9	0.00148
Fabricated metal products	0.0	133.2	133.2	0.00088
Motor vehicles and parts; other transport equipment	628.4	949.6	1578.0	0.00036
Ships and boats	0.0	96.5	96.5	0.00062
Railway equipment	0.0	0.0	0.0	0.00000
Aircraft	0.0	15.6	15.6	0.00087
Photographic and scientific equipment	22.3	138.0	160.3	0.00029
Electronic equipment	86.2	471.6	557.8	0.00076
Household appliances	42.9	556.1	599.0	0.00083
Other electrical equipment	1.9	92.9	94.9	0.00111
Agricultural, mining etc. machinery	27.9	27.8	55.7	0.00084
Other machinery and equipment	0.5	3.6	4.0	0.00058
Prefabricated buildings	0.0	0.0	0.0	0.00000
Furniture	99.3	277.6	376.9	0.00046
Other manufacturing	75.2	153.4	228.6	0.00041
Electricity supply	15933.0	0.0	15933.0	0.00869
Gas supply	4244.0	0.0	4244.0	0.02205
Water supply; sewerage and drainage services	492.5	7.5	500.0	0.00044
Residential building	0.0	0.0	0.0	0.00000
Other construction	0.0	0.0	0.0	0.00000
Wholesale trade	698.7	202.2	900.9	0.00030
Retail trade	5015.8	181.0	5196.8	0.00041
Mechanical repairs	296.7	78.7	375.4	0.00019
Other repairs	3.5	133.6	137.1	0.00046

**Table 1 Carbon content of Victorian private consumption expenditure ('000 tonnes) – 2001 (continued)**

	Victorian sources of carbon	Interstate and foreign sources of carbon	Total carbon content	CO <sub>2</sub> content in tonnes per \$ of consumption expenditure
Accommodation, cafes and restaurants	1225.6	904.0	2129.6	0.00036
Road transport	0.0	3092.7	3092.7	0.00238
Rail, pipeline and other transport	0.0	258.8	258.8	0.00089
Water transport	1057.2	0.0	1057.2	0.00438
Air and space transport	703.7	964.1	1667.8	0.00095
Services to transport; storage	22.7	9.2	31.9	0.00015
Communication services	484.5	9.8	494.3	0.00023
Banking	111.2	1.2	112.4	0.00004
Non-bank finance	39.7	0.1	39.7	0.00006
Insurance	100.1	0.0	100.1	0.00003
Services to finance, investment and insurance	21.1	10.7	31.8	0.00005
Ownership of dwellings	797.5	3.7	801.2	0.00005
Other property services	15.5	11.4	27.0	0.00009
Scientific research, technical and computer services	1.3	0.0	1.3	0.00018
Legal, accounting, marketing and business management services	135.0	2.1	137.1	0.00015
Other business services	45.0	11.0	56.0	0.00019
Government administration	85.1	14.5	99.5	0.00041
Defence	0.0	0.0	0.0	0.00000
Education	457.8	49.0	506.8	0.00019
Health services	393.6	46.8	440.3	0.00012
Community services	212.4	0.5	212.9	0.00031
Motion picture, radio and television services	5.9	0.1	6.0	0.00009
Libraries, museums and the arts	11.2	0.2	11.5	0.00013
Sport, gambling and recreational services	627.6	178.8	806.4	0.00026
Personal services	441.1	20.0	461.1	0.00030
Other services	380.2	112.5	492.7	0.00019
<b>Total</b>	<b>39873.7</b>	<b>22100.9</b>	<b>61974.6</b>	<b>0.00064</b>

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### 3. The selection of household types

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The construction of household types is obtained by manipulating the Australian Bureau of Statistics' Household expenditure Survey (HES) database. The selection is done by stating the criteria for each household type and then finding the number of households in the HES database that satisfy the criteria.

For any given unit record (i.e. household) in the database the expenditures across over 600 expenditure categories are given. For the selected household type the expenditures are averaged across the selected number of households and the average expenditure by category for the household type are then aggregated into the 106 industries of the Australian Bureau of Statistics' Input-Output Tables.

Given the household characteristics and the 1 per cent sample data provided from the Census, the number of households in each household type is then estimated at the State and regional level.

For this study twenty household types are selected, along with the overall average household type.

The criteria used to select each household type are as follows.

#### ***Household type 1: Working age security dependent family type one***

The characteristics of social security dependent family type 1 are set out below.

The principle source of household income is derived from the following:

- (i) disability support pension;
- (ii) unemployment benefits;
- (iii) education and sickness benefits;
- (iv) other government pensions and benefits;
- (v) zero weekly income from work;
- (vi) some other private income;
- (vii) the household has dependent children;
- (viii) not a retired household (that is age of household head is not greater than 55); and
- (ix) no household member works.

#### ***Household type 2: Working age social security dependent family type two***

The characteristic of the household type is one where total weekly income from government benefits as a percentage of working household employee income exceeds 30 per cent. Also:

- (i) the household has dependent children;
- (ii) the household is not a retired household (that is, the age of the household head is not greater than 55); and

- (iii) no household member receives a Veteran Affairs pension, Age pension or Overseas pension or benefit.

***Household type 3: Poor family households***

Poor households are a sub-set of Type 1 households, with the exception that at least four of the following conditions are met:

- could not afford to have a night out once a fortnight, or
- could not afford brand new clothes, or
- spends more money than receives, or
- could not afford to pay gas, electricity or telephone bills, or
- pawned or sold something, or
- went without means, or
- was unable to heat the home due to a shortage of money, or
- had cash flow problems during the past year.

As will be seen below, poor households make up the bulk of the social security dependent family household Type 1. This household type constitutes 76 per cent of household Type 3.

***Household type 4: Non-working income dependent working age families***

This household type is one where unearned income (including government benefits), as a per cent of total gross household income, exceeds 30 per cent. Also:

- (i) the household has dependent children;
- (ii) the household is not a retired household; and
- (iii) no other family members work.

***Household type 5: Age pension household***

This household type receives:

- (i) Veteran Affairs pension;
- (ii) Age pension; or
- (iii) Overseas pension.

***Household type 6: Employed families***

These are households with dependent children where the principle source of income is from work.

***Household type 7: Other non-retired households***

Households without dependent children (single or couples) either in employment or not in employment.

***Household type 8: Home owners***

Households who own their own homes. That is, do not pay rent or have a mortgage.

***Household type 9: Home renters***

Households who pay rent.

***Household type 10: Mortgage households***

Households who are paying off a mortgage.

***Household type 11: Low income working age households***

Households with incomes of less than \$60,000, in 2000 prices, where the household head is of working age.

***Household type 12: DINKS***

Couple households without children where both are working.

***Household type 13: Wage and salary households***

Households where the principle source of income is from wages and salaries.

***Household type 14: Self-employed households***

Households where one or more members are self-employed.

***Household type 15: Low skilled households***

Households with no post school qualifications.

***Household type 16: Intermediate skilled households***

Household with TAFE or equivalent qualifications.

***Household type 17: Trade occupation households***

Household head in a trade occupation (that is, a higher TAFE qualification).

***Household type 18: High skilled households***

Households with a tertiary education qualification.

***Household type 19: Management/Professional households***

Household with household head in a management or professional occupation.

***Household type 20: High income tertiary educated households***

Households where household head has tertiary qualification and also relatively high income.

***Household type 21: All household average***

Average of all households.

It can be seen from the above criteria that the household types will be overlapping. Clearly poor households are a segment of social security dependent households Type 1. Also, home owning households will include retired, employed and social security dependent households. The same is true for households that rent.

**3.1 Household expenditure by industry**

For 2001 the translation of expenditures by household types by input-output industries required finding the adjustment factor by industry for total expenditures from the HES data by input-output indicators, as compared to the total expenditures from the Victorian input-output tables by industry.

In the main the adjustment factor was less than 1 because the input-output table expenditures exclude indirect taxes, transport costs and distribution costs. These costs, however, have been put back into the analysis as the direct contribution of the rental, wholesale and transport sectors to Victorian consumption.

