



APPA Effective & Innovative Practices Award
Application for Consideration
Purdue University
Warehouse and Surplus Sustainability Programs
West Lafayette Campus, Indiana

Statement of Program / Practice and Results

The Purdue University Warehouse and Surplus (WHSE) operation has built its business model around both environmental and financial sustainability through continuous efforts to extend the useful life of University assets and divert waste from landfills. Over the past several years, this operation has reduced Purdue's environmental impact and returned funds to University departments. By continuing to focus on developing and testing new ideas with the goal of ultimately becoming a zero landfill operation, WHSE has diverted over 1,100 tons from landfills and returned approximately \$750,000 to campus departments since 2008 (not including avoided tipping fees). Additionally, \$4 million has been returned to the Aviation Technology department from the sale of 21 aircraft coordinated by WHSE.

The WHSE operation maintains three core principles:

1. Redistribute assets within the university
2. Sell assets to the public when there are no further opportunities to redistribute them within the University
3. Recycle the maximum amount of material which cannot be reused or sold

This materials management cascade of internal reuse, external reuse, and then recycling allows for the maximum value to be extracted from materials. WHSE activities support the University's Sustainability Strategic Plan and provide stewardship of resources – both environmental and fiscal.

(198 words)

Institutional Benefits

WHSE has developed a methodology that allows departments to support the 'Three Rs' (reduce, reuse, recycle) – a basic tenet of sustainability. This methodology provides departments with a user-friendly means to market their assets across other educational institutions, including state agencies, thereby reducing waste going to landfills. The efforts of WHSE are a result of a collaborative effort to implement one of the long term goals from Purdue's Sustainability Strategic Plan: to cultivate relationships between campus operational departments and academics \ research to develop solutions to operational materials efficiency and management challenges. The scope of the program was driven by input from a broad range of stakeholder groups including operations staff, faculty, senior administrators, and regional campus representatives.

The environmental benefits of this program have been significant. Since 2008, over 1,100 tons of material has been diverted from landfills by reusing or recycling the materials. Reuse extends the useful life of assets and means that the individuals who take the assets do not have to purchase new assets. Recycling ensures that the disposal of these materials will be done in an environmentally-friendly manner whereby the maximum amount of material will be recovered and used as feed stocks for new manufacturing processes. By leveraging these material flows, WHSE uses a sustainable materials management approach which is integrated and maximizes the life cycles of these materials.

In addition to the environmental benefits of this program, Purdue realizes significant economic benefits from the resale of assets and by avoided landfill tipping fees. Approximately \$250,000 per year has been returned to departments from the resale of aged assets since 2008 as a result of this program. Avoided landfill tipping fees on the material which has been resold or recycled by WHSE since 2008 amounts to approximately \$45,000.

As an extension of SecurePurdue (Purdue's information security initiative), WHSE disposes of all e-waste on campus including desktop PCs under the Recycling for the Future program. This process ensures that all electronic storage media is disposed of in a safe and secure manner. Electronic storage media of all kinds, including hard drives, is shredded in an industrial shredder, thereby maintaining the security of university data.

WHSE has set the long term goal of becoming a zero landfill operation. WHSE continues to innovate and to realize operational efficiencies in order to achieve this goal.



Program/Practice Characteristics and Qualities that Demonstrate Uniqueness or Innovation

Two aspects of WHSE's materials management approach which distinguish the overall program are the Billboard and the Recycling for the Future programs described below:

Billboard Program

The Billboard program was developed through the collaborative efforts of Material Management and Distribution (of which WHSE is a part), Printing Services, Space Management, and Internal Audit. Billboard is an in-house designed website that allows assets to be advertised for 14 days across all Purdue campuses. The condition of items is rated and posted along with asking prices. Departments can also advertise their 'wish list' for items they are currently looking for. This program is the critical user interface which provides a mechanism for Purdue assets to be repurposed by other internal departments and groups.



Recycling for the Future Program

The Recycling for the Future program provides departments with a safe and secure method of disposing of electronic storage media. The development of the Recycling for the Future methodology was a collaborative effort between Materials Management and Distribution, WHSE, and the SecurePurdue initiative. Recycling for the Future ensures that security of data on electronic devices is maintained, even after the useful life of the equipment has been reached.

Recycling for the Future offers a systematic, auditable, and reliable process for the disposal of electronic storage media containing University data. These media items are shredded with an industrial shredder at WHSE. Items that can be destroyed in this manner include hard drives, disk arrays, USB flash drives, CDs, DVDs, and other similar storage devices. In addition to increased data security, the shredding byproducts are recycled in an environmentally-friendly manner by approved contractors that handle e-waste. This process exceeds what are considered acceptable security measures and adds to the data security of the University as a whole. Recycling for the Future combines an environmentally-friendly and sustainable practice with the practical concern of data security and protection.

Prior to the implementation of this program, Purdue's Radiological and Environmental Management (REM) department paid for outside contractors to shred critical electronic storage media. Recycling for the Future provides an in-house methodology for the disposal of electronic storage media which provides maximum data security, saves money, and is environmentally responsible (see www.youtube.com/watch?v=IpfedZyrljw for more information).

