ENERGY AND WATER CONSERVATION REPORT FORMAT
PROJECTS BETWEEN $2M AND $10M CONSTRUCTION COST

2013-07-15: Revised to require yearly savings of KWH and Therms be reported, for DTE energy incentive programs.

Utilize the following report format to indicate compliance to U-M Design Guideline 3.2. Supplemental narratives and tables may be provided in addition to the information required below, but for the required tables indicated below, do not change the table explanations, format, headings, footnotes, or the order in which the tables are presented. The data in the tables in this sample report is for illustrative purposes only, update to project specific values.

Cover Page

Provide a cover page with the project name, project number, date and report version: SD, DD, CD, or FINAL. Provide similar information in the report footer.

Executive Summary

Energy conservation measures (ECMs) were evaluated per the requirements of U-M Design Guideline 3.2. The total estimated cost savings and first cost of the recommended ECMs for this project are summarized below:

Estimated Annual Energy Cost Avoidance w/ECMs:	$152,300
Total Estimated First Cost of ECMs:	$1,210,000
Over-all Simple Payback (years):	7.9

*The estimated savings in energy units, reported below, is useful for utility incentive programs. When reporting this information, **do not** convert electrical energy savings to equivalent therms, or gas savings to equivalent KWH.*

KWH/Year Savings:	XXXXX
Therms/Year Savings:	XXXXX

A requirement of U-M Design Guideline 3.2 is for designs to use 20% less water compared to designs that exactly meet the building code. The estimated water savings for this project are summarized below:

Estimated Total Annual Water Savings:	41,000 gallons
Annual Water use w/o Water Conservation Measures:	200,000 gallons
Percent Savings Versus Code Requirement:	21%

Table 1: Summary of ECM Evaluations

Table 1 summarizes every energy conservation measure evaluated by the design team for this particular project, along with various ECM financial metrics.

Table 1: Summary of ECMs Evaluated

ECM No.	Description	First Cost Estimate	Annual Costs Savings	Simple Payback	ROI	Persistence[1] H/M/L	Accepted Yes/No	Comments
1a	Additional 0.75" Wall Insulation	$180,000	$14,000	12.9	7.8%	H	**N**	
1b	Additional 1" Wall Insulation	$300,000	$16,500	18.2	5.5%	H	**N**	
1c	Additional 1.5" Wall Insulation	$350,000	$18,400	19.0	5.3%	H	**Y**	
2a	Glass SHGC =0.38	$186,000	$7,500	24.8	4.0%	M	**N**	
2b	Glass SHGC =0.33	$190,000	$8,000	23.8	4.2%	M	**Y**	
2c	Argon Filled Triple Glazed Glass SHGC = 0.26	$265,000	$13,400	19.8	5.1%	L	**N**	Seal life guaranteed only 10 years. Slight gray tint.
3	Day Lighting Sensors, Atrium	$42,000	$12,000	3.5	28.6%	M	**Y**	
4	Desiccant Wheel	$200,000	$40,000	5.0	20.0%	M	**Y**	
5	Exterior Shades, South Façade	$78,000	$15,000	5.2	19.2%	H	**Y**	
6	Increase Thermostat Deadband	$0	$7,000	N/A	N/A	L	**Y**	
7	Free Cooling Process Load	$350,000	$55,000	6.4	15.7%	H	**Y**	
8	Shower Heat Recovery Device	$24,000	$3,000	8.0	12.5%	L	**N**	Maintenance issues

Note 1: Persistence represents an opinion of the probability that the estimated energy savings will be fully realized.

Table 2: Water Conservation Measures and Predicted Results

Table 2 indicates the water saving measures and resulting percent water savings predicted for this project versus a project constructed to meet building code requirements (building code requirements are based on Energy Policy Act of 1992 fixture performance dictates). The requirement of U-M Design Guideline 3.2 is for designs to provide projects that use 20% less water than projects designed to exactly meet the building code.

Table 2: Water Conservation

Water Conservation Measure	Estimated Annual Savings (Gallons)
Dual Flush Water Closets	7,000
Waterless or 1/8 Gallon Per Flush Urinals	5,000
HVAC Condensate Used For Cooling Tower Make-Up	8,000
2 GPM Shower Heads	12,000
Gray Water Recovery	9,000

Estimated Total Annual Water Savings:	**41,000**
Annual Water use w/o Water Conservation Measures:	**200,000**
Estimated Percentage Savings:	**21%**

Tables 3 and 4:

U-M Design Guideline 3.2 requires that all projects implement certain "mandatory" energy conservation measures, and it requires that other energy conservation measures be "evaluated" for every project. Tables 3 and 4 indicate which of the mandatory and evaluated measures were found applicable to the project.

Table 3: Review of Mandatory Energy Conservation Measures

Mandatory ECM No.	Description	Implemented Yes/No	Comments	ECM Cross Ref.
a	Window Blinds/Shades	Y		ECM 9
b	Occupancy Schedules	Y		
c	Part Load Efficiency	Y		
d	HVAC System Zoning	Y		ECM 8
e	DDC VAV Control	Y		
f	Standalone HVAC Systems	N	No process areas.	
g	Laboratory ECMs	N	Not a lab building.	
h	Building Envelope Thermal Scanning	Y		ECM 4
i	Limit Incandescent Lighting	Y		
j	Lighting and Power Justification	N		

Table 4: Review of Mandatory Energy Evaluations

Mandatory Evaluation No.	Description	Implemented Yes/No	Comments	ECM Cross Ref.
a	Additional Below-Grade Insulation			
b	Additional Wall Insulation			
c	Additional Roof Insulation			
d	Improved Glazing (1)			
e	Eliminate Server Rooms			
f	High Efficiency Chiller (1)			
g	Free Cooling			
h	Heat Recovery			
i	Increased Envelope Inspections			
j	Occupancy/Daylight Sensing			
k	High Efficiency Boiler (1)			
l	High Efficiency HVAC Equipment (1)			
m	Variable Volume Kitchen Hoods			

Note 1: Performance/efficiency better than required by code.

Table 5: Energy Cost Assumptions:

Table 5 reports the energy cost assumptions utilized for energy cost calculations.

Table 5: Energy Costs Assumptions

Energy Type	Cost	Comments
Electricity	$0.079 /kwh	DTE Direct Purchase Rate
Natural Gas	$0.842/therm	MichiCon Direct Purchase Rate
District Steam	$1.90/therm	U-M Utility Rate
District Chilled Water	$1.07/therm	U-M Utility Rate

Attach the following to this report in the order indicated:

- *Completed COMcheck compliance report demonstrating compliance to ASHRAE Standard 90.1.*
- *If the ECB method is used, complete data files from the energy simulation program. Include the name of the simulation program(s) used. The output reports shall also show the amount of time any loads are not met by the HVAC system for the baseline building design and the proposed building design. The proposed building design shall not have more "unmet hours" than the baseline building.*
- *An explanation of any error messages noted in the simulation program output.*