

**VERDIGRE SHARED ENERGY SAVINGS PROGRAM**

**APPENDIX E**

**VERDIGRE SHARED  
ENERGY  
SAVINGS PROGRAM**

**ENERGY AUDIT**

# Proposed Improvements

|           |        |           |
|-----------|--------|-----------|
| Business: | Phone: | Date:     |
| Address:  | City:  | Zip Code: |

| Priority Ranking | Efficiency Improvements in Order of Most to Least Cost-effective | Estimated Savings (mmbtu) | Estimated Costs (dollars) | First year Savings (dollars) | Payback Period (years) | Y/C - Yes Contr.<br>Y/S - Yes Self.<br>N - No |
|------------------|--|---------------------------|---------------------------|------------------------------|------------------------|---|
|                  |  |                           | \$                        | \$                           |                        |   |
|                  |  |                           |                           |                              |                        |   |
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|                  |  |                           |                           |                              |                        |   |
| Totals           |  |                           | \$                        | \$                           |                        |   |

NOTES:

Name of Business \_\_\_\_\_

Address \_\_\_\_\_ Phone \_\_\_\_\_

Business Owner \_\_\_\_\_ Phone \_\_\_\_\_

Type of Business \_\_\_\_\_

Audit, Date \_\_\_\_\_ Time \_\_\_\_\_ Weather \_\_\_\_\_

Business Activities at Time of Audit \_\_\_\_\_

Age of Business \_\_\_\_\_ Age of Building \_\_\_\_\_ Additions \_\_\_\_\_

Expected Life of Building \_\_\_\_\_ Overall Condition \_\_\_\_\_

Building Original Design Use \_\_\_\_\_

Winter Hours of Operation \_\_\_\_\_

Summer Hours of Operation \_\_\_\_\_

Building Cleaning/Restocking Hours \_\_\_\_\_

Type and Age of Past Energy Improvements \_\_\_\_\_

Special Energy Intensive Equipment Used for Business \_\_\_\_\_

Other Internal Gains \_\_\_\_\_

Is the Building Charged a Peak Electrical Demand \_\_\_\_\_ Rate \_\_\_\_\_

Hours or Major Activity Changes in the Past Year \_\_\_\_\_

Types and Amounts of Waste Materials Generated or Handled During Normal

Business Activity \_\_\_\_\_

Present Yearly Heating Cost \_\_\_\_\_ Air Conditioning Cost \_\_\_\_\_

Base Load (fans, lights ect.) Electrical Energy Cost \_\_\_\_\_

Base Load (water heater, cooking ect.) Other Energy Cost \_\_\_\_\_

## ENERGY CONSUMPTION HISTORY CHART

Name of Building: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Begin with the month which is exactly 12 months previous to this month and complete all 12 months. Please complete the "PRIMARY FUEL" chart with the fuel you use for the greatest amount of heating. If this fuel is natural gas, the unit will be MCF; if it is heating oil, the unit will be GALLONS. Please also chart your "ALTERNATE FUEL" in the same manner. Please specify the types of primary and alternate fuels.

|                           |                             |
|---------------------------|-----------------------------|
| TYPE OF PRIMARY FUEL USED | TYPE OF ALTERNATE FUEL USED |
|---------------------------|-----------------------------|

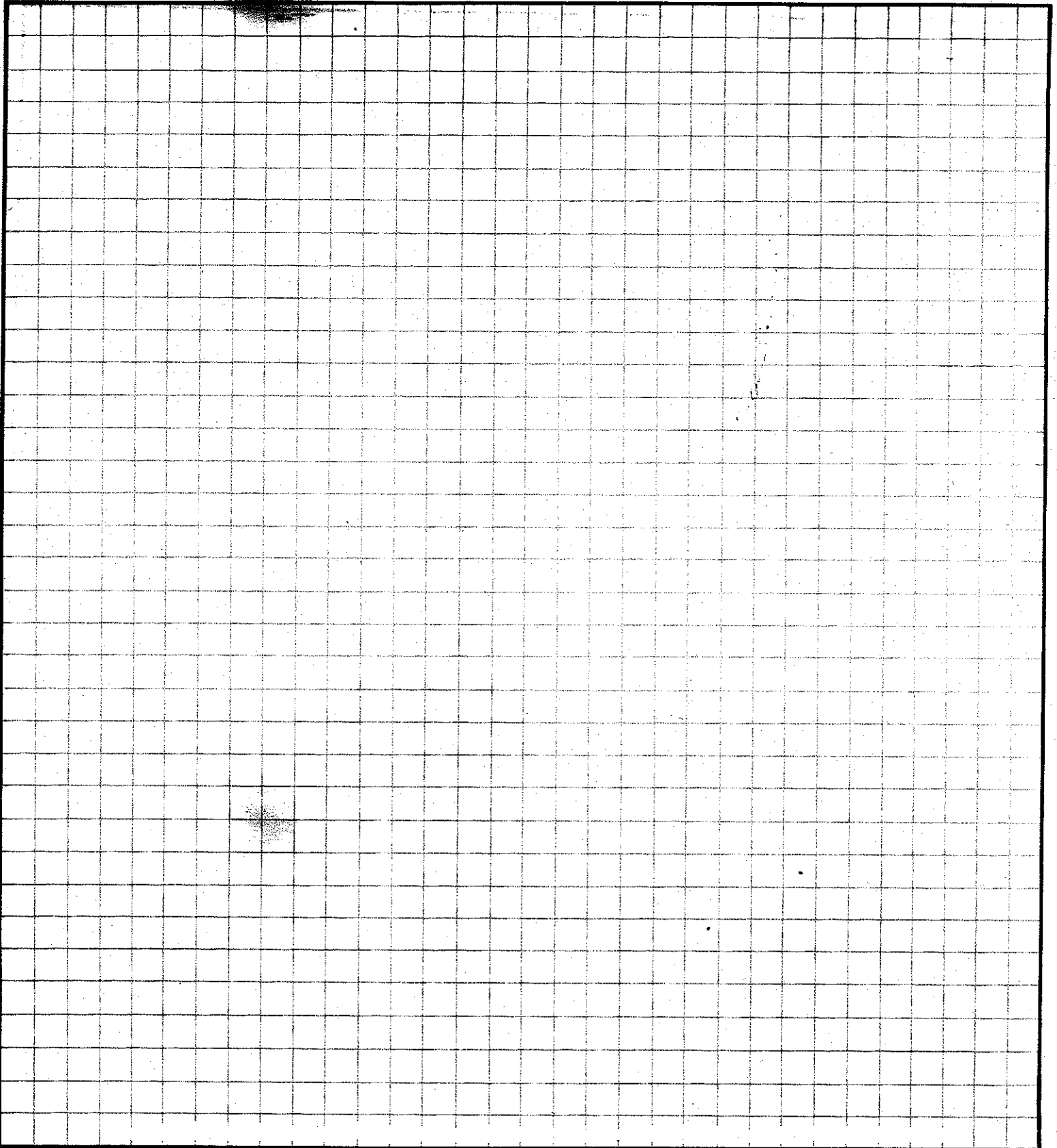
| PRIMARY FUEL  |      |       |         | ALTERNATE FUEL |      |       |         | ELECTRICITY   |      |       |         |
|---------------|------|-------|---------|----------------|------|-------|---------|---------------|------|-------|---------|
| MONTH         | YEAR | UNITS | DOLLARS | MONTH          | YEAR | UNITS | DOLLARS | MONTH         | YEAR | UNITS | DOLLARS |
|               |      |       |         |                |      |       |         |               |      |       |         |
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| <b>TOTALS</b> |      |       |         | <b>TOTALS</b>  |      |       |         | <b>TOTALS</b> |      |       |         |

**ELECTRICAL DEMAND** (Answer only if your electric utility bills you on a demand rate. Enter the highest measured electrical demand and the month for which it was recorded.)

|   |                                      |
|---|--------------------------------------|
| <b>HIGHEST MEASURED DEMAND</b><br>_____ Kilowatts | <b>MEASURED IN MONTH OF</b><br>_____ |
|---|--------------------------------------|

