



Energy Audits

Most sites are run by a General Manager, which, by definition, implies a wide range of skills. Energy Management is complex due to the wide range of variables that can influence energy consumption. An energy audit involves a site visit by an experienced, qualified Energy Professional who identifies areas where costs can be reduced and where further investigation might result in significant savings.

Setsquare Energy Solutions include,

1. Investigation and analysis of all factors affecting energy consumption that include:
 - Plant controls
 - Hours of use
 - Plant efficiency
 - Insulation
 - Processes
2. The audit monitors all maintenance records to ensure that they are adequate to assess the energy performance of the premises.
3. Where electrical or gas consumption is not metered, portable monitoring equipment is used to monitor the relevant supplies in order to be able to provide energy breakdown information.
4. A draft report of each audit is presented to the client for comment prior to the issue of the final report. The report will include:
 - What measures can be undertaken to conserve energy,
 - Measures that could be undertaken without capital expenditure,
 - The cost of each measure needing capital investment and its associated payback period.
5. The results of the audit are discussed with the client, the client's advisors and the tenants of each of the premises to establish which capital works are to be carried out.
6. The measures to be undertaken can be project managed, subject to the negotiation of project management fees.

Invoice Validation

The ability to change suppliers has meant that the quality of energy consumption data is poor. Suppliers have no historical records to rely on. Estimated bills are the norm and evidence suggests that as much as 10% of invoices are incorrect. It would be difficult for anyone lacking specialist energy knowledge to validate a utilities invoice. The site may be remote and unknown to the invoice checker. Changes in supplier can sometimes result in two bills for the same site or even no bills at all. With the lack of information available to suppliers and consumers, it is not surprising that most validation becomes a simple check that the bills are arithmetically correct. By taking responsibility for maintaining a historical database, Setsquare Energy Solutions ensure that estimates are reasonable, that readings are correct and that clients do not pay for energy that has not been consumed.

Setsquare Energy Solutions include:

1. Charges on each utility invoice are verified before the invoice is authorised. For electricity this includes day and night price per unit, broken down into each of the constituent parts (duos, supply charges, distribution charges, availability charges, maximum demand charges, reactive power charges, settlement fees and standing charges). For gas this includes the price per unit and any standing charges levied.
2. Each Invoice is checked to ensure that it is based on actual meter readings where there is a legal obligation by the utility to provide true readings.
3. Each invoice is analysed to ensure that the total cost of the invoice is within 10% of budget, if such a budget has been established.
4. If the invoice is outside 10% of the budgeted figure, the anomaly is drawn to the attention of the client in the form of a monthly written report, along with any reasons for the anomaly, which are evident from the invoice.
5. Correct invoices are passed to the client's accounts payable section for payment.

Monitoring & Targeting

There is an old saying, 'You can't manage what you can't measure'. This is especially true for energy usage, where nothing visible is delivered to the site. All too often, electricity is viewed as an uncontrollable overhead. This is because the analysis of consumption is complex due to the large numbers of variables involved, for example, production figures, sales figures, weather conditions, number of staff on site, site size, et cetera. Setsquare Energy Solutions employ a number of mathematical techniques that take these variables into account and expose the underlying trend. Once the trend has been identified, realistic consumption targets may be set and management of consumption initiated to ensure that targets are met.

Setsquare Energy Solutions include,

1. Energy consumption of each of the premises is monitored from utility invoice information and any half-hourly data provided. This will typically include day and night consumption, maximum demand, availability and reactive power. For sites with an electrical demand in excess of 100kW, the consumption should be taken from half-hourly readings provided by the electricity supplier (where possible). For electricity sites demanding less than 100kW, the consumption should be obtained from invoiced meter readings.
2. All consumption figures are stored in a central database that can be readily accessed to provide instant reports on both consumption and cost.
3. Each year an annual consumption target is set for each of the premises. If the building load has remained relatively constant over the previous three years, load profiles are averaged over the three-year period. If the building load has changed during the previous three years, the typical load profile pattern is taken from the previous year's consumption figures.
4. Actual monthly consumption figures are compared to the target set and any anomalies identified. Reports are provided on a quarterly basis.
5. Each year, a load profile pattern is set. For electricity sites demanding more than 100KW, this includes typical load profiles for each quarter: Spring, Summer, Autumn and Winter, based on half-hourly recorded values. If the building load has remained relatively constant over the previous three years, these load profiles are averaged over the three-year period. If the building load has changed during the previous three years, the typical load profile pattern is taken from the previous year's consumption profile. For premises demanding less than 100kW, this is based on metered day and night consumption values, availability and maximum demand figures.

