1998
ENERGY ANALYSIS GUIDELINES

RICHARD RUSK, P.E.
Iowa State University

ANGELA CHEN, P.E.
Iowa Department of Natural Resources

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Department of Natural Resources
Energy Bureau
Wallace State Office Building
502 E. 9th Street
Des Moines, Iowa 50319-0034
(515) 281-5145
Fax (515) 281-6794

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INTRODUCTION

Purposes of an Energy Analysis

An Energy Analysis has multiple purposes and will be read by several readers with interest in various phases of energy management projects.

One purpose is to describe the current energy use patterns in the building to the facility managers. The Energy Analysis must include a thorough description of the energy-using equipment and systems as well as information about energy purchases and end uses. This information helps the analyst and all other readers identify potential areas for energy management improvements.

The second purpose is to provide the client with the potential cost and energy savings of energy management improvements. This information is used in financing the improvements. A client may borrow through a local bank or through the Energy Bank program.

The third purpose is to serve as a vehicle for funding of energy work by utility rebates. An Energy Analysis should contain enough detail so utility representatives can calculate rebates from the information presented.

A fourth purpose is to provide a means for the Department of Natural Resources (DNR) to record data on energy use in Iowa. The DNR has the responsibility to gather this data and report to the legislature on a regular basis. This information is used to plan future energy related programs. As administrator of building efficiency programs in the state, the DNR performs a review of all Energy Analyses and gathers data from them as they are submitted.

Several people will read each Energy Analysis. The audiences to keep in mind are:

1. Building owner
2. Building operator
3. DNR reviewer
4. DNR data entry operator
5. Design engineers and other energy consultants
6. Utility customer service representatives

Necessary Documents

Several documents will be needed in the preparation of an Energy Analysis. They are:

1. This Energy Analysis guidelines booklet and any letters or other documents which serve to supersede or revise it.
2. Copies of the energy bills for the previous July 1 through June 30 state fiscal year. More billing history is helpful to the analyst but only one year's records are required for an Energy Analysis.
3. As-built drawings or another source of descriptions of the building envelope components.

4. Information on utility rebate programs.
5. Information on building codes or local zoning ordinances which may restrict the installation of renewable resource systems.
6. The Request for Proposals, and Energy Analysis contract.

Depth of Study

Starting in 1996 there is no predetermined depth of study quoted in percent energy savings or percent cost savings.

The analyst is to study several specified building systems and operating characteristics for opportunities for changes to Operation and Maintenance procedures and investment opportunities for Energy Management Improvements. The analyst is to present recommendations or state that no opportunities were found.

The Energy Analysis Process

Program Enrollment
- Memorandum of Agreement between client and DNR
- Request for Proposals from client to analysts
- Analyst selection by client
- Contract for Phase I between client and analyst

Phase I Energy Analysis
- Analyst gathers pre-visit and on-site information
- Analyst prepares Phase I Report
- Analyst arranges and holds a planning meeting between DNR representative, client, and analyst for Phase I Energy Management Plan and Phase II planning

Phase I Technical Review
- Phase I Energy Analysis including Phase I Energy Management Plan submitted to DNR by analyst
- DNR reviews report and makes comments to analyst

Phase I Analysis Revision
- Analyst revises the Phase I Analysis and updates the Energy Management Plan
- Analyst discusses revisions and updates with the client

Phase II Analysis (if needed)
- Contract for Phase II between client and analyst
- Additional data gathering for Phase II EMIs
- Analyst prepares Phase II report
- Analyst arranges and holds a meeting between DNR representative and client to develop Phase II Energy Management Plan

Phase II Technical Review

- Phase II Energy Analysis including Phase II Energy Management Plan submitted to DNR by analyst
- DNR reviews report and makes comments to analyst

Phase II Analysis Revision

- Analyst revises the Phase II Analysis and updates the Energy Management Plan
- Analyst discusses revisions and updates with the client
- If Phase I EMIs have not been implemented yet, they should be included in the Phase II report

Implementation of EMIs

- Client hires contractors to install equipment

Phase I Energy Analysis

A Phase I Energy Analysis is an information-gathering report with a prescribed list of EMIs which are simple to calculate, are based on information available from a fairly simple audit, and have a high probability of implementation.

Two major simplifications in a Phase I Energy Analysis compared to a TEA are in the way areas of investigation are addressed and in the way energy end use is estimated. A Phase I Report includes an executive summary including a list of possible Phase II EMIs, but they are not analyzed until the client expresses an interest in having a Phase II Report prepared. Renewable energy EMIs are to be addressed in the Phase II list. A Phase II Report is not to be prepared until after the completion of a Phase I report and an agreement with the client concerning which possible Phase II suggestions should be pursued.

The energy end use is estimated from a plot of the bills and inventories of equipment. Computer modeling is not required (but is likely to be necessary in Phase II). Natural gas use is divided into heating, service hot water, and kitchen, while electricity is divided into cooling, lighting, and office equipment. Other energy end use categories may be added by the analyst as appropriate.

The necessary sections and appendices for Phase I are:

Section 1. Certification
Section 2. Executive Summary
Section 3. Building Description
Section 4. Current Energy and Water Consumption
Section 5. Operation and Maintenance Review and Recommendations
Section 6. Energy Management Improvements
Section 7. Phase I Energy Management Plan
Section 8. Phase II Considerations
Appendix A. Calculations and Supporting Documents
Appendix B. Other Supporting Information
Appendix C. RFP and Energy Analysis contract

The EMI section must include these prescribed Phase I EMIs:

- Fluorescent lamp and ballast replacement
- Lighting controls such as occupancy sensors and timers
- Motor replacement of same horsepower
- Night setback with simple controls
- Replacement of incandescent exit signs
- Water heater blankets
- Pipe insulation
- Low flow showerheads
- Sensors or time-flow faucets for lavatories
- Low volume toilets
- Utility rate code change

Phase I Energy Management Plan

The analyst presents the ideas in the Phase I Energy Analysis in a meeting with the client and the DNR's marketer. The analyst invites the participants and arranges for a time and place for this meeting.

The end product of this meeting will be a plan of action for the client. For each EMI the client must decide whether to implement or not, when to implement, and how to finance the project. This information is recorded on the Phase I Energy Management Plan.

Phase I Technical Review

The Phase I Energy Analysis including the Phase I Energy Management Plan is then submitted to the DNR for review. Comments are returned to the analyst.

Phase II Reports

After a Phase I report is written, the client has the opportunity of guiding the analysis work to areas of interest or need in Phase II. A Phase II analysis is an extension of the Phase I analysis. The Phase II analysis relies on preceding analysis work done in the Phase I study and, as such, cannot be produced as a stand-alone report. A Phase II report must always be preceded by a Phase I report.

