Courts Building Energy Audit
April 24, 2008
Executive Summary

The Courts Building, built in 2001, has an energy usage of $2.78 per Sq. Ft.. This is considerably high compared to other buildings in Fluvanna County and does not compare well with other buildings of its type nationwide. The construction of the courthouse used state of the art technology. The uses of the building and its design do not allow for a large reduction of energy usage. However some reductions up to 5% are possible.

Primarily; some adjustments of the air intake, temperature setbacks and boilers will allow for some savings. Adding occupancy sensors to lights in seldom used areas will help also. Instructing staff to turn off lights in unused spaces and other user interactions would yield some savings. (See recommendations) There is a possibility that emergency generators could be used to reduce peak energy costs, this is being explored. A professional technical audit team has conducted a preliminary examination of the building and we are awaiting their recommendations.

Submitted by: Curtis Putnam

Recommendations from Energy Audit of Courts Building
April 24, 2008

- Use blinds to reduce night heat loss in winter and to reduce heat gain during the summer.
- Increase summer thermostat setting in courtrooms when unoccupied.
- Reset outside air to enable use of economizer function
- Test Boiler combustion efficiency
- Turn off one boiler for the summer
- Remove scale deposits from boiler and water side surfaces.
- Use economizer cycle in winter to provide cooling.
- Post instructions for staff to turn out lights in unused spaces and when leaving area.
- Install occupancy sensors in some offices.
- Find a way to reduce electrical demand.

2. ANNUAL ELECTRIC USE AND COST

Include Electrical Demand, if applicable

Building	Address	Year of Record
Courts	72 main street	From 2-07 2-08 To

Account Number	Meter Number	Utility
8895892548	115079056	Dominion

Maximum kW Demand W/O charge	Minimum Power Factor W/O charge	Building size (sqft)
		24,828

1	2	3	4	5	6	7	8	9	10
Meter Read Date From	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
2-21	3-21	27900				75		1016.31	2142.21
3-21	04-23	33600				81		1197.90	2637.41
4-23	5-18	29700				97		907.50	2227.02
5-18	6-22	49500				105		1870.	3489.96
6-22	7-23	49200				114		1290.73	3773.63
7-23	8-22	48300				126.00		1466.01	3469.51
8-22	9-20	47400				108.00		2253.41	3273.05
9-20	10-22	48600				93.00		1448.	3466.05
10-22	11-21	36000				90.00		1353.54	2873.52
11-21	12-19	30000				90.00		1263.31	2540.43
12-19	1-25	39000				90.00		1669.37	3331.20
1-25	2-21	30600				90.00		1226.40	2514.81
TOTAL		469800	24,828	18.89	64,581				35,334

Comments:

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.

3. ANNUAL NON-ELECTRIC ENERGY USE AND COST

Photo copy this form for additional fuel types

Building	Address	Year of Record
Courts	72 Main St	From 2-07 To 2-08
Account Number	**Meter Number**	**Utiilty**
9441/3390		Tiger fuel
Building Size (sq ft)	**Fuel Type**	**Specify Units**
24,828	#2 Fuel oil	Gallons

Billing Period From	Billing Period To	Fuel consumption	Conversion Factor	MMBTU	Annual (EUI) Btu/sq.ft.	Cost $
	2-9	1190				2598.12
	3-23	990				2317.36
	6-22	2994.5				7013.12
	10-15	2971.8				7301.71
	12-18	2180.5				6120.66
	1-20	1840.2				4972.22
	2-19	1185.8				3408.87
TOTAL		13352.8	134,000 BTU/gal	1798	72066.	33729

***Conversion Factors**

Natural Gas	100,000 Btu/therm
Natural Gas	1,030 Btu/cubic feet
Liquified Petroleum	(LP bottled gas) 95475 Btu/gallon
Kerosene	134,000 Btu/gallon
Distillate Fuel Oil	138,690 Btu/gallon
Residual Fuel Oil	149,690 Btu/gallon
Coal	24.5 million Btu per Standard short ton
Wood	8,680 Btu/pound
Steam	970 Btu/pound
Other	Consult standard Engineering Reference Manual

Comments:

$2.78/sq ft.

EUI = 90256 BTU/sq ft.

11. ENERGY SAVINGS

INSTRUCTIONS: This section is to be completed by the auditor after the walk-through portions of the audit. First, check the boxes which state the range of the percent of energy consumption which would be saved by implementing the operation and maintenance items recommended in section 2 of this book. Second, calculate the range of energy and cost savings by multiplying the estimated percentages by the annual electrical and fuel consumption date on this audit report.

Check two boxes in each category:

Range of Electrical Savings [ ]0% [ ]5% [X]10% [X]15% [ ]20% [ ]25% [ ]Other____

Range of Fuel Savings [ ]0% [ ]5% [X]10% [X]15% [ ]20% [ ]25% [ ]Other____

Calculate ranges of energy and cost savings:

Range of Electrical Savings

	% Range		Annual Electrical consumption kWh	=	Range of Electrical savings kWh	% Range		Annual Electrical dollars spent	=	Range of Electrical Dollar savings
Lower Bound	10	X	469800	=	46980	10	X	$35,334	=	$3,533
Upper bound	15	X	469,800	=	70470	15	X	$35,334	=	$5,300

Range of Fuel Savings

	% Range		Annual fuel consumption mm Btu	=	Range of fuel savings mm Btu	% Range		Annual Fuel dollars spent	=	Range of Fuel Dollar savings
Lower Bound	10	X	1798	=	179.	10	X	$33,729	=	$3,373
Upper bound	15	X	1798	=	269	15	X	$33,729	=	$5059

The auditor is not responsible if actual savings resulting from the implementation of the energy conservation opportunities listed in this section do not fall between the roughly estimated ranges which are specified.

Total Range of operation and maintenance energy savings (total all fuels):

From _____ Btu to _____Btu.
(lower bound) (upper bound)

Comments: