

Pepperdine University

The George L. Graziadio School of Business and Management



Lowering Energy Consumptions at Pepperdine Dorms

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1. Purpose Statement

The purpose of this project is to host an energy competition within the campus dorms to develop and execute a plan to reduce energy consumption in the dorms by 10-20%, and in the long run, campus energy consumption by at least 10%.

2. Scope Statement

The scope of this project extends to utilizing campus resources to develop and execute a plan for Pepperdine University's Center for Sustainability and the Housing and Residential Life committee to host an energy competition within the dorms that will include incentives and initiatives for students to cut energy usage in order to achieve the larger goals of cutting campus-wide energy usage. This competition will enable students to monitor their energy saving progress through the use of a newly developed online dashboard.

3. Objectives

In order to host an energy competition within the campus dorms and develop and execute a plan to reduce energy consumption, the project will encompass many key objectives that are essential to its completion. Crucial to the project's success, these objectives need to be achieved while employing set criteria for success, yet staying within certain constraints on time and resources and avoiding factors that would lead to failure. The following lists the project's objectives, success criteria, factors for failure, and constraints:

- Decrease energy consumption in freshman dorms by at least 10%-20%
- Educate students on how to conserve energy, both now and in the future (we can assume that today's Freshman will live somewhere else on campus in the future)
- Long term: Decrease campus-wide energy consumption by 10%
- Establish infrastructure to hold the dorm energy competitions
- Assess how much energy is consumed in the dorms
- Create a baseline usage for the dorms and establish target energy reduction
- Implement energy savings measures in all the dorms
- Create online energy usage dashboard to monitor progress

- Reduce actual dorm energy usage by 10-20%
- Reduce the overall campus-wide energy usage by 10%

a. Success Criteria

- Accurate and timely tracking of energy usage
- Fair assessment of energy usage
- Students believe that this competition is worth participating in
- An overall decrease in energy consumption during the competition

b. Factors for Failure

Goals unachievable or unsustainable

c. Constraints of the Project

i. Human Resources

- Peter Duby
- Brian Dawson, Associate Dean for Housing and Residential Life
- One sustainability intern
- the RAs (32) (2 per dorm)

ii. Budget

The budget for this project is \$5,000

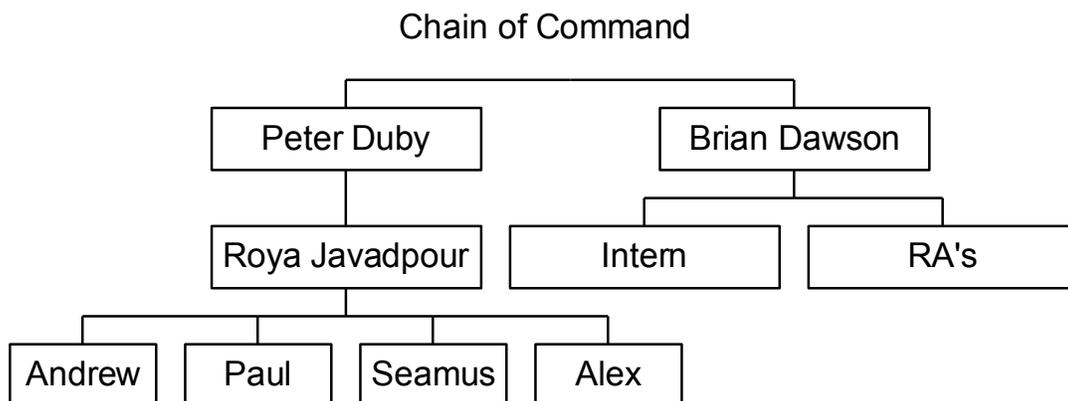
iii. Time

This project needs to be completed by April 2013

iv. Equipment

Installation of energy meters is required in every dorm prior to the beginning of the competition

4. Organization Breakdown Structure



- **Peter Duby** (Coordinator at the Center for Sustainability on Pepperdine campus)
- **Sustainability Intern** (Will be involved in implementing the energy savings projects)
- **Brian Dawson** (Associate Dean for Housing and Residential Life)
- **RAs** (Resident Advisors: Responsible for the training and motivation of students)
- **Center for Sustainability** (Responsible for training students & RAs and for tracking energy usage)
- **Governmental and Regulatory Affairs** office (Interested in reducing overall energy consumption)
- **Housing and Residential Life** (Interested in lowering energy consumption of University while maintaining standard of living for students)
- **Professor Javadpour & DESC 636 Team Members** (Responsible for developing actionable project plan for implementing energy saving competition)
- **Students** (Responsible for practicing energy savings measure. Incentivized to win competition)
- **Pepperdine University** (Interested in lowering energy consumption of University while maintaining standard of living for students)

5. Work Breakdown Structure

The Work Breakdown Structure encompasses all the tasks that need to be performed to have a successful execution of the energy saving competition. Please see Appendix A for a visual representation of the project chart.

