

Appendix II
Measured THC Emission Rates Sorted by Payout Period

Table II. Measured THC emissions rates, sorted by pay-out period, 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	5964	C-10 - union	T	0.90	\$0	\$4,400	132.71	0.00
5	5948	C-03 - plug	T	0.10	\$0	\$466	14.05	0.00
5	5959	C-10 - plug	T	0.03	\$0	\$143	4.32	0.00
5	5949	C-03 -	T	0.02	\$0	\$95	2.86	0.00
5	5962	C-10 -	T	0.02	\$0	\$91	2.75	0.00
5	5935	C-1 - 2" waterjacket connection	OEL	183.42	\$400	\$585,608	21804.71	0.00
3	6738	heat exchanger	OEL	4.95	\$60	\$92,716	0.00	0.00
1	7286	plant #1 middle-west molecular siv	T	7.30	\$30	\$40,903	933.90	0.00
4	5483	Sales Compressor	TB	3.48	\$15	\$35,423	439.54	0.00
5	6519	Comp #38 - north compressor station	T	3.38	\$20	\$16,403	495.33	0.00
1	7289	plant #1 south-west molecular siv	T	2.70	\$20	\$15,098	344.92	0.00
1	7176	residue compressor (#3 ingersoll-rand)	T	2.83	\$20	\$13,884	411.80	0.00
1	6814	plant #1 turbo expander	TB	3.08	\$25	\$28,533	447.52	0.00
3	6797	C-5	T	3.30	\$30	\$16,233	477.31	0.00
5	5956	C-11 -	CS	15.37	\$177	\$95,241	1826.90	0.00
5	6026	C-01 - plug	T	3.05	\$30	\$14,787	446.90	0.00
3	6190	EB Skid	OEL	3.89	\$190	\$89,677	0.00	0.00
1	7038	plant #5 turbo expander	T	1.84	\$20	\$8,992	266.92	0.00
5	6075	C-12 -	VVP	28.76	\$400	\$91,468	3418.32	0.00
3	6678	EB Skid	PS	7.31	\$500	\$86,355	0.00	0.01
1	6989	plant #1 dust filter	TB	0.88	\$15	\$9,340	112.93	0.01
4	5483	Sales Compressor - Retest	TB	0.89	\$15	\$9,038	112.29	0.01
1	7326	Comp 4	T	1.94	\$30	\$9,506	282.43	0.01
2	4959	Comp #3	TB	0.88	\$15	\$8,528	125.61	0.01
3	6672	EP Skid	T	0.42	\$20	\$5,999	0.00	0.01
1	7242	plant #6 dust filter	FC	1.24	\$100	\$29,591	677.40	0.01
3	6476	North Waukesha inlet compressor	T	0.93	\$20	\$5,500	113.04	0.01
1	7093	seperator	T	1.51	\$30	\$7,371	219.19	0.01
1	7174	residue compressor (#3 ingersoll-rand)	T	1.00	\$20	\$4,883	145.22	0.01
4	5875	14-6 Well Site - Chem Injection Pump Exhaust	OEL	2.39	\$60	\$14,417	283.53	0.01
3	6679	HT 207	GTV	0.92	\$75	\$32,331	0.00	0.01
1	7168	residue compressor (#2 ingersoll-rand)	VC	9.26	\$200	\$45,244	1345.96	0.01
1	7322	Comp 1	CV	8.18	\$177	\$39,973	1189.16	0.01
2	4983	Electric Comp	Cylinder head/ F	2.25	\$100	\$21,916	163.43	0.01
3	6192	EP Skid	PS	7.57	\$500	\$55,341	0.00	0.01
5	6219	C-07 -	T	1.30	\$30	\$6,308	191.17	0.01
3	6708	Amine Tank	PRV	9.15	\$214	\$44,813	1321.55	0.01
5	6334	C-11 - manifold	F	2.14	\$50	\$10,375	314.42	0.01
5	6074	flare fuel gas line -	HOLE	42.07	\$1,000	\$820,614	6172.91	0.01
5	5972	C-12 -	CS	5.48	\$177	\$33,824	650.99	0.01
1	7090	plant #1 demethanizer	T	0.20	\$30	\$5,713	0.00	0.01
5	6513	Comp #40 - north compressor station	T	0.72	\$20	\$3,476	105.44	0.01

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6348	C-11 - plug	T	1.04	\$30	\$5,028	152.56	0.01
1	7252	Comp W6	T	0.85	\$30	\$4,740	108.82	0.01
1	7125	residue compressor (#2 ingersoll-rand)	VC	6.31	\$200	\$30,759	916.94	0.01
1	6890	refrigeration compressor (#3 Clark)	GOV	5.83	\$200	\$53,873	847.37	0.01
1	7153	residue compressor (#4 ingersoll-rand)	VC	5.75	\$200	\$27,998	835.16	0.01
3	6721	West refrigeration compressor (new)	NV	0.45	\$60	\$15,820	0.00	0.01
3	6735	de-C2 reboiler	F	4.54	\$300	\$41,536	0.00	0.01
4	5908	Condensate Storage Tank VRU - Union	T	0.14	\$30	\$4,026	0.00	0.01
5	5916	low pressure sales line - vent stack	OEL	2.78	\$100	\$13,411	407.50	0.01
3	6748	blow down vent	OEL	5.51	\$245	\$32,305	666.57	0.01
5	6140	Comp # 27 - north compressor station	T	0.81	\$30	\$3,904	118.65	0.01
3	6666	mole siv skid	F	1.62	\$75	\$9,491	195.51	0.01
4	5909	Condensate Storage Tank VRU	OEL	0.27	\$60	\$7,498	0.00	0.01
4	5488	LP FG Scrubber - corrosion hole in bottle below HLL alarm	HOLE	35.72	\$1,500	\$755,803	4758.43	0.01
1	6886	refrigeration compressor (#3 Clark)	INJ	4.98	\$200	\$45,965	723.45	0.02
1	7148	residue compressor (#3 ingersoll-rand)	VC	4.94	\$200	\$24,032	717.69	0.02
4	5860	Refrigerant Compressor - Stem Packing	CV	1.15	\$141	\$16,511	0.00	0.02
1	7071	plant #5 dust filter	OEL	1.19	\$60	\$6,617	152.33	0.02
1	7269	Comp W6	T	0.59	\$30	\$3,287	75.67	0.02
1	7332	Comp 6	T	0.68	\$30	\$3,284	98.16	0.02
1	7180	residue compressor (#3 caterpillar)	F	4.49	\$200	\$21,840	652.79	0.02
1	7158	residue compressor (#4 ingersoll-rand)	VC	4.34	\$200	\$21,082	630.32	0.02
5	6209	C-07 -	VC	3.37	\$200	\$20,640	398.04	0.02
2	4949	Comp #4	VC/T	0.99	\$50	\$5,004	140.45	0.02
1	7183	plant #5 middle molecular siv	F	1.78	\$100	\$9,858	227.20	0.02
1	7034	plant #5 north molecular siv	F	1.74	\$100	\$9,685	223.25	0.02
5	6324	C-10 -	GOV	3.88	\$200	\$35,441	568.77	0.02
1	6888	refrigeration compressor (#3 Clark)	INJ	3.80	\$200	\$35,015	551.85	0.02
1	7214	residue compressor (#5 ingersoll-rand)	VC	3.78	\$200	\$18,325	548.66	0.02
1	7167	residue compressor (#2 ingersoll-rand)	VC	3.76	\$200	\$18,240	546.16	0.02
5	6506	Comp #27 - north compressor station	F	1.46	\$100	\$8,958	173.43	0.02
3	6621	West refrigeration compressor (old)	T	0.55	\$30	\$2,684	79.66	0.02
1	7196	residue compressor (#5 ingersoll-rand)	VC	3.66	\$200	\$17,771	532.25	0.02
5	5945	C-02 -	GOV	3.62	\$200	\$33,109	531.56	0.02
3	6116	F-405	OEL	0.86	\$60	\$5,026	103.95	0.02
3	6556	South White inlet compressor	F	0.86	\$50	\$4,177	124.08	0.02
5	5943	C-02 - measured at 2" water jacket connection on cylinder body	OEL	5.34	\$400	\$16,600	630.99	0.02
1	6983	ease residue turbine compressor	OEL	0.97	\$60	\$4,684	140.51	0.02

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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)
		(C-53)						
4	5487	HP FG Scrubber	T	0.30	\$20	\$1,541	39.38	0.02
3	6656	mole siv skid	T	0.39	\$30	\$2,269	46.99	0.02
2	4908	Acadian Sales	OEL	0.86	\$60	\$4,271	125.93	0.03
3	6752	pipe rack in front of C1/C2	OEL	2.96	\$245	\$17,223	357.71	0.03
3	6566	pipng from de-C2 reflux. accumulator bottoms	GTV	0.66	\$100	\$13,268	0.00	0.03
1	7181	plant #5 middle molecular siv	F	1.23	\$100	\$6,816	157.78	0.03
1	6948	residue compressor (C-9)	T	0.28	\$20	\$1,361	40.89	0.03
1	6938	plant #1 south-west molecular siv	T	0.37	\$30	\$2,028	46.96	0.03
3	6194	EP Skid	GTV	0.90	\$190	\$24,200	0.00	0.03
1	7020	plant #2 east molecular siv	F	1.20	\$100	\$6,620	153.31	0.03
5	6045	C-02 - plug	T	0.41	\$30	\$1,965	60.16	0.03
1	7194	residue compressor (#5 ingersoll-rand)	VC	2.71	\$200	\$13,084	393.44	0.03
3	6710	EP Skid	F	1.38	\$300	\$19,538	0.00	0.03
5	6038	C-07 -	T	0.02	\$30	\$1,934	59.24	0.03
1	6973	residue compressor (C-9)	T	0.39	\$30	\$1,906	57.35	0.03
5	6305	C-12 - manifold	F	0.66	\$50	\$3,153	96.60	0.03
3	6609	South White inlet compressor	GOV	2.59	\$200	\$23,900	374.26	0.03
1	7150	residue compressor (#3 ingersoll-rand)	T	0.26	\$20	\$1,252	37.67	0.03
1	7133	residue compressor (#3 ingersoll-rand)	VC	2.57	\$200	\$12,403	373.26	0.03
5	5848	C-22 -	VC	2.52	\$200	\$12,061	369.79	0.03
5	6224	C-06 - union	T	0.37	\$30	\$1,783	54.70	0.03
3	6147	north compressor	VC	2.02	\$200	\$11,718	244.06	0.03
1	7086	residue compressor (#3 caterpillar)	F	2.42	\$200	\$11,656	351.14	0.03
1	7132	residue compressor (#3 ingersoll-rand)	VC	2.42	\$200	\$11,652	351.02	0.03
3	6675	EP Skid	T	0.08	\$20	\$1,164	0.00	0.03
1	7021	plant #2 east molecular siv	F	1.06	\$100	\$5,820	135.06	0.03
4	5513	Sales Compressor	TB	0.14	\$15	\$1,640	17.15	0.03
1	6909	plant #1 demethanizer side exchanger	OEL	0.62	\$60	\$3,426	79.53	0.03
1	6836	plant #5 demethanizer condenser	T	0.51	\$50	\$2,822	65.53	0.03
1	7111	residue compressor (north caterpillar)	T	0.23	\$20	\$1,129	34.02	0.03
1	6969	refrigeration compressor (#2 Clark)	T	0.34	\$30	\$1,660	50.06	0.03
4	5494	NRU - Inlet Sep	TB	0.16	\$15	\$1,580	21.29	0.03
1	7130	residue compressor (#3 ingersoll-rand)	VVP	4.58	\$400	\$11,153	664.96	0.03
3	6745	north compressor	TB	0.14	\$15	\$1,576	17.24	0.03
5	6344	C-11 - manifold	F	0.56	\$50	\$2,684	82.45	0.03
1	7112	residue compressor (north caterpillar)	T	0.22	\$20	\$1,056	31.86	0.03
5	6393	pipe between chiller and expander turbine -	GTV	0.64	\$75	\$7,404	75.58	0.03
3	6688	middle sales turbine compressor	T	0.21	\$20	\$1,029	30.77	0.03
5	6399	expander turbine -	T	0.25	\$30	\$1,539	29.97	0.04
5	6076	C-12 -	VVP	3.37	\$400	\$10,358	400.28	0.04
1	7065	plant #6 turbo expander	T	0.19	\$20	\$1,021	23.74	0.04

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1	6818	plant #1 inlet filter seperator (PV-3)	T	0.18	\$20	\$1,017	23.65	0.04
5	6008	C-02 - manifold	F	0.53	\$50	\$2,524	77.62	0.04
3	6555	South White inlet compressor	F	0.52	\$50	\$2,515	75.28	0.04
1	7188	residue compressor (#5 ingersoll-rand)	VC	2.09	\$200	\$10,060	303.87	0.04
5	6303	C-12 - manifold	F	0.51	\$50	\$2,414	74.31	0.04
5	6304	C-12 - plug	T	0.30	\$30	\$1,408	43.37	0.04
3	6123	south compressor	VC	1.62	\$200	\$9,370	195.97	0.04
1	7107	residue compressor (north caterpillar)	T	0.29	\$30	\$1,403	42.44	0.04
3	6554	South White inlet compressor	F	0.48	\$50	\$2,316	69.44	0.04
3	6699	east sales turbine compressor	T	0.19	\$20	\$925	27.73	0.04
5	6089	C-03 - measured at 2" water-jacket connection	OEL	3.01	\$400	\$9,182	355.65	0.04
1	6874	plant #1 south-east molecular siv	TB	0.12	\$15	\$1,295	15.81	0.04
2	4990	Compressor 4	VC/F	0.35	\$75	\$3,369	25.57	0.04
3	6732	de-C2 reflux pump	GTV	0.42	\$100	\$8,492	0.00	0.04
3	6405	combined inlet header	GTV	0.92	\$120	\$10,149	111.27	0.04
5	6043	C-02 - union	T	0.28	\$30	\$1,324	40.85	0.04
3	6667	mole siv skid	F	0.57	\$75	\$3,303	69.05	0.04
1	7161	residue compressor (#1 ingersoll-rand)	OEL	0.55	\$60	\$2,641	80.01	0.04
5	6207	C-07 - measured at 2" water jacket connection on cylinder body	OEL	2.86	\$400	\$8,706	338.01	0.04
1	7173	residue compressor (#3 ingersoll-rand)	VC	1.73	\$200	\$8,303	251.83	0.04
5	6510	Comp #40 - north compressor station	T	0.26	\$30	\$1,222	37.75	0.04
3	6124	south compressor	VC	1.41	\$200	\$8,113	170.24	0.04
5	6244	C-09 - cylinder end gasket	F	2.67	\$400	\$8,127	317.27	0.04
5	6345	C-11 - union	T	0.25	\$30	\$1,200	37.09	0.04
5	6380	Skid #2 - east mol siv	CV	1.86	\$282	\$11,214	219.57	0.04
1	7155	residue compressor (#4 ingersoll-rand)	VC	1.66	\$200	\$7,939	241.05	0.05
1	7136	residue compressor (#4 ingersoll-rand)	T	0.17	\$20	\$792	24.04	0.05
5	6051	C-02 - plug	T	0.25	\$30	\$1,182	36.56	0.05
5	6049	C-02 -	T	0.25	\$30	\$1,175	36.36	0.05
1	7084	residue compressor (#3 caterpillar)	F	0.07	\$200	\$7,793	236.73	0.05
2	4982	Electric Comp	Cylinder head/ F	0.41	\$100	\$3,892	29.63	0.05
5	6285	C-10 - union	T	0.24	\$30	\$1,157	35.80	0.05
1	7216	residue compressor (#5 ingersoll-rand)	VC	1.60	\$200	\$7,662	232.86	0.05
3	6166	de-C4 reflux accumulator	OEL	0.10	\$60	\$2,296	0.00	0.05
3	6402	combined inlet header	GTV	1.24	\$190	\$13,674	150.22	0.05
5	5957	C-11 -	VC	1.24	\$200	\$7,511	147.65	0.05
5	6336	C-11 - union	T	0.23	\$30	\$1,085	33.62	0.05
1	7023	plant #2 east molecular siv	T	0.13	\$20	\$722	16.93	0.05
1	7045	plant #2 west molecular siv	F	0.66	\$100	\$3,596	84.32	0.05
5	6067	C-05 -	T	0.23	\$30	\$1,067	33.10	0.05
1	7000	residue compressor (#3 caterpillar)	T	0.22	\$30	\$1,065	32.42	0.05

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1	6889	refrigeration compressor (#3 Clark)	INJ	1.45	\$200	\$13,267	211.03	0.05
5	6269	C-08 - top	GOV	1.46	\$200	\$13,232	214.36	0.05
5	6010	C-02 - plug	T	0.22	\$30	\$1,033	32.05	0.05
3	6739	EB Skid	GTV	0.11	\$75	\$4,891	0.00	0.05
1	7182	plant #5 middle molecular siv	F	0.62	\$100	\$3,361	78.97	0.05
5	6300 B	C-12 - measured at LHS of cylinder end	F	2.20	\$400	\$6,624	261.37	0.05
1	6959	residue compressor (C-9)	T	0.20	\$30	\$972	29.67	0.05
2	4921	Near train 2 TEG Contactor	OEL	0.40	\$60	\$1,938	58.10	0.06
1	6958	residue compressor (C-9)	T	0.13	\$20	\$640	19.54	0.06
1	6999	residue compressor (#3 caterpillar)	T	0.20	\$30	\$959	29.30	0.06
5	6007	C-02 - elbow cracked	T	0.20	\$30	\$958	29.79	0.06
2	4988	Compressor 4	VC/F	0.24	\$75	\$2,313	17.73	0.06
5	6014	C-02 - union	T	0.20	\$30	\$923	28.73	0.06
1	7162	residue compressor (#1 ingersoll-rand)	VC	1.28	\$200	\$6,060	185.40	0.06
1	7207	residue compressor (#5 ingersoll-rand)	VC	1.28	\$200	\$6,060	185.40	0.06
1	6949	residue compressor (C-9)	R	1.11	\$175	\$12,381	161.86	0.06
3	6404	combined inlet header	BV	0.63	\$120	\$6,948	76.59	0.06
5	6318	C-17 -	VVP	2.56	\$400	\$6,004	375.372	0.06
1	6920	plant #1 south-east molecular siv	F	0.83	\$150	\$4,492	105.92	0.06
1	7355	Comp 1	CS	10.97	\$2,000	\$29,673	1404.33	0.06
2	5015	Compressor 4	VC/F	0.23	\$75	\$2,211	16.97	0.06
5	6080	C-04 - manifold	F	0.31	\$50	\$1,466	45.71	0.06
3	6460	combined inlet header	GTV	0.31	\$60	\$3,364	37.10	0.06
1	6947	residue compressor (C-9)	T	0.12	\$20	\$571	17.50	0.06
5	6048	C-02 -	T	0.18	\$30	\$848	26.47	0.06
3	6183	de-C1	T	0.10	\$20	\$560	11.85	0.06
1	7203	residue compressor (#4 ingersoll-rand)	VC	1.17	\$200	\$5,537	169.92	0.06
5	6306	C-12 -	INJ	1.17	\$200	\$10,578	172.00	0.06
3	6600	South White inlet compressor	VC	0.95	\$200	\$5,441	115.52	0.07
3	6807	C-7	T	0.17	\$30	\$816	24.83	0.07
3	6673	EP Skid	T	0.10	\$50	\$1,355	0.00	0.07
5	6574	pipng north of 1st/2nd stage compression -	BV	0.52	\$120	\$5,989	61.88	0.07
5	6002	C-02 -	NV	0.21	\$30	\$770	24.13	0.07
5	6280	C-09 -	T	0.16	\$30	\$767	24.04	0.07
1	7191	residue compressor (#5 ingersoll-rand)	VC	1.07	\$200	\$5,068	156.04	0.07
1	7109	residue compressor (north caterpillar)	T	0.16	\$30	\$760	23.40	0.07
2	4914	FG Scrubber	TB	0.07	\$15	\$730	10.59	0.07
2	4961	Comp #2	R	0.89	\$175	\$10,293	126.60	0.07
1	7276	Comp W2	T	0.16	\$30	\$739	22.78	0.07
1	7327	Comp 5	T	0.16	\$30	\$734	22.62	0.07
1	7035	plant #5 north molecular siv	F	0.68	\$150	\$3,652	86.75	0.07
1	7048	plant #2 turbo expander	T	0.09	\$20	\$482	11.46	0.07
5	6576	pipng north of 1st/2nd stage compression -	F	0.40	\$100	\$2,402	47.90	0.07
1	7200	residue compressor (#4 ingersoll-	VC	1.01	\$200	\$4,748	146.56	0.07

