PRODUCTION AND LOGISTICS
(L/MRM)

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, DC 20301-8000

March 17, 1993

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS, LOGISTICS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE (MANPOWER, RESERVE AFFAIRS, INSTALLATIONS AND ENVIRONMENT)
DIRECTOR, DEFENSE LOGISTICS AGENCY
DIRECTOR, DEFENSE COMMISSARY AGENCY
DIRECTOR, NATIONAL SECURITY AGENCY
DIRECTOR, DEFENSE MAPPING AGENCY
DIRECTOR, WASHINGTON HEADQUARTERS SERVICES

SUBJECT: Energy Conservation Investment Program Guidance

This memorandum replaces Defense Energy Program Policy Memorandum (DEPPM) 92-2. It provides updated policy to meet the goals set by the Energy Policy Act of 1992 (PL 102-486 of October 24, 1992) and for the continued management of the Energy Conservation Investment Program (ECIP).

The ECIP is a Military Construction funded program to improve the energy efficiency of existing Department of Defense facilities. The projects funded through ECIP improve the living and working environment of Defense personnel, enhance mission capabilities, and greatly decrease the negative environmental effects of Defense energy systems. Support of this program must continue to be emphasized at all levels.

Because of increasing emphasis on the program by the Administration and Congress, and the centralized management of funding, it is imperative that this office be kept informed of program execution and results. The attachments contain detailed guidance for program management and execution. Please inform this office of the official point of contact in your office to which all requests for program status should be addressed within sixty days of the date of this memorandum.

Jeffrey A. Jones
Acting Deputy Assistant Secretary
(Logistics)

Attachments

ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) GUIDANCE

DEFINITION: ECIP is a subset of the Defense Agencies Military Construction (MILCON) program specifically designated for projects that save energy or reduce Defense energy costs. It includes construction of new, high-efficiency energy systems or the improvement and modernization of existing systems.

SCOPE: The currently projected annual funding level of ECIP is $50.0 million as shown below not to include the cost of design: (Design will be programmed in the Defense Agency design account).

	$Millions					
	FY94	FY95	FY96	FY97	FY98	FY99
Army	12.8	12.8	12.8	12.8		
Navy	19.3	19.3	19.3	19.3	to be	
USMC	2.5	2.5	2.5	2.5	determined	
Air Force	14.9	14.9	14.9	14.9		
Def Agencies	.5	.5	.5	.5		
	50.0	50.0	50.0	50.0		

RESPONSIBILITIES: A list of projects, reviewed for conformance with technical criteria, and comprising the planned execution of the appropriated funds will be forwarded to the Congress upon enactment of the authorization and appropriations acts each year. The list will be prepared by the Office of the Deputy Assistant Secretary of Defense for Logistics in coordination with the DoD Comptroller.

Each Military Service and Defense Agency is responsible to:

- Identify and accomplish all energy conservation measures with a 10 year or less payback.
- Submit project documentation, through the normal Military Construction review and verification process, to the Deputy Assistant Secretary of Defense (Logistics) on the highest priority projects, within the funding levels projected above by February 15 each year for the following Fiscal Year.
- Execute those projects forwarded to Congress and within funds allocated by the OSD Comptroller.
- Ensure that all monies appropriated for ECIP are used for energy conservation purposes.

  The balance of funds accrued through project savings, deferrals, or cancellations within a Service may be used on projects that have experienced cost growth, for design of ECIP projects, to supplement the funding of future or prior year ECIP projects, or for additional projects approved by the Deputy Assistant Secretary of Defense (Logistics) in coordination with the DoD Comptroller.

- Revalidate all projects prior to advertising to ensure that contemplated benefits will still accrue.

  Projects may be considered valid if the Savings-to-Investment ratio remains above 1.25. This will ensure that projects funded within the 25 percent variation allowance still achieve a positive return on investment over the life of the project. However, for programming purposes, ECIP projects with comparatively low savings-to- investment ratios are less likely to be funded than those with high ratios.

