Minnesota Technical Assistance Program

Disposable vs. Reusable Gowns
&
Greenhouse Gas Baseline

Fairview Medical Center

Alicia Reigel

MnTAP Intern 2009

Advisor: Catherine Zimmer

Helping Minnesota businesses maximize resource efficiency, increase energy efficiency, reduce costs, and prevent pollution

Fairview Medical Center

- Community-based health care system founded in 1906
- Fairview is partnered with the University of Minnesota Medical School in Minneapolis
- 2,500 licensed beds
- 7 hospitals, 50 primary care clinics and 37 specialty clinics
- Improve community health through core values of dignity, integrity, service and compassion

Motivations for Change

- Healthy environment good for community health
- Reduce environmental impact
  - energy
  - resource
  - water
  - waste
- Possible regulation of the healthcare industry

Reasons for MnTAP Assistance

- Corporate Green Charter goals
- Life cycle and infection prevention assessment of surgical and isolation gowns
- Carbon emissions baseline
- Cost savings

Gown Life Cycle Assessment

- Chemotherapy, isolation & surgical
- Environmental attributes: waste, resource consumption
- Costs: purchase, waste, maintenance
- Infection prevention

LCA Approach

- Gather cost, waste and resource data
- Compiling and compare
- Review literature
  - Infection prevention attributes
- Meet with vendors
- LCA database & software

Gown Cost and Waste Assessment

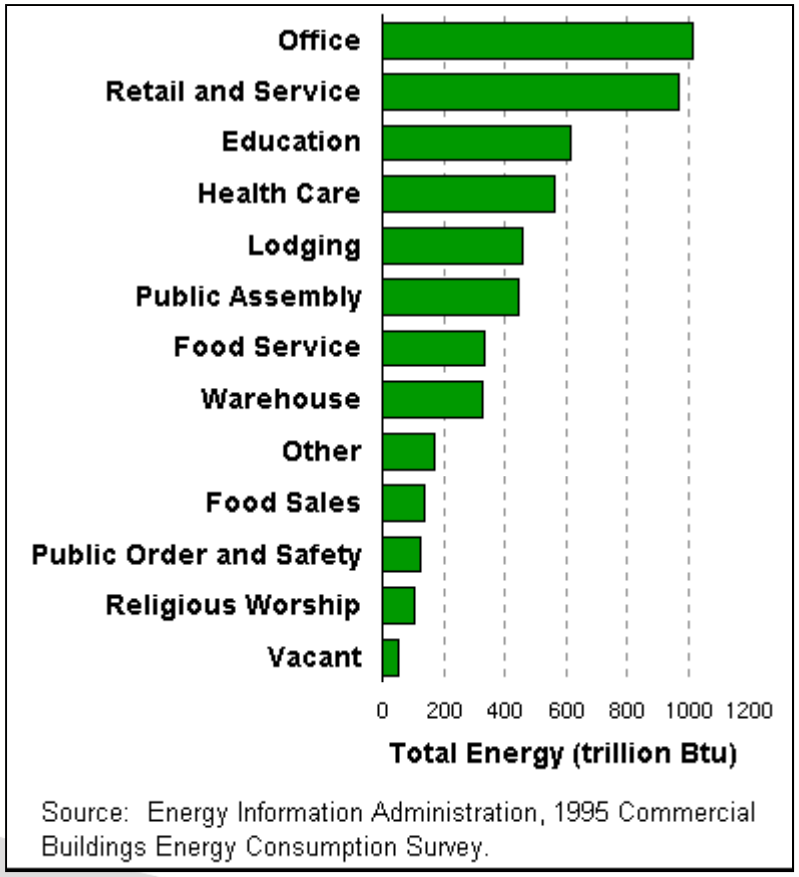
	Purchase and Laundering Cost/Year	Waste Disposal Costs/Year	Total Cost	Total Waste (lbs/year)
Reusable	$750,000	$3,500	$753,500	32,399
Kimberly-Clark	$950,000	$5,200	$955,200	178,115
Cardinal	$750,000	$5,200	$755,200	178,115

- Switch to Reusable Gowns:
  - From Kimberly-Clark ~ $200,000
  - From Cardinal ~ -$2,000
- Waste Savings ~ 145,700 lbs/year