Table 2 shows the results for the 20 Victorian households in terms of their average expenditure in broad industry classes. These industry classes are derived by aggregating the 106 industry classes in the input-output tables.

**Table 2 Average weekly expenditure by household types (excluding actual and imputed rent) by broad industry groups – \$2006**

	Agri- culture	Mining	Manufac- turing	Electricity , gas and water	Building and con- struction	Wholesale, retail and repairs	Transport	Commun- ication	Finance	Business services	Community services	Recreation and personnel services	Total
Working age social security dependant family type one	14.3	0.9	212.5	35.5	0.0	112.6	21.4	26.6	39.0	5.6	43.8	39.6	551.7
Working age social security dependant family type two	16.8	1.1	244.8	39.1	0.0	160.7	23.6	29.8	47.8	11.5	55.5	59.5	690.3
Poor family households	11.5	0.9	189.7	34.6	0.0	105.8	18.2	24.2	36.0	5.3	47.5	33.1	506.9
Non working income dependant families of working age	18.8	1.3	284.2	42.3	0.0	196.4	34.9	31.2	60.3	16.8	76.8	72.0	834.9
Age pension households	19.7	1.1	222.8	37.6	0.0	174.5	46.5	22.0	59.9	16.1	79.0	87.5	766.8
Employed families	27.0	2.0	417.8	57.2	0.0	329.3	55.3	37.3	106.3	20.5	133.4	141.4	1327.5
Other non retired households	17.2	1.4	300.5	40.0	0.0	251.3	59.0	30.8	80.4	19.5	70.5	92.5	963.1
Home owning households	24.7	1.4	306.8	48.5	0.0	248.3	57.1	26.5	87.9	24.0	70.5	115.4	1011.1
Home renter households	13.2	1.1	215.0	23.7	0.0	161.7	38.1	28.7	45.1	12.8	53.9	47.0	640.2
Households with mortgages	22.4	1.8	375.9	55.5	0.0	308.2	59.2	35.0	96.0	22.2	96.2	130.9	1203.4
Low income working age households	17.4	1.2	270.2	40.2	0.0	193.3	36.8	30.6	64.7	14.9	66.3	77.7	813.3
DINK households	16.8	1.8	341.6	41.0	0.0	297.2	59.4	31.2	97.6	22.1	65.4	104.2	1078.4
Wage and salary households	22.6	1.8	369.1	48.8	0.0	299.4	59.6	34.1	97.0	20.4	99.2	123.1	1175.2
Self employed households	27.6	2.1	418.4	60.8	0.0	398.9	82.4	39.3	119.7	18.2	125.6	156.9	1449.7
Low skilled households	18.0	1.2	251.1	40.5	0.0	190.3	39.0	26.5	64.1	14.1	51.4	81.5	777.6
Intermediate skilled households	22.7	1.5	337.4	47.0	0.0	254.8	48.5	31.1	88.6	25.3	73.9	103.7	1034.6
Trade occupation households	22.3	1.8	401.9	52.8	0.0	271.9	47.1	34.1	101.1	22.7	98.8	105.8	1160.3
High skilled households	25.1	1.8	358.0	47.3	0.0	329.4	84.8	33.2	96.2	27.3	115.8	140.3	1259.2
Management-professional households	26.8	2.2	422.1	55.4	0.0	427.8	95.1	37.9	124.8	33.8	153.2	166.7	1545.7
High income tertiary educated households	35.1	2.7	504.5	59.5	0.0	526.4	154.7	40.0	146.9	56.1	184.6	214.9	1925.4
<b>All households</b>	<b>21.1</b>	<b>1.4</b>	<b>302.8</b>	<b>44.1</b>	<b>0.0</b>	<b>245.6</b>	<b>52.8</b>	<b>29.5</b>	<b>79.9</b>	<b>20.6</b>	<b>101.3</b>	<b>102.1</b>	<b>1001.2</b>

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## 4. Victorian and Australian households: expenditure characteristics and CO<sub>2</sub> content

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Table 3 gives the average weekly expenditures for the 20 household types. The average expenditure for all households in 2006 prices is \$1,000 a week, excluding actual and imported rent. The polar household type, in terms of low expenditures is, not unexpectedly, the poor households. Average weekly expenditure is \$559. At the other polar extreme, again not unexpectedly, are the high income tertiary educated households, with an average weekly expenditure of \$1,925. There is balance here in relation to the polar households. The poor household type represents expenditures of one half the average expenditures, while the high income tertiary educated households represent approximately double the average household.

From Table 3, two household types that are representative of households approximately half way between poor households and average households are:

- Age pension households; and
- low skilled working households.

Two household types that occupy a position approximately half way between the average household and the top expenditure household type are:

- self-employed households; and
- management/professional households.

The estimated number of each household type in Victoria in 2001 is given in the last column of Table 3. These percentages clearly bring out the overlapping nature of the households. It should be noted, for example, that low income working age households would include both employed and those not in workforce, low income working age households. That is, include Types 1 and 2 working age social security dependent families, as well as a good proportion of low skilled working households.

Table 4 gives the corresponding results for Australia. In general, the Australian average expenditures are below the Victorian level.

### 4.1 Household types – equivalent expenditures

Different household types have different household memberships. Therefore, it is necessary to standardise expenditures on a per capita basis. One way to do this would be to simply divide by the average number of adults and children in each household type. However, different family members have different expenditure needs. To obtain a good expenditure estimate, which allows comparison between the different household types, it is desirable to produce an equivalence expenditure estimate where each household member is weighted differently for expenditure requirements.

In order to obtain an equivalence expenditure estimate between household types, the following scale is applied:

- the first adult is counted as 1.0;
- all subsequent adults (that is, persons over 17 years of age in the household) are given a weight of 0.73; and
- each child (person under the age of 18 years) is given a weight of 0.4.

The scale captures the economies of scale in household size.

Using this scale the equivalence household numbers are derived in Tables 3 and 4 under equivalence household expenditures per capita. In terms of the polar extremes, there is little change. The poor Victorian household per capita equivalence expenditure represents 27.6 per cent of the corresponding expenditures of high income tertiary educated households, compared to the 26.3 per cent for the unadjusted total weekly expenditure outcome.

However, Age pension households now move much closer to the average per capita equivalence expenditures for all households (which in Victoria is \$478 in 2006 prices). However, other household types decline compared to the average. For example, for working age social security dependent families (Type 2) the unadjusted expenditure, as a per cent of the Victorian average, was 69 per cent. For the per capita adjusted equivalent household expenditure the result is 54 per cent, which represents a significant decline.

## 4.2 Household types – the CO<sub>2</sub> content of expenditures

The CO<sub>2</sub> content of household expenditures is simply obtained by multiplying the average CO<sub>2</sub> content per \$ of expenditure, divided from the input-output analysis at either the Victorian or national level for a given industry, by the corresponding same industry expenditure of each household type on an annual basis, and then summing the result for each household type across all 106 input-output industries. The results are given in Table 3 for Victoria and Table 4 for Australia.

Clearly, from Tables 3 and 4, the higher the weekly expenditure, the higher the CO<sub>2</sub> content. However, as Figure 1(a) for Victoria and Figure 1(b) for Australia shows, the CO<sub>2</sub> content per dollar of expenditure declines as expenditure increases. That is, CO<sub>2</sub> consumption is inelastic with respect to the change in total expenditure, so that the proportion of CO<sub>2</sub> embodied in total expenditure declines as total expenditure increases.

