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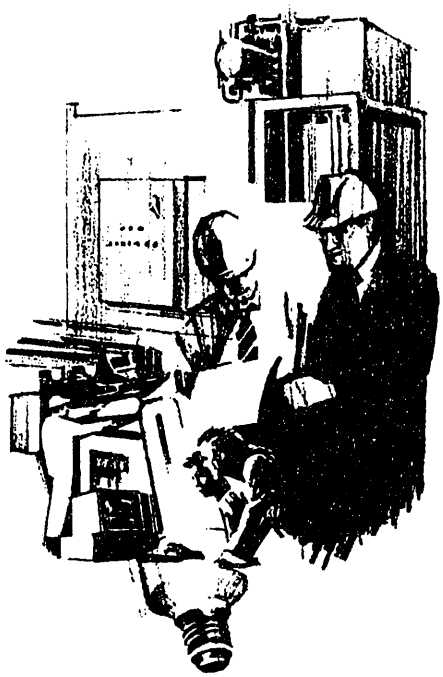
Natural Gas Cost for Evaluating Energy Resource Opportunities at Fort Stewart



January 1993

Prepared for the U.S. Department of Energy
Federal Energy Management Program
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
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NATURAL GAS COST FOR EVALUATING ENERGY RESOURCE OPPORTUNITIES AT FORT STEWART

D. J. Stucky
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January 1993

Prepared for
the U.S. Department of Energy
Federal Energy Management Program
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
Richland, Washington 99352

PREFACE

The goal of the U.S. Department of Energy Federal Energy Management Program (DOE-FEMP) is to facilitate energy-efficiency improvements at federal facilities. This is accomplished by a balanced program of technology development, energy efficiency resource and energy supply assessment, and facility modernization. Technology development focuses upon the tools and procedures used to identify and evaluate efficiency improvements, such as the federal life-cycle cost analyses. For efficiency resource and energy supply assessment, FEMP provides metering equipment and trained analysts to federal agencies exhibiting a commitment to understand and improve energy use efficiency and reduce energy costs.

The U.S. Army Forces Command (FORSCOM) has tasked Pacific Northwest Laboratory (PNL), as the lead laboratory supporting the FEMP mission, to provide technical assistance to modernize energy systems at FORSCOM installations. Under this task, PNL has undertaken an analysis of the supply and cost of natural gas at Fort Stewart. The results will be used by decision makers to determine the most life-cycle-effective costs for energy resource opportunities at Fort Stewart.

EXECUTIVE SUMMARY

Ft. Stewart, a United States Army Forces Command (FORSCOM) installation located near Hinesville, Georgia, is currently undergoing an evaluation of its energy usage, which is being performed by Pacific Northwest Laboratory. In order to examine the energy resource opportunities (EROs) at Ft. Stewart, marginal fuel costs must be calculated. The marginal, or avoided, cost of gas service is used in conjunction with the estimated energy savings of an ERO to calculate the dollar value of those savings. In the case of natural gas, the costing becomes more complicated due to the installation of a propane-air mixing station. The propane-air station is being built under a shared energy savings (SES) contract.

The building of a propane-air station allows Ft. Stewart to purchase natural gas from their local utility at an interruptible rate, which is lower than the rate for contracting natural gas on a firm basis. The propane-air station will also provide Ft. Stewart with fuel in the event that the natural gas supply is curtailed. While the propane-air station does not affect the actual cost of natural gas, it does affect the cost of services provided by gas. Because the propane-air station and the SES contract affect the cost of gas service, they must be included in the analysis.

Our analysis indicates a marginal cost of gas service of 30.0 cents per therm, assuming a total propane usage by the mixing station of 42,278 gallons (38,600 therms) annually. Because the amount of propane that may be required in the event of a curtailment is small relative to the total service requirement, variations in the actual amount should not significantly affect the cost per therm.

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TABLES

1.0 INTRODUCTION

The Federal Energy Management Program of the U.S. Department of Energy (FEMP/DOE) is assisting the United States Army Forces Command (FORSCOM) in the modernization of the energy generation, transmission, distribution, conversion, and end-use systems of selected FORSCOM sites. FEMP's lead laboratory, Pacific Northwest Laboratory (PNL), is currently conducting a study examining energy usage and cost-effective energy options at Ft. Stewart, a FORSCOM installation near Hinesville, Georgia. These options are referred to as energy resource opportunities (EROs).

Federal agencies are required to analyze all potential energy investments using a life-cycle costing (LCC) methodology developed by National Institute of Standards and Technology (NIST) (NBS 1987). The NIST LCC methodology proceeds by calculating all relevant costs of a project and discounting them to result in present dollars, and then subtracting that sum from a similarly constructed LCC of a "no-action" baseline. This difference is called the net present value (NPV) of the action being considered. Actions are recommended for implementation if the NPV is positive and greater than the NPV of any competing actions. This methodology results in minimizing the LCC of energy services at a site.

One of the costs incorporated within the LCC is the energy cost. The energy cost is obtained by multiplying the amount of fuel required by the cost of that fuel. Usually, the cost of each fuel is derived from billing data for each fuel type. In the case of Ft. Stewart, the cost of natural gas has been complicated to some extent by the addition of a propane-air station at the site which is being built under a shared energy savings (SES) contract. Under this contract, a contractor has been retained to build, operate, maintain, repair, and fuel the propane-air station. The contractor will be paid with a portion of the cost savings associated with the installation of the propane-air station. The propane-air station will provide an alternative or back-up fuel for natural gas end-uses in the event of a natural gas curtailment. Because of this, the base year energy cost for natural gas cannot be derived from billing data alone. Instead, the appropriate cost is the cost of gas

service, which will be provided by both natural gas and propane, to the extent that the propane will be serving as a substitute for natural gas.

The addition of the plant also allows Ft. Stewart to purchase natural gas from Atlanta Gas and Light (AGL) at an interruptible rate. An interruptible rate is less than a firm rate because the gas company can interrupt or curtail (cut off) service to the customer, while a firm contract requires the gas company to deliver a certain amount of fuel, with curtailments ideally occurring only after that delivery requirement has been met.

The remainder of this report is divided into five sections. Section 2.0 discusses the methodology used in the calculation of the cost of gas service. Section 3.0 presents the calculation of the natural gas rate component of the gas service cost, and Section 4.0 presents the calculation of the propane-air station cost component. Section 5.0 discusses the results, and Section 6.0 compares our results with the results calculated by Georgia Power Company.

2.0 METHODOLOGY

Federal agencies are required to analyze all potential energy investments using a LCC methodology developed by NIST (NBS 1987). The NIST LCC methodology proceeds by calculating all relevant costs of a project and discounting them to result in present dollars, and then subtracting that sum from a similarly constructed LCC of a "no-action" baseline. This difference is called the NPV of the action being considered. Actions are recommended for implementation if the NPV is positive and greater than the NPV of any competing actions. This methodology results in minimizing the LCC of energy services at a site.

The first step in the LCC process is to determine the present value of all future energy costs associated with an ERO and the no-action baseline. This is done by calculating the current year energy cost, known as the base year energy cost, escalating that cost to represent future real price increases, and then discounting the stream of costs to result in the present value. In accordance with the NIST LCC methodology, only the energy cost relevant to the ERO analysis should be included. The relevant energy cost is the energy cost that can be avoided by the ERO. Any cost that is common to the ERO and the no-action baseline is not relevant as it will cancel itself out when the difference is taken to obtain the NPV.

The relevant energy cost is obtained by using the marginal cost of the fuel. The marginal, or avoided, energy cost of fuel is the appropriate cost to use in conjunction with the estimated energy cost savings of an ERO so that the dollar value of those savings can be calculated. For this reason, it is important that only variable costs, which are affected by the amount of fuel used, are included. A cost is considered variable if the amount of fuel used affects the dollar amount paid. Fixed costs associated with a fuel, such as minimum monthly charges, will be paid despite any increase or reduction in fuel usage, and therefore do not affect the marginal cost.

According to Title 10 of the Code of Federal Regulations (CFR) Part 436 Subpart A 436.19, the life-cycle cost is the sum of the present values of investment costs, non-fuel operation and maintenance costs, replacement costs,

and energy costs. The energy cost stream is composed of annual expenditures. Per 10 CFR Part 436 Subpart A 436.17, the base year energy cost is calculated by multiplying the total amount of energy used in the base year by the price per unit of energy in the base year. The present value of energy costs over the project study period is the product of the energy cost in the base year multiplied by the appropriate modified uniform present worth factor adjusted for energy price escalation for the applicable region, sector, fuel type, and study period. To determine the energy cost, it is necessary to calculate the appropriate cost of energy for each fuel type.

