

**Appendix I**  
**Measured THC Emission Rates Sorted by Emission Rate**

<b>Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.</b>								
Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
5	5935	C-1 - 2" water-jacket connection	OEL	183.425	\$400	\$585,608	21804.71	0.00
5	6074	flare fuel gas line -	HOLE	42.068	\$1,000	\$820,614	6172.91	0.01
4	5488	LP FG Scrubber - corrosion hole in bottle below HLL alarm	HOLE	35.719	\$1,500	\$755,803	4758.43	0.01
5	6075	C-12 -	VVP	28.755	\$400	\$91,468	3418.32	0.00
5	5956	C-11 -	CS	15.368	\$177	\$95,241	1826.90	0.00
1	7355	Comp 1	CS	10.975	\$2,000	\$29,673	1404.33	0.06
1	7010	residue compressor (north caterpillar)	CS	9.664	\$8,000	\$16,399	1404.37	0.31
1	7168	residue compressor (#2 ingersoll-rand)	VC	9.262	\$200	\$45,244	1345.96	0.01
3	6708	Amine Tank	PRV	9.145	\$214	\$44,813	1321.55	0.01
1	7322	Comp 1	CV	8.183	\$177	\$39,973	1189.16	0.01
1	7080	residue compressor (#3 caterpillar)	CS	8.153	\$8,000	\$12,583	1184.72	0.37
5	5941	C-02 - measured at 1/2" hole in DP cover	CS	7.763	\$2,000	\$22,724	917.69	0.08
3	6192	EP Skid	PS	7.570	\$500	\$55,341	0.00	0.01
3	6678	EB Skid	PS	7.309	\$500	\$86,355	0.00	0.01
1	7286	plant #1. middle-west molecular siv	T	7.298	\$30	\$40,903	933.90	0.00
1	7125	residue compressor (#2 ingersoll-rand)	VC	6.310	\$200	\$30,759	916.94	0.01
1	6890	refrigeration compressor (#3 Clark)	GOV	5.831	\$200	\$53,873	847.37	0.01
5	5942	C-02 - measured at hole in DP cover	CS	5.819	\$2,000	\$16,531	687.84	0.10
1	7153	residue compressor (#4 ingersoll-rand)	VC	5.747	\$200	\$27,998	835.16	0.01
3	6748	blow down vent	OEL	5.507	\$245	\$32,305	666.57	0.01
5	5972	C-12 -	CS	5.476	\$177	\$33,824	650.99	0.01
5	5943	C-02 - measured at 2" water jacket connection on cylinder body	OEL	5.338	\$400	\$16,600	630.99	0.02
1	7242	plant #6 west molecular siv	F	5.294	\$400	\$6,561	158.81	0.11
1	6886	refrigeration compressor (#3 Clark)	INJ	4.978	\$200	\$45,965	723.45	0.02
3	6738	heat exchanger	OEL	4.955	\$60	\$92,716	0.00	0.00
1	7148	residue compressor (#3 ingersoll-rand)	VC	4.939	\$200	\$24,032	717.69	0.02
1	7130	residue compressor (#3 ingersoll-rand)	VVP	4.576	\$400	\$11,153	664.96	0.03
3	6735	de-C2 reboiler	F	4.542	\$300	\$41,536	0.00	0.01
1	7180	residue compressor (#3 caterpillar)	F	4.492	\$200	\$21,840	652.79	0.02
5	5951	C-04 -	CS	4.490	\$2,000	\$12,299	530.74	0.13
1	7158	residue compressor (#4 ingersoll-rand)	VC	4.338	\$200	\$21,082	630.32	0.02
1	7011	residue compressor (north	CS	3.936	\$2,000	\$7,936	571.91	0.19

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Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		caterpillar)						
1	7369	Comp 2	CS	3.936	\$2,000	\$9,358	503.61	0.17
1	7012	residue compressor (north caterpillar)	CS	3.912	\$2,000	\$7,877	568.51	0.19
3	6190	EB Skid	OEL	3.892	\$190	\$89,677	0.00	0.00
5	6324	C-10 -	GOV	3.876	\$200	\$35,441	568.77	0.02
1	7353	Comp 1	CS	3.832	\$2,000	\$9,058	490.32	0.17
1	6888	refrigeration compressor (#3 Clark)	INJ	3.798	\$200	\$35,015	551.85	0.02
1	7214	residue compressor (#5 ingersoll-rand)	VC	3.776	\$200	\$18,325	548.66	0.02
1	7167	residue compressor (#2 ingersoll-rand)	VC	3.758	\$200	\$18,240	546.16	0.02
1	7196	residue compressor (#5 ingersoll-rand)	VC	3.663	\$200	\$17,771	532.25	0.02
5	5945	C-02 -	GOV	3.623	\$200	\$33,109	531.56	0.02
4	5483	Sales Compressor	TB	3.477	\$15	\$35,423	439.54	0.00
1	7360	Comp 2	CS	3.379	\$2,000	\$7,752	432.41	0.19
5	6519	Comp #38 - north compressor station	T	3.376	\$20	\$16,403	495.33	0.00
5	6209	C-07 -	VC	3.367	\$200	\$20,640	398.04	0.02
5	6076	C-12 -	VVP	3.367	\$400	\$10,358	400.28	0.04
3	6797	C-5	T	3.303	\$30	\$16,233	477.31	0.00
1	6814	plant #1 turbo expander	TB	3.080	\$25	\$28,533	447.52	0.00
5	6026	C-01 - plug	T	3.046	\$30	\$14,787	446.90	0.00
5	6089	C-03 - measured at 2" water-jacket connection	OEL	3.009	\$400	\$9,182	355.65	0.04
3	6117	Refrigeration Compressors (New)	CS	3.000	\$8,000	\$20,906	0.00	0.26
3	6752	pipe rack in front of C1/C2	OEL	2.955	\$245	\$17,223	357.71	0.03
5	6207	C-07 - measured at 2" water jacket connection on cylinder body	OEL	2.859	\$400	\$8,706	338.01	0.04
1	7176	residue compressor (#3 ingersoll-rand)	T	2.834	\$20	\$13,884	411.80	0.00
5	5916	low pressure sales line - vent stack	OEL	2.777	\$100	\$13,411	407.50	0.01
3	6492	South Waukesha inlet compressor	CS	2.729	\$8,000	\$301	330.36	0.91
1	7194	residue compressor (#5 ingersoll-rand)	VC	2.707	\$200	\$13,084	393.44	0.03
1	7289	plant #1 south-west molecular siv	T	2.696	\$20	\$15,098	344.92	0.00
5	6244	C-09 - cylinder end gasket	F	2.669	\$400	\$8,127	317.27	0.04
3	6609	South White inlet compressor	GOV	2.590	\$200	\$23,900	374.26	0.03
1	7133	residue compressor (#3 ingersoll-rand)	VC	2.569	\$200	\$12,403	373.26	0.03
5	6318	C-17 -	VVP	2.558	\$400	\$6,004	375.372	0.06
5	5848	C-22 -	VC	2.520	\$200	\$12,061	369.79	0.03
1	7311	Comp W8	CS	2.501	\$2,000	\$5,218	320.05	0.26
1	7086	residue compressor (#3 caterpillar)	F	2.416	\$200	\$11,656	351.14	0.03
1	7132	residue compressor (#3	VC	2.416	\$200	\$11,652	351.02	0.03

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		ingersoll-rand)						
4	5875	14-6 Well Site - Chem Injection Pump Exhaust	OEL	2.388	\$60	\$14,417	283.53	0.01
2	4983	Electric Comp	Cylinder head/ F	2.247	\$100	\$21,916	163.43	0.01
3	6709	Waukesha inlet compressor cooler	BROKEN WELD	2.245	\$1,500	\$51,774	271.76	0.21
5	5998	C-04 -	CS	2.211	\$2,000	\$5,041	261.36	0.27
5	6300B	C-12 - measured at LHS of cylinder end	F	2.199	\$400	\$6,624	261.37	0.05
2	4957	Comp #3	common DP drain	2.168	\$2,000	\$3,715	308.65	0.33
5	6334	C-11 - manifold	F	2.143	\$50	\$10,375	314.42	0.01
1	7188	residue compressor (#5 ingersoll-rand)	VC	2.091	\$200	\$10,060	303.87	0.04
3	6758	C-4	CS	2.056	\$2,000	\$4,255	248.92	0.30
3	6147	north compressor	VC	2.016	\$200	\$11,718	244.06	0.03
1	7326	Comp 4	T	1.944	\$30	\$9,506	282.43	0.01
3	6125	south compressor	CS	1.924	\$4,000	\$1,852	232.91	0.64
5	6380	Skid #2 - east mol siv	CV	1.857	\$282	\$11,214	219.57	0.04
1	7038	plant #5 turbo expander	T	1.837	\$20	\$8,992	266.92	0.00
1	7183	plant #5 middle molecular siv	F	1.776	\$100	\$9,858	227.20	0.02
3	6762	C-2	CS	1.753	\$8,000	-\$2,667	212.24	1.42
1	7034	plant #5 north molecular siv	F	1.745	\$100	\$9,685	223.25	0.02
1	7173	residue compressor (#3 ingersoll-rand)	VC	1.733	\$200	\$8,303	251.83	0.04
1	7246	Comp W3	CS	1.715	\$2,000	\$2,949	219.45	0.38
5	5966	C-10 -	CS	1.684	\$2,000	\$3,379	200.13	0.35
1	7155	residue compressor (#4 ingersoll-rand)	VC	1.659	\$200	\$7,939	241.05	0.05
1	7084	residue compressor (#3 caterpillar)	VC	1.629	\$100	\$237	9.97	0.54
3	6123	south compressor	VC	1.619	\$200	\$9,370	195.97	0.04
3	6666	mole siv skid	F	1.618	\$75	\$9,491	195.51	0.01
1	7216	residue compressor (#5 ingersoll-rand)	VC	1.602	\$200	\$7,662	232.86	0.05
3	6743	north compressor	CS	1.566	\$4,000	\$763	189.55	0.79
1	7365	Comp 1	CS	1.563	\$2,000	\$2,510	199.98	0.42
5	6096	C-05 - measured at 1/4" vent hole in DP cover	CS	1.549	\$2,000	\$2,934	183.13	0.38
1	6935	plant #1 south-west molecular siv	GTV	1.534	\$500	\$15,766	196.35	0.11
1	7093	seperator	T	1.508	\$30	\$7,371	219.19	0.01
3	6614	West refrigeration compressor (old)	HOLE	1.500	\$1,500	\$28,155	216.81	0.37
5	5994	C-06 - measured at cylinder water jacket connection	OEL	1.485	\$400	\$4,330	175.57	0.08
5	6269	C-08 - top	GOV	1.461	\$200	\$13,232	214.36	0.05
5	6506	Comp #27 - north compressor station	F	1.459	\$100	\$8,958	173.43	0.02
1	6889	refrigeration compressor (#3 Clark)	INJ	1.452	\$200	\$13,267	211.03	0.05
3	6124	south compressor	VC	1.406	\$200	\$8,113	170.24	0.04

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Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
3	6710	EP Skid	F	1.384	\$300	\$19,538	0.00	0.03
1	7356	Comp 4	CS	1.363	\$2,000	\$1,934	174.42	0.48
3	6800	C-1	CS	1.356	\$8,000	-\$3,876	164.11	1.83
1	7105	residue compressor (north caterpillar)	CS	1.352	\$2,000	\$1,413	196.48	0.55
1	7106	residue compressor (north caterpillar)	CS	1.341	\$2,000	\$1,386	194.88	0.56
1	7336	Comp W8	VVP	1.341	\$400	\$3,470	171.61	0.10
5	6219	C-07 -	T	1.303	\$30	\$6,308	191.17	0.01
1	7121	residue compressor (#2 ingersoll-rand)	VVP	1.298	\$400	\$2,876	188.56	0.12
1	7162	residue compressor (#1 ingersoll-rand)	VC	1.276	\$200	\$6,060	185.40	0.06
1	7207	residue compressor (#5 ingersoll-rand)	VC	1.276	\$200	\$6,060	185.40	0.06
5	5957	C-11 -	VC	1.242	\$200	\$7,511	147.65	0.05
1	7242	plant #6 dust filter	FC	1.241	\$100	\$29,591	677.40	0.01
3	6402	combined inlet header	GTV	1.241	-\$190	\$13,674	150.22	0.05
1	7181	plant #5 middle molecular siv	F	1.233	\$100	\$6,816	157.78	0.03
1	7020	plant #2 east molecular siv	F	1.198	\$100	\$6,620	153.31	0.03
1	7071	plant #5 dust filter	OEL	1.190	\$60	\$6,617	152.33	0.02
5	6306	C-12 -	INJ	1.172	\$200	\$10,578	172.00	0.06
1	7203	residue compressor (#4 ingersoll-rand)	VC	1.169	\$200	\$5,537	169.92	0.06
5	6095	C-05 - measured at 2" flanged connection on cylinder head	F	1.157	\$400	\$3,286	136.80	0.10
4	5860	Refrigerant Compressor - Stem Packing	CV	1.149	\$141	\$16,511	0.00	0.02
5	6240	C-08 - measured at cylinder end bolt cover	OEL	1.149	\$400	\$3,270	136.57	0.10
1	7117	residue compressor (wast caterpillar)	CS	1.120	\$2,000	\$828	162.77	0.67
1	7312	Comp W8	CS	1.120	\$2,000	\$1,233	143.33	0.58
1	6949	residue compressor (C-9)	R	1.114	\$175	\$12,381	161.86	0.06
5	6381	Skid #2 - middle mole siv	CV	1.102	\$282	\$6,542	130.33	0.08
1	7313	Comp W7	CS	1.097	\$8,000	-\$4,833	140.43	2.38
1	7306	Comp W5	CS	1.089	\$2,000	\$1,142	139.30	0.60
3	6128	north compressor	VVP	1.085	\$400	\$2,901	131.38	0.11
1	7245	Comp W3	CS	1.082	\$2,000	\$1,122	138.44	0.60
1	7304	Comp W5	CS	1.081	\$2,000	\$1,120	138.35	0.60
1	7191	residue compressor (#5 ingersoll-rand)	VC	1.074	\$200	\$5,068	156.04	0.07
1	7255	Comp W7	CS	1.073	\$2,000	\$1,098	137.36	0.61
1	7367	Comp 2	CS	1.071	\$2,000	\$1,092	137.11	0.61
1	7254	Comp W7	CS	1.056	\$2,000	\$1,049	135.19	0.62
1	7021	plant #2 east molecular siv	F	1.055	\$100	\$5,820	135.06	0.03
5	6348	C-11 - plug	T	1.040	\$30	\$5,028	152.56	0.01
3	6605	South White inlet compressor	F	1.031	\$400	\$2,735	124.76	0.12
2	4972	Comp #4	Common DP drain	1.010	\$2,000	\$664	143.85	0.71
1	7200	residue compressor (#4 ingersoll-rand)	VC	1.009	\$200	\$4,748	146.56	0.07

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2	4964	Comp #2	Crank Case Vent	1.003	\$2,000	\$645	142.86	0.71
1	7174	residue compressor (#3 ingersoll-rand)	T	0.999	\$20	\$4,883	145.22	0.01
2	4949	Comp #4	VC/T	0.986	\$50	\$5,004	140.45	0.02
1	7198	residue compressor (#5 ingersoll-rand)	VC	0.986	\$200	\$4,638	143.30	0.08
2	4993	Compressor 4	CCV	0.981	\$2,000	\$2,945	71.35	0.38
4	5859	Refrigerant Compressor - DP Cover	CS	0.979	\$2,000	\$5,298	0.00	0.26
1	7013	residue compressor (west caterpillar)	CS	0.972	\$2,000	\$454	141.25	0.77
1	6975	residue compressor (C-9)	VC	0.971	\$200	\$4,566	141.15	0.08
1	6983	ease residue turbine compressor (C-53)	OEL	0.967	\$60	\$4,684	140.51	0.02
3	6120	south compressor	VVP	0.958	\$400	\$2,513	115.94	0.13
3	6600	South White inlet compressor	VC	0.954	\$200	\$5,441	115.52	0.07
1	7248	Comp W3	CS	0.949	\$2,000	\$738	121.38	0.69
3	6616	Refrigeration Compressors (Old)	CS	0.939	\$8,000	\$1,043	0.00	0.83
3	6476	North Waukesha inlet compressor	T	0.934	\$20	\$5,500	113.04	0.01
4	5563	Refrigerant Compressor - DP Cover	CS	0.928	\$2,000	\$4,919	0.00	0.27
4	5578	Propane Compressor - DP cover	CS	0.922	\$2,000	\$4,876	0.00	0.27
5	6093B	C-05 - cylinder head LHS	F	0.920	\$400	\$2,529	108.72	0.13
3	6405	combined inlet header	GTV	0.919	\$120	\$10,149	111.27	0.04
3	6679	HT 207	GTV	0.916	\$75	\$32,331	0.00	0.01
1	7249	Comp W5	CS	0.912	\$2,000	\$633	116.75	0.72
1	7197	residue compressor (#5 ingersoll-rand)	VC	0.909	\$200	\$4,259	132.07	0.08
3	6472B	Waukesha inlet compressor cooler	GTV	0.908	\$350	\$9,790	109.87	0.12
5	5964	C-10 - union	T	0.904	\$0	\$4,400	132.71	0.00
3	6194	EP Skid	GTV	0.900	\$190	\$24,200	0.00	0.03
5	6347	C-11 -	GOV	0.897	\$200	\$8,045	131.58	0.08
2	4961	Comp #2	R	0.889	\$175	\$10,293	126.60	0.07
4	5483	Sales Compressor - Retest	TB	0.888	\$15	\$9,038	112.29	0.01
1	6861	PIG receivers	PIG	0.886	\$300	\$4,672	113.43	0.11
1	6989	plant #1 dust filter	TB	0.883	\$15	\$9,340	112.93	0.01
2	4959	Comp #3	TB	0.882	\$15	\$8,528	125.61	0.01
5	6282	C-09 -	GOV	0.881	\$200	\$7,900	129.26	0.09
1	7305	Comp W5	CS	0.865	\$8,000	-\$5,505	110.64	3.02
2	4908	Acadian Sales	OEL	0.865	\$60	\$4,271	125.93	0.03
5	5944	C-02 -	GOV	0.863	\$200	\$7,739	126.69	0.09
3	6116	F-405	OEL	0.860	\$60	\$5,026	103.95	0.02
3	6556	South White inlet compressor	F	0.859	\$50	\$4,177	124.08	0.02
1	7252	Comp W6	T	0.850	\$30	\$4,740	108.82	0.01
1	7139	residue compressor (#4 ingersoll-rand)	VC	0.850	\$200	\$3,971	123.55	0.09
5	6039	C-04 -	OEL	0.847	\$30	\$192	6.68	0.25