Comparing the CO<sub>2</sub> results in Tables 3 and 4 indicates that Victoria has a higher CO<sub>2</sub> consumption per household and a higher CO<sub>2</sub> content of total expenditures. The reasons for this outcome are:

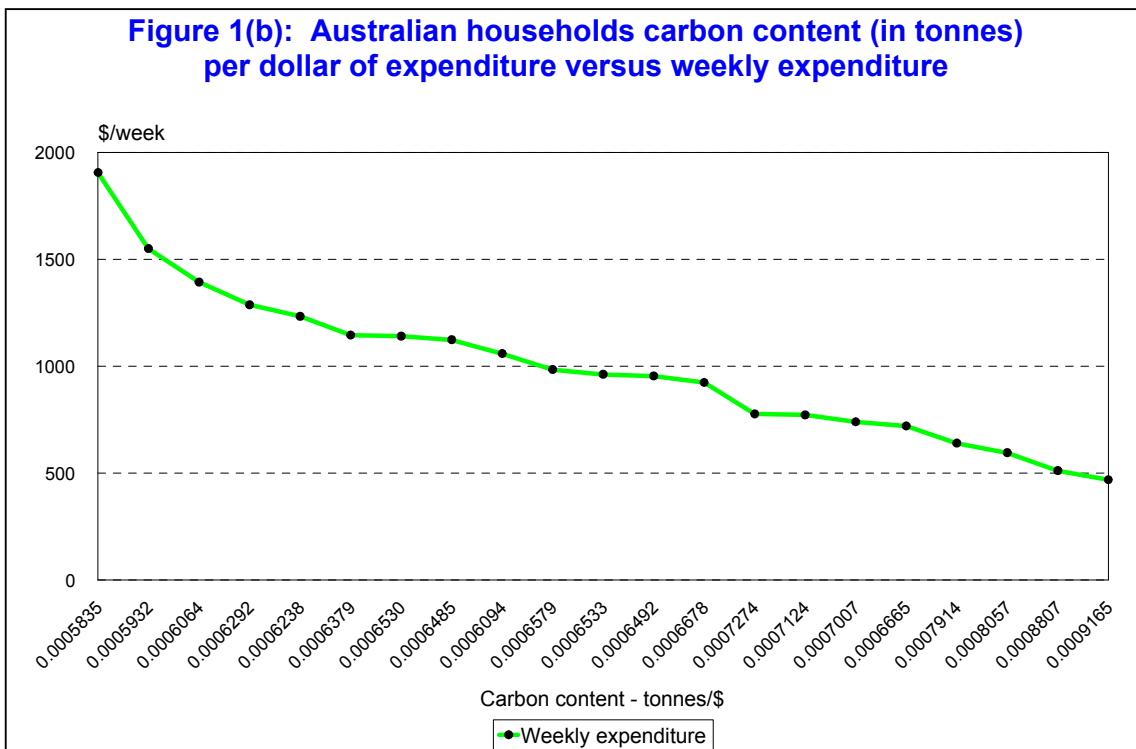
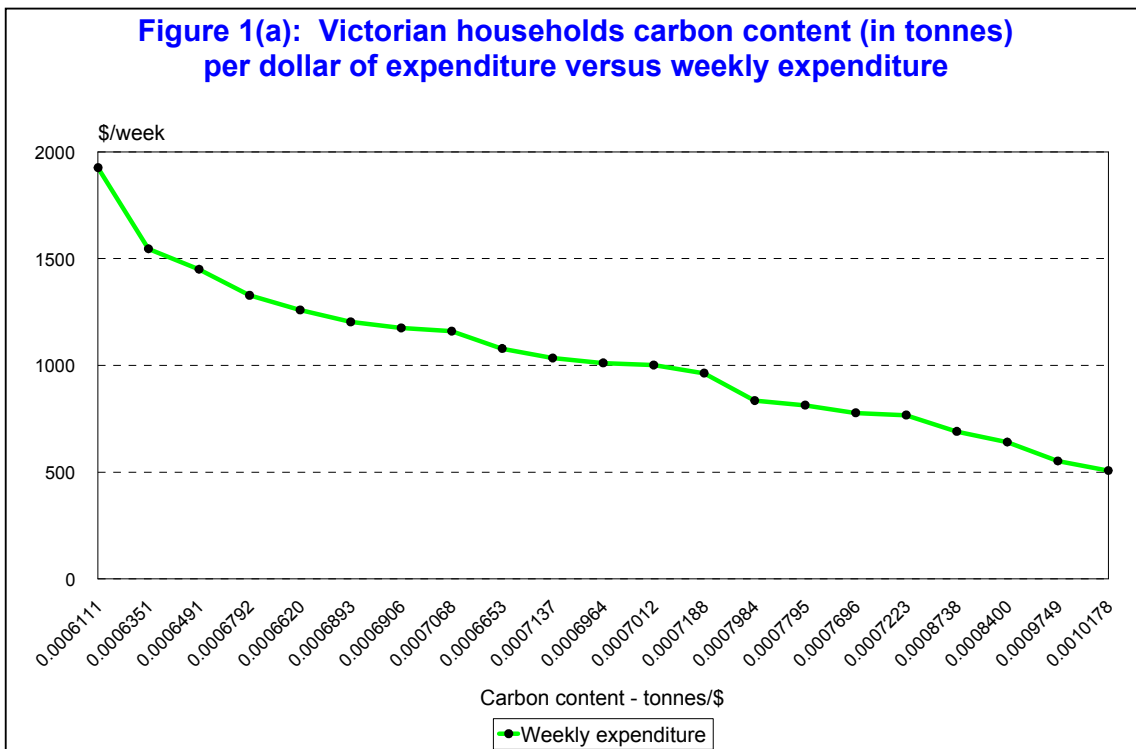
- the higher average household expenditures in Victoria;
- the higher CO<sub>2</sub> content of energy production in Victoria from the use of brown coal in electricity generation; and
- the higher household direct energy consumption, no doubt in part due to lower minimum temperatures compared to Australia as a whole.

**Table 3 Victorian household types – expenditure (excluding rent) and carbon consumption – 2001**

	Total weekly expenditure (2006 prices)	Average number of adults	Average number of children	Equivalence household numbers	Household average weekly equivalence expenditure per capita		Carbon consumption per \$ of annual expenditure (tonnes)	Share of total households (per cent)
					2006 prices	Total annual carbon consumption		
Working age social security dependant family type one	551.7	2.0	1.9	2.5	220	28.0	0.00097	8.1
Working age social security dependant family type two	690.3	2.2	1.9	2.7	260	31.4	0.00087	10.7
Poor family households	506.9	1.7	2.0	2.3	218	26.8	0.00102	6.1
Non working income dependant families of working age	834.9	2.3	1.9	2.7	308	34.7	0.00080	12.4
Age pension households	766.8	2.0	0.1	1.8	433	28.8	0.00072	25.1
Employed families	1327.5	2.6	1.8	2.9	458	46.9	0.00068	25.2
Other non retired households	963.1	1.9	0.0	1.7	573	36.0	0.00072	29.9
Home owning households	1011.1	2.2	0.4	2.1	492	36.6	0.00070	45.9
Home renter households	640.2	1.7	0.7	1.8	357	28.0	0.00084	25.8
Households with mortgages	1203.4	2.3	1.1	2.4	494	43.1	0.00069	28.3
Low income working age households	813.3	2.0	1.0	2.2	377	33.0	0.00078	43.9
DINK households	1078.4	2.0	0.0	1.7	625	37.3	0.00067	4.5
Wage and salary households	1175.2	2.3	0.9	2.3	508	42.2	0.00069	40.1
Self employed households	1449.7	2.5	0.9	2.4	598	48.9	0.00065	4.2
Low skilled households	777.6	2.1	0.6	2.0	384	31.1	0.00077	46.0
Intermediate skilled households	1034.6	2.2	0.7	2.2	472	38.4	0.00071	30.3
Trade occupation households	1160.3	2.4	1.1	2.4	474	42.6	0.00071	11.5
High skilled households	1259.2	2.1	0.7	2.1	599	43.3	0.00066	23.7
Management-professional households	1545.7	2.4	0.9	2.4	651	51.1	0.00064	11.9
High income tertiary educated households	1925.4	2.6	0.7	2.4	790	61.2	0.00061	7.7
<b>All households</b>	<b>1001.2</b>	<b>2.1</b>	<b>0.7</b>	<b>2.1</b>	<b>478</b>	<b>36.5</b>	<b>0.00070</b>	<b>100.0</b>

