

Confidential

# SAMPLE REPORT

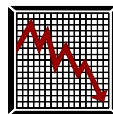
XYZ Company

## Facility Energy Analysis Report



# Energy Audit Services

Part of the **UTILI-SERV™ MANAGEMENT PROGRAM**



Gibson Consulting Group

**AEE**, Member of Association of Energy Engineers



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## Facility Energy Analysis for XYZ Company

### 1. Introduction

The purpose of this Facility Energy Analysis Report is to provide information about how energy is used, a point of reference for comparisons to other similar facilities, and direction about potential energy savings opportunities for XYZ Company facility. The analysis and recommendations are based upon the information that was provided regarding the selected XYZ facility.

The accuracy of this analysis and the resulting recommendations are directly influenced by the degree of accuracy of the data that was provided. In addition to the facility information that was entered into the Facility Energy Analysis database program, were a number of other factors such as weather variations, building occupancy and operation schedules that can affect energy usage and consequently energy cost savings. Typical characteristics for these other factors were used in the data base simulation model to calculate energy consumption and conduct this analysis. The analysis is not intended to predict the future effect on any changes made to the XYZ Company facility, but rather to provide guidance and focus on the greatest potential energy savings opportunities and recommend next steps.

### 2. Why Energy Efficiency is Good Business

Energy use and thus, improvements in energy efficiency, can contribute to the achievement of long-term organizational objectives. Links between energy efficiency and business objectives can be direct, as in the case of improved operational efficiency and reduced costs, or indirect, such as with improved employee productivity. Listed below are a few examples how energy efficiency can contribute to business success.

#### ***Examples of Business Objectives with Links to Energy Efficiency***

- \* Improved operational efficiency
- \* Reduced operating costs
- \* Improved product quality
- \* Improved air quality
- \* Improved tenant/occupant satisfaction
- \* Improved employee productivity
- \* Improved contribution to environmental protection & sustainability
- \* Improved company image

### 3. How You Use Energy Today

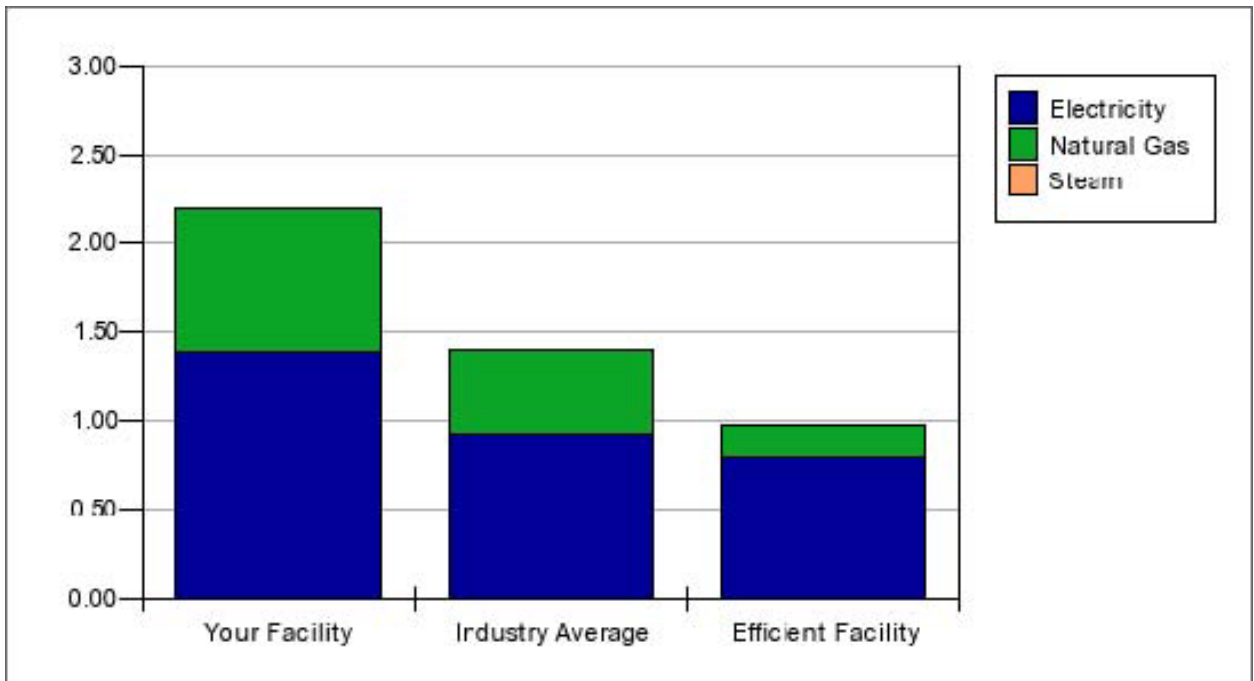
It is useful to compare energy consumption and use patterns with other similar facilities in assessing your current state and to develop improvement targets for the future. The following Report sections provide benchmarks against an "industry average" and an energy efficient low-rise office (3 stories or less) similar in size to your facility and located in the same geographic region.