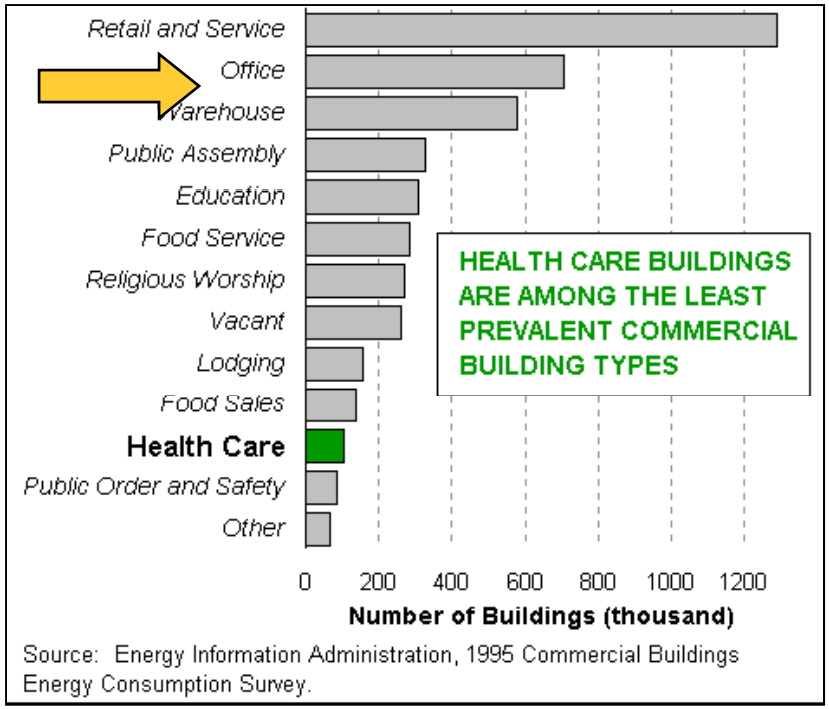
Infection Prevention

- University of Minnesota online library database searches: journals, books, newspapers, magazines
- Found five related articles
  - 4 compare disposable vs. reusable
  - 1 discusses laundering impacts on reusable materials
- No statistically significant data to support disposable or reusable as better for infection prevention
- Laundering can affect reusable material
  - Use gowns made of 99% polyester, 1% carbon with plain, woven construction

Healthcare Buildings and Energy



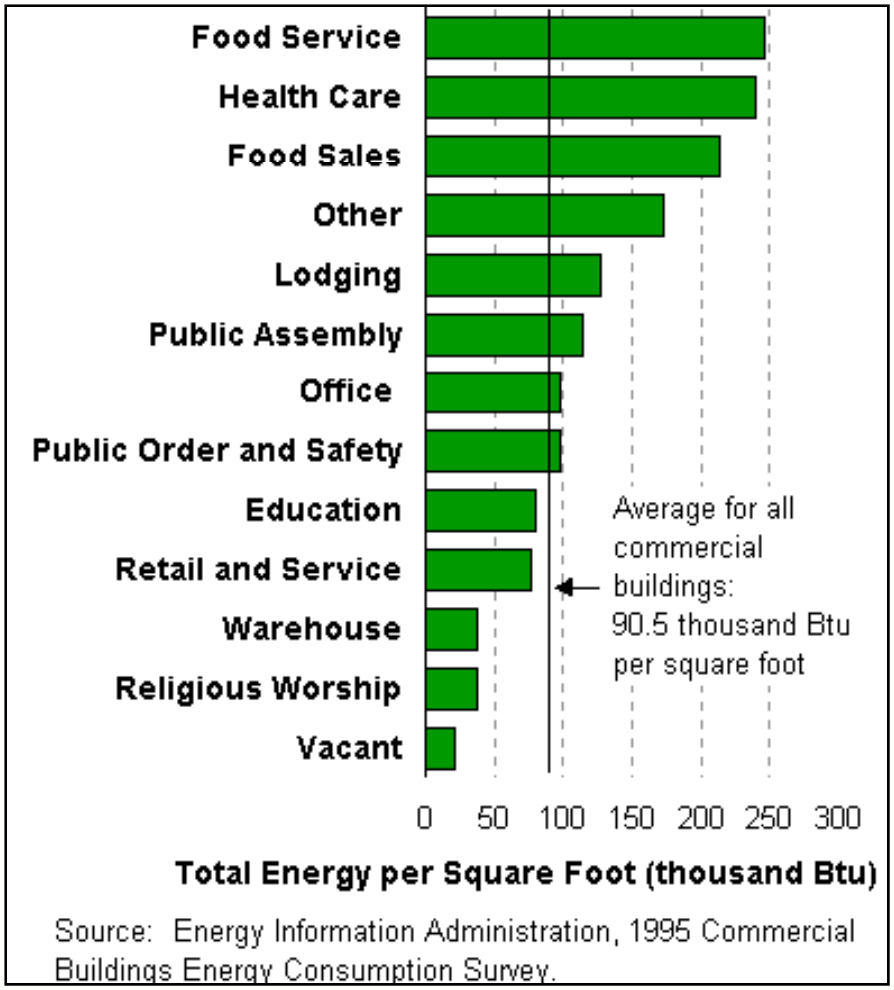
Source: Energy Information Administration, 1995 Commercial Buildings Energy Consumption Survey.



Source: Energy Information Administration, 1995 Commercial Buildings Energy Consumption Survey.