  In the event that a project cost estimate changes by more than 25 percent of that furnished to the Congress (the original estimate attached with the DoD funding document) or the scope is reduced by 25 percent to allow award within the original estimate, notify the Deputy Assistant Secretary of Defense (Logistics) and the DoD Comptroller of the circumstances causing the change. Contracts or contract modifications may be awarded 21 days after submission to OSD provided no objections exist. Contracts or contract modifications may be awarded prior to the 21 day period with OSD concurrence.

- Maintain current, auditable documentation on the execution status and the projected and realized savings for each approved ECIP project;

- Provide an annual report on the status of the ECIP to the Office of the Deputy Assistant Secretary of Defense (Logistics) by February 15 of each year in the format of Appendix A for incorporation into the Department of Energy's report to Congress.

  The report also shall include a project status list of all ECIP projects for each of the past five years indicating: original approved costs; current working estimates; the original and current estimated savings, savings-to-investment ratios, and payback periods; and whether or not the project has been awarded, completed, cancelled or deferred. Computer generated reports in Excel or Lotus 123 are preferred--sample provided as Appendix B.

  Projects added will be identified without an original estimate and projects cancelled or deferred without a current working estimate. Projects added, deferred, cancelled, or changed by more than 25 percent, will be identified in the status column.

PROGRAMMING CRITERIA: ECIP projects are to be programmed under the following criteria:

- Priority shall be given to projects that produce the highest savings-to-investment ratio and the shortest payback period.

- Additional consideration can be given to projects that substitute renewable energy for non-renewable energy.

- Since there is uncertainty over future force levels and base structure, a sensitivity analysis must be conducted to determine if there is likelihood that expected changes might alter the economic benefits. Increased risk identified as the result of a sensitivity analysis may be used to lower a project's programming priority.

- Projects must have a saving-to-investment ratio greater than 1.25 and a discounted payback period of 10 years or less.

- Energy Monitoring and Control System projects must have the Installation Commander's certification that appropriate resources will be committed to effectively operate the system over the life cycle of the investment.

- Projects will be classified into one of the ten categories listed on appendix A. Projects will be classified under a category if 75 percent of the scope of the project falls under that category. Projects that do not contain at least 75 percent of any category shall be classified as "Facility Energy Improvement projects".

ECONOMIC ANALYSIS: The savings-to-investment ratios and payback periods shall be arrived at using the following guidance:

- Life Cycle Cost analyses are to be performed on all projects, and discrete elements of the projects using the procedures specified in 10 CFR, Part 436, Subpart A.

- Savings-to-investment ratios and life-cycle cost analyses will be based upon the recommended useful life of the retrofit, as given in Appendix B, or the remaining life of the basic facility being retrofitted, whichever is less.

- Use the actual cost of energy purchased for use at the facility, rather than stock fund prices, as the basis for energy cost analysis. (Stock fund prices might be out of date and include storage and other overhead costs.)

- The following conversion factors are to be used for the calculation of energy savings:

Purchased electricity	3,413 BTU/kWh	3.6 MJ/kWh
Purchased steam	1,340 BTU/lb	1.41MJ/lb
Distillate fuel oil	138,700 BTU/gal	38.6 MJ/L
Natural gas	1,031 BTU/cu. ft.	38.85 MJ/cu. m
LPG, propane, butane	95,000 BTU/gal	24.6 MJ/L
Bituminous coal	24,580,000 BTU/ short ton	28,592 MJ/ metric ton
Anthracite coal	25,400 BTU/ short ton	29,546 MJ/ metric ton
Residual fuel oil	Average thermal content of oil at each installation	

- Call the Advanced Sciences, Inc., at (703) 243-4900 to obtain copies of the following National Institute of Standards and Technology (NIST) tools which will assist in the economic analysis of candidate ECIP projects:

  (1) *Life-Cycle Costing Manual for the Federal Energy Management Program*, NIST Handbook 135 (current version 1987).

  (2) Present Worth Factors for Life-Cycle Cost Studies in the Department of Defense, NISTIR 4942 (Current version 1993) Included in this document is a *Memorandum of Agreement on Criteria/Standards for Economic Analysis/Life Cycle Costing for MILCON Design* dated March 18, 1991, which includes further information on basic life cycle analysis assumptions and criteria.

