Central Otago
Home Heating and Air Pollution

2006 survey findings

Otago Regional Council

CENTRAL OTAGO
HOME HEATING AND AIR POLLUTION

2006 SURVEY FINDINGS

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OTAGO REGIONAL COUNCIL
HEATING SURVEY 2006

TABLE OF CONTENTS

Overview

Introduction

The Otago Regional Council has undertaken a home heating survey that investigates the heating methods used during the recent cold spell in the Central Otago towns of Alexandra, Arrowtown, Clyde, Ranfurly and Cromwell.

In addition, perceptions of the levels of winter air pollution in the Central Otago towns were surveyed.

Survey Methodology

A mailed respondent completed survey was sent to 2000 residents in the areas using data from the Council rates. Residents were asked to complete the survey and return it in a reply paid envelope.

The response rate was significantly in excess of that required in all areas. In total 836 surveys were received and analysed.

Area	**Required**	**Analysed**
Alexandra	120	265
Arrowtown	80	224
Clyde	60	117
Ranfurly	50	71
Cromwell	100	159
	410	**836**

Reporting

The report follows the survey. Where applicable the analysis has been cross tabulated by the areas where respondents lived. Verbatim comments have been included where they were provided.

The only change from the survey was to add diesel burners to all questions about forms of heating used, or considered as although diesel burners were not listed in the survey questions as an option, respondents listed it and during analysis it became obvious that the number of respondents using diesel was significant.

Respondents were asked to think about how they heated their home during the very cold spell during June 2006.

1. Forms of heating used during the cold snap

Respondents were asked to indicate the forms of heating they used most during the cold snap. The respondents were asked to tick as many types as necessary.

Forms of heating used by respondents in all towns

On average respondents used 1.6 forms of heating. The most used forms of heating were enclosed wood burners at 39.3% followed by electrical heaters at 36.3% and heat pumps at 32.0%.

Forms of heating used by respondents in all towns	(n= 832)	Percent %
Enclosed wood burner	327	39.3
Electrical heater	302	36.3
Heat pump	266	32.0
Enclosed multi fuel burner	194	23.3
Flued gas(with chimney)	77	9.3
Unflued heater (mobile heater – no chimney)	58	7.0
Diesel burner	39	4.7
Open fire	30	3.6
Pellets	9	1.1

Forms of heating used analysed by the town respondents lived in

The following table shows the form of heating used by respondents analysed by the town the respondents lived in. In each case, the most used form is shaded. Approx 50% of people in all areas indicated that they used more than one form of heating.

Form of heating used by respondents analysed by towns	Alexandra	Cromwell	Clyde	Ranfurly	Arrowtown	Total
Enclosed wood burner	37.5	40.5	32.8	46.5	42.1	39.3
Electrical heater	38.3	34.2	35.3	29.6	39.6	36.3
Heat pump	33.3	35.1	31.0	26.8	28.3	32.0
Enclosed multi fuel burner	20.1	25.7	34.5	26.8	15.7	23.3
Flued gas(with chimney)	6.4	9.5	6.0	5.6	17.6	9.3
Unflued heater (mobile heater – no chimney)	8.7	7.7	6.0	7.0	3.8	7.0
Diesel burner	7.2	2.3	3.4	7.0	3.8	4.7
Open fire	2.3	2.3	6.0	5.6	5.0	3.6
Pellets	1.1	0.9	1.7	1.4	0.6	1.1

2. The fuel used in an open fire

If they used an open fire, respondents were asked to indicate what form of fuel they used in their open fire. Wood was most frequently used at 60.0% followed by both wood and coal at 36.7% and coal alone at 3.3%.

Fuel used in open fire	(n=30)	Percent %
Wood	18	60.0
Both	11	36.7
Coal	1	3.3
Total	30	100.0

3. Age of enclosed wood burner

Respondents who used enclosed wood burners were asked to indicate how old their wood burners were. Of those who answered 58.4% indicated that their enclosed wood burner was more than five years old.

Age of enclosed wood burner	(n=430)	Percent %
More than 5years	251	58.4
1-5years	154	35.8
Less than 1 year	25	5.8

4. Ways respondents heated their homes

Respondents were asked to indicate how they heated specific rooms in their house during the cold snap in June 2006.

How respondents heated their lounge

Respondents were asked to indicate how they heated their lounge. 36.7% used enclosed wood burners and 28.1% used heat pumps. 191 respondents used more than one heating source. On average respondents used 1.2 ways to heat their lounge.