### 3.1 Total Consumption

**Annual energy costs for your facility are: \$2.19 per ft<sup>2</sup>. This is 56.6% higher than the industry average for a low-rise office (3 stories or less) in the Northeast, Middle Atlantic region.**

In contrast, energy costs for a new, energy efficient low-rise office (3 stories or less) would amount to approximately \$0.98 per ft<sup>2</sup>. For most facilities, it is possible to achieve this level of efficiency by implementing readily available energy efficiency strategies and management practices.

**Figure 1: Comparison of Energy Use for XYZ Company facility to the Industry Average and an Energy Efficient Low-rise office (3 stories or less) (\$/ft<sup>2</sup>)**



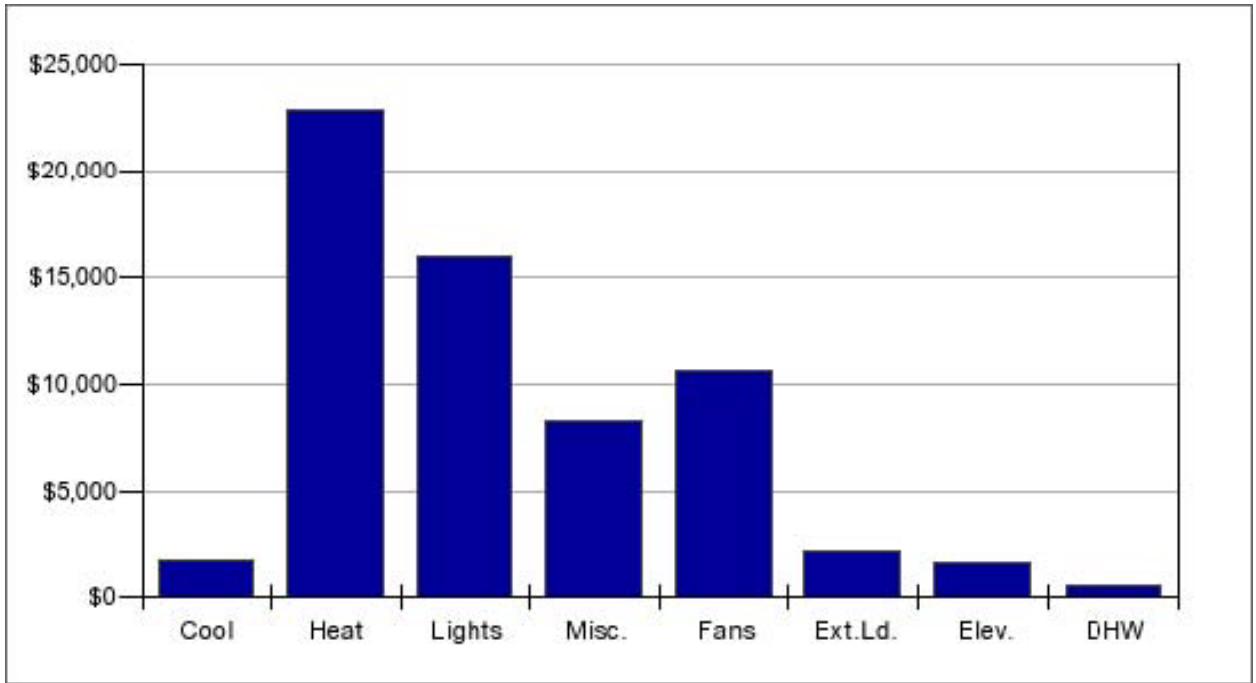
**Table 1: Comparison of Energy Use for XYZ Company facility to the Industry Average and an Energy Efficient low-rise office (3 stories or less)**

