

# DRAFT Dairy Digester Emissions Matrix

May 23, 2018

		A	B	C	D	E	F	G	H	
		CO <sub>2</sub> e (20-yr GWP)	CO <sub>2</sub> e (100-yr GWP)	NOx	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	SOx	VOCs	
1	<b>Uncovered Lagoon</b>	<b>Baseline Totals</b> <i>(Local + Remote)</i>	<b>70,581</b>	<b>24,519</b>	<b>&lt;0.1</b>	<b>&lt;0.1</b>	<b>&lt;0.1</b>	<b>&lt;0.1</b>	<b>3.0</b>	
2	<b>Onsite Reciprocating Engine to Grid and EVs</b>	Local	17,491	7,474	0.5	0.2	0.2	8.5	<0.1	0.6
3		Remote	765	318	0.1	<0.1	<0.1	0.1	0.1	<0.1
4		<b>Subtotal</b> <i>(Row 2 + Row 3)</i>	<b>18,256</b>	<b>7,792</b>	<b>0.6</b>	<b>0.2</b>	<b>0.2</b>	<b>8.6</b>	<b>0.1</b>	<b>0.6</b>
5		Diesel Displaced	8,609	7,629	5.5	1.1	0.6	5.4	2.4	1.0
6		<b>Pathway Emissions</b> <i>(Row 4 - Row 5)</i>	<b>9,647</b>	<b>163</b>	<b>-4.9</b>	<b>-0.9</b>	<b>-0.4</b>	<b>3.2</b>	<b>-2.3</b>	<b>-0.4</b>
7		<b>Net Benefit</b> <i>vs. uncovered lagoon</i> <i>(Row 6 - Row 1)</i>	<b>-60,934</b>	<b>-24,356</b>	<b>-4.9</b>	<b>-0.9</b>	<b>-0.4</b>	<b>3.2</b>	<b>-2.3</b>	<b>-3.4</b>
8	<b>Pipeline Injection to NG Vehicles</b>	Local	15,448	5,268	0.1	<0.1	<0.1	1.2	<0.1	0.3
9		Remote	4,839	3,568	4.6	0.2	0.2	52.5	0.2	0.6
10		<b>Subtotal</b> <i>(Row 8 + Row 9)</i>	<b>20,287</b>	<b>8,837</b>	<b>4.7</b>	<b>0.2</b>	<b>0.2</b>	<b>53.7</b>	<b>0.2</b>	<b>0.9</b>
11		Diesel Displaced	4,197	3,720	8.8	0.4	0.2	1.6	1.2	12.0
12		<b>Pathway Emissions</b> <i>(Row 10 - Row 11)</i>	<b>16,090</b>	<b>5,117</b>	<b>-4.1</b>	<b>-0.2</b>	<b>&lt;0.1</b>	<b>52.1</b>	<b>-1.0</b>	<b>-11.1</b>
13		<b>Net Benefit</b> <i>vs. uncovered lagoon</i> <i>(Row 12 - Row 1)</i>	<b>-54,491</b>	<b>-19,402</b>	<b>-4.1</b>	<b>-0.2</b>	<b>&lt;0.1</b>	<b>52.1</b>	<b>-1.0</b>	<b>-14.1</b>
14	<b>Pipeline Injection to Power Plant, Grid and EVs</b>	Local	15,448	5,268	0.1	<0.1	<0.1	1.2	<0.1	0.3
15		Remote	3,860	2,957	0.4	0.1	0.1	0.4	0.2	0.1
16		<b>Subtotal</b> <i>(Row 14 + Row 15)</i>	<b>19,307</b>	<b>8,226</b>	<b>0.5</b>	<b>0.1</b>	<b>0.1</b>	<b>1.6</b>	<b>0.2</b>	<b>0.4</b>
17		Diesel Displaced	11,916	10,560	7.6	1.6	0.9	7.4	3.3	1.4
18		<b>Pathway Emissions</b> <i>(Row 16 - Row 17)</i>	<b>7,391</b>	<b>-2,334</b>	<b>-7.1</b>	<b>-1.5</b>	<b>-0.8</b>	<b>-5.8</b>	<b>-3.1</b>	<b>-1.0</b>
19		<b>Net Benefit</b> <i>vs. uncovered lagoon</i> <i>(Row 18 - Row 1)</i>	<b>-63,190</b>	<b>-26,853</b>	<b>-7.1</b>	<b>-1.5</b>	<b>-0.8</b>	<b>-5.8</b>	<b>-3.1</b>	<b>-4.0</b>
17	<b>Pipeline Injection to Hydrogen Vehicles (H<sub>2</sub> from SMR)</b>	Local	15,448	5,268	0.1	<0.1	<0.1	1.2	<0.1	0.3
18		Remote	6,140	5,017	3.5	0.6	0.6	1.9	2.4	0.4
19		<b>Subtotal</b> <i>(Row 17 + Row 18)</i>	<b>21,588</b>	<b>10,285</b>	<b>3.6</b>	<b>0.6</b>	<b>0.6</b>	<b>3.1</b>	<b>2.4</b>	<b>0.7</b>
20		Diesel Displaced	7,709	6,832	4.9	1.0	0.6	4.8	2.1	0.9
21		<b>Pathway Emissions</b> <i>(Row 19 - Row 20)</i>	<b>13,879</b>	<b>3,453</b>	<b>-1.3</b>	<b>-0.4</b>	<b>&lt;0.1</b>	<b>-1.7</b>	<b>0.3</b>	<b>-0.2</b>
22		<b>Net Benefit</b> <i>vs. uncovered lagoon</i> <i>(Row 21 - Row 1)</i>	<b>-56,702</b>	<b>-21,066</b>	<b>-1.3</b>	<b>-0.4</b>	<b>&lt;0.1</b>	<b>-1.7</b>	<b>0.3</b>	<b>-3.2</b>
23	<b>Pipeline Injection to Fuel Cell, Grid and EVs (Solid Oxide Fuel Cell)</b>	Local	15,448	5,268	0.1	<0.1	<0.1	1.2	<0.1	0.3
24		Remote	3,860	2,957	0.6	<0.1	<0.1	0.5	0.1	0.1
25		<b>Subtotal</b> <i>(Row 23 + Row 24)</i>	<b>19,308</b>	<b>8,225</b>	<b>0.7</b>	<b>0.1</b>	<b>0.1</b>	<b>1.7</b>	<b>0.1</b>	<b>0.3</b>
26		Diesel Displaced	13,292	11,779	8.5	1.8	1.0	8.3	3.7	1.5
27		<b>Pathway Emissions</b> <i>(Row 25 - Row 26)</i>	<b>6,016</b>	<b>-3,554</b>	<b>-7.8</b>	<b>-1.7</b>	<b>-0.9</b>	<b>-6.6</b>	<b>-3.6</b>	<b>-1.2</b>
28		<b>Net Benefit</b> <i>vs. uncovered lagoon</i> <i>(Row 27 - Row 1)</i>	<b>-64,565</b>	<b>-28,073</b>	<b>-7.8</b>	<b>-1.7</b>	<b>-0.9</b>	<b>-6.6</b>	<b>-3.6</b>	<b>-4.2</b>

Note: Units are metric tons per year (MT/yr.) for all numerical values.