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1	7343	Comp 4	CS	0.843	\$2,000	\$433	107.88	0.78
2	4969	Comp #2	Common Dp Vent	0.832	\$2,000	\$192	118.39	0.86
1	6920	plant #1 south-east molecular siv	F	0.828	\$150	\$4,492	105.92	0.06
5	6093A	C-05 - cylinder head RHS	F	0.821	\$400	\$2,215	97.07	0.14
5	6140	Comp # 27 - north compressor station	T	0.809	\$30	\$3,904	118.65	0.01
3	6706	North White inlet compressor	CS	0.808	\$8,000	-\$5,542	97.83	3.07
3	6472A	Waukesha inlet compressor cooler	GTV	0.796	\$350	\$8,548	96.41	0.14
1	7212	residue compressor (#4 ingersoll-rand)	VC	0.793	\$200	\$3,692	115.27	0.09
5	6230	C-06 -	INJ	0.790	\$200	\$7,068	115.99	0.10
5	6302	C-12 - body flange	GOV	0.790	\$200	\$7,061	115.88	0.10
3	6134	south compressor	CS	0.777	\$2,000	\$363	94.03	0.80
3	6196	EP Skid	PS	0.766	\$500	\$5,151	0.00	0.08
1	7323	Comp 4	CS	0.765	\$2,000	\$209	97.93	0.85
1	6967	refrigeration compressor (#2 Clark)	CS	0.764	\$2,000	\$3,705	0.00	0.33
1	6974	residue compressor (C-9)	CS	0.738	\$2,000	-\$138	107.18	1.01
1	7127	residue compressor (#3 ingersoll-rand)	CS	0.732	\$2,000	-\$151	106.42	1.02
5	6513	Comp #40 - north compressor station	T	0.719	\$20	\$3,476	105.44	0.01
1	7195	residue compressor (#5 ingersoll-rand)	VC	0.717	\$200	\$3,318	104.20	0.10
1	7359	Comp 4	CS	0.694	\$2,000	\$4	88.86	0.94
1	6951	residue compressor (C-9)	INJ	0.691	\$200	\$6,212	100.48	0.11
5	6104	Comp # 37 - north compressor station	INJ	0.690	\$200	\$6,140	101.18	0.11
1	7035	plant #5 north molecular siv	F	0.678	\$150	\$3,652	86.75	0.07
1	7165	residue compressor (#2 ingersoll-rand)	VC	0.678	\$200	\$3,126	98.51	0.11
1	7357	Comp 4	CS	0.677	\$2,000	-\$47	86.58	0.97
1	7124	residue compressor (#2 ingersoll-rand)	VC	0.677	\$200	\$3,120	98.32	0.11
1	7332	Comp 6	T	0.675	\$30	\$3,284	98.16	0.02
5	6237	C-06 - body flange	GOV	0.665	\$200	\$5,911	97.52	0.11
3	6491	South Waukesha inlet compressor	CS	0.660	\$8,000	-\$5,992	79.93	3.76
1	7045	plant #2 west molecular siv	F	0.659	\$100	\$3,596	84.32	0.05
3	6566	pipng from de-C2 reflux accumulator bottoms	GTV	0.658	\$100	\$13,268	0.00	0.03
5	6305	C-12 - manifold	F	0.658	\$50	\$3,153	96.60	0.03
2	4912	Common Sales	BFV/CV	0.656	\$282	\$3,002	95.51	0.16
1	7264	Comp 1	CS	0.653	\$2,000	-\$115	83.57	1.00
5	5967	C-10 - measured at 2" water jacket connection on cylinder body	OEL	0.652	\$400	\$1,684	77.56	0.18
2	4932	PW Tank T-3500-2	Thief Hatch	0.650	\$2,000	-\$325	94.66	1.13
5	6105	Comp # 37 - north compressor station	INJ	0.642	\$200	\$5,701	94.17	0.12

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
1	7202	residue compressor (#4 ingersoll-rand)	VC	0.641	\$200	\$2,947	93.21	0.12
5	6393	pipe between chiller and expander turbine -	GTV	0.639	\$75	\$7,404	75.58	0.03
3	6404	combined inlet header	BV	0.633	\$120	\$6,948	76.59	0.06
1	6909	plant #1 demethanizer side exchanger	OEL	0.621	\$60	\$3,426	79.53	0.03
1	7182	plant #5 middle molecular siv	F	0.617	\$100	\$3,361	78.97	0.05
2	4995	Electric Comp	CCV	0.617	\$2,000	\$1,111	44.88	0.61
1	7169	residue compressor (#2 ingersoll-rand)	F	0.617	\$150	\$2,875	89.60	0.09
1	7358	Comp 4	CS	0.612	\$8,000	-\$6,235	78.27	4.28
1	7146	residue compressor (#3 ingersoll-rand)	VC	0.601	\$200	\$2,749	87.36	0.12
1	7250	Comp W5	CS	0.598	\$2,000	-\$275	76.48	1.09
1	7269	Comp W6	T	0.591	\$30	\$3,287	75.67	0.02
5	5980	C-04 -	INJ	0.585	\$200	\$5,179	85.84	0.13
3	6667	mole siv skid	F	0.572	\$75	\$3,303	69.05	0.04
1	7114	residue compressor (west caterpillar)	CS	0.563	\$2,000	-\$579	81.78	1.33
5	6344	C-11 - manifold	F	0.562	\$50	\$2,684	82.45	0.03
1	6891	refrigeration compressor (#3 Clark)	GOV	0.555	\$200	\$4,948	80.68	0.13
1	7320	Comp 1	level control	0.555	\$200	\$4,948	80.68	0.13
3	6621	West refrigeration compressor (old)	T	0.551	\$30	\$2,684	79.66	0.02
1	7161	residue compressor (#1 ingersoll-rand)	OEL	0.551	\$60	\$2,641	80.01	0.04
5	6113	Comp #23 - north compressor station	VC	0.550	\$200	\$3,217	65.41	0.11
5	5999	C-04 -	VC	0.544	\$200	\$3,170	64.36	0.11
5	6208	C-07 -	VC	0.538	\$200	\$3,128	63.57	0.11
5	6577	pipng north of 1st/2nd stage compression -	GTV	0.530	\$350	\$5,866	62.97	0.20
5	6008	C-02 - manifold	F	0.529	\$50	\$2,524	77.62	0.04
1	7151	residue compressor (#4 ingersoll-rand)	VVP	0.522	\$200	-\$2	5.88	1.85
3	6555	South White inlet compressor	F	0.521	\$50	\$2,515	75.28	0.04
5	6574	pipng north of 1st/2nd stage compression -	BV	0.521	\$120	\$5,989	61.88	0.07
1	6836	plant #5 demethanizer condenser	T	0.512	\$50	\$2,822	65.53	0.03
5	6303	C-12 - manifold	F	0.506	\$50	\$2,414	74.31	0.04
4	5592	South Boiler - Stem Packing	GTV	0.500	\$120	\$4,876	66.67	0.08
4	5577	Propane Compressor - Stem Packing	VVP	0.492	\$400	\$3,267	0.00	0.10
4	5915	NE Compressor Station Inlet - Pneumatic Bleeding	CV	0.491	\$130	\$2,848	58.32	0.08
3	6775	C-2	CS	0.488	\$2,000	-\$517	59.04	1.27
3	6554	South White inlet compressor	F	0.481	\$50	\$2,316	69.44	0.04
4	5833	NE Compressor Station Comp - Crank Case Vent	CCV	0.475	\$8,000	-\$6,708	63.33	5.84
5	5952	C-04 - measured at 2"	OEL	0.471	\$400	\$1,101	55.73	0.25

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		threaded water jacket connection in cylinder head body						
5	6376	Comp # 36 - north compressor station	GOV	0.470	\$200	\$4,123	68.98	0.16
1	7240	residue compressor (north caterpillar)	VVP	0.469	\$400	\$785	68.19	0.32
3	6778	C-2	CS	0.450	\$2,000	-\$630	54.52	1.38
3	6721	West refrigeration compressor (new)	NV	0.449	\$60	\$15,820	0.00	0.01
3	6773	C-2	CS	0.445	\$2,000	-\$647	53.84	1.39
1	6952	residue compressor (C-9)	INJ	0.441	\$200	\$3,893	64.14	0.17
5	6319	C-17 -	VVP	0.437	\$400	\$695	64.18596	0.34
1	6815	plant #1 inlet filter seperator (PV-3)	GTV	0.437	\$595	\$4,041	55.97	0.44
2	4965A	Comp #2	Cylinder body	0.434	\$400	\$745	61.85	0.33
3	6732	de-C2 reflux pump	GTV	0.423	\$100	\$8,492	0.00	0.04
3	6672	EP Skid	T	0.420	\$20	\$5,999	0.00	0.01
5	6206	C-07 -	VC	0.418	\$200	\$2,386	49.40	0.14
1	7040	plant #2 west molecular siv	F	0.417	\$100	\$2,237	53.33	0.08
2	5012	Cat Compressor	DP Vent	0.413	\$2,000	\$83	30.05	0.91
5	6383	high level chiller -	GTV	0.413	\$500	\$4,332	48.83	0.36
1	7154	residue compressor (#4 ingersoll-rand)	VC	0.410	\$200	\$1,812	59.60	0.18
5	6045	C-02 - plug	T	0.410	\$30	\$1,965	60.16	0.03
5	6094	C-05 - measured at 2" flanged connection on cylinder head	F	0.408	\$400	\$900	48.25	0.29
2	4982	Electric Comp	Cylinder head/ F	0.407	\$100	\$3,892	29.63	0.05
3	6686	east sales turbine compressor	CV	0.407	\$282	\$1,722	58.83	0.26
5	6038	C-04 - union	T	0.404	\$30	\$57	2.62	0.63
5	6576	piping north of 1st/2nd stage compression -	F	0.403	\$100	\$2,402	47.90	0.07
3	6749	blow down vent	OEL	0.403	\$245	\$2,134	48.73	0.19
1	9894	refrigeration compressor (#2 Clark)	GOV	0.401	\$200	\$3,522	58.33	0.19
1	6847	pipe rack	GTV	0.399	\$245	\$3,984	51.04	0.20
2	4921	Near train 2 TEG Contactor	OEL	0.399	\$60	\$1,938	58.10	0.06
1	7009	residue compressor (#2 caterpillar)	F	0.398	\$200	\$1,755	57.89	0.19
1	6973	residue compressor (C-9)	T	0.395	\$30	\$1,906	57.35	0.03
5	6103	Comp # 37 - north compressor station	INJ	0.390	\$200	\$3,382	57.16	0.19
3	6656	mole siv skid	T	0.389	\$30	\$2,269	46.99	0.02
2	4939	Cond Tank T-4000-1	Thief Hatch	0.388	\$5,000	-\$4,001	56.46	4.72
5	6251	C-08 - measured at 1/2" DP vent connection	CS	0.387	\$2,000	-\$762	46.05	1.52
5	6109	Comp # 36 - north compressor station	INJ	0.383	\$200	\$3,320	56.17	0.20
5	5920	C-20 - cylinder head 1" vent opening	OEL	0.378	\$400	\$547	55.48	0.40
5	6057	C-05 -	INJ	0.378	\$200	\$3,275	55.46	0.20



**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
5	6224	C-06 - union	T	0.373	\$30	\$1,783	54.70	0.03
5	6587	piping north of 3rd/4th stage compression -	BV	0.373	\$245	\$4,115	44.06	0.19
3	6121	south compressor	VC	0.367	\$200	\$1,970	44.45	0.17
1	6938	plant #1 south-west molecular siv	T	0.367	\$30	\$2,028	46.96	0.03
2	4955	Comp #3	Union	0.363	\$100	\$1,759	51.65	0.10
1	7131	residue compressor (#3 ingersoll-rand)	VC	0.357	\$200	\$1,552	51.89	0.21
1	7333	Comp W8	CS	0.357	\$2,000	-\$970	45.67	1.83
1	7033	plant #5 north molecular siv	F	0.357	\$100	\$1,900	45.63	0.09
1	9893	refrigeration compressor (#2 Clark)	GOV	0.355	\$200	\$3,090	51.56	0.21
2	4990	Compressor 4	VC/F	0.352	\$75	\$3,369	25.57	0.04
5	5922	C-20 -	VC	0.348	\$200	\$1,491	51.01	0.22
5	6585	piping north of 1st/2nd stage compression -	BV	0.346	\$120	\$3,936	41.09	0.10
3	6742	north compressor	CS	0.345	\$4,000	-\$2,950	41.79	3.59
1	6969	refrigeration compressor (#2 Clark)	T	0.345	\$30	\$1,660	50.06	0.03
4	5840	Propane Compressor - Stem Packing	VVP	0.344	\$400	\$2,167	0.00	0.15
3	6733	de-C2 reflux pump	F	0.340	\$150	\$3,506	0.00	0.08
1	7189	residue compressor (#5 ingersoll-rand)	VC	0.335	\$200	\$1,443	48.66	0.22
4	5498	NRU - Stem Packing	CV	0.325	\$282	\$1,436	43.32	0.30
2	4999	Compressor 4	CS	0.323	\$2,000	-\$373	23.47	1.16
5	6593	piping north of 3rd/4th stage compression -	OEL	0.320	\$500	\$1,481	37.84	0.46
1	7210	residue compressor (#4 ingersoll-rand)	VC	0.319	\$200	\$1,367	46.42	0.23
1	7126	residue compressor (#2 ingersoll-rand)	VC	0.318	\$200	\$1,359	46.19	0.24
3	6601	South White inlet compressor	F	0.317	\$300	\$1,575	38.41	0.29
4	5466	Sales Compressor - DPV	OEL	0.317	\$75	\$1,634	40.07	0.08
3	6415	combined inlet header	GTV	0.316	\$350	\$3,183	38.28	0.34
5	6350	C-11 -	INJ	0.314	\$200	\$2,691	46.13	0.24
5	6080	C-04 - manifold	F	0.312	\$50	\$1,466	45.71	0.06
1	7192	residue compressor (#5 ingersoll-rand)	VC	0.311	\$200	\$1,328	45.25	0.24
1	7022	plant #2 east molecular siv	F	0.310	\$100	\$1,637	39.63	0.11
1	7206	residue compressor (#4 ingersoll-rand)	VC	0.308	\$200	\$1,314	44.83	0.24
3	6460	combined inlet header	GTV	0.307	\$60	\$3,364	37.10	0.06
1	6978	residue compressor (C-9)	CS	0.306	\$2,000	-\$1,228	44.42	2.44
4	5584	Inlet Compressor - Stem Packing	VVP	0.302	\$400	\$542	35.86	0.40
5	6570	C-19 - DP cover bolt holes	CS	0.302	\$2,000	-\$1,245	44.28	2.50
4	5487	HP FG Scrubber	T	0.296	\$20	\$1,541	39.38	0.02
5	6304	C-12 - plug	T	0.296	\$30	\$1,408	43.37	0.04
1	7107	residue compressor (north caterpillar)	T	0.292	\$30	\$1,403	42.44	0.04
3	6669	mole siv skid	F	0.287	\$150	\$1,547	34.69	0.16

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
1	7272	Comp W1	CS	0.284	\$2,000	-\$1,180	36.38	2.30
1	6948	residue compressor (C-9)	T	0.281	\$20	\$1,361	40.89	0.03
5	6100	Comp # 37 - north compressor station	PV	0.281	\$60	\$2,520	41.17	0.08
5	6043	C-02 - union	T	0.278	\$30	\$1,324	40.85	0.04
5	6504	Comp #38 - north compressor station	F	0.277	\$400	\$486	32.98	0.43
1	7018	residue compressor (#1 ingersoll-rand)	CS	0.275	\$2,000	-\$1,305	39.98	2.72
5	6395	pipe between chiller and expander turbine -	GTV	0.274	\$75	\$3,135	32.44	0.08
1	7177	residue compressor (#3 ingersoll-rand)	VC	0.273	\$200	\$1,141	39.71	0.27
3	6169	PM-7A	PS	0.270	\$500	\$2,714	0.00	0.15
1	7204	residue compressor (#4 ingersoll-rand)	F	0.270	\$200	\$1,126	39.29	0.28
4	5499	NRU	F	0.269	\$100	\$1,323	35.89	0.13
3	6705	mole siv skid	F	0.269	\$150	\$1,440	32.49	0.17
2	5013	Cat Compressor	DP Vent	0.267	\$2,000	-\$655	19.40	1.40
4	5909	Condensate Storage Tank VRU	OEL	0.265	\$60	\$7,498	0.00	0.01
1	7135	residue compressor (#4 ingersoll-rand)	VVP	0.264	\$400	\$268	38.42	0.57
3	6412	combined inlet header	GTV	0.264	\$100	\$2,854	32.00	0.12
1	7205	residue compressor (#4 ingersoll-rand)	VC	0.263	\$200	\$1,093	38.29	0.28
1	7163	residue compressor (#2 ingersoll-rand)	OEL	0.263	\$60	\$1,232	38.27	0.09
3	6796	C-5	OEL	0.262	\$60	\$1,229	37.84	0.09
1	7060	plant #6 east molecular siv	OEL	0.259	\$75	\$1,379	33.18	0.09
1	7150	residue compressor (#3 ingersoll-rand)	T	0.259	\$20	\$1,252	37.67	0.03
1	7171	residue compressor (#3 ingersoll-rand)	VVP	0.259	\$400	\$253	37.57	0.58
5	6510	Comp #40 - north compressor station	T	0.257	\$30	\$1,222	37.75	0.04
5	5991	C-04 -	CS	0.255	\$2,000	-\$1,187	30.17	2.32
2	5011	Cat Compressor	DP Vent	0.255	\$2,000	-\$714	18.55	1.47
3	6801	C-7	CS	0.255	\$2,000	-\$1,225	30.85	2.43
3	6804	C-7	CS	0.254	\$2,000	-\$1,227	30.77	2.44
5	6399	expander turbine -	T	0.254	\$30	\$1,539	29.97	0.04
5	5990	C-04 -	VC	0.253	\$200	\$1,368	29.95	0.23
5	6345	C-11 - union	T	0.253	\$30	\$1,200	37.09	0.04
1	7215	residue compressor (#5 ingersoll-rand)	CS	0.250	\$2,000	-\$1,370	36.29	2.99
1	7193	residue compressor (#5 ingersoll-rand)	F	0.249	\$150	\$1,072	36.21	0.22
5	6051	C-02 - plug	T	0.249	\$30	\$1,182	36.56	0.05
5	6049	C-02 -	T	0.248	\$30	\$1,175	36.36	0.05
5	6019	C-02 -	INJ	0.247	\$200	\$2,075	36.31	0.30
5	6046	C-02 -	INJ	0.247	\$200	\$2,073	36.28	0.30
2	4927	Plant Sales Piping	V	0.245	\$60	\$2,262	35.73	0.09
5	6285	C-10 - union	T	0.244	\$30	\$1,157	35.80	0.05

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
2	4988	Compressor 4	VC/F	0.244	\$75	\$2,313	17.73	0.06
5	6309	C-12 - manifold	F	0.241	\$50	\$1,122	35.36	0.08
5	6521	Comp #38 - north compressor station	T	0.239	\$50	\$1,112	35.05	0.08
5	5898	piping west of LP sales compressors - stem packing	GTV	0.236	\$190	\$1,981	34.64	0.30
2	4940	Comp #2	Cylinder end	0.236	\$400	\$222	33.61	0.61
1	7111	residue compressor (north caterpillar)	T	0.234	\$20	\$1,129	34.02	0.03
2	5015	Compressor 4	VC/F	0.233	\$75	\$2,211	16.97	0.06
5	6243	C-09 -	VC	0.230	\$200	\$1,226	27.30	0.26
5	6336	C-11 - union	T	0.229	\$30	\$1,085	33.62	0.05
1	6928	plant #1 north-west molecular siv	F	0.229	\$150	\$1,134	29.30	0.21
1	6827	plant #1 demethanizer condenser	GTV	0.228	\$60	\$2,357	29.17	0.09
5	6067	C-05 -	T	0.226	\$30	\$1,067	33.10	0.05
1	7000	residue compressor (#3 caterpillar)	T	0.223	\$30	\$1,065	32.42	0.05
3	6122	south compressor	VC	0.220	\$200	\$1,099	26.61	0.28
3	6712	EP Skid	GTV	0.219	\$190	\$5,751	0.00	0.11
1	7112	residue compressor (north caterpillar)	T	0.219	\$20	\$1,056	31.86	0.03
5	6010	C-02 - plug	T	0.218	\$30	\$1,033	32.05	0.05
1	7157	residue compressor (#4 ingersoll-rand)	VC	0.217	\$200	\$864	31.52	0.34
1	6921	plant #1 south-east molecular siv	GTV	0.216	\$60	\$2,226	27.60	0.09
1	7083	residue compressor (#3 caterpillar)	F	0.214	\$200	\$852	31.17	0.35
3	6688	middle sales turbine compressor	T	0.213	\$20	\$1,029	30.77	0.03
3	6802	C-7	CS	0.212	\$2,000	-\$1,356	25.64	2.93
3	6422	North White inlet compressor	VC	0.210	\$200	\$1,041	25.41	0.30
1	7014	residue compressor (west caterpillar)	CS	0.209	\$2,000	-\$1,471	30.44	3.57
5	6002	C-02 -	NV	0.209	\$30	\$770	24.13	0.07
4	5857	South Boiler - Stem Packing	CV	0.208	\$282	\$815	27.67	0.47
3	6784	C-3	VC	0.207	\$200	\$1,021	25.01	0.30
2	4945B	Comp #3	Cylinder body	0.206	\$400	\$144	29.36	0.69
2	4938	Cond Tank T-4000-2	Thief Hatch	0.206	\$5,000	-\$4,470	29.98	8.89
5	6567	expander turbine -	F	0.206	\$100	\$900	30.17	0.18
1	6959	residue compressor (C-9)	T	0.204	\$30	\$972	29.67	0.05
5	6007	C-02 - elbow cracked	T	0.203	\$30	\$958	29.79	0.06
1	7090	plant #1 demethanizer	T	0.202	\$30	\$5,713	0.00	0.01
1	6999	residue compressor (#3 caterpillar)	T	0.202	\$30	\$959	29.30	0.06
2	4954	Comp #3	Union	0.201	\$100	\$931	28.65	0.18
2	4916	Pig Trap (TETCO Sales)	V	0.198	\$60	\$1,810	28.77	0.11
4	5582	Inlet Compressor - Stem Packing	VVP	0.197	\$400	\$216	23.44	0.61