A Phase II Report contains EMIs which the client has requested. The Phase II report may also contain any other information which the analyst or client see as important.

A Phase II Report contains the following items:

1. Certification containing analyst statements for Phase II
2. Executive Summary containing these forms:
   - Identification Page
   - Phase II List of EMI Savings and Costs, including Phase I EMIs
   - Fuel Consumption and Cost Data, the Phase II version containing Phase I EMIs
3. Phase II EMI Development sheets
4. Phase II Energy Management Plan

Appendix A: Calculations and Supporting Documents
Appendix B: Other Supporting Information
Appendix C: RFP and Energy Analysis contract

Phase II Energy Management Plan and Technical Review

- A second meeting is held with the client and a second Energy Management Plan is written
- The analyst submits the Phase II Energy Analysis including the Phase II Energy Management Plan to the DNR for review
- Phase II Energy Management Plan should include Phase I EMIs which have not been implemented when Phase II Energy Management Plan is developed
- The analyst revises the Phase II Analysis and updates the Energy Management Plan
- Analyst discusses revisions and updates with the client

Special Note: Combined Reports

There may be opportunities where client and analyst immediately recognize the need for both Phase I and Phase II studies at a facility. In order to avoid duplication of information and extra time spent, a single combined Phase I/Phase II report may be produced. The combined report will still contain all of the information and EMI investigations which would be included in each separate report. However, items such as building energy use models, utility bills, energy end use profiles, certification and other similar material will need to appear only once. Each section should still appear as outlined in the guidelines and the combined report should have the Phase I and Phase II sections clearly separated.

Items Deleted in 1996

Not included in either Phase I or Phase II Report are:

- Copy of previous energy audit
- Copies of rate tariffs
- Review of previous energy audit

Phase I Reports

Most of the text of this guidelines booklet explains the contents of the Phase I Report. There are separate chapters to explain each of the seven sections and a chapter on the three appendices.

SECTION 1: CERTIFICATION

This section consists of the following form:

1. Analyst Statements

Answer the questions on the form. A complete set of statements includes the analyst's signature, the date signed, and the analyst's Iowa registration number.

Analyst Statements-Part 1
Phase I Report

Institution _____ Building _____

I have included the following required information:

Executive Summary:

__ Narrative summary
__ A listing of any known local zoning ordinances and building codes which may restrict the installation of renewable resource systems
__ Identification Page
__ List of EMI Savings and Costs--Part 1
__ Fuel Consumption and Cost Data
__ List of EMI Savings and Costs--Part 2

Building Description:

__ Narrative description
__ Construction History
__ Plan view

Current Energy Consumption:

__ Fuel Consumption History
__ Energy End Use Profile
__ Water Use Profile
__ Photocopies of the energy bills for the previous fiscal year

Operation and Maintenance Review and Recommendations:

__ O&M Procedures
__ O&M Savings

Energy Management Improvements:

__ EMI Development Sheets for each EMI

I have considered the following O&M and EMI areas and I have included a recommendation for change or a statement that I could find none.

Operation and Maintenance:

__ Occupancy scheduling
__ Primary heating system
__ Air/hydronic distribution system
__ Domestic hot water system
__ Other energy-using equipment
__ Building envelope
__ Primary cooling system
__ Control system
__ Lighting system

Analyst Statements-Part 2
Phase I Report

Institution _____ Building _____

Prescribed Energy Management Improvements (Phase I)

__ Fluorescent lamp and ballast replacement
__ Motor replacement of same horsepower
__ Replacement of incandescent exit signs
__ Pipe insulation
__ Sensors or time-flow faucets for lavatories
__ Utility rate code change
__ Lighting controls, i.e. occupancy sensors and timers
__ Night setback with simple controls
__ Water heater blankets
__ Low flow showerheads
__ Low volume toilets

Phase I Energy Management Plan

___ completed ___ not completed

Phase II Considerations

I have considered the following EMI areas for a Phase II analysis and I have included a recommendation for study or a statement that I could find none.

Renewable energy system:

___ Active solar
___ Biomass fuel
___ Wind energy
___ Ground-source heat pump

Other categories:

__ Building envelope
__ Primary heating system
__ Air/hydronic distribution system
__ Domestic hot water system
__ Other energy-using equipment
__ Primary cooling system
__ Control system
__ Lighting system

If a swimming pool is present in the facility I have considered for Phase II

__ Swimming pool cover
__ Solar pool heating systems
__ Efficient motors
__ Pool heat recovery
__ Humidification control
__ Temperature adjustment

Appendix

__ RFP and Energy Analysis Contract

The energy prices used in the Energy Analysis are

__ marginal prices (prices of energy saved), or
__ average prices over the period _____

I **do** ___ **do not** ___ have conflicting financial or other interests to this program or any energy conservation recommendation made in this report.

Analyst Statements-Part 3
Phase I Report

Institution _____ Building _____

Certificate of Responsibility

Professional Engineer

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

_____
(signature) (date)

_____
Printed or typed name:

Seal

My license renewal date is December 31, _____

Pages or sheets covered by this seal:

_____

_____

_____

Registered Architect

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered architect under the laws of the state of Iowa.

_____
Printed or typed name

Seal _____
Signature

Pages or sheets covered by this seal:

_____

_____

_____

Date issued: _____

SECTION 2: EXECUTIVE SUMMARY

This section consists of:

1. Narrative text
2. A listing of any known local zoning ordinances and building codes which may restrict the installation of renewable resource systems

plus the following four forms:

3. Identification Page
4. Fuel Consumption and Cost Data
5. Phase I List of EMI Savings and Costs--Part 1
6. Phase I List of EMI Savings and Costs--Part 2

This section is to be written in a narrative style using language understandable by the building's owner and operator. It is to be a summary of the important findings contained in the report. Its main emphasis is on results. A detailed building description is not appropriate here since a separate section is included for that purpose.

A three paragraph executive summary could follow this outline:

Paragraph 1: Purpose of the report
Paragraph 2: The analyst's general comments about the current energy management program and the potential for improvement
Paragraph 3: A summary of the projected savings and the investment required to achieve them

A list of known legal barriers to the adoption of renewable resource systems should be included in this section.

Identify the parties involved in the project. A form is provided for this purpose. A list of county numbers is included in the Supplemental Information section of this booklet for use in completing the form.

