

Problem Statement:

Develop a operational model including pricing, utility integration and consumer involvement that will encourage efficiency and promote sustainability. Consider alternatives to the current centralized utility models, distribution systems and regulatory structures.

Objectives:

The utility must promote sustainability

The utility must be able to finance its operations

The service level to the consumer must not be lowered

The utility model must be specific to IIT

Develop Micro-Utility Model

Pair incentives for efficiency with control of system

Methodology:

Research

Operation of the current utility system

Factors preventing sustainability in the current utility system

Sustainable measures that have been implemented around the world
IIT's existing utility system

Documentation

Brainstorming

Testing proposed solutions

Documenting



Why is Energy Efficiency Important?

Conservation

Energy conservation reduces the energy consumption and demand per capita; thus offsets some of the growth in energy supply needed to keep up with population growth. This reduces the rise in costs, the need for new power plants, and energy imports. The lower the energy demand is, the more flexibility we have in choosing the most preferred methods of energy production.

Environment

By reducing emissions, energy conservation is an important part of lessening climate change. Energy conservation facilitates the replacement of non-renewable resources with renewable energy. This method is often the most economical solution to energy shortages, and is a more environmentally benign alternative to increased energy production.

Savings

Direct consumers of energy may want to conserve energy in order to reduce costs and promote economic security. Industrial and commercial users may want to increase efficiency to maximize their profits.

Proposed Solutions:

Steam:

Creation of new billing system

- baseline amount is based on historic usage figures which takes into account heating degreedays, occupancy type and square footage
- company provides option of buying more or less than suggested amount
- company creates different price ranges to promote efficiency
- company charges Luxury Tax when customer uses more than purchased

Natural Gas/Water:

New rate structure:

-IIT operational fee:

- flat fee for campus wide costs
- customers billed for individual costs

-City of Chicago Water Department Fee:

- Calculated by metered water use

-IIT Uniform Maintenance Fee

- Yearly maintenance cost projected from historical costs

Electricity:

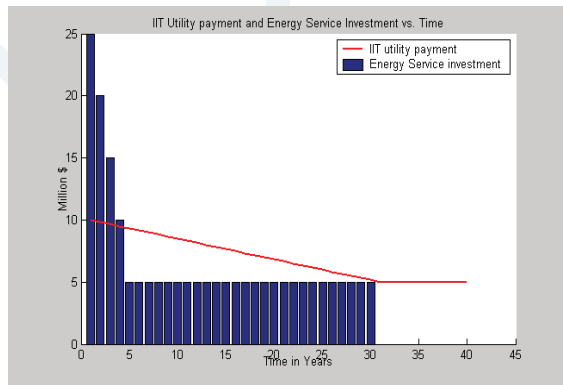
-Total Electrical Contracting based on a flat rate with giving contractors profit for any energy savings.

-Performance Contracting uses largely the same economics as the total electricity contract, but leaves both the control of the IIT power system and the risk taken in investment in IIT's hands.

Recommendation:

Energy Contracting Service:

This service would transfer management of utilities and hardware to a third party service provider. This provider would maintain the same level of service to the customer while the customer pays a diminishing flat fee for service. The contractor would gain profits from the energy reductions while the customer saves money and energy resources.



This graph shows the diminishing flat fee that IIT would pay for energy service compared with the investment the contractor would make into IIT's infrastructure.

Challenges:

Although there were a variety of solutions, the scope of the project needed to be narrowed down to the specific needs of IIT. Several challenges were identified during this process such as, time constraint, lack of readily available resources, and group member coordination. However, the most vital challenge during this process was finding solutions while retaining the existing infrastructure.

Conclusion:

With these recommendations in place, IIT will save money, reduce energy, and promote the environmental issues that we advertise on campus.

Due to the current economic crisis, the global warming, and the depletion of natural resources, it is time for a change in the way energy is used. IIT can become a model for other communities to emulate.



IPRO 326

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