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
3	6641	East refrigeration compressor (new)	GOV	0.197	\$200	\$1,635	28.49	0.38
5	6014	C-02 - union	T	0.196	\$30	\$923	28.73	0.06
1	7120	residue compressor (#2 ingersoll-rand)	VC	0.194	\$200	\$752	28.19	0.39
3	6771	C-2	CV	0.193	\$130	\$822	27.95	0.25
3	6699	east sales turbine compressor	T	0.192	\$20	\$925	27.73	0.04
4	5814	Inlet Compressor	F	0.191	\$50	\$957	25.39	0.09
5	5894	C-22 -	VC	0.188	\$200	\$716	27.63	0.40
2	4886	Compressor 4	GOV	0.187	\$200	\$3,258	13.58	0.20
1	7065	plant #6 turbo expander	T	0.186	\$20	\$1,021	23.74	0.04
1	6818	plant #1 inlet filter seperator (PV-3)	T	0.185	\$20	\$1,017	23.65	0.04
5	6277	C-09 - manifold	F	0.185	\$50	\$848	27.09	0.10
4	5583	Inlet Compressor - Stem Packing	VVP	0.184	\$400	\$174	21.84	0.66
3	6008	C-5	GOV	0.183	\$200	\$1,505	26.47	0.41
1	6982	residue compressor (C-9)	F	0.182	\$50	\$845	26.51	0.10
5	6048	C-02 -	T	0.180	\$30	\$848	26.47	0.06
3	6744	north compressor	VC	0.180	\$200	\$865	21.80	0.34
1	7036	plant #5 north molecular siv	F	0.177	\$150	\$843	22.67	0.28
2	4911	Common Sales	BFV/CV	0.173	\$282	\$584	25.20	0.60
3	6707	North White inlet compressor	CS	0.172	\$8,000	-\$7,476	20.84	14.41
5	6035B	C-01 - flange	GOV	0.172	\$200	\$1,381	25.24	0.44
3	6807	C-7	T	0.172	\$30	\$816	24.83	0.07
5	6584	piping north of 1st/2nd stage compression -	BV	0.169	\$245	\$1,741	20.12	0.43
3	6660	East refrigeration compressor (new)	GOV	0.168	\$200	\$1,366	24.32	0.44
1	7136	residue compressor (#4 ingersoll-rand)	T	0.165	\$20	\$792	24.04	0.05
1	7310	Comp W8	CS	0.165	\$8,000	-\$7,524	21.09	15.87
5	6002	C-06 - measured at 1/2" bleed connection on cylinder body	T	0.164	\$60	\$2,383	24.69	0.09
5	6280	C-09 -	T	0.164	\$30	\$767	24.04	0.07
5	6508	Comp # 26 - north compressor station	VC	0.164	\$200	\$817	19.47	0.36
1	7302	Comp W4	CS	0.162	\$2,000	-\$1,533	20.73	4.04
1	7218	residue compressor (#5 ingersoll-rand)	VC	0.162	\$200	\$594	23.52	0.46
1	7109	residue compressor (north caterpillar)	T	0.161	\$30	\$760	23.40	0.07
4	5494	NRU - Inlet Sep	TB	0.160	\$15	\$1,580	21.29	0.03
3	6119	south compressor	VVP	0.159	\$400	\$84	19.28	0.78
3	6697	west sales turbine compressor	OEL	0.159	\$60	\$723	22.98	0.14
5	6264	C-08 - body flange	GOV	0.159	\$200	\$1,259	23.29	0.47
5	5899	piping west of LP sales compressors - stem packing	GTV	0.158	\$245	\$1,203	23.11	0.59
1	7276	Comp W2	T	0.157	\$30	\$739	22.78	0.07
1	7327	Comp 5	T	0.156	\$30	\$734	22.62	0.07
3	6805	C-7	C	0.155	\$200	\$563	22.40	0.48
1	7331	Comp 6	CS	0.154	\$2,000	-\$1,555	19.75	4.24

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
1	7274	Comp W2	CS	0.153	\$2,000	-\$1,559	19.54	4.28
1	7128	residue compressor (#3 ingersoll-rand)	VC	0.152	\$200	\$547	22.13	0.49
1	7156	residue compressor (#4 ingersoll-rand)	CS	0.152	\$2,000	-\$1,616	22.11	4.91
3	6806	C-7	C	0.152	\$200	\$548	21.95	0.49
5	6359	C-12 -	INJ	0.151	\$200	\$1,187	22.13	0.50
5	6200	C-06 -	VC	0.150	\$200	\$726	17.69	0.40
1	7259	Comp W6	CS	0.149	\$2,000	-\$1,571	19.01	4.40
5	6300A	C-10 - measured at RHS of cylinder end	F	0.148	\$400	\$73	17.59	0.80
3	6777	C-2	CS	0.147	\$2,000	-\$1,552	17.84	4.21
4	5513	Sales Compressor	TB	0.144	\$15	\$1,640	17.15	0.03
1	7281	plant #1 middle-west molecular siv	OEL	0.144	\$60	\$748	18.43	0.14
4	5908	Condensate Storage Tank VRU - Union	T	0.142	\$30	\$4,026	0.00	0.01
3	6745	north compressor	TB	0.142	\$15	\$1,576	17.24	0.03
3	6634	East refrigeration compressor (new)	F	0.141	\$50	\$645	20.39	0.13
5	6232	C-06 -	T	0.141	\$30	\$656	20.70	0.08
1	6953	residue compressor (C-9)	INJ	0.140	\$200	\$1,101	20.39	0.53
1	7095	separator	GTV	0.140	\$75	\$1,220	20.29	0.20
3	6623	West refrigeration compressor (old)	T	0.139	\$30	\$653	20.06	0.08
5	6582	piping north of 1st/2nd stage compression -	BV	0.138	\$120	\$1,503	16.44	0.26
1	7041	plant #2 west molecular siv	F	0.138	\$100	\$673	17.65	0.24
1	6950	residue compressor (C-9)	INJ	0.137	\$200	\$1,067	19.85	0.55
1	6903	pipe rack	GTV	0.137	\$75	\$1,373	17.48	0.18
1	7123	residue compressor (#2 ingersoll-rand)	OEL	0.137	\$60	\$610	19.85	0.16
5	6351	C-11 -	INJ	0.135	\$200	\$1,043	19.84	0.56
3	6774	C-2	VC	0.135	\$200	\$596	16.30	0.46
1	6958	residue compressor (C-9)	T	0.134	\$20	\$640	19.54	0.06
1	7075	plant #6 west molecular siv	F	0.134	\$100	\$650	17.11	0.24
1	7341	Comp 2	T	0.133	\$30	\$624	19.36	0.08
5	5997	piping west of LP sales compressors - stem packing	VC	0.132	\$190	-\$183	0.12	90.49
5	6396	pipe between chiller and expander turbine -	GTV	0.132	\$75	\$1,473	15.65	0.17
1	7023	plant #2 east molecular siv	T	0.132	\$20	\$722	16.93	0.05
5	6377	Comp #37 - north compressor station	VC	0.132	\$200	\$619	15.68	0.45
3	6593	piping from de-C2 reflux accumulator bottoms	GTV	0.132	\$100	\$2,574	0.00	0.13
5	6030A	C-01 - plug (top)	T	0.128	\$30	\$593	18.80	0.09
5	6090	C-03 -	VC	0.126	\$200	\$580	14.90	0.47
1	6874	plant #1 south-east molecular siv	TB	0.124	\$15	\$1,295	15.81	0.04
5	6299	C-10 -	INJ	0.122	\$200	\$925	17.95	0.62
3	6416	combined inlet header	GTV	0.122	\$190	\$1,176	14.80	0.48

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
5	6330	C-10 -	INJ	0.122	\$200	\$923	17.92	0.62
5	6047	C-02 -	INJ	0.122	\$200	\$922	17.91	0.62
5	6086	C-03 -	T	0.122	\$30	\$562	17.87	0.09
1	7175	residue compressor (#3 ingersoll-rand)	F	0.122	\$100	\$497	17.69	0.31
4	5548	De-ethanizer Reflux Condenser - stem packing	GTV	0.121	\$120	\$1,089	16.13	0.34
5	6307	C-12 - plug	T	0.121	\$30	\$558	17.73	0.09
1	6947	residue compressor (C-9)	T	0.120	\$20	\$571	17.50	0.06
5	6245	C-10 -	VC	0.120	\$200	\$546	14.28	0.49
1	7307	Comp W7	CS	0.120	\$2,000	-\$1,654	15.36	5.45
5	6268	C-08 -	T	0.119	\$30	\$550	17.50	0.09
2	4925	Plant Sales Piping	R	0.119	\$175	\$1,193	17.32	0.54
5	6588	piping north of 3rd/4th stage compression -	BV	0.119	\$190	\$1,201	14.05	0.47
1	7351	Compressor	CS	0.118	\$2,000	-\$1,658	15.16	5.52
1	7081	residue compressor (#3 caterpillar)	VC	0.118	\$200	\$379	17.16	0.63
5	6003	C-02 -	T	0.118	\$30	\$544	17.32	0.10
1	6900	PIG receivers	OEL	0.116	\$75	\$578	14.90	0.21
5	6013	C-02 -	INJ	0.116	\$200	\$869	17.05	0.65
5	6214	C-07 -	GOV	0.116	\$200	\$865	17.00	0.65
3	6734	pipe east of de-C3 reflux pump	C	0.116			0.00	
1	7019	residue compressor (#1 ingersoll-rand)	VC	0.115	\$200	\$366	16.77	0.65
3	6421	North White inlet compressor	OEL	0.115	\$60	\$620	13.92	0.16
4	5912	Propane Feed Pump	OEL	0.115	\$75	\$1,591	0.00	0.08
3	6739	EB Skid	GTV	0.114	\$75	\$4,891	0.00	0.05
5	6517	Comp #38 - north compressor station	INJ	0.113	\$200	\$839	16.58	0.67
4	5581	Inlet Compressor	F	0.112	\$50	\$541	14.92	0.16
1	7335	Comp W8	CS	0.111	\$2,000	-\$1,681	14.14	5.92
1	6988	plant #1 demethanizer side exchanger	GTV	0.110	\$75	\$1,093	14.10	0.22
5	6044	C-02 -	T	0.109	\$30	\$502	16.04	0.10
1	7129	residue compressor (#3 ingersoll-rand)	VC	0.109	\$200	\$336	15.86	0.68
3	6759	C-4	VVP	0.107	\$400	-\$74	12.99	1.16
1	6810	PIG receivers	PIG	0.106	\$150	\$447	13.62	0.46
1	6918	plant #1 turbo expander	OEL	0.106	\$75	\$521	13.59	0.23
4	5830	NE Compressor Station Comp	F	0.106	\$75	\$566	12.55	0.21
3	6757	C-4	NV	0.105	\$60	\$1,113	12.71	0.18
3	6789	C-3	F	0.103	\$50	\$459	14.93	0.18
5	6349	C-11 -	T	0.103	\$30	\$472	15.15	0.11
1	7149	residue compressor (#3 ingersoll-rand)	OEL	0.103	\$60	\$444	14.92	0.22
5	6018	C-02 - plug	T	0.102	\$30	\$468	15.01	0.11
3	6166	de-C4 reflux accumulator	OEL	0.102	\$60	\$2,296	0.00	0.05
1	7138	residue compressor (#4 ingersoll-rand)	NV	0.101	\$60	\$879	14.71	0.22
5	5978	C-04 -	INJ	0.101	\$200	\$728	14.81	0.75
5	6310	C-12 - plug	T	0.099	\$30	\$452	14.53	0.11

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
1	6857	plant #1 north-east molecular siv	T	0.099	\$30	\$523	12.63	0.10
3	6183	de-C1	T	0.098	\$20	\$560	11.85	0.06
3	6673	EP Skid	T	0.098	\$50	\$1,355	0.00	0.07
1	7082	residue compressor (#3 caterpillar)	F	0.098	\$100	\$380	14.22	0.38
1	7201	residue compressor (#4 ingersoll-rand)	OEL	0.098	\$60	\$420	14.22	0.23
4	5902	North Boiler - Stem Packing	GTV	0.098	\$190	\$784	12.99	0.68
1	6879	plant #1 midle-east molecular siv	F	0.097	\$75	\$471	12.47	0.25
5	6384	Skid #2 - west mol siv	CV	0.096	\$282	\$312	11.34	0.87
5	5948	C-03 - plug	T	0.096	\$0	\$466	14.05	0.00
5	6083	C-03 -	T	0.096	\$30	\$436	14.05	0.12
1	7116	residue compressor (wast caterpillar)	F	0.095	\$75	\$392	13.82	0.29
5	6004	C-02 - plug	T	0.095	\$30	\$431	13.91	0.12
5	6234	C-06 - plug	T	0.092	\$30	\$419	13.53	0.12
1	7184	plant #6 middle molecular siv	F	0.090	\$100	\$406	11.55	0.36
3	6550	South White inlet compressor	CS	0.090	\$2,000	-\$1,726	10.90	6.89
1	6864	pipe rack	T	0.090	\$30	\$473	11.47	0.11
1	7048	plant #2 turbo expander	T	0.090	\$20	\$482	11.46	0.07
5	6365	Comp # 38 - north compressor station	INJ	0.089	\$200	\$621	13.10	0.84
3	6750	buried line	GTV	0.089	\$245	\$750	10.78	0.85
2	4889	Compressor 4	BV/CV	0.089	\$130	\$741	6.47	0.27
5	6088	C-03 - manifold	F	0.088	\$50	\$380	12.95	0.21
4	5827	NE Compressor Station Comp	T	0.088	\$30	\$502	10.42	0.10
3	6430	South White inlet compressor	VC	0.087	\$200	\$317	10.59	0.71
3	6761	C-2	CS	0.087	\$2,000	-\$1,734	10.57	7.11
1	7140	residue compressor (#4 ingersoll-rand)	CS	0.087	\$2,000	-\$1,780	12.67	8.57
3	6779	C-2	CS	0.087	\$2,000	-\$1,737	10.48	7.17
3	6772	C-2	CS	0.086	\$2,000	-\$1,738	10.43	7.20
2	4912	Parlange 12 (3-phase sep)	T	0.086	\$130	\$301	12.55	0.55
2	4944	Comp #2	CHK	0.086	\$100	\$728	12.18	0.42
1	6880	plant #1 inlet filter seperator	OEL	0.084	\$60	\$414	10.81	0.23
5	6061	C-01 - manifold	F	0.084	\$50	\$359	12.35	0.22
4	5903	North Boiler - Stem Packing	GTV	0.084	\$190	\$648	11.18	0.79
4	5492	Refrigerant Separator - Stem Packing	GTV	0.083	\$75	\$2,211	0.00	0.11
1	7300	Comp W1	CS	0.083	\$2,000	-\$1,759	10.66	7.85
5	6509	Comp #40 - north compressor station	F	0.083	\$50	\$355	12.20	0.23
1	7073	plant #5 demethanizer side exchanger	GTV	0.083	\$75	\$805	10.63	0.30
2	4971B	Comp #1	Cylinder Body	0.083	\$400	-\$182	11.76	1.73
3	6675	EP Skid	T	0.083	\$20	\$1,164	0.00	0.03
1	7185	plant #6 middle molecular siv	F	0.082	\$100	\$361	10.51	0.40
5	6066	C-05 -	GOV	0.082	\$200	\$552	11.99	0.92
1	7172	residue compressor (#3	VC	0.082	\$200	\$201	11.87	0.92

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		ingersoll-rand)						
1	7110	residue compressor (north caterpillar)	VC	0.082	\$200	\$200	11.86	0.92
3	6719	EP Skid	T	0.081	\$50	\$1,109	0.00	0.08
5	5842	low pressure sales line - outside of plant fence	GTV	0.081	\$1,000	-\$259	11.82	4.68
5	6040	C-04 - plug	T	0.080	\$30	\$362	11.81	0.14
3	6496	propane storage	GTV	0.080	\$100	\$2,717	0.00	0.12
3	6442	suction scrubber (15 psi)	CV	0.079	\$560	-\$91	9.60	2.19
4	5882	NE Compressor Station Pump	R	0.079	\$175	\$785	10.54	0.77
1	7069	plant #5 turbo expander	GTV	0.079	\$75	\$760	10.08	0.31
4	5802	Inlet Compressor	T	0.078	\$30	\$442	9.24	0.12
4	5599	Propane Compressor - DP Cover	CS	0.078	\$2,000	-\$1,421	0.00	3.26
1	7309	Comp W7	T	0.077	\$30	\$347	11.17	0.15
5	6059	C-05 -	T	0.076	\$30	\$341	11.19	0.15
5	6036	C-04 -	T	0.075	\$30	\$334	10.98	0.15
4	5826	NE Compressor Station Comp	OEL	0.075	\$75	\$378	8.87	0.30
1	7070	plant #5 dust filter	T	0.074	\$30	\$387	9.50	0.13
2	4914	FG Scrubber	TB	0.073	\$15	\$730	10.59	0.07
1	7354	Comp 1	F	0.073	\$200	\$208	9.31	0.90
1	6946	residue compressor (C-9)	F	0.073	\$50	\$307	10.57	0.26
1	7247	Comp W3	GS	0.073	\$2,000	-\$1,791	9.28	9.02
5	5844	pipng west of LP sales compressors -	T	0.071	\$20	\$327	10.47	0.11
5	6204	C-07 -	VC	0.071	\$200	\$239	8.39	0.83
5	6141	Comp #27 - north compressor station	PV	0.071	\$120	\$532	10.41	0.64
3	6746	buried line	GTV	0.071	\$500	\$289	8.55	2.20
3	6682	turbo expander-compressor	CV	0.070	\$560	-\$144	8.50	2.47
5	6271	C-09 - plug	T	0.070	\$30	\$311	10.27	0.16
5	6313	C-12 -	INJ	0.070	\$200	\$442	10.24	1.08
5	6298	C-10 -	INJ	0.070	\$200	\$441	10.22	1.08
5	6258	C-08 - plug	T	0.070	\$30	\$308	10.20	0.16
5	6266	C-08 - union	T	0.069	\$30	\$306	10.14	0.16
4	5541	Chiller - Stem Packing	CV	0.069	\$130	\$288	8.17	0.57
3	6417	combined inlet header	GTV	0.069	\$75	\$693	8.32	0.34
1	7004	residue compressor (#3 caterpillar)	GTV	0.069	\$75	\$562	9.98	0.41
1	7084	residue compressor (#3 caterpillar)	F	0.069	\$200	\$7,793	236.73	0.05
5	6231	C-06 - union	T	0.068	\$30	\$298	9.90	0.17
1	7089	residue compressor (#3 caterpillar)	VC	0.067	\$200	\$127	9.70	1.12
1	7025	plant #2 middle molecular siv	F	0.067	\$100	\$273	8.52	0.49
5	5984	C-04 - manifold	F	0.066	\$50	\$271	9.69	0.29
2	4963	Comp #4	VC/T	0.066	\$135	\$202	9.36	0.73
1	6844	pipe rack	T	0.065	\$20	\$346	8.36	0.10
1	6819	plant #1 inlet filter seperator (PV-3)	GTV	0.065	\$75	\$616	8.34	0.38
5	6211	C-07 -	VC	0.065	\$200	\$203	7.69	0.91



