Reducing the Climate Impact of Government Purchasing

Findings and Recommendations

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Executive Summary

The State of Minnesota has an opportunity to reduce the greenhouse gas emissions from the products and services the State purchases. Using environmental input-output analysis, eleven expiring apparel contracts were chosen to be analyzed through this project. The three largest GHG sources in apparel product life cycle are laundering, fabric production, and the life expectancy (durability) of apparel. Emissions from these sources can be reduced by:

1. **Encouraging** employees to wash their uniforms and other clothes in cold water.
2. **Discouraging** departments from purchasing uniforms that require dry cleaning.

3. **Promoting** purchasing of lower GHG-intensity fabric apparel provided that they have the same or better wearable life of other apparel choices.
4. **Requesting** apparel vendors provide information on the estimated wearable life of contract garments. Purchase apparel with higher durability.
5. **Examining** state purchasing and department policies that effect these laundering and apparel durability recommendations.

Two options for translating these recommendations into procurement specifications are included on page 16.

Project Goal

The State of Minnesota Department of Administration (ADM) and the Pollution Control Agency (PCA) have partnered to reduce the environmental impact of government purchasing. It is the goal of this Project to reduce life-cycle greenhouse gas emissions attributable to state and local government purchasing by working with stakeholders and analyzing the Minnesota (MN) state procurement system to develop recommendations for procurement processes that will decrease the environmental impact of products and services purchased through MN state contracts. The scope of the project includes evaluating and recommending procurement language changes for 2-3 expiring contracts.

Importance of Supply Chains

There is a growing interest in using the power of government purchasing to reduce the environmental impact of products and services that make up governments' supply chains. In 2009 President Obama signed Executive Order 13514 (*Federal Leadership in Environmental, Energy, and Economic Performance)* which charged the U.S. Government Services Agency (GSA) to find ways of reducing government supply chain greenhouse gas (GHG) emissions. Similarly, Governor Dayton's Executive Order 11-13 (*Strengthening State Agency Environmental, Energy, and Transportation Sustainability*) directs public agencies to implement purchasing practices that positively impact the environment.[1]

The majority of State and Local Government Services GHG impact lies outside of the government's direct operations. According to the Sustainability Consortium's OpenIO model an estimated 60% of the state's GHG emissions likely occur in the production and distribution of goods and services the state procures (versus 40% from the state's direct operations).

Prioritization Process

ADM and PCA collected a list of state contracts expiring in 2013. Included in the collected contract data were annual contract dollar spend totals and the contract's United Nations Standard Products and Services Codes (UNSPSC). These codes identify different products and services using an international product taxonomy system. The UNSPSC codes were matched with the corresponding North American Industry Classification System (NAICS) codes, which are used in the EEIO models. Each contract's spend total was multiplied with the corresponding emission factor for its NAICS sector to estimate upstream GHG emissions.

[1] http://mn.gov/governor/multimedia/pdf/EO-11-13.pdf

The estimated GHG emissions from expiring contracts served as the first level of contract prioritization for the project. Using the results of table 1, PCA and contractor staff eliminated contract categories where other agency projects were already working, as well as contract categories where sufficient environmentally preferable purchasing guidance already exists.

Background on EEIO Methods

Due to the time requirements and data complexity of collecting emissions data from hundreds (or thousands) of individual suppliers, organizations interested in supply chain sustainability often use environmentally-extended input-output models (EEIO). Input-output models were first proposed in economic literature by Dr. Wassily Leontief as a way to measure the economic value added between sectors in an economy. These tables are multiplied with sector environmental emissions data (from government and industry data sources) using linear algebra to create EEIO models. The models measure the environmental emissions released in the supply chain as a result of $1 of economic activity in a sector. Organizations such as Carnegie Mellon University and the Sustainability Consortium have developed publicly-available EEIO models; propriety versions also exist. All of the models use the U.S. Bureau of Economic Analysis (BEA) 2002 economic tables. This project assumes U.S. model adequately covers the supply chain geography of the State of Minnesota's supply chain.