**Table 4 Australian household types – expenditure (excluding rent) and carbon consumption – 2001**

	Total weekly expenditure (2006 prices)	Average number of adults	Average number of children	Equivalence household numbers	Household average weekly equivalence expenditure per capita		Carbon consumption per \$ of annual expenditure (tonnes)	Share of total households (per cent)
					2006 prices	Total annual carbon consumption		
Working age social security dependant family type one	510.6	1.9	2.0	2.5	206	23.4	0.00088	8.7
Working age social security dependant family type two	639.3	2.1	2.0	2.6	245	26.3	0.00079	11.3
Poor family households	468.0	1.7	2.1	2.3	201	22.3	0.00092	6.6
Non working income dependant families of working age	776.1	2.2	1.9	2.7	290	29.4	0.00073	13.0
Age pension households	719.6	1.9	0.0	1.7	414	24.9	0.00067	24.9
Employed families	1287.0	2.6	1.8	2.9	447	42.1	0.00063	24.5
Other non retired households	923.2	1.9	0.0	1.7	551	32.1	0.00067	30.5
Home owning households	961.4	2.2	0.4	2.0	476	32.7	0.00065	43.1
Home renter households	594.6	1.7	0.7	1.8	326	24.9	0.00081	30.0
Households with mortgages	1140.1	2.3	1.1	2.4	471	38.7	0.00065	26.9
Low income working age households	771.5	2.0	1.0	2.1	362	28.6	0.00071	44.5
DINK households	1058.3	2.0	0.0	1.7	614	33.5	0.00061	4.8
Wage and salary households	1145.2	2.3	0.9	2.3	501	38.0	0.00064	40.1
Self employed households	1392.9	2.4	0.9	2.4	578	43.9	0.00061	4.1
Low skilled households	738.8	2.0	0.6	2.0	369	26.9	0.00070	46.0
Intermediate skilled households	983.5	2.2	0.7	2.2	457	33.6	0.00066	31.7
Trade occupation households	1123.1	2.3	1.1	2.4	467	37.9	0.00065	11.9
High skilled households	1232.8	2.1	0.7	2.1	590	40.0	0.00062	22.2
Management-professional households	1549.3	2.4	0.9	2.4	656	47.8	0.00059	11.3
High income tertiary educated households	1905.5	2.5	0.7	2.4	788	57.8	0.00058	7.4
<b>All households</b>	<b>953.4</b>	<b>2.1</b>	<b>0.7</b>	<b>2.1</b>	<b>461</b>	<b>32.2</b>	<b>0.00065</b>	<b>100.0</b>



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## 5. Victorian and Australian households – the impact of a \$25 and \$50 carbon price

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The impact of a \$25 and \$50 a tonne carbon price on the 10 household types is shown in Table 5 for Victoria and Table 6 for Australia. The additional carbon cost as a per cent of expenditure is regressive, either in terms of total expenditure or equivalised expenditures (as indicated by Figures 2 and 3).

Focussing on Victoria, a \$25 per tonne carbon price would represent, from Table 5, 2.5 per cent of expenditures for the poor household type, while for the high income tertiary educated households it would represent 1.5 per cent. The all household average for Victoria is 1.8 per cent and 3.5 per cent for \$50 a tonne.

However, it is necessary to dig deeper. Poor households clearly had less room for adjustment to the imposition of carbon costs. The United Kingdom HM Treasury's *The Green Book: Appraisal and Evaluation in Central Government*, guidelines require that each monetary cost and benefit should be weighted according to the relative prosperity of those receiving the benefit or bearing the cost. The formula they recommend for doing this is:

$$U = \log C$$

Where:

$C$  = household consumption; and

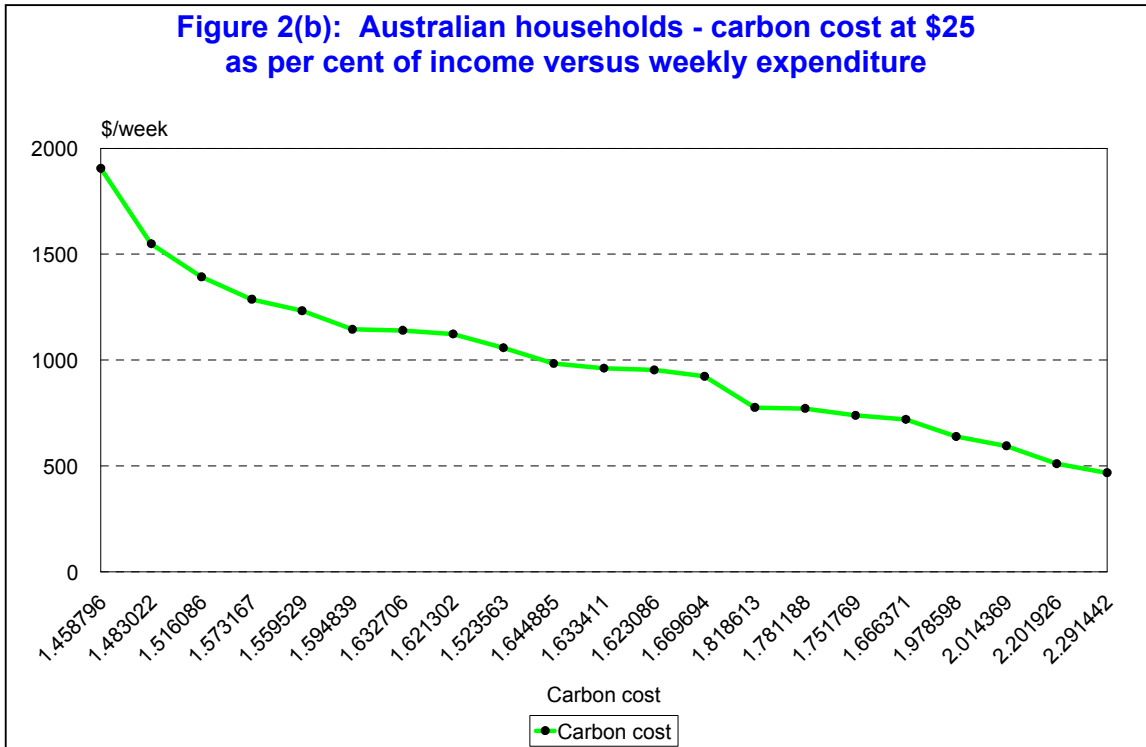
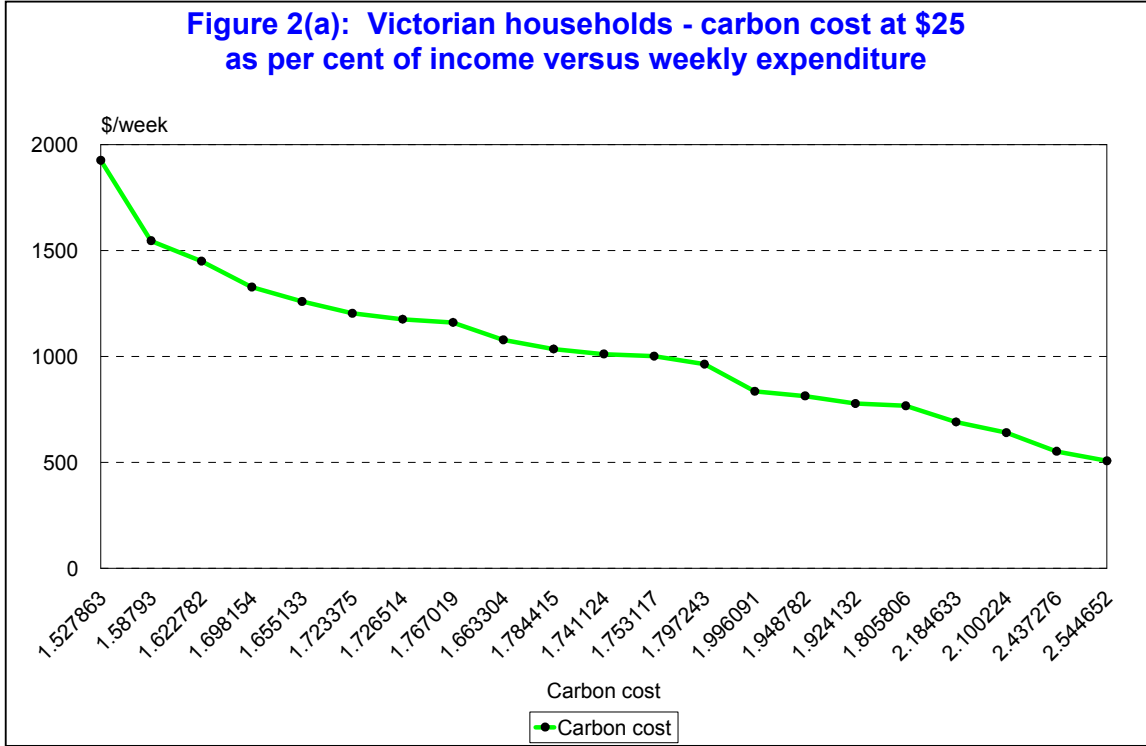
$U$  = household utility good from consumption.