1. Dorm Energy Competition

1.2. Notify Office Staff about Competition Meeting

This is the initial part of the Dorm Energy Competition where Peter Duby would notify the other staff members, Brian Dawson and the Sustainability Intern about the purpose of the competition, this plan, and the overall objective of what will need to be done. Informing Brian and the Intern should only take 1 day, and a meeting should be scheduled exactly 1 week from the day in order to avoid scheduling conflicts.

1.3. Debrief Office Staff of Project Scope

One week after the notification of the meeting, the meeting will take place. This meeting will require attendance from Brian Dawson, Peter Duby and the Sustainability Intern. Peter will lead the discussion about what will need to be done with the project and will introduce the dashboard.

- 1.4. Create Promotional Material (Flyer)**

After debriefing the office staff of the project scope, we can start creating the promotional material, which should include the scope of the competition and the prizes. This task can be done by the Sustainability Intern and can follow the examples attached; please see Appendix B.
- 1.5. Photocopy Promotional Material**

After creating the promotional material the Sustainability Intern can create enough copies to distribute.
- 1.6. Acquire Incentives for Winners of Competition**

Once the office staff has been debriefed and promotional material has been printed, we can proceed to acquire the incentives. Peter Duby has been assigned this task. The recommendations for incentives include:

 - Dodger or Angel baseball tickets
 - Movie Tickets
 - Six Flags Passes
 - Pizza Party/Food catering
- 1.7. Notify RA's about Competition Meeting**

14 days after notifying the office staff, and after debriefing the staff and acquiring the incentives, the Sustainability Intern can notify the RA's of the competition meeting.
- 1.8. Finalize and Approve Dashboard**

After the original meeting with Brian, the Sustainability Intern, and Peter, the final version of the Dashboard should be formulated and approved by Peter.
- 1.9. Coordinate with Campus about Wavenet Dashboard Implementation**

After the final version, Peter will need to coordinate with the Wavenet committee to integrate the dashboard with their systems and assure that the dashboard is functional. 7 days are allocated for this task.
- 1.10. Debrief RA's about competition**

Once the RA's know about the meeting, Brian Dawson, Peter Duby and the sustainability intern can conduct the meeting to debrief the RA's about the competition.
- 1.11. Distribute Promotional Material**

After the RA's are debriefed on the competition, the promotional materials can be distributed to the RA's. The RA's, Peter Duby, and the Sustainability Intern can all be involved for this.
- 1.12. Train RA's on Dashboard Use**

Once the RA's are debriefed about the competition and the promotional material is distributed, the RA's can be trained on using the dashboard. The goal of the dashboard is to notify the students on how to properly

track their energy consumption throughout the competition. See Appendix C for Dashboard and the Dashboard instruction material.

1.13. Notify Residents of Competition

Once the RA's are trained in using the dashboard, they can promote the competition by notifying the students using both flyers and word of mouth. The Flyers should be hung around the buildings educating students about this event and how to keep track of it.

1.14. Execute the Competition

As soon as the students know about the competition, it can begin. The competition can run even while RA's continue to notify students. We expect the competition to run until early April.

1.15. Receive Results from RA's

After the competition finishes, the RA's can submit the results to Peter Duby and the Sustainability Intern.

1.16. Compile Results

After receiving the results the Sustainability Intern can compile the results.

1.17. Establish the Winner

Once the results are compiled, we can establish and announce the winners of the competition.

1.18. Distribute Winning Prizes

Finally, we can distribute the prizes to the winners.

6. Expenses Breakdown Structure

Incentives:

50 students x \$20 incentive per student = \$1,000

Promotional material photocopies:

50 students x 16 dorms x 1 photocopy x \$0.35 cents each colored copy ~= \$300

Totals:

The estimated budget for this competition in terms of promotional material and incentives is estimated to be \$1,300.

This leaves \$3,700 for energy saving devices. The energy saving devices are beyond the scope of this project implementation.

