Report from the iSEE Purchasing, Waste and Recycling SWATeam

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***Summary***

***Unsatisfactory Performance of Purchasing, Waste Reduction and Recycling***

The iCAP recognizes that reducing campus purchases (especially of products with low recycled content) and decreasing landfilled waste would cut greenhouse gas emissions, improve use of land and natural resources, educate students on sustainable practices, and contribute to other environmental benefits. This SWATeam supports the goal of “zero waste”.[[1]](#footnote-1)

However, we find that the iCAP targets and strategies in this area have not been effectively implemented. On several measures of purchases and waste, the campus is performing worse than when the iCAP was adopted. On at least one measure, UIUC is far behind the sustainable purchasing practices of the State of Illinois’ Department of Central Management Services for state agencies. Despite some positive actions, there is a strong need to sharpen the targets’ terms; expand recycling and environmental preferences in purchasing; instill accountability and commitment to reducing purchases and waste; monitor and report on performance by department and building; and engage students, faculty and staff.

***Too Much Waste, Too Much Landfill, Low Recycling***

The iCAP states the targets of (1) increasing waste diversion to 75 percent by 2020, and (2) developing a long-term Zero Waste campus policy by 2011. UIUC is not on track to achieve increased waste diversion or significant Zero Waste programs; several of the iCAP strategies have been ignored; and the campus is not educated on or engaged in waste reduction and recycling.

Since adopting these targets, UIUC has increased its volumes of waste and landfill, with low rates of recycling commodities (paper, cardboard, plastics, glass, metals, etc.). Campus recycling is too narrow (excludes many plastics and all glass), with deficient availability of and signage for receptacles. Some students on the team observed that their high schools have stronger recycling programs than UIUC, and some members noted that visitors see greater commitments to recycling at other universities.

* Total waste (excluding agricultural and landscaping waste) was higher in each year from 2009 - 2014 than in the iCAP baseline year of 2008.[[2]](#footnote-2) Moreover, the amount landfilled was higher in each year from 2009 – 2014 than in 2008, and the amount of commodities recycled was lower in each year from 2010 – 2013 than in 2008 and 2009.
* The estimated aggregate waste diversion rate of 84.5% in 2011 and 2012 masks many shortcomings.
  + While diversion of agricultural and landscaping wastes is near 100%, diversion rates for other product categories are low (far less than 75%) and not rising.
  + Several studies estimate low commodity recycling rates (weight of commodities recycled divided by sum of weights of landfill plus commodities recycled) – 27.6% in 2012 campus-wide; 23.3% in 2013 from a data collection covering most campus buildings; and from 30.1% to 50.6% at four buildings in 2014.
* Campus units do not measure and report their volumes of waste and recycling. They lack incentives to reduce waste and increase recycling. Furthermore, UIUC fails to apply systems analysis to waste streams and diversion options, resulting in an inability to tie waste operations to reducing greenhouse gas emissions.

***Purchasing Fails to Apply Environmental Preferences and Standards***

UIUC has adopted largely meaningless policy statements on zero waste, recycled content of office paper, and environmentally-certified cleaning products and computers. Purchasing practices – from decentralized orders via the iBUY system to campus-wide contracts -- do not apply environmental standards; do not select vendors helping to reduce the UIUC’s environmental footprint; and do not foster accountability by campus units or provide incentives for them to promote sustainability. Purchasing staff is not engaged in improving their environmental performance or measuring their progress toward zero waste.

Some campus solicitations note UIUC’s sustainability goal and ask for information on vendors’ environmental programs. However, this factor appears to have little or no weight in purchasing decisions. For example, over 70% of purchased reams of paper have no recycled content; also, the campus has made little progress in reducing consumption of office paper. UIUC does not measure its purchases of environmentally-preferred cleaning or computer products.