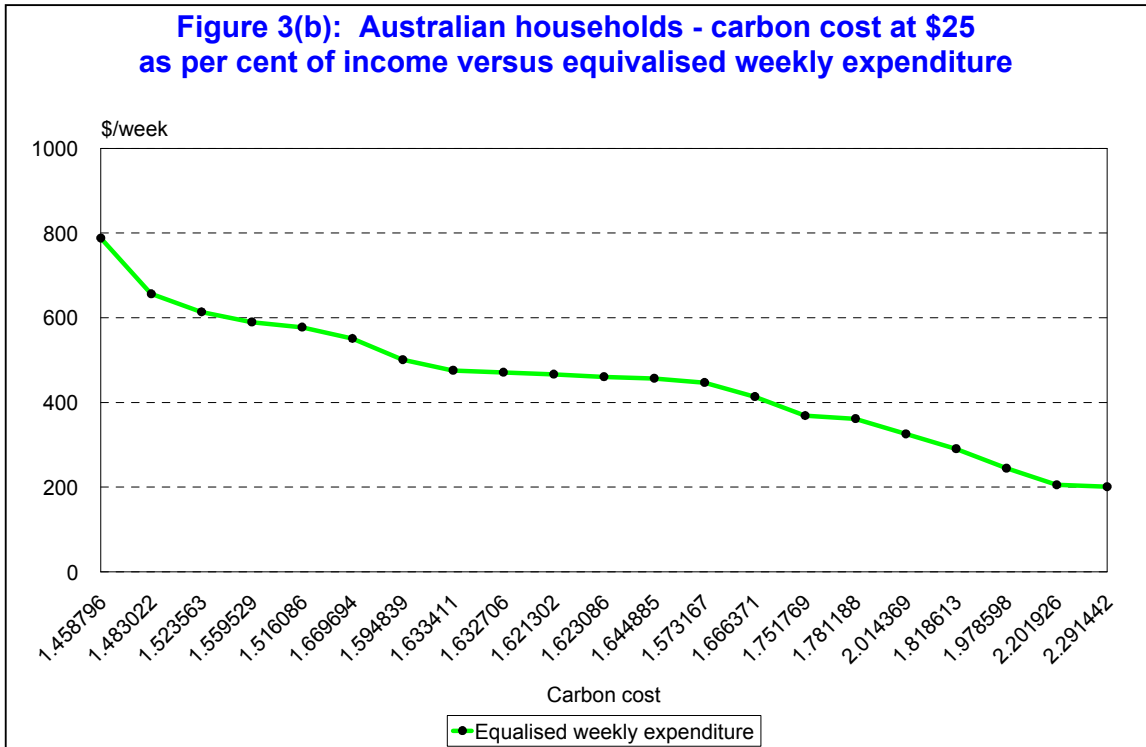
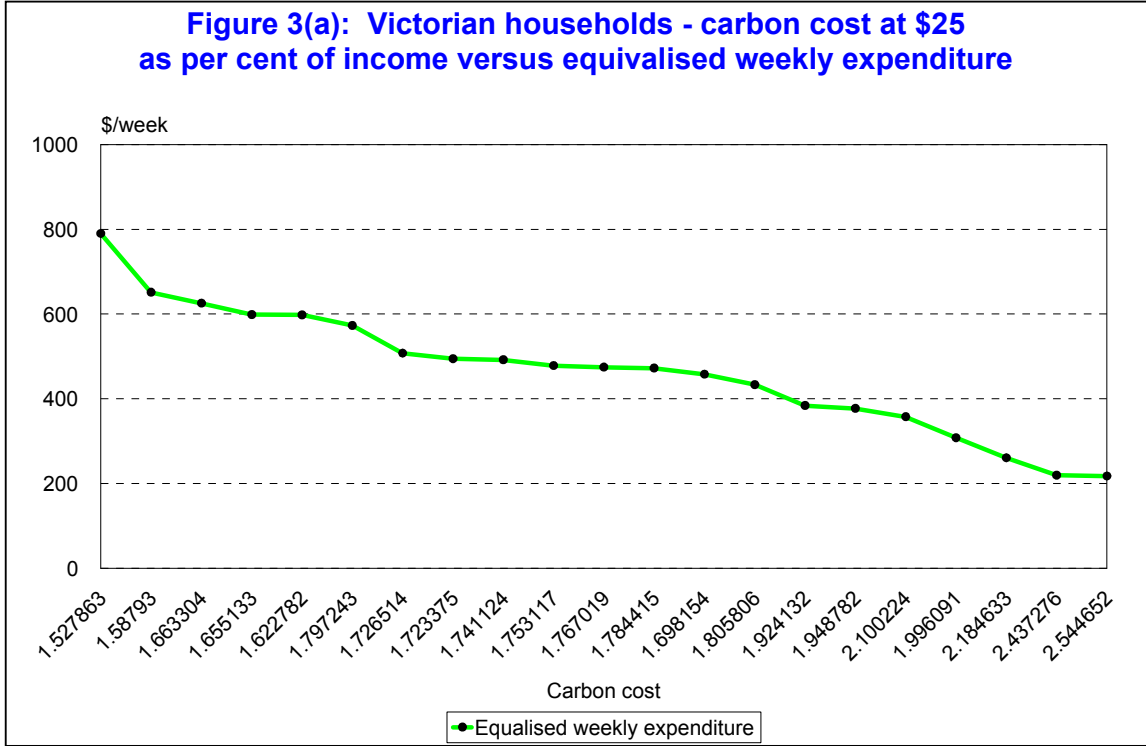
This implies a marginal utility of consumption of  $1/C$ . Hence, the utility scale derived in Table 5 is relative to the poorest household. It implies the utility cost of the high income tertiary educated households of an extra dollar of carbon cost is only a little over one quarter of the dollar cost imposed on poor households. The utility for the average household is 46 per cent per dollar of expenditure loss or gain of the poorest household.

