

Energy Tracking Large Enterprise Case Study

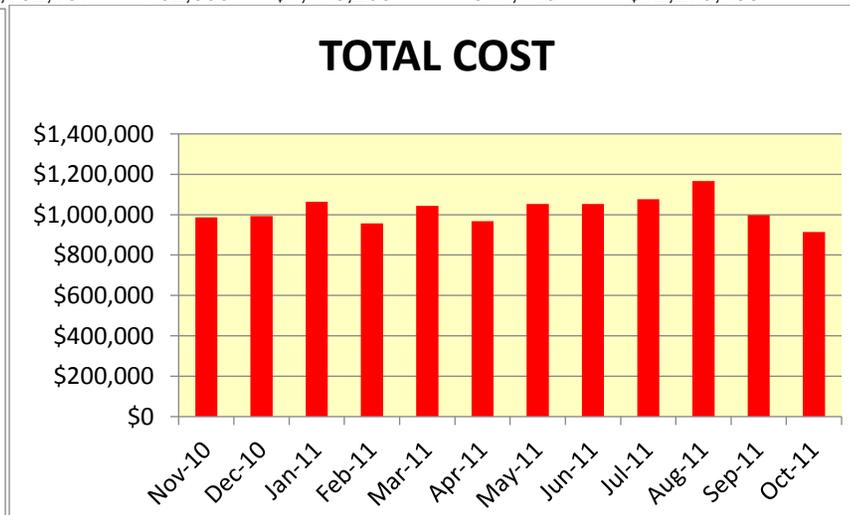
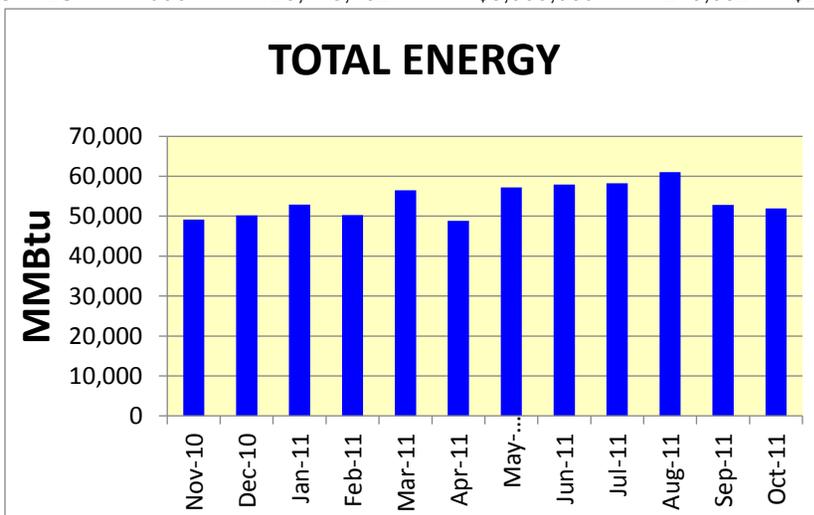
Example energy tracking data for a large food manufacturing plant is contained on the following pages. Table 1 presents the combined utility inputs for the facility during a one-year period and represents two electrical and one natural gas account. The table shows that the annual energy cost for electricity and natural gas is \$10,527,231. The tracking software also has space for storing water usage and cost. The summary sheet presents the combined usage and cost for electrical and fossil energy. The usage and cost for individual utility accounts is presented in separate tables.