Usually, the cost of gas is derived from the installation's monthly gas bills; however, the construction of a propane-air station at Ft. Stewart and the shared energy savings contract by which it was financed have made the costing process more complicated. The contract provides for monthly payments to be made by Ft. Stewart to the contractor. These payments depend on the availability of cost savings the Fort experiences by purchasing gas at an interruptible rate, as opposed to purchasing gas on a firm basis, as was previously the case. Payments made to the contractor that vary with the amount of propane used affect the cost of gas service. In order to determine the proper gas service cost, these components must be combined to reflect the marginal cost of gas service. Because the SES contract requires both fixed and variable payments, the contract must be broken down so that only the appropriate payments to the contractor are included in the cost analysis.

Under the SES contract, the contractor's payments have been divided into three parts. The first part is a fixed dollar amount for each month that covers the contractor's debt service. The second part is a fixed dollar amount that covers all other items except propane, and which includes profit. Part three of the contract is the payment to the contractor for propane supplied during the billing period (Section B, paragraph 2.2 of the contract, attached as Appendix A). The contract stipulates that the payments made to the contractor cannot exceed 100% of the savings experienced by the Fort in the given month due to the propane-air station. In the event that sufficient savings are not available for that month to provide the contractor with the full contracted payment, then the amount in excess of savings is added to the

part-one payment of the following month. If any of the payment carried over is a portion of the part-three payment, then that amount would be considered a variable cost within the part-one payment. For the purpose of this analysis, however, it is assumed that savings will be sufficient to cover the monthly payments, and contract payments will be charged in the appropriate month.

According to the contract, the first two parts mentioned above are fixed payments that will be paid whether or not the plant is actually operated during the billing period.[a] Per 10 CFR 436 Subpart A 436.17, these fixed costs should be excluded from the LCC methodology. Therefore, the only factors affecting the marginal cost of gas service are the natural gas rate, cost and amount of propane used, and cost of electricity to run the propane-air station.

While the contract payments have not yet been initiated, the contract has been signed; therefore, the fixed payments will need to be made regardless of the type of fuel used. The contract does have a provision for termination for convenience. If the contract were to be terminated, it would be necessary for the Fort to buy out some of the contractor costs. These costs would be composed of the part-one contract payment (the loan amount), less the interest on the loan, plus any additional design or legal costs. Because the Fort is essentially committed to making the part-one payment whether or not the station is ever built, it would not be feasible to cancel the contract unless natural gas usage was to be eliminated or severely reduced.[b]

If the costs of parts one and two were to be included in the LCC analysis, they would need to be included in both the LCC calculation of the ERO and the LCC calculation of the base case, since the Fort is obligated to make fixed payments on parts one and two of the SES contract regardless of gas use. When the two LCCs are subtracted to obtain the net present value, per 10 CFR 436 Subpart A 436.20, the payments to parts one and two cancel. The

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(a) Personal Communications, Denise Kelley, Ft. Stewart. October 7, 1992. 9:40 a.m. PDT.; Plylar McMannus, Army Corps of Engineers, Huntsville Division. October 8, 1992. 11:37 a.m. PDT.

(b) Personal Communication, Plylar McMannus, Army Corps of Engineers, Huntsville Division. October 26, 1992. 1:20 p.m. PDT.

inclusion of these types of irrelevant costs is unnecessary, and only the relevant, incremental cost of an ERO needs to be included in the LCC analysis.

While the issue of fixed contract payments is not relevant for determining the base energy cost, it is possible that it could become relevant through the implementation of EROs. If the combined effect of implemented EROs increases or decreases total gas usage, the savings experienced by the Fort for the propane-air station could be affected. If savings were to be reduced enough such that the fixed contract payments were pushed further into the future, the reduction in the present value of the payments would need to be accounted for in the LCC analysis. The reduction in the present value of the payments should be included as a cost increase or decrease in the LCC analysis, but should not be factored into the marginal cost of gas service.

3.0 CALCULATION OF NATURAL GAS RATE COMPONENT

The base year natural gas rate was derived from the report "Projection of Gas Cost Resulting from Use of Propane-Air Mixing Plant at Fort Stewart," Attachment 3, prepared by Mr. Billy Wise and included here as Appendix B. The attachment presents an estimate of what the annual natural gas cost would have been assuming that the Fort had bought gas at the interruptible rate. The estimate is based on actual billing data for the same time period. The total bill, based on the AGL I-24 rate schedule calculation with 100% interruptible therms, is comprised of a monthly customer charge, purchased gas adjustment on interruptible gas, commodity charge on interruptible gas, and a base take-or-pay charge.

Included in our calculation were all costs that are dependent upon the amount of gas supplied. These costs were the commodity charge, the purchased gas adjustment (PGA) on interruptible gas, and the base take-or-pay charge. The take-or-pay charge was included because AGL levies the charge on all therms purchased. The monthly customer charge was not included since it is independent from gas usage. The commodity charge used in this analysis represents a melded rate since the AGL I-24 schedule incorporates a declining block rate structure. The melded rate results in a commodity charge of $0.066 per therm. The actual rate structure is

first 100,000 therms @ $0.073 per therm
next 200,000 therms @ $0.063 per therm
over 300,000 therms @ $0.052 per therm

According to historical data, Fr. Stewart's natural gas purchases are seasonal and move between the first and second blocks. Ft. Stewart has not required more than 300,000 therms per month during the past 6 years, and therefore has not purchased natural gas at the third block rate of $0.052 per therm.

The resulting cost of gas service presented in Section 5.0 is an average based on the melded commodity charge. Because the savings resulting from any given ERO are assumed to occur throughout the year, the melded rate is the appropriate rate to use as it represents the average value of savings over the year. Using the melded rate, the resulting annual payment was divided by the

total number of therms used by the Fort to determine the cost per therm for gas service associated with natural gas. The total number of therms includes the amount of gas delivered to the Fort by AGL and the amount estimated to be supplied by the propane-air station.

4.0 CALCULATION OF PROPANE-AIR STATION COST COMPONENT

The contractor's estimation for a payment schedule under part three of the contract was based on the assumption that 10,000 therms of propane per month would be required during December and January. Since mid-1986, Ft. Stewart has had a total of seven curtailments in December through February, considered to be the winter season (see Table 4.1). Out of six winter seasons, only one season has had curtailments in two of the three months. Six of the curtailments have ranged in duration from 18 to 44 hours and in volume from 120 thousand cubic feet (mcf) to 413 mcf (the equivalent of 1,240 therms to 4,270 therms). The seventh curtailment, in December 1989, was unusually large. During that month, Ft. Stewart was curtailed for a total of 151 hours and 1,535 mcf, or 15,872 therms. Because the curtailments occurred while the Fort was purchasing natural gas on a firm basis, it would be reasonable to assume that curtailments under an interruptible rate would be greater in volume. Based on historical data, the propane-air station was sized assuming an operation schedule of 48 hours per year,[a] and our estimate was calculated accordingly.

TABLE 4.1. Ft. Stewart Curtailment History

Month/Year of Curtailment	Winter Season	MCF Curtailed	Therm. Equivalent	Winter Season Total
Jan. 1987	1986-1987	246	2,543.6	2,543.6
Jan. 1988	1987-1988	413	4,270.4	6,162.6
Feb. 1988		183	1,892.2	
Feb. 1989	1988-1989	263	2,719.4	2,719.4
Dec. 1989	1989-1990	1,535	15,871.9	15,871.9
Dec. 1990	1990-1991	203	2,099.0	2,099.0
Jan. 1992	1991-1992	120	1,240.8	1,240.8

(a) Personal Communication, Plylar McMannus, Army Corps of Engineers, Huntsville Division. October 8, 1992. 11:37 a.m. PDT.

The cost of electricity used in the analysis is a melded overall average electricity rate paid by Ft. Stewart. The amounts of electricity and propane required to run the plant were derived from engineering estimates of the plant and were calculated using Equations (1) Propane Requirement and (2) Electricity Cost:

$$F = OH * PC * LF \quad (1)$$

$$P_E = OH * E * LF * C_E \quad (2)$$

where: F = fuel required per month, in MBtu
OH = operating hours per month (24 hours/month for total of 48 hours/year)
PC = plant capacity (134 MBtu/1 hour)
LF = plant load factor (0.60)
P_E = electricity cost for propane-air station per month
E = electricity required per hour (74 kWh/hour)
C_E = cost of electricity per kilowatt-hour ($0.047).