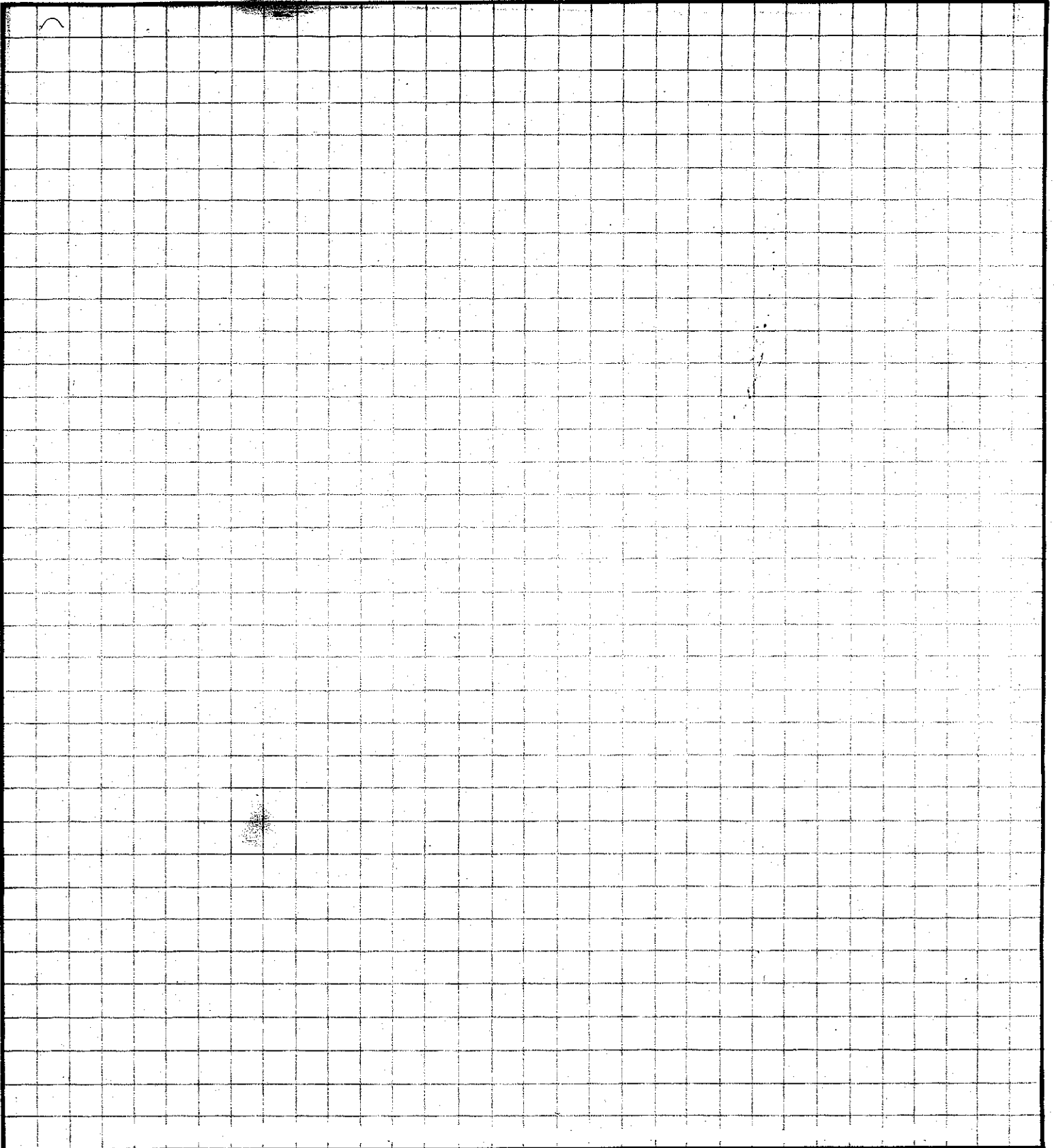
# BUILDING OUTLINE

Sketch building out line, including measurement,  
and window location, basement areas, unheated areas  
on walls of adjoining buildings, etc.