  (3) *NIST "Building Life Cycle Cost" (BLCC) Computer Program* Note: Use the most recent version available - Latest version 3.2, October 1, 1992.

These tools along with the Life Cycle Cost in Design (LCCID) program should be used to perform the economic analysis that is submitted with the 1391 project documentation. The LCCID program and application assistance is available from the Building Loads Analysis System Thermodynamics (BLAST) Support Office, Army Construction Engineering Research Laboratory, Champaign, IL, by calling 1-800-842-5278.

PROJECT DOCUMENTATION: Project documentation to be furnished to the Deputy Assistant Secretary of Defense (Logistics) will adhere to the following guidance:

- Projects will be submitted on DD Form 1391 and will include the notation "ECIP" in the title block.

- Projects will be further titled under one of the ten categories listed in Appendix C. A project will be classified in a category if 75 percent of the scope of the projects falls into the category. Projects which do not contain 75 percent on any one category shall be identified as "Facility Energy Improvement."

- Project submittals will include copies of the life-cycle analyses with supporting documentation showing basic assumptions made in arriving at projected savings. Sample format of the analyses and summary sheet are provided in Appendix D. Computer generated summaries are acceptable provided they conform to the above guidance.

- Project descriptions must clearly define the conservation measures from which the energy savings will result and the specific facilities being built or modified by the project.

- Project documentation shall be in metric units in support of the goals established under Executive Order 12770 "Metric Usage in Federal Government Programs" dated July 25, 1991.

- Project documentation shall include a statement regarding whether or not the installation affected by the project is being considered for closure or realignment. If so, an explanation must be provided for why the project is being considered in face of the closure or realignment.

PROGRAM REVIEW: A program review will be conducted mid year to determine the status of the program execution and to verify projected savings. In addition, the Defense Inspector General will make periodic audits of ECIP as part of the overall audit of the Energy Resource Management Program.

ECIP Annual Report Summary 1/

SERVICE _____

FUND SOURCE _____ 2/

DATE _____

	FY 85	FY 86	FY87	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97
Number of Projects Authorized													
Millions of Dollars Authorized													
Number of Projects Appropriated													
Millions of Dollars Appropriated													
Number of Projects Completed													
Millions of Dollars Used 3/													
Number of Projects Cancelled													
Millions of Dollars of Cancelled Projects													
Estimated Energy Savings (MBTU) 4/													
Actual Energy Savings (MBTU) 5/													
Estimated Annual Savings ($000) 4/													
Actual Annual Savings ($000) 5/													

1/ A separate project information sheet shall be maintained at the Service Program Management Office for any project cancelled, deferred beyond the Fiscal Year authorized, reduced in scope by more than 25 percent, that exceeds the authorized amount by more than 25 percent, or that fails to save less than 75 percent of the original estimated savings.

2/ Separate Summary Sheets shall be submitted for MILCON Active Forces, Family Housing, Reserve, and Guard.

3/ Actual amounts for program years that have been completed and for those program years not completed, use the total actual expenditures on completed projects and the current working estimates of projects not yet completed.

4/ As originally provided to the Congress.

5/ Actual validated cost savings including current estimates based on the latest scope of those projects not yet completed or validated

APPENDIX A.

