

# Geothermal Heat Pump Workshop

## April 29-30, 2009

### Case Study Jordan School District . . . .

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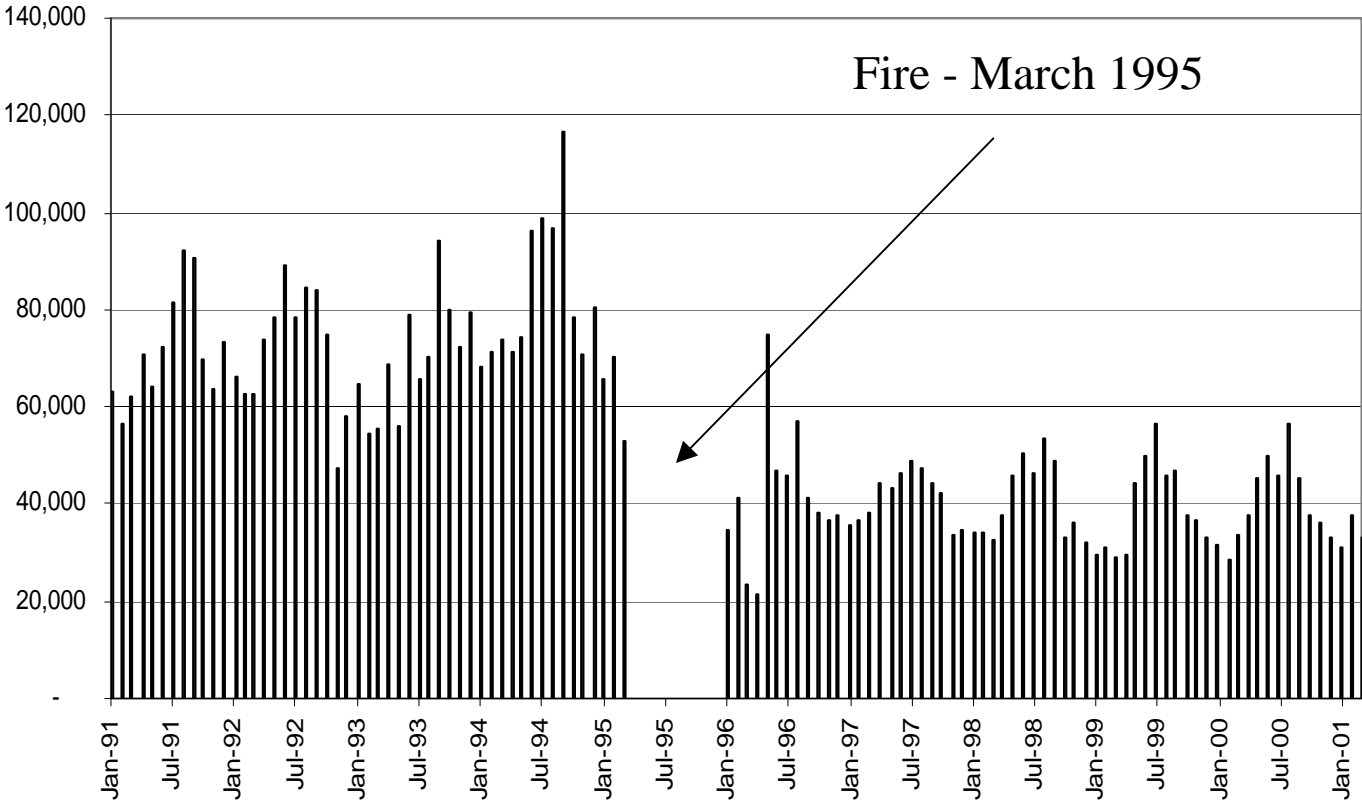


# Jordan School District

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- **Largest of Utah's 40 School Districts**
- **62 Elementary Schools**
- **17 Middle Schools**
- **10 High Schools & 1 Technical Center**
- **3 Special Schools**
- **86,000 Students**
- **Approx. 10,000,000 sq.Ft of building space**
- **250 Square miles in South Salt Lake County**
- **Cover 8 municipalities and unincorporated Salt Lake County**

### Oquirrh Elementary (Kwh) History



# Oquirrh Elementary

## After the Fire



7 month average  
before fire. . .

\$33,796

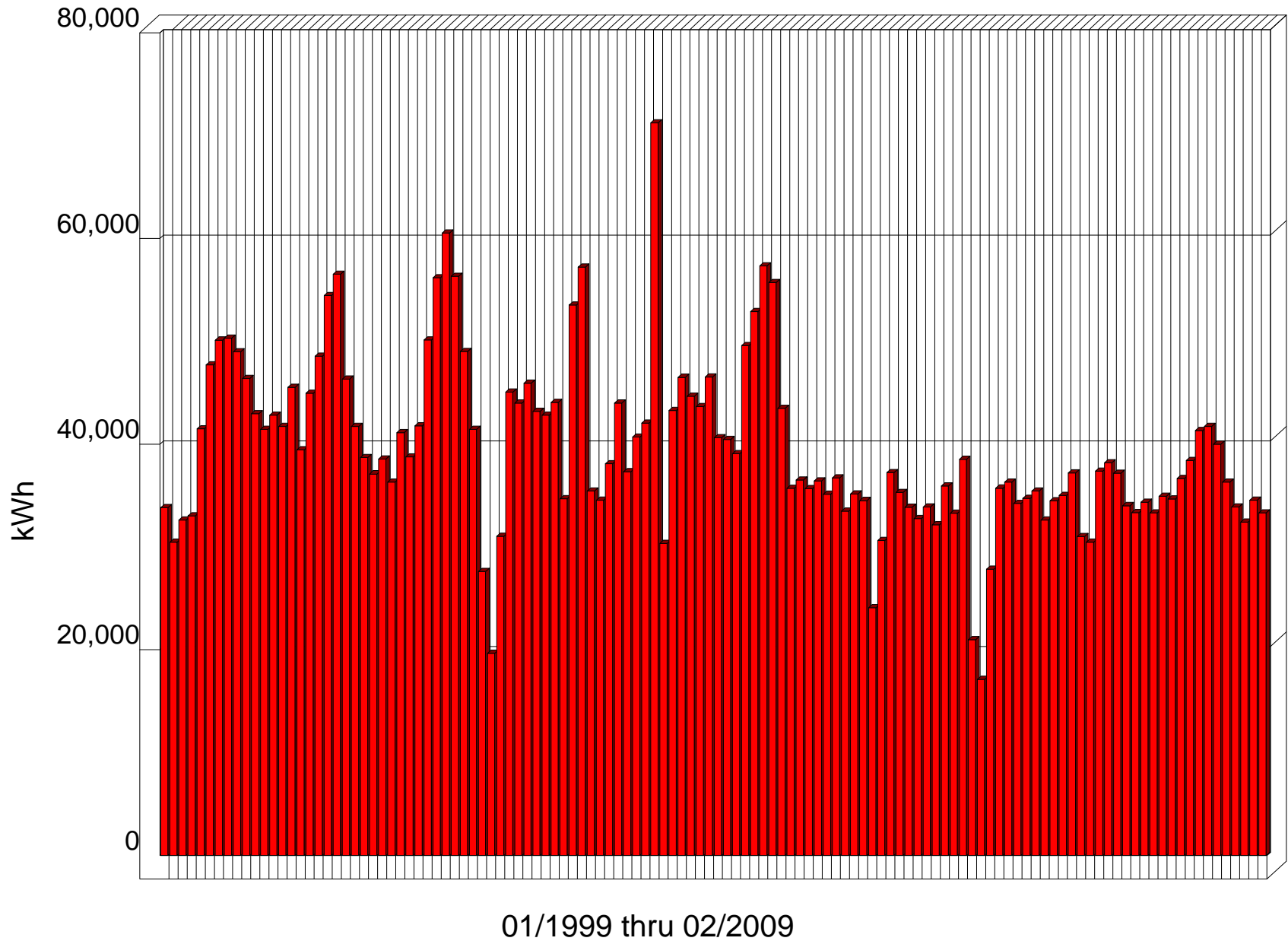
7 month 1996  
after fire. . .