How respondents heated their lounge	(n=822)	Percent %
Enclosed wood burner	302	36.7
Heat pump	231	28.1
Enclosed multi fuel burner	194	23.6
Electrical heaters	102	12.4
Flued gas (with chimney)	79	9.6
Unflued gas (mobile heater – no chimney)	34	4.1
Diesel burner	34	4.1
Open fire	30	3.6
Pellets	7	0.9

How respondents heated their dining room

Respondents were asked to indicate how they heated their dining room. 32.4% used enclosed wood burners and 29.1% used heat pumps. 122 respondents used more than one heating source. On average respondents used 1.2 ways to heat their dining room.

How respondents heated their dining room	(n=743)	Percent %
Enclosed wood burner	241	32.4
Heat pump	216	29.1
Enclosed multi fuel burner	160	21.5
Electrical heaters	114	15.3
Flued gas (with chimney)	55	7.4
Unflued gas (mobile heater – no chimney)	31	4.2
Diesel burner	30	4.0
Open fire	13	1.7
Pellets	5	0.7

How respondents heated their bedrooms

Respondents were asked to indicate how they heated their bedroom. 52.9% used electrical heaters. Some 67 respondents used more than one heating source. On average respondents used 1.1 ways to heat their bedrooms.

How respondents heated their bedrooms	(n=614)	Percent %
Electrical heaters	325	52.9
Enclosed wood burner	118	19.2
Heat pump	104	16.9
Enclosed multi fuel burner	72	11.7
Diesel burner	23	3.7
Flued gas (with chimney)	18	2.9
Unflued gas (mobile heater – no chimney)	11	1.8
Open fire	8	1.3
Pellets	2	0.3

5. The form of heating most often used

Respondents were asked to indicate **the form of heating they used most often** during the cold weather in June. Here they were asked to indicate only one form of heating whereas in question one they were able to list all the forms of heating they had used.

a. Form of heating most often used during the cold spell

Form of heating most often used during the cold spell analysed by total area

35.6% of respondents indicated that they mostly used enclosed wood burners, 21.0% used enclosed multi fuel burners and 20.2% used heat pumps.

Form of heating most often used by total area	(n=815)	Percent %
Enclosed wood burner	290	35.6
Enclosed multi fuel burner	171	21.0
Heat pump	165	20.2
Electrical heaters	65	8.0
Flued gas (with chimney)	59	7.2
Diesel burner	43	5.3
Open fire	13	1.6
Pellets	5	0.6
Unflued gas (mobile heater – no chimney)	4	0.5

Heating most often used during the cold spell analysed by the town respondents lived in

The form of heating most often used during the cold snap is analysed by the town respondents lived in. The heating most often used in each town is shaded.

Form of heating most often used analysed by towns respondents lived in	Alexandra	Cromwell	Clyde	Ranfurly	Arrowtown	Total
Enclosed wood burner	32.9	38.1	30.4	42.0	37.3	35.6
Enclosed multi fuel burner	17.4	24.3	30.4	26.1	13.3	21.0
Heat pump	21.7	19.7	24.1	14.5	18.4	20.2
Electrical heaters	12.4	4.6	2.7	8.7	8.9	8.0
Flued gas (with chimney)	3.9	8.7	4.5	1.4	15.2	7.2
Diesel burner	8.9	2.8	4.5	4.3	3.8	5.3
Open fire	1.6	1.4	1.8	-	2.5	1.6
Pellets	0.4	0.5	1.8	1.4	-	0.6
Unflued gas (mobile heater – no chimney)	0.8	-	-	1.4	0.6	0.5

b. Always the preferred choice of heating

Respondents were asked to indicate if the method indicated in question 5.a) was always their preferred choice of heating. 91.6% indicated that it was.

Always the preferred choice	(n=797)	Percent %
Yes	730	91.6
No	67	8.4

c. Heating sources preferred if one used most often was not preferred choice.

If respondents indicated that the form of heating they had indicated as the one they used most often was not always their preferred choice, they were asked to indicate what heating source they used.

Heating sources used if one used most often was not the preferred choice	(n=67)	Percent %
Heat pump	22	32.8
Electrical heaters	17	25.4
Enclosed wood burner	8	11.9
Flued gas (with chimney)	5	7.5
Open fire	4	6.0
Enclosed multi fuel burner	3	4.5
Unflued gas (mobile heater – no chimney)	3	4.5
Diesel burner	2	3.0
Pellets	1	1.5
Coal range	1	1.5
Oil heater	1	1.5

6. Heat pumps

In order to gain more information on heat pump usage, respondents were asked to indicate the age and brand of the heat pump they owned/used and to indicate how adequate they thought the heating was.

