

Reforming Laundry Room Habits and Installing New Clothes Dryers At Rutgers-New Brunswick

Problem Statement

Rutgers students use hot water settings and do not fill washing machines to full capacity.

Dryer machines at Rutgers are outdated and are not as energy efficient as newer models.

These problems can be solved by promoting new habits and replacing machines, saving energy and money.



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Summary of Calculations

In one year, students run **320,000** wash cycles and **265,000** dryer cycles. If all students completely filled their washing machines, students would run **278,000** wash cycles and **230,000** dryer cycles. This amounts to **937,000** gallons of water saved.

With this new wash cycle count, if every student used cold water settings, **2.9 billion** BTU's would be saved.

The current drying machines which run at **4.58** KWh's per cycle, can be replaced with new models which run at **1.63** KWh's per cycle. This change can save a total of **678,000** KWh's per year.

Cost Savings

- Reducing water consumption results in annual savings of \$3,290.
- Eliminating warm/hot wash cycles would results in annual savings of **\$64,700**.
- Energy savings from reducing washer and dryer cycles would results in annual savings of **\$20,500**.
- Energy savings from switching to new dryers would results in annual savings of **\$81,200**.

Washer Minutes In One		Laundry Cap	Laundry Capacity % of Washes		Gallons Used/ Cycle # of Cycl		les/ Year	# of Cycles Saved	Gallons Saved	Solved Per Year			
Year	Total Dryer Minutes In One Year		Completely	Completely Full 56% Three-Quarters 32%		6%	24.37 23.855		179478.1264 103471.3754		0		
9900039		13242332	Three-Quart			2%					25867.84384	617077,4148	1102.206782
		Normal States	Half-Full	Half-Full		1%	19.095	33532.39016		16766.19508	320150.4951	2183.120525	
				- 28		2			9,	2		Total	3285.33
T of Week Ovelas in Oce													
Year	Old # of Dryer Cycles In One Year		Washer Setting		emperature	Degrees(F)	BTUs Needed To Heat Water Per Gal.		at Water Per Gal.	% People Per Setting	Gallons Used Per Setting Per Year		\$ To Heat Water Per !
319356.1 264846.6		Whites		lot	130	1428		8	2%	118000.7423		1685.0506	
			Colors		Varm	92.5		535.5		57%	3521390.57		50285.45739
			Bright Colors		old	70		0		19%	1192428.554		0
			Permanent I	ress V	Varm	92.5		535	5	8%	47821	3.5347	6828.889275
Total Wash Cycles In One		Woolens	C	old	70	0		1%	62105	.65385	0		
Year	New Dryer Cycles In One Year		Delicates & Knits		Varm	130	1428		7%	416107.8808		5942.020538	
276722.1	229489.6				and the second							Total	64741.42
			K	KWh/V	Vash Cycle	Cycles Saved	Total KWh S	Saved	\$/KWh	Total Money Saved		1.22	
			Washers	0	.403	42634.03892	8590.758	842	0.12	1030.89			
Description		Value Unit							0				
weeks in fall and spring semester		30 weeks		KWh/D	rying Cycle	Cycles Saved	Total KWh :	Saved	\$/KWh	Total Money Saved			
eak weeks		15 weeks	Old Dryers	4.583	3333333	35357.02644	162053.0	379	0.12	19446.36			
e run time per wash cycle		31 minutes	6	2		0 V			6				
e run time per dryer cycle		50 minutes	New	KWh/D	rying Cycle	Total KW	h Saved	\$/Kwh	Total Money Saved	4 S			
f Dryer Cycles to Wash Cycles		0.829314	Dryers	1.63	3333333	67699	4.36	0.12	81239.32				
s used per wash cycle		22.44333 gallons	1. N.S.	6				343	St	- 58	20		
Wh		0.12 \$											
housand ft^3 of Natural Gas 10 \$		II - F	-				\$ Save	d, Per Year, From Stu	dent Habits & New				
er 1000 cubic foot of water in NB 51.01 \$		51.01 \$		Saved, P	wed, Per Year, From Student Habits			Dryers					
e Efficiency of Boiler System 0.35			88504.00			150296.96							
udents Washing Their Clot	thes						S				2		
Week 46%	7	3.199									-		
a Week 2%	3.5	0.0665											
Other Week 31%	14	4.396											
Every Month 19%	30	5.7											

2% 0 0



Implementation Suggestions

- Hang posters in laundry rooms that recommend students add 4.5 kg of laundry and encourage them to use cold water unless they are removing stains.
- 2. Provide scales in dormitory laundry rooms so students can weigh out the proper amount of laundry per load.
- 3. Install new energy efficient dryers over time, starting with laundry rooms with the highest usage.
- 4. Sell single use packets of cold water detergent in vending machines.

Implementation Timeline

- Reforming student habits involves poster implementation and results would be effective immediately.
- Changing dryers using only money saved would take 6 years in total to fully implement.

	\$ from Student Habits	\$ from One New Dryer	Current # of New Dryers	\$ from New Dryers	Total Profit	Cost of New Dryer and Installation (\$)	# of New Dryers Gained
Year 1	88504	248.44	0	0	88504	2079	42
Year 2	88504	248.44	42	10434.48	98938.48	2079	47
Year 3	88504	248.44	89	22111.16	110615.16	2079	53
Year 4	88504	248.44	142	35278.48	123782.48	2079	59
Year 5	88504	248.44	201	49936.44	138440.44	2079	66
Year 6	88504	248.44	267	66333.48	154837.48	2079	60
	-			T	otal # of New	Dryers Installed:	327

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Special Thanks to the Rutgers Graduate Student Francis Jordan !