\$20,732

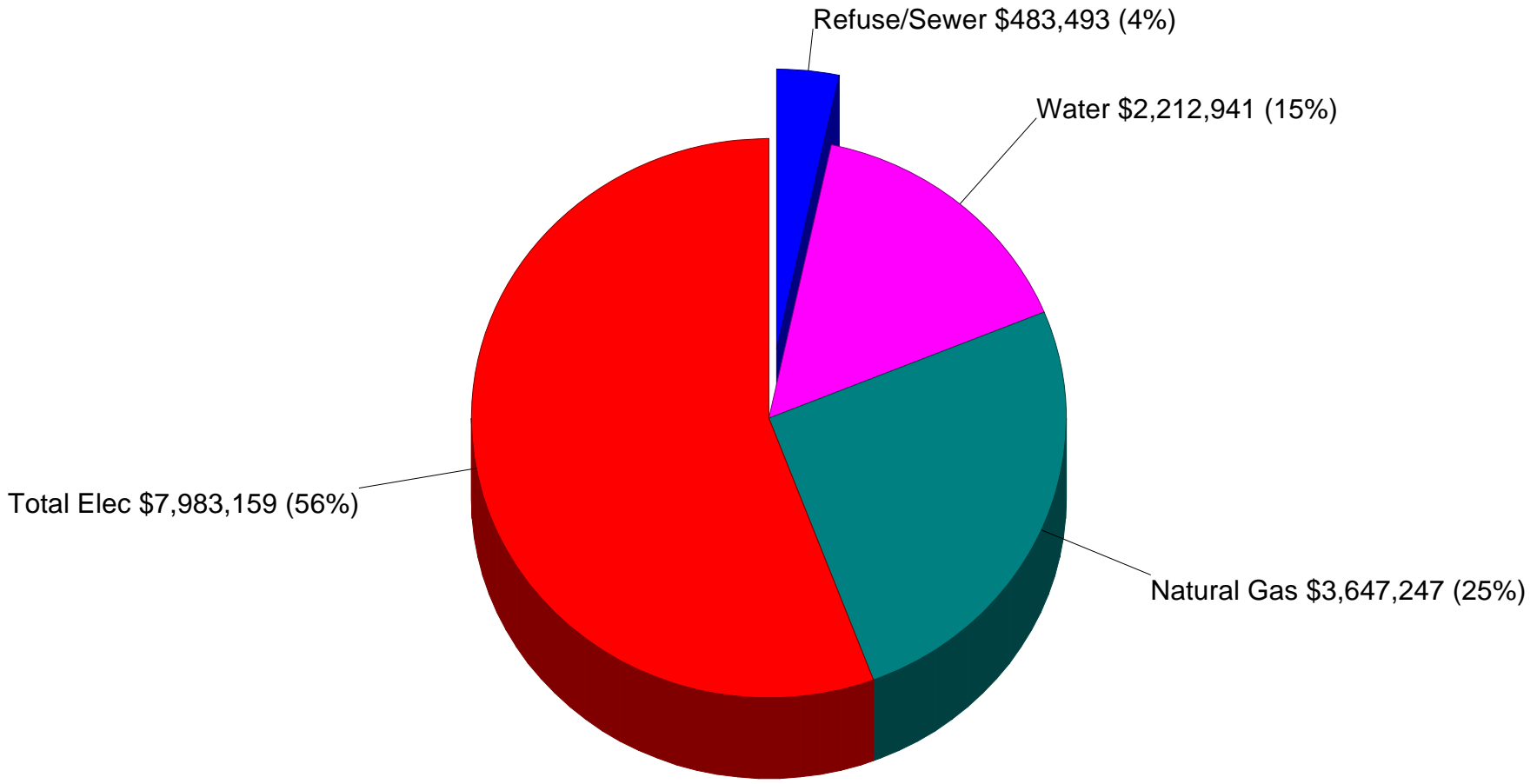
Saving

**\$13,064**

# Monthly Electricity Use for West Jordan Elementary

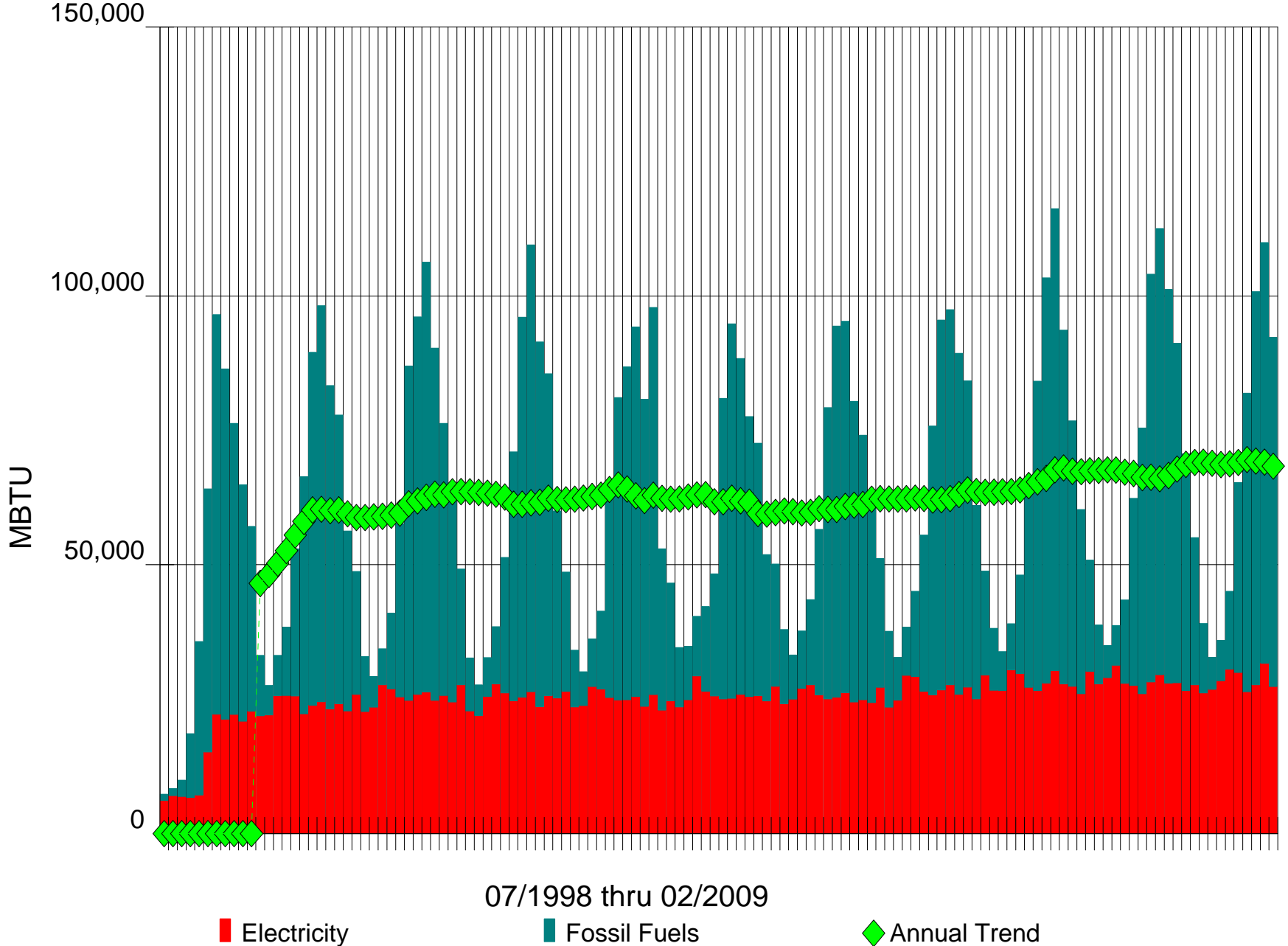


# Utility Cost Breakdown for