283 respondents indicated that they owned/used a heat pump. This is 34.0% of all respondents. It should be noted that this is more than those who said they used a heat pump during the cold snap (266 or 32%).

a. Age of heat pumps owned/used

67.9% of the heat pumps owned/used were less than 3 years old and 33.6% were less than a year old.

Age of Heat pumps owned/used	(n=283)	Percent %
0-1 year	95	33.6
1-3 years	97	34.3
3-5 years	40	14.1
5-10 years	45	15.9
10+ years	6	2.1

b. Brand of heat pump owned/used

The most favoured brand of heat pump was the Daikin at 49.3% followed by the Fujitsu at 21.8%. It should be noted that this is not an indication of market share.

Brand of heat pump owned/used	(n=280)	Percent %
Daikin	138	49.3
Fujitsu	61	21.8
Mitsubishi	30	10.7
Panasonic	13	4.6
Toshiba	11	3.9
Carrier	8	2.9
Corona	5	1.8
De Longhi	3	1.1
Hitachi	2	0.7
Blue Seal	2	0.7
Luxaire	2	0.7
Pesiah	1	0.4
Kent	1	0.4
General Electric	1	0.4
Audi	1	0.4
Daihatsu	1	0.4

c. Adequacy of heating provided from heat pump

Adequacy of heating provided from heat pump by total area

Respondents were asked to indicate how adequate they thought the heat from their heat pump was. 93.5% considered that the heat provided by their heat pump was adequate (very adequate and adequate added together).

Adequacy of heating from the heat pump analysed by total area	Very adequate	Adequate	Poor	Very poor
Number (n=275)	121	136	16	2
Percentage	44.0	49.5	5.8	0.7

Adequacy of heating provided from heat pump by the town respondents lived in

The adequacy of heat pumps is detailed by the town respondents lived in. There is very little variance between areas in the reported adequacy of the heat pumps used/owned. The shaded area shows the highest levels of adequacy.

Adequacy of heating from the heat pump used/owned analysed by the town respondents lived in	Alexandra	Cromwell	Clyde	Ranfurly	Arrowtown	Total
Very adequate	39.6	45.6	45.9	55.6	44.4	44.0
Adequate	51.0	49.4	45.9	38.9	53.3	49.5
Poor	9.4	3.8	8.1	0.0	2.2	5.8
Very poor	0.0	1.3	0.0	5.6	0.0	0.7

7. Heating preferences

a. Preferred form of heating to change to

Respondents were asked what form of heating they would change to if they were able to.

Preferred form of heating to change to by total area

28.7% indicated that they would not change but preferred to keep what they had. 1.4% indicated that they were unsure what they would change to. Of those who indicated they would consider changing 43.0% indicated they would change to a heat pump.

Preferred form of heating to change to	(n=696)	Percent %
Stay as is	200	28.7
Unsure	10	1.4
Preferred form of heating to change to	**(n=486)**	**Percent %**
Heat pump	209	43.0
Flued gas (with chimney)	75	15.4
Enclosed wood burner	39	8.0
Solar heating	37	7.6
Diesel burner	32	6.6
Enclosed multi fuel burner	29	6.0
Electrical heaters	19	3.9
Pellets	18	3.7
Underfloor heating	11	2.3
Open fire	7	1.4
Water filled heaters	5	1.0
Coal range and wetback	2	0.4
Oil burner	1	0.2
Nuclear	1	0.2
DCR	1	0.2

Preferred form of heating to change to analysed by the town respondents lived in

The table below shows the preferred form of heating respondents would consider changing to analysed by the town the respondents lived in. Heat pumps were the most preferred form of heating in all towns.

Preferred form of heating to change to analysed by the town respondents lived in (n=696)	Alexandra	Cromwell	Clyde	Ranfurly	Arrowtown	Total
Stay as is.	31.6	21.4	29.2	25.9	35.3	28.7
Unsure	1.9	1.6	2.8	0.0	0.0	1.4
Preferred form of heating to change to analysed by the town respondents lived in (n=486)	**Alexandra**	**Cromwell**	**Clyde**	**Ranfurly**	**Arrowtown**	**Total**
Heat pump	43.2	43.8	37.5	44.2	45.5	43.0
Flued gas (with chimney)	18.0	14.6	8.3	14.0	19.3	15.4
Enclosed wood burner	6.5	8.3	15.3	4.7	5.7	8.0
Solar heating	5.8	8.3	6.9	9.3	9.1	7.6
Diesel burner	7.2	6.3	9.7	7.0	3.4	6.6
Enclosed multi fuel burner	7.2	6.9	5.6	2.3	4.5	6.0
Electrical heaters	4.3	2.1	5.6	4.7	4.5	3.9
Pellets	4.3	1.4	6.9	9.3	1.1	3.7
Under floor heating	2.2	4.2	1.4	2.3	0.0	2.3
Open fire	0.0	2.1	0.0	0.0	4.5	1.4
Water filled heaters	0.7	2.1	0.0	0.0	1.1	1.0
Coal range and wetback	0.0	0.0	1.4	2.3	0.0	0.4
Oil burner	0.7	0.0	0.0	0.0	0.0	0.2
Nuclear	0.0	0.0	0.0	0.0	1.1	0.2
DCR	0.0	0.0	1.4	0.0	0.0	0.2

