CHAPTER 7: ENERGY AWARENESS AND EDUCATION

"Not advertising is like winking in the dark.   You know what is happening but no-one else does."
Nigel H. Martin

7.1   INTRODUCTION

In figure 2.1, it was shown that the only way to reduce the electricity cost per product or business function is to address both the electrical equipment and the people that use the equipment.   The Energy Load Management and Energy Maintenance Management activity areas concentrated on projects and activities aimed specifically at the equipment but this activity area however, is aimed solely at the people on campus that form part of the institution community.

The goal of this activity area is for all the people on campus to take ownership for the reduction in the electricity cost per product by ensuring that they each do their part.   This is achieved through both generating general awareness of the energy management programme and through energy education aimed at the transferral of specific energy management skills.

Unfortunately, the amount of savings that result from this activity area are immeasurable but failure to undertake this activity area will result in the energy management programme not only being incomplete but also not reaching its full potential.   The students and staff on campus can only participate in an energy management programme if they are made aware of it and given specific skills with which to help.   This chapter will firstly look at creating a marketing strategy followed by a closer look into the process involved in this activity area.

7.2   A MARKETING STRATEGY

As mentioned in the previous section, the purpose of this activity area is to instill a sense of ownership for electricity on campus and this is achieved through generating general awareness of the energy management programme and the education of the people who use the electricity.   But how is this done?

From chapter 1 it was recognised that every institution is different with its own culture on campus and that no single plan or strategy will fit any two campuses in exactly the same way.   The secret to devising a marketing strategy is to use the inherent culture on campus

as a medium for establishing an energy efficient culture. If the campus culture is vibrant and active, then the material must also be vibrant. Boring material will stand no chance amongst the volumes of other material on campus.

From the outset it is very important that all marketing material that is distributed is capable of being identified as part of the energy management programme on campus. This can be achieved by designing a cartoon character and possibly even thinking up a slogan for the programme. Figure 7.1 illustrates the cartoon character used with the energy management programme at the University of Pretoria. The cartoon character helps the students and staff to identify which material is part of the energy management programme on campus and is taken from a caricature sketch of one of the staff members involved with the energy management programme.

Figure 7.1: Cartoon Character from the University of Pretoria

The information that is distributed on campus will either be done on a regular interval e.g. monthly reports, or will be distributed when input is received or a specific need arises e.g. one-run posters. A combination of both frequencies will inevitably be required. Appendix A and B include an example of material, from the University of Pretoria, that is distributed to the members of the energy co-ordination committee on a monthly basis in the form of an "Energywise Report" and "Hostelwise Report" respectively.

In summary, a great deal of benefit will be obtained from consulting with specialists on campus as to the correct marketing strategy. Academic institutions have an advantage in the sense that they posses an environment of open-mindedness where new ideas and approaches can not only be tested but stand more chance of succeeding.

7.3   INSIDE THE ENERGY AWARENESS AND EDUCATION AREA-OF-ACTIVITY

The processes of this activity area are fairly simple in comparison to the other activity areas. There are four steps, namely identifying the target market, selecting the appropriate medium, designing the message and lastly transmitting this message along the medium that has been selected. This process is illustrated in figure 7.2.
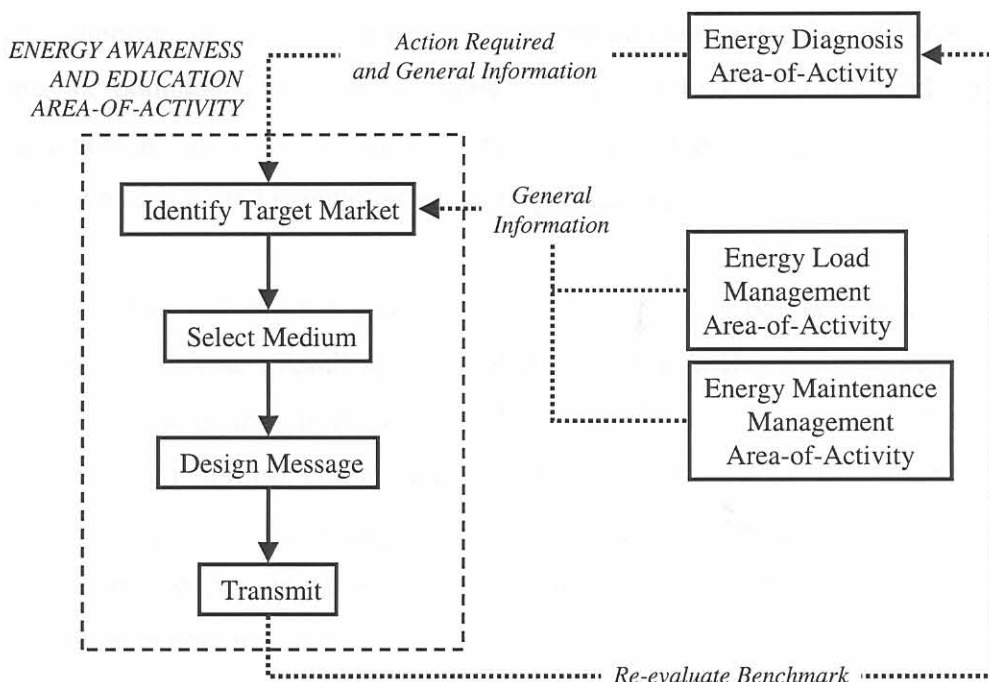
Figure 7.2: Functionality of the Energy Awareness and Education Area-of-Activity

