

PILOT PROPOSAL

University Hall Office Recycling Program

I. OVERVIEW

This document serves as a proposal to pilot a new office recycling program in University Hall, which was built to LEED Silver standards and is currently in the process of certification. With 240 employees expected to move in to University Hall in summer 2015, we have the unique opportunity of utilizing a sustainably-designed space to create an environment in which sustainable behavior is encouraged and expected. By engaging employees with their surroundings and educating them on best recycling practices, the goal is to shift sustainability from static concepts to active behavior, both on campus and at home.

II. INTRODUCTION AND RATIONALE

Nationally

Recycling adds significant value to the nation's economy as a whole, and there are numerous opportunities to add economic and environmental value by increasing the quantity and quality of material collected for re-use. Given the hard work of recycling advocates, national recycling rates have increased to 34% for municipal waste¹. Recycling has produced substantial benefits already, and by increasing or improving recycling opportunities in sectors where it is under- or inefficiently utilized would produce still further benefits.

- At the current annual national recycling rate in the U.S.:
 - Carbon dioxide equivalent emissions are reduced by more than 168 million metric tons, which is comparable to the annual emissions from over 33 million passenger vehicles.
 - Recycling and composting almost 87 million tons of material solid waste saves more than 1.1 quadrillion Btu of energy, which is equivalent to the energy consumed by almost 10 million U.S. households in a year.
 - Increased recycling could help save the estimated \$11.4 billion worth of packaging that is currently being discarded.²
- Recycling reduces the need for landfills by extending the life of current landfills, saving money for municipalities, businesses, and consumers. In 2013, 14 states calculated total savings of over \$2 billion in landfill cost avoided by diverting waste to recycling.³
- Recycling supports more than 450,000 jobs with over \$87 billion in revenues.⁴
- A study found that in ME, MA, NY, PA, and DE, there were 11,378 recycling and reuse establishments, employing 104,885 people with an annual payroll of nearly \$4.2 billion.⁵

¹ Schantz, W.P. and Ballard, D. (April 2015) Research to Inform Improved Recycling in the Workplace. Recycling at Work. Retrieved from http://www.kab.org/site/DocServer/KAB_Recycling_Work_Research_April2015.pdf

² As You Sow, (2012) Unfinished Business: The Case for Extended Producer Responsibility for Post-Consumer Packaging. Retrieved from: http://www.asyousow.org/ays_report/unfinished-business-the-case-for-extended-producer-responsibility-for-post-consumer-packaging/

³ Schantz, W.P. and Ballard, D. (April 2015) Research to Inform Improved Recycling in the Workplace. Recycling at Work. Retrieved from http://www.kab.org/site/DocServer/KAB_Recycling_Work_Research_April2015.pdf

⁴ Institute of Scrap Recycling Industries, Inc. (2013) "Economic Impact Study: U.S.-Based Scrap Recycling Industry." Retrieved from: <http://www.isri.org/recycling-industry/jobs-in-the-u-s-scrap-recycling-industry/job-study-analysis>

⁵ DSM Environmental, (2009) "Recycling Economic Information Study Update: Delaware, Maine, Massachusetts, New York, and Pennsylvania," Northeast Recycling Council. Retrieved from: https://nerc.org/documents/recycling_economic_information_study_update_2009.pdf

Coalition of Urban Serving Universities (USU)

The Coalition of USU, of which IUPUI is a member, has active participation in recycling initiatives across the university membership. **Table 1** provides a sampling of the recycle rates at our sister urban serving universities, as well as the stated goals towards which select universities are striving.

University	Recycle Rate	Additional Goals
University of Cincinnati	65% ⁶	
Boise State University	61%	
Ohio State University	47% ⁷	OSU is striving to divert 90% of the university's materials from landfill by 2030
University of Illinois – Chicago	46% (2012 rate) ⁸	
Arizona State University	27%	Arizona State University is committed to achieving zero solid waste across all campus locations by the end of 2015.
University of Central Florida	25% ⁹	The State of Florida has mandated that all government and state buildings maintain a 30% recycling rate; UCF has reached that mark several months
Florida International University	25-30% ¹⁰	
University at Albany	18% ¹¹	

Table 1: A small sample of USU universities across the country, their recycle rates, and stated goals.

