Appendix 5 Emissions of pollutants per tonne-kilometre and per passenger-kilometre

Emissions per tonne-kilometre

Table A5.1

Urban and rural life cycle emissions

Full Lifecycle	Units	LS diesel (Aus)	ULS diesel (Aus)	ULS diesel (100% hydroprocessing)	Fischer-Tropsch diesel
Greenhouse	kg CO2	0.1030	0.1055	0.1032	0.1105
NMHC total	g HC	0.168	0.152	0.150	0.105
NMHC urban	g HC	0.133	0.115	0.114	0.058
NOx total	g NOx	1.253	1.102	1.086	1.147
NOx urban	g NOx	1.185	1.033	1.017	0.991
CO total	g CO	0.303	0.379	0.376	0.260
CO urban	g CO	0.291	0.367	0.363	0.224
PM10 total	mg PM10	48.8	38.3	38.2	29.6
PM10 urban	mg PM10	47.1	36.6	36.5	27.5
Energy Embodied	MJ LHV	1.41	1.46	1.44	1.90

Full Lifecycle	Units	LS diesel (Aus)	Biodiesel (canola)	Biodiesel (soybean)	Biodiesel (rape)	Biodiesel (tallow-expanded sys. boundary)	Biodiesel (tallow-eco.allocat.)	Biodiesel (waste oil)	Biodiesel (waste oil 10% original oil value)
Greenhouse	kg CO2	0.1030	0.0480	0.0362	0.0491	0.0465	0.0552	0.0079	0.0082
NMHC total	g HC	0.168	0.160	0.190	0.161	0.157	0.067	0.066	0.068
NMHC urban	g HC	0.133	0.148	0.180	0.148	0.145	0.065	0.065	0.066
NOx total	g NOx	1.253	1.436	1.423	1.456	1.431	1.312	1.310	1.316
NOx urban	g NOx	1.185	1.350	1.369	1.352	1.349	1.311	1.309	1.315
CO total	g CO	0.303	0.189	0.243	0.190	0.188	0.157	0.156	0.161
CO urban	g CO	0.291	0.172	0.232	0.172	0.171	0.156	0.156	0.161
PM10 total	mg PM10	48.8	33.1	32.6	33.8	33.0	30.6	30.5	30.5
PM10 urban	mg PM10	47.1	31.5	31.5	31.5	31.4	30.6	30.5	30.5
Energy Embodied	MJ LHV	1.41	0.46	0.50	0.47	0.45	0.19	0.18	0.18

Full Lifecycle	Units	LS diesel (Aus)	CNG (Electric compression)	CNG (NG compression)	LNG (from existing transmission line)	LNG (Shipped from north west shelf)	LNG (perth)	LPG (Autogas)	LPG (HD5)
Greenhouse	kg CO2	0.1030	0.0852	0.0874	0.0833	0.0841	0.0873	0.0930	0.0998
NMHC total	g HC	0.168	0.034	0.037	0.035	0.035	0.038	0.123	0.126
NMHC urban	g HC	0.133	0.003	0.004	0.003	0.002	0.004	0.091	0.092
NOx total	g NOx	1.253	0.179	0.195	0.258	0.260	0.305	0.170	0.503
NOx urban	g NOx	1.185	0.162	0.176	0.240	0.221	0.225	0.108	0.439
CO total	g CO	0.303	0.014	0.018	0.015	0.016	0.017	0.046	0.043
CO urban	g CO	0.291	0.006	0.010	0.007	0.004	0.005	0.035	0.032
PM10 total	mg PM10	48.8	8.4	8.5	8.2	8.3	10.4	10.8	7.9
PM10 urban	mg PM10	47.1	8.2	8.3	8.0	7.8	8.0	9.2	6.3
Energy Embodied	MJ LHV	1.41	1.39	1.46	1.39	1.40	1.44	1.29	1.33

Table A5.1 (cont).

Urban and rural life cycle emissions

Full Lifecycle	Units	LS diesel (Aus)	LSdiesohol	Ethanol azeotropic (molasses-expanded sys.bound.)	Ethanol azeotropic (molasses-economic allocation)	Ethanol azeotropic (wheat starch waste)	Ethanol azeotropic (wheat)	Ethanol azeotropic (wheat) fired with wheat straw	Ethanol azeotropic (woodwaste)	Ethanol azeotropic (ethylene)	Hydrogen (from natural gas)
Greenhouse	kg CO2	0.1030	0.0960	0.0483	0.0838	0.0425	0.0769	0.0383	0.0092	0.1636	0.1852
NMHC total	g HC	0.168	0.159	0.096	0.095	0.086	0.162	1.116	0.720	0.743	0.179
NMHC urban	g HC	0.133	0.127	0.092	0.093	0.084	0.092	1.046	0.719	0.656	0.140
NOx total	g NOx	1.253	1.158	1.116	1.115	1.083	1.311	1.249	1.032	1.351	0.172
NOx urban	g NOx	1.185	1.094	1.080	1.109	1.080	1.118	1.057	1.030	1.302	0.151
CO total	g CO	0.303	0.402	1.010	1.194	0.363	1.258	4.303	2.543	0.427	1.105
CO urban	g CO	0.291	0.390	1.003	1.192	0.362	0.366	3.412	2.543	0.407	1.096
PM10 total	mg PM10	48.8	38.1	32.8	32.1	56.1	60.1	83.0	62.2	37.7	40.5
PM10 urban	mg PM10	47.1	36.5	32.1	31.9	56.0	56.9	79.7	62.1	37.0	40.2
Energy Embodied	MJ LHV	1.41	1.33	0.49	0.56	0.50	0.79	0.92	3.14	4.03	1.69

Table A5.2

Urban and rural upstream emissions

Precombustion	Units	LS diesel (Aus)	ULS diesel (Aus)	ULS diesel (100% hydroprocessing)	Fischer-Tropsch diesel
Greenhouse	kg CO2	0.0229	0.026	0.023	0.036
NMHC total	g HC	0.068	0.070	0.069	0.047
NMHC urban	g HC	0.033	0.034	0.033	0.001
NOx total	g NOx	0.120	0.138	0.121	0.163
NOx urban	g NOx	0.052	0.068	0.053	0.006
CO total	g CO	0.027	0.031	0.027	0.037
CO urban	g CO	0.015	0.018	0.015	0.001
PM10 total	mg PM10	6.503	6.704	6.581	2.260
PM10 urban	mg PM10	4.799	4.966	4.855	0.082
Energy Embodied	MJ LHV	1.414	1.459	1.436	1.904