FY 1991 Energy Conservation Investment Program

Installation	State	Project	Approved Estimate	Current Estimate	Original NPV Savings Est.	Current NPV Savings Est.	Design Cost Inhouse	Design Cost Contract	Original SIR	New SIR	Original Payback	New Payback	Status 1/
	ARMY												
Tooele AD	UT	Extend NAG lines	165,000	165,000	34,578,373	34,578,373			209.6	209.6	0.2		
Schofield Barracks	HI	Photovoltaics	100,000	100,000	3,863,232	3,863,232			38.6	38.6	0.2		
Tooele AD	UT	Extend NAG lines	120,000	120,000	3,483,992	3,483,992			29.0	29.0	1.2		
Tooele AD	UT	Extend NAG lines	160,000	160,000	3,302,634	3,302,634			20.6	20.6	1.7		
Ft. Carson	CO	EMCS	1,050,000	1,050,000	4,999,828	4,999,828			4.8	4.8	2.4		
Ft. Hauchuca I	AZ	EMCS	230,000	230,000	690,327	690,327			3.0	3.0	3.3		
Iowa AAP	IA	Insulate Steam lines	630,000	630,000	4,006,656	4,006,656			6.4	6.4	4.1		
Ft. Benning	GA	EMCS for Hospital	1,150,000	1,150,000	2,846,006	2,846,006			2.5	2.5	4.2		
		Design	84,000	84,000									
Army Subtotal for FY 1991			3,689,000	3,689,000	57,771,048	57,771,048	0		15.7	15.7			
	NAVY												
Bangor	WA	Boiler Plant Mods	1,166,000	1,166,000	26,246,984	26,246,984			22.5	22.5	0.7		
Port Hueneme	CA	Fac Energy Mods	310,000	310,000	1,418,821	1,418,821			4.6	4.6	3.3		
		Design	524,000	524,000									
Navy Subtotal for FY 1991			2,000,000	2,000,000	27,665,805	27,665,805	0		13.8	13.8			
	MARINE CORPS												
Camp Lejeune	NC	Replace Pipe Insulation	100,000	100,000	2,561,251	2,561,251			25.6	25.6	0.6		
MCCDC Quantico	VA	Temp Contrl	192,000	192,000	2,392,775	2,392,775			12.5	12.5	0.8		
Camp Lejeune	NC	Replace Pipe Insulation	119,000	119,000	2,289,045	2,289,045			19.2	19.2	0.8		
Camp Lejeune	NC	Replace Pipe Insulation	205,000	205,000	3,124,554	3,124,554			15.2	15.2	1.1		
MCCDC Quantico	VA	Insulate Steam Pipes	172,000	172,000	2,592,913	2,592,913			15.1	15.1	1.3		
MCCDC Quantico	VA	Insulate Steam Pipes	112,000	112,000	1,689,966	1,689,966			15.1	15.1	1.3		
MCCDC Quantico	VA	Insulate Steam Pipes	51,000	51,000	761,707	761,707			14.9	14.9	1.3		
MCCDC Quantico	VA	Various Fac Energy Impr	346,000	346,000	2,716,462	2,716,462			7.9	7.9	1.7		
		Design	114,000	114,000									
Marine Corps Subtotal for FY 1991			1,411,000	1,411,000	18,128,673	18,128,673	0		12.8	12.8			
	AIR FORCE												
Mountain Home AFB	ID	Addition to EMCS	200,000	269,075	1,668,404	1,668,404			6.2	6.2	1.2		
Tyndall AFB	FL	Add EMCS to 16 fac	170,000	170,256	714,349	714,349			4.2	4.2	2.3		
Homestead AFB	FL	Addition to EMCS	190,000	0	716,919				4.2		2.7		cancelled
Tyndall AFB	FL	Hospital Cogen Plant	720,000	840,669	4,692,529	4,692,529			6.5	5.6	2.9		
Columbus AFB	MS	Replace EMCS Basewide	1,400,000	1,400,000	3,128,727	3,128,727			2.2	2.2	4.8		
		Design	220,000	220,000									
Air Force Subtotal for FY 1991			2,900,000	2,900,000	10,920,928	10,204,009	0		3.8	3.5			
Grand total DoD for FY 1991			10,000,000	10,000,000	114,486,454	113,769,535			11.4	11.4			

1/ Status: Awarded, Completed, Deferred, or Cancelled

APPENDIX B.