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		rand)						
3	6733	de-C2 reflux pump	F	0.34	\$150	\$3,506	0.00	0.08
5	6381	Skid #2 - middle mole siv	CV	1.10	\$282	\$6,542	130.33	0.08
1	7198	residue compressor (#5 ingersoll-rand)	VC	0.99	\$200	\$4,638	143.30	0.08
5	5941	C-02 - measured at 1/2" hole in DP cover	CS	7.76	\$2,000	\$22,724	917.69	0.08
1	6975	residue compressor (C-9)	VC	0.97	\$200	\$4,566	141.15	0.08
5	6309	C-12 - manifold	F	0.24	\$50	\$1,122	35.36	0.08
1	7040	plant #2 west molecular siv	F	0.42	\$100	\$2,237	53.33	0.08
5	6521	Comp #38 - north compressor station	T	0.24	\$50	\$1,112	35.05	0.08
3	6719	EP Skid	T	0.08	\$50	\$1,109	0.00	0.08
5	5994	C-06 - measured at cylinder water jacket connection	OEL	1.49	\$400	\$4,330	175.57	0.08
4	5915	NE Compressor Station Inlet - Pneumatic Bleeding	CV	0.49	\$130	\$2,848	58.32	0.08
5	6232	C-06 -	T	0.14	\$30	\$656	20.70	0.08
4	5466	Sales Compressor - DPV	OEL	0.32	\$75	\$1,634	40.07	0.08
3	6623	West refrigeration compressor (old)	T	0.14	\$30	\$653	20.06	0.08
5	6100	Comp # 37 - north compressor station	PV	0.28	\$60	\$2,520	41.17	0.08
5	6395	pipe between chiller and expander turbine -	GTV	0.27	\$75	\$3,135	32.44	0.08
1	7197	residue compressor (#5 ingersoll-rand)	VC	0.91	\$200	\$4,259	132.07	0.08
4	5912	Propane Feed Pump	OEL	0.11	\$75	\$1,591	0.00	0.08
4	5592	South Boiler - Stem Packing	GTV	0.50	\$120	\$4,876	66.67	0.08
3	6196	EP Skid	PS	0.77	\$500	\$5,151	0.00	0.08
5	6347	C-11 -	GOV	0.90	\$200	\$8,045	131.58	0.08
1	7341	Comp 2	T	0.13	\$30	\$624	19.36	0.08
5	6002	C-06 - measured at 1/2" bleed connection on cylinder body	T	0.16	\$60	\$2,383	24.69	0.09
1	7163	residue compressor (#2 ingersoll-rand)	OEL	0.26	\$60	\$1,232	38.27	0.09
3	6796	C-5	OEL	0.26	\$60	\$1,229	37.84	0.09
5	6282	C-09 -	GOV	0.88	\$200	\$7,900	129.26	0.09
1	6827	plant #1 demethanizer condenser	GTV	0.23	\$60	\$2,357	29.17	0.09
5	5944	C-02 -	GOV	0.86	\$200	\$7,739	126.69	0.09
1	7139	residue compressor (#4 ingersoll-rand)	VC	0.85	\$200	\$3,971	123.55	0.09
5	6030 A	C-01 - plug (top)	T	0.13	\$30	\$593	18.80	0.09
2	4927	Plant Sales Piping	V	0.25	\$60	\$2,262	35.73	0.09
1	7169	residue compressor (#2 ingersoll-rand)	F	0.62	\$150	\$2,875	89.60	0.09
1	6921	plant #1 south-east molecular siv	GTV	0.22	\$60	\$2,226	27.60	0.09
4	5814	Inlet Compressor	F	0.19	\$50	\$957	25.39	0.09
1	6867	plant #1 demethanizer bottom pumps	GTV	0.04	\$60	\$2,208	0.00	0.09
1	7033	plant #5 north molecular siv	F	0.36	\$100	\$1,900	45.63	0.09
5	6086	C-03 -	T	0.12	\$30	\$562	17.87	0.09

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6307	C-12 - plug	T	0.12	\$30	\$558	17.73	0.09
1	7212	residue compressor (#4 ingersoll-rand)	VC	0.79	\$200	\$3,692	115.27	0.09
1	7060	plant #6 east molecular siv	OEL	0.26	\$75	\$1,379	33.18	0.09
3	6557	West refrigeration compressor (old)	T	0.02	\$20	\$368	0.00	0.09
5	6268	C-08 -	T	0.12	\$30	\$550	17.50	0.09
5	6230	C-06 -	INJ	0.79	\$200	\$7,068	115.99	0.10
5	6302	C-12 - body flange	GOV	0.79	\$200	\$7,061	115.88	0.10
5	6003	C-02 -	T	0.12	\$30	\$544	17.32	0.10
4	5524	De-butanizer Reflux Accumulator - sight glass	T	0.03	\$30	\$542	0.00	0.10
1	7336	Comp W8	VVP	1.34	\$400	\$3,470	171.61	0.10
3	6668	mole siv skid	T	0.06	\$20	\$352	7.60	0.10
2	4955	Comp #3	Union	0.36	\$100	\$1,759	51.65	0.10
1	6857	plant #1 north-east molecular siv	T	0.10	\$30	\$523	12.63	0.10
1	6844	pipe rack	T	0.07	\$20	\$346	8.36	0.10
5	5942	C-02 - measured at hole in DP cover	CS	5.82	\$2,000	\$16,531	687.84	0.10
5	6277	C-09 - manifold	F	0.18	\$50	\$848	27.09	0.10
5	6095	C-05 - measured at 2" flanged connection on cylinder head	F	1.16	\$400	\$3,286	136.80	0.10
1	6982	residue compressor (C-9)	F	0.18	\$50	\$845	26.51	0.10
5	6585	pipng north of 1st/2nd stage compression -	BV	0.35	\$120	\$3,936	41.09	0.10
5	6240	C-08 - measured at cylinder end bolt cover	OEL	1.15	\$400	\$3,270	136.57	0.10
4	5577	Propane Compressor - Stem Packing	VVP	0.49	\$400	\$3,267	0.00	0.10
4	5827	NE Compressor Station Comp	T	0.09	\$30	\$502	10.42	0.10
5	6044	C-02 -	T	0.11	\$30	\$502	16.04	0.10
1	7195	residue compressor (#5 ingersoll-rand)	VC	0.72	\$200	\$3,318	104.20	0.10
1	7242	plant #6 west molecular siv	F	5.29	\$400	\$6,561	158.81	0.11
1	7022	plant #2 east molecular siv	F	0.31	\$100	\$1,637	39.63	0.11
5	5844	pipng west of LP sales compressors -	T	0.07	\$20	\$327	10.47	0.11
4	5575	De-ethanizer Reflux Accumulator - Bottoms	TB	0.02	\$15	\$474	0.00	0.11
1	6935	plant #1 south-west molecular siv	GTV	1.53	\$500	\$15,766	196.35	0.11
5	6113	Comp #23 - north compressor station	VC	0.55	\$200	\$3,217	65.41	0.11
1	6951	residue compressor (C-9)	INJ	0.69	\$200	\$6,212	100.48	0.11
5	5999	C-04 -	VC	0.54	\$200	\$3,170	64.36	0.11
5	6104	Comp # 37 - north compressor station	INJ	0.69	\$200	\$6,140	101.18	0.11
1	6864	pipe rack	T	0.09	\$30	\$473	11.47	0.11
5	6349	C-11 -	T	0.10	\$30	\$472	15.15	0.11
5	6208	C-07 -	VC	0.54	\$200	\$3,128	63.57	0.11
1	7165	residue compressor (#2 ingersoll-rand)	VC	0.68	\$200	\$3,126	98.51	0.11
1	7124	residue compressor (#2 ingersoll-rand)	VC	0.68	\$200	\$3,120	98.32	0.11

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6018	C-02 - plug	T	0.10	\$30	\$468	15.01	0.11
1	6861	PIG receivers	PIG	0.89	\$300	\$4,672	113.43	0.11
3	6712	EP Skid	GTV	0.22	\$190	\$5,751	0.00	0.11
2	4916	Pig Trap (TETCO Sales)	V	0.20	\$60	\$1,810	28.77	0.11
3	6725	EP Skid	T	0.06	\$50	\$774	0.00	0.11
3	6718	EP Skid	T	0.06	\$50	\$1,495	0.00	0.11
5	6237	C-06 - body flange	GOV	0.66	\$200	\$5,911	97.52	0.11
4	5492	Refrigerant Separator - Stem Packing	GTV	0.08	\$75	\$2,211	0.00	0.11
5	6310	C-12 - plug	T	0.10	\$30	\$452	14.53	0.11
3	6128	north compressor	VVP	1.09	\$400	\$2,901	131.38	0.11
1	7121	residue compressor (#2 ingersoll-rand)	VVP	1.30	\$400	\$2,876	188.56	0.12
3	6713	EP Skid	T	0.06	\$50	\$743	0.00	0.12
3	6693	west sales turbine compressor	T	0.06	\$20	\$296	9.26	0.12
1	7202	residue compressor (#4 ingersoll-rand)	VC	0.64	\$200	\$2,947	93.21	0.12
4	5802	Inlet Compressor	T	0.08	\$30	\$442	9.24	0.12
3	6412	combined inlet header	GTV	0.26	\$100	\$2,854	32.00	0.12
5	6105	Comp # 37 - north compressor station	INJ	0.64	\$200	\$5,701	94.17	0.12
5	6083	C-03 -	T	0.10	\$30	\$436	14.05	0.12
5	6004	C-02 - plug	T	0.09	\$30	\$431	13.91	0.12
3	6472 B	Waukesha inlet compressor cooler	GTV	0.91	\$350	\$9,790	109.87	0.12
3	6605	South White inlet compressor	F	1.03	\$400	\$2,735	124.76	0.12
3	6468	combined inlet header	T	0.05	\$20	\$280	6.14	0.12
5	6234	C-06 - plug	T	0.09	\$30	\$419	13.53	0.12
3	6496	propane storage	GTV	0.08	\$100	\$2,717	0.00	0.12
1	7146	residue compressor (#3 ingersoll-rand)	VC	0.60	\$200	\$2,749	87.36	0.12
3	6724	EP Skid	T	0.05	\$50	\$670	0.00	0.13
2	5000	Cat Compressor	T	0.04	\$30	\$401	3.20	0.13
5	6093 B	C-05 - cylinder head LHS	F	0.92	\$400	\$2,529	108.72	0.13
5	5980	C-04 -	INJ	0.58	\$200	\$5,179	85.84	0.13
4	5499	NRU	F	0.27	\$100	\$1,323	35.89	0.13
3	6120	south compressor	VVP	0.96	\$400	\$2,513	115.94	0.13
3	6593	piping from de-C2 reflux accumulator bottoms	GTV	0.13	\$100	\$2,574	0.00	0.13
3	6634	East refrigeration compressor (new)	F	0.14	\$50	\$645	20.39	0.13
5	5951	C-04 -	CS	4.49	\$2,000	\$12,299	530.74	0.13
1	7070	plant #5 dust filter	T	0.07	\$30	\$387	9.50	0.13
4	5910	Propane Feed Pump	T	0.03	\$30	\$380	0.00	0.13
1	6891	refrigeration compressor (#3 Clark)	GOV	0.56	\$200	\$4,948	80.68	0.13
1	7320	Comp 1	level control	0.56	\$200	\$4,948	80.68	0.13
1	7281	plant #1 middle-west molecular siv	OEL	0.14	\$60	\$748	18.43	0.14
3	6472 A	Waukesha inlet compressor cooler	GTV	0.80	\$350	\$8,548	96.41	0.14
3	6711	EP Skid	T	0.05	\$50	\$622	0.00	0.14
4	5822	NE Compressor Station Comp	T	0.04	\$20	\$246	5.20	0.14

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6039	C-08 - measured at water jacket connection	T	0.05	\$400	\$2,305	100.66	0.14
1	6828	plant #1 demethanizer condenser	T	0.01	\$20	\$242	0.00	0.14
5	6040	C-04 - plug	T	0.08	\$30	\$362	11.81	0.14
3	6697	west sales turbine compressor	OEL	0.16	\$60	\$723	22.98	0.14
5	6206	C-07 -	VC	0.42	\$200	\$2,386	49.40	0.14
4	5525	Sample Line to GC HE2251	TB	0.01	\$15	\$350	0.00	0.14
5	6093 A	C-05 - cylinder head RHS	F	0.82	\$400	\$2,215	97.07	0.14
3	6182	de-C1	T	0.04	\$20	\$233	5.17	0.14
1	7309	Comp W7	T	0.08	\$30	\$347	11.17	0.15
3	6169	PM-7A	PS	0.27	\$500	\$2,714	0.00	0.15
4	5840	Propane Compressor - Stem Packing	VVP	0.34	\$400	\$2,167	0.00	0.15
4	5491	Propane Caustic Treater	T	0.03	\$30	\$341	0.00	0.15
5	6059	C-05 -	T	0.08	\$30	\$341	11.19	0.15
5	6036	C-04 -	T	0.07	\$30	\$334	10.98	0.15
1	7026	plant #2 dust filter	T	0.06	\$30	\$331	8.23	0.15
4	5581	Inlet Compressor	F	0.11	\$50	\$541	14.92	0.16
1	6823	plant #1 turbo expander	T	0.06	\$30	\$322	8.03	0.16
2	4912	Common Sales	BFV/CV	0.66	\$282	\$3,002	95.51	0.16
4	5573	De-ethanizer Reflux Accumulator - Bottoms	T	0.02	\$20	\$211	0.00	0.16
4	5574	De-ethanizer Reflux Accumulator - Bottoms	T	0.02	\$20	\$211	0.00	0.16
5	6376	Comp # 36 - north compressor station	GOV	0.47	\$200	\$4,123	68.98	0.16
5	6271	C-09 - plug	T	0.07	\$30	\$311	10.27	0.16
3	6421	North White inlet compressor	OEL	0.11	\$60	\$620	13.92	0.16
3	6669	mole siv skid	F	0.29	\$150	\$1,547	34.69	0.16
5	6258	C-08 - plug	T	0.07	\$30	\$308	10.20	0.16
5	6266	C-08 - union	T	0.07	\$30	\$306	10.14	0.16
1	7123	residue compressor (#2 ingersoll-rand)	OEL	0.14	\$60	\$610	19.85	0.16
1	7369	Comp 2	CS	3.94	\$2,000	\$9,358	503.61	0.17
1	7345	Comp 4	T	0.04	\$20	\$201	6.53	0.17
3	6655	mole siv skid	T	0.06	\$30	\$299	6.72	0.17
5	6231	C-06 - union	T	0.07	\$30	\$298	9.90	0.17
5	6518	Comp #38 - north compressor station	T	0.04	\$20	\$199	6.60	0.17
1	7005	residue compressor (#3 caterpillar)	T	0.04	\$20	\$199	6.48	0.17
5	6396	pipe between chiller and expander turbine -	GTV	0.13	\$75	\$1,473	15.65	0.17
3	6121	south compressor	VC	0.37	\$200	\$1,970	44.45	0.17
1	6952	residue compressor (C-9)	INJ	0.44	\$200	\$3,893	64.14	0.17
3	6597	High Chiller	OEL	0.06	\$60	\$586	0.00	0.17
1	7353	Comp 1	CS	3.83	\$2,000	\$9,058	490.32	0.17
3	6705	mole siv skid	F	0.27	\$150	\$1,440	32.49	0.17
3	6696	west sales turbine compressor	T	0.04	\$20	\$188	6.09	0.18
1	6972	residue compressor (C-9)	T	0.04	\$20	\$187	6.13	0.18
3	6757	C-4	NV	0.10	\$60	\$1,113	12.71	0.18
2	4954	Comp #3	Union	0.20	\$100	\$931	28.65	0.18

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6903	pipe rack	GTV	0.14	\$75	\$1,373	17.48	0.18
1	7141	residue compressor (#4 ingersoll-rand)	T	0.06	\$30	\$276	9.06	0.18
3	6789	C-3	F	0.10	\$50	\$459	14.93	0.18
5	5967	C-10 - measured at 2" water jacket connection on cylinder body	OEL	0.65	\$400	\$1,684	77.56	0.18
1	7154	residue compressor (#4 ingersoll-rand)	VC	0.41	\$200	\$1,812	59.60	0.18
1	7059	plant #6 east molecular siv	T	0.04	\$20	\$180	4.57	0.18
5	6567	expander turbine -	F	0.21	\$100	\$900	30.17	0.18
1	7265	Comp 1	T	0.04	\$20	\$178	4.51	0.19
3	6652	mole siv skid	T	0.03	\$20	\$177	4.03	0.19
1	9894	refrigeration compressor (#2 Clark)	GOV	0.40	\$200	\$3,522	58.33	0.19
1	7009	residue compressor (#2 caterpillar)	F	0.40	\$200	\$1,755	57.89	0.19
3	6749	blow down vent	OEL	0.40	\$245	\$2,134	48.73	0.19
1	7011	residue compressor (north caterpillar)	CS	3.94	\$2,000	\$7,936	571.91	0.19
4	5534	Pipe Rack - between inlet comp and NRU	TB	0.02	\$15	\$257	2.82	0.19
1	7012	residue compressor (north caterpillar)	CS	3.91	\$2,000	\$7,877	568.51	0.19
3	6674	EP Skid	T	0.03	\$50	\$428	0.00	0.19
3	6714	EP Skid	T	0.03	\$50	\$426	0.00	0.19
1	7360	Comp 2	CS	3.38	\$2,000	\$7,752	432.41	0.19
5	6103	Comp # 37 - north compressor station	INJ	0.39	\$200	\$3,382	57.16	0.19
1	6905	plant #1 turbo expander	TB	0.03	\$15	\$253	3.24	0.19
1	7118	residue compressor (#1 ingersoll-rand)	T	0.04	\$20	\$168	5.58	0.19
5	6587	piping north of 3rd/4th stage compression -	BV	0.37	\$245	\$4,115	44.06	0.19
5	6577	piping north of 1st/2nd stage compression -	GTV	0.53	\$350	\$5,866	62.97	0.20
2	4952	Comp #3	T	0.04	\$20	\$167	5.20	0.20
1	6816	plant #1 inlet filter seperator (PV-3)	T	0.03	\$20	\$167	4.26	0.20
5	6109	Comp # 36 - north compressor station	INJ	0.38	\$200	\$3,320	56.17	0.20
5	6356	C-12 - plug	T	0.06	\$30	\$247	8.37	0.20
4	5522	De-butanizer Reflux Accumulator - sight glass	T	0.01	\$30	\$247	0.00	0.20
5	6022	C-01 - plug	T	0.06	\$30	\$246	8.32	0.20
5	6340	C-11 - union	T	0.06	\$30	\$246	8.32	0.20
5	6057	C-05 -	INJ	0.38	\$200	\$3,275	55.46	0.20
2	4886	Compressor 4	GOV	0.19	\$200	\$3,258	13.58	0.20
5	6590	sulphur plant -	T	0.06	\$30	\$244	8.27	0.20
1	7095	seperator	GTV	0.14	\$75	\$1,220	20.29	0.20
1	6847	pipe rack	GTV	0.40	\$245	\$3,984	51.04	0.20
1	7263	pipe rack	T	0.06	\$30	\$242	8.05	0.20
5	6355	C-12 - union	T	0.06	\$30	\$242	8.19	0.20
4	5458	Sales Compressor - Plug	T	0.03	\$20	\$158	4.18	0.21
4	5463	Sales Compressor - Plug	T	0.03	\$20	\$158	4.18	0.21
3	6709	Waukesha inlet compressor cooler	BROKEN	2.25	\$1,500	\$51,774	271.76	0.21

