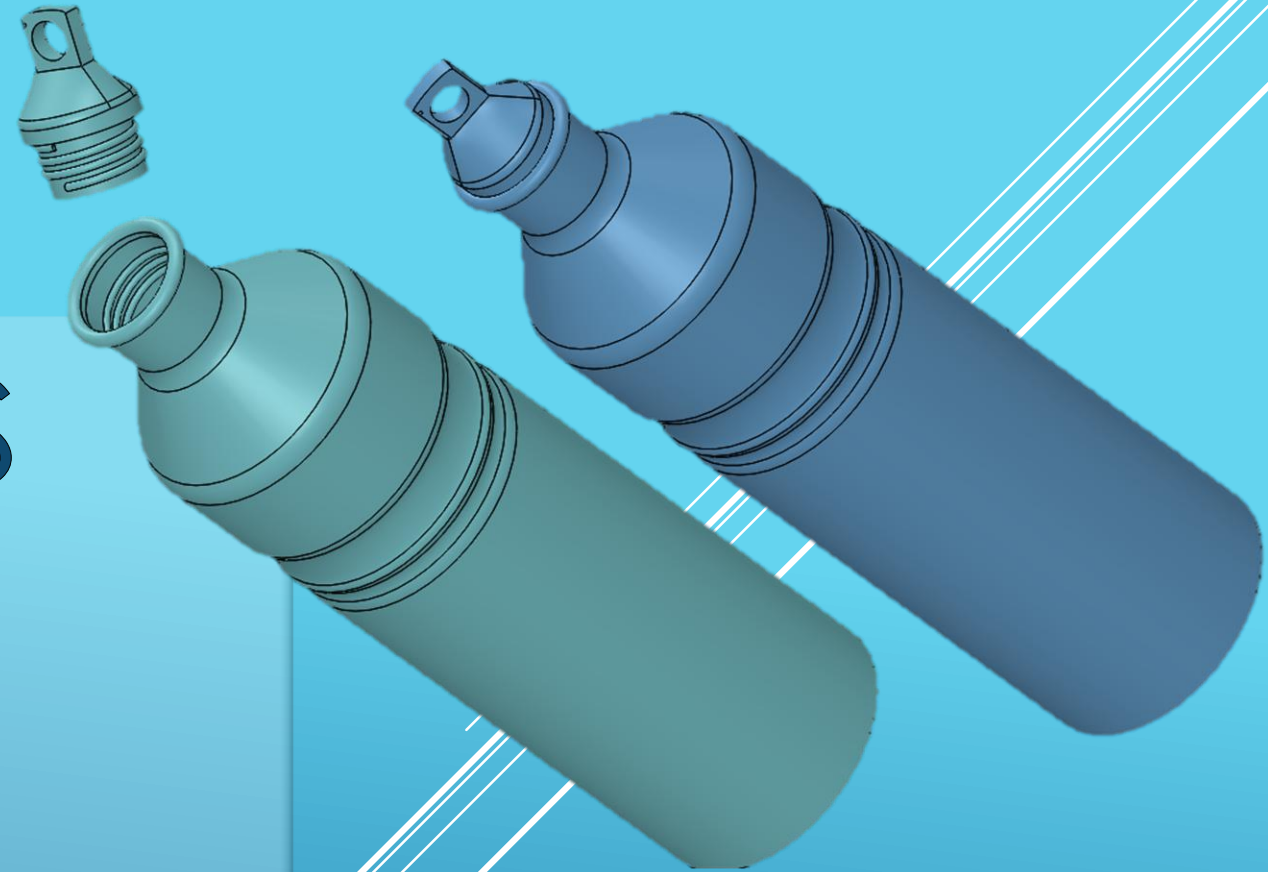




Engineers
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TERRA BOTTLES

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By: Engineers Unlimited

PREVIOUS IDEAS

- ▶ Catabuses
- ▶ Aluminum Paint
- ▶ Aluminum Siding
- ▶ Aluminum Box
- ▶ TERRA Bottles