ENERGY CONSERVATION PROJECT TYPES
(Recommended Economic Analysis Life)

Category	Title	Description
1.	EMCS or HVAC Controls (10 years)	Projects which centrally control energy systems with the ability to automatically adjust temperature, shed electrical loads, control motor speeds or adjust lighting intensities.
2.	Steam and Condensate Systems (15 years)	Projects to install condensate lines, cross connect lines, distribution system loops, repair or install insulation and repair or install stream flow meters and controls.
3.	Boiler Plant Modifications (20 years)	Projects to upgrade or replace central boilers or ancillary equipment to improve overall plant efficiency. This includes fuel switching or dual fuel conversions.
4.	Heating, Ventilation, Air Conditioning (HVAC) (20 years)	Projects to install more energy efficient heating, cooling, ventilation or hot water heating equipment. This includes the HVAC distribution system (ducts, pipes, etc).
5.	Weatherization (20 years)	Projects improving the thermal envelope of a building. This includes building insulation (wall, roof foundation, doors), windows, vestibules, earth berms, shading, etc).
6.	Lighting Systems (15 years)	Projects to install replacement lighting systems and controls. This would include daylighting, new fixtures, lamps, ballasts, photocells, motion sensors, IR sensors, light wells, highly reflective painting, etc.
7.	Energy Recovery Systems (20 years)	Projects to install heat exchangers, regenerators, heat reclaim units or recapture energy lost to the environment.
8.	Electrical energy Systems (20 years)	Projects that will increase the energy efficiency of an electrical device or system or reduce cost by reducing peak demand.
9.	Renewable Energy Systems (20 years)	Any project utilizing renewable energy. This includes active solar heating, cooling, hot water, industrial process heat, photovoltaic, wind, biomass, geothermal and passive solar applications.
10.	Facility Energy Improvements (20 years)	Multiple category projects or those that do not fall into any other category.

APPENDIX C.

SAMPLE FORMAT

Life-Cycle Cost Analysis for Energy Conservation Investment Program Projects

1992 38806 S REVISION DATE: 07 NOV 1991
MCA (AS OF 11/22/1991 AT 07:41:48) 09 AUG 1991
LAF=1.08
DATE 09 AUG 1991 FY 92 PROGRAM
PROJECT NUMBER: 38806
PROJECT TITLE: ECIP: Insulate Steam Lines
INSTALLATION: Charles Melvin Price Spt Ctr
LOCATION: Illinois

SECTION II - ECONOMIC ANALYSIS

11C CONSIDERATION OF ALTERNATIVES

Maintain Status Quo
Insulate Steam Distribution System

11D ECONOMIC JUSTIFICATION SUMMARY

Life Cycle Cost Analysis Data Base

1. Investment costs were calculated using R.S. Means estimating publications. Total investment costs, including contingency and SIOH = $224,896.

2. Energy savings were calculated using various energy conservation publications.

a. Documents included:

(1) Architects & Engineers Guide to Energy Conservation in Existing Buildings, DOE, 1979.

(2) ASHRAE Fundamentals, 1985.

(3) The 1975 Energy Management Guidebook, published by editors of Power Magazine, McGraw Hill Inc, N.Y., N.Y., 1975.

b. Distillate fuel oil will not be affected by the project. Initial firing of the boilers uses #2 fuel oil. Firing up procedures at the beginning of the heating season will not change.

Distillate fuel oil savings = 0

c. Residual fuel oil (#6 fuel oil) is the primary fuel used in the central heating plant steam distribution system.

(1) Data base:

(a) Boiler data--temperature at 100psi = 338 F
80psi = 324 F

(b) Assume average steam/condensate temperature in the line = 240 to 250 F.

(c) To be conservative, assume some of the lost

heat from the pipes will find its way to the ground level, due to both the large amount of heat lost and the circulation built up by both the temperature gradient and the unit heater blowers. Assume 25 percent of the lost heat is returned to the floor level.

(2) Current situation--No insulation on steam or condensate lines in warehouse 2. No insulation on the condensate lines in warehouse 3. The steam lines in warehouse 3 do have insulation installed.

(a) Heat loss calculations:

Q(bare)= HL*T*L
where Q(bare)=bare pipe seasonal heat loss
HL=Unit heat loss
T=7-month heating season = 5040hours
L=Unit length of pipe

(b) Heat loss

Pipe Size	BTUH/10'	10'Lengths(L)	Q(MBTU/season)
1/2 in	1125	226.8	1,285.956
3/4 in	1350	154.0	1,047.816
1 1/2 in	2300	226.8	2,629.066
2 1/2 in	3250	913.7	14,966.406
4 in	5160	446.4	11,609.257
6 in	7360	12.0	445.133
Total Q(bare) = HL*T*L =			31,983.634

(3) Proposed Situation: Install 2 inches of insulation on all bare steam and condensate lines in warehouse 2 and 3.