Precombustion	Units	LS diesel (Aus)	Biodiesel (canola)	Biodiesel (soybean)	Biodiesel (rape)	Biodiesel (tallow-expanded sys. boundary)	Biodiesel (tallow-eco.allocat.)	Biodiesel (waste oil)	Biodiesel (waste oil 10% original oil value)
Greenhouse	kg CO2	0.0229	0.048	0.036	0.049	0.047	0.055	0.008	0.008
NMHC total	g HC	0.068	0.156	0.186	0.157	0.153	0.062	0.062	0.063
NMHC urban	g HC	0.033	0.144	0.176	0.144	0.140	0.061	0.061	0.062
NOx total	g NOx	0.120	0.155	0.141	0.175	0.150	0.031	0.029	0.034
NOx urban	g NOx	0.052	0.069	0.088	0.071	0.068	0.030	0.028	0.034
CO total	g CO	0.027	0.038	0.092	0.039	0.037	0.006	0.005	0.010
CO urban	g CO	0.015	0.021	0.082	0.021	0.020	0.005	0.005	0.010
PM10 total	mg PM10	6.503	2.784	2.216	3.463	2.695	0.242	0.208	0.208
PM10 urban	mg PM10	4.799	1.125	1.180	1.158	1.088	0.228	0.196	0.196
Energy Embodied	MJ LHV	1.414	0.461	0.501	0.473	0.451	0.188	0.179	0.184

Table A5.2 (cont).

Urban and rural upstream emissions

Precombustion	Units	LS diesel (Aus)	CNG (Electric compression)	CNG (NG compression)	LNG (from existing transmission line)	LNG (Shipped from north west shelf)	LNG (perth)	LPG (Autogas)	LPG (HD5)
Greenhouse	kg CO2	0.0229	0.015	0.017	0.014	0.015	0.018	0.021	0.021
NMHC total	g HC	0.068	0.032	0.035	0.033	0.033	0.036	0.122	0.124
NMHC urban	g HC	0.033	0.001	0.001	0.001	0.000	0.002	0.090	0.090
NOx total	g NOx	0.120	0.034	0.049	0.037	0.039	0.084	0.111	0.110
NOx urban	g NOx	0.052	0.016	0.030	0.019	0.000	0.004	0.049	0.046
CO total	g CO	0.027	0.009	0.014	0.011	0.012	0.013	0.025	0.025
CO urban	g CO	0.015	0.002	0.006	0.004	0.000	0.001	0.014	0.013
PM10 total	mg PM10	6.503	0.562	0.673	0.506	0.534	2.706	6.459	6.136
PM10 urban	mg PM10	4.799	0.329	0.420	0.263	0.008	0.263	4.888	4.532
Energy Embodied	MJ LHV	1.414	1.391	1.462	1.392	1.403	1.436	1.292	1.325

Precombustion	Units	LS diesel (Aus)	LSdiesohol	Ethanol azeotropic (molasses-expanded sys.bound.)	Ethanol azeotropic (molasses-economic allocation)	Ethanol azeotropic (wheat starch waste)	Ethanol azeotropic (wheat)	Ethanol azeotropic (wheat) fired with wheat straw	Ethanol azeotropic (woodwaste)	Ethanol azeotropic (ethylene)	Hydrogen (from natural gas)
Greenhouse	kg CO2	0.0229	0.026	0.048	0.084	0.043	0.077	0.038	0.009	0.115	0.100
NMHC total	g HC	0.068	0.064	0.015	0.013	0.004	0.080	1.034	0.638	0.661	0.040
NMHC urban	g HC	0.033	0.032	0.010	0.011	0.003	0.011	0.964	0.637	0.575	0.001
NOx total	g NOx	0.120	0.124	0.148	0.147	0.116	0.343	0.282	0.065	0.383	0.063
NOx urban	g NOx	0.052	0.059	0.112	0.141	0.112	0.150	0.090	0.062	0.334	0.041
CO total	g CO	0.027	0.090	0.660	0.844	0.013	0.909	3.953	2.194	0.077	0.015
CO urban	g CO	0.015	0.078	0.654	0.842	0.012	0.016	3.062	2.194	0.057	0.005
PM10 total	mg PM10	6.503	5.957	1.058	0.340	24.387	28.395	51.223	30.511	5.924	0.811
PM10 urban	mg PM10	4.799	4.354	0.357	0.214	24.275	25.166	47.994	30.400	5.267	0.521
Energy Embodied	MJ LHV	1.414	1.325	0.491	0.561	0.504	0.790	0.920	3.140	4.031	1.693

Table A5.3

Urban and rural tailpipe emissions

Combustion	Units	LS diesel (Aus)	ULS diesel (Aus)	ULS diesel (100% hydroprocessing)	Fischer-Tropsch diesel
Greenhouse	kg CO2	0.080	0.080	0.080	0.075
NMHC total	g HC	0.100	0.081	0.081	0.057
NMHC urban	g HC	0.100	0.081	0.081	0.057
NOx total	g NOx	1.132	0.964	0.964	0.985
NOx urban	g NOx	1.132	0.964	0.964	0.985
CO total	g CO	0.276	0.349	0.349	0.223
CO urban	g CO	0.276	0.349	0.349	0.223
PM10 total	mg PM10	42.31	31.62	31.62	27.38
PM10 urban	mg PM10	42.31	31.62	31.62	27.38
Energy Embodied	MJ LHV	0	0	0	0

Table A5.3 (cont.)
Urban and rural tailpipe emissions

Combustion	Units	LS diesel (Aus)	Biodiesel (canola)	Biodiesel (soybean)	Biodiesel (rape)	Biodiesel (tallow-expanded sys. boundary)	Biodiesel (tallow-eco.allocat.)	Biodiesel (waste oil)	Biodiesel (waste oil 10% original oil value)
Greenhouse	kg CO2	0.080	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NMHC total	g HC	0.100	0.004	0.004	0.004	0.004	0.004	0.004	0.004
NMHC urban	g HC	0.100	0.004	0.004	0.004	0.004	0.004	0.004	0.004
NOx total	g NOx	1.132	1.281	1.281	1.281	1.281	1.281	1.281	1.281
NOx urban	g NOx	1.132	1.281	1.281	1.281	1.281	1.281	1.281	1.281
CO total	g CO	0.276	0.151	0.151	0.151	0.151	0.151	0.151	0.151
CO urban	g CO	0.276	0.151	0.151	0.151	0.151	0.151	0.151	0.151
PM10 total	mg PM10	42.31	30.34	30.34	30.34	30.34	30.34	30.34	30.34
PM10 urban	mg PM10	42.31	30.34	30.34	30.34	30.34	30.34	30.34	30.34
Energy Embodied	MJ LHV	0	0	0	0	0	0	0	0