The Fuel Consumption and Cost Data form provides a place for a summary of the overall results of the Phase I study. (Note that a modified version of this form is presented later in the guidelines for use with Phase II Reports.) The table provides a place to calculate and present the total effect of the identified projects if all were to be implemented. The first line of the table shows the energy use and cost experienced during the base year, the year for which bills are presented. The following lines show the effect of O&M savings and EMI savings. The last line of the table shows the potential savings quoted in terms of percentages saved. Following the table are places to present the change in peak electrical demand and energy consumption per square foot.

Include a list of all analyzed EMIs. The EMIs must be presented on a summary sheet describing the measures and indicating costs, estimated savings, and simple payback period of each. The

projects are to be listed in a suggested order of implementation on the form entitled "List of EMI Savings and Costs". The order in which the projects are presented is to be the same as the order in which EMI interaction is considered. The EMI type is a three letter code. The codes are included in the Supplemental Information section of these guidelines. The non-energy savings column is for maintenance savings, water savings, or other non-energy items.

Identification Page

Institution _____ Building _____

Institution
(CSD, AEA, Comm. Coll., Hospital, Non-profit, Local Government, State Facility or Agency)

Name _____ Number _____
Address _____ County Number _____
City _____ State _____ Zip _____
Contact Person _____ Title _____
Telephone _____

Building

Name _____ Number _____
Address _____ County Number _____
City _____ State _____ Zip _____
Contact Person _____ Title _____
Telephone _____

Energy suppliers

Electricity _____ Natural Gas _____
Others _____

Energy Analyst and Technical Support Personnel

Firm name _____
Analyst's name _____
Support Person _____
Support Person _____
Telephone _____

Dates

Energy Analysis Contract Award Date _____
Energy Analysis Report Completion Date _____

Fuel Consumption and Cost Data
Phase I

Institution _____ Building _____

	Elec. (kWh/yr)	Nat. Gas (CCF/yr)	#2 Oil (gal/yr)	Other (___ /yr)	MMBtu /yr	Cost ($/yr)
Base year consumption						
O&M savings						
Consumption after O&M savings						
Identified EMI savings (Phase I)						
Consumption after EMI savings (Phase I)						
Total percent savings						

Base year peak electrical demand: _____ kW

Projected peak electrical demand: _____ kW

Gross conditioned area: _____ sq.ft.

Actual consumption per square foot: _____ MBtu/sq.ft.

Projected consumption per square foot: _____ MBtu/sq.ft.

Phase I List of EMI Savings and Costs –Part 1

Institution _____ Building _____

EMI no.	page	Project Title	Electricity Savings		Demand Savings		Natural Gas Savings		on-Energy Savings
			kWh/yr	$/yr	kW	$/yr	CCF/yr	$/yr	$/yr

Phase I List of EMI Savings and Costs–Part 2

Institution ______________________ Building ______________________

EMI No.	EMI Type	EMI Material Cost	EMI Labor Cost	EMI Design Cost	Initial Capital Outlay	EMI Rebate	Net EMI Cost	Savings ($/yr)	Simple Payback Yrs	EMI Useful Life

SECTION 3: BUILDING DESCRIPTION

This section consists of:

1. a narrative description of the building envelope components, energy using systems, and occupancy pattern
2. a plan view of the building (no form provided)
3. the Construction History form

A narrative description of the building is to be included here. If the building can be described in parts, describe and name them here. Construction dates or functions are often useful descriptors. List the square footage of each part and the total square footage of the building on the Construction History form.

Describe the walls, windows, doors, roofs and other building components and the U or R values of each. List all the R values which add to be the total R value for each building component. Mention in this section where this R value list is included in the report if it is in another section (such as EMI existing conditions) or in an appendix.

Give a description of the following systems:

- Primary heating system
- Primary cooling system
- Air/hydronic distribution system
- Control system
- Domestic hot water system
- Water-using systems (shower, W.C., urinals, flow rate, condition)
- Lighting system
- Other energy users such as laundry or kitchen

Water-using systems such as showers, water closets, urinals, and faucets should be described in enough detail that water usage by each category can be estimated. You should include the number of fixtures and the corresponding flow rates.

A sketch of the plan view of the building is to go in this section. Identify the building parts you have named. Identify on the sketch the locations of recommended EMIs if their locations can be shown.

State the pattern of occupancy of the building. No form is provided. This can be narrative text or a table.

Construction History

Institution _____ **Building** _____

Original Building Construction Date _____ _____
Year Gross Square Footage

Dates additions were constructed _____ _____
Year Gross Square Footage

_____ _____
Year Gross Square Footage

_____ _____
Year Gross Square Footage

_____ _____
Year Gross Square Footage

_____ _____
Year Gross Square Footage

Total gross square footage _____

Remaining useful life of building _____ years

SECTION 4: CURRENT ENERGY AND WATER CONSUMPTION

This section consists of:

1. the Electricity Consumption History form
2. the Fuel Consumption History form
3. the Water Consumption History form
4. photocopies of the energy bills for the last fiscal year
5. the Energy End Use Profile form
6. the Water Use Profile form

Electricity Consumption History, Fuel Consumption, and Water Consumption History

Give the history of electricity, fuel, and water purchases for the most recently ended state fiscal year, July 1 through June 30. Use separate tables for each meter. Enter the meter number and the meter reading dates. Include photocopies of the bills from which this information was obtained.

Energy End Use

Provide a breakdown of the end uses of the energy purchased. The minimum list of categories to address for natural gas are heating, service hot water, and kitchen use. The minimum list for electricity is cooling, lighting, and office equipment. Additional categories may be added when circumstances warrant.

A simple analysis of a plot of the utility bills is sufficient for the Phase I report. In a typical building heated by gas and cooled by electricity the winter hump in gas use represents heating energy and the summer hump in electricity represents the cooling. The usage in non-peak months can be used to make an estimate of the other categories.

Water Use Profile

Provide a breakdown of the water use. The minimum list of categories includes water closets, urinals, lavatories, showers, and an "other" category.

Multiple Building Metering

If more than one building is connected to a single meter, the actual fuel use is not readily available. The analyst will have to allocate the fuel use among buildings. This is to be done on a basis which reflects the energy use of the buildings. The engineering staff of the DNR Energy Bureau are available for consultation in such cases.