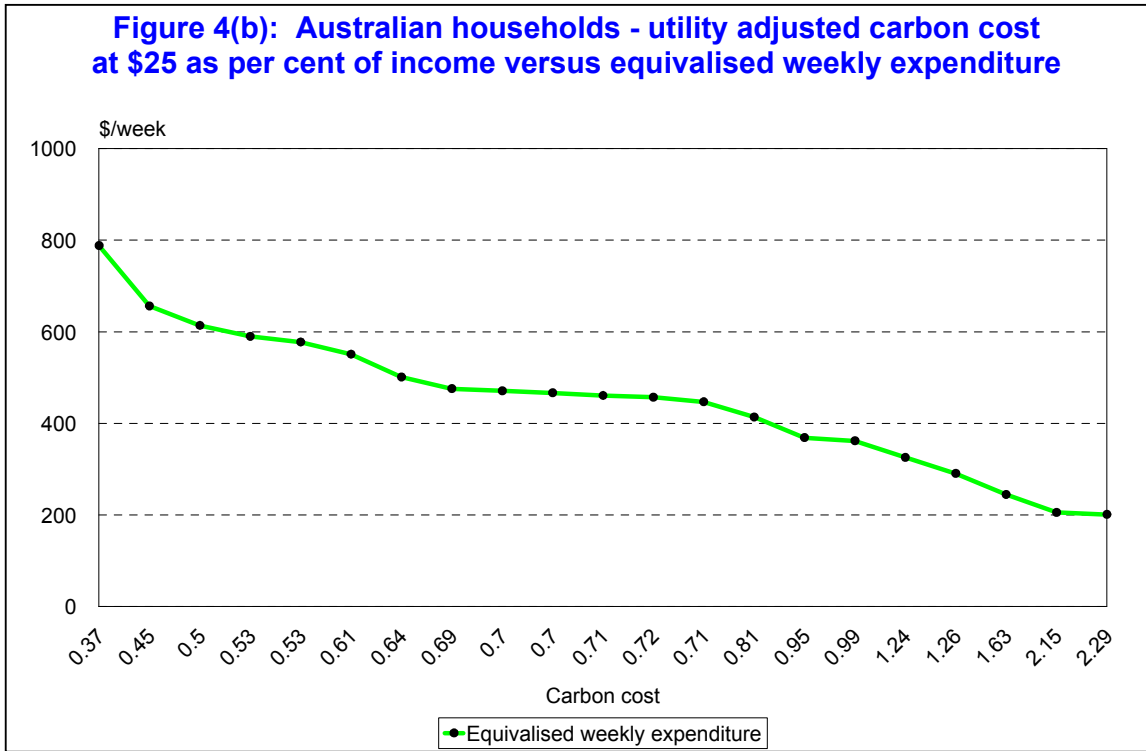
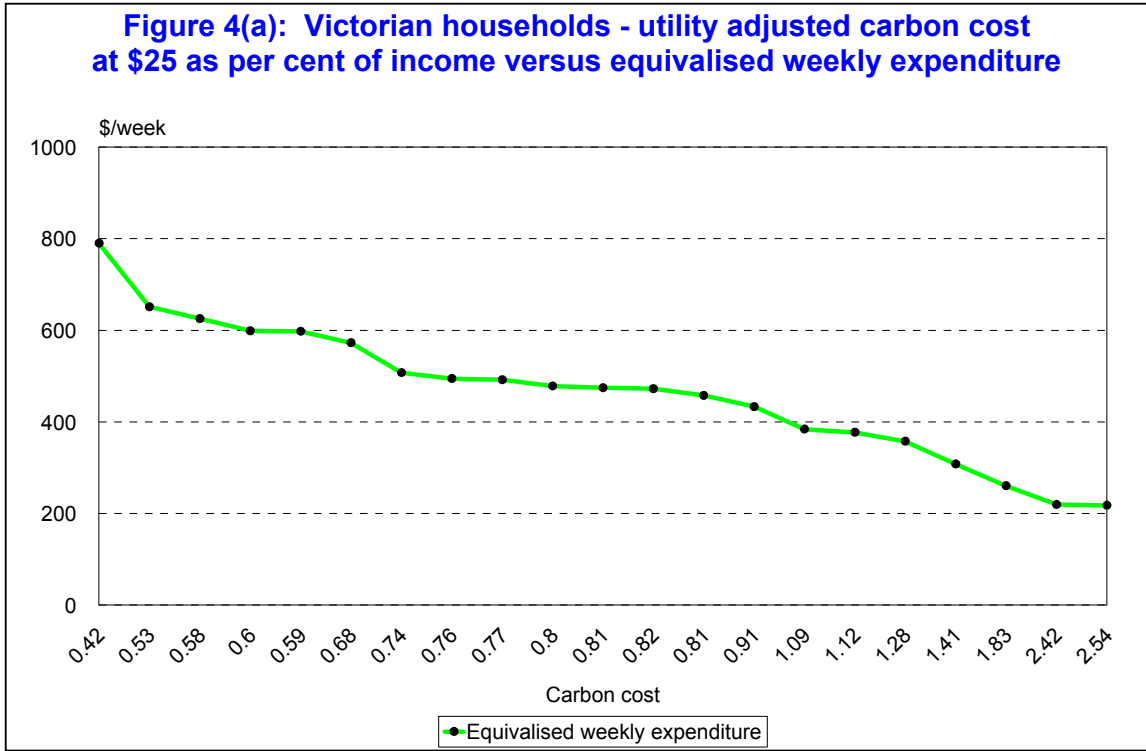
This differential is reflected in the utility adjusted carbon costs as a per cent of expenditure estimates given in the last two columns of Table 5 for Victoria and Table 6 for Australia. The regressive nature of the tax is shown in Figure 4(a) for Victoria and Figure 4(b) for Australia. For Victoria, on a utility adjusted carbon cost, the poor household average carbon cost of 2.5 per cent for the \$25 case stays the same. However, for the high income tertiary educated households the rate declines to 0.4, or 16 per cent of the poorest household. The all household average on a utility adjusted basis goes from 1.8 per cent to 0.8 per cent, or a decline of 56 per cent.

<b>Table 5 Victorian household types – Impact of carbon price</b>										
	Utility scale	Carbon cost – \$2006		Carbon cost – % of annual expenditure			Utility adjusted carbon costs – \$2006		Utility adjusted carbon costs – % of annual expenditure	
		\$25	\$50	\$25	\$50		\$25	\$50	\$25	\$50
		Working age social security dependant family type one	0.99	699.2	1398.5		2.4	4.9	220	692.9
Working age social security dependant family type two	0.84	784.2	1568.3	2.2	4.4	260	655.4	1310.7	1.8	3.7
Poor family households	1.00	670.7	1341.5	2.5	5.1	218	670.7	1341.5	2.5	5.1
Non working income dependant families of working age	0.71	866.6	1733.1	2.0	4.0	308	612.6	1225.2	1.4	2.8
Age pension households	0.50	720.0	1440.0	1.8	3.6	433	361.9	723.7	0.9	1.8
Employed families	0.48	1172.2	2344.4	1.7	3.4	458	557.4	1114.9	0.8	1.6
Other non retired households	0.38	900.1	1800.2	1.8	3.6	573	342.1	684.1	0.7	1.4
Home owning households	0.44	915.5	1830.9	1.7	3.5	492	405.1	810.1	0.8	1.5
Home renter households	0.61	699.1	1398.3	2.1	4.2	357	425.7	851.5	1.3	2.6
Households with mortgages	0.44	1078.4	2156.8	1.7	3.4	494	474.8	949.6	0.8	1.5
Low income working age households	0.58	824.2	1648.4	1.9	3.9	377	475.6	951.2	1.1	2.2
DINK households	0.35	932.7	1865.4	1.7	3.3	625	324.6	649.2	0.6	1.2
Wage and salary households	0.43	1055.1	2110.2	1.7	3.5	508	452.5	905.0	0.7	1.5
Self employed households	0.36	1223.4	2446.7	1.6	3.2	598	445.5	891.0	0.6	1.2
Low skilled households	0.57	778.0	1556.0	1.9	3.8	384	441.2	882.4	1.1	2.2
Intermediate skilled households	0.46	960.0	1920.1	1.8	3.6	472	442.5	885.0	0.8	1.6
Trade occupation households	0.46	1066.1	2132.2	1.8	3.5	474	489.1	978.3	0.8	1.6
High skilled households	0.36	1083.7	2167.5	1.7	3.3	599	394.0	788.0	0.6	1.2
Management-professional households	0.33	1276.3	2552.7	1.6	3.2	651	426.7	853.5	0.5	1.1
High income tertiary educated households	0.28	1529.7	3059.4	1.5	3.1	790	421.6	843.1	0.4	0.8
<b>All households</b>	<b>0.46</b>	<b>912.7</b>	<b>1825.5</b>	<b>1.8</b>	<b>3.5</b>	<b>478</b>	<b>415.5</b>	<b>831.1</b>	<b>0.8</b>	<b>1.6</b>

