for the residential programs, which include R-2.0.1, R-3, R-4.1.2 and R-4.4.0 (See Appendix A). These evaluations resulted in changes to the unit load impact estimates. The results of these evaluations have been reflected in the 1998 (0+12) and 1999 Budget forecasts. Fiscal 1997 actuals, however, are reported using the unit load impact estimates embedded in the 1997(0+12) consistent with the LRAM described in Chapter VI. For the remaining programs, new information gained from outside consultant studies, laboratory tests, computer model simulations, and the experiences of other utilities has been utilized. Note that prospective natural gas savings have not been specified for pilot programs. The intent of these pilots is to collect information about the various markets. Savings that may occur will be quantified based on the success of the pilot and a determination regarding roll-out to a full program. The costs for these pilots are individually specified as part of the documentation in Appendix B, and these costs are borne as an overhead by the entire sector for cost-effectiveness screening.

Environmental Externality Values

The externality values used in the program screening are based on the Final Report on Externalities for Natural Gas Integrated Resource Planning in Ontario ("Final Report of the Collaborative"), issued in September 1995. It should be noted that the Final Report of the Collaborative included dissenting views and, therefore, the CO_2 values ($10/tonne for low value in range and $60/tonne for high value) used in this Summary to update the program screening are not sponsored or endorsed by the Collaborative as a whole, but reflect Alternative 1.

Values for the other greenhouse gases, CH_4 and N_2O, follow from the approach taken to CO_2, and are determined by assessing the Global Warming Potential ("GWP") of CH_4 and N_2O relative to that of CO_2. These values are, respectively, 11 and 270, and

1GJ = .05 TCO2

Table V.2
Emissions Factors and Externality Costs (1995 $)
for Natural Gas Residential Space Heating

Line No.	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
			Externality Cost					
		Emission[1]	$Cdn/Tonne[2]		Total, $Cdn/GJ			
	Pollutant	kg/GJ	Low	High	Low	%	High	%
1.	NO_x	0.0208	$8,500	$15,000	$0.18	24	$0.31	9
2.	SO_x	0.0004	$2,100	$4,800	$0.00	0	$0.00	0
3.	Part	0.0060	$4,400	$16,400	$0.03	4	$0.10	3
4.	CO	0.0070	$1,400	$1,400	$0.01	1	$0.01	0
5.	VOCs	0.0030	$3,000	$7,500	$0.01	1	$0.02	1
6.	CO_2	51.0000	$10	$60	$0.51	69	$3.06	87
7.	CH_4	0.0010	$110	$660	$0.00	0	$0.00	0
8.	N_2O	0.0014	$2,700	$16,200	$0.00	0.0	$0.02	1.00
9.					$0.74	100	$3.52	100

[1] Emissions from "Development of Environmental Externalities for Consumers Gas," Table 14a, Tellus Institute, December 1993.

[2] Externality Costs from EBRO 490, Exhibit D2, Tab 6, Schedule 1, page IV-21.

Avoided Gas Costs

1. Updated Avoided Gas Costs

The purpose of this section is to (i) highlight changes to the input parameters that have taken place since the evidence filed in EBRO 495, (ii) update the unit avoided gas costs for the three existing DSM measures and (iii) provide unit avoided gas costs for a new measure, the space and water heating combination unit.

represent the relative global warming strength, or potential, of these gases relative to CO_2 on a per molecule basis. The environmental externalities values used in this DSM Summary are summarized in Table V.1 below.

Table V.1
Environmental Externality Screening Values

Line No.	Pollutant	Col. 1	Col. 2	Col. 3	Col. 4
		1996 DSM Summary (1995$Cdn/tonne)		1995 DSM Plan (1995$Cdn/tonne)	
		Low	High	Low	High
1.	CO_2	$ 10	$ 60	$ 10	$ 100
2.	CH_4	$ 110	$ 660	$ 110	$ 110
3.	N_2O	$2,700	$16,200	not considered	not considered
4.	Particulates	$4,400	$16,400	$1,000	$13,000
5.	CO	$1,400	$ 1,400	$ 10	$ 1,400
6.	SO_2	$2,100	$ 4,800	$ 600	$ 6,000
7.	NO_x	$8,500	$15,000	$3,000	$11,000
8.	VOCs	$3,000	$ 7,500	$1,800	$11,000

At the request of members of the Consultative, the values for these externalities have also been calculated taking into account the relative proportions of the pollutants in the combustion of natural gas. These are found in Table V.2 below. For example, even though a pollutant has a large externality value on a per tonne basis, but is small in terms of the amount produced upon combustion, the cost may be very small in absolute dollar terms. Because CO_2 represents the highest proportion of the emissions when natural gas is combusted, its value has the most impact on the overall externality cost, making up approximately 90% of it when high externality values are used.