

Problem Statement

IIT has developed much of its image around the concept of sustainability. It has invested heavily in research for new technology that will pave the way for efficiency, but these mean nothing unless they are implemented. Our IPRO is researching ways of structuring a utility in order to encourage use of these new devices and efficiency on the campus level. This model is specific to the needs of IIT's outdated campus, but can be scaled to promote the same objectives in different situations.

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

Background

Current Utility Model:

The current utility model has worked well for this country for over one hundred years. However, there is now a need for utilities to help promote efficient use of resources.

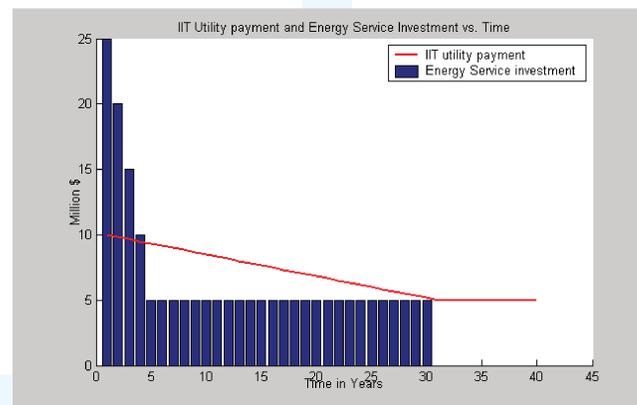
All utilities are monopolies by definition. The challenge has always been how to set up this monopoly to provide fair service to the user while allowing a fair amount of profit for the utility company.

This problem has historically been solved by regulating how much a utility can charge for its resource. Utilities are allowed to charge enough to recover their investments and make a set amount of profit. However, this system encourages usage. In order for utilities to make money, they must sell more of their commodity.

Restructuring Utilities:

Deregulation has created competition in the utility market. Decoupling has made it profitable for utilities to promote efficiency over usage. Government incentives have started to promote more research in sustainability.

Recommendation - Energy Contracting



Transfer control of utilities to energy contractor
Must maintain same level of service

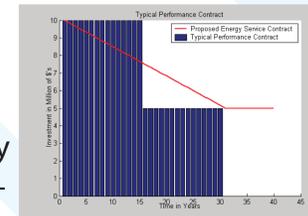
Flat Fee for Energy Service
Diminishing flat fee - immediate savings

Contractor profits from energy reductions

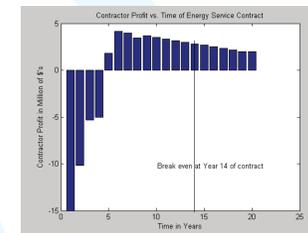
Benefits to IIT
Reduces energy resources consumed
Reduces energy costs
Reduces risk to institution

Typical method of Energy Contracting:

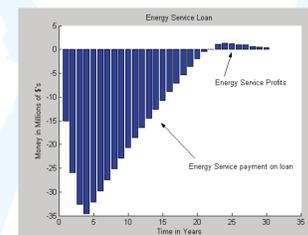
Flat rate set at beginning of contract drops drastically at end of contract vs. a continually diminishing flat rate.



Contractor Investment versus the profit gained from energy savings



Contractor profit after 5% loan for capital improvements



Previous Solutions

Utility Taxes
Provides a flat tax on users for the amount of resources used

Cap and Trade
Set a baseline of resource usage
If user uses less than baseline, can sell credits to users who consume more

Implementation of new technology by IIT Facilities Dept.
IIT surveys campus
Installs devices as needed for efficiency

Performance Contracting
IIT pays contractor a fixed rate for fixed amount of energy reduction

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- Ryan Murphy
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