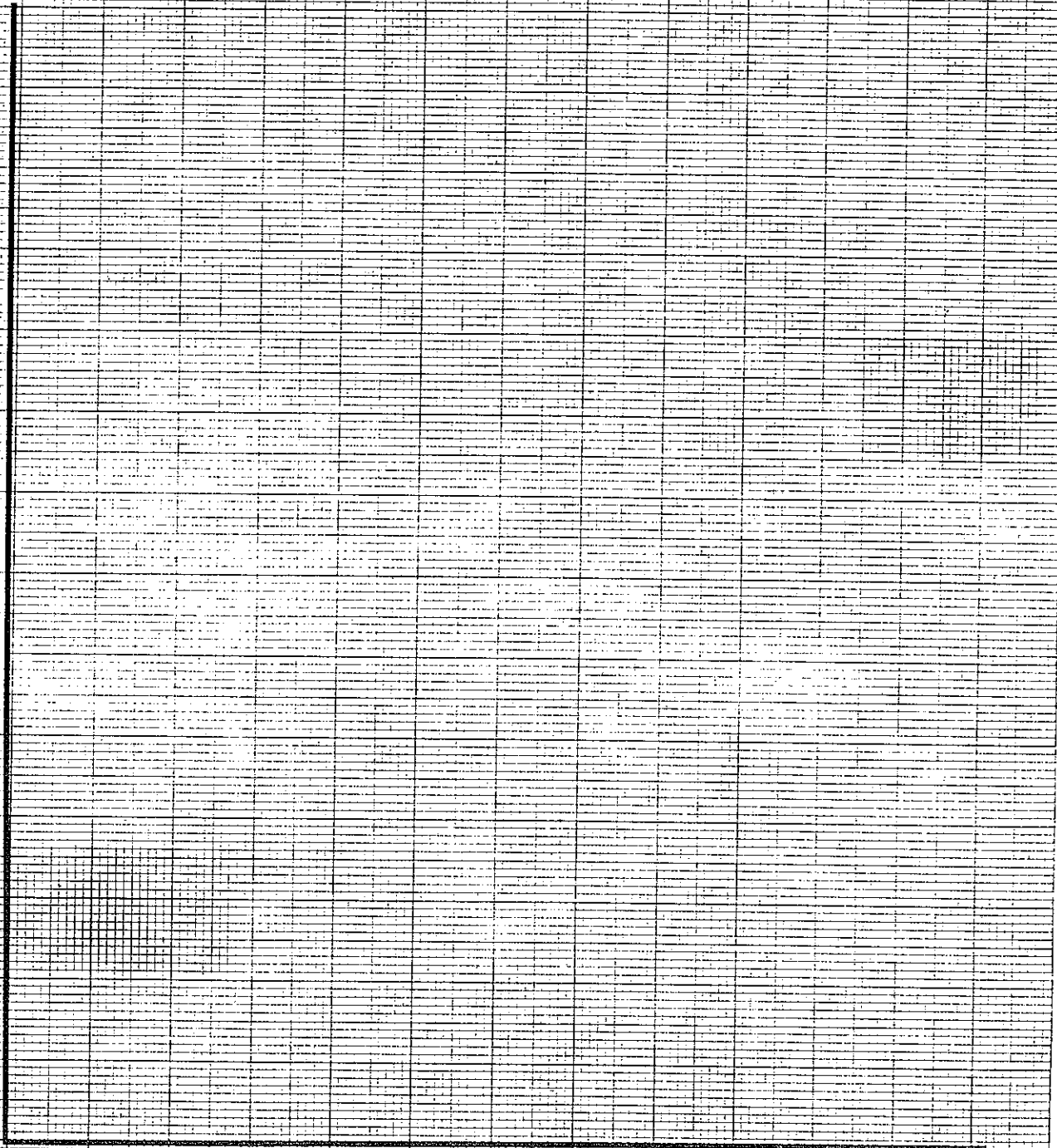
# BUILDING RELATION

Sketch Building in relation to neighboring buildings, obstructions, wind breaks, roads, etc. Indicate North.



19 \_\_\_\_\_  
19 \_\_\_\_\_  
19 \_\_\_\_\_

# PEAK DEMAND



JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC



19 \_\_\_\_\_  
19 \_\_\_\_\_  
19 \_\_\_\_\_

# ENERGY USE

JULY AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE

# ENERGY AUDIT CHECKLIST

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EXISTING CONDITION:

Suggested O & M Options:

Suggested Energy Measures: (Retrofit)

POTENTIAL ENERGY SAVING:

COMMENTS

# Energy Audit Assurances

The recommendations contained in this audit report are based on an intention of maximizing energy efficiency rather than expanding and/or improving the structural appearance of the building or business. It is understood that any energy efficiency improvements made as a result of this report should be made to comply with all applicable building and/or fire safety codes and the Verdigre Shared Energy Savings Program specifications.