b. Reasons for preferring alternative form of heating

Respondents were asked to indicate why they preferred an alternative type of heating. Respondents on average identified 2.3 reasons for preferring an alternative type of heating. Heating efficiency was the dominant reason at 66.7%, ease of use at 63.1% and cost efficiency at 56.9%.

Reasons for choosing alternative heating	(n=481)	Percent %
Heating efficiency	317	65.9
Easy to operate	305	63.4
Cost efficiency	269	55.9
Availability of fuel or power	140	29.1
Other	67	13.9

'Other' reasons for preferring alternative form of heating

64 respondents detailed other reasons for choosing alternative types of heating. 'Environmentally friendly' was the most often mentioned.

'Other' reasons for preferring alternative heating	(n=64)	Percent %
Environmentally friendly	32	57.8
Able to cope during power cuts	12	18.8
Wetback heats water as well	8	12.5
Convenient to use	2	3.1
Air conditioning in summer	4	6.3
Able to cook on it	2	3.1
Cost of gas	1	1.6
Insulate the house	1	1.6
Peer pressure to change	1	1.6
Recommended by friends	1	1.6

Comments on heating preferences

Although respondents were not asked to make comments, many did. Where they were more than one or two words they have been reported below.

Alexandra

Burner does not rely on electricity; it will still work in a power cut. Fuel is cheap, warms the whole house.
Enclosed multi fuel burner is cheaper to run. Won't run out of power. Can cook on it.
Heat pump because gas has tripled in price since putting heater in.
Hot water under floor heating run by diesel burner.
My wood burner heats my whole cottage. It replaces 2 gas heaters, 1 dehumidifier and 1 fan heater.
We have changed to a heat pump. However our power bill is now astronomical and we struggle to pay it.

Cromwell

Because under floor heating is either on or off I would like a heat pump to provide heating when the days are hot but the nights are cold.
Possibly gas but depends on cost of gas.
Prefer radiators.
Solar under floor.
Wood burner and ceiling fan can heat my whole house.
Wood burner is the most cost efficient plus it heats our water as well which saves energy.
Solid fuel heater needed to compensate for inefficiency of heat pumps at very cold outside temperatures.

Clyde

Use coal range.
Diesel burner with radiator.
Hot water circulation through copper pipes and radiators in conjunction with solar heating.

Ranfurly

No comments

Arrowtown

Gas radiators or warm air.
Solar for water heating but too expensive.
Solar powered radiators.
Why don't you send out brochures educating people of pollution ratios i.e. what's healthy/what's not. And what illnesses pollution causes.
Reliability and self sufficiency during cold snaps, earthquakes etc. Two most important things for survival, water and fire. Proven in Christchurch area this year. If you have a fire you have the basis of survival, hot water and food.

8. Use of enclosed wood burners

Respondents who had enclosed burners were asked to indicate how they used their enclosed burner during the winter. Questions surveyed if respondents banked the fire before retiring for the night, the reason for doing this and if it was a bother to keep the fire going and to clean up the ashes. They were also asked to indicate what would prevent them from switching to electrical forms of heating.

a. Banking the wood burner and turning it down at night

Respondents were asked if they banked the wood burner and turn it down at night before retiring to bed. 56.1% indicated that they did bank the fire before retiring to bed.

Bank the enclosed wood burner at night	Yes %	No %
Bank enclosed burner and turn it down at night before retiring to bed. (n=481)	56.1	43.9

Reason for banking enclosed wood burners

Respondents who indicated that they banked and turned down the wood burner at night were asked to indicate the main reason for doing this. The main reason was to keep the room warm during the night. Just over 50% of the respondents had more than one reason. On average respondents had 1.52 reasons for banking the fire and turning it down before retiring.

Reason for banking the enclosed wood burner	(n=267)	Percent %
Keep room warm through the night	251	94.0
Make it easy to start in the morning	134	50.2
Other	20	7.5

'Other' reasons for banking enclosed wood burners

19 respondents gave 'other' reasons for banking enclosed wood burners and turning them down at night. These are detailed below.