7. Risk

This project relies on the coordinated efforts of the multiple stakeholders in order to achieve its criteria for success while remaining within the constraints of the project. As a result, there is risk associated with some activities that must be managed for the project to be a success. Some of the risks associated with the project can be monitored, mitigated, transferred, or ultimately accepted depending on the type of risk. Each potential risk is defined along with an appropriate response and a contingency plan to work around any problem that may arise. The following lists the risk events associated with the project:

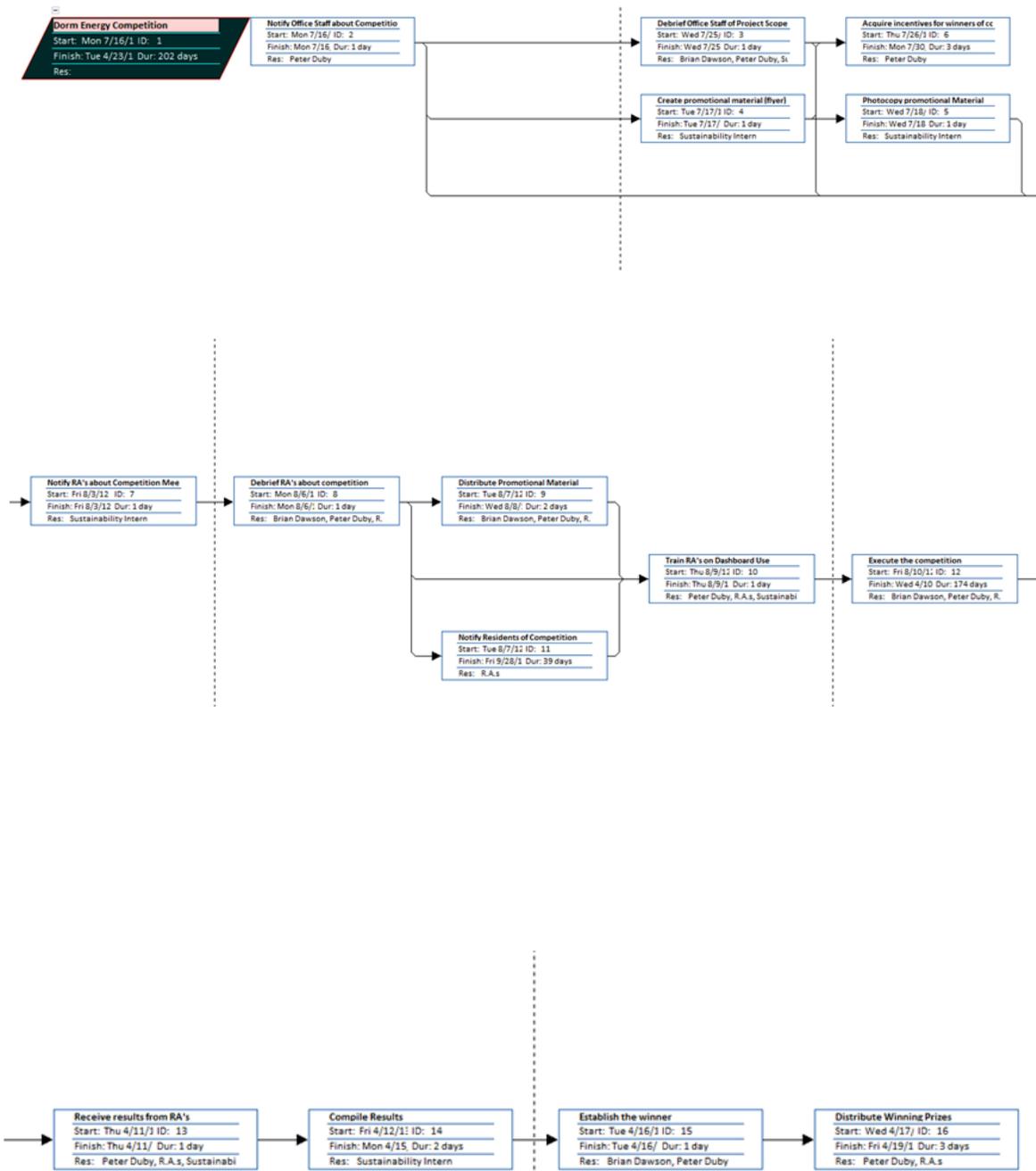
- Installation of energy meters behind schedule
- Project not completed by April 2013
- Total energy savings devices needed more than \$3,700
- HR constraints inhibit information dissemination
- Lack of participation by students
- Results are unsustainable

The first risk is the possibility that the planned installation of the energy meters falls behind schedule and pushes back the competition. The meter installation is beyond the scope of this project, however it can have significant impact on the project's completion. The second risk is that the project may not be completed by the April 2013 deadline, which would be detrimental to the implementation of the project. The third risk is that the cost of the energy savings devices needed exceeds the allotted \$3,700. This risk will need to be monitored as the preparation for the competition proceeds however; the ultimate budget constraint is firm and thus can reduce potential energy savings. The fourth risk is that there is not enough manpower to effectively disseminate information about the competition and that there could be a resulting lack of awareness. This risk could detriment the competition since the students must be informed if they are to participate. The fifth risk is that, at the end of the day, there is a lack of participation by the students. This risk is going to be hard to gauge and its mitigation is absolutely central to the success of this project. If the students do not participate, the energy savings goals will not be achieved. Lastly, the final risk is that, upon completion of the competition, the results of the competition are unsustainable moving forward.

