



# Waste Diversion at the Arizona State Fair

Andrea Aguilera, Hailey  
Campbell, Jacob Cole, and  
Melissa Sikes

**ASU** School of  
**Sustainability**  
Arizona State University

**ADEQ**  
Arizona Department  
of Environmental Quality

  
**ARIZONA**  
STATE FAIR



# Addressing the Problem

The State Fair and ADEQ want to reduce cardboard, manure, food, plastic bags, and film waste at the State Fair by implementing a zero waste initiative at the fairgrounds.

We must engage the public, educate the stakeholders, and increase front-end diversion and back-end diversion methods.



# Why is waste an issue?

---



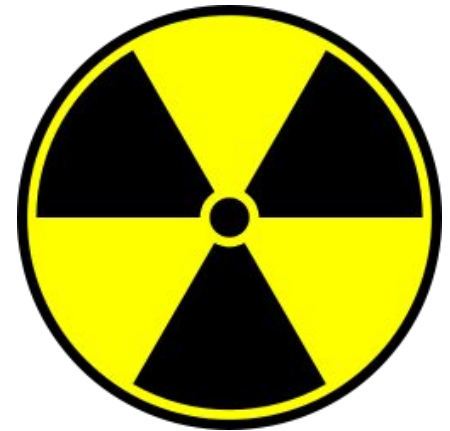
Lack of awareness  
from the city

+



Lack of awareness  
from the residents

=



High volumes of  
waste in landfills

# What is Zero Waste?

---

The practice of keeping products that could otherwise be reused, recycled, or composted out of landfills.





life

# Delaware State Fair



- Employ Americorps volunteers
- Newspaper advertisements
- Use of flyers and maps
- Increase number of recycling bins



## Results From the 2006 and 2007 Fairs

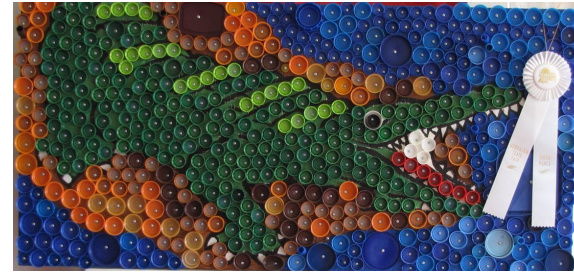
Bins	2006	2007
For collecting plastic and aluminum containers	24	30
For collecting cardboard	20	20
Material	(in Pounds)	(in Pounds)
Plastic bottles	252	535
Aluminum cans	135	423
Cardboard	6,571	6,512
<b>Total</b>	<b>6,958</b>	<b>7,470*</b>

\*DNREC attributes the overall increase in recycling between the 2006 and 2007 fairs to the use of more bins and greater participation among fairgoers.

# Nebraska State Fair



- Interactive sustainability attractions
- Food waste composting
- Recycled waste contests



# Evergreen State Fair



- Compostable food service ware
- Zero Waste Stations
- Qualco Biodigester
- High efficiency hand dryers
- Water refill stations
- Lighting upgrades
- HVAC improvements







# Getting the Public Onboard

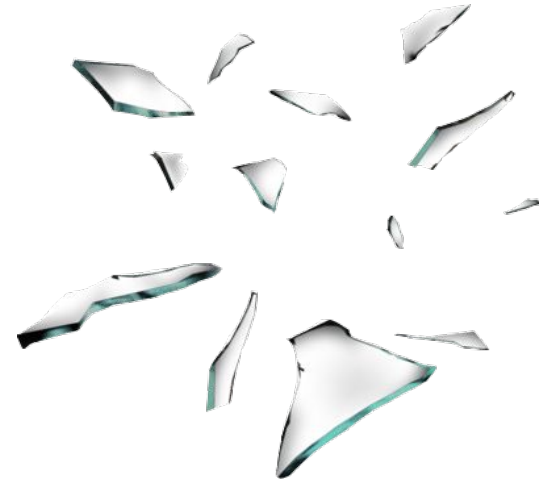
---

- Promote ‘present-for-us’ over a ‘future-for-us’
- “People evaluate environmentally relevant behaviors in terms of right and wrong”
- Introduce greener options
  - Promote the use of reusable water bottles
  - Set up water stations with compostable cups
- Encourage vendors to provide compostable food service ware
- Hire Zero Waste Educators to be present at each Zero Waste Station
- Convince behavioral changes by showing them the waste!



# Waste Audit

---



# Going Zero Waste



- WM Zero Waste bins: \$43.96 per group
- WM Dumpsters: Range from \$430 - \$490 includes drop-off and pickup
  - An extra \$55.68 for additional tonnage
- Water refilling stations through H2O LifeSource:
  - Basic refilling station - \$5,000
- Garth Britzman installation: \$12,000 - \$22,000
- Notre Dame Mission Americorps:
  - 2018: 5 volunteers; 2019: 8 volunteers
- TOMRA: reverse vending machine
  - TOMRA I RVM ~ \$3,000
- High efficiency hand dryers: \$400-\$600



TOMRA System



# Evergreen State Fair Timeline

## Year One Changes:

- 6 Zero Waste Educators
- 30 new Zero Waste Stations
- Cardboard baler
- Thirty yard compactor purchased