Jordan School District



\$14,326,840 --- Total Utility Bill for  
Year Ending 12/2008

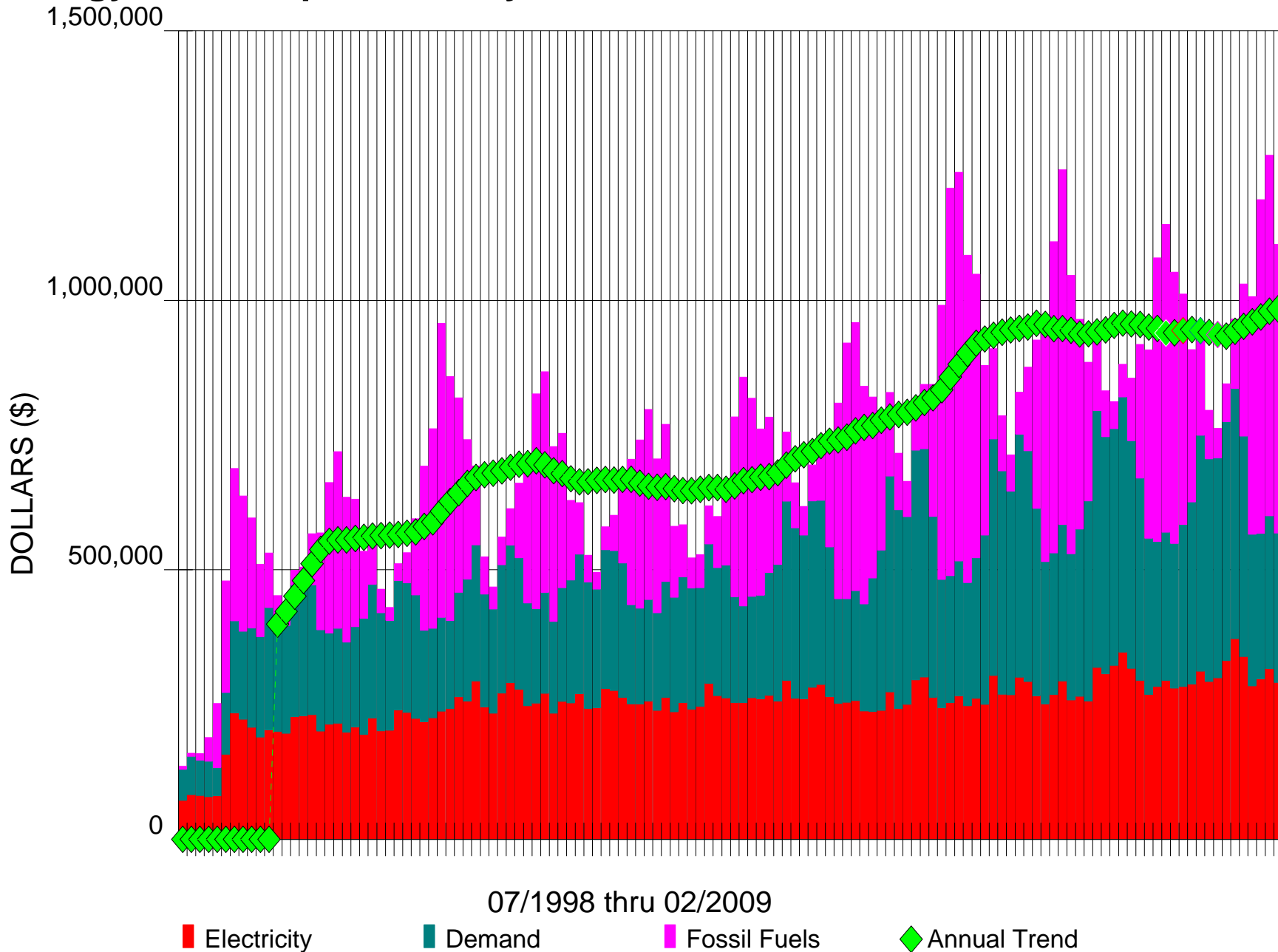
# Energy Use Graph - Monthly and Annual Trend for Jordan School District