⁶ http://www.uc.edu/af/pdc/sustainability/campus_initiatives/recycling_and_waste.html

⁷ <http://footprint.osu.edu/recycling/>

⁸ <http://sustainability.uic.edu/campus-resources/recycling-waste-minimization/>

⁹ <http://www.recycling.ucf.edu>

¹⁰ <http://gogreen.fiu.edu/topics/recycling/index.html>

¹¹ http://www.albany.edu/gogreen/4.recycling_and_waste_reduction.shtml

IUPUI

At the beginning of 2013, IUPUI converted to single-stream recycling. Since that time, the recycling rate has struggled to take off, failing to reach a rate of even 15%. **(Table 2)** The amount of waste created on campus provides us with an incredible financial and environmental opportunity to explore creative solutions in our waste management practices, as well as develop sustainability-conscious behaviors in university employees.

2015					
Month	Recycle Tonnage	Waste Tonnage	Total Tonnage	Recycle Percentage	Recycle Rebate
January	17.39	380.60	397.99	4.37%	\$277.44
February	17.08	323.09	340.17	5.02%	\$237.09
March	46.67	349.77	396.44	11.77%	\$751.38
April	44.05	297.63	341.68	12.89%	\$674.73
2014					
Month	Recycle Tonnage	Waste Tonnage	Total Tonnage	Recycle Percentage	Recycle Rebate
January	31.57	277.46	309.03	10.22%	\$633.36
February	36.01	317.42	353.43	10.19%	\$737.52
March	38.29	352.76	391.05	9.79%	\$765.36
April	46.22	335.96	382.18	12.09%	\$940.32
May	30.02	326.10	356.12	8.43%	\$442.80
June	38.09	314.89	352.98	10.79%	\$848.88
July	34.38	311.38	345.76	9.94%	\$577.20
August	32.32	343.64	375.96	8.60%	\$357.36
September	30.75	362.65	393.40	7.82%	\$468.24
October	21.19	357.27	378.46	5.60%	\$431.52
November	30.62	310.66	341.28	8.97%	\$339.60
December	54.53	333.04	387.57	14.07%	\$332.88
2013					
Month	Recycle Tonnage	Waste Tonnage	Total Tonnage	Recycle Percentage	Recycle Rebate
January	35.28	300.50	335.78	10.51%	\$912.30
February	38.66	309.42	348.08	11.11%	\$747.60
March	38.94	349.74	388.68	10.02%	\$794.16
April	50.85	380.61	431.46	11.79%	\$1,081.86
May	42.88	335.20	378.08	11.34%	\$873.18
June	31.79	314.03	345.82	9.19%	\$649.20
July	50.45	338.36	388.81	12.98%	\$954.72
August	51.28	368.02	419.30	12.23%	\$1,193.04
September	49.84	315.36	365.20	13.65%	\$959.04
October	69.71	322.63	392.34	17.77%	\$1,207.68
November	51.79	358.00	409.79	12.64%	\$920.16
December	28.19	294.32	322.51	8.74%	\$664.80

Table 2: Monthly breakdown of recycle and waste tonnage, recycle rates, and the rebates received from recycling since the implementation of single stream at IUPUI in 2013.

In April 2015, the Office of Sustainability conducted “Dumpster Dives” for multiple buildings across campus and assessed the pounds of recyclable materials found in the waste bins. This dumpster dive revealed a disturbing trend at IUPUI – nearly 60% of the material thrown in the waste bin could have been recycled. (**Table 4**)

Location	Gross Waste (lbs)	Recyclable Weight (lbs)	% Recyclable
Cavanaugh Hall	198	134	67.68%
University Library	239	97	40.59%
Business/SPEA	126	103	81.75%
Education & Social Work	178	86	48.31%
Taylor Hall	67	44	65.67%
ALL LOCATIONS	808	464	57.43%

Table 4: Breakdown of the results of the April 2015 “Dumpster Dive” by building. The Recyclable Weight column indicates the weight of the total waste that could have been recycled.

Another “Dumpster Dive” was conducted in Fall 2013 with similar results – approximately 65% of the material thrown in the waste bin could have been recycled. (**Table 5**) This “Dumpster Dive” focused on weight of individual recyclable materials rather than building location.

Gross Waste	Bottles/cans	Fiber	Metals	Recyclable Weight	% Recyclable
1400	575	305	35	915	65%

Table 5: Breakdown of the results of the Fall 2013 “Dumpster Dive” by material. All values are in pounds unless otherwise marked.