	Electricity	Natural Gas	Steam	Total
<b>Your Facility</b>	\$1.38	\$0.81	\$0.00	\$2.19
<b>Industry Average</b>	\$0.92	\$0.48	\$0.00	\$1.40
<b>Efficient Facility</b>	\$0.80	\$0.18	\$0.00	\$0.98

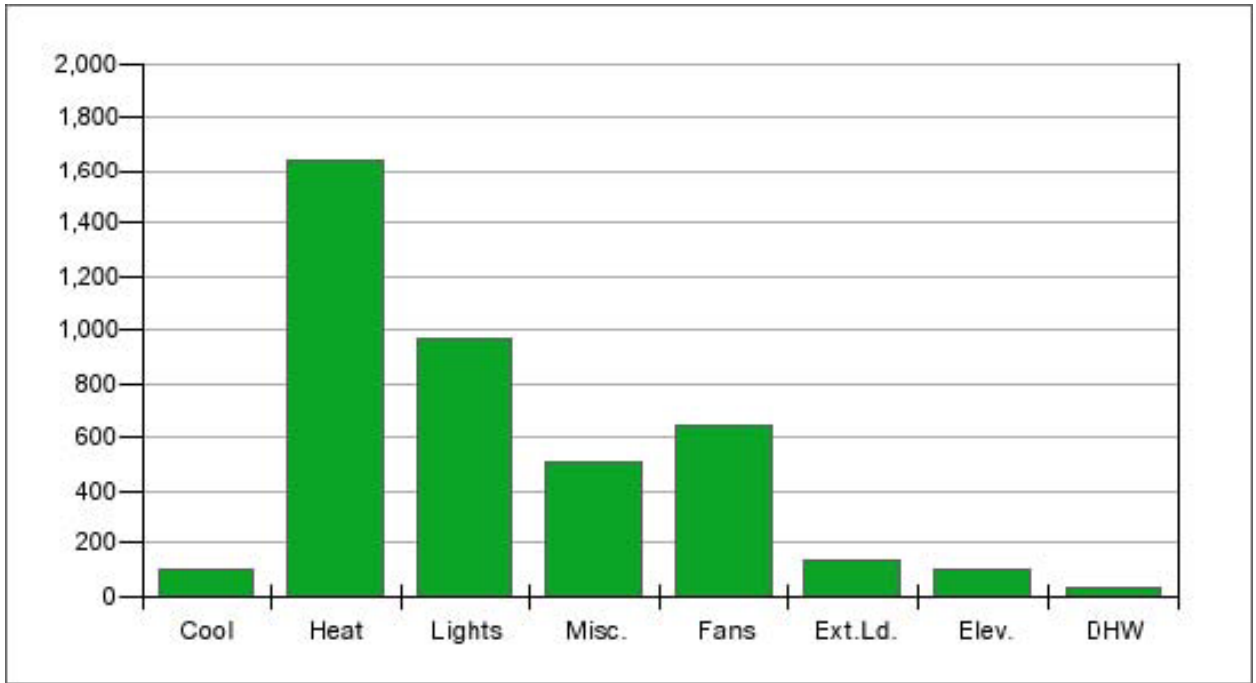
### 3.2 End Use Breakdown

Figures 2 and 3, followed by Table 2, illustrate the energy end use breakdown for XYZ Company facility. End uses with the largest costs typically represent the areas for the greatest savings opportunities. The highest end uses for XYZ Company facility are space heating and interior lighting.