## Year Three Changes:

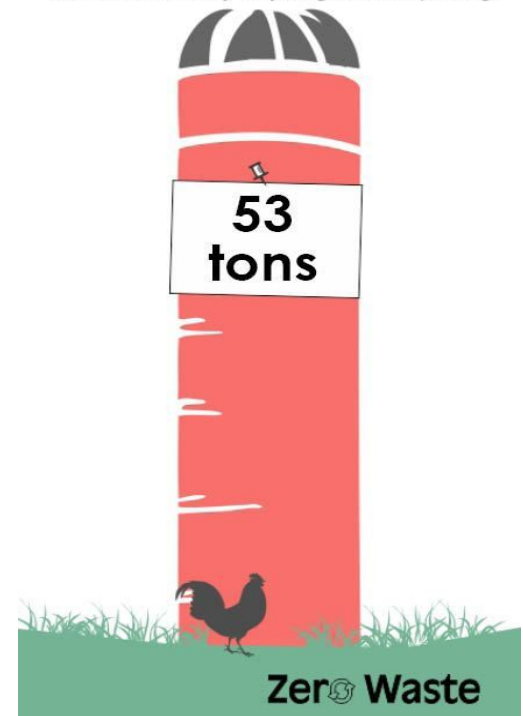
- Continue compostable packaging
- 90 Zero Waste Stations
- 30 Zero Waste Educators

## Year Two Changes:

- Require vendors to use compostable packaging
- 84 Zero Waste Stations
- 17 Zero Waste Educators
- 2 cart tippers purchased
- Water bottle refilling stations
- High efficiency hand dryers
- Solitary garbage cans eliminated
- Enhanced public engagement



How green is the Evergreen State Fair?  
The Evergreenest!  
So far, attendees have saved this much waste  
from the landfill by recycling and composting!



# Proposed Timeline

---



## Year One Changes:

- Educate vendors and public
- Determine most efficient way to hold and transport waste
- Install new Zero Waste Stations
- Train the staff to be Zero Waste Educators
- Provide information about what can be recycled/composted
- Cardboard and manure can be recycled immediately





# Proposed Timeline

---

## Year Two Changes:

- Encourage vendors to use compostable products
- Continue education of vendors and public
- Put a price on waste carried out for vendors
- Add additional waste bins for each food vendor
- Add additional Zero Waste Educator staff members
- Install water bottle refill stations
- Install high efficiency hand dryers in bathrooms
- Interactive sustainability installation
- TOMRA



## Year Three Changes:

- Request vendors to only use sustainable products
- Continue education of vendors and public
- Increase Zero Waste Stations and Zero Waste Educators

# Key Takeaways

---

- Zero Waste Educator volunteers are necessary
  - Containers must be frequent, large, and supervised
- Raise awareness before, during, and after the event
- Remember that convenience is vital
  - 1:1:1 ratio of all bins
- Allow for feedback from attendees, partners, and vendors
- Track and document progress towards Zero Waste







Questions?



# References

---

- Brosius, N., Fernandez, K., Cherrier, H. (2013). *Reacquiring Consumer Waste: Treasure in our Trash?* Journal of Public Policy and Marketing, pgs. 1-16. Retrieved from [https://research-repository.griffith.edu.au/bitstream/handle/10072/52572/84392\\_1.pdf?sequence=1](https://research-repository.griffith.edu.au/bitstream/handle/10072/52572/84392_1.pdf?sequence=1)
- Dulude, L. (2015, August 17<sup>th</sup>). *County leading by example with Zero Waste initiative at Evergreen State Fair*. Retrieved from <https://snohomishcountywa.gov/DocumentCenter/View/27044>
- Dulude, L. & Gausman, H. (2017). *Zero Waste Fairgrounds*. Retrieved from <https://snohomishcountywa.gov/3027/Zero-Waste-Fairgrounds>
- GOMN Staff (2016, September 2<sup>nd</sup>). *Just how much waste from the State Fair gets recycled and reused?* Retrieved from <https://www.gomn.com/news/just-how-much-waste-from-the-state-fair-gets-recycled-and-reused>
- Harland, P., Staats, H., Wilke, H. (1999). *Explaining Pro-environmental Intention and Behavior by Personal Norms and the Theory of Planned Behavior*. Journal of Applied Social Psychology, 1999, Volume 29(12), pg. 2505-2528. Retrieved from [https://www.researchgate.net/profile/Henk\\_Staats/publication/265140667\\_Harland\\_P\\_Staats\\_H\\_Wilke\\_HAM\\_1999\\_Explaining\\_pro-environmental\\_intention\\_and\\_behavior\\_by\\_the\\_theory\\_of\\_planned\\_behavior\\_and\\_personal\\_norms\\_Journal\\_of\\_Applied\\_Social\\_Psychology\\_29\\_2505\\_-\\_2528/links/5405a25b0cf2bba34c1d6a8d.pdf](https://www.researchgate.net/profile/Henk_Staats/publication/265140667_Harland_P_Staats_H_Wilke_HAM_1999_Explaining_pro-environmental_intention_and_behavior_by_the_theory_of_planned_behavior_and_personal_norms_Journal_of_Applied_Social_Psychology_29_2505_-_2528/links/5405a25b0cf2bba34c1d6a8d.pdf)
- Hickson, K. (2014). *Race for sustainability: energy, economy, environment and ethics*. 222-225. Retrieved from <https://ebookcentral-proquest-com.ezproxy1.lib.asu>

# References

---

Nebraska State Fair (2016). *State Fair Recycling and Environmental Sustainability Efforts*. Retrieved from

<https://www.statefair.org/p/other/state-fair-cares/459>

Rogoff, M., & Clark, B. (2013). *Solid Waste Recycling and Processing: Planning of Solid Waste Recycling Facilities and Programs*. Norwich: Elsevier Science.

US EPA Archive (2007, September). *Delaware State Fair Recycling Initiative*. Retrieved from

<https://archive.epa.gov/wastes/conserve/tools/rogo/web/pdf/delaware.pdf>

Vermeer, Dan. (2018, April 2). Personal Interview. Title: Former VP of Waste Management.

Zaman, A. (2015). *A comprehensive review of the development of zero waste management: Lessons learned and guidelines*. Journal of Cleaner Production, 91, 12-25.