With nearly 60% of our recyclables – and the associated rebate – being lost to waste, it is apparent that a change in recycling efforts is warranted.

III. REVIEW OF RELATED WORK

Several studies have been conducted assessing the efficacy of waste and recycle bin placement, size, and design.

Humphrey, Bord, Hammond, & Mann (1977)¹²

The authors found office workers much more receptive to an office paper recycling program when bins were located desk-side, rather than only in central areas. Furthermore, this research found that the accuracy of sorting recyclables was significantly higher for desk-side bin conditions over the central bin condition.

Brothers, Krantz, and McClannahan (1994)¹³

In their 1994 study, the authors compared a central office recycle bin versus desk-side recycle bins. While only 28% of paper was recycled in the central recycle bin condition, 85% to 94% of all recyclable paper was recycled in the desk-side condition. Follow-up assessments, conducted one, two, three, and seven months after the change to desk-side bins, demonstrated that 84%-98% of paper continued to be recycled in the desk-side set-up. **(Figure 1)**

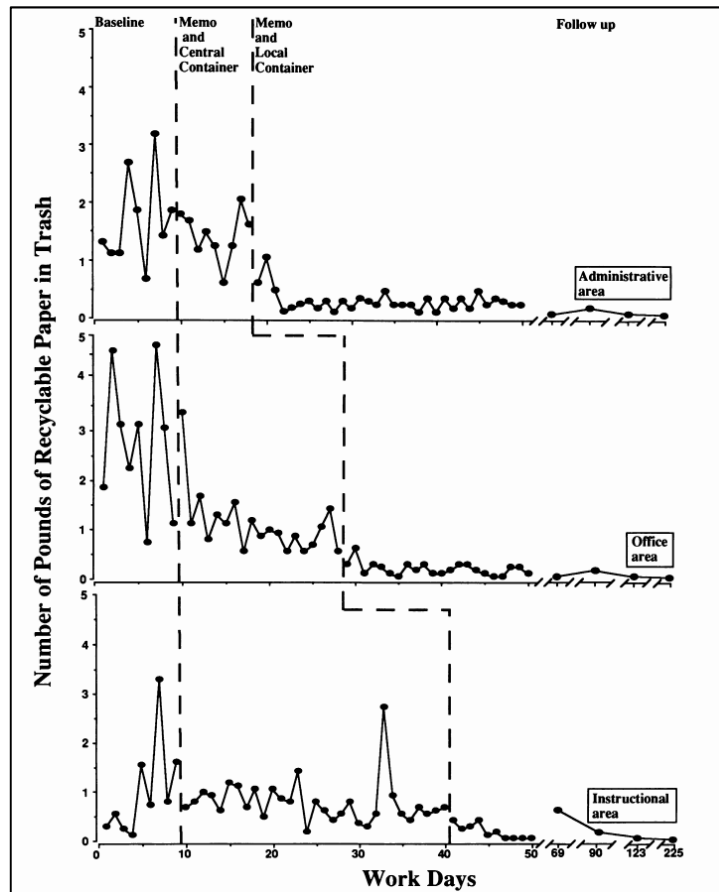


Figure 1: Pounds of recyclable paper in the trash over the course of four implementation phases: (1) baseline, (2) central recycle bin, (3) desk-side recycle bin, and (4) follow up

¹² Humphrey, C.R., Bord, R.J., Hammond, M.M., & Mann, S.H. (1977) Attitudes and Conditions for Cooperation in a Paper Recycling Program Environment and Behavior 9(1): 107-124.

¹³ Brothers, K.J., Krantz, P.J., & McClannahan, L.E. (1994) Office Paper Recycling: A Function of Container Proximity Journal of Applied Behavior Analysis 27: 153-160.

Schantz and Ballard (2015)¹⁴

In a very recent study, the authors assigned offices to one of three conditions: (1) trash and recycle bins of equal size, (2) recycle bin only, and (3) “little trash” – a regularly-sized recycle bin with a smaller trash bin hooked to the side (**Figure 2**). All conditions received an informational flyer on ten items the research team believed were commonly found in an office; five recyclable items (office paper, aluminum beverage cans, plastic beverage bottles, frozen dinner boxes, and soup cans) and five trash items (paper towels, food scraps, plastic eating utensils, used paper plates, and bubble wrap). The recycling bins were clearly marked with a recycle sign that displayed three common recyclable items – an aluminum can, plastic beverage bottle, and office paper. Monthly waste audits were conducted, daily volumes were assessed, and participants were surveyed pre and post-project.