07/1998 thru 02/2009

Electricity Fossil Fuels Annual Trend

# Energy Cost Graph - Monthly and Annual Trend for Jordan School District



07/1998 thru 02/2009

- Electricity
- Demand
- Fossil Fuels
- Annual Trend

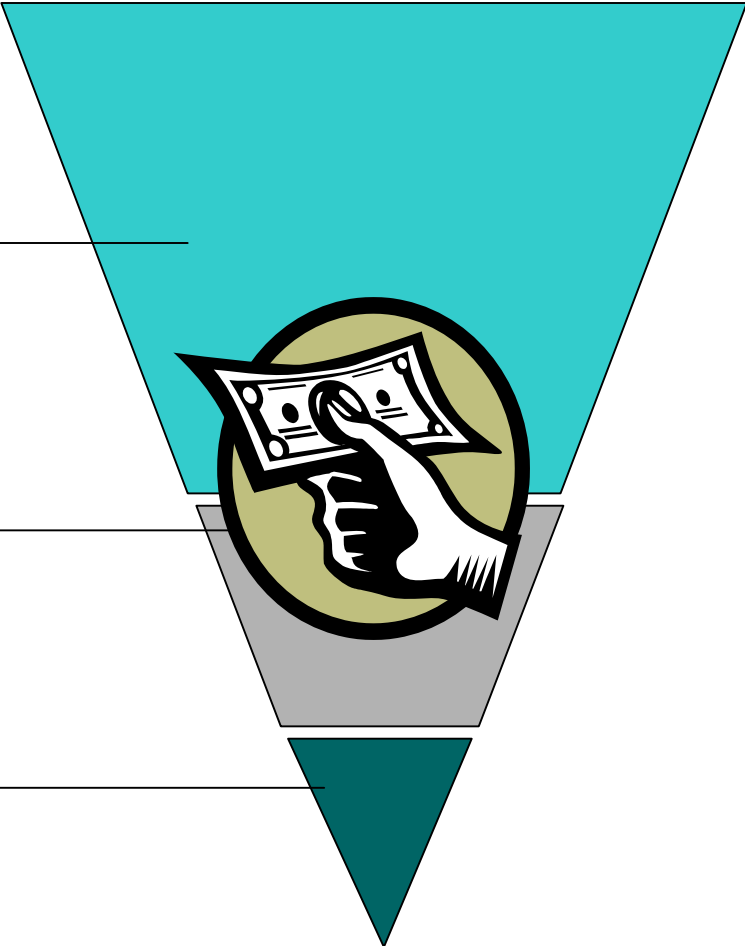


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Cost to Operate

Cost to Maintain

Cost to Purchase





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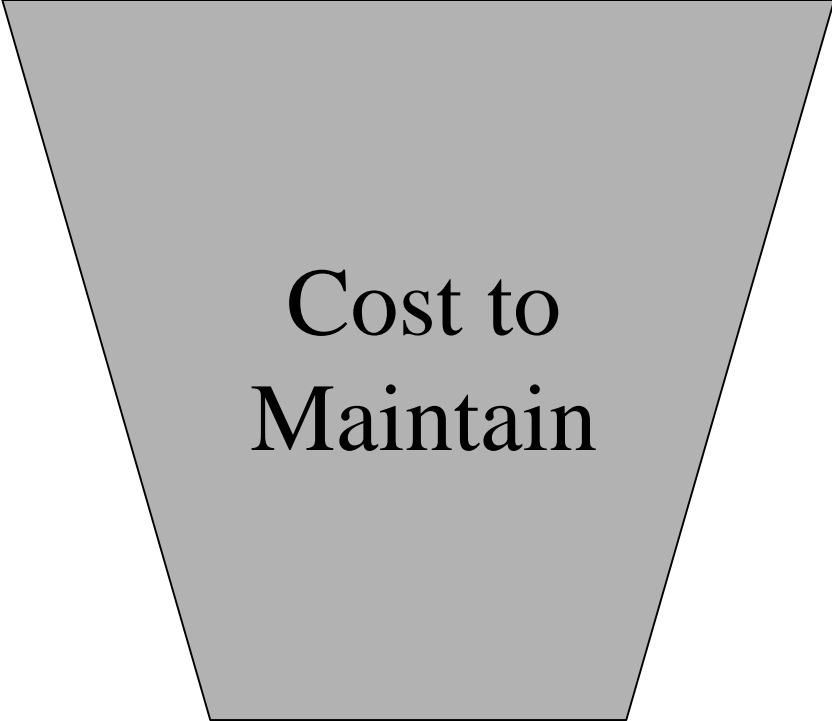


Cost to  
Purchase

# Cost to Purchase

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- Rocky Mountain Power model indicates incremental costs to install ground source at \$302,000
- Engineer estimates \$1.00 to \$1.50 per sq/ft additional cost for mechanical system
- Sunset Ridge Middle shows an increase of \$1,365,131 in construction costs over Lehi Junior
  - Bid/built 3years earlier
  - Increase in building square footage
  - Increase in construction costs
  - Bidding climate





# Cost to Maintain

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- Number of units to service
- Moved heat pump out of the ceiling and into mechanical rooms
- Questions on life expectancy of equipment.
- Currently contracting boiler/chiller maintenance
- Simplified repair of units
- Unit failure vs. Boiler/Chiller



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Cost to  
Operate



# Cost to Operate

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- Increase in utility rates
- Individual room control less expensive than shared zones
- Savings in cooling tower water costs
- Energy savings