Combustion	Units	LS diesel (Aus)	CNG (Electric compression)	CNG (NG compression)	LNG (from existing transmission line)	LNG (Shipped from north west shelf)	LNG (perth)	LPG (Autogas)	LPG (HD5)
Greenhouse	kg CO2	0.080	0.070	0.070	0.069	0.069	0.069	0.072	0.079
NMHC total	g HC	0.100	0.002	0.002	0.002	0.002	0.002	0.001	0.003
NMHC urban	g HC	0.100	0.002	0.002	0.002	0.002	0.002	0.001	0.003
NOx total	g NOx	1.132	0.146	0.146	0.221	0.221	0.221	0.059	0.393
NOx urban	g NOx	1.132	0.146	0.146	0.221	0.221	0.221	0.059	0.393
CO total	g CO	0.276	0.004	0.004	0.004	0.004	0.004	0.021	0.018
CO urban	g CO	0.276	0.004	0.004	0.004	0.004	0.004	0.021	0.018
PM10 total	mg PM10	42.31	7.85	7.85	7.74	7.74	7.74	4.31	1.74
PM10 urban	mg PM10	42.31	7.85	7.85	7.74	7.74	7.74	4.31	1.74
Energy Embodied	MJ LHV	0	0	0	0	0	0	0	0

Combustion	Units	LS diesel (Aus)	LSdiesohol	Ethanol azeotropic (molasses-expanded sys.bound.)	Ethanol azeotropic (molasses-economic allocation)	Ethanol azeotropic (wheat starch waste)	Ethanol azeotropic (wheat)	Ethanol azeotropic (wheat) fired with wheat straw	Ethanol azeotropic (woodwaste)	Ethanol azeotropic (ethylene)	Hydrogen (from natural gas)
Greenhouse	kg CO2	0.080	0.070	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.085
NMHC total	g HC	0.100	0.095	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.139
NMHC urban	g HC	0.100	0.095	0.082	0.082	0.082	0.082	0.082	0.082	0.082	0.139
NOx total	g NOx	1.132	1.035	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.109
NOx urban	g NOx	1.132	1.035	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.109
CO total	g CO	0.276	0.312	0.350	0.350	0.350	0.350	0.350	0.350	0.350	1.091
CO urban	g CO	0.276	0.312	0.350	0.350	0.350	0.350	0.350	0.350	0.350	1.091
PM10 total	mg PM10	42.31	32.16	31.73	31.73	31.73	31.73	31.73	31.73	31.73	39.67
PM10 urban	mg PM10	42.31	32.16	31.73	31.73	31.73	31.73	31.73	31.73	31.73	39.67
Energy Embodied	MJ LHV	0	0	0	0	0	0	0	0	0	0

Table 2.4

Summary of life cycle emissions from alternative fuels

		LS diesel (Aus)	ULS diesel (Aus)	ULS diesel (100% hydroprocessing)	Fischer-Tropsch diesel
Greenhouse	Precombustion	0.0229	0.0255	0.0233	0.0359
Greenhouse	Combustion	0.0801	0.0800	0.0800	0.0747
NMHC total	Precombustion	0.0678	0.0705	0.0686	0.0473
NMHC total	Combustion	0.1002	0.0813	0.0813	0.0574
NMHC urban	Precombustion	0.0325	0.0341	0.0330	0.0010
NMHC urban	Combustion	0.1002	0.0813	0.0813	0.0574
NOx total	Precombustion	0.1203	0.1381	0.1214	0.1626
NOx total	Combustion	1.132	0.964	0.964	0.985
NOx urban	Precombustion	0.052	0.068	0.053	0.006
NOx urban	Combustion	1.132	0.964	0.964	0.985
CO total	Precombustion	0.0271	0.0310	0.0274	0.0370
CO total	Combustion	0.2761	0.3485	0.3485	0.2228
CO urban	Precombustion	0.0147	0.0183	0.0149	0.0010
CO urban	Combustion	0.2761	0.3485	0.3485	0.2228
PM10 total	Precombustion	6.50	6.70	6.58	2.26
PM10 total	Combustion	42.31	31.62	31.62	27.38
PM10 urban	Precombustion	4.80	4.97	4.86	0.08
PM10 urban	Combustion	42.31	31.62	31.62	27.38
Energy Embodied	Precombustion	1.41	1.46	1.44	1.90

		LS diesel (Aus)	Biodiesel (canola)	Biodiesel (soybean)	Biodiesel (rape)	Biodiesel (tallow-expanded sys. boundary)	Biodiesel (tallow-eco.allocat.)	Biodiesel (waste oil)	Biodiesel (waste oil 10% original oil value)
Greenhouse	Precombustion	0.0229	0.048	0.036	0.049	0.047	0.055	0.008	0.008
Greenhouse	Combustion	0.0801	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NMHC total	Precombustion	0.0678	0.156	0.186	0.157	0.153	0.062	0.062	0.063
NMHC total	Combustion	0.1002	0.004	0.004	0.004	0.004	0.004	0.004	0.004
NMHC urban	Precombustion	0.0325	0.144	0.176	0.144	0.140	0.061	0.061	0.062
NMHC urban	Combustion	0.1002	0.004	0.004	0.004	0.004	0.004	0.004	0.004
NOx total	Precombustion	0.1203	0.155	0.141	0.175	0.150	0.031	0.029	0.034
NOx total	Combustion	1.132	1.281	1.281	1.281	1.281	1.281	1.281	1.281
NOx urban	Precombustion	0.052	0.069	0.088	0.071	0.068	0.030	0.028	0.034
NOx urban	Combustion	1.132	1.281	1.281	1.281	1.281	1.281	1.281	1.281
CO total	Precombustion	0.0271	0.038	0.092	0.039	0.037	0.006	0.005	0.010
CO total	Combustion	0.2761	0.151	0.151	0.151	0.151	0.151	0.151	0.151
CO urban	Precombustion	0.0147	0.021	0.082	0.021	0.020	0.005	0.005	0.010
CO urban	Combustion	0.2761	0.151	0.151	0.151	0.151	0.151	0.151	0.151
PM10 total	Precombustion	6.50	2.784	2.216	3.463	2.695	0.242	0.208	0.208
PM10 total	Combustion	42.31	30.339	30.339	30.339	30.339	30.339	30.339	30.339
PM10 urban	Precombustion	4.80	1.125	1.180	1.158	1.088	0.228	0.196	0.196
PM10 urban	Combustion	42.31	30.339	30.339	30.339	30.339	30.339	30.339	30.339
Energy Embodied	Precombustion	1.41	0.461	0.501	0.473	0.451	0.188	0.179	0.184

Table A5.4 (cont.)