Portfolio Management

In addition to our other services:

- Supply contract tendering, evaluation and negotiations,
- Energy audits,
- Invoice validation,
- Monitoring and targeting,
- Supply contract management,

We can combine these with additional services to provide complete energy portfolio management.

The additional services included are:

1. Setting electricity, gas, water and oil budgets for each of the Premises at the time requested by the Client to coincide with their annual budget setting plan. The annual budget will be set based on historic consumption data and current negotiated tariff prices unless it is known that there will be changes in either the consumption pattern or the negotiated tariff rates during the period for which the budget is being established. If the building load has remained fairly constant over the previous three years the budget will be an average of the last three years consumptions with current tariffs applied. If the building load has changed during the previous three years, the typical load profile pattern will be taken from last year's consumption figures and current tariff rates applied.
2. Quarterly accruals of expenditure to date against anticipated spend will be provided for the dates specified to coincide with the Client's accounting procedures.
3. When a property is to be sold by the Client all necessary arrangements to remove it from all the utility contracts will be undertaken provided the relevant fee is agreed between both parties. All necessary information will be provided to the suppliers to enable new contracts to be put in place as soon as possible after the completion date. Negotiation will be undertaken with the suppliers to ensure that all termination costs are kept to a minimum.
4. When a new property is bought by the Client all the necessary utility contracts will be set up provided the relevant fee is agreed between both parties. This will include the following where appropriate:
 - Electricity supply contract
 - Electricity metering contract
 - Electricity connection agreement
 - Gas supply agreement
 - Gas nomination to Transco
5. When electricity or gas data has been corrupted or has not been recorded negotiation will take place with the suppliers to agree the basis on which the data for the invoices is produced.
6. General day to day liaison with all utility suppliers will be undertaken in relation to the services provided by the Company.

Supply contract Management

The ability to change suppliers has meant that consumption data quality is poor, as suppliers have no historical records to rely on. Estimated bills are normal and evidence suggests that as much as 10% of invoices are incorrect. By taking responsibility for maintaining a historical database we ensure that budgets are accurate and that the correct information is available to negotiate new supply contracts.

Setsquare Energy Solutions include:

1. An annual electricity, gas and oil budget will be set for each of the Premises at the time requested by the Client to coincide with their annual budget setting plan. The annual budget will be set based on historic consumption data and current negotiated tariff prices unless it is known that there will be changes in either the consumption pattern or the negotiated tariff rates during the period for which the budget is being established. If the building load has remained fairly constant over the previous three years the budget will be an average of the last three years consumptions with current tariffs applied. If the building load has changed during the previous three years, the typical load profile pattern will be taken from last year's consumption figures and current tariff rates applied.
2. Quarterly accruals of expenditure to date against anticipated spend will be provided for the dates specified to coincide with the Client's accounting procedures.
3. When a property is to be sold by the Client all necessary arrangements to remove it from all the utility contracts will be. All necessary information will be provided to the suppliers to enable new contracts to be put in place as soon as possible after the completion date. Negotiation will be undertaken with the suppliers to ensure that all termination costs are kept to a minimum.
4. When the Client buys a new property all the necessary utility contracts will be set up. This will include the following where appropriate:
 - Electricity supply contract
 - Electricity metering contract
 - Electricity connection agreement
 - Gas supply agreement
 - Gas nomination to Transco
5. When electricity or gas data has been corrupted or has not been recorded negotiation will take place with the suppliers to agree the basis on which the data for the invoices is produced.