How This Practice Can Be Used By Others / Portability

The Recycling for the Future program has been recognized by the Council of Supply Chain Management Professionals (CSCMP) for its ability to reduce Purdue's volume of landfill waste. The program, along with the steps WHSE has taken towards becoming a zero landfill operation, was presented at the CSCMP Annual Conference in 2011. Several universities, including other Big Ten universities, expressed interest in emulating Purdue's programs at their institutions and in significantly reducing their environmental impact as well.

Three features make Purdue's programs desirable and replicable. First, during the current period of state budget cuts and financial pressure, this program delivered sustainable, measurable progress without increasing staffing or funding. These programs enable the university to change what was once an expense to either an avoided cost or a revenue stream. The reduction in landfill tipping fees, the income generated, and the reduction in environmental impact all can be demonstrated, duplicated, and sustained.

Second, the programs' structure means schools can utilize elements that best suit their specific budgetary and operational circumstances. Individual components of our programs are readily transferable independent of one another. This allows for the potential of a phased implementation over time.

And third, Purdue's willingness to share our experience reduces the lead-time for other schools to realize tangible benefits. Our research, testing, and development of processes, tools, and equipment identify a core list of third-party certified vendors and manufactures that can assist other schools looking to mirror Purdue's programs.

Additional Exposure

As a result of implementing this innovative program, Purdue was approached by the Big Ten Network (BTN) and the local media to share our success stories with others around the country and community. The media wanted to showcase how we developed and implemented programs that generate revenue while improving the environment through landfill diversion. Once the story was shared by the media, a local firm contacted WHSE inquiring if the operation would be willing to educate and share the methodology with their staff so they could duplicate the e-waste program for the local community. Several days were spent educating this firm on the processes. As a result, they have successfully implemented a similar program for the local community. This is an excellent example of engagement, but it also demonstrates the portability of the Purdue program.



Demonstration of Management Involvement and Employee Commitment

The Vice President of Physical Facilities has been very supportive of these recycling and reuse initiatives. Since launching these programs, WHSE has received support from other key members of University leadership as they have recognized the positive impact on their own operational areas, as well as on the university as a whole. The Vice President for Information Technology and Chief Information Officer observed the efforts taken by the department to work with his staff to increase security of University data as well as the return of funds back to his own department. As a result, he committed to having all computers and equipment for disposal to be processed / dismantled by WHSE.

The WSHE staff has been encouraged to look for additional innovative ways to recycle and provide operational efficiencies. They discovered that if they cut the electrical cords off of unusable equipment, then the cords could become a sellable commodity. The WHSE staff setup multiple bins for performing preliminary sorts of all the different recyclables such as toner cartridges, copper, stainless steel, carbon steel, plastics, precious metals, TVs, batteries, motors, and pumps. Separating the recyclable materials allows the university to recover the maximum dollar return on its original investment.



The WHSE employees are continually exploring new ways to improve the program. WHSE staff, along with members of REM, recently came to an agreement with a company to purchase our non-traditionally recyclable plastics. WHSE is currently generating approximately 500 pounds per week of these plastics, which Purdue previously had no recycling outlet for so the material was going to a landfill. Once again, this not only reduces our environmental impact, but it also reduces cost to the university.

WHSE employees have not stopped there. They are currently evaluating other possibilities, such as the recycling of shrink-wrap from around the campus. They are working on a new program that will request that all University departments bag their shrink-wrap and leave it on their loading dock area. Then delivery personnel can pick up the shrink-wrap and take it to WHSE for processing.

Documentation of Results, Analysis, Customer Feedback, and Resulting Benchmarking

Before the implementation of the Billboard program the campus used a confusing process of emails to communicate items that were available for repurposing. The Billboard program has provided a clear, consistent means of communication that has resulted in significant process improvements. Since implementation, the Billboard interface has handled over 1,600 items with a value that totals thousands of dollars, with much of these funds going back to the owning departments. This program created a single source for all of Purdue's campuses to view available items, or to post items that departments are looking to obtain.

WSHE has been tracking the impact of its Recycling for the Future initiative. Not only has this program grown in terms of reducing landfill waste, it has allowed departments to recover funds that gave them the flexibility to acquire items that they would not otherwise have been able to purchase because of budget constraints.

In fiscal year 2008-2009, 300 tons of materials were diverted from landfills by WHSE, and in fiscal year 2009-2010, this grew to 361 tons. This was a 20% increase in the landfill diversion of the WHSE operation in one year. In fiscal year 2010-2011, WHSE diverted 480 tons, which demonstrates an additional 33% increase over the prior year.

Landfill Diversions Activities	2008-2009	2009-2010	2010-2011
<i>(Calculations are in <u>Tons</u>)</i>			
Resale - Surplus Store	234	300	355
Metals - Sims Recycling	66	2	4
Winski Metals	N/A	51	99
Newlon Metals	N/A	7	18
Green Boards - SIPI	N/A	1	4
Subtotal	300	361	480

The Warehouse and Surplus operation is continuously exploring opportunities to help the environment, save money for the university, and continuously gain knowledge that will assist us in better educating the university population about the sustainable management of materials on campus.