Table II. Measured THC emissions rates, sorted by pay-out period, 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)
			WELD					
5	6308	C-12 -	T	0.05	\$30	\$234	7.95	0.21
1	7131	residue compressor (#3 ingersoll-rand)	VC	0.36	\$200	\$1,552	51.89	0.21
1	6900	PIG receivers	OEL	0.12	\$75	\$578	14.90	0.21
1	9893	refrigeration compressor (#2 Clark)	GOV	0.35	\$200	\$3,090	51.56	0.21
5	6235	C-06 - plug	T	0.05	\$30	\$230	7.85	0.21
5	6088	C-03 - manifold	F	0.09	\$50	\$380	12.95	0.21
1	6928	plant #1 north-west molecular siv	F	0.23	\$150	\$1,134	29.30	0.21
4	5830	NE Compressor Station Comp	F	0.11	\$75	\$566	12.55	0.21
5	6265	C-08 - plug	T	0.05	\$30	\$224	7.66	0.22
5	5922	C-20 -	VC	0.35	\$200	\$1,491	51.01	0.22
1	7149	residue compressor (#3 ingersoll-rand)	OEL	0.10	\$60	\$444	14.92	0.22
5	6325	C-10 - plug	T	0.05	\$30	\$221	7.56	0.22
1	6838	plant #5 demethanizer side exchanger	T	0.03	\$20	\$147	3.81	0.22
1	7138	residue compressor (#4 ingersoll-rand)	NV	0.10	\$60	\$879	14.71	0.22
1	6988	plant #1 demethanizer side exchanger	GTV	0.11	\$75	\$1,093	14.10	0.22
5	6101	Comp # 37 - north compressor station	F	0.04	\$25	\$181	6.21	0.22
1	7251	Comp W6	T	0.04	\$30	\$217	5.63	0.22
1	7189	residue compressor (#5 ingersoll-rand)	VC	0.33	\$200	\$1,443	48.66	0.22
5	6061	C-01 - manifold	F	0.08	\$50	\$359	12.35	0.22
3	6689	middle sales turbine compressor	T	0.03	\$20	\$144	4.80	0.22
3	6650	mole siv skid	T	0.03	\$20	\$143	3.34	0.22
1	7193	residue compressor (#5 ingersoll-rand)	F	0.25	\$150	\$1,072	36.21	0.22
5	6222	C-06 -	T	0.05	\$30	\$214	7.36	0.23
5	6509	Comp #40 - north compressor station	F	0.08	\$50	\$355	12.20	0.23
4	5901	South Boiler - Union	T	0.03	\$20	\$140	4.05	0.23
1	7201	residue compressor (#4 ingersoll-rand)	OEL	0.10	\$60	\$420	14.22	0.23
5	6335	C-11 - plug	T	0.05	\$30	\$209	7.22	0.23
1	6918	plant #1 turbo expander	OEL	0.11	\$75	\$521	13.59	0.23
1	6880	plant #1 inlet filter seperator	OEL	0.08	\$60	\$414	10.81	0.23
5	5990	C-04 -	VC	0.25	\$200	\$1,368	29.95	0.23
1	7210	residue compressor (#4 ingersoll-rand)	VC	0.32	\$200	\$1,367	46.42	0.23
1	7126	residue compressor (#2 ingersoll-rand)	VC	0.32	\$200	\$1,359	46.19	0.24
1	7041	plant #2 west molecular siv	F	0.14	\$100	\$673	17.65	0.24
4	5476	NRU - NRU inlet	T	0.04	\$30	\$201	5.82	0.24
5	6350	C-11 -	INJ	0.31	\$200	\$2,691	46.13	0.24
1	7192	residue compressor (#5 ingersoll-rand)	VC	0.31	\$200	\$1,328	45.25	0.24
5	6081	C-03 - plug	T	0.05	\$30	\$198	6.89	0.24
1	7206	residue compressor (#4 ingersoll-rand)	VC	0.31	\$200	\$1,314	44.83	0.24

Table II. Measured THC emissions rates, sorted by pay-out period, 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	5523	De-butanizer Reflux Accumulator - sight glass	T	0.01	\$30	\$196	0.00	0.24
1	7134	residue compressor (#3 ingersoll-rand)	T	0.03	\$20	\$131	4.46	0.24
1	7075	plant #6 west molecular siv	F	0.13	\$100	\$650	17.11	0.24
5	6030 B	C-01 - plug (bottom)	T	0.05	\$30	\$195	6.78	0.24
2	4919	Plant Inlet Piping	TB	0.02	\$15	\$196	3.25	0.25
5	6011	C-02 -	T	0.05	\$30	\$192	6.70	0.25
5	6039	C-04 -	OEL	0.85	\$30	\$192	6.68	0.25
5	6082	C-03 -	T	0.05	\$30	\$191	6.66	0.25
3	6771	C-2	CV	0.19	\$130	\$822	27.95	0.25
3	6181	de-C1	T	0.02	\$20	\$126	2.99	0.25
5	6084	C-03 - plug	T	0.05	\$30	\$189	6.60	0.25
5	5952	C-04 - measured at 2" threaded water jacket connection in cylinder head body	OEL	0.47	\$400	\$1,101	55.73	0.25
1	6879	plant #1 middle-east molecular siv	F	0.10	\$75	\$471	12.47	0.25
5	6582	piping north of 1st/2nd stage compression -	BV	0.14	\$120	\$1,503	16.44	0.26
4	5528	De-propanizer Reflux Accumulator - near bottoms pump	T	0.01	\$20	\$123	0.00	0.26
1	6946	residue compressor (C-9)	F	0.07	\$50	\$307	10.57	0.26
5	6243	C-09 -	VC	0.23	\$200	\$1,226	27.30	0.26
1	7008	residue compressor (#2 caterpillar)	T	0.03	\$20	\$122	4.22	0.26
5	6087	C-03 - plug	T	0.04	\$30	\$183	6.43	0.26
3	6686	east sales turbine compressor	CV	0.41	\$282	\$1,722	58.83	0.26
4	5859	Refrigerant Compressor - DP Cover	CS	0.98	\$2,000	\$5,298	0.00	0.26
3	6690	middle sales turbine compressor	T	0.03	\$20	\$121	4.14	0.26
4	5512	Sales Compressor - Plug	T	0.03	\$20	\$121	3.30	0.26
3	6117	Refrigeration Compressors (New)	CS	3.00	\$8,000	\$20,906	0.00	0.26
1	7311	Comp W8	CS	2.50	\$2,000	\$5,218	320.05	0.26
5	6346	C-11 - plug	T	0.04	\$30	\$176	6.21	0.27
5	5998	C-04 -	CS	2.21	\$2,000	\$5,041	261.36	0.27
5	6291	C-10 -	T	0.04	\$30	\$174	6.16	0.27
3	6726	EP Skid	T	0.02	\$50	\$289	0.00	0.27
3	6665	mole siv skid	T	0.03	\$30	\$172	4.14	0.27
4	5563	Refrigerant Compressor - DP Cover	CS	0.93	\$2,000	\$4,919	0.00	0.27
2	4889	Compressor 4	BV/CV	0.09	\$130	\$741	6.47	0.27
1	7177	residue compressor (#3 ingersoll-rand)	VC	0.27	\$200	\$1,141	39.71	0.27
2	4943	Planters #4 Inlet Sep	T	0.03	\$20	\$114	3.72	0.27
4	5578	Propane Compressor - DP cover	CS	0.92	\$2,000	\$4,876	0.00	0.27
1	7204	residue compressor (#4 ingersoll-rand)	F	0.27	\$200	\$1,126	39.29	0.28
1	7036	plant #5 north molecular siv	F	0.18	\$150	\$843	22.67	0.28
1	6981	residue compressor (C-9)	T	0.03	\$20	\$112	3.92	0.28
4	5569	Inlet Compressor	F	0.06	\$50	\$280	8.31	0.28
1	7339	Comp W8	T	0.04	\$30	\$168	5.85	0.28
1	7108	residue compressor (north)	T	0.04	\$30	\$166	5.81	0.28

Table II. Measured THC emissions rates, sorted by pay-out period, 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)
		caterpillar)						
1	7288	plant #1 south-west molecular siv	T	0.03	\$30	\$165	4.46	0.28
3	6122	south compressor	VC	0.22	\$200	\$1,099	26.61	0.28
1	7205	residue compressor (#4 ingersoll-rand)	VC	0.26	\$200	\$1,093	38.29	0.28
5	5984	C-04 - manifold	F	0.07	\$50	\$271	9.69	0.29
5	6065	C-05 -	T	0.04	\$30	\$163	5.81	0.29
1	7151	residue compressor (#3 ingersoll-rand)	VC	0.04	\$400	\$918	75.85	0.29
4	5559	Refrigerant Separator	T	0.01	\$20	\$108	0.00	0.29
5	6094	C-05 - measured at 2" flanged connection on cylinder head	F	0.41	\$400	\$900	48.25	0.29
5	5981	C-04 -	T	0.04	\$30	\$158	5.67	0.29
3	6601	South White inlet compressor	F	0.32	\$300	\$1,575	38.41	0.29
1	7116	residue compressor (wast caterpillar)	F	0.10	\$75	\$392	13.82	0.29
3	6606	South White inlet compressor	T	0.03	\$30	\$156	3.82	0.30
1	7073	plant #5 demethanizer side exchanger	GTV	0.08	\$75	\$805	10.63	0.30
3	6422	North White inlet compressor	VC	0.21	\$200	\$1,041	25.41	0.30
3	6784	C-3	VC	0.21	\$200	\$1,021	25.01	0.30
4	5498	NRU - Stem Packing	CV	0.33	\$282	\$1,436	43.32	0.30
3	6758	C-4	CS	2.06	\$2,000	\$4,255	248.92	0.30
5	5898	pipng west of LP sales compressors - stem packing	GTV	0.24	\$190	\$1,981	34.64	0.30
4	5826	NE Compressor Station Comp	OEL	0.07	\$75	\$378	8.87	0.30
5	6019	C-02 -	INJ	0.25	\$200	\$2,075	36.31	0.30
4	5546	Glycol Separator	OEL	0.06	\$60	\$301	7.07	0.30
5	6046	C-02 -	INJ	0.25	\$200	\$2,073	36.28	0.30
1	7340	Compressor	T	0.02	\$20	\$100	2.74	0.31
5	6032	C-01 -	T	0.04	\$30	\$150	5.42	0.31
4	5881	NE Compressor Station Pump	T	0.03	\$30	\$149	4.53	0.31
1	7175	residue compressor (#3 ingersoll-rand)	F	0.12	\$100	\$497	17.69	0.31
1	7010	residue compressor (north caterpillar)	CS	9.66	\$8,000	\$16,399	1404.37	0.31
5	6338	C-11 - plug	T	0.04	\$30	\$148	5.36	0.31
1	7069	plant #5 turbo expander	GTV	0.08	\$75	\$760	10.08	0.31
5	6213	C-07 -	T	0.04	\$30	\$144	5.25	0.32
1	7072	plant #5 dust filter	T	0.02	\$20	\$96	2.64	0.32
1	7240	residue compressor (north caterpillar)	VVP	0.47	\$400	\$785	68.19	0.32
5	6064	C-05 - plug	T	0.04	\$30	\$142	5.19	0.32
1	7329	Comp 6	T	0.03	\$30	\$141	5.06	0.32
3	6715	EP Skid	T	0.02	\$50	\$234	0.00	0.32
5	6333	C-11 - plug	T	0.03	\$30	\$140	5.12	0.32
1	7101	residue compressor (#1 caterpillar)	T	0.02	\$20	\$93	3.34	0.33
2	4965 A	Comp #2	Cylinder body	0.43	\$400	\$745	61.85	0.33
1	7034	plant #5	T	0.02	\$20	\$91	2.54	0.33
2	4957	Comp #3	common DP drain	2.17	\$2,000	\$3,715	308.65	0.33

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6967	refrigeration compressor (#2 Clark)	CS	0.76	\$2,000	\$3,705	0.00	0.33
5	5982	C-04 - plug	T	0.03	\$30	\$135	4.97	0.33
3	6729	de-C2 reflux pump	GTV	0.05	\$100	\$933	0.00	0.34
5	6006	C-02 - plug	T	0.03	\$30	\$134	4.94	0.34
3	6417	combined inlet header	GTV	0.07	\$75	\$693	8.32	0.34
3	6643	pipe rack north of new refrigeration compressors	T	0.03	\$30	\$132	4.76	0.34
5	6078	C-04 - plug	T	0.03	\$30	\$132	4.88	0.34
2	4920	Plant Inlet Piping	T	0.02	\$20	\$88	3.13	0.34
1	7079	plant #6	T	0.02	\$20	\$87	2.44	0.34
3	6415	combined inlet header	GTV	0.32	\$350	\$3,183	38.28	0.34
3	6676	EP Skid	T	0.02	\$50	\$217	0.00	0.34
4	5548	De-ethanizer Reflux Condenser - stem packing	GTV	0.12	\$120	\$1,089	16.13	0.34
3	6744	north compressor	VC	0.18	\$200	\$865	21.80	0.34
1	7157	residue compressor (#4 ingersoll-rand)	VC	0.22	\$200	\$864	31.52	0.34
5	6319	C-17 -	VVP	0.44	\$400	\$695	64.18596	0.34
3	6180	de-C1	T	0.02	\$20	\$86	2.17	0.35
3	6737	de-C2 reboiler	OEL	0.03	\$60	\$257	0.00	0.35
1	7083	residue compressor (#3 caterpillar)	F	0.21	\$200	\$852	31.17	0.35
5	6322	C-10 -	T	0.03	\$30	\$127	4.75	0.35
5	5966	C-10 -	CS	1.68	\$2,000	\$3,379	200.13	0.35
5	6391	low level chiller -	T	0.03	\$30	\$127	2.99	0.35
5	6005	C-02 -	T	0.03	\$30	\$126	4.71	0.35
5	6069	C-05 - plug	T	0.03	\$30	\$125	4.68	0.35
5	6383	high level chiller -	GTV	0.41	\$500	\$4,332	48.83	0.36
5	6508	Comp # 26 - north compressor station	VC	0.16	\$200	\$817	19.47	0.36
1	7159	residue compressor (#4 ingersoll-rand)	T	0.02	\$20	\$81	3.00	0.36
1	7184	plant #6 middle molecular siv	F	0.09	\$100	\$406	11.55	0.36
4	5868	15-10 Wellhead	T	0.02	\$20	\$81	1.98	0.36
5	5995	C-06 - discharge bottle	T	0.02	\$30	\$120	2.87	0.37
3	6413	combined inlet header	OEL	0.05	\$60	\$241	6.16	0.37
1	7080	residue compressor (#3 caterpillar)	CS	8.15	\$8,000	\$12,583	1184.72	0.37
1	7344	Comp 4	T	0.03	\$30	\$120	4.44	0.37
5	6315	C-12 - manifold	F	0.05	\$50	\$198	7.47	0.37
3	6614	West refrigeration compressor (old)	HOLE	1.50	\$1,500	\$28,155	216.81	0.37
1	6819	plant #1 inlet filter seperator (PV-3)	GTV	0.07	\$75	\$616	8.34	0.38
4	5885	22-7 Wellhead	F	0.04	\$50	\$193	4.77	0.38
4	5904	North Boiler	T	0.02	\$20	\$77	2.46	0.38
1	7078	plant #6 turbo expander	OEL	0.06	\$60	\$231	8.63	0.38
3	6641	East refrigeration compressor (new)	GOV	0.20	\$200	\$1,635	28.49	0.38
4	5545	Glycol Separatör - sight glass	T	0.02	\$20	\$77	1.89	0.38
1	7246	Comp W3	CS	1.71	\$2,000	\$2,949	219.45	0.38
2	4993	Compressor 4	CCV	0.98	\$2,000	\$2,945	71.35	0.38
1	7082	residue compressor (#3 caterpillar)	F	0.10	\$100	\$380	14.22	0.38
5	6096	C-05 - measured at 1/4" vent hole in DP cover	CS	1.55	\$2,000	\$2,934	183.13	0.38

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6850	pipe rack	T	0.03	\$30	\$113	4.25	0.38
3	6156	EP Skid	GTV	0.02	\$60	\$481	0.00	0.38
4	5562	Refrigerant Compressor	TB	0.01	\$25	\$200	0.00	0.39
1	7120	residue compressor (#2 ingersoll-rand)	VC	0.19	\$200	\$752	28.19	0.39
1	7027	plant #2 turbo expander	T	0.03	\$30	\$112	3.25	0.39
5	6215	C-07 - plug	T	0.03	\$30	\$110	4.23	0.39
5	6200	C-06 -	VC	0.15	\$200	\$726	17.69	0.40
5	6085	C-03 - plug	T	0.03	\$30	\$109	4.18	0.40
1	7185	plant #6 middle molecular siv	F	0.08	\$100	\$361	10.51	0.40
5	5920	C-20 - cylinder head 1" vent opening	OEL	0.38	\$400	\$547	55.48	0.40
5	5894	C-22 -	VC	0.19	\$200	\$716	27.63	0.40
4	5584	Inlet Compressor - Stem Packing	VVP	0.30	\$400	\$542	35.86	0.40
4	5475	NRU	TB	0.01	\$15	\$115	1.73	0.40
1	6853	pipe rack	T	0.03	\$30	\$107	4.06	0.40
4	5551	De-ethanizer Reflux Accumulator - sight glass	OEL	0.06	\$75	\$266	8.60	0.40
3	6631	refrigeration compressors (old)	T	0.03	\$30	\$106	3.99	0.40
3	6008	C-5	GOV	0.18	\$200	\$1,505	26.47	0.41
1	7004	residue compressor (#3 caterpillar)	GTV	0.07	\$75	\$562	9.98	0.41
3	6788	C-3	T	0.03	\$30	\$104	3.94	0.41
1	6915	pipe rack	GTV	0.05	\$60	\$446	7.94	0.41
3	6532	fuel gas scrubber (PV-9)	T	0.03	\$30	\$103	3.89	0.41
5	6342	C-11 - plug	T	0.03	\$30	\$102	3.98	0.42
1	7365	Comp 1	CS	1.56	\$2,000	\$2,510	199.98	0.42
2	4944	Comp #2	CHK	0.09	\$100	\$728	12.18	0.42
5	5928	C-20 -	T	0.02	\$20	\$67	2.63	0.42
4	5490	Propane Caustic Treater	TB	0.00	\$15	\$107	0.00	0.42
5	6504	Comp #38 - north compressor station	F	0.28	\$400	\$486	32.98	0.43
5	5852	C-20 -	T	0.03	\$30	\$99	3.89	0.43
5	6584	pipng north of 1st/2nd stage compression -	BV	0.17	\$245	\$1,741	20.12	0.43
3	6193	EP Skid	GTV	0.02	\$75	\$530	0.00	0.43
5	6312	C-12 - plug	T	0.03	\$30	\$98	3.86	0.43
1	7016	residue compressor (west caterpillar)	T	0.03	\$30	\$96	3.74	0.44
5	6035 B	C-01 - flange	GOV	0.17	\$200	\$1,381	25.24	0.44
5	6050	C-02 - union	T	0.03	\$30	\$95	3.77	0.44
3	6660	East refrigeration compressor (new)	GOV	0.17	\$200	\$1,366	24.32	0.44
1	6815	plant #1 inlet filter seperator (PV-3)	GTV	0.44	\$595	\$4,041	55.97	0.44
5	5997	C-06 -	GTV	0.00	\$200	\$620	15.65	0.45
5	6377	Comp #37 - north compressor station	VC	0.13	\$200	\$619	15.68	0.45
5	6314	C-12 - plug	T	0.03	\$30	\$92	3.69	0.45
5	6364	Comp # 38 - north compressor station	F	0.02	\$25	\$77	3.07	0.45
3	6195	EP Skid	GTV	0.02	\$75	\$500	0.00	0.45
3	6445	pipe rack between inlet	T	0.01	\$20	\$60	1.65	0.46