## Jordan School District (Selected Sites)

### Site Energy/SqFt Ranking -- Month Ending 02/2009

Site	SqFt	Electricity (kWh)	Total Elec Cost	Cost/kWh	Total Elec Cost /SqFt	Natural Gas (Therms)	Natural Gas Cost	Cost/Therm	Natural Gas Cost /SqFt	Total Energy Cost /SqFt
Auxiliary Services	72,382	83,703	\$5,335	\$0.064	\$0.07	10,992	\$9,412	\$0.856	\$0.13	\$0.20
District Office	70,215	130,445	\$8,082	\$0.062	\$0.12	6,192	\$5,130	\$0.828	\$0.07	\$0.19
West Jordan Middle	138,515	84,432	\$5,678	\$0.067	\$0.04	22,785	\$19,374	\$0.850	\$0.14	\$0.18
Midvale Middle	143,235	73,813	\$5,390	\$0.073	\$0.04	20,881	\$17,121	\$0.820	\$0.12	\$0.16
Columbia Elementary	66,550	37,479	\$2,942	\$0.079	\$0.04	8,519	\$7,136	\$0.838	\$0.11	\$0.15
Monte Vista Elementary	66,225	55,166	\$4,292	\$0.078	\$0.06	6,985	\$5,718	\$0.819	\$0.09	\$0.15
Oquirrh Hills Middle	152,979	127,564	\$8,662	\$0.068	\$0.06	17,658	\$14,358	\$0.813	\$0.09	\$0.15
South Valley School	57,839	44,240	\$3,536	\$0.080	\$0.06	6,031	\$5,157	\$0.855	\$0.09	\$0.15
Midvale Elementary	83,979	38,857	\$2,869	\$0.074	\$0.03	11,734	\$9,680	\$0.825	\$0.12	\$0.15
East Midvale Elementary	58,065	48,878	\$4,384	\$0.090	\$0.08	4,983	\$4,166	\$0.836	\$0.07	\$0.15
Quail Hollow Elementary	62,323	48,988	\$3,835	\$0.078	\$0.06	5,643	\$4,612	\$0.817	\$0.07	\$0.14
Welby Elementary	65,565	60,615	\$4,723	\$0.078	\$0.07	4,945	\$4,151	\$0.839	\$0.06	\$0.14
Central Warehouse	54,160	42,792	\$2,574	\$0.060	\$0.05	5,550	\$4,712	\$0.849	\$0.09	\$0.13
Westvale Elementary	68,121	49,357	\$4,143	\$0.084	\$0.06	5,831	\$4,887	\$0.838	\$0.07	\$0.13
JATC Sandy	65,060	66,900	\$4,800	\$0.072	\$0.07	4,289	\$3,820	\$0.891	\$0.06	\$0.13
Brighton High	308,439	256,942	\$16,033	\$0.062	\$0.05	31,281	\$24,777	\$0.792	\$0.08	\$0.13
Willow Canyon Elementary	58,500	51,361	\$3,476	\$0.068	\$0.06	5,126	\$4,240	\$0.827	\$0.07	\$0.13
Mount Jordan Middle	152,808	67,090	\$4,519	\$0.067	\$0.03	19,539	\$15,614	\$0.799	\$0.10	\$0.13
Park Lane Elementary	59,265	48,966	\$3,431	\$0.070	\$0.06	5,328	\$4,329	\$0.812	\$0.07	\$0.13
Butler Middle	174,568	104,083	\$6,506	\$0.063	\$0.04	19,840	\$15,759	\$0.794	\$0.09	\$0.13
Copper Canyon Elementary	68,439	52,297	\$3,312	\$0.063	\$0.05	6,939	\$5,409	\$0.779	\$0.08	\$0.13
Alta View Elementary	66,197	140,546	\$8,386	\$0.060	\$0.13	N/A	N/A	N/A	N/A	\$0.13
Silver Mesa Elementary	58,125	48,117	\$3,796	\$0.079	\$0.07	4,298	\$3,560	\$0.828	\$0.06	\$0.13
Sandy Elementary	73,807	58,360	\$4,355	\$0.075	\$0.06	5,882	\$4,885	\$0.830	\$0.07	\$0.13
Eastmont Middle	187,900	352,800	\$22,474	\$0.064	\$0.12	1,134	\$1,017	\$0.897	\$0.01	\$0.13
Jordan Valley	90,413	83,034	\$5,191	\$0.063	\$0.06	7,387	\$6,098	\$0.826	\$0.07	\$0.12
Indian Hills Middle	123,579	131,167	\$8,780	\$0.067	\$0.07	7,806	\$6,444	\$0.826	\$0.05	\$0.12
Southland Elementary	62,200	47,454	\$4,036	\$0.085	\$0.06	4,249	\$3,555	\$0.837	\$0.06	\$0.12
Sunrise Elementary	56,800	39,629	\$2,949	\$0.074	\$0.05	4,599	\$3,835	\$0.834	\$0.07	\$0.12
Heartland Elementary	61,950	41,677	\$2,907	\$0.070	\$0.05	5,228	\$4,439	\$0.849	\$0.07	\$0.12
Copper Hills High	352,002	133,172	\$19,391	\$0.146	\$0.06	25,715	\$21,851	\$0.850	\$0.06	\$0.12
Granite Elementary	60,290	41,490	\$3,339	\$0.080	\$0.06	4,424	\$3,680	\$0.832	\$0.06	\$0.12
Midas Creek Elementary	68,439	51,150	\$4,361	\$0.085	\$0.06	4,146	\$3,531	\$0.852	\$0.05	\$0.12
Majestic Elementary	60,765	45,756	\$3,906	\$0.085	\$0.06	3,908	\$3,071	\$0.786	\$0.05	\$0.11
Hayden Peak Elementary	69,270	50,571	\$3,870	\$0.077	\$0.06	5,148	\$4,028	\$0.782	\$0.06	\$0.11
Terra Linda Elementary	69,665	44,969	\$3,970	\$0.088	\$0.06	4,715	\$3,935	\$0.835	\$0.06	\$0.11
Willow Springs Elementary	68,439	43,088	\$4,442	\$0.103	\$0.06	3,962	\$3,315	\$0.837	\$0.05	\$0.11
Jordan High	355,866	310,714	\$20,868	\$0.067	\$0.06	23,421	\$19,340	\$0.826	\$0.05	\$0.11
Bell View Elementary	63,621	44,803	\$3,732	\$0.083	\$0.06	4,506	\$3,448	\$0.765	\$0.05	\$0.11
Oakcrest Elementary	66,550	64,716	\$4,498	\$0.070	\$0.07	3,551	\$2,974	\$0.837	\$0.04	\$0.11
Foothills Elementary	70,239	60,369	\$4,513	\$0.075	\$0.06	3,941	\$3,327	\$0.844	\$0.05	\$0.11
East Lake Elementary	66,550	71,702	\$5,874	\$0.082	\$0.09	1,591	\$1,391	\$0.874	\$0.02	\$0.11
Butterfield Canyon Elementary	68,439	61,381	\$4,201	\$0.068	\$0.06	3,824	\$3,267	\$0.854	\$0.05	\$0.11
Bingham High	342,410	411,347	\$22,586	\$0.055	\$0.07	17,772	\$14,767	\$0.831	\$0.04	\$0.11
Oakdale Elementary	58,965	43,399	\$3,117	\$0.072	\$0.05	4,146	\$3,301	\$0.796	\$0.06	\$0.11
Albion Middle	123,979	124,474	\$7,533	\$0.061	\$0.06	7,205	\$5,910	\$0.820	\$0.05	\$0.11
Sprucewood Elementary	69,981	57,297	\$4,449	\$0.078	\$0.06	3,715	\$3,103	\$0.835	\$0.04	\$0.11
Rose Creek Elementary	69,270	45,445	\$3,893	\$0.086	\$0.06	4,614	\$3,555	\$0.771	\$0.05	\$0.11
Westland Elementary	60,300	52,108	\$3,182	\$0.061	\$0.05	3,656	\$3,189	\$0.872	\$0.05	\$0.11
Riverside Elementary	67,930	48,905	\$3,838	\$0.078	\$0.06	3,944	\$3,331	\$0.844	\$0.05	\$0.11