The procedures used to make these estimates are consistent with generally acceptable criteria for completing commercial energy audits; however, the actual installation costs your business may incur and energy savings you realize from installing these measures may be different from the estimates contained in this audit report. Although the estimates for individual energy efficiency improvements are based upon measurements of your business, how you operate your business and what final mix of improvements you choose to implement will affect the actual savings you will realize.

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Auditor Signature

Date

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Administrator Signature

Date

I have received, reviewed and understood the results of the Energy Audit completed for my business as part of the Verdigre Shared Energy Savings Program.

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Business owner

\_\_\_\_\_ manager \_\_\_\_\_

Signature

Date

**Verdigre Shared Energy Savings Program  
Administrative Procedures**

**AUDITS**

**ASBESTOS** - All asbestos encountered by the auditor will be noted on the audit. When a particular project involves working with the asbestos, the auditor will require that the contractor contact the State Health Department for recommendations on handling the asbestos materials.

**AUDIT COMPLETION** - The audits will be completed in the order the program applications were received.

**CONDITIONED SPACE** - The area being purposely heated or cooled in the building is considered conditioned space.

**DOCUMENTATION OF METHOD** - All pages used to make energy saving calculations, estimates and building notes should be filed with the audit. These pages must include an explanation of how interaction between projects was accounted for and the assumptions used for the calculations and interaction estimates.

**FORMAT of the AUDIT** - The pages of the audit will be in the following order; Title page, Proposed Improvements, Business Description, Energy Consumption, Energy Use Graphs, Building Description, Building Outline, Building Relation, Operation and Maintenance, Energy Audit Checklist, Long Range Suggestions, Auditor's Note to Business, Energy Audit Assurances. **NOTE:** The Energy Audit Checklist pages should be ordered by placing the most cost effective project first, etc. For those projects where the auditor is showing an alternative to the recommended action, the alternative should follow directly behind the recommended action(option).

**INTERACTION BETWEEN PROJECTS** - Estimating interaction will occur in two steps. For the first presentation a rough estimate will be made of the possible interaction between projects. Since the auditor is unsure of which projects or options will be implemented, just a ball park amount will be presented. An estimate of how much the savings in the first pool and second pool are overstated will be presented separately. For example, the first pool may be overstated by 20% and the second pool by 15%. These statements will be made at the first presentation. After the business owner has solicited bids and has indicated to the program administrator which projects he or she are interested in, the following steps will be used: First, look at all the projects on the Proposed Improvement sheet that the business owner is interested in implementing and determine which ones will interact with each other.

Now, estimate a new expected energy savings amount for each of the projects that interact. On an extra copy of the proposed improvement sheet, note alongside each affected project the new savings estimate. Next, perform the following: a. Multiply the number of square feet that are purposely conditioned by \$1.30; if the answer is less than \$2,000, use \$2,000 as the answer; b. Moving down the proposed improvement sheet, sum the cost of the projects until you reach a sum equal to or less than the answer in a.(cost sum); c. Then sum the estimated energy savings of the projects summed in b. (USE THE ORIGINAL ESTIMATES NOT THOSE CORRECTED FOR INTERACTION); d. Divide this sum into the cost sum.

°° If the answer is less than 5.4, then all the summed projects are eligible for the 60/40 loan pool. Consequently, sum the energy savings of these projects but replace the original estimates with any new interactive estimates. This is the amount these projects are expected to save and

will be the basis for determining the loan payments which can be adjusted if the business does not realize the projected savings.

°° If the answer is greater than 5.4, subtract out the last project added to the summed costs and savings. Now, divide the costs by the savings. Repeat this procedure until an answer less than 5.4 is obtained. Then follow the instructions for answers less than 5.4;

e. Sum the costs and savings accounting for interaction for the remaining projects. Note this answer and the answer on the first group of projects on the copy of the proposed improvement sheet.

ANOTHER CONSIDERATION: If requested by the business owner during the second presentation, a project that is in the secondary pool may replace one in the 60/40 split providing the dollar and payback criteria are met. Because this situation may arise, it is important that the auditor and the administrator have a copy of the proposed improvement sheet with the individual energy savings estimates corrected for interaction. With this sheet handy, the new amounts can be calculated quickly.