Electricity Consumption History

Institution _____ Building _____

Meter number: _____					
	Meter	Electricity		Demand	
Month	Read Date	kWh	Cost	kW	Cost
July 19 —					
August					
September					
October					
November					
December 19 —					
January 19 —					
February					
March					
April					
May					
June 19 —					
Total					

Fuel Consumption History

Institution _____ Building _____

	Fuel Type: _____			Fuel Type: _____		
	Meter number: _____			Meter number: _____		
Month	Meter Read Date	Units: _____	Cost	Meter Read Date	Units: _____	Cost
July 19 —						
August						
September						
October						
November						
December 19 —						
January 19 —						
February						
March						
April						
May						
June 19 —						
Total						

Water Consumption History

Institution _____ Building _____

	Water			Sewer		
	Meter number: _____			Meter number: _____		
Month	**Meter Read Date**	**Units: _____**	**Cost**	**Meter Read Date**	**Units: _____**	**Cost**
July 19 —						
August						
September						
October						
November						
December 19 —						
January 19 —						
February						
March						
April						
May						
June 19 —						
Total						

Energy End Use Profile

Institution _____ Building _____

Electricity	kWh	MMBtu	Cost	% of Total Cost	% of Electricity	% of Total Energy
Lighting						
Cooling						
Office Equipment						
Subtotals					100	
Fuel _____	**Units** _____	**MMBtu**	**Cost**	**% of Total Cost**	**% of Fuel**	**% of Total Energy**
Heating						
Domestic Hot Water						
Kitchen						
Subtotals					100	
TOTALS				100	N/A	100

Water Use Profile

Institution _____ Building _____

Water	cu ft	Cost	% of Cost	% of Water
Water closets				
Urinals				
Lavatories				
Showers				
Other				
TOTALS			**100**	**100**

SECTION 5: OPERATION & MAINTENANCE REVIEW AND RECOMMENDATIONS

This section may or may not contain narrative text. The following form must be included:

1. O & M Procedures

Previously implemented and new O&M procedures must be described in this section. O & M's are now defined as recommendations for which savings and costs cannot be quantified. Any recommendation with calculated costs and savings is considered an EMI.

To make the Energy Analysis report comprehensive, consider each of the categories listed below. There must be at least one O&M from each of the following applicable categories or a statement indicating that the analyst considered the area but could find no recommendations:

- Occupancy scheduling
- Building envelope
- Primary heating system
- Primary cooling system
- Air/hydronic distribution system
- Control system
- Domestic hot water system
- Lighting system
- Other energy-using equipment

Operation and Maintenance Procedures

Institution _____ Building _____

Occupancy scheduling

Building envelope

Primary heating system

Primary cooling system

Air/hydronic distribution system

Control system

Domestic hot water system

Lighting system

Other energy-using equipment

SECTION 6: ENERGY MANAGEMENT IMPROVEMENTS

This section consists of:

A narrative section giving a basic description of all EMIs. The text should be understandable to the client or building operator.

A two-part form is required for each EMI:

1. Phase I EMI Development Sheet--Part 1
2. Phase I EMI Development Sheet--Part 2

Simple Payback Period vs. Savings-to-Investment Ratio (SIR)

The economic value of EMIs evaluated in a Phase I report may be reported using the simple payback period. Phase II EMIs must be evaluated using the Savings-to-Investment ratio. More detail on SIR calculations appears in the Phase II Reports section of these guidelines.

EMI Description and Savings Calculations

A thorough description of the existing conditions of each EMI must be given. Quantities and locations of items to be replaced or modified are to be listed here. This is particularly true of items distributed through the building, such as light fixtures, windows, and terminal boxes.

Calculations must be presented in a clear and understandable format. Explain the terms used in calculations. Include units of measure with all numbers. Calculations must be appropriate and mathematically correct. The energy savings calculation must account for EMI interaction in the Energy Analysis submitted as the final version. It may be advantageous for the analyst to write a preliminary version before interaction is considered but this is not required. If only one version of the Energy Analysis will be prepared, the EMIs should be put in a logical order of implementation priority and the savings for each EMI should be calculated assuming the previous O&Ms and EMIs have been implemented.

The unit energy costs used could be the average values at the time of the Energy Analysis or marginal energy costs. Marginal cost is the cost of the last energy purchased, which will also be the first energy saved. Marginal costs are preferred since the use of average prices tends to overstate the savings. Many utility companies are now showing the decreasing block rate structure on their bills so it is clear what the marginal prices are. In such cases the marginal price should be used to predict energy cost savings.

The non-energy impacts of improvements, such as routine maintenance cost avoidance, may significantly affect the cost savings of an improvement either positively or negatively. These items should be identified in detail and included in the cost savings. Starting January 1, 1994 it is no

longer necessary to calculate two simple payback periods. All energy and non-energy cost savings will be used together in the calculation of one simple payback period.

In most cases in-house labor is considered a sunk cost to the organization's operation. Therefore, its dollar value should not be included in the simple payback calculations. The change in labor hours is useful information and should be reported in hours per year.

Cost Presentation

A detailed cost breakdown must be documented for each EMI including material, labor, design costs. A bill of materials must be included listing quantities and prices of items as well as sizes and model numbers, if known. Design costs should include construction management, if appropriate. The source of the cost estimates for each EMI must be given.

Many utilities are now offering rebates for energy efficiency projects. Add the material, labor, and design costs to find the initial capital outlay the client will need to finance. If a rebate applies, include it as an entry in the EMI development sheet and use as one of the factors in calculating the net EMI cost.

Simple Payback Period Calculation, Useful Life, and Salvage Value

Since energy and non-energy cost savings are no longer kept separate only one simple payback calculation is necessary. The simple payback period is found by dividing the total cost by the cost savings per year. The cost savings includes energy and non-energy savings.

Typical useful lives for various types of equipment and/or systems are provided in the Supplemental Information section of the guidelines. These lives are provided as a guide but analysts are not required to use them.

At the end of the EMI equipment's useful life there will be a salvage value or disposal cost. Enter this information on the EMI development sheet.

Prescribed Phase I EMIs

The EMI section must include these prescribed Phase I EMIs:

- Fluorescent lamp and ballast replacement
- Lighting controls such as occupancy sensors and timers
- Motor replacement of same horsepower
- Night setback with simple controls
- Replacement of incandescent exit signs
- Water heater blankets
- Pipe insulation

- Low flow showerheads
- Sensors or time-flow faucets for lavatories
- Low volume toilets
- Utility rate code change

Special Notes on Lighting EMIs

Several of the most common fluorescent lamps will become unavailable as a result of federal energy legislation. The 34 watt straight four-foot and U-bent two-foot are currently the least efficient lamps available from manufacturers. A recommendation to change from 40 watt to 34 watt lamps does not serve Energy Bank clients well since there is no decision to make. Replacement of incandescent fixtures by 34 Watt fixtures would still be acceptable.