(a) Heat loss calculations:

Pipe Size	BTUH/LF	Length(LF)	Q(MBTU/season)
1/2 in	12	2268	137.169
3/4 in	13	1540	100.901

1992 38806 S REVISION DATE: 07 NOV 1991
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INSTALLATION: Charles Melvin Price Spt Ctr
LOCATION: Illinois

1 1/2	in	20	2268	228.614
2 1/2	in	26	9137	1,197.312
4	in	55	4464	1,237.421
6	in	75	120	45.360

Total Q(insulated) = HL*T*L =				2,946.777

(4) Residual fuel savings = Q(bare) - Q(insulated)

Q(lost) = 31,983.634 MBTU/yr - 2,946.777 MBTU/yr
= 29,036.857 MBTU/year

Not all heat lost from the pipes will be lost to the facility. Even though the warehouses have high bays, we can assume 25 percent of the heat is recycled through the buildings.

Therefore Q(lost) = 29,037 MBTU/year*.75 = 21,777 MBTU/yr

Considering boiler efficiency of 78%, this equates to a residual fuel input equal to 21,777 MBTU/yr/.78 = 27,919 MTBU/yr

SAMPLE FORMAT

1992 38806 S REVISION DATE: 07 NOV 1991
MCA (AS OF 11/22/1991 AT 07:41:43) 09 AUG 1991
LAF=1.08
FY 92 PROGRAM

DATE 09 AUG 1991
PROJECT NUMBER: 38806
PROJECT TITLE: ECIP: Insulate Steam Lines
INSTALLATION: Charles Melvin Price Spt Ctr
LOCATION: Illinois

11E ECONOMIC ANALYSIS

LIFE CYCLE COST ANALYSIS SUMMARY
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
(In Constant FY91 Dollars)

LOCATION: Price Spt Center REGION NO: 2 PROJECT NUMBER:38806
PROJECT TITLE: ECIP: Insulate Steam Lines FY 92
DISCRETE PORTION NAME: Insulate Warehouse Steam Distribution Lines
ANALYSIS DATE: Aug 91 ECONOMIC LIFE: 25 PREPARED BY: J. Hooten

1. INVESTMENT
   A. CONSTRUCTION COST $200,800
   B. SIOH $ 12,048
   C. DESIGN COST $ 12,048
   D. SALVAGE VALUE -$
   E. TOTAL INVESTMENT (1A+1B+1C-1D) ----->$224,896

2. ENERGY SAVINGS (+) / COST (-)
   ANALYSIS DATE ANNUAL SAVINGS, UNIT COST & DISCOUNTED SAVINGS

	FUEL	COST $/MBTU/YR(1)	SAVINGS MBTU/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A.	ELEC	$16.23	11	185	15.05	2,785
B.	DIST	0	0	0	0.00	0
C.	RESID	$ 6.61	27,919	184,545	28.23	5,209,694
D.	NG	0	0	0	0.00	0
E.	COAL	0	0	0	0.00	0
F.	TOTAL		$27,930	184,730		5,212,479

3. NONENERGY SAVINGS(+) / COST (-)
   A. ANNUAL RECURRING (+/-) $0
      (1) DISCOUNT FACTOR (TABLE A)
      (2) DISCOUNTED SAVING/COST (3A X 3A1)

   B. NONRECURRING SAVINGS (+) / COST (-) $0

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1992 38806 S REVISION DATE: 07 NOV 1991
MCA (AS OF 11/22/1991 AT 07:41:48) 09 AUG 1991
LAF=1.08
FY 92 PROGRAM

DATE 09 AUG 1991
PROJECT NUMBER: 38806
PROJECT TITLE: ECIP: Insulate Steam Lines
INSTALLATION: Charles Melvin Price Spt Ctr
LOCATION: Illinois