ONE MORE COMPLICATION: In most cases the projects won't sum to the eligible amount. If the next project on the proposed improvement sheet can be added to the cost and savings sums without causing the payback period to exceed 5.4, then part of this project can be funded through the 60/40 loan pool. The portion of the project that is eligible will be the dollar amount that remains in the 60/40 pool after the cost of the other projects have been subtracted divided by the cost of the project. If \$200 dollars remain in the 60/40 pool and the project being added costs \$500, then the portion of the project funded by the 60/40 pool will be \$200 or 40%. Forty percent of the interaction adjusted energy savings will be will be the amount of energy savings attributed to the 60/40 pool. The remainder of the project can be funded through the secondary pool, the owner's personal resources or a private loan.

OPERATION AND MAINTENANCE - All operation and maintenance suggestions that are not written as recommended projects should be lumped together with one estimate of the energy savings to be reported on the Proposed Improvement sheet. These recommendations must be followed for the owner to be eligible for an adjustment to the loan payments based on 50% of the energy savings.

PROGRAM PROMOTION - Auditors will promote the Program and projects during conversations with the business owner.

PROPOSED IMPROVEMENT SHEET - The first line on the sheet will be the lump sum of the operation and maintenance suggestions not written as projects. The next lines will be in the order of the most cost effective measures first. For those projects that have more than one option, list them together. To order these on the sheet, use the payback of the option most likely to be implemented or recommended.

SPECIAL AUDIT - Businesses that have equipment and/or operations that are unique to the average business or unfamiliar to the Program auditors such as grain dryers, will receive an audit by Program auditors that covers traditional items. The unique items will be audited by a qualified person approved by the Program administrator and paid for by the business owner. Cost of the special audit may be funded through the 60/40 pool???

## BIDS AND CONTRACTORS

**BIDS** - Bids must be turned in for each project and include a material list on the back of the sheet. Any bid selected by the owner that exceeds the cost estimates of the auditor are subject to review by the Program administrator who may require the contractor to revise or justify the difference in cost.

**CONTRACTOR'S AGREEMENT** - A contract between the business and prime contractor must be signed and returned to the Program administrator before the work begins. The agreement will state when the work must be completed, the cost of the project, an inspection schedule, ...??

**CONTRACTOR PAYMENT** - The prime contractor will be paid within approximately two weeks of an approved final inspection. A partial payment will be made if requested on projects requiring more than a months work. The Program administrator will check to see if the subcontractors have been paid before issuing the check.??? The check will be made out to the business and the prime contractor. The business will sign the check first.

**INSPECTIONS** - The work will be inspected at least once while in progress and once after all the work has been completed. A punch list will be used for items that don't pass inspection. Any special inspections will be listed in the Contractor's Agreement.

**INSURANCE** - All prime contractor's must carry Builder's Risk Insurance, Workmen's Compensation, and Unemployment Insurance. The prime must sign a letter of intent if his bid is selected that he will obtain insurance before starting the project. A signed copy of the insurance coverage must be attached to the Contractor's Agreement.

**NUMBER OF BIDS** - Three bids should be submitted to the Program administrator. The business owner must submit in writing why he or she is submitting less than three bids.

**PRE-CONSTRUCTION CONFERENCE** - Before work begins a conference will be held with the business owner, business manager, prime contractor, Program administrator and inspector to discuss the work to be completed and the procedures to follow. If all matters are set, the Program administrator will issue a Notice to Proceed.

**PRIME CONTRACTOR** - All work will be done through a prime contractor unless some of the work is performed by the business owner. All prime contractors must be on the approved contractors list.

**SELECTION OF CONTRACTOR** - The business owner may select any bid but must submit in writing why the lowest bid was not chosen.

**WORK CHANGES** - Any changes in work from the work write ups must be approved by the business owner and operator and the Program administrator.