'Other' reasons for banking enclosed wood burner and turning it down before retiring at night	(n=19)	Percent %
To keep whole house warm	8	42.1
Keep water heated on wetback	5	26.3
To keep power bill down	3	15.8
Stops our water pipes from freezing	2	10.5
Heat dries the washing	1	5.3

b. A bother to collect, stack and chop firewood

Respondents were asked to indicate if they found it a bother to collect, stack and chop firewood. 69.5% indicated that they didn't.

	Yes %	No %
Did respondents find it a bother to collect, stack and chop firewood? (n=501)	30.5	69.5

c. A bother to light fire each day and clean ashes

Respondents were asked to indicate if they found it a bother to light the fire each day and clean the ashes. 70% indicated that it wasn't.

	Yes %	No %
Did respondents find it a bother to light the fire each day and clean the ashes (n=483)	30.0	70.0

d. Reasons that would prevent respondents from switching to electrical forms of heating

Respondents were asked to indicate what would prevent them from changing to electrical forms of heating. On average respondents indicated 2.1 reasons that would prevent them from changing. The most overwhelming reason indicated was price (including costs of changing) at 89.1%.

Reasons that would prevent respondents from switching to electrical forms of heating	(n=505)	Percent %
Price (including costs of changing)	450	89.1
Reliability (including possible power outages)	269	53.3
Enjoyment of a fire	259	51.3
Other	105	20.8

'Other' reasons that would prevent respondents from switching to electrical forms of heating

The other reasons that would prevent respondents from switching to electrical forms of heating are detailed below.

'Other' reasons that would prevent respondents switch to electrical powered heating	(n=30)	Percent %
Better heat from fire	6	20.0
Heat pumps don't work	5	16.7
Wetback used for water heating	4	13.3
Too old to carry wood	4	13.3
Free firewood	3	10.0
Don't like the dry heat	3	10.0
Don't own the house	2	6.7
Keep fit	1	3.3
Spouse won't allow heat pump	1	3.3
Cure for arthritis	1	3.3

Comments on the reasons that would prevent respondents from switching to electrical forms of heating.

As in question 7 comments that further explained the answers given are detailed in the following tables.

Alexandra

Cannot totally be dependent only on one form of heating i.e. electrical.
Burner dries the washing at night.
Fire more efficient.
Keep kids rooms warm at night.
Keeps the whole house warm and dry. If a power cut happens I can cook, boil kettle and keep warm. Electricity is too expensive for my limited income.
Need to get house warm before going to work.
Our boiler pumps water throughout the house. It burns all night anyway.
Recent power cuts and snow storms have proved you need other options than power.
To keep my house from freezing the pipes up and keep my power bill down.
What happens if we have a power shortage?

Cromwell

Find the heat dry and comfortable.
Fire heats the water as well as the house.
Keeps the whole house warm.
My burner keeps the whole house warm and wet back for hot water.
Our fires on wetback so it heats the water.
Wood burner keeps me warm on the coldest nights.

Clyde

Natural atmosphere

Ranfurly

No comments

Arrowtown

So if I switched completely to electricity I would compound an electricity shortage problem.

9. Otago Regional Council Assistance

Respondents were asked to indicate if they would like the Otago Regional Council to contact them to assist them in planning their heating options.

Number of respondents who want the Otago Regional Council to contact them	(n=193)	Percent %
Alexandra	63	32.6
Cromwell	52	26.9
Clyde	20	10.4
Ranfurly	15	7.8
Arrowtown	43	22.3

10. Air pollution during winter

Respondents were asked to indicate their awareness of an air pollution problem in the towns during winter and to indicate the main cause of the pollution. The respondents were asked if they thought anything should be done to improve the winter air, describe anything they *were* already doing and describe what they *could* do to help decrease winter air pollution.

a. Awareness of air pollution problem during winter

98.2% of respondents were aware that Central Otago towns have a winter air pollution problem in the winter. Details by area are also shown.

Awareness of Central Otago towns having an air pollution problem. (n=820)	**Yes %**	**No %**
	98.2	1.8

b. Main cause of winter air pollution

Respondents indicated that the main causes of winter air pollution were related to household fires at 75.9% of causes detailed.