Please see Appendix D for visual representations of the risk events displayed as a Risk Assessment Form; a Risk Severity Matrix; and a Risk Response Matrix.

Appendix A:

Task Name	Duration	Start	Finish	Predecessors	Resource Names
Dorm Energy Competition	202 days	Mon 7/16/12	Tue 4/23/13		
Notify Office Staff about Competition Meeting	1 day	Mon 7/16/12	Mon 7/16/12		Peter Duby
Debrief Office Staff of Project Scope	1 day	Wed 7/25/12	Wed 7/25/12	2SS+7 days	Brian Dawson, Peter Duby, Sustainability Intern
Create promotional material (flyer)	1 day	Tue 7/17/12	Tue 7/17/12	2	Sustainability Intern
Photocopy promotional Material	1 day	Wed 7/18/12	Wed 7/18/12	4	Sustainability Intern
Acquire incentives for winners of competition	3 days	Thu 7/26/12	Mon 7/30/12	3,4	Peter Duby
Notify RA's about Competition Meeting	1 day	Fri 8/3/12	Fri 8/3/12	2SS+14 days, 3,5	Sustainability Intern
Debrief RA's about competition	1 day	Mon 8/6/12	Mon 8/6/12	7	Brian Dawson, Peter Duby, R.A.s, Sustainability Intern
Distribute Promotional Material	2 days	Tue 8/7/12	Wed 8/8/12	8	Brian Dawson, Peter Duby, R.A.s, Sustainability Intern
Train RA's on Dashboard Use	1 day	Thu 8/9/12	Thu 8/9/12	8,9	Peter Duby, R.A.s, Sustainability Intern
Notify Residents of Competition	39 days	Tue 8/7/12	Fri 9/28/12	8	R.A.s
Execute the competition	174 days	Fri 8/10/12	Wed 4/10/13	10,11SS	Brian Dawson, Peter Duby, R.A.s, Sustainability Intern
Receive results from RA's	1 day	Thu 4/11/13	Thu 4/11/13	12	Peter Duby, R.A.s, Sustainability Intern
Compile Results	2 days	Fri 4/12/13	Mon 4/15/13	13	Sustainability Intern
Establish the winner	1 day	Tue 4/16/13	Tue 4/16/13	14	Brian Dawson, Peter Duby
Distribute Winning Prizes	3 days	Wed 4/17/13	Fri 4/19/13	15	Peter Duby, R.A.s



Appendix B:

Power



for

Pizza

Pepperdine Dorm Energy Competition

Come to Meeting on _____ for more details

Power



for

Prizes

Pepperdine Dorm Energy Competition

Appendix C:

Using the Dashboard

Note: Macro must be enabled for this excel file to work.

I. Enter the number of teams, number of members per team, the competition start and end dates, and the frequency to monitor.

Note: “Monitor Frequency” is a drop-down menu that allow users to select monitoring on a daily, weekly or monthly basis. “Monitor Every....” allows user to choose the interval.

For example: If “Monitor Frequency” = “Weekly” & “Monitor Every Weeks” = 2, then the competition would be monitored every two weeks.

Number of Teams	13
Members per team	5
Competition Starts	2/20/2012
Competition Ends	5/4/2012
Monitor Frequency	Weekly
Monitor every Weeks	1

II. After entering the initial information for the competition, click “Create Competition Sheet”

Create Competition Sheet

Note: A new worksheet titled “Competition Sheet” would be generated where user can enter the energy consumption.