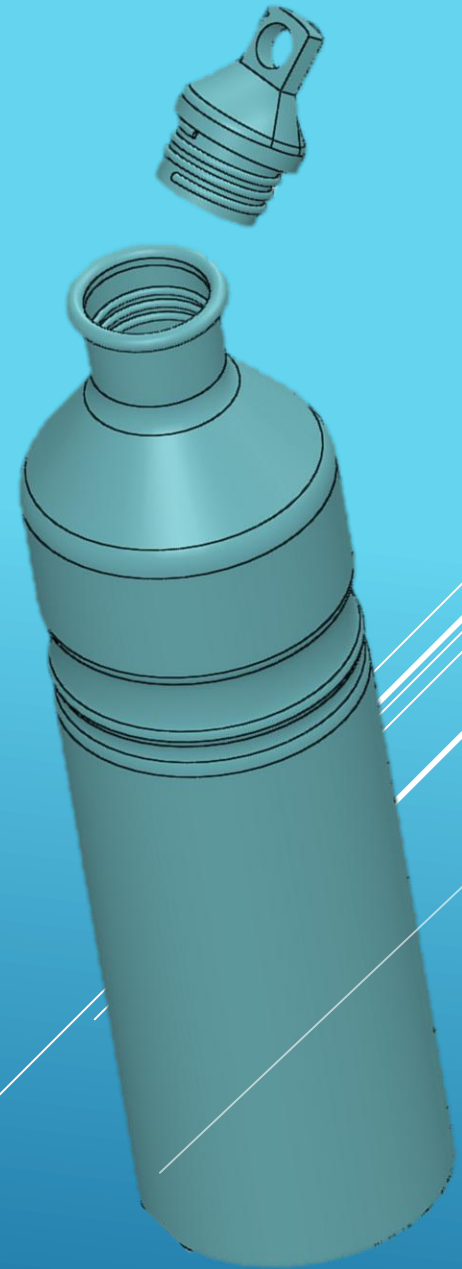
WHAT'S THE PROBLEM?



INTRODUCING: THE TERRA BOTTLE

OUR MISSION:

“To reduce waste on campus by providing students and faculty with cost effective, high quality aluminum bottles that lead to easier hydration, program incentives and, ultimately, a greener world.”



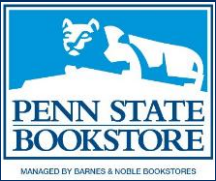
Why Aluminum?

- ▶ Requires only 5 percent as much energy to recycle vs create new
- ▶ Recycled repeatedly with little loss in quality.
 - Unlike aluminum , plastic....
 - ▶ Chemical structure alterations during the recycling process cause many plastics become different types of products
 - ▶ Not 100% recyclable
- ▶ Long-lasting

FOUR MAJOR STEPS



Purchase



Introducing



Encourage



go **GREEN!**

Collect:

- Convenient collection centers
- **Businesses = Reduced Price**
- Introduce, explain, and promote the program
- **Business Incentives**
 - After 4 years, trade in for cash
- **Discounts off original manufacturer**
- Streamline into NSO
- **Free Shipping often available**
- Sell bottles at campus "hotspots"
- **Green**
- **Custom colors and Printing**
- Deal on products every month
- Cheaper (33% returned = \$2,328)
- Sell bottles at athletic facilities & games "one get one free" at games
- **Participating vendors can include**
- **logo**
- Cheap advertising = business incentive

IMPLEMENTATION WITH 3E-COE PROGRAM:

- ▶ PSU has already proved that it is willing to take action
- ▶ Student-led initiative to stop plastic bottle waste
- ▶ Compliments our project VERY well
- Have a TERRA Bottle → reason to refill
- Refilling stations → Incentive for TERRA Bottle



BENEFITS TO STUDENTS

- ▶ Odor resistance
- ▶ Shock resistant
- ▶ Superior insulation
- ▶ Discounts at vendors
- ▶ Promotions at PSU events
- ▶ Extremely Cheap
- ▶ (especially if traded in)
- ▶ Cool design
- ▶ Shows environmental support