<b>Table 6 Australian household types – Impact of carbon price</b>										
	Utility scale	Carbon cost – \$2006		Carbon cost – % of annual expenditure			Utility adjusted carbon costs – \$2006		Utility adjusted carbon costs – % of annual expenditure	
		\$25	\$50	\$25	\$50		\$25	\$50	\$25	\$50
		Working age social security dependant family type one	0.98	584.7	1169.4		2.2	4.4	206	571.7
Working age social security dependant family type two	0.82	657.7	1315.5	2.0	4.0	245	540.3	1080.7	1.6	3.3
Poor family households	1.00	557.7	1115.4	2.3	4.6	201	557.7	1115.4	2.3	4.6
Non working income dependant families of working age	0.69	734.0	1467.9	1.8	3.6	290	507.9	1015.8	1.3	2.5
Age pension households	0.49	623.5	1247.0	1.7	3.3	414	303.0	606.0	0.8	1.6
Employed families	0.45	1052.8	2105.7	1.6	3.1	447	473.6	947.2	0.7	1.4
Other non retired households	0.36	801.5	1603.1	1.7	3.3	551	292.4	584.8	0.6	1.2
Home owning households	0.42	816.6	1633.2	1.6	3.3	476	345.1	690.1	0.7	1.4
Home renter households	0.62	622.8	1245.6	2.0	4.0	326	384.4	768.8	1.2	2.5
Households with mortgages	0.43	967.9	1935.9	1.6	3.3	471	413.2	826.4	0.7	1.4
Low income working age households	0.56	714.6	1429.1	1.8	3.6	362	397.1	794.2	1.0	2.0
DINK households	0.33	838.4	1676.9	1.5	3.0	614	274.6	549.2	0.5	1.0
Wage and salary households	0.40	949.8	1899.5	1.6	3.2	501	381.0	762.0	0.6	1.3
Self employed households	0.35	1098.1	2196.2	1.5	3.0	578	382.2	764.4	0.5	1.1
Low skilled households	0.55	673.0	1346.1	1.8	3.5	369	366.8	733.6	1.0	1.9
Intermediate skilled households	0.44	841.2	1682.5	1.6	3.3	457	370.0	740.1	0.7	1.4
Trade occupation households	0.43	946.9	1893.8	1.6	3.2	467	408.0	815.9	0.7	1.4
High skilled households	0.34	999.8	1999.5	1.6	3.1	590	340.7	681.3	0.5	1.1
Management-professional households	0.31	1194.8	2389.5	1.5	3.0	656	365.9	731.8	0.5	0.9
High income tertiary educated households	0.26	1445.5	2890.9	1.5	2.9	788	368.7	737.4	0.4	0.7
<b>All households</b>	<b>0.44</b>	<b>804.7</b>	<b>1609.3</b>	<b>1.6</b>	<b>3.2</b>	<b>461</b>	<b>351.1</b>	<b>702.3</b>	<b>0.7</b>	<b>1.4</b>







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## 6. Carbon pricing – implications

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If the above results are found to be still valid at the time of the implementation of a full carbon price regime, then the income of poor household support to:

- (i) offset the cost of carbon; and
- (ii) help adjust to a lower carbon intensive economy,

will be high on the political agenda.

Table 7 gives the estimates of the number of households by income ranges that would be the focus of attention. There are around 600,000 of these households that would have an imposed cost of approximately \$400 million for a \$25 a tonne carbon price and \$800 million for a \$50 a tonne carbon price. These estimates should form the foundation of calculations for the resource assistance costs of these households.

Finally, it should be noted that State Governments have already put in place measures (such as renewable energy use) which, in effect, are imposing a carbon price on the economy. The impact of current measures by 2010 is shown in Table 8. Currently in Victoria the measures are equivalent to a carbon price of \$0.45 a tonne in 2005, increasing to \$2.1 a tonne of CO<sub>2</sub> by 2010.

These measures are to be commended with, at this stage, relatively small distributional impacts. What is required now is a full scale debate on how the much larger costs of the future are to be accommodated in the trade-offs between business efficiency, social equity and macroeconomic costs.

**Table 7      Number of poorer Victorian households – by income (2006 \$)**

Couple with children and income under \$900 per week	135,000
Couple with children and income under \$800 per week	170,000
One parent family and income under \$700 per week	97,000
Non-family households and income under \$600 per week	199,000
<b>Total</b>	<b>601,000</b>

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<b>Table 8 NIEIR's estimates of the impact of measures on electricity prices in 2005 and 2010</b>		
	<b>2005</b>	<b>2010</b>
MRET	\$0.60/MWh	\$1.23/MWh
New South Wales GGAS	\$0.88/MWh	\$3.10/MWh
New South Wales ESF	\$0.53/MWh	\$0.50/MWh (2008)
Queensland CEP	\$2.00/MWh	\$1.50/MWh
Victoria (VREO)	–	\$1.50/MWh
<b>Price impacts of above measures by NEM region</b>		
Queensland	\$2.60/MWh	\$2.73/MWh
New South Wales	\$2.01/MWh	\$4.83/MWh
Victoria	\$0.60/MWh	\$2.73/MWh
South Australia	\$0.60/MWh	\$1.23/MWh
Tasmania	–	\$1.23/MWh

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## Appendix A: Estimating the carbon content of expenditure in the Victorian economy

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The CO<sub>2</sub> content of Victorian production will consist of elements, namely:

- (i) the direct CO<sub>2</sub> emissions content of production as measured by the energy consumed by an industry;
- (ii) the emission content of goods and services used as inputs into production for a given industry from all other industries in Victoria;
- (iii) the emission content of goods and services used as input into production for a given industry purchased from all other industries located interstate; and
- (iv) the emission content of goods and services used as inputs into production for a given industry produced from industries located overseas.

It is evident from the description of the four elements that the only way to estimate the emission content of production is via input-output analysis.

A typical input-output table of inter-industry flows is represented by:

Industry	1	2			
	$x_{11}$	$x_{12}$ . . . . .	$x_{1n}$	$f_1$	
	$x_{21}$	:	:	:	
	:	:	:	:	
	:	:	:	:	
	$x_{n1}$	:	$x_{nn}$	$f_n$	

Where:

- $x_{ij}$  = purchase of goods or services by industry  $j$  from industry  $i$ , \$ million;
- $f_i$  = industry  $i$  contribution to final demand, \$ million.

Now each  $x_{ij}$  will consist of three locations in terms of sources of supply  $j$ , that is:

$$x_{ij} = x_{ij}^v + x_{ij}^i + x_{ij}^f$$

Where:

- $x_{ij}^v$  = that part of the  $x_{ij}$  total purchase that represents purchases from other firms in industry  $i$  located in Victoria;
- $x_{ij}^i$  = that part of the  $x_{ij}$  that represents goods or services purchased from firms in industry  $i$  located interstate; and
- $x_{ij}^f$  = that part of the  $x_{ij}$  total that is purchased from other firms in industry  $i$  located overseas.

Tables with only the  $x_{ij}^v$  in the cells are called input-output tables with direct allocation of imports. Input-output tables with  $x_{ij}$  in the cells are called tables with imports allocated indirectly.

The first step is to estimate the direct CO<sub>2</sub> content by Victorian industry. This is given by:

$$CO_2^d{}_i = C_c \cdot x_{c,i} + C_g \cdot x_{g,i} + C_p \cdot x_{p,i} + C_e \cdot x_{e,i} \quad (1)$$

Where:

$CO_2^d{}_i$  = direct CO<sub>2</sub> content of industry  $i$ ;

$X_{c,i}$  = direct coal input into industry  $i$  measured in \$ million (or petajoules);

$C_l$  = CO<sub>2</sub> emissions in tonnes for coal and as a primary fuel;

And

$$\begin{pmatrix} c \\ g \\ p \\ e \end{pmatrix} = \begin{pmatrix} \text{coal} \\ \text{gas} \\ \text{petroleum} \\ \text{electricity} \end{pmatrix}$$

The second step is to calculate the indirect contribution of all Victorian industry to the emission content of any given Victorian industry. This can only be done by the use of input-output techniques.