Table 1. Annual Spend and GHG Emissions from Expiring Contract Categories

Contracts (by NAICS Category)	Annual Contract Spend	Avg Contract GHG Intensity (kg CO_2e/$)*	GHG Emissions (mt CO_2e)
Petroleum and coal products manufacturing	$ 11,207,924	1.65	18,530
Machinery manufacturing	$ 6,810,380	1.13	7,689
Professional, scientific, and technical services (**includes computer related services**)	$ 53,732,079	0.12	6,662
Chemical manufacturing	$ 1,484,204	3.16	4,693
Printing and related support activities	$ 4,752,178	0.82	3,911
Electrical equipment, appliance, and component manufacturing	$ 1,017,554	3.12	3,178
Transportation equipment manufacturing	$ 3,088,807	0.87	2,738
Computer and electronic product manufacturing	$ 1,241,723	2.17	2,694
Fabricated metal product manufacturing	$ 3,139,619	0.79	2,470
Miscellaneous manufacturing	$ 4,021,576	0.52	2,097
Apparel manufacturing	$ 2,371,567	0.72	1,716

Contracts (by NAICS Category)	Annual Contract Spend	Avg Contract GHG Intensity (kg CO_2e/$)*	GHG Emissions (mt CO_2e)
Telecommunications	$ 3,802,645	0.41	1,556
Paper Manufacturing	$ 1,117,628	1.32	1,475
Administrative and support services	$ 5,473,294	0.22	1,207
Furniture and related product manufacturing	$329,502	1.17	384
Construction	$ 782,912	0.46	363
Leather and allied product manufacturing	$ 345,689	0.86	299
Publishing industries (except Internet)	$ 477,705	0.38	182
Wood product manufacturing	$ 101,000	1.77	179
Repair and maintenance	$ 606,142	0.25	151
Waste management and remediation services	$ 33,175	1.93	64
Beverage and tobacco product manufacturing	$ 69,083	0.93	64
Primary metal manufacturing	$ 741,300	0.07	54
Nonmetallic mineral product manufacturing	$ 40,179	1.12	45
Hospitals	$ 156,753	0.26	40
Internet service providers, web search portals, and data processing services	$ 186,712	0.16	29
Personal and laundry services	$ 111,283	0.26	29
Forestry and Logging	$ 50,000	0.58	29
Broadcasting (except Internet)	$ 52,422	0.15	8
Support Activities for Agriculture and Forestry	$ 10,258	0.68	7
TOTAL	**$ 107,355,292**		**62,546**

*The categories listed above are composites of more granular NAICS categories that have been grouped together for reporting purposes. For this reason the contract GHG intensity figures are averages across the category's sectors.

Apparel Contracts

Table 2. Expiring Apparel Contracts and Estimated GHG Emissions

CR #	Contract Title	Annual Contract Amount	GHG Emissions (mt CO_2e)
C-726(5)	Clothing and Linens (Blankets), Manufactured by Minncor	$1,702,369	1,566.6
S-820(5)	Safety Garments: High Visibility (Safety Vests)	$112,333	170.9
U-90(5)	Uniforms and Accessories: Minnesota State Patrol, other State agencies and CPV members.	$197,184	162.4
S-820(5)	Safety Garments: High Visibility (fire retardant safety vests and high visibility work gloves)	$60,520	92.1
U-123	Uniforms and Accessories for the Minn. Sexual Offender Program (MSOP), Dept. of Human Services	$104,298	85.9
U-116	Uniforms; Minnesota Dept. Natural Resources (enforcement)	$89,105	82.0
C-1030(5)	Clothing: Printed (Embroidered) Wearables: T-shirts and baseball caps	$46,464	38.3
U-116	Uniforms: Duty Gear, Dept. Natural Resources, Enforcement	$16,737	25.5
U-121(5)	Uniforms (NFPA) Compliant: Military Affairslsfl Air Natl. Guard, Fire Dept. (Duluth); Security Division (Camp Ripley, Little Falls).	$16,624	13.7
U-108	Uniforms: Drivers License Examiners, Public Safety	$13,400	11.0
U-102	Uniforms and Accessories for the Minnesota Dept. of Public Safety, Capitol Complex Security Division	$12,534	10.3
TOTAL		**$2,371,567**	**2,259**