**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
5	6106	Comp # 37 - north compressor station	INJ	0.065	\$200	\$396	9.50	1.16
4	5551	De-ethanizer Reflux Accumulator - sight glass	OEL	0.065	\$75	\$266	8.60	0.40
5	5996	C-06 -	VC	0.064	\$200	\$199	7.61	0.92
1	7026	plant #2 dust filter	T	0.064	\$30	\$331	8.23	0.15
3	6400	combined inlet header	GTV	0.064	\$190	\$528	7.78	0.92
3	6693	west sales turbine compressor	T	0.064	\$20	\$296	9.26	0.12
3	6668	mole siv skid	T	0.063	\$20	\$352	7.60	0.10
3	6625	West refrigeration compressor (old)	R	0.063	\$175	\$535	9.07	1.04
1	6823	plant #1 turbo expander	T	0.063	\$30	\$322	8.03	0.16
4	5569	Inlet Compressor	F	0.062	\$50	\$280	8.31	0.28
1	7141	residue compressor (#4 ingersoll-rand)	T	0.062	\$30	\$276	9.06	0.18
5	6098	C-05 -	VC	0.062	\$200	\$182	7.30	0.96
3	6130	north compressor	VC	0.061	\$200	\$160	7.37	1.02
3	6597	High Chiller	OEL	0.060	\$60	\$586	0.00	0.17
5	6392	low level chiller -	GTV	0.060	\$350	\$1,295	0.00	0.74
4	5546	Glycol Separator	OEL	0.060	\$60	\$301	7.07	0.30
1	7078	plant #6 turbo expander	OEL	0.059	\$60	\$231	8.63	0.38
3	6489	South Waukesha inlet compressor	CS	0.059	\$8,000	-\$7,821	7.13	42.11
2	4970	Comp #4	VC/T	0.059	\$135	\$167	8.39	0.82
1	7308	Comp W7	CS	0.059	\$2,000	-\$1,831	7.49	11.17
2	4977	Comp #3	DP body	0.058	\$4,000	-\$3,847	8.28	24.61
4	5803	Inlet Compressor	VC	0.058	\$200	\$152	6.90	1.04
4	5914	De-ethanizer - Stem Packing	CV	0.058	\$130	\$176	7.73	0.78
3	6725	EP Skid	T	0.057	\$50	\$774	0.00	0.11
1	7170	residue compressor (#2 ingersoll-rand)	CS	0.057	\$2,000	-\$1,856	8.31	13.08
5	6356	C-12 - plug	T	0.057	\$30	\$247	8.37	0.20
3	6718	EP Skid	T	0.057	\$50	\$1,495	0.00	0.11
5	6022	C-01 - plug	T	0.057	\$30	\$246	8.32	0.20
5	6340	C-11 - union	T	0.057	\$30	\$246	8.32	0.20
5	6590	sulphur plant -	T	0.056	\$30	\$244	8.27	0.20
3	6541	low pressure inlet compressors suction scrubber	CV	0.056	\$560	-\$229	6.79	3.10
1	7301	Comp W1	CS	0.056	\$2,000	-\$1,838	7.16	11.68
4	5452	Inlet Header	PIG	0.056	\$245	\$94	6.64	1.33
5	6355	C-12 - union	T	0.056	\$30	\$242	8.19	0.20
3	6655	mole siv skid	T	0.056	\$30	\$299	6.72	0.17
5	6035A	C-01 - top	GOV	0.056	\$200	\$311	8.16	1.36
1	6979	residue compressor (C-9)	VVP	0.055	\$400	-\$260	8.06	2.70
1	7263	pipe rack	T	0.055	\$30	\$242	8.05	0.20
3	6713	EP Skid	T	0.055	\$50	\$743	0.00	0.12
1	6915	pipe rack	GTV	0.055	\$60	\$446	7.94	0.41
1	6883	plant #1 inlet filter seperator	GTV	0.054	\$595	-\$19	6.95	3.58
2	4973	Comp #4	Crank Case Vent	0.054	\$2,000	-\$1,857	7.73	13.18
5	6308	C-12 -	T	0.054	\$30	\$234	7.95	0.21

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
5	6575	pipng north of 1st/2nd stage compression -	BV	0.054	\$120	\$513	6.41	0.66
5	6235	C-06 - plug	T	0.054	\$30	\$230	7.85	0.21
2	4909	Parlange #9	CV/GBV	0.053	\$177	\$91	7.78	1.21
1	6977	residue compressor (C-9)	VVP	0.053	\$400	-\$266	7.72	2.81
5	6265	C-08 - plug	T	0.052	\$30	\$224	7.66	0.22
5	6325	C-10 - plug	T	0.052	\$30	\$221	7.56	0.22
5	6586	pipng north of 3rd/4th stage compression -	BV	0.051	\$120	\$482	6.09	0.69
5	6110	Comp # 36 - north compressor station	INJ	0.051	\$200	\$268	7.47	1.48
5	6315	C-12 - manifold	F	0.051	\$50	\$198	7.47	0.37
3	6729	de-C2 reflux pump	GTV	0.051	\$100	\$933	0.00	0.34
3	6413	combined inlet header	OEL	0.051	\$60	\$241	6.16	0.37
3	6468	combined inlet header	T	0.051	\$20	\$280	6.14	0.12
3	6724	EP Skid	T	0.050	\$50	\$670	0.00	0.13
5	6222	C-06 -	T	0.050	\$30	\$214	7.36	0.23
3	6401	combined inlet header	GTV	0.050	\$190	\$364	6.00	1.19
5	6335	C-11 - plug	T	0.049	\$30	\$209	7.22	0.23
4	5518	De-ethanizer - Stem Packing	GTV	0.048	\$120	\$362	6.44	0.86
3	6126	south compressor	F	0.048	\$300	-\$15	5.84	1.93
4	5823	NE Compressor Station Separator - vent	R	0.048	\$175	\$494	5.70	1.10
1	6906	plant #1 turbo expander	R	0.048	\$175	\$444	6.14	1.19
1	6966	refrigeration compressor (#3 Clark)	VC	0.048	\$200	\$496	0.00	0.53
1	7303	Comp W4	CS	0.048	\$2,000	-\$1,863	6.09	13.74
2	4978	Comp #3	CCV	0.047	\$2,000	-\$1,876	6.72	15.17
5	6081	C-03 - plug	T	0.047	\$30	\$198	6.89	0.24
3	6711	EP Skid	T	0.047	\$50	\$622	0.00	0.14
4	5493	NRU - Inlet Sep	GTV	0.046	\$130	\$114	6.17	0.97
5	6030B	C-01 - plug (bottom)	T	0.046	\$30	\$195	6.78	0.24
5	6011	C-02 -	T	0.046	\$30	\$192	6.70	0.25
5	6039	C-08 - measured at water jacket connection	T	0.046	\$400	\$2,305	100.66	0.14
5	5950	C-04 - measured at 2" threaded water jacket connection in cylinder body	OEL	0.045	\$400	-\$255	5.37	2.61
5	6082	C-03 -	T	0.045	\$30	\$191	6.66	0.25
1	6954	residue compressor (C-9)	INJ	0.045	\$200	\$220	6.58	1.65
5	6084	C-03 - plug	T	0.045	\$30	\$189	6.60	0.25
5	6518	Comp #38 - north compressor station	T	0.045	\$20	\$199	6.60	0.17
1	7345	Comp 4	T	0.045	\$20	\$201	6.53	0.17
5	5919	C-20 -	VC	0.045	\$200	\$18	6.57	1.68
1	7005	residue compressor (#3 caterpillar)	T	0.045	\$20	\$199	6.48	0.17
1	7244	Comp W2	CS	0.044	\$2,000	-\$1,872	5.67	14.75
1	7074	pipe rack	GTV	0.044	\$75	\$394	5.66	0.55
2	5000	Cat Compressor	T	0.044	\$30	\$401	3.20	0.13
1	7251	Comp W6	T	0.044	\$30	\$217	5.63	0.22
1	7076	plant #6 west molecular siv	F	0.044	\$100	\$146	5.62	0.74

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
5	6087	C-03 - plug	T	0.044	\$30	\$183	6.43	0.26
4	5822	NE Compressor Station Comp	T	0.044	\$20	\$246	5.20	0.14
4	5476	NRU - NRU inlet	T	0.044	\$30	\$201	5.82	0.24
1	7122	residue compressor (#2 ingersoll-rand)	CS	0.043	\$177	\$34	6.24	1.54
2	4909	Florida Sales Line	GTBV/ CV	0.043	\$130	\$85	6.25	1.11
3	6182	de-C1	T	0.043	\$20	\$233	5.17	0.14
3	6664	mole siv skid	F	0.043	\$75	\$177	5.14	0.55
5	6346	C-11 - plug	T	0.042	\$30	\$176	6.21	0.27
5	6101	Comp # 37 - north compressor station	F	0.042	\$25	\$181	6.21	0.22
3	6696	west sales turbine compressor	T	0.042	\$20	\$188	6.09	0.18
1	6904	pipe rack	OM	0.042	\$150	-\$28	5.40	1.16
1	6972	residue compressor (C-9)	T	0.042	\$20	\$187	6.13	0.18
1	6867	plant #1 demethanizer bottom pumps	GTV	0.042	\$60	\$2,208	0.00	0.09
5	6291	C-10 -	T	0.042	\$30	\$174	6.16	0.27
5	6572	piping north of C3 compressors -	GTV	0.042	\$190	\$417	0.00	0.57
3	6695	west sales turbine compressor	GTV	0.041	\$60	\$320	5.90	0.55
3	6425	North White inlet compressor	VC	0.040	\$200	\$39	4.90	1.53
1	7151	residue compressor (#3 ingersoll-rand)	VC	0.040	\$400	\$918	75.85	0.29
1	7339	Comp W8	T	0.040	\$30	\$168	5.85	0.28
4	5885	22-7 Wellhead	F	0.040	\$50	\$193	4.77	0.38
1	7108	residue compressor (north caterpillar)	T	0.040	\$30	\$166	5.81	0.28
3	6462	combined inlet header	GTV	0.040	\$75	\$370	4.82	0.58
5	6065	C-05 -	T	0.040	\$30	\$163	5.81	0.29
5	5981	C-04 -	T	0.039	\$30	\$158	5.67	0.29
1	7118	residue compressor (#1 ingersoll-rand)	T	0.038	\$20	\$168	5.58	0.19
1	7219	residue compressor (#5 ingersoll-rand)	VC	0.038	\$200	-\$12	5.57	1.95
3	6765	C-2	F	0.038	\$50	\$135	5.43	0.50
3	6477	North Waukesha inlet compressor	VC	0.038	\$200	\$22	4.55	1.65
1	6976	residue compressor (C-9)	VVP	0.037	\$400	-\$306	5.40	4.02
5	6032	C-01 -	T	0.037	\$30	\$150	5.42	0.31
2	4952	Comp #3	T	0.037	\$20	\$167	5.20	0.20
5	6338	C-11 - plug	T	0.037	\$30	\$148	5.36	0.31
3	6795	C-5	GOV	0.036	\$200	\$136	5.23	2.06
1	6937	plant #1 south-west molecular siv	F	0.036	\$75	\$127	4.60	0.68
5	6213	C-07 -	T	0.036	\$30	\$144	5.25	0.32
1	7059	plant #6 east molecular siv	T	0.036	\$20	\$180	4.57	0.18
3	6170	west butane transfer pump	PS	0.036	\$500	-\$77	0.00	1.11
5	6064	C-05 - plug	T	0.035	\$30	\$142	5.19	0.32
2	4956	Comp #3	GBV/CV	0.035	\$282	-\$101	5.02	2.86
1	7265	Comp 1	T	0.035	\$20	\$178	4.51	0.19
4	5514	TEG Contactor - Stem Packing	GTV	0.035	\$75	\$327	4.17	0.65
5	6505	Comp #38 - north compressor	VC	0.035	\$200	\$17	4.15	1.69

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		station						
5	6333	C-11 - plug	T	0.035	\$30	\$140	5.12	0.32
1	7329	Comp 6	T	0.035	\$30	\$141	5.06	0.32
1	7288	plant #1 south-west molecular siv	T	0.035	\$30	\$165	4.46	0.28
3	6728	de-C2 reflux pump	GTV	0.035	\$100	\$606	0.00	0.49
3	6737	de-C2 reboiler	OEL	0.034	\$60	\$257	0.00	0.35
3	6553	South White inlet compressor	F	0.034	\$50	\$119	4.97	0.54
3	6665	mole siv skid	T	0.034	\$30	\$172	4.14	0.27
1	7179	residue compressor (#3 ingersoll-rand)	VC	0.034	\$200	-\$33	4.96	2.19
4	5881	NE Compressor Station Pump	T	0.034	\$30	\$149	4.53	0.31
5	5982	C-04 - plug	T	0.034	\$30	\$135	4.97	0.33
5	6006	C-02 - plug	T	0.034	\$30	\$134	4.94	0.34
1	6963	plant #1 middle-west molecular siv	GTV	0.033	\$190	\$164	4.27	1.86
3	6652	mole siv skid	T	0.033	\$20	\$177	4.03	0.19
3	6674	EP Skid	T	0.033	\$50	\$428	0.00	0.19
1	6816	plant #1 inlet filter seperator (PV-3)	T	0.033	\$20	\$167	4.26	0.20
4	5468	Sales Compressor - Lube Oil Tank Plug	T	0.033	\$50	\$129	4.20	0.51
5	6078	C-04 - plug	T	0.033	\$30	\$132	4.88	0.34
3	6689	middle sales turbine compressor	T	0.033	\$20	\$144	4.80	0.22
3	6714	EP Skid	T	0.033	\$50	\$426	0.00	0.19
4	5458	Sales Compressor - Plug	T	0.033	\$20	\$158	4.18	0.21
4	5463	Sales Compressor - Plug	T	0.033	\$20	\$158	4.18	0.21
3	6643	pipe rack north of new refrigeration compressors	T	0.033	\$30	\$132	4.76	0.34
5	6322	C-10 -	T	0.032	\$30	\$127	4.75	0.35
3	6431	South White inlet compressor	VVP	0.032	\$400	-\$302	3.91	3.84
4	5470	NRU - Valve Under P1103	BV	0.032	\$75	\$247	4.30	0.81
2	4910	Acadian Sales	NV	0.032	\$60	\$245	4.69	0.68
5	6005	C-02 -	T	0.032	\$30	\$126	4.71	0.35
5	6069	C-05 - plug	T	0.032	\$30	\$125	4.68	0.35
3	6461	combined inlet header	GTV	0.032	\$75	\$281	3.86	0.73
1	7067	plant #6 turbo expander	CV	0.032	\$177	\$1	4.05	1.83
3	6606	South White inlet compressor	T	0.032	\$30	\$156	3.82	0.30
2	5019	Compressor 4	Union	0.031	\$100	\$205	2.26	0.60
1	6964	plant #1 middle-west molecular siv	GTV	0.031	\$60	\$269	3.97	0.63
4	5529	De-propanizer - Stem Packing	CV	0.031	\$130	\$318	0.00	0.53
1	6930	plant #1 north-west molecular siv	GTV	0.031	\$60	\$267	3.95	0.64
5	5946	C-03 -	GOV	0.031	\$200	\$84	4.53	2.44
1	7134	residue compressor (#3 ingersoll-rand)	T	0.031	\$20	\$131	4.46	0.24
1	7164	residue compressor (#2 ingersoll-rand)	CS	0.031	\$2,000	-\$1,923	4.44	24.45
1	7344	Comp 4	T	0.031	\$30	\$120	4.44	0.37
5	6366	Comp # 38 - north compressor	PV	0.030	\$60	\$219	4.46	0.74

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		station						
4	5901	South Boiler - Union	T	0.030	\$20	\$140	4.05	0.23
5	6135	Comp # 27 - north compressor station	PV	0.030	\$120	\$158	4.43	1.50
5	6203	C-07 -	VC	0.030	\$200	-\$15	3.53	1.98
1	7006	residue compressor (#3 caterpillar)	GTV	0.030	\$75	\$201	4.32	0.94
1	6838	plant #5 demethanizer side exchanger	T	0.030	\$20	\$147	3.81	0.22
5	5959	C-10 - plug	T	0.029	\$0	\$143	4.32	0.00
1	6850	pipe rack	T	0.029	\$30	\$113	4.25	0.38
1	7008	residue compressor (#2 caterpillar)	T	0.029	\$20	\$122	4.22	0.26
5	6215	C-07 - plug	T	0.029	\$30	\$110	4.23	0.39
3	6562	West refrigeration compressor (old)	F	0.029	\$50	\$92	4.16	0.65
4	5519	Gas-Liquid Heat Exchanger - hole in insulation	OEL	0.029	\$60	\$114	3.41	0.63
1	7208	residue compressor (#5 ingersoll-rand)	VVP	0.029	\$400	-\$328	4.17	5.21
3	6760	C-2	VC	0.029	\$200	-\$30	3.47	2.16
3	6690	middle sales turbine compressor	T	0.029	\$20	\$121	4.14	0.26
5	6085	C-03 - plug	T	0.028	\$30	\$109	4.18	0.40
4	5497	NRU - Dehy out	F	0.028	\$100	\$50	3.79	1.22
4	5910	Propane Feed Pump	T	0.028	\$30	\$380	0.00	0.13
1	7243	Comp W2	CS	0.028	\$2,000	-\$1,918	3.61	23.14
2	4910	Parlange 12 (3-phase sep)	T	0.028	\$60	\$206	4.10	0.78
4	5836	NE Compressor Station Separator - body	R	0.028	\$175	\$216	3.34	1.88
1	6853	pipe rack	T	0.028	\$30	\$107	4.06	0.40
1	7325	Comp 4	CS	0.028	\$2,000	-\$1,920	3.54	23.61
3	6650	mole siv skid	T	0.028	\$20	\$143	3.34	0.22
3	6631	refrigeration compressors (old)	T	0.028	\$30	\$106	3.99	0.40
3	6133	north compressor	VC	0.027	\$200	-\$38	3.33	2.26
3	6704	mole siv skid	F	0.027	\$50	\$112	3.31	0.57
3	6788	C-3	T	0.027	\$30	\$104	3.94	0.41
5	6342	C-11 - plug	T	0.027	\$30	\$102	3.98	0.42
1	6981	residue compressor (C-9)	T	0.027	\$20	\$112	3.92	0.28
3	6532	fuel gas scrubber (PV-9)	T	0.027	\$30	\$103	3.89	0.41
5	6233	C-06 -	INJ	0.027	\$200	\$47	3.94	2.81
1	7064	plant #6 turbo expander	OEL	0.027	\$60	\$90	3.42	0.73
2	4942	Comp #4	F	0.027	\$75	\$61	3.79	1.01
1	7096	separator	GTV	0.027	\$75	\$172	3.86	1.05
1	7147	residue compressor (#3 ingersoll-rand)	VC	0.027	\$200	-\$70	3.86	2.81
5	5852	C-20 -	T	0.027	\$30	\$99	3.89	0.43
4	5861	NE Compressor Station Comp	VC	0.026	\$200	-\$40	3.14	2.29
5	6370	Comp # 38 - north compressor station	PV	0.026	\$60	\$182	3.86	0.86
5	6312	C-12 - plug	T	0.026	\$30	\$98	3.86	0.43
2	4943	Planters #4 Inlet Sep	T	0.026	\$20	\$114	3.72	0.27