Summary of life cycle emissions from alternative fuels

		LS diesel (Aus)	CNG (Electric compression)	CNG (NG compression)	LNG (from existing transmission line)	LNG (Shipped from north west shelf)	LNG (perth)	LPG (Autogas)	LPG (HD5)
Greenhouse	Precombustion	0.0229	0.0151	0.0173	0.0143	0.0150	0.0183	0.0207	0.0207
Greenhouse	Combustion	0.0801	0.0701	0.0701	0.0690	0.0690	0.0690	0.0723	0.0791
NMHC total	Precombustion	0.0678	0.0318	0.0350	0.0332	0.0332	0.0359	0.1225	0.1236
NMHC total	Combustion	0.1002	0.0025	0.0025	0.0020	0.0020	0.0020	0.0009	0.0026
NMHC urban	Precombustion	0.0325	0.0008	0.0013	0.0010	0.0001	0.0015	0.0903	0.0899
NMHC urban	Combustion	0.1002	0.0025	0.0025	0.0020	0.0020	0.0020	0.0009	0.0026
NOx total	Precombustion	0.1203	0.0336	0.0492	0.0371	0.0391	0.0843	0.1114	0.1100
NOx total	Combustion	1.132	0.146	0.146	0.221	0.221	0.221	0.059	0.393
NOx urban	Precombustion	0.052	0.016	0.030	0.019	0.000	0.004	0.049	0.046
NOx urban	Combustion	1.132	0.146	0.146	0.221	0.221	0.221	0.059	0.393
CO total	Precombustion	0.0271	0.0092	0.0138	0.0112	0.0117	0.0135	0.0254	0.0249
CO total	Combustion	0.2761	0.0043	0.0043	0.0039	0.0039	0.0039	0.0208	0.0185
CO urban	Precombustion	0.0147	0.0018	0.0057	0.0036	0.0001	0.0011	0.0140	0.0134
CO urban	Combustion	0.2761	0.0043	0.0043	0.0039	0.0039	0.0039	0.0208	0.0185
PM10 total	Precombustion	6.50	0.56	0.67	0.51	0.53	2.71	6.46	6.14
PM10 total	Combustion	42.31	7.85	7.85	7.74	7.74	7.74	4.31	1.74
PM10 urban	Precombustion	4.80	0.33	0.42	0.26	0.01	0.26	4.89	4.53
PM10 urban	Combustion	42.31	7.85	7.85	7.74	7.74	7.74	4.31	1.74
Energy Embodied	Precombustion	1.41	1.39	1.46	1.39	1.40	1.44	1.29	1.33

		LS diesel (Aus)	LSdiesohol	Ethanol azeotropic (molasses-expanded sys.bound.)	Ethanol azeotropic (molasses-economic allocation)	Ethanol azeotropic (wheat starch waste)	Ethanol azeotropic (wheat)	Ethanol azeotropic (wheat) fired with wheat straw	Ethanol azeotropic (woodwaste)	Ethanol azeotropic (ethylene)	Hydrogen (from natural gas)
Greenhouse	Precombustion	0.0229	0.0257	0.0483	0.0838	0.0425	0.0769	0.0383	0.0092	0.1147	0.0999
Greenhouse	Combustion	0.0801	0.0703	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0489	0.0853
NMHC total	Precombustion	0.0678	0.0638	0.0148	0.0131	0.0044	0.0802	1.0345	0.6381	0.6614	0.0399
NMHC total	Combustion	0.1002	0.0954	0.0816	0.0816	0.0816	0.0816	0.0816	0.0816	0.0816	0.1388
NMHC urban	Precombustion	0.0325	0.0316	0.0105	0.0114	0.0027	0.0109	0.9643	0.6369	0.5746	0.0013
NMHC urban	Combustion	0.1002	0.0954	0.0816	0.0816	0.0816	0.0816	0.0816	0.0816	0.0816	0.1388
NOx total	Precombustion	0.1203	0.1236	0.1481	0.1470	0.1158	0.3430	0.2817	0.0646	0.3831	0.0632
NOx total	Combustion	1.132	1.035	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.109
NOx urban	Precombustion	0.052	0.059	0.112	0.141	0.112	0.150	0.090	0.062	0.334	0.041
NOx urban	Combustion	1.132	1.035	0.968	0.968	0.968	0.968	0.968	0.968	0.968	0.109
CO total	Precombustion	0.0271	0.0896	0.6603	0.8441	0.0128	0.9086	3.9531	2.1937	0.0773	0.0146
CO total	Combustion	0.2761	0.3119	0.3498	0.3498	0.3498	0.3498	0.3498	0.3498	0.3498	1.0909
CO urban	Precombustion	0.0147	0.0779	0.6536	0.8418	0.0121	0.0165	3.0622	2.1937	0.0568	0.0055
CO urban	Combustion	0.2761	0.3119	0.3498	0.3498	0.3498	0.3498	0.3498	0.3498	0.3498	1.0909
PM10 total	Precombustion	6.50	5.96	1.06	0.34	24.39	28.40	51.22	30.51	5.92	0.81
PM10 total	Combustion	42.31	32.16	31.73	31.73	31.73	31.73	31.73	31.73	31.73	39.67
PM10 urban	Precombustion	4.80	4.35	0.36	0.21	24.28	25.17	47.99	30.40	5.27	0.52
PM10 urban	Combustion	42.31	32.16	31.73	31.73	31.73	31.73	31.73	31.73	31.73	39.67
Energy Embodied	Precombustion	1.41	1.33	0.49	0.56	0.50	0.79	0.92	3.14	4.03	1.69