BENEFITS TO VENDORS

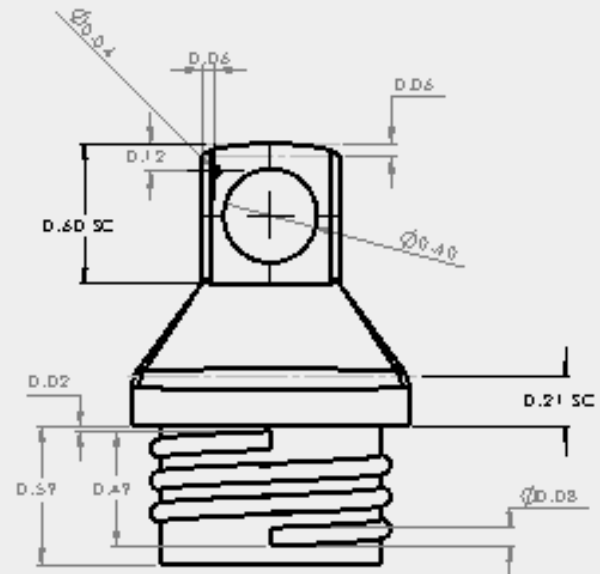
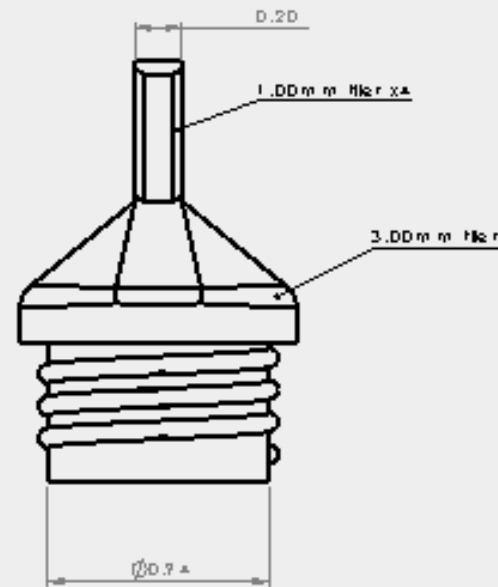
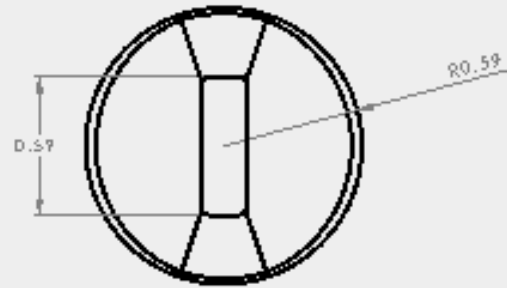
- ▶ Public relations
- ▶ Builds customer base
- ▶ Promotes high-profit products

BENEFITS TO PSU

- ▶ Public Relations
- ▶ Educates students about sustainability
- ▶ Inexpensive program

BENEFITS TO ALL: SUSTAINABLE LIVING!

BOTTLE & CAP DESIGN:

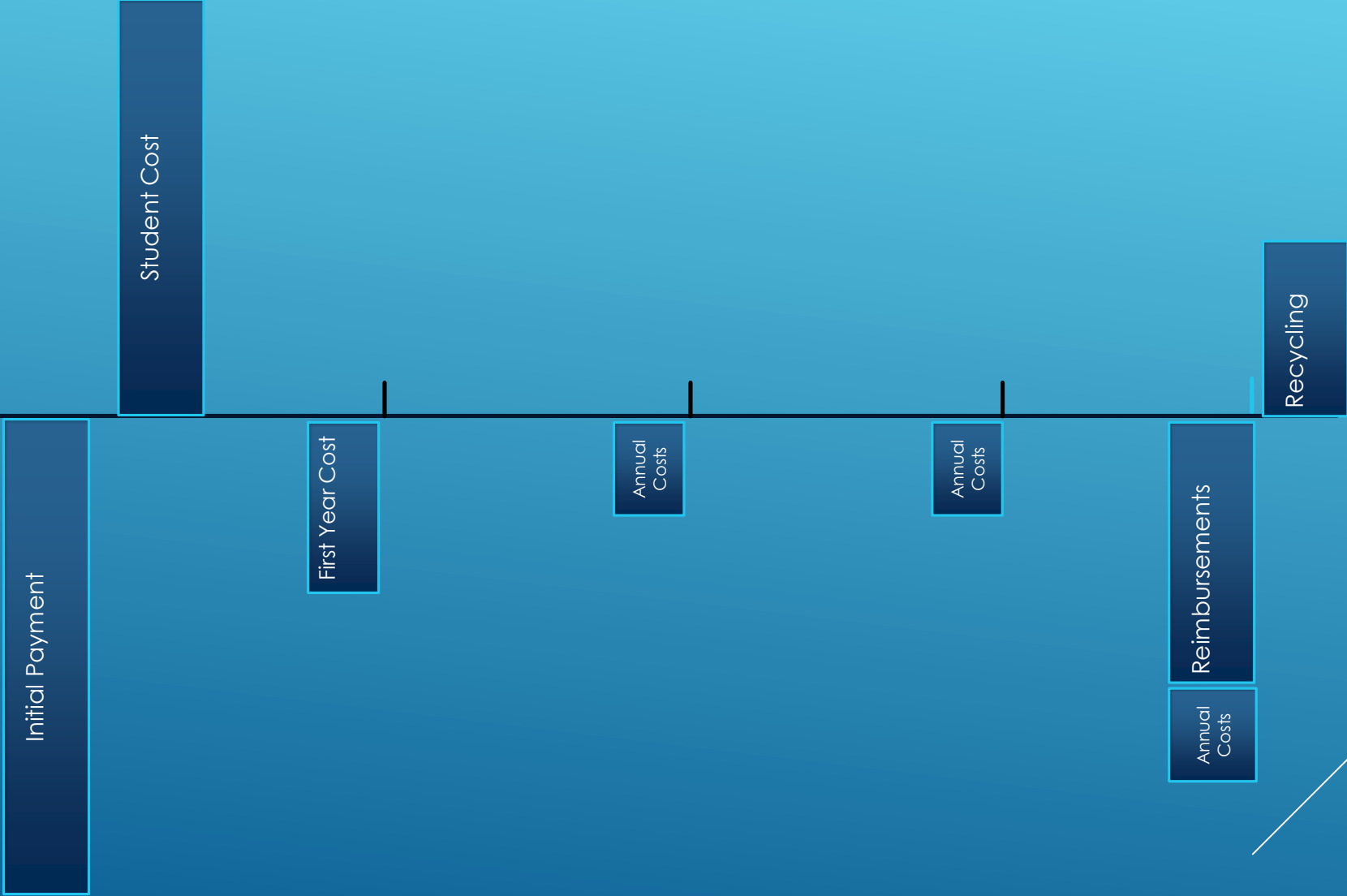


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Bottle Cap

Version:

THE STATS



THE STATS

Cost Per Bottle	\$2.75
# of bottles	9,798
Cost of Shipping	\$0.00
Total Payment	\$26,944.50

Student cost per bottle	\$2.00
# of bottles	9,798
Total Student Costs	\$19,596.00

First Year cost	\$3,500
Annual Cost	\$2,500
# of years	3
Total upkeep cost	\$11,000

# of UP Students	39,192
% of participants	25.00%
# of bottles	9,798

# returned	4899
\$ Return per bottle	\$2.00
Total Cash Back	\$9,798

# of bottles	9,798
Weight per bottle	0.4lb
Total weight	3919.2 lb
recycle \$ per lb	\$0.55
Total recycling rev.	\$2,155.56

Total Payment	\$26,944.50
Total Student Cost	(\$19,596.00)
Total upkeep	\$11,000
Total Recycling	(\$2,155.56)
Total Cash Back	\$9,798
Total Cost	\$25,990.90

Price of 1 Out-of-State student for 1 academic year **\$29,566**

CONCLUSION:

- ▶ The cost is relatively low
- ▶ Steps have already been taken (project)
- ▶ Incentives for all parties involved
- ▶ Promotes sustainable living on campus



SOURCES:

- ▶ <http://www.aluminum.org/AM/Template.cfm?Section=Home&CONTENTID=29337&TEMPLATE=/CM/ContentDisplay.cfm>
- ▶ <https://www.silkletter.com/drinkware/sports-water-bottles/aluminum/25-oz-bpa-free-aluminum-bottle.html>
- ▶ <http://www.freedrinkingwater.com/resource-siggnature-water-bottle.htm>
- ▶ <https://www.ed.psu.edu/educ/for-current-faculty-and-staff/associate-dean-undergrad/sustainability-pr>
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- ▶ <https://www.alcoa.com/usa/en/home.asp>
- ▶ <http://www.epa.gov/osw/consERVE/materials/plastics.htm>