



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



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Dryer machines at Rutgers are outdated and are not as energy efficient as newer models.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

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.

Implementation Suggestions

1. 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.

Data Acquisition

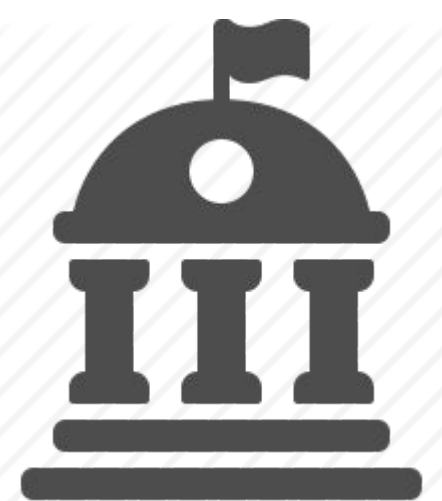
eSuds



Machine Testing



University Cooperation



Surveys



Cost Savings

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

Washer Setting	Temperature	Degrees(F)	BTUs Needed To Heat Water Per Gal.	% People Per Setting	Gallons Used Per Setting Per Year	\$ To Heat Water Per Year
Whites	Hot	130	1428	2%	110000.7423	1685.0508
Colors	Warm	92.5	535.5	37%	352190.25	50285.45738
Bright Colors	Cold	70	0	19%	118248.554	0
Permanent Press	Warm	92.5	535.5	8%	478213.5547	6828.89275
Woolens	Cold	70	0	1%	42105.45385	0
Delicates & Knits	Warm	130	1428	7%	418107.8208	5942.020538
Total						64741.42

Washers	KWh/Wash Cycle	Cycles Saved	Total KWh Saved	\$/KWh	Total Money Saved
Old	0.402	42834.03892	8590.78842	0.12	1030.89
New	1.83333333	67694.36	12400.00	0.12	150296.96

Year	\$ 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 Sained
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
Total # of New Dryers Installed:							327

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