Table II. Measured THC emissions rates, sorted by pay-out period, 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						
5	6226	C-06 -	T	0.02	\$30	\$90	3.63	0.46
1	6810	PIG receivers	PIG	0.11	\$150	\$447	13.62	0.46
3	6774	C-2	VC	0.13	\$200	\$596	16.30	0.46
1	7218	residue compressor (#5 ingersoll-rand)	VC	0.16	\$200	\$594	23.52	0.46
5	6593	pipng north of 3rd/4th stage compression -	OEL	0.32	\$500	\$1,481	37.84	0.46
1	7047	plant #2 middle molecular siv.	T	0.02	\$30	\$88	2.69	0.47
5	6090	C-03 -	VC	0.13	\$200	\$580	14.90	0.47
1	6829	plant #1 dust filter	T	0.01	\$20	\$58	1.78	0.47
4	5857	South Boiler - Stem Packing	CV	0.21	\$282	\$815	27.67	0.47
3	6475	North Waukesha inlet compressor	T	0.01	\$20	\$57	1.59	0.47
5	6588	pipng north of 3rd/4th stage compression -	BV	0.12	\$190	\$1,201	14.05	0.47
5	6264	C-08 - body flange	GOV	0.16	\$200	\$1,259	23.29	0.47
5	6288	C-10 - plug	T	0.02	\$30	\$85	3.47	0.48
4	5564	Refrigerant Compressor	TB	0.01	\$25	\$156	0.00	0.48
3	6153	EP Skid	GTV	0.02	\$75	\$468	0.00	0.48
1	7356	Comp 4	CS	1.36	\$2,000	\$1,934	174.42	0.48
3	6630	refrigeration compressors (old)	T	0.02	\$30	\$85	3.36	0.48
3	6805	C-7	C	0.16	\$200	\$563	22.40	0.48
5	6254	C-08 -	T	0.02	\$30	\$84	3.45	0.48
3	6416	combined inlet header	GTV	0.12	\$190	\$1,176	14.80	0.48
5	6037	C-04 - plug	T	0.02	\$30	\$84	3.44	0.48
5	6072	C-05 - plug	T	0.02	\$30	\$83	3.40	0.49
3	6806	C-7	C	0.15	\$200	\$548	21.95	0.49
1	7128	residue compressor (#3 ingersoll-rand)	VC	0.15	\$200	\$547	22.13	0.49
3	6728	de-C2 reflux pump	GTV	0.03	\$100	\$606	0.00	0.49
1	7025	plant #2 middle molecular siv	F	0.07	\$100	\$273	8.52	0.49
5	6245	C-10 -	VC	0.12	\$200	\$546	14.28	0.49
3	6765	C-2	F	0.04	\$50	\$135	5.43	0.50
4	5884	22-7 Wellhead	T	0.01	\$20	\$54	1.44	0.50
5	6359	C-12 -	INJ	0.15	\$200	\$1,187	22.13	0.50
1	6944	pipe rack	T	0.01	\$20	\$52	1.65	0.51
1	6824	stabilizer overheads compressor (C-92)	T	0.02	\$30	\$78	3.20	0.51
4	5468	Sales Compressor - Lube Oil Tank Plug	T	0.03	\$50	\$129	4.20	0.51
3	6716	EP Skid	T	0.01	\$50	\$129	0.00	0.51
3	6497	pipe west of PV18	T	0.00	\$20	\$51	0.00	0.51
3	6178	de-C1	T	0.01	\$20	\$51	1.46	0.51
5	6568	pipng south of cryo plant -	T	0.02	\$30	\$76	3.21	0.52
5	6138	Comp # 27 - north compressor station	T	0.02	\$30	\$76	3.20	0.52
1	6881	plant #1 inlet filter seperator	T	0.02	\$30	\$76	2.42	0.52
5	6029	C-01 -	T	0.02	\$30	\$76	3.19	0.52
4	5806	Inlet Compressor	TB	0.01	\$25	\$141	1.72	0.52
1	7328	Comp 5	T	0.02	\$30	\$75	3.11	0.52
3	6731	de-C2 reflux pump	OEL	0.02	\$60	\$150	0.00	0.52

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6834	plant #5 demethanizer side exchanger	T	0.01	\$20	\$50	1.59	0.53
1	6966	refrigeration compressor (#3 Clark)	VC	0.05	\$200	\$496	0.00	0.53
5	6033	C-01 - plug	T	0.02	\$30	\$74	3.13	0.53
4	5529	De-propanizer - Stem Packing	CV	0.03	\$130	\$318	0.00	0.53
1	6953	residue compressor (C-9)	INJ	0.14	\$200	\$1,101	20.39	0.53
5	6034	C-01 - union	T	0.02	\$30	\$73	3.11	0.53
3	6677	EP Skid	T	0.01	\$50	\$121	0.00	0.54
2	4925	Plant Sales Piping	R	0.12	\$175	\$1,193	17.32	0.54
3	6553	South White inlet compressor	F	0.03	\$50	\$119	4.97	0.54
1	7256	Comp W8	T	0.02	\$30	\$71	2.31	0.54
1	7084	residue compressor (#3 caterpillar)	VC	1.63	\$100	\$237	9.97	0.54
3	6664	mole siv skid	F	0.04	\$75	\$177	5.14	0.55
1	6950	residue compressor (C-9)	INJ	0.14	\$200	\$1,067	19.85	0.55
3	6695	west sales turbine compressor	GTV	0.04	\$60	\$320	5.90	0.55
2	4912	Parlange 12 (3-phase sep)	T	0.09	\$130	\$301	12.55	0.55
5	6352	C-12 -	T	0.02	\$30	\$70	3.00	0.55
1	7105	residue compressor (north caterpillar)	CS	1.35	\$2,000	\$1,413	196.48	0.55
1	7074	pipe rack	GTV	0.04	\$75	\$394	5.66	0.55
1	7106	residue compressor (north caterpillar)	CS	1.34	\$2,000	\$1,386	194.88	0.56
5	6351	C-11 -	INJ	0.14	\$200	\$1,043	19.84	0.56
1	7135	residue compressor (#4 ingersoll-rand)	VVP	0.26	\$400	\$268	38.42	0.57
3	6704	mole siv skid	F	0.03	\$50	\$112	3.31	0.57
3	6197	EP Skid	OEL	0.01	\$60	\$134	0.00	0.57
4	5541	Chiller - Stem Packing	CV	0.07	\$130	\$288	8.17	0.57
5	6572	piping north of C3 compressors -	GTV	0.04	\$190	\$417	0.00	0.57
1	7171	residue compressor (#3 ingersoll-rand)	VVP	0.26	\$400	\$253	37.57	0.58
4	5507	Sales Compressor - Union	T	0.02	\$30	\$64	2.21	0.58
1	7312	Comp W8	CS	1.12	\$2,000	\$1,233	143.33	0.58
3	6462	combined inlet header	GTV	0.04	\$75	\$370	4.82	0.58
5	5899	piping west of LP sales compressors - stem packing	GTV	0.16	\$245	\$1,203	23.11	0.59
5	6218	C-07 -	T	0.02	\$30	\$63	2.81	0.59
5	6260	C-08 -	T	0.02	\$30	\$63	2.81	0.59
3	6150	EP Skid	F	0.02	\$100	\$208	0.00	0.60
5	6216	C-07 -	T	0.02	\$30	\$62	2.79	0.60
2	4911	Common Sales	BFV/CV	0.17	\$282	\$584	25.20	0.60
5	6070	C-05 - union	T	0.02	\$30	\$62	2.77	0.60
1	7306	Comp W5	CS	1.09	\$2,000	\$1,142	139.30	0.60
2	5019	Compressor 4	Union	0.03	\$100	\$205	2.26	0.60
1	7245	Comp W3	CS	1.08	\$2,000	\$1,122	138.44	0.60
1	7304	Comp W5	CS	1.08	\$2,000	\$1,120	138.35	0.60
2	4940	Comp #2	Cylinder end	0.24	\$400	\$222	33.61	0.61
2	4995	Electric Comp	CCV	0.62	\$2,000	\$1,111	44.88	0.61
1	7255	Comp W7	CS	1.07	\$2,000	\$1,098	137.36	0.61
1	7367	Comp 2	CS	1.07	\$2,000	\$1,092	137.11	0.61
4	5582	Inlet Compressor - Stem Packing	VVP	0.20	\$400	\$216	23.44	0.61

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6531	fuel gas scrubber (PV-9)	T	0.02	\$30	\$60	2.63	0.61
5	6299	C-10 -	INJ	0.12	\$200	\$925	17.95	0.62
5	6330	C-10 -	INJ	0.12	\$200	\$923	17.92	0.62
5	6047	C-02 -	INJ	0.12	\$200	\$922	17.91	0.62
1	7254	Comp W7	CS	1.06	\$2,000	\$1,049	135.19	0.62
4	5911	Propane Feed Pump	TB	0.01	\$25	\$115	0.00	0.62
4	5906	North Boiler	TB	0.01	\$15	\$69	1.12	0.62
4	5519	Gas-Liquid Heat Exchanger - hole in insulation	OEL	0.03	\$60	\$114	3.41	0.63
1	6964	plant #1 middle-west molecular siv	GTV	0.03	\$60	\$269	3.97	0.63
1	7081	residue compressor (#3 caterpillar)	VC	0.12	\$200	\$379	17.16	0.63
5	6038	C-04 - union	T	0.40	\$30	\$57	2.62	0.63
1	6930	plant #1 north-west molecular siv	GTV	0.03	\$60	\$267	3.95	0.64
5	5862	low pressure sales line - outside of plant fence	T	0.02	\$30	\$57	2.61	0.64
4	5544	Glycol Separator - sight glass	T	0.01	\$20	\$38	1.13	0.64
5	6141	Comp #27 - north compressor station	PV	0.07	\$120	\$532	10.41	0.64
3	6700	mole siv skid	T	0.01	\$20	\$37	1.17	0.64
1	6922	plant #1 south-east molecular siv	T	0.01	\$20	\$37	1.30	0.64
3	6125	south compressor	CS	1.92	\$4,000	\$1,852	232.91	0.64
4	5514	TEG Contactor - Stem Packing	GTV	0.04	\$75	\$327	4.17	0.65
3	6562	West refrigeration compressor (old)	F	0.03	\$50	\$92	4.16	0.65
1	7019	residue compressor (#1 ingersoll-rand)	VC	0.12	\$200	\$366	16.77	0.65
5	6013	C-02 -	INJ	0.12	\$200	\$869	17.05	0.65
5	6214	C-07 -	GOV	0.12	\$200	\$865	17.00	0.65
1	6855	plant #1 north-east molecular siv	T	0.02	\$30	\$54	1.92	0.65
3	6486	South Waukesha inlet compressor	T	0.01	\$20	\$36	1.15	0.65
2	5016	Compressor 4	T	0.01	\$20	\$36	0.42	0.65
5	6575	pipng north of 1st/2nd stage compression -	BV	0.05	\$120	\$513	6.41	0.66
4	5583	Inlet Compressor - Stem Packing	VVP	0.18	\$400	\$174	21.84	0.66
5	6068	C-05 - plug	T	0.02	\$30	\$54	2.52	0.66
5	6028	C-01 - plug	T	0.02	\$30	\$53	2.51	0.66
3	6410	combined inlet header	T	0.01	\$20	\$35	1.13	0.66
5	5924	C-20 -	T	0.01	\$20	\$35	1.66	0.67
3	6429	North White inlet compressor	T	0.01	\$20	\$35	1.62	0.67
5	6517	Comp #38 - north compressor station	INJ	0.11	\$200	\$839	16.58	0.67
1	7117	residue compressor (wast caterpillar)	CS	1.12	\$2,000	\$828	162.77	0.67
5	6079	C-04 - union	T	0.02	\$30	\$52	2.48	0.67
4	5902	North Boiler - Stem Packing	GTV	0.10	\$190	\$784	12.99	0.68
2	4910	Acadian Sales	NV	0.03	\$60	\$245	4.69	0.68
1	6937	plant #1 south-west molecular siv	F	0.04	\$75	\$127	4.60	0.68
5	6102	Comp # 37 - north compressor station	F	0.01	\$25	\$42	2.02	0.68
1	7129	residue compressor (#3 ingersoll-rand)	VC	0.11	\$200	\$336	15.86	0.68
1	7248	Comp W3	CS	0.95	\$2,000	\$738	121.38	0.69

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6622	West refrigeration compressor (old)	T	0.02	\$30	\$50	2.34	0.69
5	6586	pipng north of 3rd/4th stage compression -	BV	0.05	\$120	\$482	6.09	0.69
3	6160	EP Skid	T	0.01	\$30	\$49	0.00	0.69
2	4945 B	Comp #3	Cylinder body	0.21	\$400	\$144	29.36	0.69
1	6898	stabilizer overheads compressor (C-92)	T	0.02	\$30	\$49	2.34	0.70
3	6769	C-2	T	0.01	\$20	\$33	1.54	0.70
4	5552	De-ethanizer Reflux Accumulator - bottoms	T	0.01	\$20	\$33	1.33	0.70
2	4972	Comp #4	Common DP drain	1.01	\$2,000	\$664	143.85	0.71
3	6430	South White inlet compressor	VC	0.09	\$200	\$317	10.59	0.71
4	5591	NE Compressor Station Separator	TB	0.01	\$15	\$58	0.76	0.71
2	4964	Comp #2	Crank Case Vent	1.00	\$2,000	\$645	142.86	0.71
1	7249	Comp W5	CS	0.91	\$2,000	\$633	116.75	0.72
3	6648	mole siv skid	GTV	0.03	\$60	\$230	3.13	0.72
3	6176	de-C2 feed line	GTV	0.01	\$60	\$228	0.00	0.72
3	6635	East refrigeration compressor (new)	T	0.02	\$30	\$46	2.24	0.72
1	6980	residue compressor (C-9)	T	0.01	\$20	\$31	1.50	0.73
5	6056	C-05 -	T	0.02	\$30	\$46	2.29	0.73
3	6565	South White inlet compressor	T	0.02	\$30	\$45	2.22	0.73
3	6461	combined inlet header	GTV	0.03	\$75	\$281	3.86	0.73
3	6683	turbo expander-compressor	GTV	0.03	\$60	\$224	3.07	0.73
1	7064	plant #6 turbo expander	OEL	0.03	\$60	\$90	3.42	0.73
4	5566	Inlet Compressor	TB	0.01	\$25	\$93	1.58	0.73
2	4963	Comp #4	VC/T	0.07	\$135	\$202	9.36	0.73
5	6392	low level chiller -	GTV	0.06	\$350	\$1,295	0.00	0.74
1	6841	PIG receivers	TB	0.01	\$15	\$55	0.85	0.74
5	6225	C-06 -	T	0.02	\$30	\$44	2.24	0.74
3	6649	mole siv skid	GTV	0.03	\$60	\$220	3.03	0.74
1	6970	refrigeration compressor (#2 Clark)	T	0.02	\$30	\$44	2.19	0.74
1	7076	plant #6 west molecular siv	F	0.04	\$100	\$146	5.62	0.74
5	6366	Comp # 38 - north compressor station	PV	0.03	\$60	\$219	4.46	0.74
5	5978	C-04 -	INJ	0.10	\$200	\$728	14.81	0.75
1	6991	stabilizer overheads compressor (C-92)	T	0.01	\$30	\$43	1.67	0.75
5	6326	C-10 - union	T	0.01	\$30	\$43	2.20	0.75
3	6407	combined inlet header	T	0.01	\$30	\$43	1.49	0.76
5	6054	C-05 -	T	0.01	\$30	\$43	2.19	0.76
3	6717	EP Skid	T	0.01	\$50	\$71	0.00	0.76
1	6919	pipe rack	TB	0.01	\$15	\$53	0.82	0.76
1	7103	residue compressor (#1 caterpillar)	T	0.01	\$30	\$42	2.13	0.77
5	5854	C-01 -	T	0.01	\$30	\$42	2.17	0.77
4	5882	NE Compressor Station Pump	R	0.08	\$175	\$785	10.54	0.77
1	7013	residue compressor (west caterpillar)	CS	0.97	\$2,000	\$454	141.25	0.77

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6414	combined inlet header	T	0.01	\$30	\$41	1.46	0.77
4	5553	Refrigerant Separator - GTV Seat	OEL	0.01	\$75	\$103	0.00	0.77
1	7343	Comp 4	CS	0.84	\$2,000	\$433	107.88	0.78
1	7342	Comp 4	T	0.01	\$20	\$27	1.40	0.78
4	5914	De-ethanizer - Stem Packing	CV	0.06	\$130	\$176	7.73	0.78
3	6119	south compressor	VVP	0.16	\$400	\$84	19.28	0.78
5	6357	C-12 - manifold	F	0.02	\$50	\$68	3.55	0.78
2	4910	Parlange 12 (3-phase sep)	T	0.03	\$60	\$206	4.10	0.78
5	6212	C-07 - plug	T	0.01	\$30	\$40	2.12	0.78
4	5903	North Boiler - Stem Packing	GTV	0.08	\$190	\$648	11.18	0.79
3	6743	north compressor	CS	1.57	\$4,000	\$763	189.55	0.79
3	6698	middle sales turbine compressor	T	0.01	\$30	\$39	2.02	0.80
5	6300 A	C-10 - measured at RHS of cylinder end	F	0.15	\$400	\$73	17.59	0.80
3	6134	south compressor	CS	0.78	\$2,000	\$363	94.03	0.80
2	4994 B	Compressor 4	VC/T	0.01	\$50	\$64	0.85	0.80
4	5470	NRU - Valve Under PI103	BV	0.03	\$75	\$247	4.30	0.81
4	5472	Inlet Header	T	0.01	\$30	\$38	1.33	0.81
4	5561	O - Stem Packing	GTV	0.02	\$100	\$327	0.00	0.81
5	6320	C-10 - plug	T	0.01	\$30	\$38	2.05	0.81
3	6767	C-2	T	0.01	\$30	\$38	1.99	0.81
1	7346	Comp 2	T	0.01	\$30	\$38	2.00	0.81
4	5505	Sales Compressor - Lube Oil Tank Cap	T	0.02	\$50	\$62	2.63	0.82
3	6608	South White inlet compressor	T	0.01	\$30	\$37	1.38	0.82
5	6055	C-05 - plug	T	0.01	\$30	\$37	2.03	0.82
4	5520	Butane Product Cooler	TB	0.00	\$15	\$48	0.00	0.82
2	4970	Comp #4	VC/T	0.06	\$135	\$167	8.39	0.82
5	6263	C-08 - plug	T	0.01	\$30	\$36	2.00	0.83
4	5589	NE Compressor Station Comp - Relief Valve	T	0.02	\$50	\$61	2.17	0.83
1	7350	Compressor	T	0.01	\$30	\$36	1.51	0.83
5	6204	C-07 -	VC	0.07	\$200	\$239	8.39	0.83
3	6616	Refrigeration Compressors (Old)	CS	0.94	\$8,000	\$1,043	0.00	0.83
5	5989	C-06 - union	T	0.01	\$30	\$36	1.99	0.84
1	7046	plant #2 middle molecular siv	T	0.01	\$30	\$36	1.50	0.84
5	6365	Comp # 38 - north compressor station	INJ	0.09	\$200	\$621	13.10	0.84
5	6281	C-09 - plug	T	0.01	\$30	\$35	1.95	0.85
3	6594	pipng from de-C2 reflux accumulator bottoms	GTV	0.02	\$100	\$308	0.00	0.85
1	6849	pipe rack	T	0.01	\$30	\$35	1.91	0.85
5	6108	Comp # 36 - north compressor station	T	0.01	\$30	\$35	1.95	0.85
5	6062	C-01 - manifold	F	0.02	\$50	\$58	3.24	0.85
5	6287	C-10 -	T	0.01	\$30	\$35	1.95	0.85
3	6750	buried line	GTV	0.09	\$245	\$750	10.78	0.85
5	6063	C-01 - manifold	F	0.02	\$50	\$57	3.24	0.85
1	7323	Comp 4	CS	0.77	\$2,000	\$209	97.93	0.85
1	6994	PSV 671101	GTV	0.02	\$60	\$182	2.92	0.86