Table 1

FACILITY UTILITY SUMMARY REPORT

Processing Plant

MONTH	DAYS	ELECTRICITY USE (KWH)	ELECTRICITY COST (\$)	FOSSIL FUEL USE (MMBTU)	FOSSIL FUEL COST (\$)	WATER USE (KGAL)	WATER COST (\$)	TOTAL ENERGY (MMBTU)	TOTAL UTILITY COST (\$)	AVERAGE COST (\$/MMBTU)
Nov-10	30	9,397,344	\$562,350	17,074	\$282,608	53,807	\$141,997	49,138	\$986,955	\$17.20
Dec-10	30	9,118,128	\$589,990	19,060	\$261,965	52,278	\$140,850	50,171	\$992,805	\$16.98
Jan-11	31	9,738,882	\$644,724	19,712	\$275,985	56,264	\$143,840	52,941	\$1,064,548	\$17.39
Feb-11	27	9,031,250	\$610,810	19,473	\$203,499	54,705	\$142,670	50,288	\$956,979	\$16.19
Mar-11	30	10,482,312	\$711,638	20,724	\$182,840	62,719	\$148,681	56,489	\$1,043,158	\$15.83
Apr-11	29	9,520,374	\$678,753	16,329	\$145,842	54,649	\$142,628	48,812	\$967,223	\$16.89
May-11	31	11,045,710	\$731,144	19,561	\$173,564	62,833	\$148,766	57,249	\$1,053,475	\$15.80
Jun-11	29	11,689,324	\$769,323	18,067	\$136,079	60,760	\$147,212	57,951	\$1,052,613	\$15.62
Jul-11	30	11,922,946	\$798,193	17,600	\$131,836	60,070	\$146,694	58,281	\$1,076,723	\$15.96
Aug-11	30	12,537,956	\$855,154	18,268	\$161,690	64,495	\$150,013	61,048	\$1,166,858	\$16.66
Sep-11	29	10,932,634	\$718,468	15,542	\$133,889	58,734	\$145,692	52,844	\$998,049	\$16.13
Oct-11	30	10,058,302	\$664,546	17,642	\$102,340	60,739	\$147,196	51,961	\$914,082	\$14.76
TOTALS	356	125,475,162	\$8,335,093	219,052	\$2,192,137	702,053	\$1,746,239	647,173	\$12,273,468	\$16.28

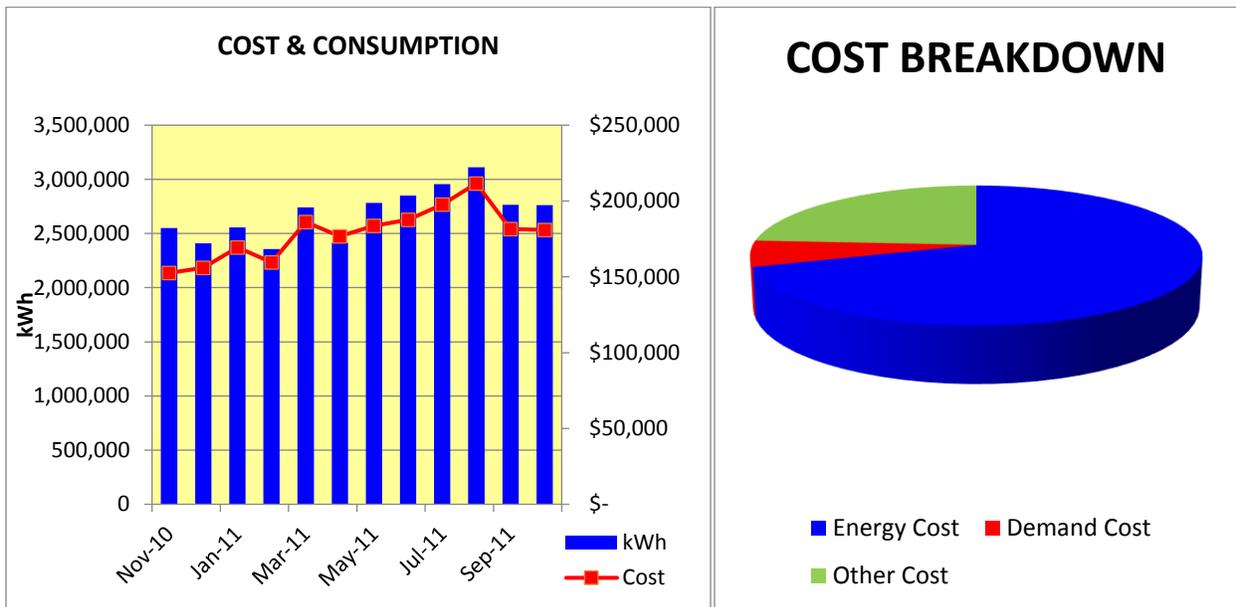


The software used for tracking also presents monthly bar charts for energy cost and consumption. Graphical illustrations clearly show trends as well as maximum and minimum.