## Jordan School District (Selected Sites)

### Site Energy/SqFt Ranking -- Month Ending 02/2009

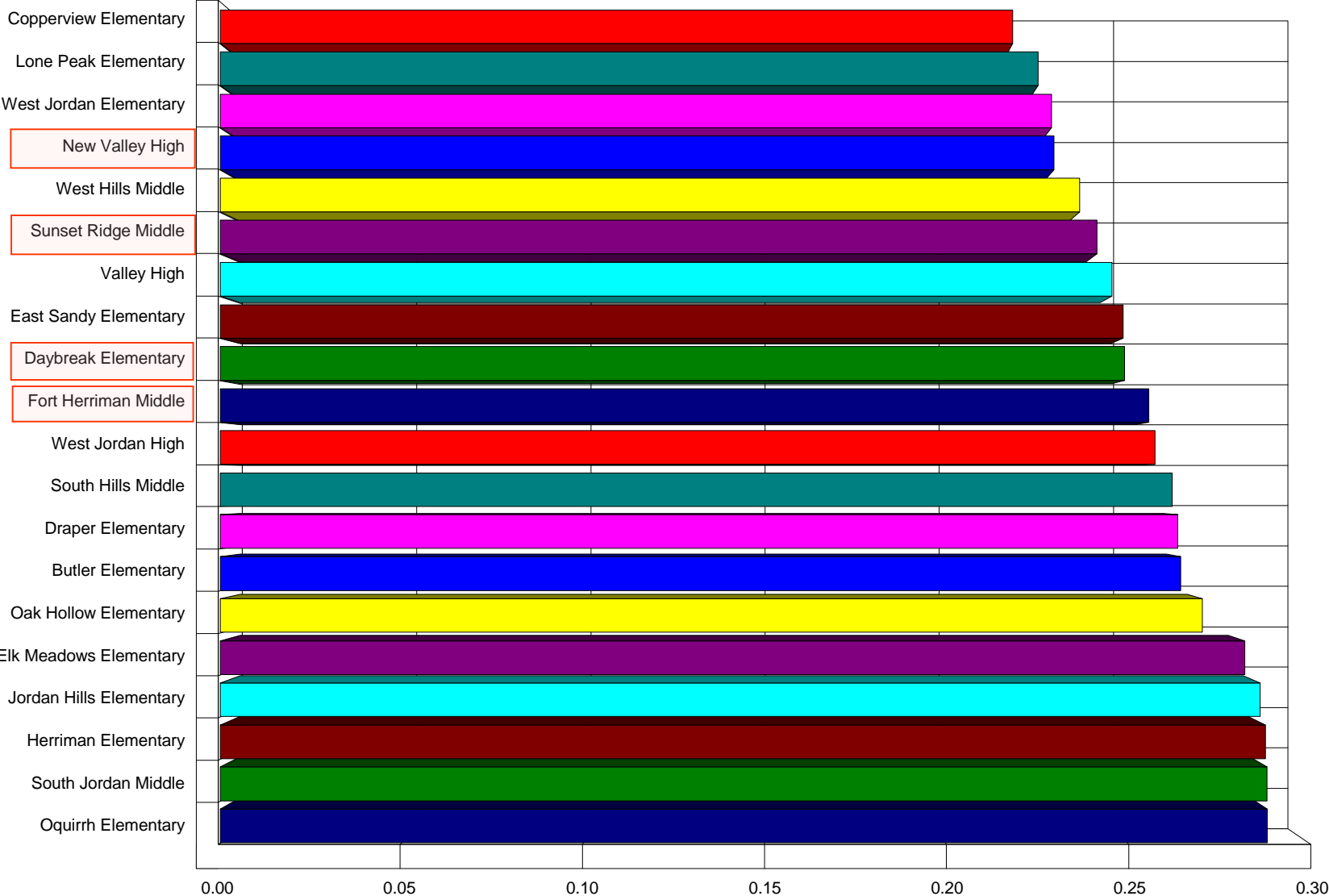
Site	SqFt	Electricity (kWh)	Total Elec Cost	Cost/kWh	Total Elec Cost /SqFt	Natural Gas (Therms)	Natural Gas Cost	Cost/Therm	Natural Gas Cost /SqFt	Total Energy Cost /SqFt
Crescent Elementary	63,321	42,516	\$2,945	\$0.069	\$0.05	4,433	\$3,711	\$0.837	\$0.06	\$0.11
Cottonwood Hts. Elementary	60,588	16,782	\$1,144	\$0.068	\$0.02	6,544	\$5,215	\$0.797	\$0.09	\$0.10
Edgemont Elementary	66,747	36,309	\$2,843	\$0.078	\$0.04	4,905	\$4,087	\$0.833	\$0.06	\$0.10
Crescent View Middle	128,479	111,895	\$7,721	\$0.069	\$0.06	6,594	\$5,501	\$0.834	\$0.04	\$0.10
Brookwood Elementary	60,290	34,041	\$2,618	\$0.077	\$0.04	4,547	\$3,482	\$0.766	\$0.06	\$0.10
Riverton High	365,306	306,929	\$21,149	\$0.069	\$0.06	18,869	\$15,734	\$0.834	\$0.04	\$0.10
Elk Ridge Middle	142,878	134,575	\$9,108	\$0.068	\$0.06	6,237	\$5,229	\$0.838	\$0.04	\$0.10
Ridgecrest Elementary	63,865	34,367	\$2,750	\$0.080	\$0.04	4,561	\$3,611	\$0.792	\$0.06	\$0.10
Riverton Elementary	60,925	42,852	\$3,114	\$0.073	\$0.05	3,422	\$2,938	\$0.859	\$0.05	\$0.10
Rosamond Elementary	64,123	49,506	\$3,694	\$0.075	\$0.06	3,017	\$2,588	\$0.858	\$0.04	\$0.10
Union Middle	183,177	114,587	\$7,672	\$0.067	\$0.04	12,252	\$10,106	\$0.825	\$0.06	\$0.10
Alta High	336,288	348,350	\$22,167	\$0.064	\$0.07	12,068	\$10,148	\$0.841	\$0.03	\$0.10
Midvalley Elementary	80,042	30,526	\$2,673	\$0.088	\$0.03	5,996	\$5,004	\$0.835	\$0.06	\$0.10
South Jordan Middle	140,678	113,630	\$8,474	\$0.075	\$0.06	5,703	\$4,727	\$0.829	\$0.03	\$0.09
South Jordan Elementary	68,439	48,333	\$3,682	\$0.076	\$0.05	3,195	\$2,685	\$0.840	\$0.04	\$0.09
Peruvian Park Elementary	68,360	30,108	\$2,469	\$0.082	\$0.04	4,618	\$3,848	\$0.833	\$0.06	\$0.09
Jordan Ridge Elementary	63,625	49,142	\$3,597	\$0.073	\$0.06	2,631	\$2,276	\$0.865	\$0.04	\$0.09
Canyon View Elementary	60,731	34,448	\$2,729	\$0.079	\$0.04	3,662	\$2,873	\$0.784	\$0.05	\$0.09
Falcon Ridge Elem	69,232	34,975	\$2,334	\$0.067	\$0.03	4,775	\$4,044	\$0.847	\$0.06	\$0.09
Herriman Elementary	70,170	38,477	\$3,718	\$0.097	\$0.05	3,566	\$2,735	\$0.767	\$0.04	\$0.09