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6370	Comp # 38 - north compressor station	PV	0.03	\$60	\$182	3.86	0.86
2	4969	Comp #2	Common Dp Vent	0.83	\$2,000	\$192	118.39	0.86
4	5518	De-ethanizer - Stem Packing	GTV	0.05	\$120	\$362	6.44	0.86
3	6428	North White inlet compressor	T	0.01	\$20	\$22	1.24	0.87
5	6341	C-11 - plug	T	0.01	\$30	\$33	1.91	0.87
4	5479	Pipe Rack - between sales comp and NRU	T	0.01	\$20	\$22	0.99	0.87
5	6372	Comp # 37 - north compressor station	F	0.01	\$25	\$28	1.59	0.87
5	6384	Skid #2 - west mol siv	CV	0.10	\$282	\$312	11.34	0.87
1	7268	pipe rack	T	0.02	\$50	\$55	3.11	0.87
4	5537	TEG Contactor	T	0.01	\$20	\$22	0.81	0.88
5	6294	C-10 - manifold	F	0.02	\$50	\$53	3.09	0.89
5	6516	Comp # 39 - north compressor station	T	0.01	\$20	\$21	1.23	0.90
1	7354	Comp 1	F	0.07	\$200	\$208	9.31	0.90
2	5012	Cat Compressor	DP Vent	0.41	\$2,000	\$83	30.05	0.91
3	6492	South Waukesha inlet compressor	CS	2.73	\$8,000	\$301	330.36	0.91
5	6211	C-07 -	VC	0.07	\$200	\$203	7.69	0.91
1	7172	residue compressor (#3 ingersoll-rand)	VC	0.08	\$200	\$201	11.87	0.92
1	7110	residue compressor (north caterpillar)	VC	0.08	\$200	\$200	11.86	0.92
3	6400	combined inlet header	GTV	0.06	\$190	\$528	7.78	0.92
1	6917	pipe rack	T	0.01	\$30	\$30	1.77	0.92
5	5996	C-06 -	VC	0.06	\$200	\$199	7.61	0.92
5	6066	C-05 -	GOV	0.08	\$200	\$552	11.99	0.92
3	6186	de-C1	T	0.01	\$20	\$20	0.81	0.92
3	6157	EP Skid	GTV	0.01	\$60	\$164	0.00	0.93
3	6184	de-C1	T	0.01	\$20	\$19	0.80	0.93
2	4992	Compressor 4	T	0.00	\$20	\$19	0.29	0.94
1	7359	Comp 4	CS	0.69	\$2,000	\$4	88.86	0.94
1	7006	residue compressor (#3 caterpillar)	GTV	0.03	\$75	\$201	4.32	0.94
1	7270	Comp W6	T	0.01	\$30	\$28	1.32	0.95
5	6098	C-05 -	VC	0.06	\$200	\$182	7.30	0.96
1	7357	Comp 4	CS	0.68	\$2,000	-\$47	86.58	0.97
5	6367	Comp # 38 - north compressor station	PV	0.02	\$60	\$154	3.41	0.97
2	4936	Glycol Heater	T	0.01	\$20	\$18	1.01	0.97
4	5493	NRU - Inlet Sep	GTV	0.05	\$130	\$114	6.17	0.97
5	6267	C-08 - plug	T	0.01	\$30	\$26	1.70	0.98
3	6411	combined inlet header	GTV	0.02	\$75	\$189	2.87	0.98
3	6159	EP Skid	GTV	0.01	\$60	\$151	0.00	0.98
5	6397	pipe between chiller and expander turbine -	GTV	0.02	\$75	\$188	2.66	0.99
5	6353	C-12 - plug	T	0.01	\$30	\$25	1.67	1.00
3	6617	refrigeration compressors (old)	T	0.01	\$20	\$17	1.08	1.00
5	6052	C-05 -	T	0.01	\$30	\$25	1.66	1.00
5	6227	C-06 - plug	T	0.01	\$30	\$25	1.66	1.00
1	7264	Comp 1	CS	0.65	\$2,000	-\$115	83.57	1.00

Table II. Measured THC emissions rates, sorted by pay-out period, 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	7032	plant #5 north molecular siv	T	0.01	\$20	\$17	0.83	1.00
5	6279	C-09 - plug	T	0.01	\$30	\$25	1.65	1.01
2	4942	Comp #4	F	0.03	\$75	\$61	3.79	1.01
4	5509	Sales Compressor - DPV	OEL	0.03	\$75	\$61	3.20	1.01
4	5913	Butane Feed Pump	T	0.00	\$30	\$25	0.00	1.01
1	7257	pipe rack	T	0.01	\$20	\$16	0.83	1.01
1	6974	residue compressor (C-9)	CS	0.74	\$2,000	-\$138	107.18	1.01
1	6913	plant #1 demethanixer side exchanger	OEL	0.02	\$60	\$48	2.47	1.02
3	6130	north compressor	VC	0.06	\$200	\$160	7.37	1.02
1	7127	residue compressor (#3 ingersoll-rand)	CS	0.73	\$2,000	-\$151	106.42	1.02
1	7275	Comp W2	T	0.01	\$30	\$23	1.58	1.03
3	6625	West refrigeration compressor (old)	R	0.06	\$175	\$535	9.07	1.04
5	6311	C-12 -	T	0.01	\$30	\$23	1.60	1.04
4	5803	Inlet Compressor	VC	0.06	\$200	\$152	6.90	1.04
5	6332	C-11 -	T	0.01	\$30	\$22	1.58	1.05
5	6354	C-12 - manifold	F	0.02	\$50	\$37	2.63	1.05
1	7096	seperator	GTV	0.03	\$75	\$172	3.86	1.05
5	6278	C-09 -	T	0.01	\$30	\$22	1.57	1.05
1	6912	plant #1 demethanixer side exchanger	OEL	0.02	\$60	\$44	2.36	1.06
3	6680	turbo expander-compressor	T	0.01	\$20	\$14	0.70	1.06
4	5864	22.7 Well Site - Plug	T	0.01	\$20	\$14	0.67	1.06
3	6681	turbo expander-compressor	T	0.01	\$20	\$14	1.00	1.07
4	5576	De-butanizer - Stem Packing	GTV	0.01	\$75	\$167	0.00	1.07
4	5482	Sales Compressor	T	0.01	\$30	\$21	1.20	1.07
5	6313	C-12 -	INJ	0.07	\$200	\$442	10.24	1.08
5	6298	C-10 -	INJ	0.07	\$200	\$441	10.22	1.08
1	7187	residue compressor (#5 ingersoll-rand)	T	0.01	\$20	\$14	1.00	1.08
5	6387	demethanizer bottoms pump -	GTV	0.02	\$190	\$415	0.00	1.09
4	5876	14-6 Wellhead	T	0.01	\$20	\$14	0.66	1.09
1	7250	Comp W5	CS	0.60	\$2,000	-\$275	76.48	1.09
3	6782	C-3	F	0.01	\$50	\$33	1.71	1.10
4	5556	Refrigerant Separator	F	0.01	\$75	\$50	0.00	1.10
1	7015	residue compressor (west caterpillar)	T	0.01	\$30	\$20	1.48	1.10
4	5823	NE Compressor Station Separator - vent	R	0.05	\$175	\$494	5.70	1.10
2	4909	Florida Sales Line	GTBV/ CV	0.04	\$130	\$85	6.25	1.11
3	6170	west butane transfer pump	PS	0.04	\$500	-\$77	0.00	1.11
3	6611	West Refrigeration Compressor (Old)	OEL	0.01	\$75	\$48	0.00	1.12
1	7089	residue compressor (#3 caterpillar)	VC	0.07	\$200	\$127	9.70	1.12
5	6223	C-06 - plug	T	0.01	\$30	\$19	1.48	1.12
2	4932	PW Tank T-3500-2	Thief Hatch	0.65	\$2,000	-\$325	94.66	1.13
1	6990	plant #2 west molecular siv	T	0.01	\$20	\$12	0.74	1.13
1	7267	pipe rack	T	0.01	\$20	\$12	0.96	1.14
1	6895	refrigeration compressor (#2 Clark)	T	0.01	\$30	\$18	1.41	1.15
3	6759	C-4	VVP	0.11	\$400	-\$74	12.99	1.16

Table II. Measured THC emissions rates, noted by pay-out period, 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	4999	Compressor 4	CS	0.32	\$2,000	-\$373	23.47	1.16
1	6904	pipe rack	OM	0.04	\$150	-\$28	5.40	1.16
5	6106	Comp # 37 - north compressor station	INJ	0.06	\$200	\$396	9.50	1.16
5	5975	C-04 - manifold	F	0.02	\$50	\$29	2.37	1.17
5	6343	C-11 - manifold	F	0.02	\$50	\$28	2.36	1.17
1	6957	residue compressor (C-9)	T	0.01	\$30	\$17	1.39	1.18
3	6560	West refrigeration compressor (old)	T	0.01	\$30	\$17	1.37	1.18
5	6390	demethanizer bottoms pump -	GTV	0.01	\$120	\$233	0.00	1.18
3	6627	refrigeration compressors (old)	T	0.01	\$30	\$17	1.37	1.18
3	6401	combined inlet header	GTV	0.05	\$190	\$364	6.00	1.19
1	6906	plant #1 turbo expander	R	0.05	\$175	\$444	6.14	1.19
5	6257	C-08 -	T	0.01	\$30	\$16	1.38	1.20
5	6331	C-11 -	T	0.01	\$30	\$16	1.38	1.20
1	7049	plant #2 turbo expander	T	0.01	\$20	\$10	0.69	1.21
1	6987	plant #1 demethanizer side exchanger	T	0.01	\$20	\$10	0.69	1.21
2	4909	Parlange #9	CV/GBV	0.05	\$177	\$91	7.78	1.21
4	5497	NRU - Dehy out	F	0.03	\$100	\$50	3.79	1.22
5	6569	piping north of C3 compressors -	OEL	0.01	\$60	\$29	0.00	1.23
5	6525	Comp # 38 - north compressor station	F	0.01	\$25	\$12	1.12	1.24
5	6255	C-08 - plug	T	0.01	\$30	\$14	1.34	1.24
1	7029	plant #2 turbo expander	T	0.01	\$30	\$14	1.01	1.24
3	6786	C-3	OEL	0.02	\$75	\$36	3.25	1.24
5	6262	C-08 -	T	0.01	\$30	\$14	1.32	1.25
1	7285	plant #1 north-east molecular siv	GTV	0.02	\$60	\$106	2.00	1.25
3	6684	turbo expander-compressor	T	0.01	\$20	\$9	0.85	1.27
3	6775	C-2	CS	0.49	\$2,000	-\$517	59.04	1.27
1	7337	Comp W8	T	0.01	\$30	\$13	1.28	1.27
2	4974	Comp #4	T	0.01	\$20	\$8	0.79	1.29
5	6515	Comp # 39 - north compressor station	T	0.01	\$20	\$8	0.85	1.29
5	6316	piping north of 1st/2nd stage compression -	F	0.02	\$100	\$41	2.70	1.30
5	6261	C-08 - plug	T	0.01	\$30	\$12	1.28	1.30
2	4926	Plant Sales Piping	T	0.01	\$20	\$8	0.82	1.31
2	4915	FG Scrubber	V	0.02	\$60	\$98	2.25	1.32
5	6071	C-05 -	T	0.01	\$30	\$12	1.26	1.32
5	6273	C-09 - plug	T	0.01	\$30	\$12	1.26	1.32
4	5452	Inlet Header	PIG	0.06	\$245	\$94	6.64	1.33
1	7114	residue compressor (west caterpillar)	CS	0.56	\$2,000	-\$579	81.78	1.33
3	6791	C-5	T	0.01	\$30	\$11	1.20	1.35
4	5508	Sales Compressor - DPV	OEL	0.02	\$75	\$27	2.38	1.35
5	6035 A	C-01 - top	GOV	0.06	\$200	\$311	8.16	1.36
1	6927	plant #1 north-west molecular siv	TB	0.00	\$15	\$23	0.46	1.37
5	6385	demethanizer bottoms pump -	GTV	0.01	\$120	\$183	0.00	1.37
3	6778	C-2	CS	0.45	\$2,000	-\$630	54.52	1.38
5	6369	Comp # 38 - north compressor	F	0.01	\$25	\$8	1.00	1.39

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6773	C-2	CS	0.44	\$2,000	-\$647	53.84	1.39
2	5013	Cat Compressor	DP Vent	0.27	\$2,000	-\$655	19.40	1.40
1	6945	residue compressor (C-9)	OEL	0.02	\$60	\$18	2.32	1.40
3	6762	C-2	CS	1.75	\$8,000	-\$2,667	212.24	1.42
3	6191	EB Skid	GTV	0.01	\$190	\$274	0.00	1.42
3	6418	combined inlet header	GTV	0.02	\$75	\$108	1.98	1.42
3	6466	combined inlet header	T	0.00	\$20	\$6	0.53	1.42
4	5829	NE Compressor Station Comp - bottom of compressor	T	0.00	\$20	\$6	0.50	1.44
1	7290	plant #1 south-west molecular siv	T	0.00	\$20	\$6	0.58	1.44
5	6388	demethanizer bottoms pump -	GTV	0.01	\$75	\$106	0.00	1.44
1	6840	PIG receivers	T	0.00	\$20	\$5	0.58	1.44
5	5954	C-10 - measured at 2" flanged connection on body	F	0.01	\$50	\$13	1.21	1.45
4	5815	Inlet Compressor	F	0.01	\$50	\$13	1.58	1.46
2	5011	Cat Compressor	DP Vent	0.26	\$2,000	-\$714	18.55	1.47
3	6538	pipe rack between inlet compressors	T	0.01	\$20	\$5	0.73	1.47
5	6110	Comp # 36 - north compressor station	INJ	0.05	\$200	\$268	7.47	1.48
3	6730	de-C2 reflux pump	OEL	0.01	\$60	\$14	0.00	1.49
5	6135	Comp # 27 - north compressor station	PV	0.03	\$120	\$158	4.43	1.50
1	6925	plant # 1 middle-east molecular siv	T	0.01	\$30	\$7	0.83	1.50
4	5820	NE Compressor Station Comp - Stem Packing	GTV	0.01	\$50	\$64	1.18	1.52
3	6162	EP Skid	GTV	0.01	\$60	\$77	0.00	1.52
3	6720	east sales turbine compressor	GTV	0.01	\$60	\$77	2.13	1.52
5	6251	C-08 - measured at 1/2" DP vent connection	CS	0.39	\$2,000	-\$762	46.05	1.52
3	6425	North White inlet compressor	VC	0.04	\$200	\$39	4.90	1.53
1	7122	residue compressor (#2 ingersoll-rand)	CS	0.04	\$177	\$34	6.24	1.54
1	7271	Comp W6	T	0.01	\$30	\$5	0.80	1.56
4	5560	Refrigerant Subcooler	T	0.00	\$20	\$3	0.00	1.58
3	6644	pipe rack north of new refrigeration compressors	GTV	0.01	\$60	\$71	2.03	1.59
3	6163	EB Skid	GTV	0.01	\$120	\$141	0.00	1.59
3	6115	De-C2 Transfer Pump	GTV	0.01	\$75	\$88	0.00	1.59
3	6639	West refrigeration compressor (new)	T	0.01	\$30	\$4	1.01	1.60
1	7042	plant #2 west molecular siv	F	0.02	\$100	\$15	2.62	1.60
5	6514	Comp #40 - north compressor station	T	0.00	\$20	\$3	0.69	1.60
4	5486	Glycol Separator	T	0.00	\$20	\$3	0.44	1.62
3	6645	refrigerant discharge coalescer	T	0.00	\$20	\$2	0.00	1.63
3	6671	mole siv skid	T	0.00	\$20	\$2	0.46	1.64
1	6961	plant #1 middle-west molecular siv	GTV	0.01	\$60	\$66	1.53	1.64
1	6954	residue compressor (C-9)	INJ	0.05	\$200	\$220	6.58	1.65
3	6477	North Waukesha inlet compressor	VC	0.04	\$200	\$22	4.55	1.65
2	4991	Compressor 4	GTV	0.01	\$60	\$66	0.49	1.65

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6768	C-2	GTV	0.01	\$60	\$65	1.95	1.66
4	5495	NRU - Inlet Sep.	T	0.01	\$30	\$3	0.83	1.66
3	6174	de-C2 feed line	GTV	0.01	\$100	\$108	0.00	1.67
3	6659	mole siv skid	T	0.01	\$30	\$3	0.67	1.67
1	6833	plant #5 demethanizer side exchanger	T	0.00	\$20	\$2	0.50	1.67
3	6657	mole siv skid	F	0.01	\$75	\$7	1.68	1.67
1	7028	plant #2 turbo expander	T	0.01	\$30	\$3	0.75	1.68
3	6670	mole siv skid	T	0.00	\$20	\$2	0.45	1.68
2	4975	Comp #4	T	0.00	\$20	\$2	0.61	1.68
5	6375	Comp # 36 - north compressor station	F	0.01	\$50	\$4	1.64	1.68
5	5919	C-20 -	VC	0.04	\$200	\$18	6.57	1.68
4	5889	11-16 Pig Unit	T	0.00	\$20	\$2	0.43	1.69
5	6505	Comp #38 - north compressor station	VC	0.03	\$200	\$17	4.15	1.69
5	5917	low pressure sales line -	GTV	0.02	\$75	\$78	2.44	1.70
5	6001	C-22 -	T	0.00	\$20	\$2	0.65	1.70
3	6647	mole siv skid	GTV	0.01	\$60	\$62	1.32	1.71
3	6558	West refrigeration compressor (old)	VC	0.01	\$200	\$13	0.00	1.72
3	6198	EP Skid	GTV	0.01	\$75	\$76	0.00	1.73
2	4971 B	Comp #1	Cylinder Body	0.08	\$400	-\$182	11.76	1.73
1	6852	pipe rack	T	0.01	\$30	\$2	0.94	1.73
1	6965	plant #1 middle-west molecular siv	T	0.01	\$30	\$2	0.72	1.74
3	6164	pipe rack north of old refrigeration compressors	GTV	0.00	\$75	\$73	0.00	1.75
3	6152	EP Skid	GTV	0.01	\$75	\$73	0.00	1.75
4	5550	De-ethanizer Reflux Condenser - stem packing	GTV	0.02	\$120	\$117	3.17	1.75
4	5481	Sales Compressor	OEL	0.01	\$60	\$2	1.47	1.76
3	6561	West refrigeration compressor (old)	BV	0.02	\$100	\$96	3.05	1.77
5	6221	C-06 - plug	T	0.01	\$30	\$1	0.94	1.77
4	5837	De-ethanizer Reflux Accumulator	T	0.01	\$30	\$1	0.78	1.77
5	6220	C-06 -	T	0.01	\$30	\$1	0.93	1.79
5	6327	C-10 -	T	0.01	\$30	\$1	0.93	1.79
5	6276	C-09 -	T	0.01	\$30	\$1	0.92	1.80
4	5883	NE Compressor Station Comp	F	0.01	\$75	\$1	1.49	1.80
5	5855	C-01 - outside of plant fence	T	0.01	\$30	\$0	0.92	1.81
5	6297	C-10 - plug	T	0.01	\$30	\$0	0.92	1.81
1	6837	plant #5 demethanizer side exchanger	GTV	0.01	\$75	\$68	1.73	1.81
1	6851	pipe rack	T	0.01	\$30	\$0	0.90	1.82
1	7067	plant #6 turbo expander	CV	0.03	\$177	\$1	4.05	1.83
3	6800	C-1	CS	1.36	\$8,000	-\$3,876	164.11	1.83
1	7333	Comp W8	CS	0.36	\$2,000	-\$970	45.67	1.83
5	6589	sulphur plant -	T	0.01	\$30	\$0	0.90	1.84
3	6188	glycol flash tank	OEL	0.02	\$100	-\$1	2.92	1.84
3	6658	mole siv skid	T	0.01	\$30	\$0	0.61	1.85
1	7151	residue compressor (#4 ingersoll-	VVP	0.52	\$200	-\$2	5.88	1.85