## GENERAL

- BUSINESSES ELIGIBLE** - all for profit businesses operated outside a residence and located within 1 mile of the Village limits are eligible.
- BUSINESS TRAINING** - Any business participating in the program must attend at least one training session that teaches the business operator and employees how to manage the energy consumption in their building.
- ENERGY CONSUMPTION** - Energy consumption will be reported quarterly by the business to the Program administrator or Tri-Cog. Tri-Cog staff will record the information on the Pre- and Post-Improvement Consumption forms and monitor the data for large variations from the expected consumption.
- GRIEVANCES** - All grievances will be handled by the Program administrator. If the grievance is not resolved to the satisfaction of the business owner, a final decision will be made by the Village Board.
- LIGHT BULB REPLACEMENT** - Any light bulbs replaced with Program funds must be given to the inspector at the time of final inspection and be destroyed later by the inspector.
- PAYMENTS** - The check will be issued to the business and the contractor. When the owner does some of the work, the check will be issued to the owner only for the cost of the materials.
- PROGRAM CHANGES** - Depending on the balance of funds, the community could decide at a later date whether to 1) expand the definition of a business to include a non-profit or other variations; or 2) fund other commercial projects not funded the first time around; or 3) fund residential weatherization.

## LABOR AND MATERIAL COSTS AND SPECIFICATIONS

- DAVIS-BACON WAGE LAWS** - The Law applies to all jobs over \$2,000. Contractor's must supply payroll records for the work done on Program projects, pay time and a half over 40 hours a week on Program projects and pay the Knox County established wage rate for the appropriate job classification. The Law does not apply to the owner of the business who is the sub-contractor but does apply to the subcontractor's employees. Program staff will visit the job site to ask the workers questions about their wages and hours.
- LABOR AND MATERIAL COST** - The Program administrator must be informed in writing by the Prime contractor of any changes in labor or material costs prior to incurring the change. The request must be signed by the business owner and operator and contractor. The administrator must approve the change before it is made. Request for funds in excess of the contractor's bid will not be honored unless written approval was given.
- LEAD BASED PAINT** - All paint that is cracked and peeling and is in an area accessible to the general public, must be scraped and painted unless it clearly can be identified as non-lead based paint. The cost of scraping and painting will be paid for through the 60/40 pool. The amount the business is eligible for in the 60/40 pool will be increased by the cost of the job.
- SPECIFICATIONS** - Work specifications on the bid sheets supercede the specifications in the Specifications Manual. Both the Manual and the work specifications establish the standards the inspectors will use when inspecting the work.

## PRESENTATIONS

### FIRST PRESENTATION

This presentation will occur once the audit is complete and the administrator has compiled the proposed Improvement sheets. Then, the following is done:

1. The auditor will explain the audit from front to back but will not discuss the proposed improvement sheet. Stress what the business is currently paying now to heat, cool and operate his or her business so that they can put some of the recommendations in perspective. After each explanation of a project, ask if the owner has any questions. Sell the benefit of each measure as you go. After you have explained the audit, ask the owner if he or she feels you forgot to consider anything.
2. The Program administrator will explain how much the business is eligible to receive in the 60/40 pool and then explain which projects can be funded with the pool. Applicable information will be explained concerning the processes involved with the 60/40 pool. At this point, the administrator will ask which projects the business is interested in soliciting bids on. Be sure to ask if there are any questions often.
3. The same process will be followed with projects not included in the 60/40 pool.
4. Discuss any procedural items that weren't covered in the previous discussion.

The administrator should take notes on anything the business says regarding changes they would like to see that are different from the audit. The auditor should take notes on any open procedural items or questions that arise during the administrator's presentation.

5. Provide the business with three bid sheet copies of the projects they would like to obtain bids on and a copy of the approved prime contractor's list.

A list of items that the business needs to do before submitting the bids, should be given to the business owner before he or she leaves.

### SECOND PRESENTATION

This presentation will be made after the business has submitted bids on projects that they are likely to implement. The auditor will then adjust the energy saving estimates to reflect the interaction between the projects likely to be implemented. Then at the presentation:

1. The administrator will explain what projects now fit into the 60/40 pool and what the payments will be using the Proposed Improvement sheet. The same will be done for the Secondary pool.
2. The auditor will assist in recalculating the amounts in the two pools if the business requests that projects different from those presented in the 60/40 pool replace one or two in the 60/40 pool.



3. Once the projects have been chosen, the next procedures to follow will be explained.

Again, a sheet describing what the business needs to do between the presentation and the next step should be provided before the business owner leaves.