Figure 2: Set up of the “Little Trash” condition. Recycle bins are lined; “little trash” bin is not.

¹⁴ Schantz, W.P. and Ballard, D. (April 2015) Research to Inform Improved Recycling in the Workplace. Recycling at Work. Retrieved from http://www.kab.org/site/DocServer/KAB_Recycling_Work_Research_April2015.pdf

The “Little Trash” condition had statistically significant, desirable changes in almost all survey measures (knowledge, attitude, self-reported behavior, and perceived difficulty), it increased correct disposal of recyclables as demonstrated by the waste audits (more in the recycling bins and less in the trash), decreased the trash in the recycling, and participants reported a positive experience. Overall, “Little Trash” was the ideal condition, showing a wide range of desirable changes that were statistically significant, meaning they can be attributed to the project, not random chance. (Figure 3)

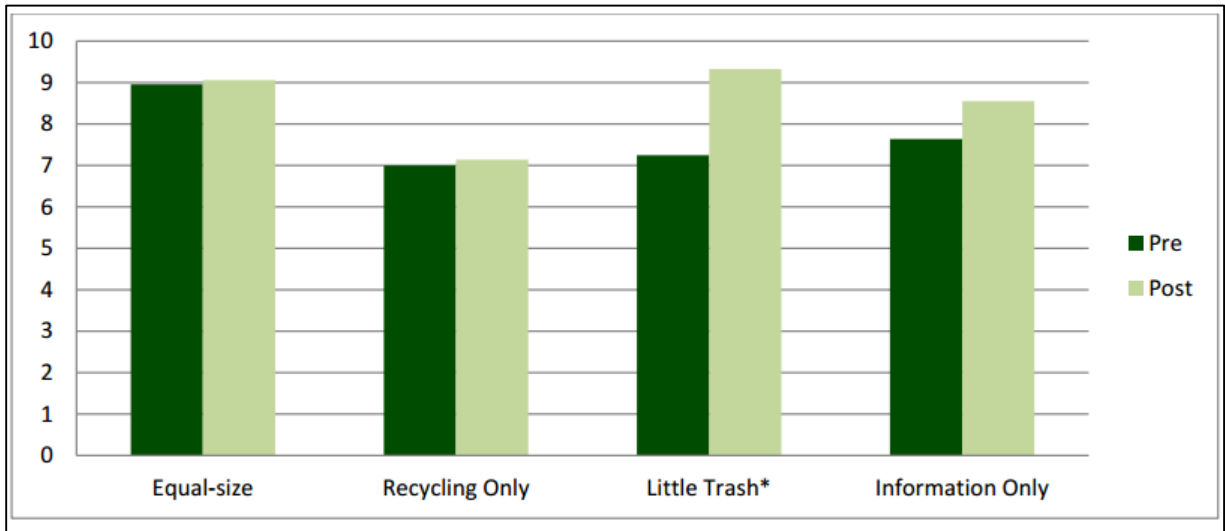


Figure 3: Participants were asked to indicate where they placed 10 recyclable items the last time they used them. A total behavior score was compared from pre to post by condition. As there were 10 items tested, a perfect score would be a “10.” “Little Trash” experienced a statistically significant increase in correct placement at the 0.05 level.

IV. OBJECTIVES OF THE PROPOSED PROJECT

- a. Direct
 - i. Improve IUPUI’s recycling rate by diverting office waste to the recycle stream
 - ii. Educate university administration and staff on best practices in recycling
 - iii. Capture data on pilot participant attitudes toward the office recycling program and recycling in general, knowledge of recycling, and recycling behavior
 - iv. Utilize the results of this pilot as guidance for campus-wide implementation of office recycling
- b. Indirect
 - i. Cause a recycling behavior change in pilot participants, both on campus at home
 - ii. Increase the recycling knowledge and confidence of pilot participants
 - iii. Increase interest in sustainability initiatives across campus and at home