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
4	5512	Sales Compressor - Plug	T	0.026	\$20	\$121	3.30	0.26
3	6648	mole siv skid	GTV	0.026	\$60	\$230	3.13	0.72
1	7160	residue compressor (#1 ingersoll-rand)	VC	0.026	\$200	-\$73	3.77	2.88
1	7088	residue compressor (#3 caterpillar)	VC	0.026	\$200	-\$73	3.76	2.89
4	5524	De-butanizer Reflux Accumulator - sight glass	T	0.026	\$30	\$542	0.00	0.10
1	7016	residue compressor (west caterpillar)	T	0.026	\$30	\$96	3.74	0.44
5	6092	C-03 -	VC	0.026	\$200	-\$41	3.04	2.30
5	6050	C-02 - union	T	0.026	\$30	\$95	3.77	0.44
5	6358	C-12 -	INJ	0.026	\$200	\$36	3.76	2.94
4	5491	Propane Caustic Treater	T	0.026	\$30	\$341	0.00	0.15
4	5835	NE Compressor Station Separator - body	R	0.025	\$175	\$180	3.03	2.08
3	6683	turbo expander-compressor	GTV	0.025	\$60	\$224	3.07	0.73
1	7027	plant #2 turbo expander	T	0.025	\$30	\$112	3.25	0.39
1	6905	plant #1 turbo expander	TB	0.025	\$15	\$253	3.24	0.19
3	6741	north compressor	VC	0.025	\$200	-\$50	3.06	2.45
5	6391	low level chiller -	T	0.025	\$30	\$127	2.99	0.35
4	5509	Sales Compressor - DPV	OEL	0.025	\$75	\$61	3.20	1.01
5	6314	C-12 - plug	T	0.025	\$30	\$92	3.69	0.45
3	6649	mole siv skid	GTV	0.025	\$60	\$220	3.03	0.74
4	5588	NE Compressor Station Comp	VC	0.025	\$200	-\$48	2.98	2.41
5	6328	C-10 -	INJ	0.025	\$200	\$30	3.67	3.02
5	6242	C-08 - packing	VVP	0.025	\$400	-\$320	2.971536	4.73
3	6444	pipe rack between inlet compressors	OM	0.025	\$150	-\$74	3.01	1.87
2	4906	Acadian Sales	R	0.025	\$175	\$110	3.61	2.58
3	6181	de-C1	T	0.025	\$20	\$126	2.99	0.25
5	6226	C-06 -	T	0.025	\$30	\$90	3.63	0.46
2	4965B	Comp #2	Cylinder body	0.025	\$400	-\$335	3.50	5.82
5	6329	C-10 -	INJ	0.025	\$200	\$26	3.60	3.07
2	4906	Parlange #5	OM	0.024	\$175	\$106	3.55	2.62
5	5947	C-03 -	GOV	0.024	\$200	\$24	3.57	3.10
5	5995	C-06 - discharge bottle	T	0.024	\$30	\$120	2.87	0.37
1	7213	residue compressor (#5 ingersoll-rand)	VVP	0.024	\$400	-\$339	3.53	6.16
3	6620	West refrigeration compressor (old)	CV	0.024	\$130	-\$11	3.50	2.00
3	6148	north compressor	F	0.024	\$300	-\$157	2.93	3.85
5	6394	pipe between chiller and expander turbine -	CV	0.024	\$282	-\$132	2.86	3.46
5	6357	C-12 - manifold	F	0.024	\$50	\$68	3.55	0.78
4	5550	De-ethanizer Reflux Condenser - stem packing	GTV	0.024	\$120	\$117	3.17	1.75
4	5534	Pipe Rack - between inlet comp and NRU	TB	0.024	\$15	\$257	2.82	0.19
5	6288	C-10 - plug	T	0.024	\$30	\$85	3.47	0.48
3	6411	combined inlet header	GTV	0.024	\$75	\$189	2.87	0.98

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
3	6726	EP Skid	T	0.024	\$50	\$289	0.00	0.27
5	6254	C-08 -	T	0.024	\$30	\$84	3.45	0.48
5	6037	C-04 - plug	T	0.023	\$30	\$84	3.44	0.48
3	6630	refrigeration compressors (old)	T	0.023	\$30	\$85	3.36	0.48
5	6367	Comp # 38 - north compressor station	PV	0.023	\$60	\$154	3.41	0.97
5	6072	C-05 - plug	T	0.023	\$30	\$83	3.40	0.49
1	6843	pipe rack	GTV	0.023	\$245	\$1	2.96	3.46
1	7101	residue compressor (#1 caterpillar)	T	0.023	\$20	\$93	3.34	0.33
1	6994	PSV 671101	GTV	0.023	\$60	\$182	2.92	0.86
5	6580	pipng north of 1st/2nd stage compression -	BV	0.023	\$190	\$78	2.71	2.46
5	6316	pipng north of 1st/2nd stage compression -	F	0.023	\$100	\$41	2.70	1.30
3	6776	C-2	CS	0.023	\$2,000	-\$1,931	2.75	27.32
5	6501	South Comp - south compressor station	VC	0.023	\$200	-\$59	2.70	2.60
5	5993	C-06 -	VC	0.023	\$200	-\$60	2.67	2.63
3	6786	C-3	OEL	0.022	\$75	\$36	3.25	1.24
5	6397	pipe between chiller and expander turbine -	GTV	0.022	\$75	\$188	2.66	0.99
3	6193	EP Skid	GTV	0.022	\$75	\$530	0.00	0.43
2	4919	Plant Inlet Piping	TB	0.022	\$15	\$196	3.25	0.25
5	6062	C-01 - manifold	F	0.022	\$50	\$58	3.24	0.85
5	6063	C-01 - manifold	F	0.022	\$50	\$57	3.24	0.85
1	6824	stabilizer overheads compressor (C-92)	T	0.022	\$30	\$78	3.20	0.51
5	6568	pipng south of cryo plant -	T	0.022	\$30	\$76	3.21	0.52
5	6138	Comp # 27 - north compressor station	T	0.022	\$30	\$76	3.20	0.52
5	6387	demethanizer bottoms pump -	GTV	0.022	\$190	\$415	0.00	1.09
5	5960	C-10 - manifold	F	0.022	\$200	-\$94	3.19	3.47
5	6029	C-01 -	T	0.022	\$30	\$76	3.19	0.52
5	6502	South Comp - south compressor station	CCV	0.022	\$8,000	-\$7,931	2.58	108.91
2	4920	Plant Inlet Piping	T	0.021	\$20	\$88	3.13	0.34
3	6150	EP Skid	F	0.021	\$100	\$208	0.00	0.60
1	7328	Comp 5	T	0.021	\$30	\$75	3.11	0.52
1	7340	Compressor	T	0.021	\$20	\$100	2.74	0.31
1	7268	pipe rack	T	0.021	\$50	\$55	3.11	0.87
5	6033	C-01 - plug	T	0.021	\$30	\$74	3.13	0.53
3	6195	EP Skid	GTV	0.021	\$75	\$500	0.00	0.45
5	6034	C-01 - union	T	0.021	\$30	\$73	3.11	0.53
5	6294	C-10 - manifold	F	0.021	\$50	\$53	3.09	0.89
3	6561	West refrigeration compressor (old)	BV	0.021	\$100	\$96	3.05	1.77
1	6848	pipe rack	GTV	0.021	\$245	-\$22	2.69	3.81
1	7047	plant #2 middle molecular siv	T	0.021	\$30	\$88	2.69	0.47
5	6364	Comp # 38 - north compressor station	F	0.021	\$25	\$77	3.07	0.45
4	5505	Sales Compressor - Lube Oil	T	0.021	\$50	\$62	2.63	0.82

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		Tank Cap						
3	6557	West refrigeration compressor (old)	T	0.021	\$20	\$368	0.00	0.09
1	7159	residue compressor (#4 ingersoll-rand)	T	0.021	\$20	\$81	3.00	0.36
1	7072	plant #5 dust filter	T	0.021	\$20	\$96	2.64	0.32
1	7217	residue compressor (#5 ingersoll-rand)	VC	0.021	\$200	-\$99	2.98	3.64
1	7042	plant #2 west molecular siv	F	0.020	\$100	\$15	2.62	1.60
5	6352	C-12 -	T	0.020	\$30	\$70	3.00	0.55
5	5850	C-20 -	GOV	0.020	\$200	-\$13	2.98	3.71
3	6188	glycol flash tank	OEL	0.020	\$100	-\$1	2.92	1.84
3	6594	piping from de-C2 reflux accumulator bottoms	GTV	0.020	\$100	\$308	0.00	0.85
3	6153	EP Skid	GTV	0.020	\$75	\$468	0.00	0.48
3	6747	buried line	GTV	0.020	\$500	-\$277	2.42	7.76
4	5871	15-10 Heater - Body	R	0.020	\$175	\$103	2.37	2.65
3	6156	EP Skid	GTV	0.020	\$60	\$481	0.00	0.38
3	6715	EP Skid	T	0.020	\$50	\$234	0.00	0.32
1	7034	plant #5	T	0.020	\$20	\$91	2.54	0.33
5	5949	C-03 -	T	0.020	\$0	\$95	2.86	0.00
3	6731	de-C2 reflux pump	OEL	0.020	\$60	\$150	0.00	0.52
4	5804	Inlet Compressor - Stem Packing	VVP	0.019	\$400	-\$339	2.31	6.22
3	6544	South White inlet compressor	VC	0.019	\$200	-\$85	2.35	3.20
1	6913	plant #1 demethanixer side exchanger	OEL	0.019	\$60	\$48	2.47	1.02
3	6662	mole siv skid	CV	0.019	\$177	-\$64	2.31	2.87
5	6218	C-07 -	T	0.019	\$30	\$63	2.81	0.59
5	6260	C-08 -	T	0.019	\$30	\$63	2.81	0.59
1	7079	plant #6	T	0.019	\$20	\$87	2.44	0.34
5	6216	C-07 -	T	0.019	\$30	\$62	2.79	0.60
1	6881	plant #1 inlet filter seperator	T	0.019	\$30	\$76	2.42	0.52
5	6070	C-05 - union	T	0.019	\$30	\$62	2.77	0.60
4	5508	Sales Compressor - DPV	OEL	0.019	\$75	\$27	2.38	1.35
5	5962	C-10 -	T	0.019	\$0	\$91	2.75	0.00
3	6676	EP Skid	T	0.019	\$50	\$217	0.00	0.34
3	6803	C-7	VVP	0.019	\$400	-\$343	2.25	6.68
1	6912	plant #1 demethanixer side exchanger	OEL	0.018	\$60	\$44	2.36	1.06
4	5904	North Boiler	T	0.018	\$20	\$77	2.46	0.38
4	5589	NE Compressor Station Comp - Relief Valve	T	0.018	\$50	\$61	2.17	0.83
3	6603	South White inlet compressor	VC	0.018	\$200	-\$92	2.21	3.41
3	6531	fuel gas scrubber (PV-9)	T	0.018	\$30	\$60	2.63	0.61
4	5580B	Propane Compressor - Bolts on Cylinder End	CS	0.018	\$400	-\$265	0.00	2.79
3	6751	north compressor	F	0.018	\$300	-\$193	2.19	5.14
2	4958	Comp #3	VC	0.018	\$200	-\$107	2.57	3.96
3	6424	North White inlet compressor	VVP	0.018	\$400	-\$345	2.18	6.88
1	7256	Comp W8	T	0.018	\$30	\$71	2.31	0.54



**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
3	6180	de-C1	T	0.018	\$20	\$86	2.17	0.35
5	5928	C-20 -	T	0.018	\$20	\$67	2.63	0.42
5	6354	C-12 - manifold	F	0.018	\$50	\$37	2.63	1.05
5	5988	C-06 -	INJ	0.018	\$200	-\$35	2.63	4.21
4	5575	De-ethanizer Reflux Accumulator - Bottoms	TB	0.018	\$15	\$474	0.00	0.11
5	6038	C-07 -	T	0.018	\$30	\$1,934	59.24	0.03
5	5862	low pressure sales line - outside of plant fence	T	0.018	\$30	\$57	2.61	0.64
5	6283	C-09 -	INJ	0.018	\$200	-\$37	2.59	4.26
2	4953	Comp #3	Gov	0.018	\$200	-\$30	2.50	4.07
5	6520	Comp #38 - north compressor station	INJ	0.018	\$200	-\$38	2.58	4.29
4	5507	Sales Compressor - Union	T	0.017	\$30	\$64	2.21	0.58
4	5580A	Propane Compressor - Bolts on Cylinder End	CS	0.017	\$400	-\$270	0.00	2.90
1	6943	refrigeration compressor (#2 Clark)	VVP	0.017	\$400	-\$270	0.00	2.91
4	5905	North Boiler - Vent	R	0.017	\$175	\$35	2.31	3.51
5	6068	C-05 - plug	T	0.017	\$30	\$54	2.52	0.66
5	6028	C-01 - plug	T	0.017	\$30	\$53	2.51	0.66
5	6079	C-04 - union	T	0.017	\$30	\$52	2.48	0.67
5	6246	C-10 - cylinder end gasket	F	0.017	\$400	-\$346	2.00	7.02
3	6632	refrigeration compressors (old)	GTV	0.017	\$100	\$57	2.43	2.21
4	5868	15-10 Wellhead	T	0.017	\$20	\$81	1.98	0.36
5	5917	low pressure sales line -	GTV	0.017	\$75	\$78	2.44	1.70
4	5869	15-10 Wellhead - Plug on side of ESD	T	0.017	\$400	-\$300	1.96	7.33
3	6418	combined inlet header	GTV	0.016	\$75	\$108	1.98	1.42
3	6151	EP Skid	CV	0.016	\$282	-\$48	0.00	2.21
3	6622	West refrigeration compressor (old)	T	0.016	\$30	\$50	2.34	0.69
5	5975	C-04 - manifold	F	0.016	\$50	\$29	2.37	1.17
1	6898	stabilizer overheads compressor (C-92)	T	0.016	\$30	\$49	2.34	0.70
5	6343	C-11 - manifold	F	0.016	\$50	\$28	2.36	1.17
1	6945	residue compressor (C-9)	OEL	0.016	\$60	\$18	2.32	1.40
4	5545	Glycol Separator - sight glass	T	0.016	\$20	\$77	1.89	0.38
4	5573	De-ethanizer Reflux Accumulator - Bottoms	T	0.016	\$20	\$211	0.00	0.16
4	5574	De-ethanizer Reflux Accumulator - Bottoms	T	0.016	\$20	\$211	0.00	0.16
3	6452	pipe rack between inlet compressors	GTV	0.016	\$500	-\$324	1.91	9.82
5	5965	C-10 - manifold	F	0.016	\$200	-\$124	2.31	4.80
1	7285	plant #1 north-east molecular siv	GTV	0.016	\$60	\$106	2.00	1.25
4	5561	0 - Stem Packing	GTV	0.016	\$100	\$327	0.00	0.81
5	6056	C-05 -	T	0.016	\$30	\$46	2.29	0.73
2	4915	FG Scrubber	V	0.016	\$60	\$98	2.25	1.32
3	6635	East refrigeration compressor (new)	T	0.015	\$30	\$46	2.24	0.72

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
3	6563	West refrigeration compressor (old)	CV	0.015	\$177	-\$101	2.24	4.26
5	6112	Comp #23 - north compressor station	VC	0.015	\$200	-\$105	1.82	3.85
3	6565	South White inlet compressor	T	0.015	\$30	\$45	2.22	0.73
5	6225	C-06 -	T	0.015	\$30	\$44	2.24	0.74
3	6118	south compressor	CS	0.015	\$2,000	-\$1,954	1.84	40.92
1	6970	refrigeration compressor (#2 Clark)	T	0.015	\$30	\$44	2.19	0.74
3	6687	east sales turbine compressor	CV	0.015	\$177	-\$103	2.18	4.38
1	6855	plant #1 north-east molecular siv	T	0.015	\$30	\$54	1.92	0.65
5	6326	C-10 - union	T	0.015	\$30	\$43	2.20	0.75
5	6054	C-05 -	T	0.015	\$30	\$43	2.19	0.76
5	5955	C-10 -	VVP	0.015	\$400	-\$353	1.76	7.98
5	5854	C-01 -	T	0.015	\$30	\$42	2.17	0.77
5	6107	Comp # 36 - north compressor station	INJ	0.015	\$200	-\$64	2.16	5.11
3	6720	east sales turbine compressor	GTV	0.015	\$60	\$77	2.13	1.52
1	7103	residue compressor (#1 caterpillar)	T	0.015	\$30	\$42	2.13	0.77
3	6604	South White inlet compressor	VC	0.015	\$200	-\$114	1.76	4.26
4	5806	Inlet Compressor	TB	0.014	\$25	-\$141	1.72	0.52
2	4971A	Comp #1	Cylinder Body	0.014	\$400	-\$362	2.06	9.88
5	6212	C-07 - plug	T	0.014	\$30	\$40	2.12	0.78
3	6451	pipe rack between inlet compressors	F	0.014	\$150	-\$65	1.75	3.22
3	6790	C-5	VVP	0.014	\$400	-\$356	1.75	8.60
1	7253	Comp W6	CS	0.014	\$2,000	-\$1,959	1.84	45.53
3	6176	de-C2 feed line	GTV	0.014	\$60	\$228	0.00	0.72
4	5496	NRU - Stem Packing	CV	0.014	\$282	-\$207	1.89	6.92
3	6782	C-3	F	0.014	\$50	\$33	1.71	1.10
3	6644	pipe rack north of new refrigeration compressors	GTV	0.014	\$60	\$71	2.03	1.59
3	6698	middle sales turbine compressor	T	0.014	\$30	\$39	2.02	0.80
5	6320	C-10 - plug	T	0.014	\$30	\$38	2.05	0.81
3	6657	mole siv skid	F	0.014	\$75	\$7	1.68	1.67
1	6829	plant #1 dust filter	T	0.014	\$20	\$58	1.78	0.47
5	6111	Comp #27 - north compressor station	VC	0.014	\$200	-\$114	1.65	4.26
5	6055	C-05 - plug	T	0.014	\$30	\$37	2.03	0.82
5	6102	Comp # 37 - north compressor station	F	0.014	\$25	\$42	2.02	0.68
1	7346	Comp 2	T	0.014	\$30	\$38	2.00	0.81
3	6767	C-2	T	0.014	\$30	\$38	1.99	0.81
5	6263	C-08 - plug	T	0.014	\$30	\$36	2.00	0.83
3	6445	pipe rack between inlet compressors	T	0.014	\$20	\$60	1.65	0.46
5	5989	C-06 - union	T	0.014	\$30	\$36	1.99	0.84
1	6837	plant #5 demethanizer side	GTV	0.014	\$75	\$68	1.73	1.81

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		exchanger						
3	6197	EP Skid	OEL	0.014	\$60	\$134	0.00	0.57
3	6768	C-2	GTV	0.013	\$60	\$65	1.95	1.66
5	6281	C-09 - plug	T	0.013	\$30	\$35	1.95	0.85
5	6108	Comp # 36 - north compressor station	T	0.013	\$30	\$35	1.95	0.85
5	6287	C-10 -	T	0.013	\$30	\$35	1.95	0.85
1	6849	pipe rack	T	0.013	\$30	\$35	1.91	0.85
3	6475	North Waukesha inlet compressor	T	0.013	\$20	\$57	1.59	0.47
1	6991	stabilizer overheads compressor (C-92)	T	0.013	\$30	\$43	1.67	0.75
5	6341	C-11 - plug	T	0.013	\$30	\$33	1.91	0.87
4	5475	NRU	TB	0.013	\$15	\$115	1.73	0.40
1	6944	pipe rack	T	0.013	\$20	\$52	1.65	0.51
4	5858	Inlet Compressor - Body	VVP	0.013	\$400	-\$360	1.53	9.40
5	6390	demethanizer bottoms pump -	GTV	0.013	\$120	\$233	0.00	1.18
1	7097	seperator	GTV	0.013	\$75	\$43	1.84	2.21
4	5883	NE Compressor Station Comp	F	0.013	\$75	\$1	1.49	1.80
4	5522	De-butanizer Reflux Accumulator - sight glass	T	0.012	\$30	\$247	0.00	0.20
3	6716	EP Skid	T	0.012	\$50	\$129	0.00	0.51
1	6834	plant #5 demethanizer side exchanger	T	0.012	\$20	\$50	1.59	0.53
3	6407	combined inlet header	T	0.012	\$30	\$43	1.49	0.76
4	5553	Refrigerant Separator - GTV Seat	OEL	0.012	\$75	\$103	0.00	0.77
5	6524	Comp # 38 - north compressor station	INJ	0.012	\$200	-\$87	1.80	6.16
1	6917	pipe rack	T	0.012	\$30	\$30	1.77	0.92
4	5884	22-7 Wellhead	T	0.012	\$20	\$54	1.44	0.50
3	6414	combined inlet header	T	0.012	\$30	\$41	1.46	0.77
2	4933	PW Tank T-3500-1	Thief Hatch	0.012	\$2,000	-\$1,969	1.76	60.57
5	6097	C-05 -	VC	0.012	\$200	-\$125	1.42	4.92
3	6178	de-C1	T	0.012	\$20	\$51	1.46	0.51
3	6677	EP Skid	T	0.012	\$50	\$121	0.00	0.54
3	6453	pipe rack between inlet compressors	GTV	0.012	\$500	-\$367	1.44	13.00
1	6961	plant #1 middle-west molecular siv	GTV	0.012	\$60	\$66	1.53	1.64
5	6361	North Comp - south compressor station	VC	0.012	\$200	-\$126	1.41	4.96
4	5815	Inlet Compressor	F	0.012	\$50	\$13	1.58	1.46
4	5566	Inlet Compressor	TB	0.012	\$25	\$93	1.58	0.73
1	7350	Compressor	T	0.012	\$30	\$36	1.51	0.83
1	7046	plant #2 middle molecular siv	T	0.012	\$30	\$36	1.50	0.84
4	5547	Glycol Separator - stem packing	GTV	0.012	\$75	\$59	1.38	1.94
2	4994B	Compressor 4	VC/T	0.012	\$50	\$64	0.85	0.80
4	5481	Sales Compressor	OEL	0.012	\$60	\$2	1.47	1.76
5	6267	C-08 - plug	T	0.012	\$30	\$26	1.70	0.98
4	5542	Chiller - Stem Packing	GTV	0.012	\$120	\$12	1.37	3.15