Table 2

ELECTRICITY ACCOUNT REPORT 00002754 (Fresh Processing)

MONTH	DAYS	ELECTRICITY USE (KWH)	ACTUAL DEMAND	BILLING DEMAND	TOTAL COST	¢/KWH	COST PER DAY
Nov-10	29	2,549,567	5,296	5,296	\$ 152,521	5.982	\$5,259
Dec-10	30	2,409,372	5,036	5,036	\$ 155,973	6.474	\$5,199
Jan-11	30	2,554,661	5,202	5,202	\$ 169,387	6.631	\$5,646
Feb-11	27	2,355,811	4,972	4,972	\$ 159,400	6.766	\$5,904
Mar-11	30	2,740,342	5,069	5,069	\$ 186,117	6.792	\$6,204
Apr-11	29	2,414,319	5,170	5,170	\$ 176,718	7.320	\$6,094
May-11	30	2,781,832	5,213	5,213	\$ 183,672	6.603	\$6,122
Jun-11	29	2,849,674	5,461	5,461	\$ 187,627	6.584	\$6,470
Jul-11	30	2,955,478	5,562	5,562	\$ 197,720	6.690	\$6,591
Aug-11	30	3,109,820	5,569	5,569	\$ 211,559	6.803	\$7,052
Sep-11	29	2,765,452	5,504	5,504	\$ 181,487	6.563	\$6,258
Oct-11	30	2,762,716	5,447	5,447	\$ 180,831	6.545	\$6,028
TOTALS	353	32,249,044			\$2,143,012	6.646	\$6,069

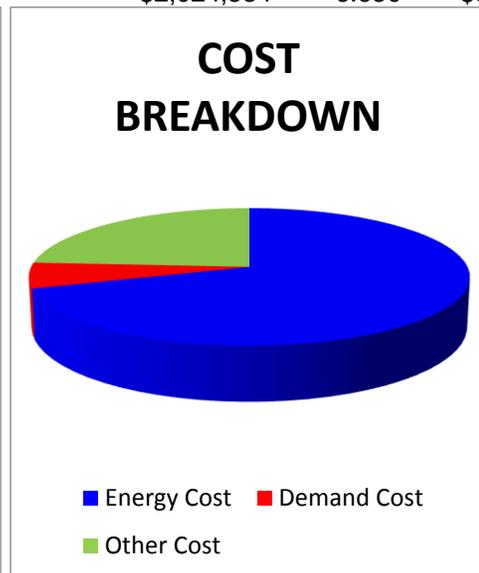
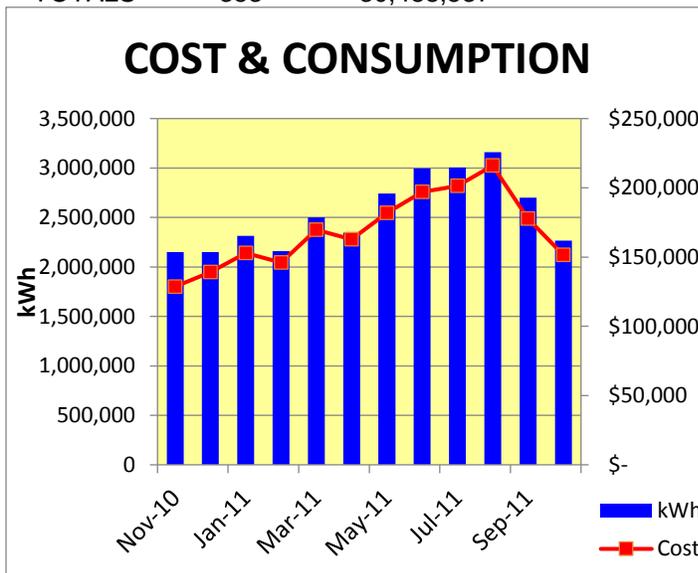


Electrical account 2754 is for one major segment of the plant referred to as fresh processing. Fresh processing is the initial step in the manufacturing process. The bar chart for cost and consumption shows a rise in summertime usage due to the higher ambient temperatures and resulting greater load on the refrigeration systems.