Emissions per passenger kilometre

Table A5.5

Urban and rural exbodied emissions

Precombustion	Units	LS diesel (Aus)	ULS diesel (Aus)	ULS diesel (100% hydroprocessing)	Fischer-Tropsch diesel
Greenhouse	kg CO2	0.0910	0.0931	0.0912	0.0976
NMHC total	g HC	0.148	0.134	0.132	0.092
NMHC urban	g HC	0.117	0.102	0.101	0.052
NOx total	g NOx	1.107	0.974	0.959	1.014
NOx urban	g NOx	1.046	0.912	0.898	0.875
CO total	g CO	0.268	0.335	0.332	0.229
CO urban	g CO	0.257	0.324	0.321	0.198
PM10 total	mg PM10	43.1	33.9	33.7	26.2
PM10 urban	mg PM10	41.6	32.3	32.2	24.3
Energy Embodied	MJ LHV	1.249	1.289	1.269	1.682

Precombustion	Units	LS diesel (Aus)	Biodiesel (canola)	Biodiesel (soybean)	Biodiesel (rape)	Biodiesel (tallow-expanded sys. boundary)	Biodiesel (tallow-eco.allocat.)	Biodiesel (waste oil)	Biodiesel (waste oil 10% original oil value)
Greenhouse	kg CO2	0.0910	0.0424	0.0320	0.0434	0.0411	0.0488	0.0069	0.0072
NMHC total	g HC	0.148	0.142	0.168	0.143	0.139	0.059	0.059	0.060
NMHC urban	g HC	0.117	0.131	0.159	0.131	0.128	0.058	0.058	0.059
NOx total	g NOx	1.107	1.268	1.257	1.286	1.264	1.159	1.157	1.162
NOx urban	g NOx	1.046	1.193	1.209	1.195	1.191	1.158	1.156	1.161
CO total	g CO	0.268	0.167	0.215	0.168	0.166	0.138	0.138	0.143
CO urban	g CO	0.257	0.152	0.205	0.152	0.151	0.138	0.138	0.142
PM10 total	mg PM10	43.1	29.3	28.8	29.9	29.2	27.0	27.0	27.0
PM10 urban	mg PM10	41.6	27.8	27.8	27.8	27.8	27.0	27.0	27.0
Energy Embodied	MJ LHV	1.249	0.407	0.443	0.418	0.398	0.166	0.158	0.162

Precombustion	Units	LS diesel (Aus)	CNG (Electric compression)	CNG (NG compression)	LNG (from existing transmission line)	LNG (Shipped from north west shelf)	LNG (perth)	LPG (Autogas)	LPG (HD5)
Greenhouse	kg CO2	0.0910	0.0752	0.0772	0.0736	0.0743	0.0771	0.0822	0.0882
NMHC total	g HC	0.148	0.030	0.033	0.031	0.031	0.033	0.109	0.111
NMHC urban	g HC	0.117	0.003	0.003	0.003	0.002	0.003	0.081	0.082
NOx total	g NOx	1.107	0.158	0.172	0.228	0.230	0.270	0.150	0.444
NOx urban	g NOx	1.046	0.143	0.155	0.212	0.196	0.198	0.095	0.387
CO total	g CO	0.268	0.012	0.016	0.013	0.014	0.015	0.041	0.038
CO urban	g CO	0.257	0.005	0.009	0.007	0.003	0.004	0.031	0.028
PM10 total	mg PM10	43.1	7.4	7.5	7.3	7.3	9.2	9.5	7.0
PM10 urban	mg PM10	41.6	7.2	7.3	7.1	6.8	7.1	8.1	5.5
Energy Embodied	MJ LHV	1.249	1.229	1.291	1.230	1.239	1.269	1.141	1.171

Table A5.5 (cont.)

Urban and rural exbodied emissions

Precombustion	Units	LS diesel (Aus)	LSdiesohol	Ethanol azeotropic (molasses-expanded sys.bound.)	Ethanol azeotropic (molasses-economic allocation)	Ethanol azeotropic (wheat starch waste)	Ethanol azeotropic (wheat)	Ethanol azeotropic (wheat) fired with wheat straw	Ethanol azeotropic (woodwaste)	Ethanol azeotropic (ethylene)	Hydrogen (from natural gas)
Greenhouse	kg CO2	0.0910	0.0848	0.0427	0.0741	0.0376	0.0680	0.0338	0.0081	0.1445	0.1636
NMHC total	g HC	0.148	0.141	0.085	0.084	0.076	0.143	0.986	0.636	0.656	0.158
NMHC urban	g HC	0.117	0.112	0.081	0.082	0.074	0.082	0.924	0.635	0.580	0.124
NOx total	g NOx	1.107	1.023	0.986	0.985	0.957	1.158	1.104	0.912	1.193	0.152
NOx urban	g NOx	1.046	0.966	0.954	0.980	0.954	0.988	0.934	0.909	1.150	0.133
CO total	g CO	0.268	0.355	0.892	1.055	0.320	1.112	3.801	2.247	0.377	0.976
CO urban	g CO	0.257	0.344	0.886	1.053	0.320	0.324	3.014	2.247	0.359	0.968
PM10 total	mg PM10	43.1	33.7	29.0	28.3	49.6	53.1	73.3	55.0	33.3	35.8
PM10 urban	mg PM10	41.6	32.3	28.3	28.2	49.5	50.3	70.4	54.9	32.7	35.5
Energy Embodied	MJ LHV	1.249	1.171	0.434	0.496	0.446	0.697	0.812	2.774	3.561	1.495

Table A5.6

Urban and rural upstream emissions

Precombustion	Units	LS diesel (Aus)	ULS diesel (Aus)	ULS diesel (100% hydroprocessing)	Fischer-Tropsch diesel
Greenhouse	kg CO2	0.020	0.023	0.021	0.032
NMHC total	g HC	0.060	0.062	0.061	0.042
NMHC urban	g HC	0.029	0.030	0.029	0.001
NOx total	g NOx	0.106	0.122	0.107	0.144
NOx urban	g NOx	0.046	0.060	0.047	0.005
CO total	g CO	0.024	0.027	0.024	0.033
CO urban	g CO	0.013	0.016	0.013	0.001
PM10 total	mg PM10	5.744	5.921	5.813	1.997
PM10 urban	mg PM10	4.239	4.387	4.289	0.072
Energy Embodied	MJ LHV	1.249	1.289	1.269	1.682