Analyze

Team Number	# team members	2/20/2012	2/27/2012	3/5/2012	3/12/2012	3/19
1	5					
2	5					
3	5					
4	5					
5	5					
6	5					
7	5					
8	5					
9	5					
10	5					
11	5					
12	5					
13	5					
Total by period		0	0	0	0	

Set-up sheet **Competition Sheet**

III. After energy consumption has been entered, click “Analyze.”

Analyze

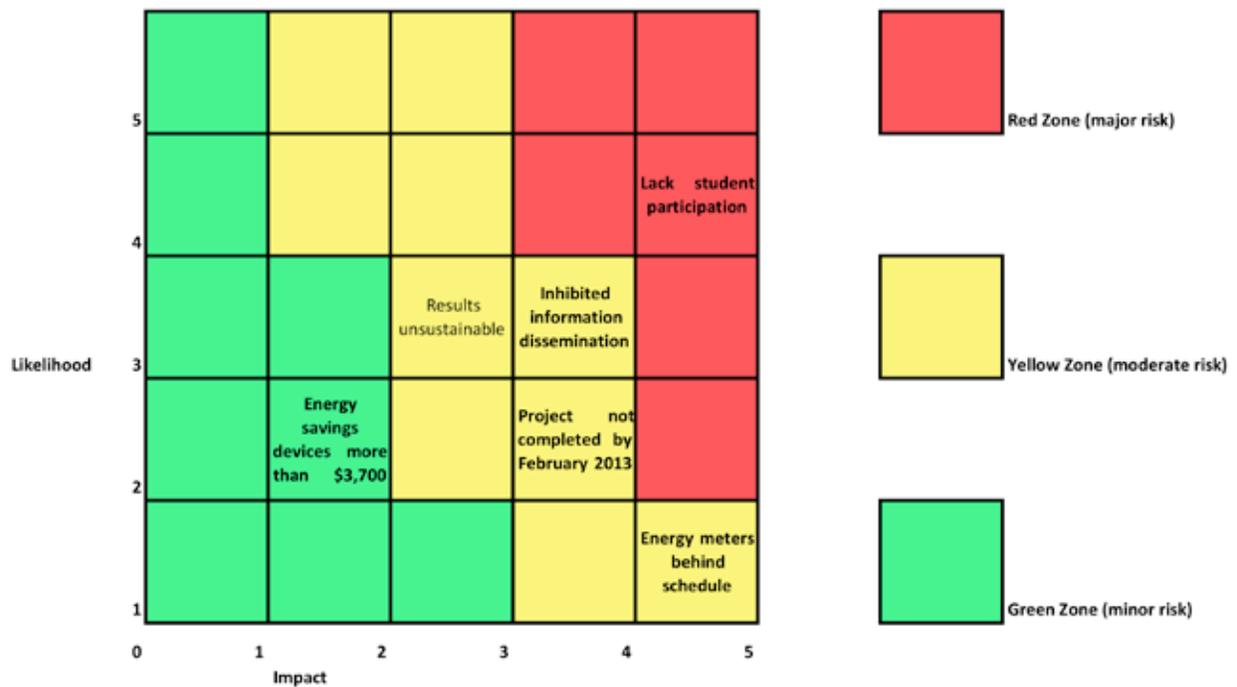
	Team Number	# team members	2/20/2012	2/27/2012	3/5/2012	3/12/2012	3/19
1							
2	1	5	12	13	12	11	
3	2	5	13	14	15	11	
4	3	5	13	10	13	12	
5	4	5	14	13	10	14	
6	5	5	15	12	14	12	
7	6	5	13	13	12	14	
8	7	5	13	12	10	14	
9	8	5	11	15	15	13	
10							

Note: A new worksheet titled “Analysis Sheet” would be created that displays the cumulative energy consumption as well as improvements.

Appendix D: RISK ASSESSMENT FORM

Risk Event	Likelihood	Impact	Detention Difficulty	When
Installation of energy meters behind schedule	1	5	5	pre-competition
Project not completed by February 2013	2	4	4	planning, competition
Total energy savings devices needed more than \$3,700	2	2	2	pre-competition, planning
HR constraints inhibit information dissemination	3	4	3	competition
Lack of participation by students	4	5	5	competition
Results are unsustainable	3	3	5	competition

RISK SEVERITY MATRIX



Risk Response Matrix

Risk Event	Response	Contingency Plan	Trigger	Who's Responsible?
Installation of energy meters behind schedule	Transfer	hire installers	not solved within 2 weeks	Peter
Project not completed by February 2013	Monitor	crash activities	missing milestone markers	Peter, Brian
Total energy savings devices needed more than \$3,700	Accept	maximize utilization	expense per unit dorm above allotted fraction	Brian
HR constraints inhibit information dissemination	Mitigate	get more intern help	lack of buzz and awareness by commencement	Brian
Lack of participation by students	Mitigate	Increase incentive prize offerings	dashboard reflects minimal participation	Brian
Results are unsustainable	Transfer	Assess results before next year	Efforts cannot be replicated	Peter