According to plant specifications,[a] 74 kilowatt-hours per hour are required to run the plant, which uses a 100-horsepower compressor and has a capacity of 134 million BTU (MBtu)[b] per hour. It was assumed that the compressor load was 60% over a 24-hour day.[c] A minor load would also be incurred from the use of lights and controls, but because the amount would be minimal compared to the compressor load, this was excluded from the analysis.

(a) Personal Communication, Plylar McMannus, Army Corps of Engineers, Huntsville Division. October 9, 1992. 9:12 a.m. PDT.
(b) 1 MBtu = 10 therms
(c) Personal Communication, Plylar McMannus, Army Corps of Engineers, Huntsville Division. May 20, 1992. 10:30 a.m. PDT.

Equation (1) resulted in approximately 3,860 MBtu, or 38,600 therms,[a] per year. This amount is more than twice that required by the Fort during their largest curtailment in the past 6 years. Because the Fort will be purchasing natural gas on a completely interruptible rate with the propane-air station, it is possible that curtailments could be of longer duration or fuel amount. As Section 5.0 illustrates, however, the portion of the gas service cost attributed to propane and electricity is small; therefore, the estimate of 38,600 therms should be adequate to account for the propane and electricity portions of the gas service cost, with no appreciable difference in the event that the actual requirement is higher.

(a) 1 therm = 1.0953 gallons propane.

5.0 RESULTS

Our analysis results in a marginal cost of natural gas service of 30.0 cents per therm assuming a total of 38,600 therms of propane annually. The analysis indicates that because the amount of propane that may be required in the event of a curtailment is small relative to the combined gas and propane usage, and because the plant does not use a significant amount of electricity, variations in the actual plant use should not significantly affect the cost per therm.

Table 5.1 contains the results of the analysis. The table breaks out the components of the cost of gas service into the cost of interruptible gas without the fixed monthly charge, the cost of propane, the cost of electricity, and the total fuel cost. The cost per therm for interruptible gas is 95.4% of the total, the cost of propane per therm is 4.6% of the total, and the cost of electricity is less than one tenth of one percent of the total.

The average annual component cost per therm was calculated by dividing the total cost of each component by the total estimated therms required for gas service. The total therm requirement for gas service was calculated by adding the total therms delivered by AGL to the total estimated number of therms which would be supplied by propane.

TABLE 5.1. Ft. Stewart Gas Service Cost Calculation Assuming Curtailment of 38,600 Therms annually

Month	Cost of Inter. Gas w/o Fixed Charge	Cost of Propane	Cost of Electricity	Total Fuel Cost
Oct.	$23,584	$0	$0.00	$23,584
Nov.	$49,929	$0	$0.00	$49,929
Dec.	$58,419	$10,570	$50.08	$69,043
Jan.	$73,094	$10,570	$50.08	$83,718
Feb.	$55,740	$0	$0.00	$55,740
Mar.	$46,720	$0	$0.00	$46,720
Apr.	$30,659	$0	$0.00	$30,659
May	$23,415	$0	$0.00	$23,415
Jun.	$25,654	$0	$0.00	$25,654
Jul.	$18,487	$0	$0.00	$18,487
Aug.	$19,330	$0	$0.00	$19,330
Sep.	$17,593	$0	$0.00	$17,593
Total	$444,624	$21,139	$100.17	$463,872

Average Annual Component Cost/Therm	$0.2862	$0.0137	$0.0001	$0.2999

Assumptions:

Delivered Natural Gas Therms	1,508,085
Therms from Propane	38,600
Total Gas Service Therms	1,546,685
Cost of Propane	$0.500/gallon
Cost of Electricity	$0.047/kWh

Conversion: 1 Therm = 1.0953 Gallons Propane

6.0 COMPARISON OF PNL RESULTS TO GEORGIA POWER COMPANY RESULTS

Our results differ significantly from those prepared for Georgia Power Company and presented in Mr. Billy Wise's report, "Projection of Gas Cost Resulting From Use of Propane-Air Mixing Plant at Fort Stewart," which determined a projected gas cost of 45 cents per therm (see Appendix B). The difference in the results can be easily explained.

First, we are attempting to determine the appropriate cost of gas services to use in the LCC methodology, and not a cost projection, as the Wise report calculates. Wise's cost projection includes payments made to the contractor that are not affected by energy use. While it could be argued that these costs should be included in the non-fuel O&M category of the LCC methodology (see Section 2.0), their inclusion in both the calculation of the ERO LCC and the base case LCC would cause the fixed payments to cancel out. Second, Wise's calculations include the fixed costs paid to the contractor under the first two parts of the contract. Because variations in gas usage do not affect fixed costs, fixed costs should not be included. Third, Wise bases his calculations on the savings generated by the propane-air station over a 25-year period, according to the SES contract. While the expected savings will determine whether or not the contractor will be paid in full each month, it has no bearing on the marginal cost of gas service. The contract does not include a method by which the cost of gas service should be calculated, however, and is therefore not relevant in this situation. The LCC methodology requires an initial cost for natural gas, or in this case, natural gas service, which is then escalated according to DOE escalation rates through the analysis period. Finally, to determine the average cost per therm, Wise used only those therms delivered by the gas company; however, the therms generated by the propane plant must also be included since they are substituting for the natural gas.

The marginal, or avoided, cost of gas service is the appropriate cost to use in conjunction with the estimated energy savings of an ERO to calculate the dollar value of those savings. For this reason, it is important that only variable costs which are affected by the amount of gas used are included. A

cost is considered variable if the amount of fuel used affects the dollar amount paid by the Fort. Fixed costs associated with natural gas and the propane plant will be paid despite any increase or reduction in gas or propane usage. Because the effect of an increase or decrease in total gas service requirements will not significantly affect propane plant savings (see Section 2.0), the fixed contract payments should not be significantly affected, and are therefore not included in the cost calculation.

7.0 REFERENCES

10 CFR 436. 1992. U.S. Department of Energy, "Federal Energy Management and Planning Programs." U.S. Code of Federal Regulations.

U.S. Department of Commerce, National Bureau of Standards (NBS). November 1987. Life-Cycle Costing Manual for the Federal Energy Management Program. NBS Handbook 135, Prepared for Federal Energy Management Program Staff Office, U.S. Department of Energy. U.S. Government Printing Office, Washington, D.C.

APPENDIX A

SES CONTRACT SECTION

SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

1. SUPPLIES OR SERVICES. The Contractor shall furnish all material, equipment, labor, supervision, and services needed to (1) design, deliver, receive at site, store, construct, finance, fabricate, start-up, check-out, test, inspect, install, operate, repair, maintain, and provide propane supplies for a propane-air storage and supply systems for natural gas peak demand shaving for the duration of the contract, (2) obtain all environmental, construction and operating permits, (3) provide connections to gas and electrical systems, (4) provide meters for use in determining payments, and (5) read meters and calculate billings in accordance with the provisions of this contract, in support of the shared energy savings program.

2.0 Schedule B-1. The contract will consist of this RFP, including the schedules for 15 years with an option to extend performance for 5 years. The actual savings will be based on the difference between actual Atlanta Gas Light Company (AGLC) monthly billings for natural gas consumed under an interruptible service contract and the calculated billings for an equivalent consumption of natural gas consumed for the same period under a noninterruptible service contract plus the cost of the propane used during the billing period, and less the cost of power to the propane-air systems for the same period. No guarantees are made by the Government in regards to changes in the current AGLC natural gas rate schedules or changes in Fort Stewart gas consumption. Schedule B-2 is estimated construction costs for bonding purposes.

2.1 Since the savings generated by the contractor will vary depending on propane usage and changing utility rates, the then current AGLC rates shall be used by the Contractor, in addition to his propane and electric power meter readings, to compute the actual monthly savings and billings to the Government. Samples of the current AGLC rates are shown in Section J, Attachment 2.