**I. iCAP Targets and Strategies on Purchasing, Waste and Recycling**

A. Targets

1. Increase waste diversion to 75 percent by 2020

2. Develop a long-term Zero Waste campus policy by 2011

B. Strategies

1. Waste reduction and diversion

a. Make campus purchasing entities responsible for costs of the disposal of the products consumed

b. Develop a campus incentive for reducing trash with the possibility of charging for waste

c. Consider a campus-wide bottle or can deposit program

d. Identify opportunities for an increase in reuse and recycling of materials

e. Develop a durable goods reuse cataloguing system

f. Work for legislation to enable the resale of campus goods to the general public

2. Purchasing policy

a. Use carbon and other environmental indicators for purchasing to avoid environmentally irresponsible products and corporations. Coordinate this effort with other universities.

b. Implement full-cost accounting and life-cycle analysis structures for major purchases exceeding $25,000 by 2015

c. Set and enforce minimum recycled content standards

**II. Status of Campus Efforts on Waste and Recycling**

This section starts by reporting four sets of estimates of wastes and commodity waste diversion rates. The sources use different coverage and methodologies, but all support the findings of higher total waste and landfill compared to the baseline year of 2008, lower recycling of commodities, and low commodity waste diversion rates. The next part lists many of the recently initiated or proposed waste diversion actions, which indicate progress on reducing landfill and engaging students, faculty and staff. Importantly, in 2009 UIUC switched to a landfill which recovers part of its methane emissions for electricity generation. The concluding point addresses the financial impacts of recycling for UIUC.

Generally, the campus suffers from too little measurement, reporting, systems analysis, and accountability for wastes. Except for a recent survey of four buildings, most campus units have not participated in a waste stream characterization study, developed plans to decrease wastes and increase recycling, or conducted training and engagement efforts. Current measures of waste diverted from landfill do not reflect the streams of food waste going to composting or waste water treatment. The paucity of data also handicaps efforts to tie waste options to the broader iCAP goal of cutting greenhouse gas emissions.

1. Estimates of wastes and diversion rates, FY2008 – 2012

The following estimates are from a 2014 report that this SWATeam views as the most comprehensive and reliable data collection. See Table 1 below.

1. **Total waste** (excluding agricultural and landscaping waste, called “special recyclables”) was higher in each year from 2009 - 2012 than in the iCAP baseline year of 2008. Comparing 2008 to 2012, total waste (excluding special recyclables) rose by 429 tons or 5.6%.