Therefore, any EMI which analyzes a fluorescent lighting upgrade must go beyond a lamp change to 34 watt lamps. Possible acceptable EMIs would be:

- T8 triphosphor lamps and matching magnetic or electronic ballasts
- 34 watt lamps and new hybrid or electronic ballasts
- 34 watt lamps, existing magnetic ballasts and added power limiters

Market prices should be used in all EMIs when available. A good source for lamp and ballast prices is the state contract. All political subdivisions of the state are eligible to buy lamps and ballasts at a discount stated in a contract administered by the state General Services. When preparing a TEA for a public school district, or local government the prices used in the TEA should be no higher than those available on the state contracts.

Lamp contract 1143 is with Van Meter Company (in Des Moines ask for Deb Moses, 800-247-1410). Ballast contract 2043 is with Stitzell Electric Supply Company (ask for Bill Patton, 800-798-1261). The purchasing agent in charge of the contracts for the state of Iowa is Sharon Downey at 515-281-5982.

Phase I EMI Development Sheet--Part 1

EMI No.: ____ EMI Title: _____ EMI Type: ____

Institution _____ Building _____

1. Description of existing conditions:

2. Description of energy management improvement (EMI):

3. Energy savings calculation:

4. Energy cost savings calculations (use current prices):

5. Non-energy cost savings:

6. In-house maintenance labor savings (in hours):

Phase I EMI Development Sheet--Part 2

EMI No.: ____ EMI Title: _____ EMI Type: ____

Institution _____ Building _____

7. EMI cost estimates:

Material:

Labor:

Design:

Initial capital outlay (sum of material, labor, and design costs):

Rebate (if any):

Net cost after rebate:

Method of cost determination:

8. Simple payback period calculation (Net cost / total savings per year):

9. Useful life: _____ yrs

10. Salvage value or disposal cost at the end of the useful life : $_____

SECTION 7: PHASE I ENERGY MANAGEMENT PLAN

The analyst presents the Phase I report at a meeting of the client, analyst, and DNR marketer. Each party brings a unique perspective. The analyst has the most knowledge of the EMIs, the marketer has knowledge of the financing alternatives, and the client knows what projects can be accomplished in light of other priorities.

The Energy Management plan contains information on projected dates of implementation and the method of financing.

The analyst is to fill out the Phase I Energy Management Plan form and submit it to the DNR with the Phase I Energy Analysis.

Phase I Energy Management Plan

Institution _____ Number (if any) _____

Page ____ of ____

EMI Number and Title	Building Number	Implementation Date	Method of Financing	EMI Cost	Annual Cost Savings ($/yr)	Simple Payback Period (yrs)
Totals	N/A					

_____ _____ _____

Institution Representative Signature Date

SECTION 8: PHASE II CONSIDERATIONS (IN PHASE I REPORTS)

The list of Phase II considerations is designed to be a "shopping list" of ideas for further consideration by the client and in-depth study by the analyst. The value of each of the items on this list should be explained by narrative text, references to the analyst's experience, or case studies.

The following list of items should be addressed in the list of Phase II considerations:

Renewable energy system:
- Active solar
- Wind energy
- Biomass fuel
- Ground-source heat pump

Other categories:
- Building envelope
- Primary heating system
- Primary cooling system
- Air/hydronic distribution system
- Control system
- Domestic hot water system
- Lighting system
- Other energy-using equipment
- Recommissioning

Special Cases

Recommissioning

The Building Commissioning Guide sponsored by the U.S. General Services Administration and the U.S. Department of Energy (draft version 2.1) contains the following definition of building commissioning:

> *In the broadest sense , a process for achieving, verifying, and documenting that the performance of a building and its various systems meet design intent and the owner and occupants' operational needs. The process ideally extends through all phases of a project, from concept to occupancy and operation.*

When applied to existing buildings this process is often called recommissioning. Many older buildings do not have a comprehensive set of documents and maintenance procedures. The function of the rooms may have changed over time. The energy using equipment and controls are often not working as designed. The analyst should consider the benefits of bringing the

mechanical and electrical systems back to the design intent and providing documentation so the building operators can maintain it.

Wind Turbines

A computer program for making a preliminary wind turbine feasibility study is available from the Iowa Energy Center at http://www.energy.iastate.edu.

Roof Insulation

Norwest Investment Services will lend money for the cost of a complete roof replacement. Roof insulation EMIs could therefore show either the cost of the entire job or just the cost of the insulation. There is no restriction in the Energy Bank programs so the client's financing plans will determine which cost to use. It may be appropriate to calculate the EMI with two cost figures before the client can make a decision. The client's decision will be shown in the energy management plan.

Swimming Pools

The U.S. Department of Energy administers a special program to assist with the identification of energy management improvements in swimming pools. The acronym is RSPEC which stands for Reduce Swimming Pool Energy Costs. To be eligible for this program the following EMIs must be evaluated:

- swimming pool cover
- pool heat recovery
- solar pool heating systems
- humidification control
- efficient motors
- temperature adjustment

If a swimming pool is present in the facility the client should be given the opportunity to participate in the RSPEC program. Please contact the DNR Energy Bureau staff to make sure the Energy Analysis will comply with the requirements of the RSPEC program.

APPENDICES

Appendix A: Calculations and Supporting Documents

There are no required forms. Use this section for lengthy supporting documents if there are any (i.e., computer modeling input and output data).

Appendix B: Other Supporting Information

There are no required forms. This appendix is included when there are miscellaneous documents which do not fit into other categories. It is rarely used.

Appendix C: RFP and Energy Analysis contract

Place a photocopy of the Request for Proposals and the Energy Analysis contract in an Appendix. This is useful information to the client and reviewer to see if the objectives were met.

PHASE II REPORTS

A Phase II report is only written if the client hires the analyst to pursue any of the Phase II considerations and only after the completion of a Phase I study.

A Phase II report contains the following items plus any other supporting information needed to explain the EMIs:

A Phase II Report contains the following sections:

1. Certification containing analyst statements for Phase II
2. Executive Summary containing these forms:
   - Identification Page
   - Phase II List of EMI Savings and Costs, including Phase I EMIs
   - Fuel Consumption and Cost Data, the Phase II version containing Phase I EMIs
3. Phase II EMI Development sheets
4. Phase II Energy Management Plan

Appendix A: Calculations and Supporting Documents
Appendix B: Other Supporting Information
Appendix C: RFP and Energy Analysis contract

The forms to use are included in this section.

Savings-to-Investment Ratio

Phase II EMIs are to be evaluated using the Savings-to-Investment ratio.

The following introduction to the Savings-to-Investment ratio is taken from the Life-Cycle Costing Manual for the Federal Energy Management Program, NIST Handbook 135, 1995 edition.

"The SIR is a measure of economic performance for a project alternative that expresses the relationship between its savings and its increased investment cost (in present value terms) as a ratio. It is a variation of the Benefit-to-Cost Ratio for use when benefits occur primarily as reductions in operation-related costs. SIR is a relative measure of performance; that is, it can only be computed with respect to a designated base case. This means that the same base date, study period, and discount rate must be used for both the base case and the alternative."