**Figure 2: Energy Cost End Use Breakdown of XYZ Company Facility**



**Figure 3: Energy End Use Breakdown of XYZ Company facility (mmBtu)**



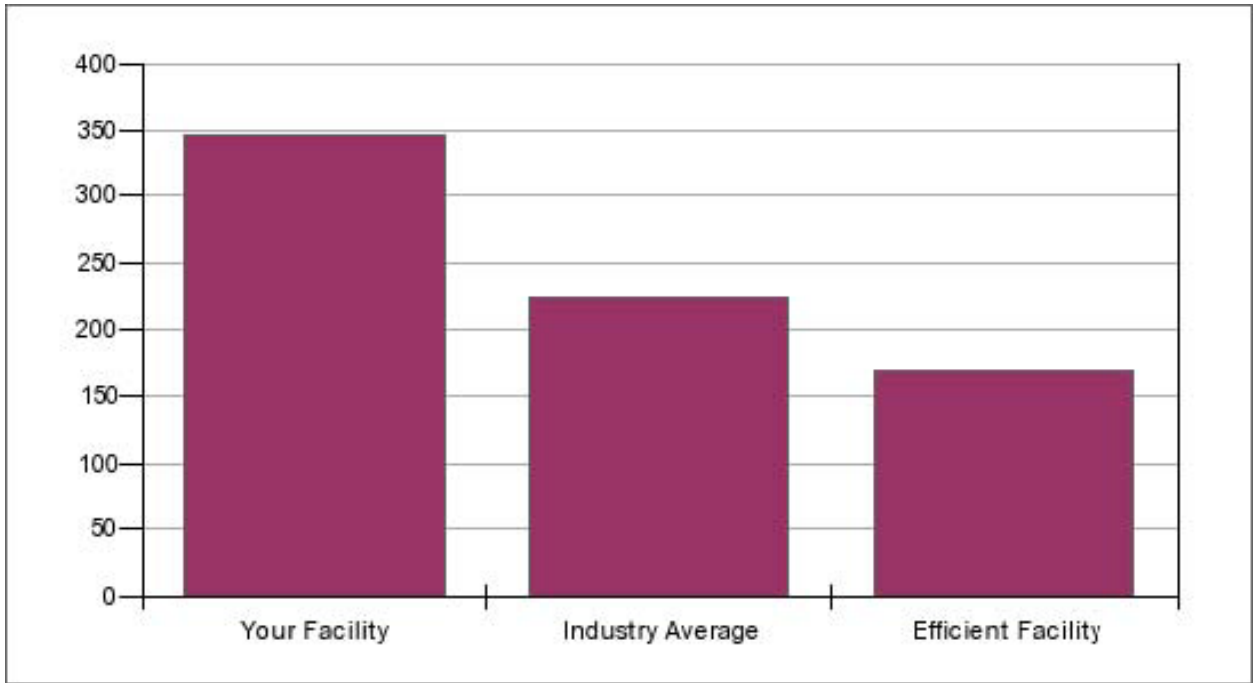
**Table 2: Energy End Use Breakdown of XYZ Company facility**

End Uses	Cost		mmBtu	Energy
	Dollars	Percent		Percent
Space Cooling (Cool)	\$1,656	2.6%	101.2	2.5%
Space Heating (Heat)	\$22,867	36.1%	1,642.4	39.9%
Interior Lighting (Lights)	\$15,863	25.1%	969.7	23.5%
Misc. Equipment (Misc.)	\$8,217	13.0%	502.3	12.2%
Fans & Pumps (Fans)	\$10,580	16.7%	646.7	15.7%
Exterior Loads (Ext.Ld.)	\$2,104	3.3%	128.6	3.1%
Elevators (Elev.)	\$1,533	2.4%	93.7	2.3%
Domestic Hot Water (DHW)	\$468	0.7%	33.6	0.8%

### 3.3 Greenhouse Gas Emissions

Greenhouse gases, particularly carbon dioxide, are known to cause global warming and are linked to the production of energy. Figure 4 below illustrates greenhouse gas emissions generated by your energy consumption as compared to the industry average and an energy efficient facility.

**Figure 4: Greenhouse Gas Emissions (metric tons of CO2)**



**Table 4: Your Facility's CO2 Output Comparison**

	Annual Metric Tons of CO2
<b>Your Facility</b>	346.47
<b>Industry Average</b>	224.18
<b>Energy Efficient Facility</b>	169.39
<b>Typical Automobile</b>	3.80

By reducing your consumption level to that of the industry average, you would save 122 metric tons of CO2 per year. That's equivalent to taking 32 automobiles off the road each year. The savings are even more significant when reducing your consumption to that of an energy efficient facility — you would save 177 tons, which is equivalent to removing 47 automobiles from the road each year.

## 4. Energy Savings Opportunities

Significant energy savings can accrue from implementing a combination of best energy management practices and upgrading or installing new, more energy efficient technology. The greatest potential savings opportunities for XYZ Company facility are summarized below.

### 4.1 Low and No-Cost Opportunities

Energy savings of from 3 to 15 percent can be realized by adopting best energy management practices. These opportunities typically require little or no cost to implement. Suggested best energy management practices for XYZ Company facility include the following:

#### Your Energy Saving Opportunities

**Office Equipment:** Turn off office equipment and appliances and invoke energy saving features. Computers, monitors, copiers, fax machines, and printers often have energy saving modes which are not activated and most office equipment is left on unnecessarily.