Table 3. Sample of Apparel Products Provided in Contracts

Shirts	Pants
T-SHIRTS, 5.4 oz 100% Cotton	Men's trouser. 7.0 oz. per square yard. 11.5 – 12 oz. per linear yard. 80% polyester, 20% worsted wool.
Polo shirt, long sleeve, 6.5 oz. 100% cotton pique knit.	Trouser, 8.0 z. per square yard. 14 oz. per linear yard, elastique weave. 100% polyester.
Shirt, long sleeve, with sewn-in military creases.	Trouser. Easy-fit chino. 65% polyester, 35% cotton, 7-1/4 oz. moisture-wicking fabric
Men's shirt, long sleeve. 8 oz. 100% cotton twill.	Trouser, 55% Dacron/45% wool, flat front.
Men's short sleeve shirt. Wool tropical blend.	Trouser. 7.5 oz. 65% polyester, 35% cotton, soft casual twill fabric.

Shirt, short sleeve. NOMEX™ heavy duty, fire retardant. Washable.	Trouser. 100% cotton durable press. Wrinkle resistant. Care-free cotton.
Shirt, long sleeve. 100% VISKA® polyester. Machine washable.	Trouser. 7.5 oz. 65% polyester, 35% cotton. Soft casual twill fabric. Durable press. Pressed open seams. Little or no ironing.
Shirt, long sleeve. 65% polyester, 35% cotton, Duro Poplin. Machine washable. Permanent press	Trouser, 7 – 7.5 oz. 100% cotton.
Shirt, short sleeve, 7 – 7-1/2 oz. 100% polyester, plain weave.	Trouser. fire retardant. NOMEX™ heavy duty wove fire retardant blend. Washable
Long sleeve shirt. 60% cotton, 40% polyester. Oxford style. Wrinkle-less easy-care	Trouser, 8.5 oz. 100% cotton. Machine washable or dry clean
Jackets/Sweaters/Vests	EMT pocket trouser. 11 oz. twill cotton blend with 10% stretch and 3XDRY®.
Vest, 10 oz. 65/35 polyester/cotton. Nylon lining.	Bike patrol short, lined.
Sweater, V-neck. 70/30 blend of low pill acrylic fiber and long-staple wool.	Tactical leggings. Double-sided fabric.
Blazer, 55% Dacron/45% wool. Fully lined	
Sweater, cardigan style. 100% low-pill acrylic. Machine washable	
Jacket, three-season, with zip-out liner.	
Winter jacket. Waterproof, breathable. Shell: 100% Taslan® nylon. Polyester liner, nylon lined.	
Lightweight jacket. Zip-in liner. Non-pill micro-fleece with nylon Tactel® shell.	

Stakeholder Advisory Group

On January 16, 2013 the draft apparel environmental hotspots and recommendations were presented during the kickoff meeting of the apparel stakeholder advisory group. The stakeholder advisory group is comprised of apparel experts from current state vendors, academia, non-governmental organizations, and government; a list of stakeholders is in appendix A. Feedback from the stakeholder group meeting is integrated into the apparel hotspot descriptions below.

Apparel Hotspots

GHG intensive processes in apparel supply chains (also known as hotspots) were identified using EEIO models, product process maps, and LCA and other industry studies. Potential GHG reduction opportunities that could be pursued through purchasing strategies were identified in a similar manner.