V. PROPOSAL

Site Description

University Hall is IUPUI's newest addition to campus. The \$22.9 million five-story building, at the corner of University Boulevard and New York Street, is the new home of the IUPUI administration, replacing the Administration Building on Lansing Street. University Hall also houses Lilly Family School of Philanthropy, the first school of its kind in the world, and a significant portion of the School of Social Work, the oldest program of its kind in the United States. Construction of University Hall, which covers approximately 100,000 square feet, took 14 months to complete. University Hall was built to meet Silver LEED standards and is awaiting certification.¹⁵

Lead Offices

The IUPUI Office of Sustainability will work in conjunction with IUPUI Campus Facility Services to implement this pilot program. The Office of Sustainability will be responsible for coordinating the implementation, education, surveying, and purchasing of materials. CFS will be responsible for disposing of recyclables under the new program and providing in-field feedback on the efficacy of the program.

Methodology

- a. Materials needed
 - a. Desk-side recycle bins: 300
 - b. Little waste bins: 300
 - c. Flyers and signage for educational purposes
- b. Implementation
 - a. "Little waste bin" model
 - i. Each employee will be provided with a desk-side recycle bin and "little waste bin" combination.
 - ii. CFS will empty the recycle bin on their regular disposal schedule.
 - iii. Employees will be responsible for emptying their own "little waste bin" into the common waste bin as needed.
- c. Assessment
 - a. Pre-survey (web-based)
 - i. Recycling attitude of those in the pilot program
 - ii. Recycling knowledge of those in the pilot program
 - iii. Recycling behavior of those in the pilot program
 1. In office
 2. At home
 - iv. Difficulty of recycling items in office
 - b. Post-survey (web-based; 1 and 5 months post implementation)
 - i. Recycling attitude of those in the pilot program
 - ii. Recycling knowledge of those in the pilot program
 - iii. Recycling behavior of those in the pilot program
 1. In office
 2. At home
 - iv. Difficulty of recycling items in office

¹⁵ Burrous, R. (June 2015). University Hall ready for Launch. insideIUPUI. Retrieved from <http://inside.iupui.edu/features/stories/2015-06-02-university-hall.shtml>

- v. Evaluation of the new recycling pilot program (post-survey only)
 - c. Building recycle rate comparison
- d. Timeline
 - a. Offices move in on their respective dates (See Appendix A for University Hall move-in dates by office)
 - b. Education and Assessment Phase: One to two weeks post-move-in
 - i. Office of Sustainability reaches out to floor contacts/head of office, notifying them of pilot program and request for a meeting
 - ii. Office of Sustainability meets with floor contacts/heads of office to provide information on the pilot program and to schedule a time for office training
 - iii. Office of Sustainability requests contact information for all employees on each floor
 - iv. Floor contact/head of office sends employees link to pre-survey
 - v. Office of Sustainability sends employees email with brief summary of program, date of office training program, and anticipated start date
 - vi. Floor contact/head of office sends notification to office of their participation in the pilot
 - c. Implementation Phase: One week post Education Phase
 - i. Office of Sustainability hosts educational training session for employees, provides them with new bins, notifies them of the changes in waste removal process, provides locations for common waste bins, and fields questions
 - ii. Old waste bins are removed from offices as needed
 - iii. CFS begins disposing of recyclable waste on their regular schedule
 - d. Assessment Phase: One month post-implementation
 - i. Follow up survey sent
 - e. Extended Assessment Phase: Five months post-implementation
 - i. Follow up survey sent

VI. APPENDIX

- a. University Hall move-in dates by office



REVISED: 4/24/15

JUNE 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 HD Filing for Finance	2	3 Social Work	4 Social Work	5 VC Student Life VC Diversity	6
7	8 AVC Finance	9 VC Finance & Admin IU Foundation & Alumni	10 VC Finance & Admin IU Foundation & Alumni	11 Undergraduate	12 HD Filing for Chancellor	13
14	15 Chancellor Office	16 Chancellor Office	17 Executive VC & CAO	18 Executive VC & CAO VC External Affairs	19 VC External Affairs	20
21	22 Planning & Institutional Improvement	23 Philanthropy	24 Philanthropy	25 Philanthropy	26 Philanthropy	27
28	29	30				



TENTATIVE MOVE SCHEDULE

IU 20128855

REVISED: 4/24/15

JULY 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8 University Council & President's Suite	9 University Council & President's Suite	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	