Table II. Measured THC emissions rates, sorted by pay-out period, 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)
		rand)						
5	6275	C-09 - union	T	0.01	\$30	\$0	0.90	1.85
4	5891	13-12#1 Separator	T	0.00	\$20	\$0	0.39	1.85
3	6610	South White inlet compressor	T	0.01	\$30	\$0	0.87	1.85
1	6963	plant #1 middle-west molecular siv	GTV	0.03	\$190	\$164	4.27	1.86
3	6444	pipe rack between inlet compressors	OM	0.02	\$150	-\$74	3.01	1.87
4	5836	NE Compressor Station Separator -body	R	0.03	\$175	\$216	3.34	1.88
5	6274	C-09 - plug	T	0.01	\$30	-\$1	0.88	1.88
5	6337	C-11 -	T	0.01	\$30	-\$1	0.87	1.90
1	6971	pipe rack	T	0.00	\$20	-\$1	0.57	1.91
5	6249	C-08 - measured at cylinder bleed	NV	0.01	\$60	-\$48	1.10	1.92
3	6126	south compressor	F	0.05	\$300	-\$15	5.84	1.93
4	5547	Glycol Separator - stem packing	GTV	0.01	\$75	\$59	1.38	1.94
1	7219	residue compressor (#5 ingersoll-rand)	VC	0.04	\$200	-\$12	5.57	1.95
1	6992	plant #1 gas-gas heat exchanger	T	0.00	\$20	-\$1	0.56	1.95
2	4994 A	Compressor 4	VC/F	0.01	\$75	-\$5	0.52	1.95
5	6203	C-07 -	VC	0.03	\$200	-\$15	3.53	1.98
3	6620	West refrigeration compressor (old)	CV	0.02	\$130	-\$11	3.50	2.00
1	7258	Comp W6	T	0.01	\$30	-\$3	0.81	2.00
2	4917	Pig Trap (TETCO Sales)	V	0.01	\$60	\$44	1.59	2.01
3	6473	South Waukesha inlet compressor	T	0.01	\$30	-\$3	0.80	2.01
4	5870	15-10 Wellhead	TB	0.00	\$15	\$11	0.27	2.01
4	5886	11-16 Pig Unit	T	0.00	\$30	-\$3	0.53	2.02
1	7330	Comp 6	T	0.01	\$30	-\$3	0.80	2.02
4	5813	Inlet Compressor	F	0.01	\$50	-\$5	1.14	2.03
1	6960	plant #1 middle-west molecular siv	OEL	0.01	\$60	-\$6	1.23	2.04
4	5810	NE Compressor Station Comp - Lube Oil Tank Blanket	T	0.01	\$50	-\$5	0.88	2.05
1	6916	pipe rack	T	0.00	\$20	-\$2	0.53	2.06
3	6795	C-5	GOV	0.04	\$200	\$136	5.23	2.06
1	7104	residue compressor (#1 caterpillar)	T	0.01	\$30	-\$3	0.79	2.07
1	7338	Comp W8	T	0.01	\$30	-\$3	0.79	2.07
4	5835	NE Compressor Station Separator -body	R	0.03	\$175	\$180	3.03	2.08
4	5467	Sales Compressor - Separator	T	0.00	\$20	-\$2	0.41	2.09
5	5976	C-04 - plug	T	0.01	\$30	-\$4	0.78	2.12
5	6060	C-05 -	T	0.01	\$30	-\$4	0.78	2.12
2	4885	Compressor 4	Union	0.01	\$100	-\$14	0.64	2.12
1	7100	residue compressor (#2 caterpillar)	T	0.00	\$20	-\$3	0.51	2.13
3	6760	C-2	VC	0.03	\$200	-\$30	3.47	2.16
5	6379	Comp # 27 - north compressor station	T	0.01	\$30	-\$5	0.77	2.16
3	6420	North White inlet compressor	OEL	0.01	\$60	-\$9	1.04	2.16
4	5816	Inlet Compressor	TB	0.00	\$25	\$15	0.53	2.17
1	6826	plant #1 demethanizer condenser	GTV	0.01	\$60	\$36	1.15	2.17
5	6042	C-02 - manifold	F	0.01	\$50	-\$8	1.27	2.18
5	6507	Comp #26 - north compressor	T	0.01	\$50	-\$8	0.80	2.19

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6702	mole siv skid	GTV	0.01	\$75	\$44	1.28	2.19
3	6442	suction scrubber (15 psi)	CV	0.08	\$560	-\$91	9.60	2.19
1	7179	residue compressor (#3 ingersoll-rand)	VC	0.03	\$200	-\$33	4.96	2.19
3	6746	buried line	GTV	0.07	\$500	\$289	8.55	2.20
3	6151	EP Skid	CV	0.02	\$282	-\$48	0.00	2.21
1	7097	seperator	GTV	0.01	\$75	\$43	1.84	2.21
3	6632	refrigeration compressors (old)	GTV	0.02	\$100	\$57	2.43	2.21
3	6455	pipe rack between inlet compressors	GTV	0.01	\$75	\$42	1.27	2.22
3	6653	mole siv skid	T	0.00	\$20	-\$4	0.34	2.22
3	6199	EP Skid	GTV	0.00	\$75	\$42	0.00	2.23
1	6914	pipe rack	T	0.00	\$30	-\$6	0.72	2.25
3	6133	north compressor	VC	0.03	\$200	-\$38	3.33	2.26
4	5543	Glycol Separator - both ends of elbow on sight glass	T	0.00	\$30	-\$6	0.47	2.28
4	5861	NE Compressor Station Comp	VC	0.03	\$200	-\$40	3.14	2.29
1	7272	Comp W1	CS	0.28	\$2,000	-\$1,180	36.38	2.30
5	6092	C-03 -	VC	0.03	\$200	-\$41	3.04	2.30
5	5991	C-04 -	CS	0.26	\$2,000	-\$1,187	30.17	2.32
5	6041	C-02 - manifold	F	0.01	\$50	-\$11	1.19	2.32
3	6612	Refrigeration Compressors (Old)	VC	0.01	\$200	-\$44	0.00	2.35
5	6210	C-07 - measured at cylinder bleed	NV	0.01	\$60	\$28	0.89	2.37
1	7313	Comp W7	CS	1.10	\$8,000	-\$4,833	140.43	2.38
3	6755	pipe rack in front of C1/C2	T	0.00	\$30	-\$7	0.47	2.41
4	5588	NE Compressor Station Comp	VC	0.03	\$200	-\$48	2.98	2.41
3	6801	C-7	CS	0.25	\$2,000	-\$1,225	30.85	2.43
3	6804	C-7	CS	0.25	\$2,000	-\$1,227	30.77	2.44
5	5946	C-03 -	GOV	0.03	\$200	\$84	4.53	2.44
1	6978	residue compressor (C-9)	CS	0.31	\$2,000	-\$1,228	44.42	2.44
3	6741	north compressor	VC	0.03	\$200	-\$50	3.06	2.45
5	6580	piping north of 1st/2nd stage compression -	BV	0.02	\$190	\$78	2.71	2.46
3	6646	refrigerant discharge coalescer	T	0.00	\$20	-\$5	0.00	2.47
3	6682	turbo expander-compressor	CV	0.07	\$560	-\$144	8.50	2.47
1	6962	plant #1 middle-west molecular siv	F	0.01	\$75	-\$20	1.26	2.48
3	6722	West refrigeration compressor (new)	T	0.00	\$30	-\$8	0.65	2.49
2	4913	FG Scrubber	V	0.01	\$60	\$23	1.19	2.49
5	6570	C-19 - DP cover bolt holes	CS	0.30	\$2,000	-\$1,245	44.28	2.50
5	5973	C-12 - measured at cylinder head bleed	NV	0.01	\$60	\$23	0.84	2.51
4	5856	South Boiler	T	0.00	\$20	-\$6	0.36	2.54
2	4906	Acadian Sales	R	0.02	\$175	\$110	3.61	2.58
3	6766	C-2	GTV	0.01	\$60	\$20	1.24	2.60
5	6501	South Comp - south compressor station	VC	0.02	\$200	-\$59	2.70	2.60
1	6955	residue compressor (C-9)	T	0.00	\$30	-\$9	0.62	2.61
5	5950	C-04 - measured at 2" threaded water jacket connection in cylinder body	OEL	0.05	\$400	-\$255	5.37	2.61

Table II. Measured THC emissions rates, sorted by pay-out period, 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	5893	13-12#1 Separator	T	0.00	\$20	-\$6	0.27	2.62
2	4906	Parlange #5	OM	0.02	\$175	\$106	3.55	2.62
1	7211	fuel gas scrubber (F-5)	GTV	0.01	\$75	\$24	1.55	2.63
5	5993	C-06 -	VC	0.02	\$200	-\$60	2.67	2.63
5	6296	C-10 -	T	0.00	\$30	-\$9	0.63	2.64
2	4937	Glycol Heater	T	0.00	\$20	-\$6	0.37	2.64
4	5871	15-10 Heater - Body	R	0.02	\$175	\$103	2.37	2.65
2	5018	Compressor 4	VC/T	0.00	\$50	-\$16	0.26	2.67
4	5455	NRU	F	0.01	\$75	-\$24	1.30	2.67
5	6363	Comp # 38 - north compressor station	F	0.00	\$25	-\$8	0.51	2.69
1	7094	seperator	GTV	0.01	\$60	\$17	1.21	2.69
1	6979	residue compressor (C-9)	VVP	0.06	\$400	-\$260	8.06	2.70
1	6940	plant #1 south-west molecular siv	F	0.01	\$75	-\$24	1.16	2.71
1	7018	residue compressor (#1 ingersoll-rand)	CS	0.28	\$2,000	-\$1,305	39.98	2.72
5	6144	Comp #23 - north compressor station	PV	0.01	\$75	\$20	1.52	2.73
3	6783	C-3	F	0.01	\$100	-\$33	1.37	2.73
4	5580 B	Propane Compressor - Bolts on Cylinder End	CS	0.02	\$400	-\$265	0.00	2.79
3	6161	EP Skid	GTV	0.00	\$75	\$18	0.00	2.79
5	6233	C-06 -	INJ	0.03	\$200	\$47	3.94	2.81
1	7147	residue compressor (#3 ingersoll-rand)	VC	0.03	\$200	-\$70	3.86	2.81
1	6977	residue compressor (C-9)	VVP	0.05	\$400	-\$266	7.72	2.81
1	6817	plant #1 inlet filter seperator (PV-3)	GTV	0.01	\$60	\$13	0.88	2.86
2	4956	Comp #3	GBV/CV	0.04	\$282	-\$101	5.02	2.86
5	6290	C-10 - plug	T	0.00	\$30	-\$11	0.58	2.86
3	6662	mole siv skid	CV	0.02	\$177	-\$64	2.31	2.87
5	6286	C-10 -	T	0.00	\$30	-\$11	0.58	2.87
4	5888	11-16 Wellhead	T	0.00	\$20	-\$7	0.25	2.88
5	6389	demethanizer bottoms pump -	GTV	0.01	\$120	\$24	0.00	2.88
5	6386	demethanizer bottoms pump -	GTV	0.01	\$190	\$39	0.00	2.88
1	7160	residue compressor (#1 ingersoll-rand)	VC	0.03	\$200	-\$73	3.77	2.88
1	7088	residue compressor (#3 caterpillar)	VC	0.03	\$200	-\$73	3.76	2.89
4	5580 A	Propane Compressor - Bolts on Cylinder End	CS	0.02	\$400	-\$270	0.00	2.90
1	6943	refrigeration compressor (#2 Clark)	VVP	0.02	\$400	-\$270	0.00	2.91
1	6870	plant #1 demethanizer	OEL	0.01	\$60	-\$22	0.86	2.92
1	6858	plant #1 north-east molecular siv	T	0.00	\$30	-\$11	0.43	2.92
3	6802	C-7	CS	0.21	\$2,000	-\$1,356	25.64	2.93
5	6358	C-12 -	INJ	0.03	\$200	\$36	3.76	2.94
1	7057	plant #5 turbo expander	GTV	0.01	\$60	\$11	0.85	2.95
1	7007	residue compressor (#3 caterpillar)	T	0.00	\$30	-\$11	0.55	2.95
5	6522	Comp # 38 - north compressor station	PV	0.01	\$60	\$10	1.12	2.97
3	6457	fuel gas scrubber (PV-9)	T	0.00	\$20	-\$8	0.25	2.98
1	7215	residue compressor (#5 ingersoll-rand)	CS	0.25	\$2,000	-\$1,370	36.29	2.99
1	6856	plant #1 north-east molecular siv	GTV	0.01	\$60	\$9	0.84	3.00

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6328	C-10 -	INJ	0.02	\$200	\$30	3.67	3.02
1	7305	Comp W5	CS	0.86	\$8,000	-\$5,505	110.64	3.02
1	7186	plant #6 east molecular siv	F	0.01	\$100	-\$40	1.37	3.04
3	6691	middle sales turbine compressor	GTV	0.01	\$60	\$8	1.06	3.05
5	6329	C-10 -	INJ	0.02	\$200	\$26	3.60	3.07
3	6706	North White inlet compressor	CS	0.81	\$8,000	-\$5,542	97.83	3.07
5	5947	C-03 -	GOV	0.02	\$200	\$24	3.57	3.10
3	6541	low pressure inlet compressors suction scrubber	CV	0.06	\$560	-\$229	6.79	3.10
1	6924	plant # 1 middle-east molecular siv	GTV	0.01	\$75	\$9	1.01	3.10
4	5890	13-12#1 Separator - PRV Vent	OEL	0.01	\$75	-\$31	0.86	3.12
4	5504	Sales Compressor - Lube Oil Tank Vent Stack	OEL	0.01	\$75	-\$31	1.03	3.12
4	5502	NRU	TB	0.00	\$15	\$2	0.22	3.13
1	7099	scrubber	GTV	0.01	\$60	\$6	1.04	3.13
2	4976	Comp #3	VC/T	0.01	\$50	-\$21	0.81	3.14
3	6618	refrigeration compressors (old)	GTV	0.01	\$60	\$6	1.03	3.14
4	5542	Chiller - Stem Packing	GTV	0.01	\$120	\$12	1.37	3.15
3	6499	regen economizer	GTV	0.00	\$100	\$10	0.00	3.16
3	6185	de-C1 reflux condenser	T	0.00	\$20	-\$9	0.23	3.20
3	6544	South White inlet compressor	VC	0.02	\$200	-\$85	2.35	3.20
2	4907	Parlange #5	GBV	0.00	\$30	-\$13	0.50	3.21
5	6031	C-01 -	T	0.00	\$30	-\$13	0.52	3.22
3	6451	pipe rack between inlet compressors	F	0.01	\$150	-\$65	1.75	3.22
4	5599	Propane Compressor - DP Cover	CS	0.08	\$2,000	-\$1,421	0.00	3.26
4	5571	Inlet Compressor	F	0.01	\$50	-\$22	0.71	3.27
3	6613	Refrigeration Compressors (Old)	VC	0.01	\$200	-\$88	0.00	3.29
5	5853	C-22 - union	T	0.00	\$30	-\$13	0.50	3.30
1	6882	plant #1 inlet filter seperator	T	0.00	\$30	-\$13	0.38	3.32
3	6409	combined inlet header	T	0.00	\$20	-\$9	0.23	3.33
5	6143	Comp # 23 - north compressor station	F	0.01	\$50	-\$23	0.82	3.37
3	6628	refrigeration compressors (old)	T	0.00	\$20	-\$9	0.32	3.40
3	6603	South White inlet compressor	VC	0.02	\$200	-\$92	2.21	3.41
1	7282	plant #1 north-east molecular siv	OEL	0.01	\$60	-\$28	0.73	3.42
5	6373	Comp # 36 - north compressor station	F	0.01	\$75	-\$35	1.20	3.44
5	6394	pipe between chiller and expander turbine -	CV	0.02	\$282	-\$132	2.86	3.46
1	6843	pipe rack	GTV	0.02	\$245	\$1	2.96	3.46
5	5960	C-10 - manifold	F	0.02	\$200	-\$94	3.19	3.47
4	5905	North Boiler - Vent	R	0.02	\$175	\$35	2.31	3.51
3	6599	High Chiller	GTV	0.01	\$190	-\$3	0.00	3.52
2	4922	Plant Sales Piping	V	0.01	\$75	-\$1	1.13	3.54
1	6820	pipe rack	OEL	0.01	\$75	-\$36	0.88	3.54
5	5986	C-06 - manifold	GTV	0.00	\$30	-\$15	0.47	3.56
1	6876	plant #1 midle-east molecular siv	OEL	0.01	\$60	-\$29	0.70	3.57
1	7014	residue compressor (west caterpillar)	CS	0.21	\$2,000	-\$1,471	30.44	3.57
1	6883	plant #1 inlet filter seperator	GTV	0.05	\$595	-\$19	6.95	3.58

Table II. Measured THC emissions rates, sorted by pay-out period, 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	4907	Acadian Sales	T	0.00	\$20	-\$10	0.30	3.59
3	6742	north compressor	CS	0.35	\$4,000	-\$2,950	41.79	3.59
4	5594	Propane Compressor - FG inlet	F	0.00	\$50	-\$25	0.64	3.63
4	5558	Refrigerant Separator - Stem Packing	GTV	0.01	\$245	-\$11	0.00	3.63
3	6403	combined inlet header	GTV	0.01	\$60	-\$3	0.62	3.64
1	7217	residue compressor (#5 ingersoll-rand)	VC	0.02	\$200	-\$99	2.98	3.64
5	6293	C-10 -	T	0.00	\$30	-\$15	0.45	3.67
3	6435	inlet separator (400 psi)	T	0.00	\$20	-\$10	0.20	3.68
5	5850	C-20 -	GOV	0.02	\$200	-\$13	2.98	3.71
3	6158	EP Skid	GTV	0.00	\$60	-\$4	0.00	3.72
1	6860	PIG receivers	OEL	0.01	\$60	-\$30	0.67	3.72
3	6491	South Waukesha inlet compressor	CS	0.66	\$8,000	-\$5,992	79.93	3.76
2	4924	Plant Sales Piping	V	0.01	\$60	-\$5	0.85	3.77
1	6848	pipe rack	GTV	0.02	\$245	-\$22	2.69	3.81
3	6431	South White inlet compressor	VVP	0.03	\$400	-\$302	3.91	3.84
3	6419	combined inlet header	T	0.00	\$30	-\$16	0.29	3.84
3	6148	north compressor	F	0.02	\$300	-\$157	2.93	3.85
5	6112	Comp #23 - north compressor station	VC	0.02	\$200	-\$105	1.82	3.85
5	6256	C-08 - manifold	F	0.00	\$50	-\$26	0.71	3.88
5	6252	C-08 - body	BV	0.01	\$120	-\$15	1.68	3.94
2	4958	Comp #3	VC	0.02	\$200	-\$107	2.57	3.96
4	5598	Propane Compressor - Surge Bottle	OEL	0.00	\$75	-\$40	0.00	3.97
3	6638	West refrigeration compressor (new)	TB	0.00	\$15	-\$2	0.20	3.97
1	6976	residue compressor (C-9)	VVP	0.04	\$400	-\$306	5.40	4.02
1	7302	Comp W4	CS	0.16	\$2,000	-\$1,533	20.73	4.04
2	4953	Comp #3	Gov	0.02	\$200	-\$30	2.50	4.07
3	6434	pipe rack between inlet compressors	OM	0.01	\$150	-\$116	1.37	4.12
5	6368	Comp # 38 - north compressor station	PV	0.01	\$60	-\$10	0.80	4.15
3	6663	refrigeration suction scrubber	CV	0.01	\$459	-\$258	0.00	4.18
4	5801	Inlet Compressor	OEL	0.01	\$75	-\$42	0.64	4.18
1	6908	plant #1 turbo expander	GTV	0.01	\$75	-\$13	0.75	4.18
5	5988	C-06 -	INJ	0.02	\$200	-\$35	2.63	4.21
3	6777	C-2	CS	0.15	\$2,000	-\$1,552	17.84	4.21
1	6911	plant #1 demethanixer side exchanger	OEL	0.00	\$60	-\$34	0.59	4.23
1	7331	Comp 6	CS	0.15	\$2,000	-\$1,555	19.75	4.24
3	6604	South White inlet compressor	VC	0.01	\$200	-\$114	1.76	4.26
3	6563	West refrigeration compressor (old)	CV	0.02	\$177	-\$101	2.24	4.26
5	6111	Comp #27 - north compressor station	VC	0.01	\$200	-\$114	1.65	4.26
5	6283	C-09 -	INJ	0.02	\$200	-\$37	2.59	4.26
1	7358	Comp 4	CS	0.61	\$8,000	-\$6,235	78.27	4.28
1	7274	Comp W2	CS	0.15	\$2,000	-\$1,559	19.54	4.28
5	6520	Comp #38 - north compressor	INJ	0.02	\$200	-\$38	2.58	4.29