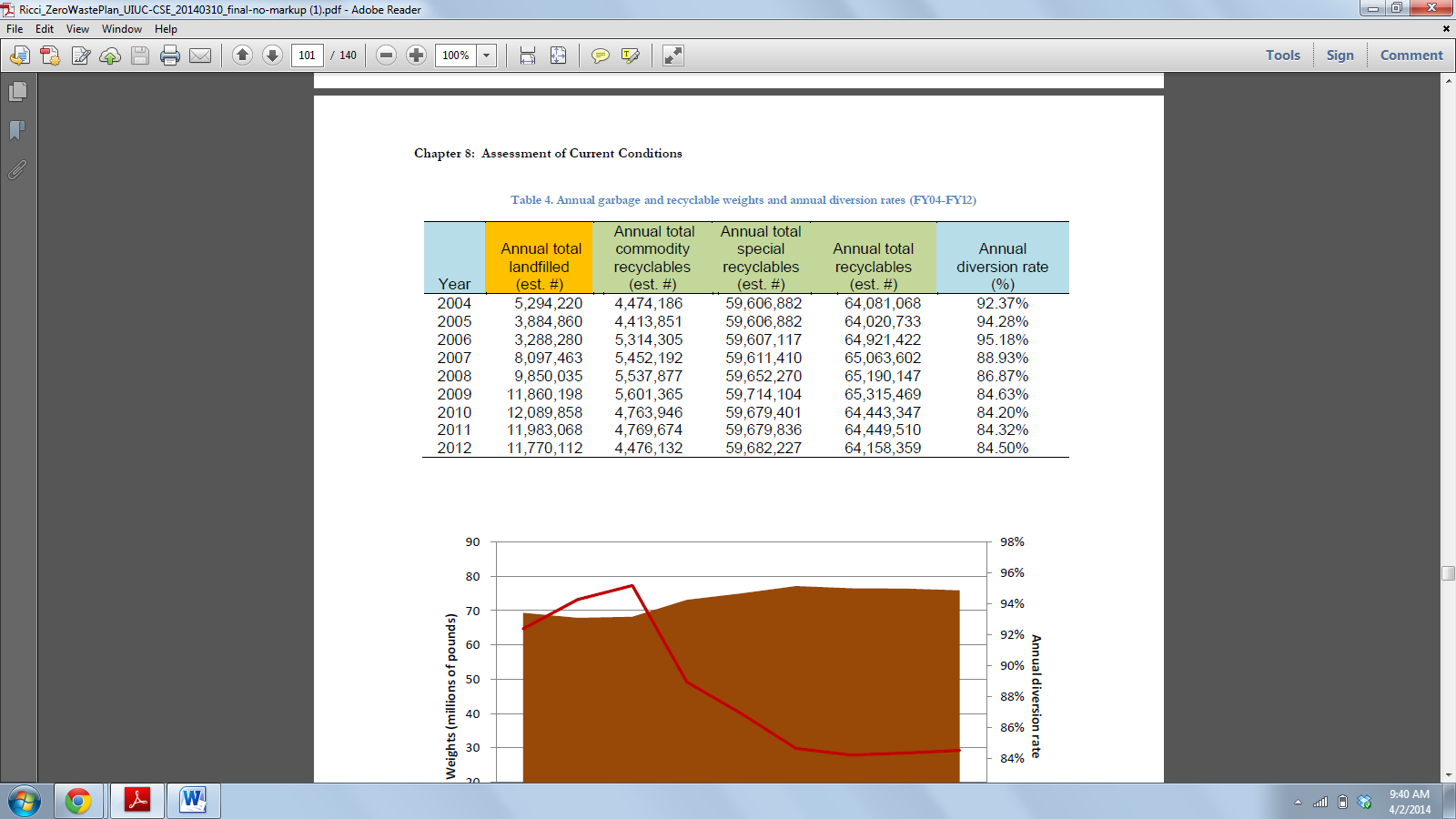
2. The amount **landfilled** was higher in each year from 2009 – 2012 than in 2008. Comparing 2008 to 2012, landfill rose by 960 tons or 19.5%.

3. The amount of **commodities recycled** (paper, cardboard, some plastics, and metal) was lower in each year from 2010 - 2012 than in 2008 and 2009. Comparing 2008 to 2012, commodities recycled declined by 531 tons or 19.2%.

4. **Aggregate waste diversion rate** (recyclables (including special recyclables) divided by sum of landfill plus recyclables) was lower in 2009 - 2012 than in 2008. This calculation is dominated by the large amount of special recyclables; manure, animal bedding and other agricultural and landscaping waste are almost 100% diverted from landfill. While this rate exceeds the iCAP target of 75%, it masks low commodity recycling and increased landfill.

5. **Commodity waste diversion rate** (commodity recyclables divided by sum of landfill plus commodity recyclables) declined from 36.0% in 2008 to 32.1% in 2009, 28.3% in 2010, 28.5% in 2011, and 27.6% in 2012. Comparing 2008 to 2012, the commodity recycling rate fell 8.4 percentage points.