"A project alternative is generally considered economically justified relative to a designated base case when its SIR is greater than 1.0. This is equivalent to saying that its savings are greater than its incremental investment costs, and that its net savings are greater than zero. However, it is important to recognize that when evaluating multiple, mutually exclusive, project alternatives, the alternative with the ***lowest LCC*** *is the most cost effective alternative. The project alternative with the lowest LCC is* ***not*** *generally the alternative with the highest SIR. For example, a single layer of insulation in roof assembly is likely to have a higher SIR than a*

thicker layer, but the latter may be more cost effective on a LCC basis. ***Do NOT use the SIR for choosing among mutually exclusive project alternatives.*** *The SIR for a project is most useful as a means of ranking that project along with other independent projects as a guide for allocating limited investment funding."*

$$SIR_{A:BC} = \frac{\Delta E + \Delta W + \Delta OM\&R}{\Delta I_0 + \Delta Repl - \Delta Res}$$

where

$SIR_{A:BC}$ = ratio of operational savings to investment-related additional costs, computed for the alternative relative to the base case

$\Delta E = (E_{BC} - E_A)$ savings in energy costs attributable to the alternative

$\Delta W = (W_{BC} - W_A)$ savings in water costs attributable to the alternative

$\Delta OM\&R = (OM\&R_{BC} - OM\&R_A)$ difference in OM&R costs

$\Delta I_o = (I_A - I_{BC})$ additional initial investment cost required for the alternative relative to the base case

$\Delta Repl = (Repl_A - Repl_{BC})$ difference in capital replacement costs

$\Delta Res = (Res_A - Res_{BC})$ difference in residual value

and

where **all amounts are in present values.**

The analyst should explain this concept to the client by including a summary of this explanation in each Phase II Energy Analysis.

Default Discount Rate

If the client does not have a discount rate the analyst should use the federal government's discount rate found in the current BLCC computer program (can be downloaded from *www.ergn.doggov*) and in FEMP publications.

If needed, call the Iowa DNR at 515/281-4736 for the latest rate.

Analyst Statements-Part 1
Phase II Report

Institution _____ Building _____

I have included the following required information:

Executive Summary:

__ Identification Page
__ List of EMI Savings and Costs--Part 1
__ Fuel Consumption and Cost Data
__ List of EMI Savings and Costs--Part 2

Energy Management Improvements:

__ EMI Development Sheets for each EMI

Phase II Energy Management Plan

___ completed ___ not completed

Appendices

__ RFP and Energy Analysis Contract
__ other information

The energy prices used in the Energy Analysis are

__ marginal prices (prices of energy saved), or
__ average prices over the period _____

I **do** ___ **do not** ___ have conflicting financial or other interests to this program or any energy conservation recommendation made in this report.

Analyst Statements-Part 2
Phase II Report

Institution _____ Building _____

Certificate of Responsibility

Professional Engineer

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

_____
(signature) (date)

Printed or typed name:

Seal

My license renewal date is December 31, _____

Pages or sheets covered by this seal:

_____

_____

_____

Registered Architect

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered architect under the laws of the state of Iowa.

_____
Printed or typed name

Seal

_____
Signature

Pages or sheets covered by this seal:

_____

_____

_____

Date issued: _____

Identification Page

Institution _____ **Building** _____

Institution
(CSD, AEA, Comm. Coll., Hospital, Non-profit, Local Government, State Facility or Agency)

Name _____ Number _____
Address _____ County Number ___
City _____ State_____ Zip _____
Contact Person _____ Title_____
Telephone _____

Building

Name _____ Number _____
Address _____ County Number ___
City _____ State _____ Zip _____
Contact Person _____ Title _____
Telephone _____

Energy suppliers

Electricity _____ Natural Gas _____
Others _____

Energy Analyst and Technical Support Personnel

Firm name _____
Analyst's name _____
Support Person _____
Support Person _____
Telephone _____

Dates

Energy Analysis Contract Award Date_____
Energy Analysis Report Completion Date_____

Phase II List of EMI Savings and Costs --Part 1

Institution _____ Building _____

EMI no.	page	Project Title	Electricity Savings			Demand Savings			Natural Gas Savings			Non-Energy Savings	
			kWh/yr	$/yr	PV $	kW	$/yr	PV $	CCF/yr	$/yr	PV $	$/yr	PV $

Phase II List of EMI Savings and Costs --Part 2

Institution ____________________ Building ____________________

EMI No.	EMI Type	EMI Material Cost PV $	EMI Labor Cost PV $	EMI Design Cost PV $	Initial Capital Outlay PV $	EMI Rebate PV $	Net EMI Cost PV $	Annual Savings $/yr	Savings PV $	Savings-to-Investment Ratio

Fuel Consumption and Cost Data
Phase II Report

Institution _____ **Building** _____

	Elec. (kWh/yr)	Nat. Gas (CCF/yr)	#2 Oil (gal/yr)	Other (___ /yr)	MMBtu /yr	Cost ($/yr)
Base year consumption						
O&M savings						
Consumption after O&M savings						
Identified EMI savings (Phase I)						
Consumption after EMI savings (Phase I)						
Identified EMI savings (Phase II)						
Consumption after EMI savings (Phase II)						
Total percent savings						

Base year peak electrical demand: _____ kW

Projected peak electrical demand: _____ kW

Gross conditioned area: _____ sq.ft.

Actual consumption per square foot: _____ MBtu/sq.ft.

Projected consumption per square foot: _____ MBtu/sq.ft.

Phase II EMI Development Sheet--Part 1

EMI No.: ____ EMI Title: _____ EMI Type: ____

Institution _____ Building _____

1. Description of existing conditions (base case):

2. Description of alternative energy management improvement (EMI):

3. Base Date year _____

4. Study Period in years _____

5. Discount rate _____% (check one: _____ real, _____ nominal)

6. Energy savings calculation:

7. Present value of energy savings over the study period:

8. Present value of savings in operation, maintenance, and repair:

Phase II EMI Development Sheet--Part 2

EMI No.: ____ EMI Title: _____ EMI Type: ____

Institution _____ Building _____

9. Present value of additional investment cost:

Material:

Labor:

Design:

Initial capital outlay (sum of material, labor, and design costs):

Rebate (if any):

Net cost after rebate:

Method of cost determination:

10. Present value of difference in capital replacement costs:

11. Present value of difference in residual value:

12. Savings-to-investment ratio calculation:

PHASE II ENERGY MANAGEMENT PLAN

A second Energy Management Plan is prepared by the analyst after the analyst, DNR marketer, and client have discussed the ideas in the Phase II Energy Analysis.