Oquirrh Elementary	65,177	39,079	\$2,857	\$0.073	\$0.04	3,977	\$3,120	\$0.784	\$0.05	\$0.09
West Jordan High	339,549	315,378	\$21,479	\$0.068	\$0.06	11,906	\$9,588	\$0.805	\$0.03	\$0.09
Altara Elementary	66,725	41,669	\$3,215	\$0.077	\$0.05	3,346	\$2,850	\$0.852	\$0.04	\$0.09
Bella Vista Elementary	59,180	47,132	\$2,981	\$0.063	\$0.05	2,829	\$2,319	\$0.820	\$0.04	\$0.09
Hillcrest High	376,599	170,239	\$11,667	\$0.069	\$0.03	26,399	\$21,616	\$0.819	\$0.06	\$0.09
Mountain Shadows Elementary	68,040	52,814	\$3,756	\$0.071	\$0.06	2,571	\$2,225	\$0.865	\$0.03	\$0.09
Bluffdale Elementary	72,620	53,420	\$3,657	\$0.068	\$0.05	3,450	\$2,722	\$0.789	\$0.04	\$0.09
Joel P. Jensen Middle	123,979	72,750	\$5,152	\$0.071	\$0.04	6,766	\$5,680	\$0.839	\$0.05	\$0.09
Elk Meadows Elementary	63,820	36,293	\$2,469	\$0.068	\$0.04	3,529	\$2,993	\$0.848	\$0.05	\$0.09
Jordan Hills Elementary	68,370	45,378	\$3,127	\$0.069	\$0.05	3,068	\$2,625	\$0.856	\$0.04	\$0.08
Oak Hollow Elementary	70,170	31,438	\$2,795	\$0.089	\$0.04	3,581	\$2,999	\$0.837	\$0.04	\$0.08
Draper Elementary	64,425	38,258	\$3,072	\$0.080	\$0.05	2,494	\$2,162	\$0.867	\$0.03	\$0.08
South Hills Middle	156,608	115,385	\$7,647	\$0.066	\$0.05	5,781	\$4,849	\$0.839	\$0.03	\$0.08
Butler Elementary	71,627	35,016	\$2,633	\$0.075	\$0.04	3,671	\$2,968	\$0.809	\$0.04	\$0.08
Fort Herriman Middle	189,651	166,067	\$12,508	\$0.075	\$0.07	2,337	\$2,061	\$0.882	\$0.01	\$0.08
East Sandy Elementary	62,992	32,779	\$2,785	\$0.085	\$0.04	2,487	\$1,932	\$0.777	\$0.03	\$0.07
Daybreak Elementary	120,284	112,971	\$7,719	\$0.068	\$0.06	1,414	\$1,283	\$0.907	\$0.01	\$0.07
New Valley High	83,760	82,403	\$6,028	\$0.073	\$0.07	218	\$226	\$1.036	\$0.00	\$0.07
West Hills Middle	157,350	97,721	\$6,634	\$0.068	\$0.04	6,196	\$5,071	\$0.818	\$0.03	\$0.07
Lone Peak Elementary	69,130	33,840	\$2,562	\$0.076	\$0.04	2,870	\$2,446	\$0.852	\$0.04	\$0.07
Sunset Ridge Middle	195,254	156,919	\$11,751	\$0.075	\$0.06	2,295	\$1,968	\$0.857	\$0.01	\$0.07
West Jordan Elementary	61,050	33,319	\$2,635	\$0.079	\$0.04	1,837	\$1,629	\$0.887	\$0.03	\$0.07
Copperview Elementary	70,876	35,062	\$2,541	\$0.072	\$0.04	2,573	\$2,197	\$0.854	\$0.03	\$0.07
<b>Company Totals:</b>	9,955,673	7,821,281	\$555,232	\$0.071	\$0.06	636,746	\$525,784	\$0.826	\$0.05	\$0.11

