A Case Study on Achieving Living Building Challenge Certification on the UCSD Triton Project

Abstract: This research consists of a case study conducted on the UCSD Triton Pavilion project. The case study evaluates the strategies proposed to help the project achieve a Living Building Challenge certification. Research and communication with integral employees from PCL Construction helped identify key strategies that ultimately caused the project to not pursue LBC certification. In summary the size and scope of the project created too many complexities for the proposed strategies to effectively be applied to a building of this size and scale.

Research Significance

By identifying key components of costs and strategy implementation that affect a project in significant ways, owners and contractors could have a better understanding of what buildings are better suited to attempt certain levels of sustainable achievement.

LEED: Leadership in Energy and Environmental Design

LIVING BUILDING CHALLENGE

UCSD Triton Pavilion

The UCSD Triton Pavilion is designed to be the grand entrance of the campus. The buildable site area is approximately 3.9 acres with four planned buildings boasting 350,000 GSF.

UCSD's past commitments to Sustainability prompted them to evaluate the possibility of achieving either full Living Building Challenge accreditation or the Living Building Challenge Energy Petal.

Research Methodology

The purpose of this research is to explore the different strategies a project like the UCSD Triton Project would need to implement to achieve the LBC accreditation and evaluate the value of each of these strategies to the project team.

Identifying key outliers in scores and evaluating the overall total score, this research identified and evaluated how these strategies affected the consensus of the project team to not attempt LBC accreditation. Scoring criteria is given below and an example of the Scoring Matrix for Water strategies. Similar matrices were conducted with all other potential strategies.

Scoring Criteria

Benefits: 1,2,3,4,5. Possible Benefits of Strategy (Equity Benefit, Climate Benefit, Ecosystem Benefit, Local Benefit, Health benefit)

First Costs: 1,3,5. 1= < $1 Million, 3= $1-$5 Million, 5 = > $5 Million

Ease of Implementation: 1,3,5. 5= Easy to Implement, 3= Some Increased Consideration to Implementation, 1= Complex to Implement

Operations and Maintenance: 1,3,5. 5=Easy to Implement, 3= Some Increased Consideration to Implementation, 1=Complex to Implement

UCSD Triton Pavilion Rendering

Scoring Matrix for Water Strategies

Strategy	Environmental Benefits	First Costs	Ease of Implementation	Operations and Maintenance	Value Score
Water					
Stormwater Management	1	5	5	5	80
Rainwater capture and reuse	1	5	3	5	70
Grey and blackwater treatment and reuse	1	3	1	3	40
Recycled Water for irrigation	1	5	3	5	70
Vacuum-flush toilets	1	3	3	3	50
Average Water Score					62

Created by Grayson Farnham, G.A
graysonfarnham@yahoo.com
858-750-0844

Impacts and the Future

At the time of this research, there are 23 full LBC buildings globally. Not a single one of them is more than 150,000SF. The question now lies in how we can evolve strategies so that all buildings can achieve the highest levels of sustainability. This research encourages future development of practices of sustainable building that can accommodate projects of this scale.

Findings

At the end of the day there is a simple yet complex answer, the UCSD Triton project is just too big. Several of the strategies evaluated in this case study are simply too costly and are untested at this magnitude. The risk for both the contractor and the owner from this ambiguity outweighs the desire to make the stretch to LBC. The average score of all strategies identified was a low 68.7.

UCSD Triton Pavilion Site Plan