Main causes of winter air pollution	**(n=1072)**	**Percent of causes**
Causes related to household fires		
Fires	250	23.3
Coal	184	17.2
Old wood burners/Non compliance burners	132	12.3
Wet wood	69	6.4
Chimney smoke	54	5.0
Banking fires	47	4.4
Cheap coal being used	30	2.8
Damp wood	29	2.7
People don't know how to operate burners	4	0.4
Green wood being used	15	1.4
	814	**75.9**
Other causes		
Lack of wind in the area	63	8.4
The weather	59	7.8
Location in a basin or valley	46	6.1
Vehicle emissions	29	3.8
Smog	23	3.1
Burn offs by farmers	14	1.9
Fog	8	1.1
High density housing	7	0.9
Cost of electricity	5	0.7
Clyde dam	2	0.3
Industry	2	0.3

c. Improving the winter air

87.8% of the respondents consider something should be done about the winter air in Central Otago towns.

	Yes %	No %
Should anything at all be done to improve the winter air in Central Otago towns? (n=735)	87.8	12.2

d. What would improve the winter air in Central Otago towns

When asked to indicate what they thought would improve the winter air in Central Otago towns. The most often mentioned methods were fire related. On average respondents mentioned 1.3 ways that they thought would improve the winter air quality.

Things that would improve the winter air in Central Otago towns	**(n=844)**	**Percent of improvements**
Suggested improvements related to household fires		
Ban all fires	137	16.2
Use no coal	94	11.1
Dry wood	57	6.8
Use cleaner fires	44	5.2
Use clean fuels	40	4.7
Regulate against fires	39	4.6
No banking of burners	38	4.5
More efficient fires	31	3.7
Lessen smoke from fires	15	1.8
	495	**58.6**
Other suggested improvements		
Cheaper electricity	89	10.5
Subsidies by ORC	63	7.5
Alternate energy efficient heating	49	5.8
Wind/Wind mills/Wind farms	49	5.8
Education of residents	35	4.1
Insulate houses	17	2.0
Nothing	11	1.3
No burn offs by farmers	10	1.2
Check car exhausts	7	0.8
Industry	7	0.8
Solar energy	5	0.6
Encourage self sufficiency	3	0.4
Stop encouraging urban development	2	0.2
Nuclear power	2	0.2

e. What respondents were already doing to help decrease winter air pollution

Respondents were asked to list what they were already doing to help decrease winter air pollution in Central Otago. 1.9% of respondents indicated that they were doing nothing to improve the winter air.
Residents on average indicated that they were doing 1.2 things to decrease winter air pollution in Central Otago.
The key things respondents indicated that they were already doing were related to household fires at 57.5%.

What respondents are already doing to help decrease winter air pollution	(n=760)	Percent of things respondents doing
Respondents already doing things related to household fires		
Using dry wood	222	29.2
Don't bank fires any more	92	12.1
Don’t use fire	71	9.3
Don’t use coal	41	5.4
Clean chimney regularly	11	1.4
		57.5
Other things respondents already doing		
Use heat pump	81	10.7
Use electrical heating	69	9.1
Use gas heating	53	7.0
Use approved heating	37	4.9
Use diesel heating	23	3.0
Use alternate heating	13	1.7
Tune or not use vehicles	9	1.2
Insulate house	8	1.1
Walk to work	6	0.8
Doing enough already	6	0.8
Change other people’s way of thinking	4	0.5
Put more clothes	4	0.5
Double glaze the house	2	0.3
Use solar power	2	0.3
Don’t allow burn offs by farmers	2	0.3
Subsidise power	1	0.1
Use nightstore heater	1	0.1
Complaining to Council	1	0.1
Blow air to make wind	1	0.1

f. What respondents could do that would help decrease winter air pollution in Central Otago

Respondents were asked to list what they could do that would help decrease winter air pollution in Central Otago**.** 14.5% of respondents indicated that they were already doing enough or could do nothing to improve the winter air. Respondents on average indicated that they could do 1.1 things that would help decrease winter air pollution in Central Otago.
The key things they indicated that they could do were related to household fires.

What respondents could do to help decrease winter air pollution	(n=305)	Percent of things respondents could do
Things respondents could do to help decrease winter air pollution related to household fires		
Stop using the fire	47	15.6
Use dry wood	22	7.3
Don't bank fires any more	22	7.3
Do not use coal	16	5.3
Clean the chimney regularly	4	1.3
		36.8
Other things respondents could do to help decrease winter air pollution		
Use electrical heating	32	10.6
Use the heat pump	27	8.9
Only use approved heating	17	5.6
Insulate the house	17	5.6
Leave Central Otago	16	5.3
Use alternative heating	13	4.3
Use gas heating	13	4.3
Walk to work	8	2.6
Use solar power	7	2.3
Tune vehicle or use it less	7	2.3
Stop all burn offs by farmers	5	1.7
Change other peoples minds	4	1.3
Use diesel power	4	1.3
Double glaze houses	4	1.3
Subsidise power or installations of heaters	4	1.3
Earn more money to pay for power	3	1.0
Educate the public to understand the problem	3	1.0
More tax to subsidise to insulate homes	2	0.7
Blow harder to make more wind	2	0.7
Wear more clothes	1	0.3
Stop growth no more subdivisions	1	0.3
Keep complaining	1	0.3