**Outdoor Air:** Check that minimum outdoor air levels are at recommended requirements which maintain proper indoor air quality; many buildings actually bring in much more outdoor air than necessary.

**Operation & Maintenance:** Have mechanical systems checked and maintained on a regularly scheduled basis. At least 10% in energy savings may be expected for systems that are properly maintained versus those which are serviced only when problems occur. Moreover, equipment life is prolonged, leading to further cost savings.

**HVAC Controls:** Have controls for heating, ventilation and air conditioning (HVAC) equipment checked to ensure that they are operating at optimum levels.

**Lighting:** Optimize circuits and/or energy management systems to only control areas where lighting is needed at desired times; many buildings require that the lights are on for an entire floor when only an office is occupied, for instance.

**4.2 High Value Opportunities**

Based on the energy profile for XYZ Company facility, the following energy efficiency measures represent the greatest potential for savings. Note that most measures are not additive and cannot be summed to obtain a cumulative total savings estimate.

**Table 3: High Value Opportunities**

<b>Opportunity</b>	<b>Action Item</b>	<b>Estimated Annual Savings</b>
Heating	Improve heating system effectiveness by reducing heating system losses, routine maintenance, and/or replacing old heating equipment (20% increase in overall heating efficiency).	\$3,811
Lighting (Option 1)	Retrofit interior lighting with more efficient system to reduce overall lighting demand (0.9 W/ft <sup>2</sup> )	\$2,551
Demand Ventilation	Use carbon dioxide and/or occupancy sensors to control outside air while maintaining indoor air quality	\$1,703
Lighting (Option 2)	Retrofit interior lighting with more efficient fixtures to reduce overall lighting demand (1.2 W/ft <sup>2</sup> )	\$1,204
Infiltration	Caulk and weather strip around doors, windows and other building penetrations to reduce air leakage into the building (infiltration reduced 50%)	\$861

## 5. Next Steps

The Facility Energy Analysis has evaluated a number of energy saving measures that can be taken immediately and others that will require additional information and planning. The following steps are suggested:

### ***Planning***

- \* Identify how energy efficiency improvements link to achievement of your business objectives both directly and indirectly to create motivation for action
- \* Develop an energy efficiency improvement target for your business
- \* Identify a person who will become the "energy champion" for your business
- \* Develop a detailed plan for how to achieve your target

### ***Immediate No Cost/Low Cost Energy Savings Opportunities***

- \* Develop a plan to implement the suggestions from section 4.1
- \* Develop an employee awareness and communications program to gain broad support and participation for your energy savings initiatives

### ***Retrofit/Other Improvements***

- \* Conduct a cost/benefit analysis to determine if the project meets your organization's investment criteria. Remember to take into account the influence of "cross effects" when evaluating the long-term benefits of your project.
- \* More detailed information regarding reducing Energy/Utility service usage and costs at your facility can be obtained through a **Standard Audit** (On-Site), or a **Comprehensive Energy Modeling Audit** (On-Site) provided through Gibson Consulting Group.

*Note: Making an upgrade to one system may influence another system. For example, improving the efficiency of your lighting may impact your air conditioning.*

## 6. Summary

The results of this **Energy Audit Service** for your facility as detailed in this Report show there is a potential for energy cost savings if there is follow-up on the action items that have been identified. If you have any questions regarding the information provided in this Report or would like to discuss a more comprehensive on-site **Energy Audit Service** for your facility that will further define the energy cost savings opportunities or discuss other Energy and Utility cost savings services available through the **UTIL-SERV Management Program**, please contact Gibson Consulting Group at 724/836-5378 or e-mail to [gcg@gibsonconsultants.com](mailto:gcg@gibsonconsultants.com).

### **Report Considerations**

*The energy cost breakdowns and potential savings indicated are based upon information that you provided. A number of factors, such as weather variations, building occupancy, and operation schedules, can affect energy usage and, consequently, energy cost savings. Therefore, we cannot offer any assurance that the suggested energy-saving measures, whether implemented individually or in combination, will necessarily result in realizing the indicated, or any, energy cost savings. Based upon your energy consumption history, the profile is not intended to predict the future effect of any changes you may make. This Energy Audit Service is powered by EnerPro software.*