2.2 Schedule B-1 shall reflect contractor payment split into three parts, all of which will be dependent upon and derived from energy savings if any. Part one shall be a proposed fixed dollar amount for each month to cover the contractors debt service. Part two shall be a fixed amount to cover all other items including profit, but not including propane. This part shall be fixed dollar amount which will be adjusted by the Consumer Price Index, Urban Consumers, Atlanta, GA In this way the offeror can estimate what price he requires for.his service, less debt service and propane supplies, based on todays dollars and his actual payment for part two will automatically increase with inflation to cover his cost

growth due to inflation. Part three shall be dollar amount which will pay the contractor for the propane which his system supplies during the billing period. The payment for part three shall be based upon the actual price paid by the contractor for the last shipment of propane he received in support of this contract and the amount of propane supplied to the Governments distribution systems as metered using the contractor supplied propane-air meter. All propane unit costs shall be made available to the Government to verify the unit cost that the contractor bills the Government. The total payment to the contractor shall be subject to savings being available during that billing period. At no time may the contractor receive more than 100 percent of its share of the calculated savings during any one billing period. If, due to no fault of the contractor, sufficient savings do not exist in any given billing period to cover all parts of the payment, the contractor shall receive 100 percent of the savings generated during that billing period and the remainder of the payment not recovered shall be called a shortfall and that amount will be added to part 1 of the next billing periods payment. This process will continue until the shortfall is recovered. In this way, if propane usage is high in any given pay period and not enough savings exist to cover all payments, the contractor can recover these payments during a later billing period when sufficient savings exist. Since by law, the Government is only obligated to pay the contractor a portion of the savings, which can not exceed 100 percent of the savings, any shortfall can only be considered due when savings exist; therefore interest will not be paid to the contractor on any unpaid shortfall. To minimize this effect on the contractor, the contractor is encouraged to propose a higher payment in the months when the savings are predicted to be higher and a lower payment when the savings are lower.

APPENDIX B

PROJECTION OF GAS COST RESULTING FROM USE OF PROPANE-AIR MIXING PLANT AT FORT STEWART

PROJECTION OF GAS COST RESULTING FROM USE OF PROPANE-AIR MIXING PLANT AT FORT STEWART

BACKGROUND

A life cycle cost analysis is being conducted to consider application of a residential energy efficiency program in 283 military family housing units at Fort Stewart. A critical element in life cycle cost analysis is the cost for various types of energy used in the facilities. Huntsville Division has recently awarded a shared energy savings contract involving expansion of an existing propane-air mixing plant, which will allow Fort Stewart to reduce their firm gas purchases under the AGL I-24 rate from 6,980 therms per month to 0 therms per month, thereby resulting in a decrease in the cost per therm of gas consumed. It is necessary to calculate the projected gas cost as a result of having the propane-air mixing plant in operation. The purpose of this paper is to describe the method of calculating the projected gas cost and determine what that cost per therm at Fort Stewart will be. This projected gas cost will then be used in the life cycle cost analysis for the residential energy efficiency program.

Critical to the calculation of projected gas cost is the nature of the shared energy savings (SES) contract for the propane/air mixing plant. The SES contract specifies that the contractor shall furnish all material, equipment, labor, supervision, and services needed to (1) design, deliver, receive at site, store, construct, finance, fabricate, start-up, check out, test, inspect, install, operate, repair, maintain, and provide propane supplies for a propane-air storage and supply system for natural gas peak demand shaving for the duration of the contract, (2) obtain all environmental, construction and operating permits, (3) provide connections to gas and electrical systems, (4) provide meters for use in determining payments, and (5) read meters and calculate billings in accordance with the provisions of this contract, in support of the shared energy savings program.

The SES contract is for a period of 15 years, with an option to extend performance for an additional 5 years. The actual energy dollar savings will be based on the difference between actual Atlanta Gas Light (AGL) monthly billings for natural gas consumed under an interruptible service contract and the calculated billings for an equivalent consumption of natural gas consumed for the same period under a noninterruptible service contract, plus the cost of the propane used during the billing period, less the cost of electric power to operate the propane-air system during the billing period, plus government operations and maintenance savings on the existing facility, calculated as described in Attachment 1.

Contractor payment is split into three parts, all of which will be dependent upon and derived from energy savings, if any. Part one shall be a proposed fixed dollar amount for each month to cover the contractor's first cost of the plant, including design, construction, initial propane fill of the newly installed tanks, etc. Part two shall be a fixed amount to cover all other items including profit, but not including propane, and will be adjusted annually by the Consumer Price Index, Urban Consumers, Atlanta, Ga. Part three shall be the dollar amount which repays the contractor for the propane which his system supplies during the billing period.

At no time may the contractor receive more than 100% of the calculated savings during any one billing period. If sufficient savings do not exist in any given billing period to cover all parts of the payment, the contractor shall receive 100% of the savings generated during that billing period and the remainder of the payment not recovered shall be called a shortfall and that

amount will be added to part one of the next billing period's payment. This process will continue until the shortfall is recovered by the contractor. Attachment 2 is the SES contractor's proposed three-part schedule of payments.

ANALYTICAL PROCESS

This process for calculating the projected cost of natural gas at Fort Stewart with the propane-air plant in operation follows exactly the procedures described in Attachment 1. The projected gas rate is a function of, and must include consideration for, all of the contractor's costs in building and operating the propane-air plant.

This analysis is based upon 12-month's actual natural gas invoices dating from J[illegible] 1991 through June 1992, obtained from Fort Stewart. The 12 invoices were first run thr[illegible]gh the AGL I-24 rate assuming a monthly firm gas demand of 6,980 therms. Then the same 12 twelve invoices were run through the rate assuming zero firm gas. The results of these calculations are shown in Attachment 3.

Schedule B-1 from contract number DACA87-92-C-0012 (Attachment 2) and data from Attachment 3 were used to construct Attachment 4, a schedule of potential savings and contractor payments. The columns in Attachment 4 are defined as follows.

Cost Firm	The monthly cost for natural gas assuming a firm demand of 6,980 therms
Cost Int	The monthly cost for natural gas assuming zero firm demand
Savings	The difference between Cost Firm and Cost Int, or maximum savings potential
Contractor Payment 1	Taken from Schedule B-1 of the SES contract
Contractor Payment 2	Taken from Schedule B-1 of the SES contract
Contractor Payment 3	Taken from Schedule B-1 of the SES contract
Total Contractor Payments	Total monthly payment expected by the contractor, including the appropriate CPI multiplier (1.2) on Contractor Payment 2

Attachment 4 was extended for a 25-year period, corresponding to the 25-year life cycle cost analysis period. The 12 gas invoices noted above were used as a representative demand shape for each of the 25 years. Data for the first 20 years for the three Contractor Payment columns came from Schedule B-1 in the SES contract. Operating costs to the government for the last 5 years were assumed to be identical to the last year of the contract (year 20 of the SES contract).

Total Projected Savings over 25 Years	$8,058,225
Total of Contractor Payments and Operating Cost to the Government for 25 Years	$5,957,558
Total Net Savings Potential over 25 Years	$2,100,667
Average Annual Savings ($2,100,667 / 25 years)	$84,027
Adjustments to savings	
+ Displaced Gas Savings 20,000 therms (.39)(1.1014) + 20,000 therms (.06) =	$9,109
+ Annual O&M Savings $272 (1.2) (12) =	$3,960
	$97,096
- Propane Plant Power Cost 40,000 kwh (.05) =	$2,000
Resulting Annual Savings	$95,096
Current Annual Gas Cost with 6,980 therms firm demand	$774,554
- Resulting Annual Savings	$95,096
Net Annual Cost for Gas	$679,458
Total Therms Used	1,508,085
Average Cost Per Therm with Propane-Air Plant in Operation ($679,458 / 1,508,085 therms)	$0.45

ATTACHMENT 1

13.0 BASIS OF PAYMENT TO THE CONTRACTOR

13.1 Basis for Contract Billing. Actual Atlanta Gas Light Company billing records and billing formulas are to be used as the basis for contract billing. The method and natural gas prices used as the basis for determining the "Actual Cost" used for contract billing shall be in accordance with the natural gas billing procedures and pricing strategies in effect during the billing period and the actual dollar amount will be obtained from the Ft. Stewart gas bill. The "Baseline cost" and "Savings" will be determined in accordance with Section C, Paragraph 13.4. The electric rates used to determine the cost of electricity used by the system shall be based on the Ft. Stewart sales rate in effect during the billing period. The propane rate used to determine the dollar amount due to the contractor for the propane used during the billing period shall be the price that the contractor purchases propane for under the bulk propane supply contract.
The Contracting Officer may give 30 days notice to the Contractor that the Government intends to provide the propane. After giving a 30 day notice of its intention, the Government may elect, at any time during the period of this contract, to furnish propane in lieu of purchasing propane from the contractor. If the Government provides the propane, the contractor would not be reimbursed for any propane purchased.

Natural gas usage displaced by the contractors propane supplied to the distribution system is considered a savings to the Government. The contractor shall determine the amount of this savings by metering the number of therms of propane supplied to the distribution system, convert that to the number of therms of natural gas displaced, and calculate the natural gas dollar savings using Atlanta Gas Light Company's pricing procedures for firm contract natural gas that are in effect during the billing period.

13.2 The contractor shall claim payments on a monthly basis. The contractor shall use formats as agreed to by the Contracting Officer. Sample billing formats shall be submitted for approval to the Contracting Officer, at least 60 days prior to the completion of construction. The bills submitted by the contractor shall be accompanied by the Atlanta Gas Light Company bill for the same period, by the contractor's meter reading records for propane and electricity, by the contractor's calculation of the costs of propane and electricity, and by all other data used or required to develop the invoice.