Table II. Measured THC emissions rates, sorted by pay-out period, 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	5459	Sales Compressor - Plug	T	0.00	\$30	-\$17	0.30	4.32
3	6770	C-2	T	0.00	\$20	-\$12	0.25	4.37
3	6687	east sales turbine compressor	CV	0.02	\$177	-\$103	2.18	4.38
4	5538	Gas-Liquid Heat Exchanger - Stem Packing	CV	0.01	\$141	-\$82	1.15	4.39
1	7259	Comp W6	CS	0.15	\$2,000	-\$1,571	19.01	4.40
3	6595	High Chiller	GTV	0.00	\$100	-\$21	0.00	4.41
3	6450	pipe rack between inlet compressors	F	0.01	\$150	-\$88	1.27	4.43
3	6484	North Waukesha inlet compressor	T	0.00	\$20	-\$12	0.24	4.43
4	5825	NE Compressor Station Separator	T	0.00	\$30	-\$18	0.24	4.53
5	6378	Comp # 27 - north compressor station	PV	0.01	\$120	-\$28	1.46	4.54
5	6136	Comp # 27 - north compressor station	PV	0.01	\$120	-\$29	1.46	4.56
5	6139	Comp # 27 - north compressor station	PV	0.01	\$120	-\$29	1.46	4.56
3	6559	West refrigeration compressor (old)	T	0.00	\$20	-\$12	0.00	4.63
3	6463	combined inlet header	OEL	0.00	\$60	-\$36	0.48	4.67
5	5842	low pressure sales line - outside of plant fence	GTV	0.08	\$1,000	-\$259	11.82	4.68
3	6470	combined inlet header	GTV	0.00	\$75	-\$20	0.60	4.71
2	4939	Cond Tank T-4000-1	Thief Hatch	0.39	\$5,000	-\$4,001	56.46	4.72
5	6242	C-08 - packing	VVP	0.02	\$400	-\$320	2.971536	4.73
3	6636	East refrigeration compressor (new)	T	0.00	\$30	-\$18	0.34	4.75
3	6408	combined inlet header	T	0.00	\$30	-\$19	0.23	4.79
5	5965	C-10 - manifold	F	0.02	\$200	-\$124	2.31	4.80
3	6528	pipe rack north of 400 psi inlet separator	GTV	0.01	\$120	-\$33	1.34	4.80
5	5974	C-04 - plug	T	0.00	\$30	-\$19	0.34	4.82
5	5977	C-04 - union	T	0.00	\$30	-\$19	0.34	4.82
5	6077	C-04 -	T	0.00	\$30	-\$19	0.34	4.82
4	5510	Sales Compressor - Plug	T	0.00	\$20	-\$12	0.18	4.87
3	6481	North Waukesha inlet compressor	T	0.00	\$30	-\$19	0.23	4.88
1	7156	residue compressor (#4 ingersoll-rand)	CS	0.15	\$2,000	-\$1,616	22.11	4.91
5	6097	C-05 -	VC	0.01	\$200	-\$125	1.42	4.92
5	6583	pipng north of 1s1/2nd stage compression -	BV	0.01	\$190	-\$56	1.35	4.92
1	6986	plant #1 demethanizer side exchanger	GTV	0.00	\$75	-\$22	0.63	4.94
3	6654	mole siv skid	T	0.00	\$30	-\$19	0.23	4.95
3	6701	mole siv skid	T	0.00	\$30	-\$19	0.23	4.95
5	6361	North Comp - south compressor station	VC	0.01	\$200	-\$126	1.41	4.96
3	6175	de-C2 feed line	GTV	0.00	\$120	-\$37	0.00	4.99
5	5987	C-06 -	T	0.00	\$30	-\$19	0.33	5.03
3	6736	de-C2 reboiler	F	0.01	\$150	-\$95	0.00	5.05
5	6571	pipng north of C3 compressors -	BV	0.01	\$350	-\$110	0.00	5.06

Table II. Measured THC emissions rates, sorted by pay-out period, 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	0.01	\$175	-\$30	1.24	5.07
5	6107	Comp # 36 - north compressor station	INJ	0.01	\$200	-\$64	2.16	5.11
3	6751	north compressor	F	0.02	\$300	-\$193	2.19	5.14
1	7208	residue compressor (#5 ingersoll-rand)	VVP	0.03	\$400	-\$328	4.17	5.21
4	5819	NE Compressor Station Comp - Cylinder Bleed	OEL	0.00	\$75	-\$49	0.51	5.26
3	6171	PV-15	GTV	0.01	\$75	-\$26	0.76	5.31
1	6859	plant #1 north-east molecular siv	T	0.00	\$30	-\$20	0.24	5.31
1	7307	Comp W7	CS	0.12	\$2,000	-\$1,654	15.36	5.45
3	6446	pipe rack between inlet compressors	GTV	0.00	\$60	-\$22	0.41	5.49
1	6897	refrigeration compressor (#2 Clark)	T	0.00	\$30	-\$20	0.30	5.51
1	7351	Compressor	CS	0.12	\$2,000	-\$1,658	15.16	5.52
4	5511	Sales Compressor - Separator Plug	T	0.00	\$30	-\$20	0.23	5.52
1	6941	refrigeration compressor (#2 Clark)	VC	0.00	\$200	-\$134	0.00	5.56
3	6781	C-3	VC	0.01	\$200	-\$134	1.35	5.58
5	6374	Comp # 38 - north compressor station	PV	0.00	\$60	-\$23	0.59	5.61
1	7091	fuel gas scrubber (F-5)	GTV	0.00	\$75	-\$29	0.72	5.63
5	5895	B-01 -	T	0.00	\$30	-\$20	0.29	5.63
4	5593	South Boiler - Stem Packing	GTV	0.01	\$120	-\$46	0.98	5.65
4	5808	NE Compressor Station Comp - Lube Oil Tank Blanket	T	0.00	\$50	-\$34	0.32	5.69
1	7098	seperator	GTV	0.00	\$75	-\$30	0.71	5.71
1	7044	plant #2 west molecular siv	T	0.00	\$30	-\$20	0.22	5.73
2	4965 B	Comp #2	Cylinder body	0.02	\$400	-\$335	3.50	5.82
4	5833	NE Compressor Station Comp - Crank Case Vent	CCV	0.48	\$8,000	-\$6,708	63.33	5.84
1	6862	PIG receivers	OEL	0.01	\$120	-\$83	0.85	5.87
5	6503	Comp #38 - north compressor station	VC	0.01	\$200	-\$138	1.19	5.90
3	6692	middle sales turbine compressor	GTV	0.00	\$60	-\$25	0.55	5.90
1	7335	Comp W8	CS	0.11	\$2,000	-\$1,681	14.14	5.92
4	5457	NRU	CV	0.01	\$177	-\$122	1.38	5.93
4	5807	Inlet Compressor	TB	0.00	\$25	-\$10	0.15	5.93
1	6854	pipe rack	T	0.00	\$30	-\$21	0.27	5.96
4	5474	NRU	TB	0.00	\$15	-\$6	0.12	5.97
5	5845	piping west of LP sales compressors -	GTV	0.01	\$120	-\$51	1.11	5.99
5	6289	C-10 -	T	0.00	\$30	-\$21	0.27	6.05
5	6217	C-07 - plug	T	0.00	\$30	-\$21	0.27	6.11
5	6201	C-06 -	VC	0.01	\$200	-\$140	1.15	6.11
5	6573	piping north of C3 compressors -	GTV	0.01	\$500	-\$217	0.00	6.12
4	5865	22-7 Well Site	OEL	0.00	\$60	-\$42	0.35	6.16
5	6524	Comp # 38 - north compressor station	INJ	0.01	\$200	-\$87	1.80	6.16
1	7213	residue compressor (#5 ingersoll-rand)	VVP	0.02	\$400	-\$339	3.53	6.16

Table II. Measured THC emissions rates, sorted by pay-out period, 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	5535	Pipe Rack - Stab OVHD by desalter	OEL	0.00	\$75	-\$53	0.44	6.17
1	7321	Comp 1	F	0.01	\$100	-\$70	0.67	6.21
4	5804	Inlet Compressor - Stem Packing	VVP	0.02	\$400	-\$339	2.31	6.22
1	6998	plant #1 chiller	GTV	0.01	\$100	-\$45	0.66	6.29
4	5539	DEA Contactor Feed Separator	GTV	0.01	\$75	-\$34	0.42	6.35
3	6474	South Waukesha inlet compressor	T	0.00	\$30	-\$21	0.25	6.41
3	6482	North Waukesha inlet compressor	T	0.00	\$30	-\$21	0.25	6.44
1	7087	residue compressor (#3 caterpillar)	VC	0.01	\$200	-\$144	1.66	6.55
3	6764	C-2	GTV	0.01	\$100	-\$47	0.82	6.56
1	6812	pipe rack	TB	0.00	\$15	-\$7	0.09	6.61
5	6511	Comp #40 - north compressor station	INJ	0.01	\$200	-\$95	1.67	6.62
5	6523	Comp # 38 - north compressor station	INJ	0.01	\$200	-\$96	1.66	6.67
3	6803	C-7	VVP	0.02	\$400	-\$343	2.25	6.68
4	5539	Gas-Liquid Heat Exchanger - Stem Packing	GTV	0.00	\$190	-\$92	1.01	6.72
5	6259	C-08 -	INJ	0.01	\$200	-\$97	1.64	6.73
1	6875	plant #1 midle-east molecular siv	F	0.01	\$150	-\$110	0.92	6.85
3	6424	North White inlet compressor	VVP	0.02	\$400	-\$345	2.18	6.88
3	6550	South White inlet compressor	CS	0.09	\$2,000	-\$1,726	10.90	6.89
4	5527	Glycol Separator Heat Exchanger - vent	OEL	0.00	\$75	-\$55	0.39	6.91
4	5831	NE Compressor Station Comp	T	0.00	\$20	-\$15	0.10	6.91
4	5496	NRU - Stem Packing	CV	0.01	\$282	-\$207	1.89	6.92
3	6694	west sales turbine compressor.	CV	0.01	\$177	-\$131	1.36	7.00
5	6246	C-10 - cylinder end gasket	F	0.02	\$400	-\$346	2.00	7.02
3	6761	C-2	CS	0.09	\$2,000	-\$1,734	10.57	7.11
5	6270	C-09 - plug	T	0.00	\$30	-\$22	0.23	7.13
3	6779	C-2	CS	0.09	\$2,000	-\$1,737	10.48	7.17
3	6772	C-2	CS	0.09	\$2,000	-\$1,738	10.43	7.20
4	5869	15-10 Wellhead - Plug on side of ESD	T	0.02	\$400	-\$300	1.96	7.33
5	5961	C-10 - vent hole	INJ	0.01	\$200	-\$106	1.50	7.36
4	5533	Inlet Separator	CV	0.01	\$141	-\$106	0.69	7.38
5	6512	Comp #40 - north compressor station	INJ	0.01	\$200	-\$107	1.48	7.49
4	5811	Inlet Compressor	F	0.00	\$50	-\$38	0.31	7.52
4	5839	Refrigerant Accumulator	CV	0.00	\$141	-\$107	0.00	7.55
4	5554	Refrigerant Separator - Stem Packing	GTV	0.00	\$75	-\$41	0.00	7.56
4	5549	De-ethanizer Reflux Condenser - stem packing	CV	0.01	\$130	-\$99	0.79	7.59
4	5572	Inlet Compressor	F	0.00	\$50	-\$38	0.30	7.68
4	5821	NE Compressor Station Comp - Pneumatic valve control	CV	0.01	\$130	-\$99	0.60	7.73
3	6155	EP Skid	GTV	0.00	\$75	-\$41	0.00	7.74
3	6747	buried line	GTV	0.02	\$500	-\$277	2.42	7.76
3	6149	south compressor	BV	0.00	\$75	-\$42	0.36	7.77
1	7300	Comp W1	CS	0.08	\$2,000	-\$1,759	10.66	7.85
5	6236	C-06 - top	GOV	0.01	\$200	-\$113	1.39	7.97

Table II. Measured THC emissions rates, sorted by pay-out period, 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	5955	C-10 -	VVP	0.01	\$400	-\$353	1.76	7.98
5	6009	C-02 - manifold	F	0.00	\$50	-\$39	0.34	8.03
4	5456	NRU	GTV	0.00	\$60	-\$34	0.35	8.04
3	6168	PV-15	OM	0.01	\$150	-\$132	1.00	8.05
4	5555	Refrigerant Separator - Stem Packing	GTV	0.00	\$75	-\$43	0.00	8.06
4	5557	Refrigerant Separator - Stem Packing	GTV	0.00	\$75	-\$43	0.00	8.06
1	7178	residue compressor (#3 ingersoll-rand)	OEL	0.00	\$60	-\$47	0.40	8.23
1	6873	plant #1 south-east molecular siv	F	0.00	\$75	-\$59	0.38	8.35
3	6165	pipe rack north of old refrigeration compressors	GTV	0.00	\$245	-\$143	0.00	8.36
3	6703	mole siv skid	GTV	0.00	\$60	-\$35	0.27	8.38
3	6173	de-C2 feed line	GTV	0.00	\$120	-\$71	0.00	8.50
1	7140	residue compressor (#4 ingersoll-rand)	CS	0.09	\$2,000	-\$1,780	12.67	8.57
3	6187	F4115	OEL	0.00	\$60	-\$47	0.26	8.59
3	6790	C-5	VVP	0.01	\$400	-\$356	1.75	8.60
1	7050	plant #2 turbo expander	GTV	0.00	\$60	-\$36	0.29	8.63
3	6406	combined inlet header	BV	0.01	\$245	-\$147	1.07	8.64
2	4938	Cond Tank T-4000-2	Thief Hatch	0.21	\$5,000	-\$4,470	29.98	8.89
1	7280	plant #1 middle-east molecular siv	OEL	0.00	\$60	-\$48	0.28	8.92
1	7247	Comp W3	CS	0.07	\$2,000	-\$1,791	9.28	9.02
5	6581	piping north of 1st/2nd stage compression -	BV	0.01	\$190	-\$117	0.74	9.03
3	6495	pipe rack west of old control room	GTV	0.00	\$60	-\$37	0.25	9.12
4	5809	NE Compressor Station Comp	OEL	0.00	\$60	-\$48	0.23	9.25
3	6432	pipe rack between inlet compressors	OEL	0.00	\$60	-\$48	0.24	9.29
3	6596	High Chiller	GTV	0.00	\$75	-\$47	0.00	9.32
4	5858	Inlet Compressor - Body	VVP	0.01	\$400	-\$360	1.53	9.40
5	6091	C-03 -	VC	0.01	\$200	-\$162	0.73	9.54
4	5485	Glycol Separator - sight glass	T	0.00	\$30	-\$24	0.11	9.61
3	6452	pipe rack between inlet compressors	GTV	0.02	\$500	-\$324	1.91	9.82
2	4971 A	Comp #1	Cylinder Body	0.01	\$400	-\$362	2.06	9.88
3	6542	pipe rack between inlet compressors	GTV	0.00	\$120	-\$78	0.65	9.92
4	5473	NRU	CV	0.00	\$130	-\$106	0.60	9.95
4	5824	NE Compressor Station Separator	T	0.00	\$20	-\$16	0.07	10.00
3	6478	North Waukesha inlet compressor	OEL	0.00	\$60	-\$49	0.22	10.03
3	6530	fuel gas scrubber (PV-9)	T	0.00	\$30	-\$25	0.16	10.10
5	5970	C-11 -	VVP	0.01	\$400	-\$363	1.37	10.26
5	5968	C-11 -	VVP	0.01	\$400	-\$363	1.36	10.30
5	6500	South Comp - south compressor station	F	0.01	\$400	-\$364	1.35	10.40
5	6374	Comp # 36 - north compressor station	INJ	0.01	\$200	-\$133	1.06	10.41
4	5817	Inlet Compressor	T	0.00	\$20	-\$17	0.09	10.50
4	5877	11-16 Pig Unit	T	0.00	\$30	-\$25	0.10	10.54

Table II. Measured THC emissions rates, noted by pay-out period, 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	5958	C-11 - cylinder end gasket	F	0.01	\$400	-\$364	1.33	10.55
5	5969	C-11 -	VVP	0.01	\$400	-\$365	1.31	10.69
4	5453	Inlet Header	BV	0.00	\$75	-\$51	0.25	10.80
1	7209	residue compressor (#5 Ingersoll-Rand)	VC	0.01	\$200	-\$166	1.00	10.88
3	6448	pipe rack between inlet compressors	F	0.00	\$150	-\$125	0.52	10.91
3	6685	turbo expander-compressor	GTV	0.00	\$60	-\$41	0.29	11.01
5	5971	C-11 -	VVP	0.01	\$400	-\$366	1.27	11.06
1	6896	refrigeration compressor (#2 Clark)	INJ	0.01	\$200	-\$137	0.98	11.08
3	6443	pipe rack between inlet compressors	GTV	0.00	\$75	-\$52	0.25	11.08
5	5979	C-04 -	INJ	0.01	\$200	-\$138	1.00	11.09
3	6459	pipe rack along side mid pressure inlet sep	T	0.00	\$30	-\$25	0.15	11.13
1	7308	Comp W7	CS	0.06	\$2,000	-\$1,831	7.49	11.17
3	6438	PV-47 (400 psi suction scrubber)	GTV	0.00	\$120	-\$83	0.40	11.21
3	6456	fuel gas scrubber (PV-9)	GTV	0.00	\$60	-\$42	0.19	11.58
5	6248	C-08 -	VC	0.01	\$200	-\$168	0.61	11.59
1	7301	Comp W1	CS	0.06	\$2,000	-\$1,838	7.16	11.68
1	7068	plant #5 turbo expander	CV	0.00	\$130	-\$110	0.60	11.86
3	6154	EP Skid	GTV	0.00	\$75	-\$54	0.00	12.25
3	6132	north compressor	F	0.01	\$400	-\$369	1.22	12.32
3	6633	East refrigeration compressor (new)	VC	0.00	\$200	-\$170	0.00	12.40
4	5586	NE Compressor Station Comp	OEL	0.00	\$60	-\$51	0.17	12.52
4	5878	11-16 Separator	T	0.00	\$20	-\$17	0.06	12.71
1	6887	refrigeration compressor (#3 Clark)	INJ	0.01	\$200	-\$146	0.85	12.74
1	7030	plant #2 turbo expander	T	0.00	\$30	-\$26	0.10	12.85
3	6453	pipe rack between inlet compressors	GTV	0.01	\$500	-\$367	1.44	13.00
1	7170	residue compressor (#2 Ingersoll-Rand)	CS	0.06	\$2,000	-\$1,856	8.31	13.08
4	5489	HP FG Scrubber - leaking past GTV stem	OEL	0.00	\$75	-\$65	0.26	13.18
2	4973	Comp #4	Crank Case Vent	0.05	\$2,000	-\$1,857	7.73	13.18
4	5484	Sour Water Tanks - Blanket Gas Inlet	R	0.00	\$175	-\$119	0.47	13.24
5	6398	expander turbine -	NV	0.00	\$60	-\$44	0.16	13.29
3	6167	PV-15	GTV	0.00	\$75	-\$55	0.30	13.31
4	5907	Sulphur Plant	OEL	0.00	\$60	-\$52	0.21	13.45
3	6598	High Chiller	CV	0.00	\$177	-\$153	0.00	13.54
1	7303	Comp W4	CS	0.05	\$2,000	-\$1,863	6.09	13.74
3	6629	refrigeration compressors (old)	R	0.00	\$175	-\$122	0.68	13.87
3	6753	pipe rack in front of C1/C2	GTV	0.01	\$245	-\$184	0.66	14.02
1	7024	plant #2 east molecular siv	CV	0.01	\$282	-\$245	0.83	14.15
3	6707	North White inlet compressor	CS	0.17	\$8,000	-\$7,476	20.84	14.41
3	6498	de-C2 owhds line	GTV	0.00	\$100	-\$76	0.00	14.50
3	6465	combined inlet header	F	0.00	\$100	-\$87	0.26	14.61
3	6479	North Waukesha inlet compressor	T	0.00	\$20	-\$17	0.05	14.65
2	4930	Pig Trap (TETCO Sales)	TB	0.00	\$15	-\$11	0.05	14.73

