

**Department of Social Services Energy Audit**  
**December 17, 2007**  
**Executive Summary**

The Department of Social Services building was built in 1939 as a high school. It has an energy usage of \$1.70 per sq. ft. per year, which is moderately high. The ground floor is scheduled for a remodel from a Library into office space in 2008-9. The building currently uses an oil fired boiler for heating and a cooling tower for A/C. The system is over 20 years old and showing signs of increasing repair and maintenance costs as well as increasing consumer complaints about comfort. Possible energy savings for the building are in the range of 10-15%. This would mean a savings of \$2,000 to \$3,000 over the next year.

The greatest opportunity for savings lies in tamper proofing thermostats and adding programmable thermostats for saving energy during hours when the building is unoccupied. Upgrading lighting to energy efficient fixtures would also help save money. Upper story windows could be permanently sealed and missing interior storm windows replaced. Other cost effective measures could be pursued as well.

Submitted by: Curtis Putnam

Recommendations from Energy Audit of Dept of Soc. Ser.  
12-17-2007

- Permanently seal all upper story windows
- Replace missing interior storm windows
- Replace windows with thermopanes utilizing the same casings
- Or consider installing double pane windows.
- Keep curtains and drapes closed in unoccupied spaces.
- Consider adding reflective or heat absorbing film to minimize solar gain in the summer and heat loss in winter. (Note any window film reduces natural lighting and winter heat gain.)
- Consider adding insulation to ceiling to meet recommended standard. (Check cost effectiveness of this measure)
- Instruct personnel to close interior shading devices to reduce night heat loss in winter and to reduce solar heat gain during the summer.
- Place reminders where appropriate.
- Thermostats on heating/cooling units are vulnerable to occupant adjustment.  
Reset thermostats to correct settings  
Install tamperproof locking covers on thermostats  
Consider installing pre-set solid-state thermostats
- Adjust thermostats to 68°F in heating season and to 78°F in the cooling season.
- Reduce thermostat settings by a minimum of 10°F at night, weekends and holidays.
- Install time clock or an automated energy management system that will reduce heating and/or cooling. Maintain ventilation rates.
- Replace dirty filters on a regular basis.
- Test boiler efficiency on a regular basis
- Remove scale deposits, accumulation of sediment and boiler compounds on water side surfaces. Examine and treat rear portion of boiler.
- Cooling tower not maintained on an ongoing basis.
- Domestic hot water temperature is excessive. Lower thermostat setpoint to 105°F to 115°F for general purposes.
- Insulate water heater.
- Provide task lighting and reduce lamps and ballasts in fixtures by 50%.
- Replace burned out ballasts with more efficient electronic ballasts.
- Consider re-lamping to T5 fixtures.
- Post instructions to turn lights off when leaving areas unoccupied.

**2. ANNUAL ELECTRIC USE AND COST**  
Include Electrical Demand, if applicable

Building		Address		Year of Record					
DSS		88808 James Madison Hwy		From 7-2006 To 6-2007					
Account Number		Meter Number		Utility					
007403258		0001555021		Dominion Virginia Elec					
Maximum kW Demand W/O charge		Minimum Power Factor W/O charge		Building Size (sqft)					
				13,299					
1	2	3	4	5	6	7	8	9	10
Meter Read From	Meter Read Date To	KWh* Used	KWh/gross sq.ft.**	Annual (EUI) BTU/sqft (000)	Energy Cost	KW-KVA Demand	Fixed Service Cost	P.F.* and Demand Cost***	Total Cost
6-22	7-25	3,3200							2,173.08
7-25	8-23	2,8400							1,942.44
8-23	9-22	2,5280							1,802.67
9-22	10-23	2,0800							1,586.75
10-23	11-22	2,2000							1,609.15
11-22	12-22	1,7280							1,244.52
12-22	1-24	1,9440							1,251.42
1-24	2-22	1,8960							1,227.50
2-22	3-23	1,6640							1,122.15
3-23	4-24	2,1600							1,476.68
4-24	5-23	1,8320							1,311.17
5-23	6-22	3,320							2,172.49
TOTAL		27,240	20.4707	69866.5	\$0.06949/kWh				18,919.97

Comments: \$1.827/sq.ft/yr

Conversion: 3413 BTU/kWh

\*KW – Kilowatts, KVA – Kilo-Volt-ampere, KWH – Kilowatt hour, P.F. – Power Factor

\*\*Total annual kWh divided by the building's gross sq. ft.

\*\*\*If demand and/or power factor are metered and billed, energy cost here.