Figure 1. Apparel Hotspot and Reduction Opportunities identification process

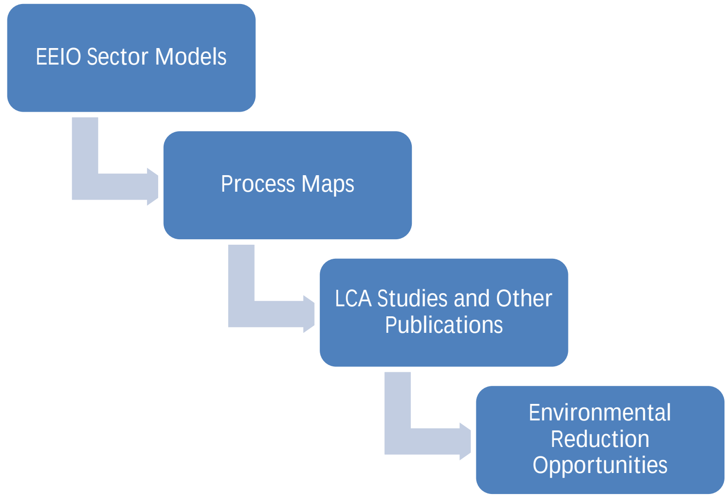


Figure 2: OpenIO EEIO Upstream (Cradle to Retail Gate) of Cut and Sew Apparel Manufacturing