13.3 The amount of the payments that shall be claimed by the contractor will be based upon Schedule B-1, the calculated cost of the propane that the contractor supplied to the natural gas distribution system and the availability of savings.

13.4 The actual savings will be based on the difference between actual Atlanta Gas Light Company monthly billings for natural gas consumed under the interruptible service contract which Ft. Stewart purchases natural gas (Actual Gas Cost) during the billing period and the calculated cost for an equivalent consumption of natural gas consumed for the same period under a current Atlanta Gas Light Company curtailable service contract (for a similar type customer) with firm gas service of 6980 therms per day with the remaining daily requirement supplied at an interruptible rate (Baseline Gas Cost), plus the calculated cost of the natural gas displaced by propane during the billing period, less the cost of power to the propane-air systems for the same period, and plus Government operations and maintenance savings on the existing facility as indicated herein. The Baseline Gas Cost shall be determined by the contractor by obtaining the daily Ft. Stewart natural gas consumption records for the billing period from Ft. Stewart personnel, and reconstructing a gas bill using the procedures outlined in the current Atlanta Gas Light Company curtailable service contract with firm gas service of 6980 therms per day with the remaining daily requirement supplied at an interruptible rate. Propane usage and electricity usage will be determined by meter readings from the contractor installed and contractor read meters. All data used to reconstruct the Baseline Gas Cost shall be submitted with the invoices.

13.5 If savings exceed the adjusted proposed payment for the month, the contractor shall be paid per proposed payment, subject to all other provisions of this contract.

The following is an example of how savings and payments will be determined:

Assumptions: All Values are Fictitious and the example is simplified by ignoring customer charges and other utility company adjustments.

Natural gas usage - 200,000 therms (total, firm and interruptible therms)

Natural gas usage under the reconstructed daily firm contract - 180,000 therms (firm therms)

Natural gas price interruptible rate-$0.24 /therm

Natural gas price firm rate - $0.39/therm

Charge for Daily Firm Contract - $1.30/firm daily therm

Commodity Charge Firm Therms (first 100,000 therms) - $0.073/therm

Propane usage - 10,000 gallons

Contractors Propane Cost - $0.50 per gallon

Propane Plant Energy Usage - 10,000 kwh

Electric Cost - (from Ft. Stewart Sales Rate B) assume $.05/kwh

Operations and Maintenance Savings - $275.00 per month.

a. Actual Gas Cost: (fully interruptible supply) (During the contract, this cost will be obtained from the actual Ft. Stewart Natural gas bill.)

(a) Cost per therm for interruptible gas

200,000 therms * $0.24/interruptible therm = $48,000

(b) Transportation charge

200,000 therms * $.06/therm (commodity charge) = $12,000

(c) Total

Actual Gas Cost = $48,000 + $12,000 = $60,000

Commodity Charge Firm Therms (therms over 100,000 therms) -

$0.06/therm

Commodity Charge Interruptible Therms - $0.06/therm

Franchise Rec. Factor for firm therms - 1.4 % of total firm gas cost excluding commodity charge and base take of pay cost.

Consumer Price Index, Urban Consumers, Atlanta, Ga. results is a factor of 1.2.

b. Baseline Gas Cost: (All costs and procedures used to reconstruct the bill that the Government would have received had the contractor not provided the capability to interrupt service shall be based upon the rates Atlanta Gas Light Company uses for customers with a curtailable service contract similar to the one in effect for Fort Stewart billing at the time of contract award with firm gas service of 6980 therms per day with the remaining daily requirement supplied at an interruptible rate.)
As new uninterruptible firm gas loads are added at Fort Stewart due to additional construction or retrofits of existing equipment to burn gas, the firm gas demand used to determine baseline cost will be increased accordingly. As an example, if an additional load of 10 x 10 E6 btu/hr is added to the installation, then firm demand used in the baseline cost determination will be increased as follows:

10 x 10 E6 btu/hr/ 100,000 btu/therm x 24 hours/day x .6 =
1440 therms/day

Note: A 60% diversity factor will be used when converting from a maximum hourly load to a daily load unless it can be shown that a different diversity factor is more appropriate.

Therefore, if the installation load increased by 10 x 10 E6 btu/hr, the firm demand used to calculate the baseline cost will be increased by 1440 therms/day.

(a) Availability Charge

6,980 firm therms/day * $1.30/firm therm = $9,074

(b) Cost per therm of firm gas delivered.

180,000 delivered firm therms * $0.39/firm therm = $70,200

(c) Transportation charge for firm therms

100,000 therms * $0.073 = $7,300 (for first 100,000 therms)

80,000 therms * $0.06 = $4,800

(d) Cost per therm of interruptible gas

20,000 delivered interruptible therms * $0.24/therm = $4,800

(e) Transportation charge for interruptible therms

20,000 therms * $0.06 = $1,200

(f) Franchise Rec. Factor for firm therms

($9,074 + $70,200) * .014 = $1109.84

(g) Total

$9,074 + $70,200 + $7,300 + $4,800 + $4,800 + $1,200 +

$1109.84 = $98,483.84

c. Displaced Natural Gas Savings:

5,000 therms x [.39] x [1.014] + 5,000 x [.06] = $2,277.30

Note: Propane usage is converted to Natural gas therms. The terms in brackets represent the pricing strategies of Atlanta Gas Light Company for firm gas supply.

d. Propane Plant Power Cost:

10,000 kwh * $.05/kwh = $ 500.00

Note: 10,000 kwh is the power consumed by the propane air plant and shall be determined by the contractor installed, contractor monitored electric meter. The price of power shall be determined from the Ft. Stewart Power Sales Rate in effect during the billing period.

e. Operations and Maintenance Savings:

O&M Savings = 275 x 1.2 = 330

f. Savings: (See paragraph 13.4 for the definition of savings)

$98,483.84 - $60,000 + $2,277.30 - $ 500.00 + 330 = $40,591.14

g. Contractor Payment: Assuming Schedule B-1 indicated that the contractor bid a payment for Part 1 (first cost) of $10,000 for this billing period, a payment for Part 2 (operation, maintenance, and repair cost) of $1,000 for this billing period adjusted with the CPI.

Parts 1 and 2 Payment = $10,000 + ($1,000 * 1.2) = $11,200

Part 3 Payment, Propane Cost: Propane usage will be determined by the propane meter. For this example, we will assume the system supplied 10,000 gallons of propane to Fort Stewart. Assume the contractor's price for propane is $0.50 per gallon.

Propane cost = 10,000 gallons propane X $0.50 $/gallons = $5,000

Total Payment = $11,200 + $5,000 = $16,200.

Since the payment is less than the savings, the contractor is due his entire payment of $16,200, subject to all other provisions of this contract.

If gas usage is low in any given month resulting in savings being lower than the requested payment or if propane usage is higher making the Part 3 payment push the total requested months payment higher than savings, then the contractor shall receive 100% of the savings that month subject to all other provisions of this contract, and the payment shortfall shall be added to the next billing periods Part 1 payment so that the contractor may recover the shortfall. No interest or late penalty may be added to the shortfall due to it not being paid during the month requested since by law, the Government cannot pay the contractor more than the savings that this project generates.

For example, if savings were only $16,000 in the previous example and the requested payment was $16,200, the $200 difference would be applied to the next billing periods Part 1 payment.

13.6 All gas billing data that is available to the Government will be made available to the contractor. The contractor shall obtain all available data necessary for preparing invoices. The contractor shall calculate the desired payment on a monthly basis for the previous billing period. A copy of these calculations shall be sent to the Contracting Officer with a monthly invoice. All gas and electric consumption data that is available to the contractor shall be made available to the Government.

13.7 If the contractor does not perform in accordance with the terms of this contract providing full system capacity, including nonperformance due to acts of God and due to his nonperformance the utility company imposes a penalty on the Government, the contractor shall receive no payment until the Government recoups the entire amount of the penalty. The contractors anticipated payments which were applied to repay the Government for the penalty shall not be considered shortfalls and shall not be recoverable by the contractor.

For example, assume that the system does not work properly due to a failure of any part of the system and the Government is charged an additional $3.00 per therm over and above the regular commodity charge for all unauthorized gas taken from the natural gas distributor. Also assume that the Government uses 10,000 therms of unauthorized gas.