Precombustion	Units	LS diesel (Aus)	Biodiesel (canola)	Biodiesel (soybean)	Biodiesel (rape)	Biodiesel (tallow-expanded sys. boundary)	Biodiesel (tallow-eco.allocat.)	Biodiesel (waste oil)	Biodiesel (waste oil 10% original oil value)
Greenhouse	kg CO2	0.020	0.042	0.032	0.043	0.041	0.049	0.007	0.007
NMHC total	g HC	0.060	0.138	0.164	0.139	0.135	0.055	0.055	0.056
NMHC urban	g HC	0.029	0.127	0.155	0.127	0.124	0.054	0.054	0.055
NOx total	g NOx	0.106	0.137	0.125	0.154	0.133	0.027	0.025	0.030
NOx urban	g NOx	0.046	0.061	0.077	0.063	0.060	0.027	0.025	0.030
CO total	g CO	0.024	0.034	0.081	0.035	0.033	0.005	0.005	0.009
CO urban	g CO	0.013	0.019	0.072	0.019	0.018	0.005	0.004	0.009
PM10 total	mg PM10	5.744	2.459	1.957	3.059	2.380	0.213	0.184	0.184
PM10 urban	mg PM10	4.239	0.993	1.043	1.023	0.961	0.202	0.173	0.173
Energy Embodied	MJ LHV	1.249	0.407	0.443	0.418	0.398	0.166	0.158	0.162

Table A5.6 (cont.)

Urban and rural upstream emissions

Precombustion	Units	LS diesel (Aus)	CNG (Electric compression)	CNG (NG compression)	LNG (from existing transmission line)	LNG (Shipped from north west shelf)	LNG (perth)	LPG (Autogas)	LPG (HD5)
Greenhouse	kg CO2	0.020	0.013	0.015	0.013	0.013	0.016	0.018	0.018
NMHC total	g HC	0.060	0.028	0.031	0.029	0.029	0.032	0.108	0.109
NMHC urban	g HC	0.029	0.001	0.001	0.001	0.000	0.001	0.080	0.079
NOx total	g NOx	0.106	0.030	0.043	0.033	0.035	0.074	0.098	0.097
NOx urban	g NOx	0.046	0.014	0.027	0.017	0.000	0.003	0.043	0.040
CO total	g CO	0.024	0.008	0.012	0.010	0.010	0.012	0.022	0.022
CO urban	g CO	0.013	0.002	0.005	0.003	0.000	0.001	0.012	0.012
PM10 total	mg PM10	5.744	0.497	0.595	0.447	0.472	2.390	5.705	5.420
PM10 urban	mg PM10	4.239	0.290	0.371	0.232	0.007	0.232	4.318	4.003
Energy Embodied	MJ LHV	1.249	1.229	1.291	1.230	1.239	1.269	1.141	1.171

Precombustion	Units	LS diesel (Aus)	LSdiesohol	Ethanol azeotropic (molasses-expanded sys.bound.)	Ethanol azeotropic (molasses-economic allocation)	Ethanol azeotropic (wheat starch waste)	Ethanol azeotropic (wheat)	Ethanol azeotropic (wheat) fired with wheat straw	Ethanol azeotropic (woodwaste)	Ethanol azeotropic (ethylene)	Hydrogen (from natural gas)
Greenhouse	kg CO2	0.020	0.023	0.043	0.074	0.038	0.068	0.034	0.008	0.101	0.088
NMHC total	g HC	0.060	0.056	0.013	0.012	0.004	0.071	0.914	0.564	0.584	0.035
NMHC urban	g HC	0.029	0.028	0.009	0.010	0.002	0.010	0.852	0.563	0.508	0.001
NOx total	g NOx	0.106	0.109	0.131	0.130	0.102	0.303	0.249	0.057	0.338	0.056
NOx urban	g NOx	0.046	0.052	0.099	0.125	0.099	0.133	0.079	0.055	0.295	0.037
CO total	g CO	0.024	0.079	0.583	0.746	0.011	0.803	3.492	1.938	0.068	0.013
CO urban	g CO	0.013	0.069	0.577	0.744	0.011	0.015	2.705	1.938	0.050	0.005
PM10 total	mg PM10	5.744	5.262	0.934	0.300	21.541	25.083	45.247	26.951	5.233	0.716
PM10 urban	mg PM10	4.239	3.846	0.316	0.189	21.443	22.230	42.394	26.853	4.653	0.460
Energy Embodied	MJ LHV	1.249	1.171	0.434	0.496	0.446	0.697	0.812	2.774	3.561	1.495

Table A5.7

Urban and rural tailpipe emissions

Combustion	Units	LS diesel (Aus)	ULS diesel (Aus)	ULS diesel (100% hydroprocessing)	Fischer-Tropsch diesel
Greenhouse	kg CO2	0.071	0.071	0.071	0.066
NMHC total	g HC	0.089	0.072	0.072	0.051
NMHC urban	g HC	0.089	0.072	0.072	0.051
NOx total	g NOx	1.000	0.852	0.852	0.870
NOx urban	g NOx	1.000	0.852	0.852	0.870
CO total	g CO	0.244	0.308	0.308	0.197
CO urban	g CO	0.244	0.308	0.308	0.197
PM10 total	mg PM10	37.38	27.94	27.94	24.18
PM10 urban	mg PM10	37.38	27.94	27.94	24.18
Energy Embodied	MJ LHV	0	0	0	0

Table A5.7 (cont.)