ITEM	SAVINGS(+) COST (-) (1)	YEAR OF OCCURRENCE(2)	DISCOUNT FACTOR(3)	DISCOUNTED SAVINGS(+) COST (-)(4)
(1)				
(2)				
(3)				
(4) TOTAL	$0			$0

C. TOTAL NONENERGY DISCOUNTED SAVINGS(+) / COST(-) (3A2+3Bd4) $0

D. PROJECT NONENERGY QUALIFICATION TEST
(1) 25% MAX NONENERGY CALC (2F5 X .33) $1,347,487
a. IF 3D1 IS = OR > 3C GO TO ITEM 4
b. IF 3D1 IS < 3C CALC SIR= (2F5+3D1)/1E =
c. IF 3D1b IS = > 1 GO TO ITEM 4
d. IF 3D1b IS < 1 PROJECT DOES NOT QUALIFY

4. FIRST YEAR DOLLAR SAVINGS 2F3+3A+(3B1d / YEARS ECONOMIC LIFE) $184,730

5. TOTAL NET DISCOUNTED SAVINGS (2F5+3C) $5,212,479

6. DISCOUNTED SAVINGS RATIO (IF<1 PROJECT DOES NOT QUALIFY)(SIR)=(5/1E)=23.18

7. SIMPLE PAYBACK PERIOD (ESTIMATED YEARS)
SPB=1E/4 = 1.22

SAMPLE FORMAT

LIFE CYCLE COST ANALYSIS SUMMARY
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

LOCATION _____ REGION NO. _____ PROJECT NO. _____
PROJECT TITLE _____ FISCAL YEAR _____
ANALYSIS DATE _____ ECONOMIC LIFE _____ PREPARER _____

1. INVESTMENT COSTS:

A. CONSTRUCTION COST $_____
B. SIOH $_____
C. DESIGN COST $_____
D. TOTAL COST (1A+1B+1C) $_____
E. SALVAGE VALUE OF EXISTING EQUIPMENT $_____
F. PUBLIC UTILITY COMPANY REBATE $_____
G. TOTAL INVESTMENT (1D-1E-1F) $_____

2. ENERGY SAVINGS (+) OR COST (-):

DATE OF NISTIR 4942 USED FOR DISCOUNT FACTORS _____

ENERGY SOURCE	COST $/MBTU(1)	SAVINGS MBTU/YR(2)	ANNUAL $ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELEC	$_____	_____	$_____	_____	$_____
B. DIST	$_____	_____	$_____	_____	$_____
C. RESID	$_____	_____	$_____	_____	$_____
D. NG	$_____	_____	$_____	_____	$_____
E. PPG	$_____	_____	$_____	_____	$_____
F. COAL	$_____	_____	$_____	_____	$_____
G. _____	$_____	_____	$_____	_____	$_____
H. DEMAND SAVINGS			$_____	_____	$_____
I. TOTAL		_____	$_____		$_____

3. NON-ENERGY SAVINGS (+) OR COST (-):

A. ANNUAL RECURRING (+/-) $_____
(1) DISCOUNT FACTOR (TABLE A-2) _____
(2) DISCOUNTED SAVINGS/COST (3A X 3A1) $_____

B. NON-RECURRING SAVINGS (+) OR COST (-)

ITEM	SAVINGS(+) COST(-) (1)	YEAR OF OCCUR.(2)	DISCOUNT FACTOR(3)	DISCOUNTED SAVINGS/COST(+/-) (4)
a. _____	$_____	_____	_____	$_____
b. _____	$_____	_____	_____	$_____
c. _____	$_____	_____	_____	$_____
d. TOTAL	$_____			$_____

C. TOTAL NON-ENERGY DISCOUNTED SAVINGS (3A2+3B4d) $_____

4. FIRST YEAR DOLLAR SAVINGS (2I3+3A+(3B1d/YRS ECON LIFE)): $_____
5. SIMPLE PAYBACK (1G/4): _____ YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2I5+3C): $_____
7. SAVINGS TO INVESTMENT RATIO (SIR) (6/1G): _____

~O6VB000.MAX