Natural Gas Cost over and above the regular cost would be:

10,000 therms * $3.00 = $30,000 penalty

Also assume that the contractor's monthly payment is $10,000. The contractor would not receive a payment for three months. The payments which the contractor did not receive would not be considered a shortfall and will not be recoverable by the contractor. This is done to insure that the contractor properly maintains the system and that the contractor is responsible for system failures.

If the contractor's system is providing full contractual requirements, and due to a larger than anticipated system demand, the Government must purchase natural gas during an interruption, and, therefore, incurs a penalty from the gas supplier, the contractor shall not be responsible for paying the penalty.

13.8 If Fort Stewart's requirement for natural gas exceeds this contracts requirements for propane-air supply capacity, the Government shall have the right to, and in such case shall be responsible for, contracting with the natural gas supplier for enough firm natural gas supply capacity to meet it's needs over and above the capacity supplied by the contractor. In such case, the determination of savings shall be based on the difference between the actual Atlanta Gas Light Company monthly billings for natural gas consumed under the new service contract (which includes some firm gas supply) which Fort Stewart purchases natural gas during the billing period and the calculated cost for an equivalent consumption of natural gas consumed for the same period under a Atlanta Gas Light Company contract, similar to the one Fort Stewart buys natural gas at the time of contract award, with curtailable service with firm gas service of 6980 therms per day with the remaining daily requirement supplied at an interruptible rate (Baseline Gas Cost), plus the calculated cost of the natural gas displaced by propane during the billing period, less the cost of power to the propane-air systems for the same period, and plus Government operations and maintenance savings on the existing facility as indicated herein.

13.9 Government operations and maintenance savings shall be $275 per month adjusted by the Consumer Price Index, Urban Consumers, Atlanta, GA.

14.0 FACILITY AND EQUIPMENT DISPOSITION

14.1 The facilities, equipment, programs, and full tanks of propane required for propane air, and all other items used by the contractor or required to operate and maintain the propane-air supply system which is provided and installed under this contract shall become the property of the Government at the end of the contract term at no additional cost to the Government.

The baseline consumer price index is the consumer price index for All urban consumers, Atlanta, GA. The current consumer price index to use in order to properly index the payments is according to the month of the billing.

Month	CPI to use
January	October of the previous year
February	November of the previous year
March	December of the previous year
April	January of the current year
May	February of the current year
June	March of the current year
July	April of the current year
August	May of the current year
September	June of the current year
October	July of the current year
November	August of the current year
December	September of the current year

The current CPI can be obtained from the local bureau of labor statistics or any other publication acceptable to the Government and the contractor.

16. GOVERNMENT FURNISHED PROPERTY

The contractor will assume operation and maintenance of the propane air mixing plant that was built in 1974 at a cost of $212,000. The contractor will be responsible for the property in accordance with FAR 52.245-2, Government Property (Fixed Price Contracts) (Dec 1989)

ATTACHMENT 2

Schedule B-1 (APR 92 Contract Award & Contract Term Start) (Oct 92 Savings Commence)

SCHEDULE B-1

CONT. YEAR	CONT. MONTH	PART 1 CONT SHARE*	PART 2 CONT SHARE*	PART 3 CONT SHARE**
1 1992	1	construction	construction	construction
	2	construction	construction	construction
	3	construction	construction	construction
	4	construction	construction	construction
	5	construction	construction	construction
	6	construction	construction	construction
	7	$27,468	$0	$0
	8	$23,569	$0	$0
	9	$39,789	$0	$6,075
	10	$35,455	$0	$6,075
	11	$27,452	$0	$0
	12	$24,233	$6,169	$0
2 1993	1	$14,484	$7,657	$0
	2	$12,997	$6,843	$0
	3	$13,809	$5,285	$0
	4	$15,368	$3,727	$0
	5	$16,926	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$6,439
	10	$12,273	$8,380	$6,439
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0
3 1994	1	$12,273	$8,380	$0
	2	$12,273	$8,056	$0
	3	$12,596	$6,969	$0
	4	$13,685	$5,881	$0
	5	$14,772	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$6,826
	10	$12,273	$8,380	$6,826
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0

Schedule B-1 (APR 92 Contract Award & Contract Term Start) (Oct 92 Savings Commence)

* See Section E, Para 2.2 for definitions

** For proposal purposes, estimated Part 3 share shall be based on the Government using 10,000 therms per month during the months of December and January. The price of the propane shall be based on estimates obtained by the offeror with the estimated price increased by 6% each year.

CONT. YEAR	CONT. MONTH	PART 1 CONT SHARE*	PART 2 CONT SHARE*	PART 3 CONT SHARE**
4 1995	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$7,774	$0
	4	$12,879	$7,169	$0
	5	$13,484	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$7,235
	10	$12,273	$8,380	$7,235
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0
5 1996	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,258	$0
	4	$12,385	$8,157	$0
	5	$12,495	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$7,669
	10	$12,273	$8,380	$7,669
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0
6 1997	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$8,129

Schedule B-1 (APR 92 Contract Award & Contract Term Start) (Oct 92 Savings Commence)

10	$12,273	$8,380	$8,129
11	$12,273	$8,380	$0
12	$12,273	$8,380	$0

* See Section B, Para 2.2 for definitions

** For proposal purposes, estimated Part 3 share shall be based on the Government using 10,000 therms per month during the months of December and January. The price of the propane shall be based on estimates obtained by the offeror with the estimated price increased by 6% each year.

CONT. YEAR	CONT. MONTH	PART 1 CONT SHARE*	PART 2 CONT SHARE*	PART 3 CONT SHARE**
7 1998	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$8,617
	10	$12,273	$8,380	$8,617
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0
8 1999	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$9,134
	10	$12,273	$8,380	$9,134
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0
9 2000	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0

Schedule B-1 (APR 92 Contract Award & Contract Term Start) (Oct 92 Savings Commence)

5	$12,273	$8,380	$0
6	$12,273	$8,380	$0
7	$12,273	$8,380	$0
8	$12,273	$8,380	$0
9	$12,273	$8,380	$9,682
10	$12,273	$8,380	$9,682
11	$12,273	$8,380	$0
12	$12,273	$8,380	$0

* See Section B, Para 2.2 for definitions

** For proposal purposes, estimated Part 3 share shall be based on the Government using 10,000 therms per month during the months of December and January. The price of the propane shall be based on estimates obtained by the offeror with the estimated price increased by 6% each year.

CONT. YEAR	CONT. MONTH	PART 1 CONT SHARE*	PART 2 CONT*** SHARE*	PART 3 CONT SHARE**
10 2001	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$10,263
	10	$12,273	$8,380	$10,263
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0
11 2002	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$10,879
	10	$12,273	$8,380	$10,879
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0

12 2003	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$11,532
	10	$12,273	$8,380	$11,532
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0

* See Section B, Para 2.2 for definitions

** For proposal purposes, estimated Part 3 share shall be based on the Government using 10,000 therms per month during the months of December and January. The price of the propane shall be based on estimates obtained by the offeror with the estimated price increased by 6% each year.

CONT. YEAR	CONT. MONTH	PART 1 CONT SHARE*	PART 2 CONT SHARE*	PART 3 CONT SHARE**
13	1	$12,273	$8,380	$0
2004	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$12,224
	10	$12,273	$8,380	$12,224
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0
14 2005	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0

	9	$12,273	$8,380	$12,957
	10	$12,273	$8,380	$12,957
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0
15 2006	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$12,273	$8,380	$0
	8	$12,273	$8,380	$0
	9	$12,273	$8,380	$13,734
	10	$12,273	$8,380	$13,734
	11	$12,273	$8,380	$0
	12	$12,273	$8,380	$0

* See Section B, Para 2.2 for definitions

** For proposal purposes, estimated Part 3 share shall be based on the Government using 10,000 therms per month during the months of December and January. The price of the propane shall be based on estimates obtained by the offeror with the estimated price increased by 5% each year.

OPTION YEARS ARE 16 THROUGH 20. OFFERORS MAY VARY THE SHARE RATIO FOR THE OPTION YEARS.