11. Benefits of cleaner winter air

Respondents were asked to indicate what would be the main benefit for them personally and for the overall Central Otago area.

a. Personal benefits of clean winter air in Central Otago towns

Respondents were asked to indicate what they considered would be the main benefit of clean winter air in Central Otago towns. The major benefit for them as an individual was considered to be better health related by 49.1% of respondents. This included less or improved asthma and asthmatic conditions, less coughing and easier breathing.

Personal benefits of clean air in Central Otago	(n=570)	Percent %
Healthier - less asthma, less coughing, easier breathing	280	49.1
Air would be cleaner	74	13.0
No benefit	48	8.4
Smog would be reduced	42	7.4
The area would look better - be able to see more	20	3.5
Air would smell better	20	3.5
Walk outdoors more - not get dirty	19	3.3
Pollution would be reduced	16	2.8
Washing on line would be cleaner	15	2.6
Sunnier days	10	1.8
Overall better image of the area	6	1.1
Be able to open the windows	6	1.1
Nicer place to live	6	1.1
Better environment	3	0.5
People would complain less	1	0.2
Feel less guilty about not changing	1	0.2
Better publicity	1	0.2
Would have more energy to do things	1	0.2
Change too expensive	1	0.2

b. Benefits of clean winter air for the overall Central Otago area

As in the previous question, the most significant benefit to the overall area was detailed as being healthier people by 53.9% of respondents identifying improvement in asthma, asthma control, less coughing and easier breathing.

Main benefits of clean winter air for the overall Central Otago area	(n=549)	Percent %
Healthier - less asthma, less coughing, easier breathing	296	53.9
Overall better image of the area	41	7.5
The area would look better - be able to see more	40	7.3
Smog would be reduced	39	7.1
Air would be cleaner	37	6.7
Pollution would be reduced	21	3.8
Better environment	21	3.8
Nothing	13	2.4
Air would smell better	12	2.2
Sunnier days	8	1.5
Nicer place to live	8	1.5
Better publicity	4	0.7
Would be able to walk outdoors	4	0.7
People would complain less	2	0.4
Feel less guilty about not changing	2	0.4
Washing on line would be cleaner	1	0.2

12. Demographics

Gender

Gender (n=828)	Number	Percent
Male	465	56.2
Female	363	43.8
Total	828	

Numbers in household

Numbers in households (n=818)	Number	Percent
1	171	20.9
2	407	49.8
3	93	11.4
4	93	11.4
5	45	5.5
6	7	0.9
8	1	0.1
11	1	0.1
Total	**818**	

Towns respondents lived in

Town	Number	Percent
Alexandra	265	31.7
Cromwell	224	26.8
Clyde	117	14.0
Ranfurly	71	8.5
Arrowtown	159	19.0
TOTAL	**836**	

OTAGO REGIONAL COUNCIL
HEATING SURVEY 2006

SAMPLE SURVEY

JUNE WAS VERY COLD - HOW DID YOU HEAT YOUR HOME?

The Otago Regional Council would like your assistance in completing this survey to help them provide more effective information on the home heating alternatives.

This survey is being undertaken by Advanced Business Research Limited on behalf of The Otago Regional Council. You have been randomly selected and any comments you make will remain completely confidential.

Everyone who fills out and returns the survey by the due date can enter a draw for one of FIVE gift vouchers each valued at $200.

Please fill out the survey and return it in the Freepost Envelop provided to Advanced Business Research Ltd., P.O. Box 1592, Dunedin. Freepost Number 745 by

7 August 2006

If you have any enquiries about the survey, or it raises an issue that you would like to discuss with the Otago Regional Council please call Peter Taylor at 03 474 0827

Please answer these questions thinking about what you did to heat your home during the very cold spell in June this year.