Any EMIs from Phase I which the client intends to implement but which have not yet been implemented should be listed on the Phase II Energy Management Plan. List the simple payback period on the form but do not calculate an SIR.

The Energy Management plan contains information on projected dates of implementation and the method of financing.

APPENDICES

Appendix A: Calculations and Supporting Documents

There are no required forms. Use this section for lengthy supporting documents if there are any (i.e., computer modeling input and output data).

Appendix B: Other Supporting Information

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Appendix C: RFP and Energy Analysis contract

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Phase II Energy Management Plan

Institution _____ Number (if any) _____

Page ____ of ____

EMI Number and Title	Building Number	Implementation Date	Method of Financing	EMI Cost	Annual Cost Savings ($/yr)	Simple Payback	SIR
Totals	N/A						

_____ _____ _____

Institution Representative Signature Date

CONVERSION FACTORS

Fuel	Conversion Factor
Electricity	3.413 MBtu/kWh
Natural Gas	1000 MBtu/MCF
Liquid Petroleum Gas	91.5 MBtu/Gallon
Liquid Petroleum Gas	21.56 MBtu/lb
Fuel Oil #1	137.4 MBtu/Gallon
Fuel Oil #2	139.6 MBtu/Gallon
Fuel Oil #4	145.1 MBtu/Gallon
Fuel Oil #4	6090 MBtu/Barrel
Fuel Oil #5	148.8 MBtu/Gallon
Fuel Oil #5	6216 MBtu/Barrel
Fuel Oil #6	152.4 MBtu/Gallon
Fuel Oil #6	6287 MBtu/Barrel

Purchased services:

Steam	1000 Btu/lb
Hot Water	1,000,000 Btu/MMBtu
Chilled Water	12,000 Btu/ton-HR

Other Useful Conversion Factors

1 Therm	=	100,000 Btu
1 Horsepower	=	746 W (100% efficiency)[1]
1 Horsepower-hr	=	2547 Btu (100% efficiency)[1]
1 Boiler Horsepower	=	33,520 Btu/hr

MBtu	=	1000 Btu (Roman numerals) or 1,000,000 Btu (SI notation)
kBtu	=	1000 Btu (SI notation)
MMBtu	=	1,000,000 Btu (Roman numerals)

[1] For actual energy savings, motor efficiency must be considered.

IOWA COUNTY NUMBERS

1	Adair	34	Floyd	67	Monona
2	Adams	35	Franklin	68	Monroe
3	Allamakee	36	Fremont	69	Montgomery
4	Appanoose	37	Greene	70	Muscatine
5	Audubon	38	Grundy	71	O'Brien
6	Benton	39	Guthrie	72	Osceola
7	Black Hawk	40	Hamilton	73	Page
8	Boone	41	Hancock	74	Palo Alto
9	Bremer	42	Hardin	75	Plymouth
10	Buchanan	43	Harrison	76	Pocahontas
11	Buena Vista	44	Henry	77	Polk
12	Butler	45	Howard	78	Pottawattamie
13	Calhoun	46	Humboldt	79	Poweshiek
14	Carroll	47	Ida	80	Ringgold
15	Cass	48	Iowa	81	Sac
16	Cedar	49	Jackson	82	Scott
17	Cerro Gordo	50	Jasper	83	Shelby
18	Cherokee	51	Jefferson	84	Sioux
19	Chickasaw	52	Johnson	85	Story
20	Clarke	53	Jones	86	Tama
21	Clay	54	Keokuk	87	Taylor
22	Clayton	55	Kossuth	88	Union
23	Clinton	56	Lee	89	Van Buren
24	Crawford	57	Linn	90	Wapello
25	Dallas	58	Louisa	91	Warren
26	Davis	59	Lucas	92	Washington
27	Decatur	60	Lyon	93	Wayne
28	Delaware	61	Madison	94	Webster
29	Des Moines	62	Mahaska	95	Winnebago
30	Dickinson	63	Marion	96	Winneshiek
31	Dubuque	64	Marshall	97	Woodbury
32	Emmet	65	Mills	98	Worth
33	Fayette	66	Mitchell	99	Wright

EMI Codes and Useful Lives

Useful Life in Yrs.		
Building Envelope		
	Insulation	
25	BRR	Roof/Ceiling insulation
25	BRW	Wall insulation
25	BRC	Combination roof/ceiling and wall insulation
25	BRO	Other insulation measures
	Infiltration Control	
10	BIZ	Infiltration control
	Fenestration/Windows	
25	BFS	Storm windows
25	BFD	Double glazing
25	BFT	Triple glazing
25	BFI	Replace glass with insulated panels
15	BFF	Reflective film
25	BFW	Wall up or close off
15	BFX	Other window measures
	Other Openings (e.g. doors, loading docks, etc.)	
25	B0S	Storm doors
25	BOA	Air locks or vestibules
25	BOW	Wall up or close off openings
25	BOX	Other door/miscellaneous measures
Renewable		
	Solar	
10	RSW	Solar hot water
10	RSA	Active solar space conditioning
20	RSP	Passive solar space conditioning
10	RSV	Photovoltaic application
	Wind, Hydro	
10	RBZ	Use of wind energy
10	RGZ	Use of water power
	Renewable Conversions	
25	RCB	Conversion to biomass
19	**RCG**	**Geothermal heat pump**
25	RCM	Conversion to methane
25	RCR	Conversion to refuse
25	RCW	Conversion to wood
25	RCX	Conversion to other renewable

Mechanical Systems		
	Non-Renewable Conversions	
25	MCC	Conversion to coal
25	MCE	Conversion to electricity
25	MCG	Conversion to natural gas
25	MCO	Conversion to oil
25	MCX	Conversion to another non-renewable fuel
	Controls	
10	MKC	Central control/automated energy management
10	MKE	Enthalpy control
10	MKS	Shut down/shut off devices
10	MKT	Temperature reset devices
10	MKX	Other control devices
	Air-Conditioning	
25	MAC	Chiller conversion/efficiency improvement
15	MAE	Install economizer
25	MAU	Package unit application
15	MAX	Other air-conditioning measure
	Domestic Water	
10	MWC	Reduce circulation pump operation
15	MWD	Decentralized hot water heater
20	MWF	Install flow restrictors
20	MWI	Insulate tanks
15	MWX	Other water measure
	Other	
10	MOE	Install energy recovery devices
20	MOG	Cogeneration application
	Heating Modifications	
10	MHA	Install automatic ignition device
25	MHB	Replace burner
25	MHD	Downsize system
15	MHE	Install stack economizer
10	MHF	Install automatic flue damper
10	MHH	Install humidification device
25	MHO	Replace boiler
20	MHP	Preheat combustion air/make up water
15	MHT	Install turbulators
10	MHX	Other heating modification
	Air Distribution System Modifications	
15	MDA	Reduce air volume
20	MDI	Insulate pipes or ductwork
10	MDO	Install automatic dampers
15	MDS	Prevent air stratification
15	MDT	Repair/replace steam traps
15	MDV	Install variable air volume system
10	MDX	Other distribution system modification
10	MDZ	Zoning modifications