Table 3

ELECTRICITY ACCOUNT REPORT 00002757 (Further Processing)

MONTH	DAYS	ELECTRICITY USE (KWH)	ACTUAL DEMAND	BILLING DEMAND	TOTAL COST	¢/KWH	COST PER DAY
Nov-10	29	2,149,105	5,230	5,230	\$ 128,654	5.986	\$4,436
Dec-10	30	2,149,692	5,091	5,091	\$ 139,022	6.467	\$4,634
Jan-11	30	2,314,780	5,116	5,116	\$ 152,975	6.609	\$5,099
Feb-11	27	2,159,814	5,417	5,417	\$ 146,005	6.760	\$5,408
Mar-11	30	2,500,814	5,721	5,721	\$ 169,702	6.786	\$5,657
Apr-11	29	2,345,868	5,563	5,563	\$ 162,659	6.934	\$5,609
May-11	30	2,741,023	5,857	5,857	\$ 181,900	6.636	\$6,063
Jun-11	29	2,994,988	6,041	6,041	\$ 197,034	6.579	\$6,794
Jul-11	30	3,005,995	6,292	6,292	\$ 201,376	6.699	\$6,713
Aug-11	30	3,159,158	6,447	6,447	\$ 216,018	6.838	\$7,201
Sep-11	29	2,700,865	6,209	6,209	\$ 177,747	6.581	\$6,129
Oct-11	30	2,266,435	5,531	5,531	\$ 151,442	6.682	\$5,048
TOTALS	353	30,488,537			\$2,024,534	6.630	\$5,733