Urban and rural tailpipe emissions

Combustion	Units	LS diesel (Aus)	Biodiesel (canola)	Biodiesel (soybean)	Biodiesel (rape)	Biodiesel (tallow-expanded sys. boundary)	Biodiesel (tallow-eco.allocat.)	Biodiesel (waste oil)	Biodiesel (waste oil 10% original oil value)
Greenhouse	kg CO2	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NMHC total	g HC	0.089	0.004	0.004	0.004	0.004	0.004	0.004	0.004
NMHC urban	g HC	0.089	0.004	0.004	0.004	0.004	0.004	0.004	0.004
NOx total	g NOx	1.000	1.132	1.132	1.132	1.132	1.132	1.132	1.132
NOx urban	g NOx	1.000	1.132	1.132	1.132	1.132	1.132	1.132	1.132
CO total	g CO	0.244	0.133	0.133	0.133	0.133	0.133	0.133	0.133
CO urban	g CO	0.244	0.133	0.133	0.133	0.133	0.133	0.133	0.133
PM10 total	mg PM10	37.38	26.80	26.80	26.80	26.80	26.80	26.80	26.80
PM10 urban	mg PM10	37.38	26.80	26.80	26.80	26.80	26.80	26.80	26.80
Energy Embodied	MJ LHV	0	0	0	0	0	0	0	0

Combustion	Units	LS diesel (Aus)	CNG (Electric compression)	CNG (NG compression)	LNG (from existing transmission line)	LNG (Shipped from north west shelf)	LNG (perth)	LPG (Autogas)	LPG (HD5)
Greenhouse	kg CO2	0.071	0.062	0.062	0.061	0.061	0.061	0.064	0.070
NMHC total	g HC	0.089	0.002	0.002	0.002	0.002	0.002	0.001	0.002
NMHC urban	g HC	0.089	0.002	0.002	0.002	0.002	0.002	0.001	0.002
NOx total	g NOx	1.000	0.129	0.129	0.195	0.195	0.195	0.052	0.347
NOx urban	g NOx	1.000	0.129	0.129	0.195	0.195	0.195	0.052	0.347
CO total	g CO	0.244	0.004	0.004	0.003	0.003	0.003	0.018	0.016
CO urban	g CO	0.244	0.004	0.004	0.003	0.003	0.003	0.018	0.016
PM10 total	mg PM10	37.38	6.93	6.93	6.84	6.84	6.84	3.81	1.54
PM10 urban	mg PM10	37.38	6.93	6.93	6.84	6.84	6.84	3.81	1.54
Energy Embodied	MJ LHV	0	0	0	0	0	0	0	0

Combustion	Units	LS diesel (Aus)	LSdiesohol	Ethanol azeotropic (molasses-expanded sys.bound.)	Ethanol azeotropic (molasses-economic allocation)	Ethanol azeotropic (wheat starch waste)	Ethanol azeotropic (wheat)	Ethanol azeotropic (wheat) fired with wheat straw	Ethanol azeotropic (woodwaste)	Ethanol azeotropic (ethylene)	Hydrogen (from natural gas)
Greenhouse	kg CO2	0.071	0.062	0.000	0.000	0.000	0.000	0.000	0.000	0.043	0.075
NMHC total	g HC	0.089	0.084	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.123
NMHC urban	g HC	0.089	0.084	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.123
NOx total	g NOx	1.000	0.914	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.096
NOx urban	g NOx	1.000	0.914	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.096
CO total	g CO	0.244	0.276	0.309	0.309	0.309	0.309	0.309	0.309	0.309	0.964
CO urban	g CO	0.244	0.276	0.309	0.309	0.309	0.309	0.309	0.309	0.309	0.964
PM10 total	mg PM10	37.38	28.41	28.03	28.03	28.03	28.03	28.03	28.03	28.03	35.04
PM10 urban	mg PM10	37.38	28.41	28.03	28.03	28.03	28.03	28.03	28.03	28.03	35.04
Energy Embodied	MJ LHV	0	0	0	0	0	0	0	0	0	0

Table A5.8

Summary of life cycle emissions from alternative fuels

		LS diesel (Aus)	ULS diesel (Aus)	ULS diesel (100% hydroprocessing)	Fischer-Tropsch diesel
Greenhouse	Precombustion	0.0203	0.0225	0.0206	0.0317
Greenhouse	Combustion	0.0707	0.0706	0.0706	0.0660
NMHC total	Precombustion	0.0599	0.0623	0.0606	0.0418
NMHC total	Combustion	0.0885	0.0718	0.0718	0.0507
NMHC urban	Precombustion	0.0287	0.0301	0.0291	0.0009
NMHC urban	Combustion	0.0885	0.0718	0.0718	0.0507
NOx total	Precombustion	0.1062	0.1220	0.1072	0.1436
NOx total	Combustion	1.000	0.852	0.852	0.870
NOx urban	Precombustion	0.046	0.060	0.047	0.005
NOx urban	Combustion	1.000	0.852	0.852	0.870
CO total	Precombustion	0.0239	0.0273	0.0242	0.0327
CO total	Combustion	0.2439	0.3079	0.3079	0.1968
CO urban	Precombustion	0.0130	0.0161	0.0132	0.0009
CO urban	Combustion	0.2439	0.3079	0.3079	0.1968
PM10 total	Precombustion	5.74	5.92	5.81	2.00
PM10 total	Combustion	37.38	27.94	27.94	24.18
PM10 urban	Precombustion	4.24	4.39	4.29	0.07
PM10 urban	Combustion	37.38	27.94	27.94	24.18
Energy Embodied	Precombustion	1.25	1.29	1.27	1.68

		LS diesel (Aus)	Biodiesel (canola)	Biodiesel (soybean)	Biodiesel (rape)	Biodiesel (tallow-expanded sys. boundary)	Biodiesel (tallow-eco.allocat.)	Biodiesel (waste oil)	Biodiesel (waste oil 10% original oil value)
Greenhouse	Precombustion	0.0203	0.0424	0.0320	0.0434	0.0411	0.0488	0.0069	0.0072
Greenhouse	Combustion	0.0707	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NMHC total	Precombustion	0.0599	0.1377	0.1643	0.1387	0.1348	0.0552	0.0549	0.0559
NMHC total	Combustion	0.0885	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038
NMHC urban	Precombustion	0.0287	0.1269	0.1554	0.1269	0.1239	0.0540	0.0539	0.0549
NMHC urban	Combustion	0.0885	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038
NOx total	Precombustion	0.1062	0.1367	0.1249	0.1544	0.1328	0.0274	0.0255	0.0304
NOx total	Combustion	1.000	1.132	1.132	1.132	1.132	1.132	1.132	1.132
NOx urban	Precombustion	0.046	0.061	0.077	0.063	0.060	0.027	0.025	0.030
NOx urban	Combustion	1.000	1.132	1.132	1.132	1.132	1.132	1.132	1.132
CO total	Precombustion	0.0239	0.0337	0.0814	0.0345	0.0328	0.0050	0.0046	0.0093
CO total	Combustion	0.2439	0.1334	0.1334	0.1334	0.1334	0.1334	0.1334	0.1334
CO urban	Precombustion	0.0130	0.0186	0.0720	0.0189	0.0181	0.0047	0.0044	0.0090
CO urban	Combustion	0.2439	0.1334	0.1334	0.1334	0.1334	0.1334	0.1334	0.1334
PM10 total	Precombustion	5.74	2.46	1.96	3.06	2.38	0.21	0.18	0.18
PM10 total	Combustion	37.38	26.80	26.80	26.80	26.80	26.80	26.80	26.80
PM10 urban	Precombustion	4.24	0.99	1.04	1.02	0.96	0.20	0.17	0.17
PM10 urban	Combustion	37.38	26.80	26.80	26.80	26.80	26.80	26.80	26.80
Energy Embodied	Precombustion	1.25	0.41	0.44	0.42	0.40	0.17	0.16	0.16

Table A5.8 (cont.)

