



Introduction

This mechanical breadth analyzed the feasibility of a cogeneration system to provide power to the roof top units. This system added to the initial costs, of the building, but significantly lowered The VCU Life Sciences Building's cost of electricity. Please refer to The Mechanical Breadth for more detail. Another issue to be considered in the feasibility of this system in comparison with the one that is currently in place are initial labor costs, scheduling issues, and the payback period.

Initial Labor Costs

The only piece of equipment that is being installed in addition to what is in places is the generator. Labor costs were obtained from the CostWorks program. The amount of 6" pipe, T's and 90's for the natural gas fuel were estimated.

LABOR COSTS					
MODIFIED					
Equip.	Amt.	Crew	Labor Hours	Hourly Labor Rate	Total Labor Cost
GEN SET	1	R13	110.00	382.09	\$42,029.90
6" PIPE	500	Q2	0.77	110.52	\$42,771.24
T's	30	Q2	3.43	110.52	\$11,369.19
90's	30	Q2	6.00	110.52	\$19,893.60
TOTAL					\$116,063.93

The labor costs add to the initial system cost, which was \$164,030.00. Therefore, the actual initial cost of the generator would be \$280093.93. This is the amount that the mechanical system cost to install would increase by.

Scheduling

As is seen in the table above, because no equipment is not being installed, only more equipment is being installed, there is an increase in the necessary labor hours to complete this system. The labor hours increase by about 120 hours, or almost 3 weeks worth of work hours. This would be a significant set back for the schedule. This is a major disadvantage for the cogeneration system. Especially, with this building being a part of a large college campus. There is minimal time to complete a project and the campus can be strained for space while construction is going on.



Payback Period

The initial costs and savings of the cogeneration system were totaled in order to calculate the payback period.

INITIAL COSTS		INITIAL SAVINGS (daily)	
Equipment	-\$164,030.00	\$746,476.21	Electricity
Labor	-\$116,063.93	-\$6.64	Natural Gas
TOTAL	-\$280,093.93	\$746,469.57	TOTAL

The payback period was then calculated by dividing the initial cost by the initial savings. According to this information, the payback period comes out to be nine hours.

Conclusion

Looking at the information gathered here, the cogeneration seems great as far as savings, with a payback period of only nine hours. However, it would delay the project by three weeks. Again, going back to the mechanical depth, as much as a cogeneration system for The VCU Life Sciences Building would save money, it also introduces many inefficiencies to the mechanical system overall. Therefore, despite the savings, I would not recommend that a cogeneration system be installed in The VCU Life Sciences Building.