This activity area receives two types of input. The first type is as a result of specific problems that contribute towards poor electricity benchmarks. These would have been identified by the Energy Diagnosis activity area and require training on the part of the people on campus to help remedy the situation. An example of this is leaving office lights on when going home in the evening. The second type of information consists of general information that is received from all of the other activity areas. For example, project plans from the Energy Load Management area-of-activity or examples of poor maintenance from the Energy Maintenance Management area-of-activity.

The solid arrows in figure 7.2 indicate internal operation and the dotted arrows indicate operations that occur with the other areas-of-activity as previously illustrated in figures 2.4, 2.5 and 2.6.

7.4   IDENTIFYING THE TARGET MARKET

The first step from when general information is received from the other activity areas, or when specific action is required from the Energy Diagnosis activity area, is to decide where the attention must be focused.   In other words, the target market must be identified. Being able to pinpoint the fault areas will ensure that the communication mediums are not overloaded and that the people on campus do not receive too much information.   For example, poor benchmarks in the student hostels are the problem of those students residing there and attention need not be paid to the entire student or personnel bodies.   As a guideline, the boundary can be drawn along the lines of the electrical reticulation system where any person who uses electrical equipment at levels lower than the point where the benchmark was calculated is included in the target market.

Once this has been done, the cause of the problem must be identified as either an awareness problem or as a result of a lack of skills.   This will help to identify the correct medium and message that is required.   For example, if the commercial vendors on campus, such as cafeteria operators, are being targeted, they might first need to be made aware of the energy issues on campus before they are trained to understand an electricity account.   The first part involves awareness and the second involves education in the transferral of an energy management skill.

7.5   SELECTING A MEDIUM

Once it has been ascertained where the attention must be focussed and the type of message that is required, be it for general awareness or specific skill education, the ideal medium or combination of mediums can be selected.

An academic institution is fortunate in the sense that there may be many communication channels available on campus that would not normally be available to every-day commercial companies.   These include access to campus newspapers, campus radio stations and possibly even campus television studios.   Naturally the normal options of printed media and the Internet are available for the distribution of posters, flyers, reports and articles.

Many institutions have established energy websites on the Internet and this makes it very easy to distribute the latest energy management material and ensure that it is easily updated.   The costs associated with printed media are also avoided.   Care must be taken

however when making use of electronic mail (or e-mail) distribution because, although the costs to the energy management programme are very low, it could create an annoyance amongst the recipients if they are continually bombarded with information.   Distributing too much information too regularly will result in the recipients simply deleting the item before reading it.   This defeats the purpose of the electronic mail in the first place.

Many other mediums should be considered and the energy management programme will have great success if innovative ways are found to get the message across such as:

- Placing energy management suggestions and tips on the inside of fast-food packaging on campus

- Conducting forums and undertaking presentations to key members of the student body and staff

- Undertaking radio interviews and advertisement spots regarding energy management on campus

- Distributing marketing gadgets on campus such as computer mouse-pads, T-shirts, stickers, fridge magnets, pocket protectors, pens etc.

7.6   DESIGNING THE MESSAGE

Before the final message can be transmitted or distributed, it needs to be designed in an innovative way.   The information that is going to be distributed on a regular basis will typically be done in a standard format on the same communication channels.   Develop the layout of these reports first and then continually try and improve them by encouraging input from the recipients.

