MS&E 108: Examples of Past Public Service Projects

These projects were chosen from among others to serve as examples because they were of an appropriate scope and addressed problems well-suited to our program.

Menlo Park Fire Dept.: Fire Station Location Analysis

Management Science & Engineering students will evaluate the relocation / replacement of a current fire station in East Palo Alto and recommend an optimum community site and adequate public safety facility amenities.

Project Baobab: New Tracking System

Project Baobab is a nonprofit that teaches Kenyan youth skills for economic independence. In the fourth year of secondary school, our students (nearly 100% women) write business plans for small businesses that they would like to start when they leave school. If they present a good idea we fund them $100 to start the business.

One pressing problem that we have -- that, hopefully, you can help us solve -- is keeping track of and supporting our grantees' progress. Once a young woman is out of school and her business is underway, it is hard to locate her to check in and see how she is doing. She is no longer in the school and may live a considerable distance from the school, and the information we have gathered thus far is anecdotal and disorganized.

Project Baobab: Jewelry Import Project

Project Baobab, a 501(c) 3 nonprofit organization based in Palo Alto, CA, provides free Life Skills training, entrepreneurship education, and small business grants that create strategic economic opportunities for young people in Kenya. In doing so, Project Baobab's modest but strategic investments catalyze local economies and challenge women's traditional social roles by promoting independence and self-sufficiency.

On a recent trip to Kenya a Project Baobab representative met with a number of their students who have started jewelry and curio businesses. As a small non-profit they are consistently looking for ways of raising money. One idea would be to import some of the nice jewelry if they had someone who wanted to sell it. They have no idea about importing and exporting, setting a fair price for items sold in the USA, how a non-profit could receive part of the profits, whether they would be permitted to make money off of sales, etc.

City of Menlo Park: Road Impact Fee Study

The condition of the City's streets are deteriorating at a faster rate than they can be repaired given limitations in existing resources. One of the major sources of damage to the streets is heavy truck traffic associated with construction projects in Menlo Park. Recently staff presented a recommendation to the City Council to establish a new fee, based on a percentage of the cost of construction projects approved in the city. The Council was concerned that such a fee may not truly capture the street repair cost associated with construction or may not fairly allocate these costs to various construction projects. Consequently, the Council requested additional research to identify whether it would be possible to: 1) specifically pinpoint those construction projects and activities that have an actual impact on streets; 2) accurately set fees to cover actual costs; and 3) identify alternatives to fees, such as construction bonds.

City of Mountain View: Photovoltaic Feasibility Study

Analyze and make recommendations regarding the feasibility of a photovoltaic system at the City's Municipal Operations Center:

The City of Mountain View is evaluating ways to reduce energy consumption at its facilities, and is also interested in renewable energy sources. This project involves analyzing the cost effectiveness of installing photovoltaic (PV) panels at the City's Municipal Operations Center to generate electricity for approximately 70,000 square feet of onsite buildings and a potable water reservoir and pump station. Activities include analyzing the optimum location(s) for PV panels, installation and maintenance costs, available grant and rebate programs, anticipated energy cost savings, and payback period for the City's investment.

City of Palo Alto: Water Quality

Leachate from 2 landfills is discharged to the sewage treatment
plant adding salt and making it harder to reuse the treated wastewater for landscape irrigation. Students should determine

1) salinity goals for the recycled water (treated effluent),
2) amounts added by the landfills (by assembling existing data),
3) options for reducing salinity contributions from the landfills including rough cost estimates where possible, and

4) recommendations for next steps. The report should be geared for upper management, who must decide whether to proceed with recommendations and spend money.

Planning for the new School of Engineering Center

The MS&E Department is scheduled to move into a newly constructed School of Engineering Center in 2009. The Stanford Board of Trustees has set the project in motion while most of the planning is still underway. This is a critical time to design spaces that will serve the needs of the students, staff, and faculty for years to come within tight budget and space constraints. The project team will work with the School of Engineering and the MS&E Department to develop plans that integrate the diverse needs and preferences of the different members of the department community.

Annual Reviews: Energy Efficiency

Annual Reviews (http://www.AnnualReviews.org) is a non-profit publisher of scientific review journals in the physical, biological and social sciencees. Stanford University provides the largest number of individuals serving on our governing board and editorial committees*. A 75+ year organization, we are located in a building in Palo Alto erected in 1971. The editorial committees (there are 38) meet in locations throughout North America and draw scholars from around the world.

We are eager to assess our carbon footprint form all our activities, not only the use of our 20,000 sq.ft. facility at 4139 El Camino Way, but the costs (in terms of carbon emissions) of the meetings we hold.
With an assessment of our carbon cost, we will consider what measures to undertake to pay for offsets.

The building we are in serves us well. I've looked into putting solar panels on the roof, but two commercial firms have advised against it on the grounds that the costs are vastly disproportionate to the benefits, even after government subsidies are taken into account.

I would like to have our facility evaluated, however, to determine if we can retrofit/renovate to make the building a model of energy efficiency. If we didn't have a building, our goal would be to create something like the Ecology Research Center (Carnegie Institute of Washington) at Stanford (Panama Street).

San Mateo Medical Center: Space Utilization

The purpose of the project would be to recommend improvements in the utilization of space in the San Mateo Medical Center's emergency department. This can include physician workstation design; nursing station design; supply and equipment accessibility; and patient room standardization. Currently, the ED appears disorganized and cluttered, causing wasted staff and physician time, and diminishing productivity and time allowed for direct patient care. While the student team would need to determine their approach, a Lean / 5s approach could be utilized. Certainly, staff/physician interviews, leadership interviews, and direct observation would be an important piece of any approach. Improvements would most likely be directed towards staff/physician activities; however patient flow and throughput could also be incorporated.