General day to day liaison with all utility suppliers will be undertaken in relation to the services provided by the Company

Supply Contract Tendering, Evaluation and Negotiation

Electricity

There are two consumer-controlled factors that influence electricity pricing: total energy consumed and a measurement known as “Load Factor”. Load factor is the most important parameter when suppliers tender for supply to a site. It is the relationship between the peak demand of a site and the normal daily consumption. Half-hourly data recording can provide a visual representation of this relationship and enables the negotiation of the best possible prices on behalf of our clients. Sites where half-hourly data is not available are assigned a standard profile based on an assumption of the site load factor. It is possible to calculate the load factor for sites where maximum demand is known to ensure the correct profile is being applied.

Gas

Similarly, there are two factors affecting gas prices. The first is total volume consumed. Transco (responsible for the transportation of gas) nominate the estimated annual consumption for a site. This figure is known as the AQ (annual quantity). Significant financial penalties can be incurred for sites that have actual consumption that deviates significantly from the AQ. The second factor is, once more, the load factor. Setsquare Energy Solutions is able to estimate the load factor and ensure that the nominated AQ is realistic.

Setsquare Energy Solutions include:

1. A computerised database containing all utility account information on each of the premises relevant to securing a utilities contract at the most favourable rates. The database includes:
 - Building Name
 - Address and Postcode
 - Usage Pattern based on ½ hourly recorded data (if available)
 - MSID Number
 - 12 months consumption data for both day and night usage
 - Availability
 - Supply Voltage
 - National Grid Metering Point
 - Maximum Demand
 - 24 hr Emergency Contact Name & Phone Number
 - Gas “M” Number

- Billing Address
 - Consumption information recorded from fuel invoices
2. Load factors are calculated for each of the Premises using the best historic data available.
 3. Tender documentation is drawn up, containing all relevant data needed to obtain the most competitive prices. This includes daily load profiles and load factors (where known).
 4. A contract tendered to all utility suppliers in the UK. Each response is analysed using all price components. The current level of Fossil Fuel Levy is added to all prices. The contract is then negotiated between the suppliers of the three lowest offers and the most competitive prices secured.
 5. The contract includes the provision of $\frac{1}{2}$ hourly data (electricity only) and copy invoices via the electronic billing route where possible.
 6. Any premises to be added to the contract are subject to the request of the Client and agreement of the relevant fees to be added at the earliest available date (allowing for meter operator and settlement contracts to be put in place). Contracts for all additions terminate on the same date as the bulk contract, regardless of the start date.



Energy Data Collection

The Energy Utilities are billed via the main incoming meter(s) to a site e.g. electricity, gas and water. The available consumption data is therefore only for the whole site. In most cases this is only either a monthly or a quarterly total figure.

Often more detailed sub meter data over half hourly periods (or less) is required to identify and analyse potential savings for different processes and/or areas.

Setsquare Energy Solutions can provide,

The complete sub metering and data collection solution from meter installation to Internet access of the data

- Supply and Install Meters/Data Loggers plus coms links on site.
- Energy consumption recorded on Meter/Data Logger
- A Data Collector and/or SES dial up meter each day or access via Internet & download data.
- Data imported into Monitoring & Analyses system.
- Data analysed and exceptions identified
- Reports sent to clients or available via website.
- Clients use reports to achieve Energy Savings
- Service provided for electricity, gas, oil and water.

The benefits of Half Hourly Electricity Data are,

- Half-Hour Metering is used by Suppliers to calculate bills based on tariff structures that can vary as often as every half-hour of every day. More often a typical tariff will be two to five different rates.
- Electricity Supplier - will use customer's half-hour load profiles to produce tariff structures & offers.
- The Customer - can use the data to recalculate bills to check for supplier billing errors.
- The Customer can utilize the data to calculate future business plan costs
- The Customer - utilizes the half-hour data to evaluate suppliers tariff structures against the actual load profile.
- The Customer has an accurate history of Power Consumption & can identify the effect of process changes or unusual spikes in demand e.g. high use in the middle of the night.