1. During the recent cold snap what form of heating did you mostly use to heat your home? *(You may tick more than one.)*

- ❑[1] Open fire
- ❑[2] Enclosed Multi fuel burner
- ❑[3] Enclosed Wood burner
- ❑[4] Heat pump
- ❑[5] Electrical heaters
- ❑[6] Flued gas (with chimney)
- ❑[7] Unflued gas (mobile heater – no chimney)
- ❑[8] Pellets

2. If you used an open fire what did you burn?

- ❑[1] Wood
- ❑[2] Coal
- ❑[3] Both
- ❑[4] Other *(please detail)* _____

3. If you use an enclosed wood burner how old is this enclosed wood burner?

- ❑[1] Less than 1 year old
- ❑[2] 1-5 years old
- ❑[3] More than 5 years old

4. Ways you heated your rooms

In the recent cold snap how did you heat the listed rooms in your house.
(Please tick all the heating methods you used).

Ways you heated your rooms	Lounge	Dining Room	Bedrooms
Open fire	❑[1]	❑[1]	❑[1]
Enclosed Multi fuel burner	❑[2]	❑[2]	❑[2]
Enclosed Wood burner	❑[3]	❑[3]	❑[3]
Heat pump	❑[4]	❑[4]	❑[4]
Electrical heaters	❑[5]	❑[5]	❑[5]
Flued gas (with chimney)	❑[6]	❑[6]	❑[6]
Unflued gas (mobile heater – no chimney)	❑[7]	❑[7]	❑[7]
Pellets	❑[8]	❑[8]	❑[8]

5. The form of heating you most often use

a) In the recent cold weather what form of heating did you use **<u>the most</u>** to heat your home? _____

b) Is this **<u>always</u>** your preferred choice of heating? Yes ❑[1] No ❑[2]

c) If **No**, what other heating sources do you use most often? _____

6. If you used a heat pump for heating during the June cold spell

a) How old is the model you own/used? _____ years old

b) What is the brand of heat pump you own/used? _____

c) How adequate was the heating provided by the heat pump you use/own?	Very Adequate	Adequate	Poor	Very Poor
	❑	❑	❑	❑

7. Heating preferences

a) If you were to change the way you heat your home what form of heating would you prefer to change to? _____

_____

b) Why do you prefer this type of heating? *(please tick those that apply)*

- ❑[1] Heating efficiency
- ❑[2] Cost efficiency
- ❑[3] Easy to operate
- ❑[4] Availability of fuel or power
- ❑[5] Other*(please detail)* _____

_____

8. Use of Enclosed Wood Burners

a) If you have an enclosed wood burner do you bank it and turn it down at night when you retire to bed? Yes ❑[1] No ❑[2]

If Yes, is this to

- ❑[1] Make it easy to start in the morning
- ❑[2] Keep the room warm through the night
- ❑[3] Other*(please detail)* _____

_____

b) Do you find it a bother to collect, stack and chop firewood? Yes ❑[1] No ❑[2]

c) Do you find it a bother to light the fire each day and clean the ashes? Yes ❑[1] No ❑[2]

d) What would prevent you from switching to electrical forms of heating?

- ❑[1] Price
- ❑[2] Reliability
- ❑[3] Enjoyment of a fire
- ❑[4] Other*(please detail)*_____

9. Otago Regional Council Assistance

The Otago Regional Council would like to assist residents with planning their heating options.

If you would like the Otago Regional Council to contact you to discuss your home heating plans please provide your name and contact details here:

Name _____ Tel _____ Email _____

10. Air Pollution

a) Are you aware that Central Otago towns have air pollution problems in winter? Yes ❑[1] No ❑[2]

b) What do you think is the main cause of this air pollution? _____

c) Should anything at all be done to improve the winter air in Central Otago towns? Yes ❑[1] No ❑[2]

d) What do you think would improve the air in Central Otago towns?

_____

e) Please describe anything that **you are already doing** that helps decrease winter air pollution?

_____

f) Please describe anything **you could do** that would help decrease winter air pollution?

_____

11. Benefits of cleaner winter air

a) What would be the main benefit of clean winter air in Central Otago towns for you as an **individual?**

_____

b) What would be the main benefit of clean winter air in Central Otago towns for the **overall area?**

_____

12. About yourself

Are you Male ❑[1] Female ❑[2]

How many live in your house Adults _____ Children _____

Which one of the following towns do you live in?

❑[1]	Alexandra	❑[2]	Cromwell
❑[3]	Clyde	❑[4]	Ranfurly
❑[5]	Arrowtown		

Thank you we really appreciate you taking the time to assist us.

If you would like to go in the draw to win the
$200 gift voucher in your area

Please fill in your name and address here and return the completed survey by 7th August 2006

Name _____

Address _____

_____

Phone _____

Please note that your comments, and contact details will not be disclosed to any other organisation or individual, or used for any purpose beyond this research.

Please return the survey in the FREEPOST envelope provided to
Advanced Business Research Ltd, P.O. Box 1592 Dunedin Freepost Number 745

by 7 August 2006