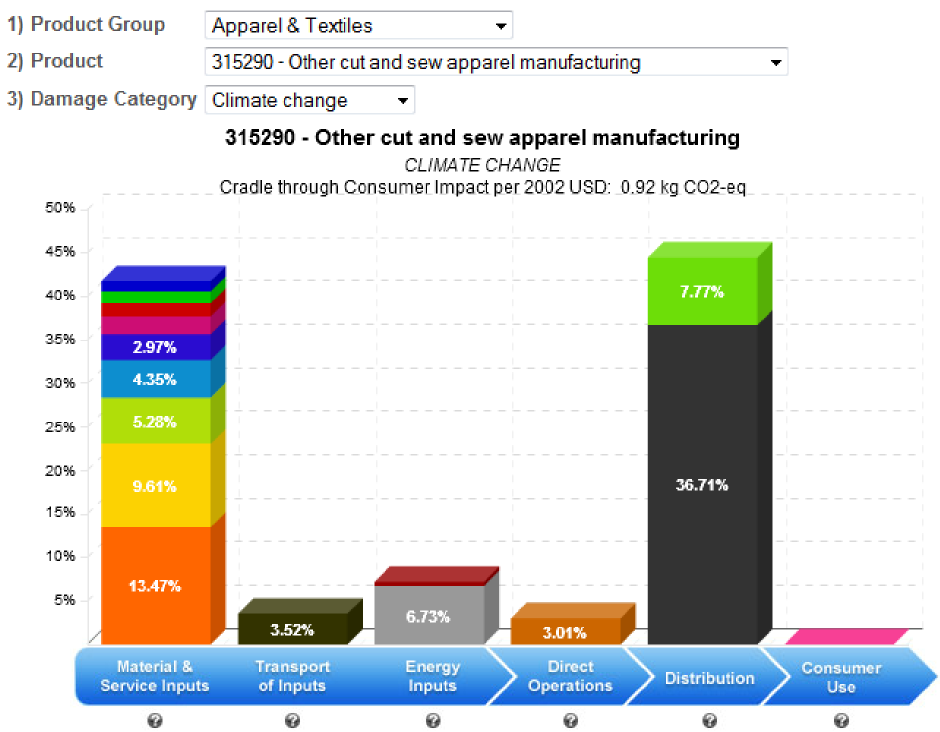


Table 5. OpenIO Upstream GHG Contribution Estimates

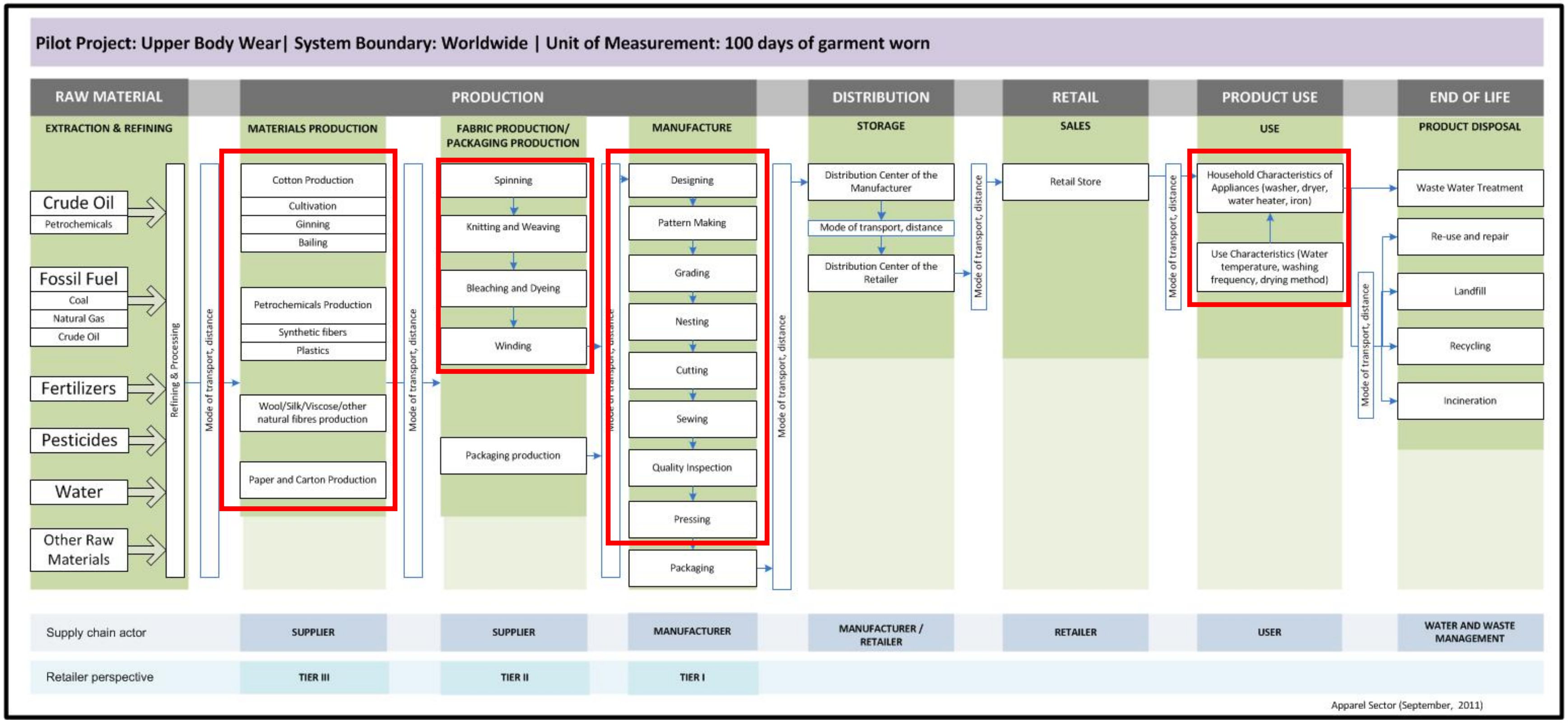
Category	% of Upstream GHG Emissions
Warehousing and Retailing	36.7%
Knit Fabric Mills	13.5%
Final Transportation	7.7%
Electricity Inputs to Commodity	6.7%
Broadwoven Fabric Mills	5.3%
Total % of Upstream GHG Emissions Captured in 5 Categories[2]	70%

Since the apparel contract products ship directly from vendors to the state, retail activity is considered insignificant for this study. These hotspots are then compared to a sample apparel product process map to identify the specific activities that contribute the most to overall emissions (figure 3).

The EEIO models do not include downstream (e.g. use and end of life impacts) due to methodological limitations. Many studies indicate that the use phase of apparel, including washing and drying, are significant GHG contributors. Information from these studies and the EEIO model was applied to the generic "Upper Body Wear" apparel process map developed by the Sustainability Consortium; hotspot processes are framed in red in figure 3.

[2] The yellow bar, labeled 9.61% under "Material & Service Inputs" in figure 2, is a combination of all other sector inputs in the Other cut and sew manufacturing sector. Since it is a combination of sectors it does not appear in table 5's top 5 input to the sector.