	Swimming Pools	
10	MPC	Install swimming pool cover
15	MPD	Pool dehumidification
15	MPR	Pool heat recovery
	Electrical/Lighting	
	Lighting Conversions	
20	ECE	Convert to T8s and electronic ballasts
20	ECF	Convert to fluorescent lights
8	ECH	Convert to high intensity discharge (HID) lamps
25	**ECL**	**Convert exit light fixtures to LED exit fixtures**
10	ECW	Install reduced wattage fluorescent lamps
8	ECX	Convert to other high efficiency lamps
	Lighting Modifications	
20	EMB	Install energy efficient ballasts
20	EMD	Disconnect ballasts
8	EMF	Modify fixture (e.g. reflectors, lower height, etc.)
20	EMR	Reduce number of fixtures/task lighting
10	EMZ	Other lighting modification
	Controls	
10	EKD	Install demand limiter controls
10	EKZ	Electrical system control devices
	Motors	
20	MME	Install energy efficient motors
20	MMS	Down size motors
20	MMV	Install VFDs
20	MMX	Other motor modification
	Other Electrical	
10	EEZ	Other electrical applications

QUALIFICATIONS FOR ANALYSTS

I. Qualifications for Prospective Analysts

1. Licensed Professional Engineer or Architect in the State of Iowa.

2. Demonstrated knowledge and experience in energy management/energy conservation matters (see Section III).

3. Free from any conflicts of interest (financial or otherwise) in any of the energy management improvements/energy conservation measures.

4. Attend the annual Department of Natural Resources (DNR) Analyst Workshop.

II. Requirements for Continuing Analysts

1. Licensed Professional Engineer or Architect in the State of Iowa.

2. Free from any conflicts of interest (financial or otherwise) in any of the EMIs.

3. Submit by **November 15 each year** a record of annual completion of 8 Professional Development Hours (PDH) as defined in Subsection 193c IAC in energy-related courses. These 8 hours are in addition to the required attendance at the annual Analyst Workshop provided by the Department. A letter indicating the specific energy-related coursework shall be submitted to the department or their designee each year.

4. A copy of the Professional Engineer or Registered Architect certificate with energy related coursework documentation shall be submitted to DNR within 30 days of receipt of the certificate from the respective board.

5. Attend the Annual Analyst Workshop.

III. Demonstrated Knowledge and Experience in Energy Management

1. Submission and approval of a TEA in accordance with the current edition of the Energy Analysis guidelines published by DNR.

or

2. Submission and approval of a technical engineering analysis prepared for another governmental agency or body which in effect provides the data identified in a DNR Energy Analysis, in a similar format, including but not limited to:
   a) Executive Summary

b) Building Description
c) Current Energy Consumption Analysis
d) Review of Operation and Maintenance (O&M) Practices and Procedures
e) EMI Analysis Documentation

or

3. Submission and approval of reports, studies, or analyses which demonstrate competency in all of the following areas:
   a) building electrical load analysis
   b) building fuel load analysis
   c) air/hydronic HVAC systems analysis
   d) lighting systems analysis
   e) building energy modeling analysis
   f) building O&M practices and procedures analysis
   g) EMI analysis
   h) envelope systems analysis
   i) heating and cooling plant analysis

or

4. Submission and approval of other credentials, documents, or information which materially demonstrate ability to prepare Energy Analyses in accordance with current DNR Energy Analysis guidelines.

Note: For submissions under line items III.2, III.3, III.4 above, it is the responsibility of the prospective Analyst to provide a table of contents which clearly cross references the above requirements to the material submitted. Failure to do so may result in rejection of the submission.

IV. Causes for Disqualification

1. Substantial Errors

Substantial errors (incorrect calculations, missing information, conflicting data, etc.) result in the delay of implementing energy management improvements. Inferior quality of the Energy Analysis diminishes its value as a useful management tool for the facility owner. Therefore, it is necessary to take administrative action in such cases.

First Occurrence - A letter will be sent to the facility owner and the Analyst indicating the deficiencies in the report. The letter to the Analyst will be a Notice of Warning. It will state that if subsequent Energy Analyses are submitted with substantial errors, the Analyst will be placed in provisional status. The resubmission of the originally rejected Energy Analysis will be considered a new submission.

Second Occurrence - A letter will be sent to the facility owner and the Analyst indicating the deficiencies in the report. The letter to the Analyst will be a Notice of Provisional Status. It will state that if subsequent Energy Analyses are submitted with substantial errors, the removed from the DNR Energy Bureau List of Qualified Analysts. The resubmission of the originally rejected Energy Analysis will be considered a new submission.

Third Occurrence - A letter will be sent to the facility owner and the Analyst indicating deficiencies in the report. The letter to the Analyst will be a Notice of Disqualification and Removal from the DNR Energy Bureau List of Qualified Analysts. The disqualified analyst will not be allowed to participate in any new contracts with the Energy Bank program until requalified by the department.

2. Untimely or Non-Performance of Energy Analyses

Failure to perform an Energy Analysis in a timely manner is detrimental to the facility, the energy program, and the credibility of other Analysts. Therefore it is necessary to take administrative action in such cases.

A letter will be sent to the Analyst indicating untimely or non-performance in executing their Energy Analysis contract. Upon review of input from the Analyst, a decision will be made by the DNR as to the Analyst's qualification status. Possible outcomes range from unchanged status to disqualification.

3. Other

Failure to meet the minimum requirements can result in disqualification. The disqualified analyst will not be allowed to participate with the Energy Bank program until requalified by the department.

V. Reinstatement to Qualified Analyst

1. Analysts placed in warning or provisional status will be reclassified to the next higher status level after one year from their respective rejection dates.

2. Individuals who are disqualified as Analysts may attend an Analyst Workshop, and submit a sample Energy Analysis for review while disqualified. If that individual meets the conditions of section I, they will be reinstated one year after their disqualification date.

3. Analysts who have allowed their qualifications to lapse and have been removed from the DNR List of Qualified Analysts can be reinstated by meeting the conditions stated in Section I.