CONT. YEAR	CONT. MONTH	PART 1 CONT SHARE*	PART 2 CONT SHARE*	PART 3 CONT SHARE**
16 2007	1	$12,273	$8,380	$0
	2	$12,273	$8,380	$0
	3	$12,273	$8,380	$0
	4	$12,273	$8,380	$0
	5	$12,273	$8,380	$0
	6	$12,273	$8,380	$0
	7	$0	$8,380	$0
	8	$0	$8,380	$0
	9	$0	$8,380	$14,559
	10	$0	$8,380	$14,559
	11	$0	$8,380	$0
	12	$0	$8,380	$0
17 2008	1	$0	$8,380	$0

	2	$0	$8,380	$0
	3	$0	$8,380	$0
	4	$0	$8,380	$0
	5	$0	$8,380	$0
	6	$0	$8,380	$0
	7	$0	$8,380	$0
	8	$0	$8,380	$0
	9	$0	$8,380	$15,432
	10	$0	$8,380	$15,432
	11	$0	$8,380	$0
	12	$0	$8,380	$0
18 2009	1	$0	$8,380	$0
	2	$0	$8,380	$0
	3	$0	$8,380	$0
	4	$0	$8,380	$0
	5	$0	$8,380	$0
	6	$0	$8,380	$0
	7	$0	$8,380	$0
	8	$0	$8,380	$0
	9	$0	$8,380	$16,356
	10	$0	$8,380	$16,356
	11	$0	$8,380	$0
	12	$0	$8,380	$0

* See Section B, Para 2.2 for definitions

** For proposal purposes, estimated Part 3 share shall be based on the Government using 10,000 therms per month during the months of December and January. The price of the propane shall be based on estimates obtained by the offeror with the estimated price increased by 6% each year.

CONT. YEAR	CONT. MONTH	PART 1 CONT SHARE*	PART 2 CONT SHARE*	PART 3 CONT SHARE**
19 2010	1	$0	$8,380	$0
	2	$0	$8,380	$0
	3	$0	$8,380	$0
	4	$0	$8,380	$0
	5	$0	$8,380	$0
	6	$0	$8,380	$0
	7	$0	$8,380	$0
	8	$0	$8,380	$0
	9	$0	$8,380	$17,339

Schedule B-1 (APR 92 Contract Award & Contract Term Start) (Oct 92 Savings Commence)

	10	$0	$8,380	$17,339
	11	$0	$8,380	$0
	12	$0	$8,380	$0
20	1	$0	$8,380	$0
	2	$0	$8,380	$0
	3	$0	$8,380	$0
	4	$0	$8,380	$0
	5	$0	$8,380	$0
	6	$0	$8,380	$0
	7	$0	$8,380	$0
	8	$0	$8,380	$0
	9	$0	$8,380	$18,380
	10	$0	$8,380	$16,380
	11	$0	$8,380	$0
	12	$0	$8,380	$0

* See Section B, Para 2.2 for definitions

** For proposal purposes, estimated Part 3 share shall be based on the Government using 10,000 therms per month during the months of December and January. The price of the propane shall be based on estimates obtained by the offeror with the estimated price increased by 6% each year.

SCHEDULE B-2, ESTIMATED ECP CONSTRUCTION COST * $521,570

*For Bonding Purposes

ATTACHMENT 3

AGL I–24 Rate Calculation with Daily Firm Therms of 6,980

MONTH	DAILY FIRM THERMS	FIRM THERMS	INTERRUP. THERMS	TOTAL THERMS	MONTHLY CUST. CHRG.	FIRM USE CHARGE	PGA ON FIRM	COMMO. CHARGE ON FIRM	PGA ON INTERRUP.	COMMOD. CHARGE ON INTERRUP.	BASE TAKE OR PAY	FRAN. REC. FACTOR	TOTAL	AVERAGE PRICE PER THERM
JAN	6,980	206,494	37,205	243,699	800	9,074	78,282	13,070	8,587	2,121	1,657	1,056	$114,657	$0.4705
FEB	6,980	166,992	20,668	187,660	800	9,074	63,257	10,819	4,679	1,178	1,257	882	$91,946	$0.4900
MAR	6,980	153,044	6,549	159,593	800	9,074	56,580	10,024	1,447	373	1,069	821	$80,188	$0.5025
APR	6,980	106,733	4	106,737	800	9,074	37,665	7,498	1	0	707	580	$56,324	$0.5180
MAY	6,980	82,710	0	82,710	800	9,074	29,957	5,790	0	0	496	472	$45,588	$0.5512
JUN	6,980	66,073	1,863	88,736	800	9,074	31,179	6,081	397	130	541	499	$48,701	$0.5488
JUL	6,980	65,535	0	65,535	800	9,074	22,911	4,597	0	0	387	397	$38,156	$0.5922
AUG	6,980	65,769	0	65,769	800	9,074	23,598	4,604	0	0	391	405	$38,862	$0.5909
SEP	6,980	64,163	0	64,163	800	9,074	22,374	4,491	0	0	494	406	$37,639	$0.5866
OCT	6,980	79,999	0	79,999	800	9,074	29,304	5,600	0	0	616	495	$45,889	$0.5736
NOV	6,980	153,634	16,754	170,388	800	9,074	56,353	10,057	3,699	955	1,295	844	$83,077	$0.4876
DEC	6,980	166,988	24,108	191,096	800	9,074	63,556	10,818	5,668	1,374	1,299	937	$93,526	$0.4894
TOTAL		1,400,934	107,151	1,508,085	9,600	108,888	514,014	93,439	24,478	6,132	10,201	7,803	$774,554	$0.5136

U. S. Army – Fort Stewart, Artillery Firing Center
AGL I–24 Rate Calculation with 100% Interruptible Therms

MONTH	DAILY FIRM THERMS	FIRM THERMS	INTERRUP. THERMS	TOTAL THERMS	MONTHLY CUSTOMER CHARGE	FIRM USE CHARGE	PGA ON FIRM	COMMODITY CHARGE ON FIRM	PGA ON INTERRUP.	COMMODITY CHARGE ON INTERRUP.	BASE TAKE OR PAY	FRAN. REC. FACTOR	TOTAL	AVERAGE PRICE PER THERM
JAN	0	0	243,699	243,699	800	0	0	0	56,246	15,191	1,657	0	$73,894	$0.3032
FEB	0	0	187,660	187,660	800	0	0	0	42,486	11,997	1,257	0	$56,540	$0.3013
MAR	0	0	159,593	159,593	800	0	0	0	35,254	10,397	1,069	0	$47,520	$0.2978
APR	0	0	106,737	106,737	800	0	0	0	22,454	7,498	707	0	$31,459	$0.2883
MAY	0	0	82,710	82,710	800	0	0	0	17,129	5,790	496	0	$24,215	$0.2928
JUN	0	0	88,736	88,736	800	0	0	0	18,901	6,212	541	0	$26,454	$0.2981
JUL	0	0	65,535	65,535	800	0	0	0	13,513	4,597	387	0	$19,287	$0.2943
AUG	0	0	65,769	65,769	800	0	0	0	14,344	4,604	391	0	$20,130	$0.3061
SEP	0	0	64,163	64,163	800	0	0	0	12,608	4,491	494	0	$18,393	$0.2867
OCT	0	0	79,999	79,999	800	0	0	0	17,368	5,600	616	0	$24,384	$0.3048
NOV	0	0	170,388	170,388	800	0	0	0	37,622	11,012	1,295	0	$50,729	$0.2977
DEC	0	0	191,096	191,096	800	0	0	0	44,927	12,192	1,299	0	$59,219	$0.3099
TOTAL		0	1,508,085	1,508,085	9,600	0	0	0	332,852	99,571	10,201	0	$452,223	$0.2999

ATTACHMENT 4

	COST FIRM	COST INT	SAVINGS	CONTRACTOR PAYMENT 1	CONTRACTOR PAYMENT 2	CONTRACTOR PAYMENT 3	TOTAL CONTRACTOR PAYMENTS
Year 1							
OCT	$45,889	$24,384	$21,505	$27,468	$0	$0	$27,468
NOV	$83,077	$50,729	$32,348	$23,569	$0	$0	$23,569
DEC	$93,526	$59,219	$34,307	$39,789	$0	$6,075	$45,864
JAN	$114,657	$73,894	$40,763	$35,455	$0	$6,075	$41,530
FEB	$91,946	$56,540	$35,406	$27,452	$0	$0	$27,452
MAR	$80,188	$47,520	$32,668	$24,233	$6,169	$0	$31,636
APR	$56,324	$31,459	$24,865	$14,484	$7,657	$0	$23,672
MAY	$45,588	$24,215	$21,373	$12,997	$6,843	$0	$21,209
JUN	$48,701	$26,454	$22,247	$13,809	$5,285	$0	$20,151
JUL	$30,156	$19,287	$18,869	$15,630	$3,727	$0	$20,110
AUG	$38,862	$20,130	$18,732	$16,926	$8,380	$0	$26,982
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$331,972
Year 2							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$6,439	$28,768
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$6,439	$28,768
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,056	$0	$21,940
JUN	$48,701	$26,454	$22,247	$12,596	$6,969	$0	$20,959
JUL	$30,156	$19,287	$18,869	$13,685	$5,881	$0	$20,742
AUG	$38,862	$20,130	$18,732	$14,772	$8,380	$0	$24,828
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$279,979