Combining the energy management messages with other events on campus or topical news items will provide some good opportunities to get the message across.   Attaching incentives is also a possibility.   For example, when distributing a poster or flyer regarding Compact Fluorescent Lamps (CFLs) such as the one on appendix C, a lighting manufacturer can be approached to provide CFLs at a reduced price for every person showing their student or personnel card (and a copy of the flyer).   This will increase the market presence of the manufacturer and will encourage students and personnel members to participate because they will be able to get these lamps for their homes at special prices. In this specific project, acquiring efficient lamps for the homes of students and personnel members will not address the electricity benchmarks on campus but will make the target

audience more receptive to suggestions, ideas and requests in the future.   In this manner an environment of information transfer is created.   Examples of posters that are used to generate awareness and impart some skills at the University of Pretoria are included in appendix D and E.   Campaigning for a sponsor for individual marketing projects will help to reduce the costs of the energy awareness and education campaign such as sponsors for T-shirts for the members of the Energy Action Team described in section 2.7.

7.7   CASE STUDIES

The goal of this Energy Awareness and Education activity area is for all the people on campus to take ownership for the energy management programme.   In the previous sections, two types of messages were identified, namely those for awareness and those for the transferral of energy management skills.   This section will deal with two case studies from the University of Pretoria that highlight the potential of this activity area.

7.7.1   Separate Metering and Billing of Vendors

One of the most powerful methods in which to make people take ownership for their electricity is to make them financially accountable for it.   This does not mean that each student on campus receives an electricity account but rather that the electricity portion of the class fees and hostel residency fees are clearly reflected on student accounts.   Taking this one step further would be to issue each faculty with a monthly electricity account that has to be paid for from the budget of that faculty.   This may sound strange in principle but is already applied for other services such as telephones and Internet connections at the University of Pretoria.   This is termed "separate metering and billing" and involves the recovery of the total institution electricity costs from the various faculties and departments in relation to their contribution to the total costs.

According to the National Electricity Regulator (NER) in South Africa [56], it is necessary to find a compromise between the following points when designing a tariff structure:

- The need to accurately reflect costs
- The need to ensure equity and fairness
- The need for a practically implementable tariff
- The need to utilise appropriate metering and supply technology
- The need for an understandable tariff
- The customer's ability to pay

These points were used as guidelines at the University of Pretoria when designing internal tariff structures for separate metering and billing. At the University, the catering functions on campus such as cafeterias and restaurants are outsourced to private companies. These companies, termed independent commercial vendors, receive a monthly account from the University for rent, water and electricity. Unfortunately for these companies, they effectively only have a large client base for eight months of the year while the students are attending lectures on campus. For this reason, it was decided to apply an electricity tariff where they pay for their monthly contribution to the overall electricity account of the University. The University is billed according to a demand tariff and therefore each vendor is billed according to their energy consumption and only their contribution to the overall maximum demand. Figure 7.3 illustrates the load profiles of three of the vendors on the day that the University reached its maximum demand for the month of June 1999.

Tuesday 8 June 1999

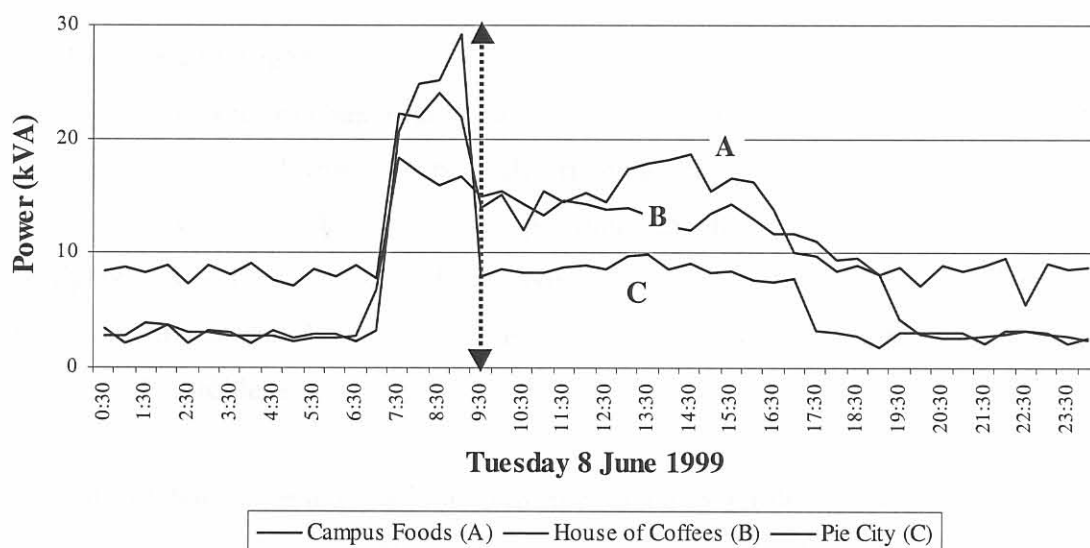Campus Foods (A) ——— House of Coffees (B) ——— Pie City (C)