Table 1 Estimated Aggregate Annual Diversion Rate

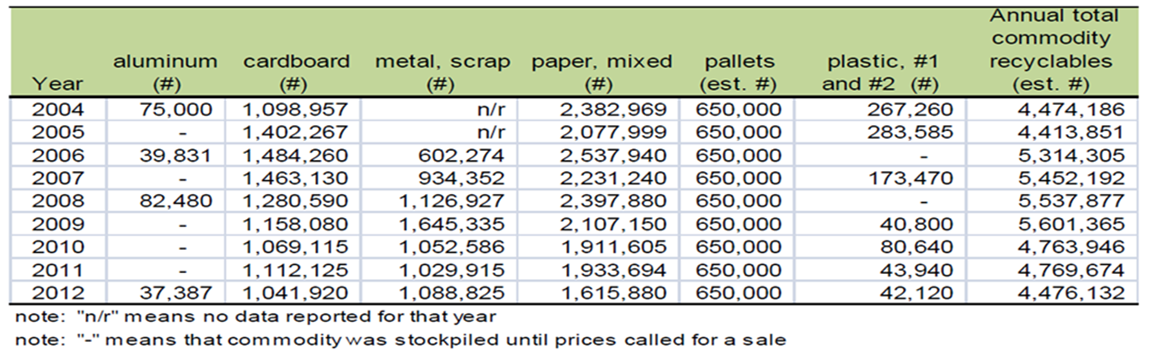


(data compiled in special report submitted to F&S in 2014; units in pounds; estimates of commodity recyclables reflect sales in a year, with some recyclables withheld from sale in some years because of unattractive prices; special recyclables are from agriculture and landscaping)

Source: M. Ricci, “Zero Waste Planning at the University of Illinois at Urbana-Champaign” at 94 (2014)

6. The amounts of **commodity waste recycled by category** in Table 2 show lower recycling in 2012 than in 2008 for all categories, except for plastic which was stockpiled in 2008 for later sale.

Table 2 Estimated Annual Recycling by Commodity Waste Category

 Source: Ricci, supra, at 86.

1. Estimates of wastes and commodity waste diversion rate, FY2013 - 14

Another data collection, covering many but not all UIUC buildings and possibly using different analysis than the Ricci report,[[3]](#footnote-3) provides more recent estimates of waste diversion rates. For FY2013, the landfilled amount was 14,015,760 pounds and the recycled commodities amount was 4,247,940. The commodity waste diversion rate was 23.3%. Compared to the estimates for 2012 in the Ricci study, the 2013 figures show a lower commodity diversion rate (along with more landfill and less commodity recycling).

In data used to report in the American College & University President’s Climate Commitment (“ACUPCC”, covering fewer sources than the Ricci report), tons of landfilled waste rose by 0.9% from 2012 to 2013 (to 21% above the 2008 baseline) and then declined by 5.6% from 2013 to 2014 (to 14% above the 2008 baseline).

1. Estimates of commodity waste diversion rates from four buildings, 2014

A 2014 waste stream characterization study of four office buildings on campus shows the following estimates of commodity waste diversion rates: Alice Campbell Alumni Center 50.6%; Henry Administration Building 48.0%; Illini Union Bookstore 42.8%; and Swanlund Administration Building 30.1%.[[4]](#footnote-4)

D. Recently initiated or proposed landfill and waste diversion actions

1. Methane recovery by landfill – In 2009, UIUC switched from sending its landfill waste to a site in Clinton (which did not recover methane emissions) to a site in Danville (which does recover methane emissions for electricity generation). In reporting to ACUPCC, UIUC stated that this change yielded a substantial benefit in greenhouse gas emissions from the landfilled waste – going from 14,697 metric tons of carbon dioxide equivalent emissions in 2008 to a negative (saving of) 172 tons of carbon dioxide equivalent emissions in 2009. In 2014, UIUC estimated that recovering and generating electricity using methane from its landfilled waste saved about 163 metric tons of carbon dioxide. This analysis excludes emissions from garbage trucks collecting waste on campus and transporting it to the landfill.