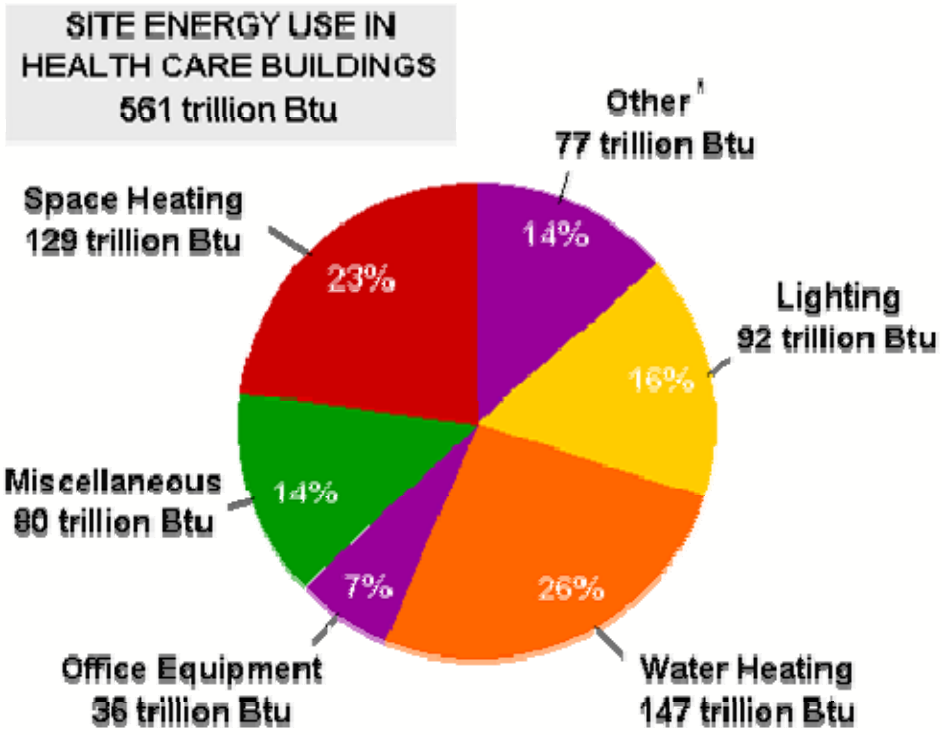
Energy Use in Healthcare

- Average energy use commercial buildings = 90.5 BTU/sq.ft.
- Healthcare uses ~240 BTU/sq. ft.
- About 40% more



Source: Energy Information Administration, 1995 Commercial Buildings Energy Consumption Survey.

How is energy used in healthcare?



* Other includes cooking (28 trillion Btu), cooling (23 trillion Btu), ventilation (17 trillion Btu), and refrigeration (11 trillion Btu).
Source: Energy Information Administration, 1999 Commercial Buildings Energy Consumption Survey.

Approach to the Greenhouse Gas Assessment

- Review calculators & databases
  - Used EPA Greenhouse Gas Conversion Calculator to determine current emission levels
- Determine appropriate data (2008)
  - Electricity and water use
  - Steam Use
  - Natural gas, oil and diesel se
  - Air and car miles
  - Solid waste tonnage
- Site tours and collection of invoices from all seven hospitals

GHG Assessment Results

Location/beds	Total $MTCO_2e$	Equivalent number of passenger vehicles
Southdale- 390 beds	33,220	6,160
Ridges- 150 beds	8,130	1,530
Lakes- 74 beds	8,030	1,500
Red Wing- 50 beds	4,790	900
Range-175 beds	9,980	1,860
UMMC- 800 beds	84,730	15,690
Northland- 54 beds	n/a	n/a

- Total $MTCO_2e$ ~ 148,900
- Total Equivalent Passenger Vehicle GHG Emissions ~ 27,600 cars

Medical & Societal Costs of GHG

Location/beds	Direct Medical Costs	Societal Value
Southdale- 390 beds	$209,151	$1,497,164
Ridges- 150 beds	$103,135	$738,270
Lakes- 74 beds	$76,522	$547,771
Red Wing- 50 beds	$50,401	$360,779
Range-175 beds	$93,245	$667,476
UMMC- 800 beds	$447,515	$3,203,415
Northland- 54 beds	n/a	n/a
Total	**$979,969**	**$7,014,875**

Recommendations

- Switch to reusable surgical and isolation gowns
  - Annual Cost Savings: $199,700
  - Annual Waste Savings: 145,700 lbs (73 tons)

- Reduce amounts of energy usage within hospitals
  - Space and water heating (23% & 26%)
  - Lighting (16%)

- Reduce commuter car and airfare miles for employees
  - Live Meeting for executive green team
  - 500 lbs GHG and $5000.

Personal Benefits

- Gathering job experience in fields related to corporate environmental management
- Problem solving skill development
- Learning to define job expectations and creating a plan of action
- Expanding my personal and professional network
- Sense of accomplishment upon completion of the project

Questions?