## Jordan School District (Selected Sites)

### Site Energy/SqFt Ranking -- Month Ending 02/2009

Site	SqFt	Electricity (kWh)	Total Elec Cost	Cost/kWh	Total Elec Cost /SqFt	Natural Gas (Therms)	Natural Gas Cost	Cost/Therm	Natural Gas Cost /SqFt	Total Energy Cost /SqFt
Crescent Elementary	63,321	42,516	\$2,945	\$0.069	\$0.05	4,433	\$3,711	\$0.837	\$0.06	\$0.11
Cottonwood Hts. Elementary	60,588	16,782	\$1,144	\$0.068	\$0.02	6,544	\$5,215	\$0.797	\$0.09	\$0.10
Edgemont Elementary	66,747	36,309	\$2,843	\$0.078	\$0.04	4,905	\$4,087	\$0.833	\$0.06	\$0.10
Crescent View Middle	128,479	111,895	\$7,721	\$0.069	\$0.06	6,594	\$5,501	\$0.834	\$0.04	\$0.10
Brookwood Elementary	60,290	34,041	\$2,618	\$0.077	\$0.04	4,547	\$3,482	\$0.766	\$0.06	\$0.10
Riverton High	365,306	306,929	\$21,149	\$0.069	\$0.06	18,869	\$15,734	\$0.834	\$0.04	\$0.10
Elk Ridge Middle	142,878	134,575	\$9,108	\$0.068	\$0.06	6,237	\$5,229	\$0.838	\$0.04	\$0.10
Ridgecrest Elementary	63,865	34,367	\$2,750	\$0.080	\$0.04	4,561	\$3,611	\$0.792	\$0.06	\$0.10
Riverton Elementary	60,925	42,852	\$3,114	\$0.073	\$0.05	3,422	\$2,938	\$0.859	\$0.05	\$0.10
Rosamond Elementary	64,123	49,506	\$3,694	\$0.075	\$0.06	3,017	\$2,588	\$0.858	\$0.04	\$0.10
Union Middle	183,177	114,587	\$7,672	\$0.067	\$0.04	12,252	\$10,106	\$0.825	\$0.06	\$0.10
Alta High	336,288	348,350	\$22,167	\$0.064	\$0.07	12,068	\$10,148	\$0.841	\$0.03	\$0.10
Midvalley Elementary	80,042	30,526	\$2,673	\$0.088	\$0.03	5,996	\$5,004	\$0.835	\$0.06	\$0.10
South Jordan Middle	140,678	113,630	\$8,474	\$0.075	\$0.06	5,703	\$4,727	\$0.829	\$0.03	\$0.09
South Jordan Elementary	68,439	48,333	\$3,682	\$0.076	\$0.05	3,195	\$2,685	\$0.840	\$0.04	\$0.09
Peruvian Park Elementary	68,360	30,108	\$2,469	\$0.082	\$0.04	4,618	\$3,848	\$0.833	\$0.06	\$0.09
Jordan Ridge Elementary	63,625	49,142	\$3,597	\$0.073	\$0.06	2,631	\$2,276	\$0.865	\$0.04	\$0.09
Canyon View Elementary	60,731	34,448	\$2,729	\$0.079	\$0.04	3,662	\$2,873	\$0.784	\$0.05	\$0.09
Falcon Ridge Elem	69,232	34,975	\$2,334	\$0.067	\$0.03	4,775	\$4,044	\$0.847	\$0.06	\$0.09
Herriman Elementary	70,170	38,477	\$3,718	\$0.097	\$0.05	3,566	\$2,735	\$0.767	\$0.04	\$0.09
Oquirrh Elementary	65,177	39,079	\$2,857	\$0.073	\$0.04	3,977	\$3,120	\$0.784	\$0.05	\$0.09
West Jordan High	339,549	315,378	\$21,479	\$0.068	\$0.06	11,906	\$9,588	\$0.805	\$0.03	\$0.09
Altara Elementary	66,725	41,669	\$3,215	\$0.077	\$0.05	3,346	\$2,850	\$0.852	\$0.04	\$0.09
Bella Vista Elementary	59,180	47,132	\$2,981	\$0.063	\$0.05	2,829	\$2,319	\$0.820	\$0.04	\$0.09
Hillcrest High	376,599	170,239	\$11,667	\$0.069	\$0.03	26,399	\$21,616	\$0.819	\$0.06	\$0.09
Mountain Shadows Elementary	68,040	52,814	\$3,756	\$0.071	\$0.06	2,571	\$2,225	\$0.865	\$0.03	\$0.09
Bluffdale Elementary	72,620	53,420	\$3,657	\$0.068	\$0.05	3,450	\$2,722	\$0.789	\$0.04	\$0.09
Joel P. Jensen Middle	123,979	72,750	\$5,152	\$0.071	\$0.04	6,766	\$5,680	\$0.839	\$0.05	\$0.09
Elk Meadows Elementary	63,820	36,293	\$2,469	\$0.068	\$0.04	3,529	\$2,993	\$0.848	\$0.05	\$0.09
Jordan Hills Elementary	68,370	45,378	\$3,127	\$0.069	\$0.05	3,068	\$2,625	\$0.856	\$0.04	\$0.08
Oak Hollow Elementary	70,170	31,438	\$2,795	\$0.089	\$0.04	3,581	\$2,999	\$0.837	\$0.04	\$0.08
Draper Elementary	64,425	38,258	\$3,072	\$0.080	\$0.05	2,494	\$2,162	\$0.867	\$0.03	\$0.08
South Hills Middle	156,608	115,385	\$7,647	\$0.066	\$0.05	5,781	\$4,849	\$0.839	\$0.03	\$0.08
Butler Elementary	71,627	35,016	\$2,633	\$0.075	\$0.04	3,671	\$2,968	\$0.809	\$0.04	\$0.08
Fort Herriman Middle	189,651	166,067	\$12,508	\$0.075	\$0.07	2,337	\$2,061	\$0.882	\$0.01	\$0.08
East Sandy Elementary	62,992	32,779	\$2,785	\$0.085	\$0.04	2,487	\$1,932	\$0.777	\$0.03	\$0.07
Daybreak Elementary	120,284	112,971	\$7,719	\$0.068	\$0.06	1,414	\$1,283	\$0.907	\$0.01	\$0.07
New Valley High	83,760	82,403	\$6,028	\$0.073	\$0.07	218	\$226	\$1.036	\$0.00	\$0.07
West Hills Middle	157,350	97,721	\$6,634	\$0.068	\$0.04	6,196	\$5,071	\$0.818	\$0.03	\$0.07
Lone Peak Elementary	69,130	33,840	\$2,562	\$0.076	\$0.04	2,870	\$2,446	\$0.852	\$0.04	\$0.07
Sunset Ridge Middle	195,254	156,919	\$11,751	\$0.075	\$0.06	2,295	\$1,968	\$0.857	\$0.01	\$0.07
West Jordan Elementary	61,050	33,319	\$2,635	\$0.079	\$0.04	1,837	\$1,629	\$0.887	\$0.03	\$0.07
Copperview Elementary	70,876	35,062	\$2,541	\$0.072	\$0.04	2,573	\$2,197	\$0.854	\$0.03	\$0.07
<b>Company Totals:</b>	<b>9,955,673</b>	<b>7,821,281</b>	<b>\$555,232</b>	<b>\$0.071</b>	<b>\$0.06</b>	<b>636,746</b>	<b>\$525,784</b>	<b>\$0.826</b>	<b>\$0.05</b>	<b>\$0.11</b>

# Total Energy Cost/SqFt Jordan School District (Selected Sites)



Quarter Ending 02/2009

# Valley High School

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# Building Commissioning

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- Three-way valves not allowing circulating pumps to back down
- Co2 sensors allowing outside air dampers to remain open
- Unshielded wire causing problems with control of VFD's pumping
- Circulating pumps not staged as designed
- Hours of operation



# Future Building

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- Commissioning of all District buildings
- Specify - mandated a start-up team (control contractor, electrician, HVAC contractor) all trades sign off with documentation
- Large mechanical closets with multiple units between classrooms
- Add filter rack doors to all units
- Expand DDC controls for better staging of bore field

# Geothermal Heat Pump Workshop

April 29-30, 2009

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*You can't manage what  
you can't track!*

**Thanks!**