The UIUC’s report may assume that 100 percent of the methane emissions from its landfilled waste is recovered by the Danville site. If so, this assumption would likely overstate the reduction in greenhouse gases by 10 to 40 percent (for 2014, from 1,681 to 6,727 metric tons of carbon dioxide equivalent emissions). According to the U.S. EPA, a landfill gas recovery energy project captures “roughly 60 to 90 percent of the methane emitted from the landfill, depending on system design and effectiveness.”[[5]](#footnote-5) Also, carbon dioxide is emitted from electricity generation using landfill gas.[[6]](#footnote-6)

2. Food waste - Three dining halls installed EnviroPures Aerobic Digesters in March 2013; equipment grinds solid food waste into liquid waste which is washed down kitchen drains. Expected to divert nearly 7 tons of waste weekly from landfills (reducing by about 4 percent amount of landfill, and increasing by about 3 percent diversion rate for non-agricultural and non-landscaping waste). Evaluation of digesters in context of iCAP requires systems approach, including effects on water usage and energy used to pump and treat liquid waste. The analysis of waste diversion does not cover the conversion of food waste into waste water; nor does it reflect the greenhouse gas emissions associated with processing food waste into waste water, and then transporting and treating the waste water.

In addition, university dining halls send some food waste to the Sustainable Student Farm for vermicomposting. Again, the analysis of waste diversion does not cover this diversion of food waste from landfill or the impacts on greenhouse gas emissions.

3. Repurposing coffee grounds from university dining halls

4. RecycleMania – participation in intercollegiate competition

a. Game Day event 2/26/14 (diversion rate of 31.5%)

b. e-Waste collection event 3/18/14 (13,870 pounds)

5. ChemCycle – program to facilitate reuse of laboratory chemicals in the Chemistry Department; database updated daily for redistribution of pre-owned, excess chemicals across labs

6. Program for students to reuse furniture, furnishings and equipment from move-out and move-in periods (Dump and Run)

7. Recycling on the Quad - adding recycling bins on the Quad and creating dual-bin stations

8. Working with waste sorting facility for increased separation of recyclables

9. Tomato processing at the Student Sustainable Farm using environmentally-friendly packaging

10. Game Day Recycling Challenge – participating in national challenge to divert material from landfill during October 26, 2014 homecoming game

11. Nitrile Glove Recycling – implementing a glove recycling program in labs and university dining halls

E. Financial Impacts of Recycling for UIUC

Recycling earns revenues for UIUC and avoids tipping fees applied to waste going to landfills

1. Estimate of recycling revenues in 2013: $462,000
2. Estimate of costs for handling waste in 2013: $1.1 million
3. In 2010, recycling avoided $228,440 in tipping fees and yielded $347,818 in revenues

This team was told that F&S determined that recycling glass and plastics types 3-7 would not be cost-effective. We believe that UIUC should re-visit this decision. The earlier analysis may have missed the financial benefit of avoided tipping fees, as well as the potential contribution to the iCAP’s goals of reduced emissions and other environmental impacts. Even if recycling these commodities causes a net financial loss, the team encourages such recycling because it would educate and engage students, faculty and staff, as well as mirror practices in many other universities, high schools, communities and sites.

**III. Status of Campus Efforts on Purchasing**

UIUC’s purchasing demonstrates a gap between policy statements and practices. Consequently, purchasing lags in contributing to reducing waste, landfill and greenhouse gas emissions.

This team believes that Zero Waste purchasing practices at UIUC could have a substantial impact on greenhouse gas emissions, far exceeding the accounting that has been applied for iCAP purposes. Current reporting excludes emissions from most suppliers of products and services used by UIUC. Cutting the UIUC’s consumption of products and services would reduce emissions from collecting and transporting natural resources (wood, minerals, water, etc.), manufacturing and transporting products, and disposing of used goods. Also, sustainable purchasing practices could educate students and the community on the process and benefits of applying environmental preferences.