The equations for the total direct and indirect CO<sub>2</sub> emission content for Victorian industry are given by:

$$\begin{aligned} CO_2^v{}_1 &= a_{1,1} \cdot CO_2^v{}_1 + a_{2,1} \cdot CO_2^v{}_2 + \dots + a_{n,1} \cdot CO_2^v{}_n + CO_2^d{}_1 \\ &\quad \vdots \\ CO_2^v{}_n &= a_{n,1} \cdot CO_2^v{}_1 + a_{n,2} \cdot CO_2^v{}_2 + \dots + a_{n,n} \cdot CO_2^v{}_n + CO_2^d{}_n \end{aligned} \quad (2)$$

Where:

$CO_2^v{}_i$  = total emission content of industry  $i$  from Victorian industry;

$a_{i,j}$  = share of Victorian industry  $i$ 's output allocated to Victorian industry  $j$ .

The solution becomes:

$$CO_2^v = [I - A]^{-1} CO_2^d \quad (3)$$

Where:

$CO_2^v$  =  $n \times 1$  vector of the  $CO_2^v{}_i$

$A$  =  $n \times n$  matrix of the  $a_{i,j}$

$CO_2^d$  =  $n \times 1$  vector of the  $CO_2^d{}_i$

$I$  =  $n \times n$  unity matrix.

The indirect contribution of Victorian industry to emissions in industry  $i$  will be given by:

$$CO_2^{vi} = CO_2^v{}_i - CO_2^d{}_i \quad (4)$$

The total emissions content will be given by:

$$CO_{2i} = CO_{2i}^v + CO_{2i}^{is} + CO_{2i}^f$$

Where:

$CO_{2i}^{is}$  = emission content of industry  $i$  from goods and services from interstate industries;

$CO_{2i}^f$  = emission content of industry  $i$  from goods and services sourced from overseas.

In order to estimate the interstate contribution to emissions the following data is required:

$$\begin{array}{cccc} x_{1,1}^i & x_{1,2}^i & \dots & x_{1,n}^i \\ \vdots & & & \\ \vdots & & & \\ \vdots & & & \\ \vdots & & & \\ x_{n,1}^i & \dots & & x_{n,n}^i \end{array}$$

Where:

$x_{ij}^i$  = imports from interstate industry  $i$  used by Victorian industry  $j$ .

Therefore:

$$CO_{2i}^{is} = \sum_{j=1}^n \overline{CO}_{2i,j}^{is} \cdot x_{ij}^i \quad (5)$$

Where  $\overline{CO}_{2j}$  is the total emission content of interstate industry  $j$  per dollar of output.

A similar equation to (5) applies for foreign imports.

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## **Appendix B: Definitions**

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### **1. Social Security Type 1 Family With Dependent Children**

Where total weekly unearned income as a percentage of total gross Income exceeds 30 per cent AND the household has dependent children AND is NOT a (retired Household age>55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit)

### **2. Social Security Type 2 Family With Dependent Children**

Total weekly household income from Government benefits as a percentage of weekly household employee income exceeds 30 per cent AND the household has dependent children AND is NOT a (retired Household age>55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit)

### **3. Social Security Type 3 Family With Dependent Children**

Where Principal source of household income is derived from one of the following:

- other private income;
- age and disability support payments;
- unemployment;
- education and sickness benefits;
- other Government pensions and benefits; and
- the person has zero or negative total weekly income.

AND the household has dependent children AND is NOT a (retired Household age>55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit)

### **4. Retired Person/Age Pension**

These are retired Households age>55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit

### **5. Singles/Couples No Child**

Households that are either singles or couples without children.

### **6. Social Security 6 Family With Dependent Children**

Satisfies the following criteria:

- NOT a (retired Household age >55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit) AND
- Family structure with dependent children AND

- Households is not covered by Social Security Type 1

OR

- Family structure with dependent children AND is NOT a (retired Household age>55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit)

#### **7. Social Security Type 7 Family With Dependent Children**

Satisfies the following criteria:

- NOT a (retired Household age >55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit) AND
- Family structure with dependent children AND
- Households is not covered by Social Security Type 2

OR

- Family structure with dependent children AND is NOT a (retired Household age>55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit)

#### **8. Social Security Type 8 Family With Dependent Children**

Satisfies the following criteria:

- NOT a (retired Household age >55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit) AND
- Family structure with dependent children AND
- Households is not covered by Social Security Type 3

OR

- Family structure with dependent children AND is NOT a (retired Household age>55 where no other family member works OR the household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit)

#### **9. Age Pension**

The household receives Vet Affairs Pension, Age Pension or Overseas Pension or Benefit.

#### **10. Employed Families**

The household income is from employment.

**11. Unemployed Families**

Households with:

- dependent children, and
- the spouse of the household head is unemployed or not in the labour force, and
- the household head is not over 55 and out of the labour force, and
- no other member of the family is in the labour force, or
- the household does not receive Vet Affairs Pension, Age Pension or Overseas Pension or Benefit.

**12. Other**

Not included in categories 9, 10 or 11.

**13. Low Income (Working Age) < 60K**

Households of working age with annual income less than \$60,000.

**14. High Income (Working Age) < 50**

Households with high income > \$60,000 per annum (working age) < 50 years.

**15. High Income (Working Age) > 50**

Households with high income > \$60,000 per annum (working age) > 50 years.

**16. DINKS**

Dual income households without children.

**17. Self Employed****18. Wage and Salary Earners****19. Tertiary Educated****20. No Post School Education****21. Intermediate Qualifications****22. Mortgaged Household****23. Renters****24. Owners****25. House Hold with small Travel Costs**

**26. Extremely Poor Households**

Household experienced at least four of the following:

- could not afford to have a night out once a fortnight, or
- could not afford brand new clothes, or
- spends more money than receives, or
- could not afford to pay gas, electricity or telephone bills, or
- pawned or sold something, or
- went without meals, or
- was unable to heat the home due to a shortage of money, or
- had cash flow problems during the past year, and
- the household head is not over 55 and out of the labour force, and
- no other member of the family is in the labour force, or
- the household does not receive Vet Affairs Pension, Age Pension or Overseas Pension or Benefit.

**27. Social Security 1 DSP**

Sub group of type 1: Household income from Disability Support Pension.

**28. Social Security 1 Unemployed**

Sub group of type 1: Household income from Unemployment Benefits.

**29. Social Security 1 Poor**

Sub group of type 1: Household also meets criteria for poor.

**30. Social Security 1 Other**

Remaining sub group of type 1.

**31. Social Security 2 DSP**

Sub group of type 2: Household income from Disability Support Pension.

**32. Social Security 2 Unemployed**

Sub group of type 2: Household income from Unemployment Benefits.

**33. Social Security 2 Poor**

Sub group of type 2: Household also meets criteria for poor.

**34. Social Security 2 Other**

Remaining sub group of type 2.

**35. Social Security 3 DSP**

Sub group of type 3: Household income from Disability Support Pension.

**36. Social Security 3 Unemployed**

Sub group of type 3: Household income from Unemployment Benefits.

**37. Social Security 3 Poor**

Sub group of type 3: Household also meets criteria for poor.

**38. Social Security 3 Other**

Remaining sub group of type 3.

**39. Managers/Professionals****40. Associated/Trades****41. Other Working Household****42. ICONS**

Household structure that:

- could not afford to have a holiday once a year, and
- could not afford to have a night out once a fortnight, and
- could not afford to have friends or family over for a meal once a month, and
- could not afford to have a special meal once a week, and
- could not afford brand new clothes, and
- could not afford to spend time on leisure/hobby activities, and
- can afford to pay gas, electricity, telephone bills, registration and insurance on time, and
- did not seek some form of welfare assistance due to a shortage of money, and
- expenditure on recreation, personal care and miscellaneous goods and services exceeds 25 per cent of total expenditure on goods and services, and
- principal source of income is not from unemployment, sickness or other government pension,
- and the household head is aged less than 65.

**43. Tertiary Educated High Incomes (>60K)**