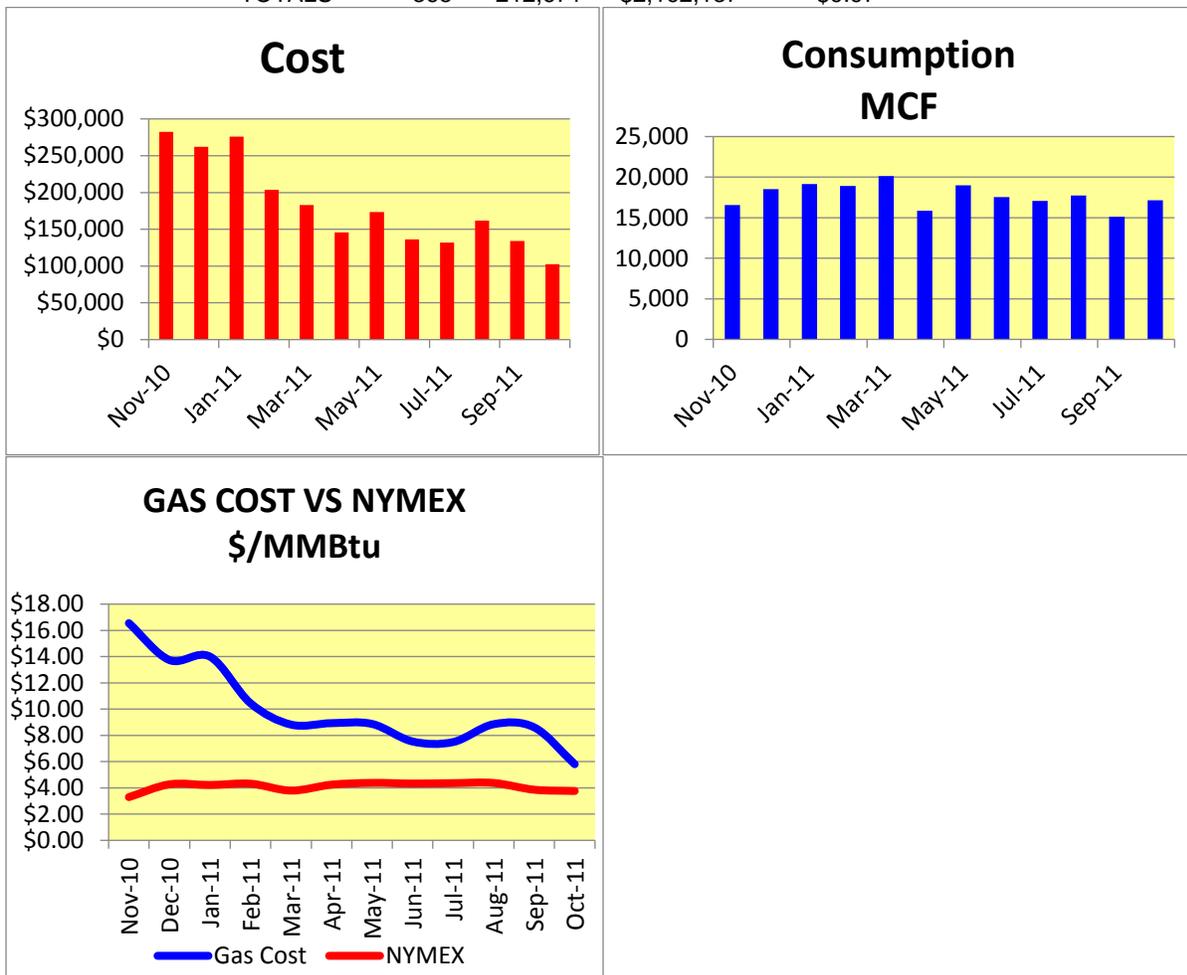


Electrical account 2757 is for another segment of the plant referred to as further processing. Further processing is the step following fresh processing and involves cutting fresh bulk meat product into manageable pieces, breading, cooking and flash freezing. As with the previous electrical account, metered consumption and billed cost rise in the summer as outside temperatures increase putting more load on the refrigeration system.

Table 4

NATURAL GAS ACCOUNT REPORT 00002755

MONTH	DAYS	TOTAL MCF	TOTAL COST	\$/MMBTU	NYMEX \$/MMBTU
Nov-10	32	16,577	\$282,608	\$16.55	\$3.292
Dec-10	31	18,505	\$261,965	\$13.74	\$4.267
Jan-11	33	19,138	\$275,985	\$14.00	\$4.216
Feb-11	28	18,906	\$203,499	\$10.45	\$4.316
Mar-11	31	20,120	\$182,840	\$8.82	\$3.793
Apr-11	28	15,853	\$145,842	\$8.93	\$4.240
May-11	33	18,991	\$173,564	\$8.87	\$4.377
Jun-11	29	17,541	\$136,079	\$7.53	\$4.326
Jul-11	30	17,087	\$131,836	\$7.49	\$4.357
Aug-11	32	17,736	\$161,690	\$8.85	\$4.370
Sep-11	29	15,089	\$133,889	\$8.61	\$3.857
Oct-11	29	17,128	\$102,340	\$5.80	\$3.759
TOTALS	365	212,671	\$2,192,137	\$9.97	



The natural gas account shows usage that is relatively stable throughout the year. The gas cost displayed a steady decrease during the tracking period as a result of falling gas commodity costs. Commodity prices are presented in the gas cost vs. NYMEX price in the bottom chart.

Table 5

Resource	Energy Rates*	
Electricity	\$0.0605	per kWh Energy
	\$2.00	per kW-month Demand
Natural Gas	\$10.00	per MMBtu

*Applicable sales taxes were included in these costs.

Table 5 presents information on marginal energy cost. Marginal costs are derived from utility rate schedules or energy commodity contracts. This data is useful in properly analyzing the cost savings from energy opportunities.