This team has been unable to obtain much information about how campus units apply (or don’t apply) environmental policy statements in selecting vendors and products, in contracts or through the iBUY system used in purchases. We understand that purchasing is decentralized, purchases are not monitored and evaluated in terms of goals for waste and recycling, and staff is not trained or given incentives to guide purchases toward zero waste practices. Moreover, UIUC does not attempt to measure or reduce the emissions of its supply chain, and does not apply full-cost accounting and life-cycle analysis in evaluating products and services. We have found only a few data points to characterize purchases.

Some campus efforts have gone into advancing sustainable purchasing policy statements. The UIUC Policy Statement on Recycling, Purchase of Recycled Products, and Waste Reduction was revised in August 2011 (originally adopted in May 1990). Also, the STARS report submitted to AASHE by UIUC on July 31, 2013 shows that the campus earned full STARS points (0.5 each) for having purchasing policies stating preferences for recycled content office paper, Green Seal or EcoLabel certified cleaning products, and EPEAT Silver or higher computers and monitors.

However, this STARS report shows that the campus earned no or low STARS points for actual implementation of these purchasing policies. For the metric of purchasing office paper with recycled content, UIUC earned only 0.21 out of 1.50 possible STARS points. Out of $611,000 in expenditures on office paper in FY2013, 2% had recycled content of 90-100%; 4% had recycled content of 50-69%; 23% had recycled content of 30-49%; and 71% had recycled content less than 10%.For the metric of purchasing certified cleaning products, UIUC did not report any measures and earned zero out of 1.50 possible STARS points. Similarly, for the metric of purchasing EPEAT computers and monitors, UIUC did not report any measures and earned zero out of 1.50 possible STARS points.

The campus has failed to implement the iCAP strategy of setting and enforcing minimum recycled content standards. More generally, the iCAP strategy of using carbon and other environmental indicators in purchasing has been dormant.

Aside from the low recycled content in purchases of office paper, it is disturbing that the campus is making little progress in reducing its consumption of office paper. Purchases of office paper were 164,822 reams in FY2011, 164,305 reams in FY2012 (only 0.3% less than the prior year), and 159,485 reams in FY2013 (only 2.9% less than the prior year). Progress in reducing purchases of such products depends on making campus units accountable for their orders with regard to zero waste goals, not just responsible for paying the vendor. There is no evidence of implementing the iCAP strategy of full-cost accounting and life-cycle analysis for major purchases in excess of $25,000. Additionally, reducing consumption requires engaging campus units in developing and implementing initiatives, which has not been pursued.

In contrast, the State of Illinois’ Department of Central Management Services (CMS) reports annually on recycling and recycled paper procurement initiatives within State agencies.[[7]](#footnote-7) In April 2013, the Governor’s Green Council Committee along with the CMS Bureau of Strategic Sourcing launched a “Buy Recycled Paper Challenge” to all State agencies, citing many benefits to the environment and community recycling efforts. The report submitted in November 2013 shows that office paper and envelopes purchased by the CMS Printing Unit for State agencies contained in aggregate 41.7% recycled content. CMS also described several initiatives to reduce State agencies’ paper consumption.

Finally, we have seen examples of sustainability clauses in solicitations to vendors by the Illinois Public Higher Education Cooperative, an organization formed to consolidate requirements for several state universities (including UIUC). These provisions note that the member institutions may have sustainable purchasing policies and request that prospective vendors submit their companies’ sustainability plans, including any achievements under green/sustainability certification programs such as the EPA’s Energy Star or Green Seal. Unfortunately, such clauses are weak: they do not award explicit environmental preferences to vendors and products (such as specific environmental performance measures account for 10% of the total evaluation points); they do not request measures of emissions or other environmental impacts for the specific product or service to be purchased; and they do not require vendors to report on and decrease the environmental impacts of the products and services sold to UIUC during a multiyear contract.

UIUC should expand its purchases under those State of Illinois master contracts for state agencies which reflect strong sustainability provisions. Furthermore, UIUC should apply sustainable purchasing tools developed and made available by federal agencies and other organizations, such as the Green Procurement Compilation in the U.S. General Services Administration’s Sustainable Facilities Tool.