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
5	5970	C-11 -	VVP	0.012	\$400	-\$363	1.37	10.26
5	6252	C-08 - body	BV	0.011	\$120	-\$15	1.68	3.94
5	5968	C-11 -	VVP	0.011	\$400	-\$363	1.36	10.30
1	7087	residue compressor (#3 caterpillar)	VC	0.011	\$200	-\$144	1.66	6.55
5	6583	piping north of 1st/2nd stage compression -	BV	0.011	\$190	-\$56	1.35	4.92
3	6558	West refrigeration compressor (old)	VC	0.011	\$200	\$13	0.00	1.72
3	6608	South White inlet compressor	T	0.011	\$30	\$37	1.38	0.82
5	6511	Comp #40 - north compressor station	INJ	0.011	\$200	-\$95	1.67	6.62
5	6500	South Comp - south compressor station	F	0.011	\$400	-\$364	1.35	10.40
5	6353	C-12 - plug	T	0.011	\$30	\$25	1.67	1.00
3	6783	C-3	F	0.011	\$100	-\$33	1.37	2.73
5	5924	C-20 -	T	0.011	\$20	\$35	1.66	0.67
5	6523	Comp # 38 - north compressor station	INJ	0.011	\$200	-\$96	1.66	6.67
5	6052	C-05 -	T	0.011	\$30	\$25	1.66	1.00
5	6227	C-06 - plug	T	0.011	\$30	\$25	1.66	1.00
3	6434	pipe rack between inlet compressors	OM	0.011	\$150	-\$116	1.37	4.12
5	6279	C-09 - plug	T	0.011	\$30	\$25	1.65	1.01
5	5958	C-11 - cylinder end gasket	F	0.011	\$400	-\$364	1.33	10.55
5	6259	C-08 -	INJ	0.011	\$200	-\$97	1.64	6.73
5	6375	Comp # 36 - north compressor station	F	0.011	\$50	\$4	1.64	1.68
4	5472	Inlet Header	T	0.011	\$30	\$38	1.33	0.81
3	6429	North White inlet compressor	T	0.011	\$20	\$35	1.62	0.67
3	6781	C-3	VC	0.011	\$200	-\$134	1.35	5.58
5	5969	C-11 -	VVP	0.011	\$400	-\$365	1.31	10.69
2	4917	Pig Trap (TETCO Sales)	V	0.011	\$60	\$44	1.59	2.01
5	6385	demethanizer bottoms pump -	GTV	0.011	\$120	\$183	0.00	1.37
3	6647	mole siv skid	GTV	0.011	\$60	\$62	1.32	1.71
5	6311	C-12 -	T	0.011	\$30	\$23	1.60	1.04
1	7275	Comp W2	T	0.011	\$30	\$23	1.58	1.03
5	6372	Comp # 37 - north compressor station	F	0.011	\$25	\$28	1.59	0.87
5	6332	C-11 -	T	0.011	\$30	\$22	1.58	1.05
3	6663	refrigeration suction scrubber	CV	0.011	\$459	-\$258	0.00	4.18
1	7186	plant #6 east molecular siv	F	0.011	\$100	-\$40	1.37	3.04
5	6278	C-09 -	T	0.011	\$30	\$22	1.57	1.05
3	6769	C-2	T	0.011	\$20	\$33	1.54	0.70
5	5971	C-11 -	VVP	0.011	\$400	-\$366	1.27	11.06
1	7211	fuel gas scrubber (F-5)	GTV	0.011	\$75	\$24	1.55	2.63
3	6191	EB Skid	GTV	0.011	\$190	\$274	0.00	1.42
3	6702	mole siv skid	GTV	0.011	\$75	\$44	1.28	2.19
3	6450	pipe rack between inlet compressors	F	0.011	\$150	-\$88	1.27	4.43
3	6455	pipe rack between inlet compressors	GTV	0.010	\$75	\$42	1.27	2.22

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
4	5866	22-7 Separator - Body	R	0.010	\$175	-\$30	1.24	5.07
1	7273	Comp W3	CS	0.010	\$2,000	-\$1,970	1.33	62.79
3	6494	pipe rack west of old control room	GTV	0.010	\$500	-\$384	1.26	14.90
4	5457	NRU	CV	0.010	\$177	-\$122	1.38	5.93
5	6144	Comp #23 - north compressor station	PV	0.010	\$75	\$20	1.52	2.73
5	6573	piping north of C3 compressors -	GTV	0.010	\$500	-\$217	0.00	6.12
1	7270	Comp W6	T	0.010	\$30	\$28	1.32	0.95
1	6980	residue compressor (C-9)	T	0.010	\$20	\$31	1.50	0.73
5	5961	C-10 - vent hole	INJ	0.010	\$200	-\$106	1.50	7.36
3	6174	de-C2 feed line	GTV	0.010	\$100	\$108	0.00	1.67
5	5954	C-10 - measured at 2" flanged connection on body	F	0.010	\$50	\$13	1.21	1.45
4	5523	De-butanizer Reflux Accumulator - sight glass	T	0.010	\$30	\$196	0.00	0.24
1	6922	plant #1 south-east molecular siv	T	0.010	\$20	\$37	1.30	0.64
1	7015	residue compressor (west caterpillar)	T	0.010	\$30	\$20	1.48	1.10
5	6223	C-06 - plug	T	0.010	\$30	\$19	1.48	1.12
3	6132	north compressor	F	0.010	\$400	-\$369	1.22	12.32
5	6512	Comp #40 - north compressor station	INJ	0.010	\$200	-\$107	1.48	7.49
5	6503	Comp #38 - north compressor station	VC	0.010	\$200	-\$138	1.19	5.90
5	6145	Comp # 23 - north compressor station	R	0.010	\$500	-\$475	1.47	18.84
4	5820	NE Compressor Station Comp - Stem Packing	GTV	0.010	\$50	\$64	1.18	1.52
5	6378	Comp # 27 - north compressor station	PV	0.010	\$120	-\$28	1.46	4.54
4	5552	De-ethanizer Reflux Accumulator - bottoms	T	0.010	\$20	\$33	1.33	0.70
5	6136	Comp # 27 - north compressor station	PV	0.010	\$120	-\$29	1.46	4.56
5	6139	Comp # 27 - north compressor station	PV	0.010	\$120	-\$29	1.46	4.56
1	6962	plant #1 middle-west molecular siv	F	0.010	\$75	-\$20	1.26	2.48
4	5455	NRU	F	0.010	\$75	-\$24	1.30	2.67
4	5538	Gas-Liquid Heat Exchanger - Stem Packing	CV	0.010	\$141	-\$82	1.15	4.39
3	6700	mole siv skid	T	0.010	\$20	\$37	1.17	0.64
1	6895	refrigeration compressor (#2 Clark)	T	0.010	\$30	\$18	1.41	1.15
5	6201	C-06 -	VC	0.010	\$200	-\$140	1.15	6.11
1	6960	plant #1 middle-west molecular siv	OEL	0.010	\$60	-\$6	1.23	2.04
1	7342	Comp 4	T	0.010	\$20	\$27	1.40	0.78
1	6957	residue compressor (C-9)	T	0.010	\$30	\$17	1.39	1.18
4	5482	Sales Compressor	T	0.010	\$30	\$21	1.20	1.07

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
3	6486	South Waukesha inlet compressor	T	0.010	\$20	\$36	1.15	0.65
4	5544	Glycol Separator - sight glass	T	0.009	\$20	\$38	1.13	0.64
3	6560	West refrigeration compressor (old)	T	0.009	\$30	\$17	1.37	1.18
5	6236	C-06 - top	GOV	0.009	\$200	-\$113	1.39	7.97
3	6627	refrigeration compressors (old)	T	0.009	\$30	\$17	1.37	1.18
5	6257	C-08 -	T	0.009	\$30	\$16	1.38	1.20
3	6694	west sales turbine compressor	CV	0.009	\$177	-\$131	1.36	7.00
5	6331	C-11 -	T	0.009	\$30	\$16	1.38	1.20
3	6410	combined inlet header	T	0.009	\$20	\$35	1.13	0.66
3	6528	pipe rack north of 400 psi inlet separator	GTV	0.009	\$120	-\$33	1.34	4.80
5	6249	C-08 - measured at cylinder bleed	NV	0.009	\$60	\$48	1.10	1.92
1	6828	plant #1 demethanizer condenser	T	0.009	\$20	\$242	0.00	0.14
5	6255	C-08 - plug	T	0.009	\$30	\$14	1.34	1.24
1	6940	plant #1 south-west molecular siv	F	0.009	\$75	-\$24	1.16	2.71
5	6262	C-08 -	T	0.009	\$30	\$14	1.32	1.25
1	6826	plant #1 demethanizer condenser	GTV	0.009	\$60	\$36	1.15	2.17
4	5579	Propane Compressor - DP cover	CS	0.009	\$2,000	-\$1,934	0.00	28.52
4	5559	Refrigerant Separator	T	0.009	\$20	\$108	0.00	0.29
2	4885	Compressor 4	Union	0.009	\$100	-\$14	0.64	2.12
3	6406	combined inlet header	BV	0.009	\$245	-\$147	1.07	8.64
1	7337	Comp W8	T	0.009	\$30	\$13	1.28	1.27
5	6571	pipng north of C3 compressors -	BV	0.009	\$350	-\$110	0.00	5.06
4	5525	Sample Line to GC HE2251	TB	0.009	\$15	\$350	0.00	0.14
5	6261	C-08 - plug	T	0.009	\$30	\$12	1.28	1.30
5	6042	C-02 - manifold	F	0.009	\$50	-\$8	1.27	2.18
4	5556	Refrigerant Separator	F	0.009	\$75	\$50	0.00	1.10
3	6766	C-2	GTV	0.009	\$60	\$20	1.24	2.60
3	6428	North White inlet compressor	T	0.009	\$20	\$22	1.24	0.87
3	6420	North White inlet compressor	OEL	0.009	\$60	-\$9	1.04	2.16
5	6071	C-05 -	T	0.009	\$30	\$12	1.26	1.32
5	6273	C-09 - plug	T	0.009	\$30	\$12	1.26	1.32
4	5539	DEA Contactor Feed Separator	GTV	0.009	\$75	-\$34	0.42	6.35
4	5813	Inlet Compressor	F	0.009	\$50	-\$5	1.14	2.03
4	5597	Propane Compressor - DP Cover	CS	0.009	\$2,000	-\$1,936	0.00	29.65
4	5558	Refrigerant Separator - Stem Packing	GTV	0.009	\$245	-\$11	0.00	3.63
1	6939	plant #1 south-west molecular siv	GTV	0.009	\$500	-\$410	1.09	19.16
3	6717	EP Skid	T	0.008	\$50	\$71	0.00	0.76
5	6516	Comp # 39 - north compressor station	T	0.008	\$20	\$21	1.23	0.90

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
4	5906	North Boiler	TB	0.008	\$15	\$69	1.12	0.62
3	6612	Refrigeration Compressors (Old)	VC	0.008	\$200	-\$44	0.00	2.35
1	7094	seperator	GTV	0.008	\$60	\$17	1.21	2.69
3	6791	C-5	T	0.008	\$30	\$11	1.20	1.35
3	6157	EP Skid	GTV	0.008	\$60	\$164	0.00	0.93
5	6386	demethanizer bottoms pump -	GTV	0.008	\$190	\$39	0.00	2.88
4	5562	Refrigerant Compressor	TB	0.008	\$25	\$200	0.00	0.39
5	6373	Comp # 36 - north compressor station	F	0.008	\$75	-\$35	1.20	3.44
2	4913	FG Scrubber	V	0.008	\$60	\$23	1.19	2.49
4	5504	Sales Compressor - Lube Oil Tank Vent Stack	OEL	0.008	\$75	-\$31	1.03	3.12
1	7324	Comp 4	CS	0.008	\$2,000	-\$1,976	1.04	80.15
3	6740	north compressor	CS	0.008	\$2,000	-\$1,975	0.98	76.29
5	6041	C-02 - manifold	F	0.008	\$50	-\$11	1.19	2.32
3	6115	De-C2 Transfer Pump	GTV	0.008	\$75	\$88	0.00	1.59
1	6924	plant # 1 middle-east molecular siv	GTV	0.008	\$75	\$9	1.01	3.10
1	7029	plant #2 turbo expander	T	0.008	\$30	\$14	1.01	1.24
4	5479	Pipe Rack - between sales comp and NRU	T	0.008	\$20	\$22	0.99	0.87
3	6159	EP Skid	GTV	0.008	\$60	\$151	0.00	0.98
2	4922	Plant Sales Piping	V	0.008	\$75	-\$1	1.13	3.54
4	5805	Inlet Compressor - DP cover	CS	0.008	\$2,000	-\$1,976	0.91	79.18
5	6525	Comp # 38 - north compressor station	F	0.008	\$25	\$12	1.12	1.24
5	6522	Comp # 38 - north compressor station	PV	0.008	\$60	\$10	1.12	2.97
5	5845	piping west of LP sales compressors -	GTV	0.008	\$120	-\$51	1.11	5.99
5	6210	C-07 - measured at cylinder bleed	NV	0.007	\$60	\$28	0.89	2.37
3	6617	refrigeration compressors (old)	T	0.007	\$20	\$17	1.08	1.00
4	5810	NE Compressor Station Comp - Lube Oil Tank Blanket	T	0.007	\$50	-\$5	0.88	2.05
4	5593	South Boiler - Stem Packing	GTV	0.007	\$120	-\$46	0.98	5.65
3	6691	middle sales turbine compressor	GTV	0.007	\$60	\$8	1.06	3.05
4	5890	13-12#1 Separator - PRV Vent	OEL	0.007	\$75	-\$31	0.86	3.12
5	6374	Comp # 36 - north compressor station	INJ	0.007	\$200	-\$133	1.06	10.41
2	4994A	Compressor 4	VC/F	0.007	\$75	-\$5	0.52	1.95
1	6875	plant #1 midle-east molecular siv	F	0.007	\$150	-\$110	0.92	6.85
1	7099	scrubber	GTV	0.007	\$60	\$6	1.04	3.13
3	6618	refrigeration compressors (old)	GTV	0.007	\$60	\$6	1.03	3.14
5	5973	C-12 - measured at cylinder head bleed	NV	0.007	\$60	\$23	0.84	2.51
3	6639	West refrigeration compressor (new)	T	0.007	\$30	\$4	1.01	1.60
2	4936	Glycol Heater	T	0.007	\$20	\$18	1.01	0.97
5	6317	piping north of 1st/2nd stage	BV	0.007	\$350	-\$268	0.83	14.85

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		compression -						
3	6681	turbo expander-compressor	T	0.007	\$20	\$14	1.00	1.07
3	6168	PV-15	OM	0.007	\$150	-\$132	1.00	8.05
1	6820	pipe rack	OEL	0.007	\$75	-\$36	0.88	3.54
1	7187	residue compressor (#5 ingsoll-rand)	T	0.007	\$20	\$14	1.00	1.08
1	7209	residue compressor (#5 ingsoll-rand)	VC	0.007	\$200	-\$166	1.00	10.88
3	6730	de-C2 reflux pump	OEL	0.007	\$60	\$14	0.00	1.49
1	6817	plant #1 inlet filter seperator (PV-3)	GTV	0.007	\$60	\$13	0.88	2.86
4	5537	TEG Contactor	T	0.007	\$20	\$22	0.81	0.88
5	5979	C-04 -	INJ	0.007	\$200	-\$138	1.00	11.09
5	6369	Comp # 38 - north compressor station	F	0.007	\$25	\$8	1.00	1.39
2	4991	Compressor 4	GTV	0.007	\$60	\$66	0.49	1.65
5	6507	Comp #26 - north compressor station	T	0.007	\$50	-\$8	0.80	2.19
1	6896	refrigeration compressor (#2 Clark)	INJ	0.007	\$200	-\$137	0.98	11.08
3	6186	de-C1	T	0.007	\$20	\$20	0.81	0.92
1	6870	plant #1 demethanizer	OEL	0.007	\$60	-\$22	0.86	2.92
1	7334	Comp W8	VVP	0.007	\$400	-\$381	0.86	19.47
1	6862	PIG receivers	OEL	0.007	\$120	-\$83	0.85	5.87
3	6184	de-C1	T	0.007	\$20	\$19	0.80	0.93
1	7057	plant #5 turbo expander	GTV	0.007	\$60	\$11	0.85	2.95
1	6841	PIG receivers	TB	0.007	\$15	\$55	0.85	0.74
4	5564	Refrigerant Compressor	TB	0.007	\$25	\$156	0.00	0.48
3	6756	C-4	CS	0.007	\$2,000	-\$1,980	0.80	94.06
1	7267	pipe rack	T	0.007	\$20	\$12	0.96	1.14
3	6611	West Refrigeration Compressor (Old)	OEL	0.007	\$75	\$48	0.00	1.12
1	6856	plant #1 north-east molecular siv	GTV	0.007	\$60	\$9	0.84	3.00
1	6925	plant # 1 middle-east molecular siv	T	0.007	\$30	\$7	0.83	1.50
1	7032	plant #5 north molecular siv	T	0.007	\$20	\$17	0.83	1.00
1	7024	plant #2 east molecular siv	CV	0.007	\$282	-\$245	0.83	14.15
5	6388	demethanizer bottoms pump -	GTV	0.007	\$75	\$106	0.00	1.44
1	6852	pipe rack	T	0.006	\$30	\$2	0.94	1.73
1	7257	pipe rack	T	0.006	\$20	\$16	0.83	1.01
4	5528	De-propanizer Reflux Accumulator - near bottoms pump	T	0.006	\$20	\$123	0.00	0.26
1	6919	pipe rack	TB	0.006	\$15	\$53	0.82	0.76
5	6221	C-06 - plug	T	0.006	\$30	\$1	0.94	1.77
4	5591	NE Compressor Station Separator	TB	0.006	\$15	\$58	0.76	0.71
1	6984	stabilizer overheads compressor (C-92)	CS	0.006	\$2,000	-\$1,982	0.81	102.86
5	6220	C-06 -	T	0.006	\$30	\$1	0.93	1.79
4	5595	Propane Compressor - DP	CS	0.006	\$2,000	-\$1,953	0.00	40.11