Table II. Measured THC emissions rates, sorted by pay-out period, 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	7244	Comp W2	CS	0.04	\$2,000	-\$1,872	5.67	14.75
2	4929	Pig Trap (TETCO Sales)	T	0.00	\$20	-\$18	0.07	14.82
1	6822	plant #1 turbo expander	T	0.00	\$30	-\$26	0.08	14.84
5	6317	pipng north of 1st/2nd stage compression -	BV	0.01	\$350	-\$268	0.83	14.85
3	6494	pipe rack west of old control room	GTV	0.01	\$500	-\$384	1.26	14.90
5	6292	C-10 - plug	T	0.00	\$30	-\$26	0.11	14.95
2	4978	Comp #3	CCV	0.05	\$2,000	-\$1,876	6.72	15.17
5	5843	low pressure sales line - outside of plant fence	GTV	0.00	\$190	-\$147	0.68	15.37
4	5503	Pipe Rack - Between NRU and Sales Comp	T	0.00	\$20	-\$18	0.06	15.59
1	7310	Comp W8	CS	0.16	\$8,000	-\$7,524	21.09	15.87
1	6993	PSV 671101	T	0.00	\$20	-\$18	0.05	15.98
4	5892	13-12#1 Separator	T	0.00	\$30	-\$27	0.07	16.53
5	6272	C-09 - union	T	0.00	\$30	-\$27	0.09	17.47
3	6483	North Waukesha inlet compressor	T	0.00	\$20	-\$18	0.06	17.59
3	6488	South Waukesha inlet compressor	T	0.00	\$20	-\$18	0.06	17.59
3	6537	pipe rack between inlet compressors	T	0.00	\$20	-\$18	0.06	17.59
3	6637	East refrigeration compressor (new)	T	0.00	\$20	-\$18	0.06	17.59
3	6723	West refrigeration compressor (new)	T	0.00	\$20	-\$18	0.06	17.59
1	7368	Comp 2	F	0.00	\$200	-\$179	0.47	17.82
1	6956	residue compressor (C-9)	T	0.00	\$20	-\$18	0.06	17.87
3	6809	C-5	GOV	0.00	\$200	-\$162	0.59	18.16
2	4931	Glycol Heater	V	0.00	\$60	-\$49	0.16	18.33
1	6842	pipe rack	GTV	0.00	\$245	-\$199	0.56	18.42
5	6360	North Comp - south compressor station	VC	0.00	\$200	-\$180	0.38	18.47
3	6552	South White inlet compressor	F	0.00	\$50	-\$45	0.14	18.62
1	6877	plant #1 middle-east molecular siv	GTV	0.00	\$60	-\$49	0.13	18.66
5	6145	Comp # 23 - north compressor station	R	0.01	\$500	-\$475	1.47	18.84
4	5587	NE Compressor Station Comp - Pilot Valve Vent	OEL	0.00	\$60	-\$54	0.11	18.93
1	6939	plant #1 south-west molecular siv	GTV	0.01	\$500	-\$410	1.09	19.16
1	7334	Comp W8	VVP	0.01	\$400	-\$381	0.86	19.47
2	4908	Parlange #5	T	0.00	\$60	-\$54	0.16	19.58
3	6787	C-3	T	0.00	\$100	-\$91	0.27	19.81
4	5887	11-16 Pig Unit	T	0.00	\$30	-\$27	0.05	19.92
1	6926	plant #1 north-west molecular siv	GTV	0.00	\$60	-\$50	0.12	20.14
4	5812	Inlet Compressor	F	0.00	\$50	-\$46	0.11	20.39
5	6142	Comp # 27 - north compressor station	GOV	0.00	\$200	-\$166	0.54	20.44
1	6885	amine filter	T	0.00	\$30	-\$27	0.06	20.55
4	5480	Sales Compressor	T	0.00	\$30	-\$27	0.06	21.15
5	6012	C-02 -	INJ	0.00	\$200	-\$168	0.52	21.46
4	5478	Pipe Rack - between sales comp and NRU	T	0.00	\$30	-\$27	0.06	21.73
1	6901	pipe rack	TB	0.00	\$15	-\$13	0.03	21.91

Table II. Measured THC emissions rates, sorted by pay-out period, 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	6454	pipe rack between inlet compressors	T	0.00	\$30	-\$27	0.05	21.98
4	5838	Refrigerant Accumulator	GTV	0.00	\$120	-\$101	0.00	22.08
3	6440	South White inlet compressor	GTV	0.00	\$100	-\$85	0.17	22.51
3	6780	C-3	VC	0.00	\$200	-\$184	0.33	22.74
1	7243	Comp W2	CS	0.03	\$2,000	-\$1,918	3.61	23.14
1	7325	Comp 4	CS	0.03	\$2,000	-\$1,920	3.54	23.61
5	6592	sulphur plant -	T	0.00	\$30	-\$28	0.07	23.67
4	5477	NRU - NRU inlet	T	0.00	\$30	-\$28	0.06	24.05
1	7164	residue compressor (#2 ingersoll-rand)	CS	0.03	\$2,000	-\$1,923	4.44	24.45
2	4977	Comp #3	DP body	0.06	\$4,000	-\$3,847	8.28	24.61
3	6602	South White inlet compressor	VC	0.00	\$200	-\$185	0.30	25.15
3	6127	south compressor	T	0.00	\$30	-\$28	0.06	26.39
3	6427	North White inlet compressor	T	0.00	\$30	-\$28	0.06	26.39
3	6529	pipe rack north of 400 psi inlet separator	T	0.00	\$30	-\$28	0.06	26.39
3	6533	fuel gas scrubber (PV-9)	T	0.00	\$30	-\$28	0.06	26.39
3	6540	Waukesha fuel gas scrubber	T	0.00	\$30	-\$28	0.06	26.39
3	6619	refrigeration compressors (old)	T	0.00	\$30	-\$28	0.06	26.39
3	6624	West refrigeration compressor (old)	T	0.00	\$30	-\$28	0.06	26.39
1	6871	plant #1 south-east molecular siv	GTV	0.01	\$500	-\$435	0.79	26.62
3	6776	C-2	CS	0.02	\$2,000	-\$1,931	2.75	27.32
1	6825	stabilizer overheads compressor (C-92)	T	0.00	\$30	-\$28	0.06	28.14
4	5579	Propane Compressor - DP cover	CS	0.01	\$2,000	-\$1,934	0.00	28.52
1	6813	plant #1 turbo expander	T	0.00	\$20	-\$19	0.04	28.55
4	5501	NRU	CV	0.00	\$130	-\$122	0.21	29.28
1	6936	plant #1 south-west molecular siv	F	0.00	\$150	-\$141	0.21	29.52
3	6754	pipe rack in front of C1/C2	GTV	0.00	\$245	-\$216	0.31	29.53
4	5597	Propane Compressor - DP Cover	CS	0.01	\$2,000	-\$1,936	0.00	29.65
3	6526	pipe rack between inlet compressors	GTV	0.00	\$120	-\$106	0.22	29.86
3	6131	north compressor	VC	0.00	\$200	-\$188	0.25	30.03
4	5567	Inlet Compressor	F	0.00	\$50	-\$47	0.07	32.79
1	6995	PSV 671101	T	0.00	\$20	-\$19	0.03	32.84
4	5516	Glycol Separator - Stem Packing	GTV	0.00	\$100	-\$90	0.11	33.62
4	5565	Inlet Compressor	F	0.00	\$50	-\$47	0.07	33.64
4	5872	15-10 Heater - TSTM	T	0.00	\$30	-\$28	0.03	34.65
5	5986	piping west of LP sales compressors - stem packing	T	0.00	\$75	-\$68	0.12	35.72
4	5568	Inlet Compressor	F	0.00	\$50	-\$48	0.06	37.15
2	4968	Comp #2	GTV	0.00	\$60	-\$55	0.08	38.61
2	4960	Comp #2	GTV	0.00	\$60	-\$55	0.08	38.75
5	5846	B-01 -	CV	0.00	\$130	-\$124	0.18	39.05
1	7283	plant #1 south-east molecular siv	OEL	0.00	\$60	-\$57	0.06	39.92
1	7366	Comp 2	OEL	0.00	\$60	-\$57	0.06	39.92
5	6295	C-10 - union	T	0.00	\$30	-\$29	0.04	40.01
4	5595	Propane Compressor - DP Cover	CS	0.01	\$2,000	-\$1,953	0.00	40.11
5	6591	sulphur plant -	T	0.00	\$30	-\$29	0.04	40.20

Table II. Measured THC emissions rates, sorted by pay-out period, from leaking equipment components at surveyed gas plants.

Site #	Tag ID	Process Unit / Location	Component Type	Hydro-carbon Leak Rate (mscf/d)	Estimated Repair Cost (\$)	NPV (\$)	CO2E (t/yr)	Pay-out Period (y)
1	7277	Comp W2	CS	0.01	\$2,000	-\$1,953	0.00	40.51
3	6118	south compressor	CS	0.02	\$2,000	-\$1,954	1.84	40.92
4	5454	NRU	F	0.00	\$100	-\$96	0.11	41.01
1	6934	plant #1 south-west molecular siv	OEL	0.00	\$60	-\$57	0.06	41.35
1	7190	residue compressor (#5 ingersoll-rand)	VC	0.00	\$200	-\$191	0.26	42.02
3	6489	South Waukesha inlet compressor	CS	0.06	\$8,000	-\$7,821	7.13	42.11
1	6884	PV-1	T	0.00	\$30	-\$29	0.03	42.72
3	6485	North Waukesha inlet compressor	GOV	0.00	\$200	-\$184	0.25	42.92
3	6464	combined inlet header	GTV	0.00	\$60	-\$55	0.05	43.96
1	7253	Comp W6	CS	0.01	\$2,000	-\$1,959	1.84	45.53
1	6845	pipe rack	T	0.00	\$30	-\$29	0.03	46.21
1	7058	plant #5 turbo expander	CV	0.00	\$177	-\$170	0.16	46.66
2	4962	Comp #2	GTV	0.00	\$60	-\$56	0.06	47.24
1	6811	inlet header	T	0.00	\$20	-\$19	0.02	49.43
3	6535	fuel gas scrubber (PV-9)	GTV	0.00	\$60	-\$56	0.06	52.77
3	6543	pipe rack between inlet compressors	GTV	0.00	\$60	-\$56	0.06	52.77
3	6785	C-3	GTV	0.00	\$60	-\$56	0.06	52.77
1	7066	plant #6 turbo expander	GTV	0.00	\$60	-\$56	0.05	53.40
4	5596	Propane Compressor - Stem Packing	VVP	0.00	\$400	-\$393	0.00	53.48
3	6551	South White inlet compressor	F	0.00	\$75	-\$72	0.05	54.95
3	6467	combined inlet header	GTV	0.00	\$75	-\$70	0.05	54.95
3	6469	combined inlet header	OEL	0.00	\$75	-\$72	0.05	54.95
2	4933	PW Tank T-3500-1	Thief Hatch	0.01	\$2,000	-\$1,969	1.76	60.57
5	6228	C-06 - union	T	0.00	\$30	-\$29	0.03	61.21
1	6997	PSV 671101	T	0.00	\$20	-\$19	0.01	61.73
1	7284	plant #1 north-west molecular siv	T	0.00	\$20	-\$19	0.01	61.73
1	7273	Comp W3	CS	0.01	\$2,000	-\$1,970	1.33	62.79
5	6229	C-06 -	INJ	0.00	\$200	-\$189	0.17	64.03
3	6547	pipe rack between inlet compressors	F	0.00	\$75	-\$73	0.06	65.97
3	6426	North White inlet compressor	GTV	0.00	\$75	-\$71	0.06	65.97
3	6458	combined inlet header	GTV	0.00	\$75	-\$71	0.06	65.97
3	6534	fuel gas scrubber (PV-9)	GTV	0.00	\$75	-\$71	0.06	65.97
3	6536	pipe rack between inlet compressors	GTV	0.00	\$75	-\$71	0.06	65.97
5	6339	C-11 - manifold	F	0.00	\$50	-\$49	0.04	66.99
4	5873	15-10 Separator - Stem Packing	CV	0.00	\$130	-\$126	0.07	67.15
5	5953	C-10 - no leak on rescreen	VC	0.00	\$200	-\$195	0.10	71.16
4	5526	Glycol Separator Heat Exchanger - Stem Packing	CV	0.00	\$130	-\$127	0.06	72.45
3	6480	North Waukesha inlet compressor	F	0.00	\$400	-\$395	0.20	73.81
3	6740	north compressor	CS	0.01	\$2,000	-\$1,975	0.98	76.29
3	6441	pipe rack between inlet compressors	GTV	0.00	\$350	-\$334	0.17	77.71
4	5465	Sales Compressor - TSTM	OEL	0.00	\$60	-\$59	0.03	77.92
4	5805	Inlet Compressor - DP cover	CS	0.01	\$2,000	-\$1,976	0.91	79.18
4	5517	Glycol Separator - Stem Packing	GTV	0.00	\$120	-\$115	0.05	79.45
4	5585	Inlet Compressor - TSTM, Solenoid Valve	OEL	0.00	\$60	-\$59	0.03	79.57

Table II. Measured THC emissions rates, sorted by pay-out period, 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	7324	Comp 4	CS	0.01	\$2,000	-\$1,976	1.04	80.15
5	6241	C-08 - packing	VVP	0.00	\$400	-\$396	0.166559	84.30
1	6931	plant #1 middle-east molecular siv	GTV	0.00	\$60	-\$58	0.03	85.04
1	7092	fuel gas scrubber (F-5)	GTV	0.00	\$75	-\$72	0.05	86.03
3	6439	PV-47 (400 psi suction scrubber)	GTV	0.00	\$120	-\$115	0.05	87.91
3	6640	refrigeration compressors (old)	BV	0.00	\$100	-\$96	0.06	87.96
3	6539	pipe rack between inlet compressors	GTV	0.00	\$100	-\$96	0.06	87.96
5	5997	pipng west of LP sales compressors - stem packing	VC	0.13	\$190	-\$183	0.12	90.49
5	6015	C-02 -	INJ	0.00	\$200	-\$192	0.12	90.81
2	4923	Plant Sales Piping	NV	0.00	\$60	-\$58	0.04	91.04
4	5469	NRU - Stem Packing	CV	0.00	\$130	-\$127	0.07	91.84
3	6433	pipe rack between inlet compressors	GTV	0.00	\$595	-\$573	0.24	92.50
3	6756	C-4	CS	0.01	\$2,000	-\$1,980	0.80	94.06
1	7102	residue compressor (#1 caterpillar)	T	0.00	\$30	-\$29	0.02	98.58
1	6996	PSV 671101	GTV	0.00	\$60	-\$58	0.02	101.78
1	6984	stabilizer overheads compressor (C-92)	CS	0.01	\$2,000	-\$1,982	0.81	102.86
3	6527	pipe rack north of 400 psi inlet separator	GTV	0.00	\$120	-\$116	0.06	105.55
3	6546	pipe rack north of 400 psi inlet separator	GTV	0.00	\$120	-\$116	0.06	105.55
1	6899	stabilizer overheads compressor (C-92)	BV	0.00	\$100	-\$97	0.05	107.45
5	6502	South Comp - south compressor station	CCV	0.02	\$8,000	-\$7,931	2.58	108.91
3	6447	pipe rack between inlet compressors	OM	0.00	\$150	-\$149	0.05	109.89
5	6058	C-05 - plug	T	0.00	\$30	-\$30	0.01	135.94
3	6548	inlet separator (400 psi)	GTV	0.00	\$190	-\$185	0.05	139.20
3	6449	pipe rack between inlet compressors	GTV	0.00	\$500	-\$488	0.13	141.26
5	6247	C-08 - cylinder end gasket	F	0.00	\$400	-\$397	0.10	142.31
3	6661	pipe rack north of new refrigeration compressors	R	0.00	\$175	-\$170	0.06	153.92
1	6863	pipe rack	F	0.00	\$75	-\$74	0.02	172.96
5	5918	pipng west of LP sales compressors -	GTV	0.00	\$350	-\$343	0.11	177.16
2	5017	Compressor 4	T	0.00	\$20	-\$20	0.00	185.49
2	4998	Compressor 4	Cylinder end	0.00	\$400	-\$398	0.03	197.64
1	7038	plant #5 turbo expander	GTV	0.00	\$60	-\$59	0.02	204.45
1	7137	residue compressor (#4 ingersoll-rand)	VC	0.00	\$200	-\$198	0.05	209.28
4	5874	14-6 Wellhead - Plug on side of ESD	T	0.00	\$400	-\$397	0.07	216.87
2	5010	Cat Compressor	DP Vent	0.00	\$2,000	-\$1,992	0.12	230.62
1	6878	plant #1 middle-east molecular siv	GTV	0.00	\$190	-\$187	0.03	243.82
2	4967	Comp #2	NV	0.00	\$60	-\$59	0.01	257.03
3	6437	inlet separator (400 psi)	CV	0.00	\$353	-\$350	0.05	258.62
1	6929	plant #1 north-west molecular siv	GTV	0.00	\$500	-\$494	0.08	270.18
2	4945	Comp #3	Cylinder body	0.00	\$400	-\$399	0.07	275.52

Table II. Measured THC emissions rates, sorted by pay-out period, 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 (\$)	CO ₂ E (t/yr)	Pay-out Period (y)
	A							
2	4887	Compressor 4	T	0.00	\$30	-\$30	0.00	278.23
1	7199	residue compressor (#5 ingersoll-rand)	VC	0.00	\$200	-\$199	0.04	285.50
3	6549	South White inlet compressor	F	0.00	\$400	-\$399	0.05	293.05
3	6423	North White inlet compressor	VVP	0.00	\$400	-\$399	0.05	293.05
5	6250	C-08 -	VC	0.00	\$200	-\$199	0.02	294.86
1	6835	plant #5 demethanizer side exchanger	TB	0.00	\$15	-\$15	0.00	305.68
5	6323	C-10 - manifold	F	0.00	\$50	-\$50	0.01	305.74
1	6942	refrigeration compressor (#2 Clark)	F	0.00	\$200	-\$199	0.00	326.10
3	6493	fuel gas piping north of Waukesha inlet compressors	DM	0.00	\$400	-\$399	0.06	351.83
1	7166	residue compressor (#2 ingersoll-rand)	VC	0.00	\$200	-\$199	0.03	367.00
5	5925	C-20 -	GOV	0.00	\$200	-\$198	0.03	376.30
5	6284	C-10 -	T	0.00	\$30	-\$30	0.00	383.40
3	6436	inlet separator (400 psi)	T	0.00	\$600	-\$597	0.05	439.57
4	5863	22-7 Wellhead - TSTM	ESD	0.00	\$400	-\$398	0.03	462.07
3	6487	South Waukesha inlet compressor	CS	0.00	\$8,000	-\$7,989	0.44	690.02
5	6021	C-01 - plug	T	0.00	\$30	-\$30	0.00	865.27
2	4928	Plant Sales Piping	V	0.00	\$60	-\$60	0.00	1088.41
1	7077	plant #6 middle molecular siv	CV	0.00	\$282	-\$282	0.01	1157.12
2	4918	Plant Inlet Piping	GTV	0.00	\$75	-\$75	0.00	1360.51
1	7115	residue compressor (west caterpillar)	CS	0.00	\$2,000	-\$1,999	0.06	1856.19
2	4950	Glycol Heater	CTBV/ CV	0.00	\$130	-\$130	0.00	2190.91
5	5985	C-06 - body	BV	0.00	\$100	-\$100	0.00	2884.24
2	4966	Comp #2	R	0.00	\$175	-\$175	0.00	3103.33
2	4911	Parlange 12 (3-phase sep)	Greaser	0.00	\$130	-\$130	0.00	3114.98
3	6734	pipe east of de-C3 reflux pump	C	0.12			0.00	
3	6626	West refrigeration compressor (old)	HOLE	0.00			0.06	

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 CO₂E 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.