**IV. Areas for Further Analysis and Work**

A. Waste diversion

1. Develop targets and strategies by commodity category for diversion of waste

*Example of possible targets reflecting categories of waste [subject to further review]*

* *By July 31, 2020, reuse, recycle or compost 75 percent of ongoing consumables, 75 percent of durable goods, and 75 percent of construction/demolition debris.*
* *By July 31, 2020 divert 90 percent of all waste from landfill including yard and agricultural waste*
* *By July 31, 2025, reuse, recycle or compost 90 percent of all ongoing consumables, durable goods, and construction/demolition debris*

2. Recycling

a. Expand number and locations of recycling bins; pair with trash bins; remove some trash bins

b. Expand recycled commodities to include plastics types 3-7 and glass

c. More uniform signage for recycling and trash bins

d. Measurements and incentive programs for recycling by campus units, such as for specific buildings and departments including Auxiliaries

e. Communications and programs on recycling for students, staff and faculty (such as more zero-waste sports and cultural events)

f. Increased sorting of combined waste at waste sorting station (financial incentives)

g. Develop innovative recycling programs

3. Make campus purchasing entities responsible for costs of the disposal of the products consumed

4. Develop campus incentives for reducing trash

a. Incentives for specific buildings to reduce waste (like Energy Conservation Incentive Program)

b. Possibility of charging campus units for waste by volume/tonnage (expanding current practices applied to Auxiliaries such as Housing and Division of Intercollegiate Athletics)

5. Reuse of materials

a. Durable use cataloguing system (such as for available furniture on campus); possible involvement of students through courses. Widen and encourage use by all departments.

b. Support legislation enabling resale of campus goods to general public

B. Purchasing policy

1. Use carbon footprint and other environmental indicators for purchasing

a. Review possible application of sustainable purchasing tools developed by the U.S. General Services Administration and other organizations

b. Select and apply purchasing standards, including minimum recycled content, for various products

c. Utilize State of Illinois purchasing contracts with environmental preferences

d. Coordinate Zero Waste purchasing with other U of I campuses

e. Pursue opportunities to engage major vendors on strategies to reduce waste and emissions

2. Implement full-cost accounting and life-cycle analysis structures for major purchases exceeding $25,000

1. We use the Zero Waste International Alliance’s definition: “Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.” [↑](#footnote-ref-1)
2. Based on one study released in 2014 that attempted to apply a consistent, comprehensive methodology to buildings covered, measurement of waste streams, etc. M. Ricci, “Zero Waste Planning at the University of Illinois at Urbana-Champaign” at 94 (2014). The UIUC population of full-time students, faculty and staff rose from 53,436 in 2008 to 55,917 in 2014, an increase of 4.6%. [↑](#footnote-ref-2)
3. These data do not include materials from the Illini Union, several buildings run by the Division of Intercollegiate Athletics, the iHotel, or many Auxiliary units. Source: Tracy Osby, Coordinator of Waste Management & Recycling. Estimates from this source for FY2014 show the landfilled amount was 8,934,700 pounds and the recycled commodities amount was 1,917,240. The commodity diversion rate was 17.7%. The sharp drop in the 2014 estimates from the range of the 2012 and 2013 estimates suggests the need for further analysis of the 2014 figures. [↑](#footnote-ref-3)
4. Illinois Sustainable Technology Center, “Baseline Waste Stream Characterization Study” (2014). [↑](#footnote-ref-4)
5. U.S. EPA, “Landfill Methane Outreach Program, Basic Information – It directly reduces greenhouse gas emissions” <http://www.epa.gov/methane/lmop/basic-info/index.html>. [↑](#footnote-ref-5)
6. Id. [↑](#footnote-ref-6)
7. CMS, “Recycling & Recycled Paper Procurement Update” (Nov. 14, 2013). [↑](#footnote-ref-7)