**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		Cover						
5	6327	C-10 -	T	0.006	\$30	\$1	0.93	1.79
1	7271	Comp W6	T	0.006	\$30	\$5	0.80	1.56
5	6276	C-09 -	T	0.006	\$30	\$1	0.92	1.80
4	5495	NRU - Inlet Sep	T	0.006	\$30	\$3	0.83	1.66
5	5855	C-01 - outside of plant fence	T	0.006	\$30	\$0	0.92	1.81
5	6297	C-10 - plug	T	0.006	\$30	\$0	0.92	1.81
1	7277	Comp W2	CS	0.006	\$2,000	-\$1,953	0.00	40.51
5	6581	pipng north of 1st/2nd stage compression -	BV	0.006	\$190	-\$117	0.74	9.03
5	6091	C-03 -	VC	0.006	\$200	-\$162	0.73	9.54
1	6851	pipe rack	T	0.006	\$30	\$0	0.90	1.82
5	6569	pipng north of C3 compressors -	OEL	0.006	\$60	\$29	0.00	1.23
5	6589	sulphur plant -	T	0.006	\$30	\$0	0.90	1.84
1	6871	plant #1 south-east molecular siv	GTV	0.006	\$500	-\$435	0.79	26.62
5	6275	C-09 - union	T	0.006	\$30	\$0	0.90	1.85
3	6610	South White inlet compressor	T	0.006	\$30	\$0	0.87	1.85
5	6274	C-09 - plug	T	0.006	\$30	-\$1	0.88	1.88
3	6163	EB Skid	GTV	0.006	\$120	-\$141	0.00	1.59
5	6337	C-11 -	T	0.006	\$30	-\$1	0.87	1.90
3	6613	Refrigeration Compressors (Old)	VC	0.006	\$200	-\$88	0.00	3.29
4	5549	De-ethanizer Reflux Condenser - stem packing	CV	0.006	\$130	-\$99	0.79	7.59
3	6736	de-C2 reboiler	F	0.006	\$150	-\$95	0.00	5.05
3	6684	turbo expander-compressor	T	0.006	\$20	\$9	0.85	1.27
4	5837	De-ethanizer Reflux Accumulator	T	0.006	\$30	\$1	0.78	1.77
1	6908	plant #1 turbo expander	GTV	0.006	\$75	-\$13	0.75	4.18
1	6887	refrigeration compressor (#3 Clark)	INJ	0.006	\$200	-\$146	0.85	12.74
1	7028	plant #2 turbo expander	T	0.006	\$30	\$3	0.75	1.68
2	4924	Plant Sales Piping	V	0.006	\$60	-\$5	0.85	3.77
3	6680	turbo expander-compressor	T	0.006	\$20	\$14	0.70	1.06
5	6515	Comp # 39 - north compressor station	T	0.006	\$20	\$8	0.85	1.29
1	6990	plant #2 west molecular siv	T	0.006	\$20	\$12	0.74	1.13
4	5533	Inlet Separator	CV	0.006	\$141	-\$106	0.69	7.38
4	5576	De-butanizer - Stem Packing	GTV	0.006	\$75	-\$167	0.00	1.07
1	7282	plant #1 north-east molecular siv	OEL	0.006	\$60	-\$28	0.73	3.42
2	5016	Compressor 4	T	0.006	\$20	\$36	0.42	0.65
2	4976	Comp #3	VC/T	0.006	\$50	-\$21	0.81	3.14
4	5864	22.7 Well Site - Plug	T	0.006	\$20	\$14	0.67	1.06
3	6764	C-2	GTV	0.006	\$100	-\$47	0.82	6.56
1	6965	plant #1 middle-west molecular siv	T	0.006	\$30	\$2	0.72	1.74
1	7258	Comp W6	T	0.006	\$30	-\$3	0.81	2.00
2	4926	Plant Sales Piping	T	0.006	\$20	\$8	0.82	1.31
5	6143	Comp # 23 - north compressor	F	0.006	\$50	-\$23	0.82	3.37

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		station						
3	6659	mole siv skid	T	0.006	\$30	\$3	0.67	1.67
3	6198	EP Skid	GTV	0.006	\$75	\$76	0.00	1.73
3	6473	South Waukesha inlet compressor	T	0.006	\$30	-\$3	0.80	2.01
4	5876	14-6 Wellhead	T	0.006	\$20	\$14	0.66	1.09
3	6160	EP Skid	T	0.006	\$30	\$49	0.00	0.69
1	7330	Comp 6	T	0.006	\$30	-\$3	0.80	2.02
2	4974	Comp #4	T	0.006	\$20	\$8	0.79	1.29
1	6876	plant #1 midle-east molecular siv	OEL	0.005	\$60	-\$29	0.70	3.57
3	6152	EP Skid	GTV	0.005	\$75	\$73	0.00	1.75
5	6368	Comp # 38 - north compressor station	PV	0.005	\$60	-\$10	0.80	4.15
4	5801	Inlet Compressor	OEL	0.005	\$75	-\$42	0.64	4.18
3	6753	pipe rack in front of C1/C2	GTV	0.005	\$245	-\$184	0.66	14.02
1	7104	residue compressor (#1 caterpillar)	T	0.005	\$30	-\$3	0.79	2.07
1	7049	plant #2 turbo expander	T	0.005	\$20	\$10	0.69	1.21
1	6987	plant #1 demethanizer side exchanger	T	0.005	\$20	\$10	0.69	1.21
1	7338	Comp W8	T	0.005	\$30	-\$3	0.79	2.07
5	5976	C-04 - plug	T	0.005	\$30	-\$4	0.78	2.12
5	6060	C-05 -	T	0.005	\$30	-\$4	0.78	2.12
4	5571	Inlet Compressor	F	0.005	\$50	-\$22	0.71	3.27
3	6599	High Chiller	GTV	0.005	\$190	-\$3	0.00	3.52
1	6860	PIG receivers	OEL	0.005	\$60	-\$30	0.67	3.72
1	7321	Comp 1	F	0.005	\$100	-\$70	0.67	6.21
3	6171	PV-15	GTV	0.005	\$75	-\$26	0.76	5.31
5	6379	Comp # 27 - north compressor station	T	0.005	\$30	-\$5	0.77	2.16
5	6389	demethanizer bottoms pump -	GTV	0.005	\$120	\$24	0.00	2.88
1	6998	plant #1 chiller	GTV	0.005	\$100	-\$45	0.66	6.29
3	6403	combined inlet header	GTV	0.005	\$60	-\$3	0.62	3.64
4	5911	Propane Feed Pump	TB	0.005	\$25	\$115	0.00	0.62
5	6248	C-08 -	VC	0.005	\$200	-\$168	0.61	11.59
4	5821	NE Compressor Station Comp - Pneumatic valve control	CV	0.005	\$130	-\$99	0.60	7.73
3	6162	EP Skid	GTV	0.005	\$60	\$77	0.00	1.52
3	6538	pipe rack between inlet compressors	T	0.005	\$20	\$5	0.73	1.47
3	6658	mole siv skid	T	0.005	\$30	\$0	0.61	1.85
1	6914	pipe rack	T	0.005	\$30	-\$6	0.72	2.25
1	7091	fuel gas scrubber (F-5)	GTV	0.005	\$75	-\$29	0.72	5.63
1	6986	plant #1 demethanizer side exchanger	GTV	0.005	\$75	-\$22	0.63	4.94
3	6470	combined inlet header	GTV	0.005	\$75	-\$20	0.60	4.71
1	7098	seperator	GTV	0.005	\$75	-\$30	0.71	5.71
5	6256	C-08 - manifold	F	0.005	\$50	-\$26	0.71	3.88
4	5594	Propane Compressor - FG inlet	F	0.005	\$50	-\$25	0.64	3.63
5	6514	Comp #40 - north compressor	T	0.005	\$20	\$3	0.69	1.60

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mcsfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		station						
3	6629	refrigeration compressors (old)	R	0.005	\$175	-\$122	0.68	13.87
5	5843	low pressure sales line - outside of plant fence	GTV	0.005	\$190	-\$147	0.68	15.37
1	6911	plant #1 demethanixer side exchanger	OEL	0.005	\$60	-\$34	0.59	4.23
1	7290	plant #1 south-west molecular siv	T	0.005	\$20	\$6	0.58	1.44
1	6941	refrigeration compressor (#2 Clark)	VC	0.005	\$200	-\$134	0.00	5.56
4	5473	NRU	CV	0.005	\$130	-\$106	0.60	9.95
1	6840	PIG receivers	T	0.005	\$20	\$5	0.58	1.44
3	6542	pipe rack between inlet compressors	GTV	0.005	\$120	-\$78	0.65	9.92
4	5886	11-16 Pig Unit	T	0.004	\$30	-\$3	0.53	2.02
3	6722	West refrigeration compressor (new)	T	0.004	\$30	-\$8	0.65	2.49
4	5490	Propane Caustic Treater	TB	0.004	\$15	\$107	0.00	0.42
5	6001	C-22 -	T	0.004	\$20	\$2	0.65	1.70
3	6466	combined inlet header	T	0.004	\$20	\$6	0.53	1.42
1	6842	pipe rack	GTV	0.004	\$245	-\$199	0.56	18.42
4	5819	NE Compressor Station Comp - Cylinder Bleed	OEL	0.004	\$75	-\$49	0.51	5.26
3	6199	EP Skid	GTV	0.004	\$75	\$42	0.00	2.23
1	6955	residue compressor (C-9)	T	0.004	\$30	-\$9	0.62	2.61
5	6296	C-10 -	T	0.004	\$30	-\$9	0.63	2.64
3	6448	pipe rack between inlet compressors	F	0.004	\$150	-\$125	0.52	10.91
2	4975	Comp #4	T	0.004	\$20	\$2	0.61	1.68
4	5829	NE Compressor Station Comp - bottom of compressor	T	0.004	\$20	\$6	0.50	1.44
3	6164	pipe rack north of old refrigeration compressors	GTV	0.004	\$75	\$73	0.00	1.75
3	6175	de-C2 feed line	GTV	0.004	\$120	-\$37	0.00	4.99
3	6809	C-5	GOV	0.004	\$200	-\$162	0.59	18.16
1	7068	plant #5 turbo expander	CV	0.004	\$130	-\$110	0.60	11.86
5	6374	Comp # 38 - north compressor station	PV	0.004	\$60	-\$23	0.59	5.61
4	5484	Sour Water Tanks - Blanket Gas Inlet	R	0.004	\$175	-\$119	0.47	13.24
4	5816	Inlet Compressor	TB	0.004	\$25	\$15	0.53	2.17
2	4992	Compressor 4	T	0.004	\$20	\$19	0.29	0.94
3	6463	combined inlet header	OEL	0.004	\$60	-\$36	0.48	4.67
4	5543	Glycol Separator - both ends of elbow on sight glass	T	0.004	\$30	-\$6	0.47	2.28
5	6290	C-10 - plug	T	0.004	\$30	-\$11	0.58	2.86
5	6286	C-10 -	T	0.004	\$30	-\$11	0.58	2.87
1	6833	plant #5 demethanizer side exchanger	T	0.004	\$20	\$2	0.50	1.67
1	6971	pipe rack	T	0.004	\$20	-\$1	0.57	1.91
3	6595	High Chiller	GTV	0.004	\$100	-\$21	0.00	4.41
3	6755	pipe rack in front of C1/C2	T	0.004	\$30	-\$7	0.47	2.41

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
1	6992	plant #1 gas-gas heat exchanger	T	0.004	\$20	-\$1	0.56	1.95
3	6497	pipe west of PV18	T	0.004	\$20	\$51	0.00	0.51
1	7007	residue compressor (#3 caterpillar)	T	0.004	\$30	-\$11	0.55	2.95
3	6692	middle sales turbine compressor	GTV	0.004	\$60	-\$25	0.55	5.90
3	6671	mole siv skid	T	0.004	\$20	\$2	0.46	1.64
4	5486	Glycol Separator	T	0.004	\$20	\$3	0.44	1.62
3	6670	mole siv skid	T	0.004	\$20	\$2	0.45	1.68
5	6142	Comp # 27 - north compressor station	GOV	0.004	\$200	-\$166	0.54	20.44
4	5535	Pipe Rack - Stab OVHD by desalter	OEL	0.004	\$75	-\$53	0.44	6.17
1	7368	Comp 2	F	0.004	\$200	-\$179	0.47	17.82
1	6916	pipe rack	T	0.004	\$20	-\$2	0.53	2.06
3	6487	South Waukesha inlet compressor	CS	0.004	\$8,000	-\$7,989	0.44	690.02
1	6927	plant #1 north-west molecular siv	TB	0.004	\$15	-\$23	0.46	1.37
4	5889	11-16 Pig Unit	T	0.004	\$20	\$2	0.43	1.69
4	5539	Gas-Liquid Heat Exchanger - Stem Packing	GTV	0.004	\$190	-\$92	1.01	6.72
5	6012	C-02 -	INJ	0.004	\$200	-\$168	0.52	21.46
5	6031	C-01 -	T	0.004	\$30	-\$13	0.52	3.22
1	7100	residue compressor (#2 caterpillar)	T	0.004	\$20	-\$3	0.51	2.13
2	5018	Compressor 4	VC/T	0.004	\$50	-\$16	0.26	2.67
5	6363	Comp # 38 - north compressor station	F	0.004	\$25	-\$8	0.51	2.69
3	6161	EP Skid	GTV	0.003	\$75	\$18	0.00	2.79
5	5853	C-22 - union	T	0.003	\$30	-\$13	0.50	3.30
2	4907	Parlange #5	GBV	0.003	\$30	-\$13	0.50	3.21
3	6446	pipe rack between inlet compressors	GTV	0.003	\$60	-\$22	0.41	5.49
1	6858	plant #1 north-east molecular siv	T	0.003	\$30	-\$11	0.43	2.92
3	6438	PV-47 (400 psi suction scrubber)	GTV	0.003	\$120	-\$83	0.40	11.21
4	5527	Glycol Separator Heat Exchanger - vent	OEL	0.003	\$75	-\$55	0.39	6.91
4	5891	13-12#1 Separator	T	0.003	\$20	\$0	0.39	1.85
4	5467	Sales Compressor - Separator	T	0.003	\$20	-\$2	0.41	2.09
5	6360	North Comp - south compressor station	VC	0.003	\$200	-\$180	0.38	18.47
5	5986	pipng west of LP sales compressors - stem packing	T	0.003	\$75	-\$68	0.12	35.72
3	6499	regen economizer	GTV	0.003	\$100	\$10	0.00	3.16
5	6293	C-10 -	T	0.003	\$30	-\$15	0.45	3.67
3	6149	south compressor	BV	0.003	\$75	-\$42	0.36	7.77
1	6882	plant #1 inlet filter seperator	T	0.003	\$30	-\$13	0.38	3.32
4	5865	22-7 Well Site	OEL	0.003	\$60	-\$42	0.35	6.16
1	6873	plant #1 south-east molecular	F	0.003	\$75	-\$59	0.38	8.35

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		siv						
3	6165	pipe rack north of old refrigeration compressors	GTV	0.003	\$245	-\$143	0.00	8.36
3	6653	mole siv skid	T	0.003	\$20	-\$4	0.34	2.22
4	5856	South Boiler	T	0.003	\$20	-\$6	0.36	2.54
3	6780	C-3	VC	0.003	\$200	-\$184	0.33	22.74
1	7178	residue compressor (#3 ingersoll-rand)	OEL	0.003	\$60	-\$47	0.40	8.23
4	5808	NE Compressor Station Comp - Lube Oil Tank Blanket	T	0.003	\$50	-\$34	0.32	5.69
4	5456	NRU	GTV	0.003	\$60	-\$34	0.35	8.04
3	6754	pipe rack in front of C1/C2	GTV	0.003	\$245	-\$216	0.31	29.53
2	4937	Glycol Heater	T	0.003	\$20	-\$6	0.37	2.64
3	6602	South White inlet compressor	VC	0.002	\$200	-\$185	0.30	25.15
4	5913	Butane Feed Pump	T	0.002	\$30	\$25	0.00	1.01
3	6419	combined inlet header	T	0.002	\$30	-\$16	0.29	3.84
3	6173	de-C2 feed line	GTV	0.002	\$120	-\$71	0.00	8.50
4	5598	Propane Compressor - Surge Bottle	OEL	0.002	\$75	-\$40	0.00	3.97
4	5839	Refrigerant Accumulator	CV	0.002	\$141	-\$107	0.00	7.55
4	5459	Sales Compressor - Plug	T	0.002	\$30	-\$17	0.30	4.32
3	6636	East refrigeration compressor (new)	T	0.002	\$30	-\$18	0.34	4.75
5	6009	C-02 - manifold	F	0.002	\$50	-\$39	0.34	8.03
5	5974	C-04 - plug	T	0.002	\$30	-\$19	0.34	4.82
5	5977	C-04 - union	T	0.002	\$30	-\$19	0.34	4.82
5	6077	C-04 -	T	0.002	\$30	-\$19	0.34	4.82
4	5811	Inlet Compressor	F	0.002	\$50	-\$38	0.31	7.52
4	5893	13-12#1 Separator	T	0.002	\$20	-\$6	0.27	2.62
1	7050	plant #2 turbo expander	GTV	0.002	\$60	-\$36	0.29	8.63
4	5572	Inlet Compressor	F	0.002	\$50	-\$38	0.30	7.68
4	5870	15-10 Wellhead	TB	0.002	\$15	\$11	0.27	2.01
5	5987	C-06 -	T	0.002	\$30	-\$19	0.33	5.03
3	6703	mole siv skid	GTV	0.002	\$60	-\$35	0.27	8.38
1	7280	plant #1 middle-east molecular siv	OEL	0.002	\$60	-\$48	0.28	8.92
3	6628	refrigeration compressors (old)	T	0.002	\$20	-\$9	0.32	3.40
3	6187	F4115	OEL	0.002	\$60	-\$47	0.26	8.59
3	6465	combined inlet header	F	0.002	\$100	-\$87	0.26	14.61
4	5888	11-16 Wellhead	T	0.002	\$20	-\$7	0.25	2.88
4	5453	Inlet Header	BV	0.002	\$75	-\$51	0.25	10.80
3	6443	pipe rack between inlet compressors	GTV	0.002	\$75	-\$52	0.25	11.08
3	6167	PV-15	GTV	0.002	\$75	-\$55	0.30	13.31
3	6457	fuel gas scrubber (PV-9)	T	0.002	\$20	-\$8	0.25	2.98
3	6131	north compressor	VC	0.002	\$200	-\$188	0.25	30.03
3	6158	EP Skid	GTV	0.002	\$60	-\$4	0.00	3.72
3	6495	pipe rack west of old control room	GTV	0.002	\$60	-\$37	0.25	9.12
2	4907	Acadian Sales	T	0.002	\$20	-\$10	0.30	3.59
1	6897	refrigeration compressor (#2)	T	0.002	\$30	-\$20	0.30	5.51