Figure 7.3: Vendor Load Profiles on Day of University Maximum Demand

From the profiles it is evident that these vendors would have to pay a lot more for electricity if they had to pay for their individual maximum demands and not only for their contribution to the system maximum demand that occurred at 09:30. Their individual demands are of no consequence to the overall demand provided that it does not occur at the exact same time interval. The tariff rates of the University are applied to these vendors on a back-to-back basis in order to remain consistent with changes in the supply costs. The energy rate, however, is increased by 5% in order to compensate for distribution losses through the 11kV network on campus.

One problem that did exist was that not all of the vendors have their electricity consumption measured with the real-time energy management system on campus. Most of the vendors have only their energy consumption measured with an electromechanical meter. For this reason it was decided that the combined equivalent cost per unit (see section 3.3.5) of the three vendors, illustrated in figure 7.3, would be used as the energy rate for all of the other vendors until funds can be procured to measure their respective electricity load profiles in real-time.

It should be noted that before this tariff structure was implemented, all the vendors were first consulted and time was spent explaining the exact workings of the new tariff structure. This facilitated the easy introduction of the tariff structure and has eliminated many complaints on their part because a win-win situation was created.

7.7.2   Light Audit Night

The University of Pretoria has a large base load of approximately 4MVA, or 40% of the peak demand. Although many types of electrical equipment contribute towards this ever-present load, it was also noticed that many personnel members were not switching off their office lights and other equipment when leaving work in the evenings. Some basic skills coupled with a general shortage of awareness of the electricity costs of campus were identified as the problem.

It was realised that something innovative must be done to get the necessary attention of all of the personnel members. For this reason, the concept of "light audit night" was developed whereby the Energy Action Team conducted an evening walk audit of all of the major buildings on campus and attached friendly posters to the door of offices that had their lights burning encouraging the occupants to alter their present pattern. An example of the poster is illustrated in figure 7.4.

During the evening, a total of approximately 56kW of unnecessary office lighting was discovered burning. The true success of the project however was the number of responses that the posters generated. Many people contacted the Energy Action Team either requesting additional information or to provide information regarding other areas of where energy is being wasted (not necessarily related to lighting only). Some departments even collected the posters off the office doors and had them mounted in the passageways as a continual reminder to the occupants of the building.

Figure 7.4: Door Poster from Light Audit Night

The general response was overwhelming based on the fact that most personnel members are more responsive when they realise that people such as the Energy Action Team are prepared to put in a little bit extra of their time in order to make a difference. In this instance, the innovative way of distributing the message worked.

7.8   CONCLUSION

It is important that the function of this activity area is not considered as insignificant or secondary in relation to the other areas-of-activity. Sometimes this aspect of the energy management programme is neglected because the returns in terms of an improved electricity benchmark are not easily quantifiable or measurable.

In chapter 6, under the Energy Maintenance Management area-of-activity, the establishment of a customer care-line was introduced. Instilling ownership for the energy management programme through the generation of awareness will help to ensure that the people on campus are prepared to take the effort to use the care-line to report faults with the electrical (and other) equipment on campus.

There are many resources available on campus in terms of a broad range of communication mediums and the necessary technical and marketing expertise. These resources should be harnessed to provide the energy management programme with a style unique to each specific institution.

From the onset of the energy management programme, a great deal of information in terms of facts and figures will become available. In all probability, the amount of information will outweigh the opportunities to use it and extreme care must be taken not to use all the available material when an opportunity presents itself. In other words, information overload must be prevented at all times because the recipients will not be able digest too much information. Each message must be absorbed in order for the energy management programme to be successful and dumping information will in effect kill the good efforts of this activity area.

More often than not, the people on campus will provide feedback in the form of ideas or opinions. The energy manager and his team must encourage this feedback even though it may not always be positive. All commentary should be used in a positive manner in an attempt to improve the methods and messages that are being distributed on campus.

Encouraging feedback is a good way of inviting the people on campus to take ownership for the energy management programme. This is achieved by making sure that all the necessary contact information (and possibly the address of the energy management Internet page) is included in all material that is distributed on campus.

The culmination of this chapter brings to a close the detailed working of each of the areas-of-activity. The next chapter will look specifically at the evaluation of the energy management programme as a vital feedback link back to the energy policy of the institution.