

BANZ - Biogas Interest Group Committee										Methane Capture			
Biogas Industry Overview										Power Generation Only (8760 hours on full rating, surplus assumed to be flared off or emitted)			
Biogas Projects in New Zealand (including landfill gas, sewer gas and other biogas, e.g. in farming)										Energy Captured	Energy Captured	Methane Captured	CO2-equivalent Emis. avoided
Project Name	Type of Biogas	Application	Owner	Location	Power Rating	Gas Rating	Gas Potential	Year of Commissioning	Comments	eff=0.33 kWh/a	GJ/a	55MJ/kg (HHV) kg/a	21xCH4 to/a
					Utilisation kW	Utilisation kW (or specify)							
<b>Landfills</b>													
Greenmount	Landfill	Power Generation		Auckland	5,400.0			1992		143,345,455	515,631.1	9,375,111	196,877
Rosedale	Landfill	Power Generation		Auckland	2,700.0			1992		71,672,727	257,815.6	4,687,556	98,439
Redvale	Landfill	Power Generation		Auckland	9,000.0					238,909,091	859,385.2	15,625,186	328,129
Whitford	Landfill	Power Generation		Auckland	3,000.0					79,636,364	286,461.7	5,208,395	109,376
Hamilton	Landfill	Power Generation		Hamilton	900.0					23,890,909	85,938.5	1,562,519	32,813
Palmerston North	Landfill	Power Generation		Palmerston North	1,000.0					26,545,455	95,487.2	1,736,132	36,459
Tirohia (Hauraki)	Landfill	Power Generation		Tirohia	1,000.0					26,545,455	95,487.2	1,736,132	36,459
Nelson	Landfill	Power Generation		Nelson		300				0	0.0	0	0
Chch Bellwood	Landfill	Power Generation		Christchurch	200.0	5,000		?		5,309,091	19,097.4	347,226	7,292
Hampton Downs	Landfill	Power Generation		Waikato	2,000.0					53,090,909	190,974.5	3,472,264	72,918
Tauranga Landfill	Landfill	Power Generation		Tauranga	1,000				?	26,545,455	95,487.2	1,736,132	36,459
Happy Valley	Landfill	Power Generation	Todd Energy	Wellington	1000			2008		26,545,455	95,487.2	1,736,132	36,459
Silverstream	Landfill	Power Generation	Mighty River	Lower Hutt	2000			1993	new owner	53,090,909	190,974.5	3,472,264	72,918
Spicer Landfill	Landfill	Flaring	Porirua CC	Porirua / Well.			1,000	2009	?	0	0.0	0	0
CCC digester upgrade	thermophilic/biosolids	Cogeneration	CCC	Christchurch	1500			projected		39,818,182	143,230.9	2,604,198	54,688
<b>Subtotal Landfills</b>					<b>30,700.0</b>	<b>5,300</b>	<b>1,000</b>				<b>2,931,458.5</b>		<b>1,119,284</b>
<b>Waste Water Treatment Plants:</b>													
Tauranga					200								
Chch Bromley													
Mangare WWTP	Sewage	Cogeneration	Watercare	Auckland	7400			2004	?	196,436,364	706,605.6	12,847,375	269,795
Northshore				Auckland	800					21,236,364	76,389.8	1,388,905	29,167
Hamilton WWTP	Sewage	Cogeneration	Hamilton CC	Hamilton	1000			2005	?	26,545,455	95,487.2	1,736,132	36,459
Piggery Waste	Rural Waste	Research	NIWA (?)	Waikato	20			2008	?	530,909	1,909.7	34,723	729
Tirau Dairy	Industrial Waste	Boilers	Fonterra	Tirau		4,000		1990	?	0	0.0	0	0
FORTEX Silverstream	wastewater biosolids	Boilers	decommissioned	Mosgiel			1,000	1992		0	0.0	0	0
PNCC digester upgrade	codigestion	Cogeneration	PNCC	Palmerston North	750			2008/10		19,909,091	71,615.4	1,302,099	27,344
GI digester	thermophilic/biosolids	Boilers	DCC	Dunedin		375		2001		0	0.0	0	0
HCC digester upgrade	codigestion	Cogeneration	HCC	Hamilton	1000			projected		26,545,455	95,487.2	1,736,132	36,459
<b>Subtotal WWTP</b>					<b>10,970</b>	<b>4,375</b>	<b>1,000</b>			<b>291,203,636</b>	<b>1,047,495</b>	<b>19,045,365</b>	<b>399,953</b>
<b>Industrial Digester</b>													
Landcorp Waimakariri	manure biosolids	Cogeneration	LandCorp	Rangiora	15			2007/08					
Piggery Waste	Rural Waste	Study	Dept Corrections	Canterbury		????		2009					
Beef feedlot manure	Feedlot Waste	Study	industry	Canterbury			1,000	2008					
Piggery feedlot manure	Feedlot Waste	Study	industry	Waikato			2,000	2008					
Kiwifruit Waste	Rural Waste	Study	Zespri	Tauranga			500	2008					
Chicken Waste	Industrial Waste	Study / Research	Inghams	Waikato			500	2008					
Piggery Waste	Rural Waste	Study	PIC	Canterbury			500	2008					
<b>Subtotal</b>					<b>15</b>		<b>4,500</b>						
Total Biogas Capacity currently planned									Total	6,500			
Total Biogas capacity already installed in NZ in kW					41,685	9,675		51,360		Greenhouse Gas Reduction t/a			1,519,237
Total Biogas capacity already installed in NZ in MW					42	10				from Biogas Utilisation (power only)			
As % of total					0.46%								
<b>Comparison (Energy Data File 2007)</b>										Fossil Energy Produced	Gas Volume scm/a	CO2 Emissions scm/a	CO2 Emiss t/a
Hydro					5,366.0	58.72%				40 MJ/scm	1.06 m3/m3	1.9 kg/scm	
Geothermal					450.0	4.92%				GJ/a			
Oil					156.0	1.71%							
Coal					671.0	7.34%							
Gas					2,029.0	22.20%							t/a
Biogas (MED data)					41.0	0.45%			Power (Gas) only	85,000,000	2,125,000,000	2,252,500,000	4,279,750
Waste Heat					24.0	0.26%			Total Gas Combustion	155,000,000	3,875,000,000	4,107,500,000	7,804,250
Wood					80.0	0.88%			Coal Combustion				8,600,000
Wind					322.0	3.52%			Oil Combustion				18,000,000
<b>Total</b>					<b>9,139.0</b>	<b>100.00%</b>			<b>Total Energy and Industry</b>				<b>38,684,000</b> 48.8%
<b>NZ Primary Fuel Demand</b>					<b>PJ</b>	<b>750</b>			<b>Total Agriculture</b>				<b>38,600,000</b> 48.7%
<b>NZ Consumer Fuel Demand</b>					<b>PJ</b>	<b>500</b>			<b>Total Waste (see above)</b>				<b>2,000,000</b> 2.5%
<b>Current Biogas Production</b>					<b>PJ</b>	<b>1.05</b>			<b>Total CO2 Emissions (gross)</b>				<b>79,284,000</b> 100.0%
<b>Proportion of primary fuel</b>					<b>0.14%</b>				<b>Change of Land Use and Forestry</b>				<b>-24,000,000</b> -30.3%
									<b>Net NZ CO2 Equivalent Emissions</b>				<b>55,284,000</b>