Summary of life cycle emissions from alternative fuels

		LS diesel (Aus)	CNG (Electric compression)	CNG (NG compression)	LNG (from existing transmission line)	LNG (Shipped from north west shelf)	LNG (perth)	LPG (Autogas)	LPG (HD5)
Greenhouse	Precombustion	0.0203	0.0133	0.0153	0.0126	0.0133	0.0161	0.0183	0.0183
Greenhouse	Combustion	0.0707	0.0619	0.0619	0.0610	0.0610	0.0610	0.0639	0.0699
NMHC total	Precombustion	0.0599	0.0281	0.0309	0.0293	0.0293	0.0317	0.1082	0.1092
NMHC total	Combustion	0.0885	0.0022	0.0022	0.0018	0.0018	0.0018	0.0008	0.0023
NMHC urban	Precombustion	0.0287	0.0007	0.0011	0.0009	0.0001	0.0013	0.0798	0.0794
NMHC urban	Combustion	0.0885	0.0022	0.0022	0.0018	0.0018	0.0018	0.0008	0.0023
NOx total	Precombustion	0.1062	0.0296	0.0435	0.0328	0.0345	0.0745	0.0984	0.0972
NOx total	Combustion	1.000	0.129	0.129	0.195	0.195	0.195	0.052	0.347
NOx urban	Precombustion	0.046	0.014	0.027	0.017	0.000	0.003	0.043	0.040
NOx urban	Combustion	1.000	0.129	0.129	0.195	0.195	0.195	0.052	0.347
CO total	Precombustion	0.0239	0.0081	0.0122	0.0099	0.0103	0.0119	0.0224	0.0220
CO total	Combustion	0.2439	0.0038	0.0038	0.0034	0.0034	0.0034	0.0184	0.0163
CO urban	Precombustion	0.0130	0.0016	0.0051	0.0031	0.0001	0.0009	0.0124	0.0118
CO urban	Combustion	0.2439	0.0038	0.0038	0.0034	0.0034	0.0034	0.0184	0.0163
PM10 total	Precombustion	5.74	0.50	0.59	0.45	0.47	2.39	5.71	5.42
PM10 total	Combustion	37.38	6.93	6.93	6.84	6.84	6.84	3.81	1.54
PM10 urban	Precombustion	4.24	0.29	0.37	0.23	0.01	0.23	4.32	4.00
PM10 urban	Combustion	37.38	6.93	6.93	6.84	6.84	6.84	3.81	1.54
Energy Embodied	Precombustion	1.25	1.23	1.29	1.23	1.24	1.27	1.14	1.17

		LS diesel (Aus)	LSdiesohol	Ethanol azeotropic (molasses-expanded sys.bound.)	Ethanol azeotropic (molasses-economic allocation)	Ethanol azeotropic (wheat starch waste)	Ethanol azeotropic (wheat)	Ethanol azeotropic (wheat) fired with wheat straw	Ethanol azeotropic (woodwaste)	Ethanol azeotropic (ethylene)	Hydrogen (from natural gas)
Greenhouse	Precombustion	0.0203	0.0227	0.0427	0.0741	0.0376	0.0680	0.0338	0.0081	0.1013	0.0882
Greenhouse	Combustion	0.0707	0.0621	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0432	0.0753
NMHC total	Precombustion	0.0599	0.0564	0.0131	0.0116	0.0039	0.0708	0.9138	0.5636	0.5843	0.0352
NMHC total	Combustion	0.0885	0.0843	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.1226
NMHC urban	Precombustion	0.0287	0.0279	0.0093	0.0100	0.0024	0.0096	0.8518	0.5626	0.5076	0.0012
NMHC urban	Combustion	0.0885	0.0843	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.1226
NOx total	Precombustion	0.1062	0.1092	0.1308	0.1298	0.1023	0.3030	0.2489	0.0571	0.3384	0.0559
NOx total	Combustion	1.000	0.914	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.096
NOx urban	Precombustion	0.046	0.052	0.099	0.125	0.099	0.133	0.079	0.055	0.295	0.037
NOx urban	Combustion	1.000	0.914	0.855	0.855	0.855	0.855	0.855	0.855	0.855	0.096
CO total	Precombustion	0.0239	0.0792	0.5833	0.7456	0.0113	0.8026	3.4919	1.9377	0.0683	0.0129
CO total	Combustion	0.2439	0.2755	0.3089	0.3089	0.3089	0.3089	0.3089	0.3089	0.3089	0.9636
CO urban	Precombustion	0.0130	0.0689	0.5774	0.7436	0.0107	0.0146	2.7050	1.9377	0.0502	0.0048
CO urban	Combustion	0.2439	0.2755	0.3089	0.3089	0.3089	0.3089	0.3089	0.3089	0.3089	0.9636
PM10 total	Precombustion	5.74	5.26	0.93	0.30	21.54	25.08	45.25	26.95	5.23	0.72
PM10 total	Combustion	37.38	28.41	28.03	28.03	28.03	28.03	28.03	28.03	28.03	35.04
PM10 urban	Precombustion	4.24	3.85	0.32	0.19	21.44	22.23	42.39	26.85	4.65	0.46
PM10 urban	Combustion	37.38	28.41	28.03	28.03	28.03	28.03	28.03	28.03	28.03	35.04
Energy Embodied	Precombustion	1.25	1.17	0.43	0.50	0.45	0.70	0.81	2.77	3.56	1.50
Energy Embodied	Combustion	0	18	19	20	21	22	23	24	25	26