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		Clark)						
3	6685	turbo expander-compressor	GTV	0.002	\$60	-\$41	0.29	11.01
5	5895	B-01 -	T	0.002	\$30	-\$20	0.29	5.63
3	6432	pipe rack between inlet compressors	OEL	0.002	\$60	-\$48	0.24	9.29
4	5825	NE Compressor Station Separator	T	0.002	\$30	-\$18	0.24	4.53
3	6433	pipe rack between inlet compressors	GTV	0.002	\$595	-\$573	0.24	92.50
4	5489	HP FG Scrubber - leaking past GTV stem	OEL	0.002	\$75	-\$65	0.26	13.18
4	5809	NE Compressor Station Comp	OEL	0.002	\$60	-\$48	0.23	9.25
3	6185	de-C1 reflux condenser	T	0.002	\$20	-\$9	0.23	3.20
3	6408	combined inlet header	T	0.002	\$30	-\$19	0.23	4.79
3	6481	North Waukesha inlet compressor	T	0.002	\$30	-\$19	0.23	4.88
1	6854	pipe rack	T	0.002	\$30	-\$21	0.27	5.96
3	6654	mole siv skid	T	0.002	\$30	-\$19	0.23	4.95
3	6701	mole siv skid	T	0.002	\$30	-\$19	0.23	4.95
3	6787	C-3	T	0.002	\$100	-\$91	0.27	19.81
5	6289	C-10 -	T	0.002	\$30	-\$21	0.27	6.05
3	6409	combined inlet header	T	0.002	\$20	-\$9	0.23	3.33
3	6478	North Waukesha inlet compressor	OEL	0.002	\$60	-\$49	0.22	10.03
5	6217	C-07 - plug	T	0.002	\$30	-\$21	0.27	6.11
1	6859	plant #1 north-east molecular siv	T	0.002	\$30	-\$20	0.24	5.31
4	5511	Sales Compressor - Separator Plug	T	0.002	\$30	-\$20	0.23	5.52
1	7190	residue compressor (#5 ingersoll-rand)	VC	0.002	\$200	-\$191	0.26	42.02
3	6474	South Waukesha inlet compressor	T	0.002	\$30	-\$21	0.25	6.41
3	6485	North Waukesha inlet compressor	GOV	0.002	\$200	-\$184	0.25	42.92
3	6482	North Waukesha inlet compressor	T	0.002	\$30	-\$21	0.25	6.44
1	7044	plant #2 west molecular siv	T	0.002	\$30	-\$20	0.22	5.73
3	6770	C-2	T	0.002	\$20	-\$12	0.25	4.37
3	6435	inlet separator (400 psi)	T	0.002	\$20	-\$10	0.20	3.68
3	6480	North Waukesha inlet compressor	F	0.002	\$400	-\$395	0.20	73.81
3	6484	North Waukesha inlet compressor	T	0.002	\$20	-\$12	0.24	4.43
4	5502	NRU	TB	0.002	\$15	\$2	0.22	3.13
1	6936	plant #1 south-west molecular siv	F	0.002	\$150	-\$141	0.21	29.52
2	5010	Cat Compressor	DP Vent	0.002	\$2,000	-\$1,992	0.12	230.62
3	6456	fuel gas scrubber (PV-9)	GTV	0.002	\$60	-\$42	0.19	11.58
4	5560	Refrigerant Subcooler	T	0.002	\$20	\$3	0.00	1.58
5	6270	C-09 - plug	T	0.002	\$30	-\$22	0.23	7.13
3	6633	East refrigeration compressor (new)	VC	0.002	\$200	-\$170	0.00	12.40

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit/ Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
4	5907	Sulphur Plant	OEL	0.002	\$60	-\$52	0.21	13.45
4	5501	NRU	CV	0.002	\$130	-\$122	0.21	29.28
4	5520	Butane Product Cooler	TB	0.002	\$15	\$48	0.00	0.82
3	6526	pipe rack between inlet compressors	GTV	0.001	\$120	-\$106	0.22	29.86
4	5586	NE Compressor Station Comp	OEL	0.001	\$60	-\$51	0.17	12.52
3	6638	West refrigeration compressor (new)	TB	0.001	\$15	-\$2	0.20	3.97
5	6241	C-08 - packing	VVP	0.001	\$400	-\$396	0.166559	84.30
3	6441	pipe rack between inlet compressors	GTV	0.001	\$350	-\$334	0.17	77.71
4	5510	Sales Compressor - Plug	T	0.001	\$20	-\$12	0.18	4.87
3	6440	South White inlet compressor	GTV	0.001	\$100	-\$85	0.17	22.51
3	6498	de-C2 ovhds line	GTV	0.001	\$100	-\$76	0.00	14.50
3	6596	High Chiller	GTV	0.001	\$75	-\$47	0.00	9.32
5	6398	expander turbine -	NV	0.001	\$60	-\$44	0.16	13.29
3	6598	High Chiller	CV	0.001	\$177	-\$153	0.00	13.54
4	5807	Inlet Compressor	TB	0.001	\$25	-\$10	0.15	5.93
4	5554	Refrigerant Separator - Stem Packing	GTV	0.001	\$75	-\$41	0.00	7.56
5	5846	B-01 -	CV	0.001	\$130	-\$124	0.18	39.05
1	7058	plant #5 turbo expander	CV	0.001	\$177	-\$170	0.16	46.66
3	6155	EP Skid	GTV	0.001	\$75	-\$41	0.00	7.74
3	6645	refrigerant discharge coalescer	T	0.001	\$20	\$2	0.00	1.63
4	5555	Refrigerant Separator - Stem Packing	GTV	0.001	\$75	-\$43	0.00	8.06
4	5557	Refrigerant Separator - Stem Packing	GTV	0.001	\$75	-\$43	0.00	8.06
5	6229	C-06 -	INJ	0.001	\$200	-\$189	0.17	64.03
2	4908	Parlange #5	T	0.001	\$60	-\$54	0.16	19.58
2	4931	Glycol Heater	V	0.001	\$60	-\$49	0.16	18.33
3	6530	fuel gas scrubber (PV-9)	T	0.001	\$30	-\$25	0.16	10.10
3	6449	pipe rack between inlet compressors	GTV	0.001	\$500	-\$488	0.13	141.26
1	6877	plant #1 midle-east molecular siv	GTV	0.001	\$60	-\$49	0.13	18.66
3	6459	pipe rack along side mid pressure inlet sep	T	0.001	\$30	-\$25	0.15	11.13
3	6552	South White inlet compressor	F	0.001	\$50	-\$45	0.14	18.62
1	6926	plant #1 north-west molecular siv	GTV	0.001	\$60	-\$50	0.12	20.14
4	5587	NE Compressor Station Comp - Pilot Valve Vent	OEL	0.001	\$60	-\$54	0.11	18.93
4	5596	Propane Compressor - Stem Packing	VVP	0.001	\$400	-\$393	0.00	53.48
4	5485	Glycol Separator - sight glass	T	0.001	\$30	-\$24	0.11	9.61
4	5516	Glycol Separator - Stem Packing	GTV	0.001	\$100	-\$90	0.11	33.62
4	5831	NE Compressor Station Comp	T	0.001	\$20	-\$15	0.10	6.91
4	5474	NRU	TB	0.001	\$15	-\$6	0.12	5.97
4	5877	11-16 Pig Unit	T	0.001	\$30	-\$25	0.10	10.54
4	5812	Inlet Compressor	F	0.001	\$50	-\$46	0.11	20.39

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
4	5454	NRU	F	0.001	\$100	-\$96	0.11	41.01
5	6247	C-08 - cylinder end gasket	F	0.001	\$400	-\$397	0.10	142.31
5	6015	C-02 -	INJ	0.001	\$200	-\$192	0.12	90.81
5	5953	C-10 - no leak on rescreen	VC	0.001	\$200	-\$195	0.10	71.16
3	6646	refrigerant discharge coalescer	T	0.001	\$20	-\$5	0.00	2.47
5	5986	C-06 - manifold	GTV	0.001	\$30	-\$15	0.47	3.56
5	5997	C-06 -	GTV	0.001	\$200	\$620	15.65	0.45
3	6154	EP Skid	GTV	0.001	\$75	-\$54	0.00	12.25
1	7030	plant #2 turbo expander	T	0.001	\$30	-\$26	0.10	12.85
5	6292	C-10 - plug	T	0.001	\$30	-\$26	0.11	14.95
5	5918	piping west of LP sales compressors -	GTV	0.001	\$350	-\$343	0.11	177.16
1	6812	pipe rack	TB	0.001	\$15	-\$7	0.09	6.61
4	5838	Refrigerant Accumulator	GTV	0.001	\$120	-\$101	0.00	22.08
4	5817	Inlet Compressor	T	0.001	\$20	-\$17	0.09	10.50
1	6822	plant #1 turbo expander	T	0.001	\$30	-\$26	0.08	14.84
5	6272	C-09 - union	T	0.001	\$30	-\$27	0.09	17.47
4	5824	NE Compressor Station Separator	T	0.001	\$20	-\$16	0.07	10.00
1	6929	plant #1 north-west molecular siv	GTV	0.001	\$500	-\$494	0.08	270.18
4	5873	15-10 Separator - Stem Packing	CV	0.001	\$130	-\$126	0.07	67.15
4	5874	14-6 Wellhead - Plug on side of ESD	T	0.001	\$400	-\$397	0.07	216.87
2	4968	Comp #2	GTV	0.001	\$60	-\$55	0.08	38.61
2	4960	Comp #2	GTV	0.001	\$60	-\$55	0.08	38.75
4	5892	13-12#1 Separator	T	0.001	\$30	-\$27	0.07	16.53
4	5526	Glycol Separator Heat Exchanger - Stem Packing	CV	0.001	\$130	-\$127	0.06	72.45
4	5567	Inlet Compressor	F	0.001	\$50	-\$47	0.07	32.79
2	4945A	Comp #3	Cylinder body	0.001	\$400	-\$399	0.07	275.52
4	5565	Inlet Compressor	F	0.001	\$50	-\$47	0.07	33.64
2	4929	Pig Trap (TETCO Sales)	T	0.000	\$20	-\$18	0.07	14.82
4	5469	NRU - Stem Packing	CV	0.000	\$130	-\$127	0.07	91.84
1	7283	plant #1 south-east molecular siv	OEL	0.000	\$60	-\$57	0.06	39.92
1	7366	Comp 2	OEL	0.000	\$60	-\$57	0.06	39.92
4	5480	Sales Compressor	T	0.000	\$30	-\$27	0.06	21.15
5	6592	sulphur plant -	T	0.000	\$30	-\$28	0.07	23.67
1	6885	amine filter	T	0.000	\$30	-\$27	0.06	20.55
4	5878	11-16 Separator	T	0.000	\$20	-\$17	0.06	12.71
1	6934	plant #1 south-west molecular siv	OEL	0.000	\$60	-\$57	0.06	41.35
4	5478	Pipe Rack - between sales comp and NRU	T	0.000	\$30	-\$27	0.06	21.73
4	5568	Inlet Compressor	F	0.000	\$50	-\$48	0.06	37.15
4	5517	Glycol Separator - Stem Packing	GTV	0.000	\$120	-\$115	0.05	79.45
4	5887	11-16 Pig Unit	T	0.000	\$30	-\$27	0.05	19.92
2	4962	Comp #2	GTV	0.000	\$60	-\$56	0.06	47.24



**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
4	5503	Pipe Rack - Between NRU and Sales Comp	T	0.000	\$20	-\$18	0.06	15.59
4	5477	NRU - NRU inlet	T	0.000	\$30	-\$28	0.06	24.05
3	6640	refrigeration compressors (old)	BV	0.000	\$100	-\$96	0.06	87.96
3	6437	inlet separator (400 psi)	CV	0.000	\$353	-\$350	0.05	258.62
3	6493	fuel gas piping north of Waukesha inlet compressors	DM	0.000	\$400	-\$399	0.06	351.83
3	6547	pipe rack between inlet compressors	F	0.000	\$75	-\$73	0.06	65.97
3	6549	South White inlet compressor	F	0.000	\$400	-\$399	0.05	293.05
3	6551	South White inlet compressor	F	0.000	\$75	-\$72	0.05	54.95
3	6426	North White inlet compressor	GTV	0.000	\$75	-\$71	0.06	65.97
3	6439	PV-47 (400 psi suction scrubber)	GTV	0.000	\$120	-\$115	0.05	87.91
3	6458	combined inlet header	GTV	0.000	\$75	-\$71	0.06	65.97
3	6464	combined inlet header	GTV	0.000	\$60	-\$55	0.05	43.96
3	6467	combined inlet header	GTV	0.000	\$75	-\$70	0.05	54.95
3	6527	pipe rack north of 400 psi inlet separator	GTV	0.000	\$120	-\$116	0.06	105.55
3	6534	fuel gas scrubber (PV-9)	GTV	0.000	\$75	-\$71	0.06	65.97
3	6535	fuel gas scrubber (PV-9)	GTV	0.000	\$60	-\$56	0.06	52.77
3	6536	pipe rack between inlet compressors	GTV	0.000	\$75	-\$71	0.06	65.97
3	6539	pipe rack between inlet compressors	GTV	0.000	\$100	-\$96	0.06	87.96
3	6543	pipe rack between inlet compressors	GTV	0.000	\$60	-\$56	0.06	52.77
3	6546	pipe rack north of 400 psi inlet separator	GTV	0.000	\$120	-\$116	0.06	105.55
3	6548	inlet separator (400 psi)	GTV	0.000	\$190	-\$185	0.05	139.20
3	6785	C-3	GTV	0.000	\$60	-\$56	0.06	52.77
3	6626	West refrigeration compressor (old)	HOLE	0.000			0.06	
3	6469	combined inlet header	OEL	0.000	\$75	-\$72	0.05	54.95
3	6447	pipe rack between inlet compressors	OM	0.000	\$150	-\$149	0.05	109.89
3	6661	pipe rack north of new refrigeration compressors	R	0.000	\$175	-\$170	0.06	153.92
3	6127	south compressor	T	0.000	\$30	-\$28	0.06	26.39
3	6427	North White inlet compressor	T	0.000	\$30	-\$28	0.06	26.39
3	6436	inlet separator (400 psi)	T	0.000	\$600	-\$597	0.05	439.57
3	6454	pipe rack between inlet compressors	T	0.000	\$30	-\$27	0.05	21.98
3	6479	North Waukesha inlet compressor	T	0.000	\$20	-\$17	0.05	14.65
3	6483	North Waukesha inlet compressor	T	0.000	\$20	-\$18	0.06	17.59
3	6488	South Waukesha inlet compressor	T	0.000	\$20	-\$18	0.06	17.59
3	6529	pipe rack north of 400 psi inlet separator	T	0.000	\$30	-\$28	0.06	26.39
3	6533	fuel gas scrubber (PV-9)	T	0.000	\$30	-\$28	0.06	26.39
3	6537	pipe rack between inlet	T	0.000	\$20	-\$18	0.06	17.59

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
		compressors						
3	6540	Waukesha fuel gas scrubber	T	0.000	\$30	-\$28	0.06	26.39
3	6559	West refrigeration compressor (old)	T	0.000	\$20	-\$12	0.00	4.63
3	6619	refrigeration compressors (old)	T	0.000	\$30	-\$28	0.06	26.39
3	6624	West refrigeration compressor (old)	T	0.000	\$30	-\$28	0.06	26.39
3	6637	East refrigeration compressor (new)	T	0.000	\$20	-\$18	0.06	17.59
3	6723	West refrigeration compressor (new)	T	0.000	\$20	-\$18	0.06	17.59
3	6423	North White inlet compressor	VVP	0.000	\$400	-\$399	0.05	293.05
1	6956	residue compressor (C-9)	T	0.000	\$20	-\$18	0.06	17.87
1	6993	PSV 671101	T	0.000	\$20	-\$18	0.05	15.98
1	7115	residue compressor (west caterpillar)	CS	0.000	\$2,000	-\$1,999	0.06	1856.19
1	6825	stabilizer overheads compressor (C-92)	T	0.000	\$30	-\$28	0.06	28.14
2	4998	Compressor 4	Cylinder end	0.000	\$400	-\$398	0.03	197.64
2	4930	Pig Trap (TETCO Sales)	TB	0.000	\$15	-\$11	0.05	14.73
1	7066	plant #6 turbo expander	GTV	0.000	\$60	-\$56	0.05	53.40
1	7137	residue compressor (#4 ingersoll-rand)	VC	0.000	\$200	-\$198	0.05	209.28
1	6899	stabilizer overheads compressor (C-92)	BV	0.000	\$100	-\$97	0.05	107.45
1	7092	fuel gas scrubber (F-5)	GTV	0.000	\$75	-\$72	0.05	86.03
5	6295	C-10 - union	T	0.000	\$30	-\$29	0.04	40.01
5	6339	C-11 - manifold	F	0.000	\$50	-\$49	0.04	66.99
5	6591	sulphur plant -	T	0.000	\$30	-\$29	0.04	40.20
4	5863	22-7 Wellhead - TSTM	ESD	0.000	\$400	-\$398	0.03	462.07
4	5465	Sales Compressor - TSTM	OEL	0.000	\$60	-\$59	0.03	77.92
4	5585	Inlet Compressor - TSTM, Solenoid Valve	OEL	0.000	\$60	-\$59	0.03	79.57
1	6813	plant #1 turbo expander	T	0.000	\$20	-\$19	0.04	28.55
4	5872	15-10 Heater - TSTM	T	0.000	\$30	-\$28	0.03	34.65
1	7199	residue compressor (#5 ingersoll-rand)	VC	0.000	\$200	-\$199	0.04	285.50
1	6878	plant #1 middle-east molecular siv	GTV	0.000	\$190	-\$187	0.03	243.82
2	4923	Plant Sales Piping	NV	0.000	\$60	-\$58	0.04	91.04
1	6931	plant #1 middle-east molecular siv	GTV	0.000	\$60	-\$58	0.03	85.04
1	6884	PV-1	T	0.000	\$30	-\$29	0.03	42.72
1	6901	pipe rack	TB	0.000	\$15	-\$13	0.03	21.91
1	6845	pipe rack	T	0.000	\$30	-\$29	0.03	46.21
1	7166	residue compressor (#2 ingersoll-rand)	VC	0.000	\$200	-\$199	0.03	367.00
5	5925	C-20 -	GOV	0.000	\$200	-\$198	0.03	376.30
5	6250	C-08 -	VC	0.000	\$200	-\$199	0.02	294.86
1	6995	PSV 671101	T	0.000	\$20	-\$19	0.03	32.84
1	6996	PSV 671101	GTV	0.000	\$60	-\$58	0.02	101.78

**Table I. Measured THC emissions rates, sorted by emission rate, from leaking equipment components at surveyed gas plants.**

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscfd)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
5	6228	C-06 - union	T	0.000	\$30	-\$29	0.03	61.21
1	6863	pipe rack	F	0.000	\$75	-\$74	0.02	172.96
1	6811	inlet header	T	0.000	\$20	-\$19	0.02	49.43
1	7102	residue compressor (#1 caterpillar)	T	0.000	\$30	-\$29	0.02	98.58
1	7038	plant #5 turbo expander	GTV	0.000	\$60	-\$59	0.02	204.45
1	6997	PSV 671101	T	0.000	\$20	-\$19	0.01	61.73
1	7284	plant #1 north-west molecular siv	T	0.000	\$20	-\$19	0.01	61.73
2	4967	Comp #2	NV	0.000	\$60	-\$59	0.01	257.03
5	6058	C-05 - plug	T	0.000	\$30	-\$30	0.01	135.94
1	7077	plant #6 middle molecular siv	CV	0.000	\$282	-\$282	0.01	1157.1 2
1	6942	refrigeration compressor (#2 Clark)	F	0.000	\$200	-\$199	0.00	326.10
5	6323	C-10 - manifold	F	0.000	\$50	-\$50	0.01	305.74
5	6284	C-10 -	T	0.000	\$30	-\$30	0.00	383.40
2	4950	Glycol Heater	CTBV/ CV	0.000	\$130	-\$130	0.00	2190.9 1
2	4918	Plant Inlet Piping	GTV	0.000	\$75	-\$75	0.00	1360.5 1
2	4966	Comp #2	R	0.000	\$175	-\$175	0.00	3103.3 3
2	4887	Compressor 4	T	0.000	\$30	-\$30	0.00	278.23
2	5017	Compressor 4	T	0.000	\$20	-\$20	0.00	185.49
2	4928	Plant Sales Piping	V	0.000	\$60	-\$60	0.00	1088.4 1
1	6835	plant #5 demethanizer side exchanger	TB	0.000	\$15	-\$15	0.00	305.68
2	4911	Parlange 12 (3-phase sep)	Greaser	0.000	\$130	-\$130	0.00	3114.9 8
5	5985	C-06 - body	BV	0.000	\$100	-\$100	0.00	2884.2 4
5	6021	C-01 - plug	T	0.000	\$30	-\$30	0.00	865.27

1 The presented costs do not account for the expense of finding and evaluating these reduction opportunities and therefore are potentially low.

NE Repair costs were not estimated for this component.

NA The payout period could not be calculated because the component emission rate was below the minimum measurable value of the HiFlow™ Sampler or repair costs were not estimated.

---- The net present value of could not be calculated because repair costs were not estimated for this component, or the CO<sub>2</sub>E emissions could not be calculated.

\* If the pay-out period is longer than the life expectancy of the component, then this component is not cost effective to fix.