Year 3							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$6,826	$29,155
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$6,826	$29,155
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$7,774	$0	$21,602
JUL	$38,156	$19,287	$18,869	$12,879	$7,169	$0	$21,482
AUG	$38,862	$20,130	$18,732	$13,484	$8,380	$0	$23,540
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$281,237
Year 4							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$7,235	$29,564
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$7,235	$29,564
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$8,268	$0	$22,195
JUL	$38,156	$19,287	$18,869	$12,385	$8,157	$0	$22,173
AUG	$38,862	$20,130	$18,732	$12,495	$8,380	$0	$22,551
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$282,350

Year 5							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$7,669	$29,998
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$7,669	$29,998
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$8,380	$0	$22,329
JUL	$38,156	$19,287	$18,869	$12,385	$8,380	$0	$22,441
AUG	$38,862	$20,130	$18,732	$12,495	$8,380	$0	$22,551
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$263,620

Year 6							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$8,129	$30,458
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$8,129	$30,458
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$8,380	$0	$22,329
JUL	$38,156	$19,287	$18,869	$12,385	$8,380	$0	$22,441
AUG	$38,862	$20,130	$18,732	$12,495	$8,380	$0	$22,551
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$284,540

Year 7							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$8,617	$30,946
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$8,617	$30,946
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,596	$8,380	$0	$22,652
JUL	$38,156	$19,287	$18,869	$13,685	$8,380	$0	$23,741
AUG	$38,862	$20,130	$18,732	$14,772	$8,380	$0	$24,828
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$289,416
Year 8							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$9,134	$31,463
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$9,134	$31,463
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,879	$8,380	$0	$22,935
JUL	$38,156	$19,287	$18,869	$13,484	$8,380	$0	$23,540
AUG	$38,862	$20,130	$18,732	$12,273	$8,380	$0	$22,329
SEP	$37,639	$18,393	$19,246				$288,033
			$322,329				

Year 9							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$9,682	$32,011
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$9,682	$32,011
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$8,380	$0	$22,441
JUL	$38,156	$19,287	$18,869	$12,385	$8,380	$0	$22,551
AUG	$38,862	$20,130	$18,732	$12,495	$8,380	$0	$22,329
SEP	$37,639	$18,393	$19,246	$12,273	$8,380		$287,646
			$322,329				

Year 10							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$10,263	$32,592
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$10,263	$32,592
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$8,380	$0	$22,441
JUL	$38,156	$19,287	$18,869	$12,385	$8,380	$0	$22,551
AUG	$38,862	$20,130	$18,732	$12,495	$8,380	$0	$22,329
SEP	$37,639	$18,393	$19,246	$12,273	$8,380		$288,800
			$322,329				

Year 11							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$10,879	$33,208
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$10,879	$33,208
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$8,380	$0	$22,329
JUL	$38,156	$19,287	$18,869	$12,385	$8,380	$0	$22,441
AUG	$38,862	$20,130	$18,732	$12,495	$8,380	$0	$22,551
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$290,040

Year 12							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$11,532	$33,861
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$11,532	$33,861
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,596	$8,380	$0	$22,652
JUL	$38,156	$19,287	$18,869	$13,685	$8,380	$0	$23,741
AUG	$38,862	$20,130	$18,732	$14,772	$8,380	$0	$24,828
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$295,246

Year 13							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$12,224	$34,553
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$12,224	$34,553
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$8,380	$0	$22,329
JUL	$38,156	$19,287	$18,869	$12,879	$8,380	$0	$22,935
AUG	$38,862	$20,130	$18,732	$13,484	$8,380	$0	$23,540
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$294,213
Year 14							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$12,957	$35,286
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$12,957	$35,286
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$8,380	$0	$22,329
JUL	$38,156	$19,287	$18,869	$12,385	$8,380	$0	$22,441
AUG	$38,862	$20,130	$18,732	$12,495	$8,380	$0	$22,551
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$294,196

Year 15							
OCT	$45,889	$24,384	$21,505	$12,273	$8,380	$0	$22,329
NOV	$83,077	$50,729	$32,348	$12,273	$8,380	$0	$22,329
DEC	$93,526	$59,219	$34,307	$12,273	$8,380	$13,734	$36,063
JAN	$114,657	$73,894	$40,763	$12,273	$8,380	$13,734	$36,063
FEB	$91,946	$56,540	$35,406	$12,273	$8,380	$0	$22,329
MAR	$80,188	$47,520	$32,668	$12,273	$8,380	$0	$22,329
APR	$56,324	$31,459	$24,865	$12,273	$8,380	$0	$22,329
MAY	$45,588	$24,215	$21,373	$12,273	$8,380	$0	$22,329
JUN	$48,701	$26,454	$22,247	$12,273	$8,380	$0	$22,329
JUL	$30,156	$19,287	$18,869	$12,385	$8,380	$0	$22,441
AUG	$38,862	$20,130	$18,732	$12,495	$8,380	$0	$22,551
SEP	$37,639	$18,393	$19,246	$12,273	$8,380	$0	$22,329
			$322,329				$295,750
Year 16							
OCT	$45,889	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$14,559	$24,615
JAN	$114,657	$73,894	$40,763	$0	$8,380	$14,559	$24,615
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,865	$0	$8,380	$0	$10,056
MAY	$45,588	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380	$0	$10,056
			$322,329				$149,790

Year 17							
OCT	$45,089	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$15,432	$25,488
JAN	$114,657	$73,894	$40,763	$0	$8,380	$15,432	$25,488
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,865	$0	$8,380	$0	$10,056
MAY	$45,588	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380		$151,536
			$322,329				
Year 18							
OCT	$45,889	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$16,358	$26,414
JAN	$114,657	$73,894	$40,763	$0	$8,380	$16,358	$26,414
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,865	$0	$8,380	$0	$10,056
MAY	$45,588	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380		$153,388
			$322,329				

Year 19							
OCT	$45,889	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$17,339	$27,395
JAN	$114,657	$73,894	$40,763	$0	$8,380	$17,339	$27,395
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,865	$0	$8,380	$0	$10,056
MAY	$45,588	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380		$155,350
			$322,329				
Year 20							
OCT	$45,889	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$18,380	$28,436
JAN	$114,657	$73,894	$40,763	$0	$8,380	$18,380	$28,436
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,865	$0	$8,380	$0	$10,056
MAY	$45,588	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380		$157,432
			$322,329				

Year 21							
OCT	$45,889	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$19,483	$29,539
JAN	$114,657	$73,894	$40,763	$0	$8,380	$19,483	$29,539
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,865	$0	$8,380	$0	$10,056
MAY	$45,588	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380	$0	$10,056
			$322,329				$159,633
Year 22							
OCT	$45,889	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$20,652	$30,708
JAN	$114,657	$73,894	$40,763	$0	$8,380	$20,652	$30,708
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,865	$0	$8,380	$0	$10,056
MAY	$45,588	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380	$0	$10,056
			$322,329				$161,976

Year 23							
OCT	$45,809	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$21,691	$31,947
JAN	$114,657	$73,894	$40,763	$0	$8,380	$21,891	$31,947
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,865	$0	$8,380	$0	$10,056
MAY	$45,588	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380	$0	$10,056
			$322,329				$164,454

Year 24							
OCT	$45,089	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$23,205	$33,261
JAN	$114,657	$73,894	$40,763	$0	$8,380	$23,205	$33,261
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,065	$0	$8,380	$0	$10,056
MAY	$45,568	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380	$0	$10,056
			$322,329				$167,082

Year 25							
OCT	$45,889	$24,384	$21,505	$0	$8,380	$0	$10,056
NOV	$83,077	$50,729	$32,348	$0	$8,380	$0	$10,056
DEC	$93,526	$59,219	$34,307	$0	$8,380	$24,597	$34,653
JAN	$114,657	$73,894	$40,763	$0	$8,380	$24,597	$34,653
FEB	$91,946	$56,540	$35,406	$0	$8,380	$0	$10,056
MAR	$80,188	$47,520	$32,668	$0	$8,380	$0	$10,056
APR	$56,324	$31,459	$24,865	$0	$8,380	$0	$10,056
MAY	$45,588	$24,215	$21,373	$0	$8,380	$0	$10,056
JUN	$48,701	$26,454	$22,247	$0	$8,380	$0	$10,056
JUL	$38,156	$19,287	$18,869	$0	$8,380	$0	$10,056
AUG	$38,862	$20,130	$18,732	$0	$8,380	$0	$10,056
SEP	$37,639	$18,393	$19,246	$0	$8,380	$0	$10,056
			$322,329				$169,866

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