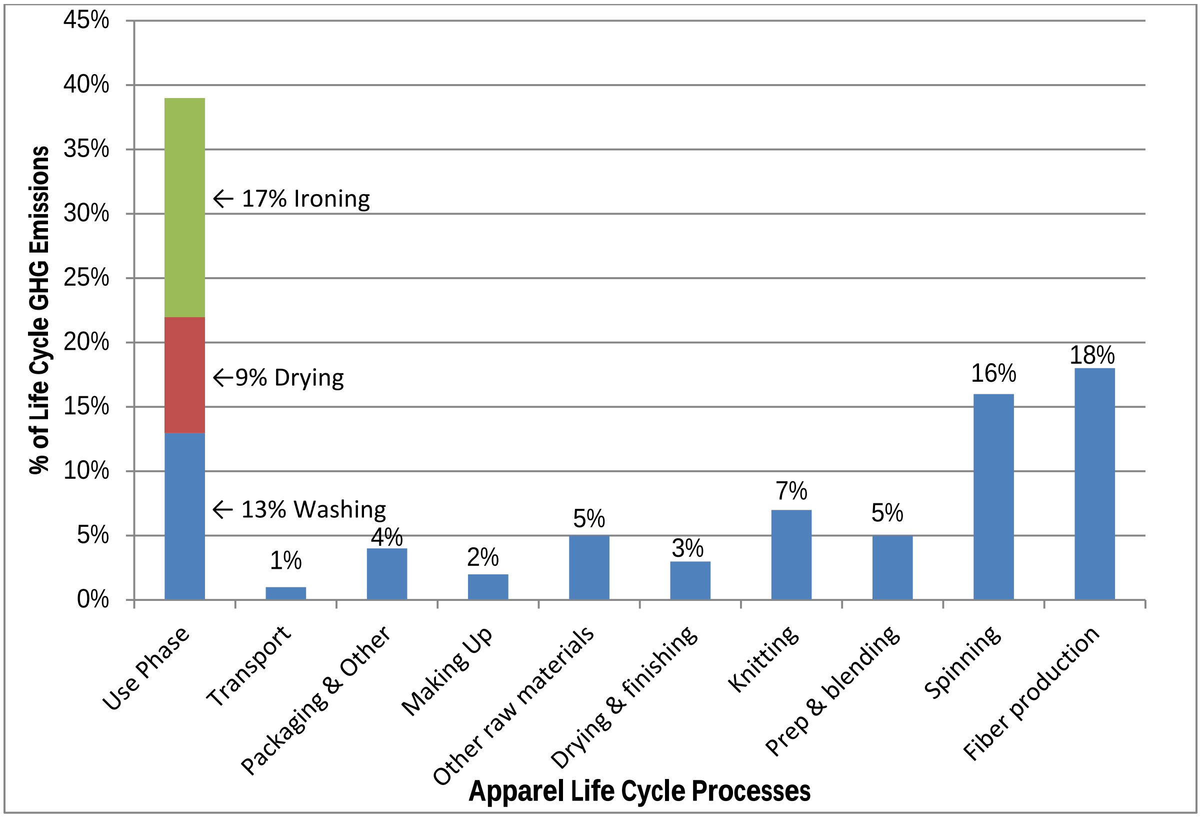
Figure 3: Clothing Life Cycle Process Map (The Sustainability Consortium)



Hotspot 1: Laundering of Apparel

The laundering, drying, and ironing of apparel make up the largest GHG hotspot in the apparel life cycle: the use phase (BSR 2009). This finding has been confirmed in numerous other apparel life cycle studies (Laursen 2007).

Figure 4. Clothing Supply Chain Life Cycle GHG Emissions (source: BSR 2009)



Potential Reduction Opportunities:

- **Encourage** employees to wash their uniforms and other clothes in cold water (60 – 75 degrees Fahrenheit). Survey employees about laundering behaviors to estimate potential impact of educational campaign.

With new detergents nearly all clothes can be washed successfully on cold water temperatures; however, consumers appear to be skeptical about the successfulness of cold water washing.[3]

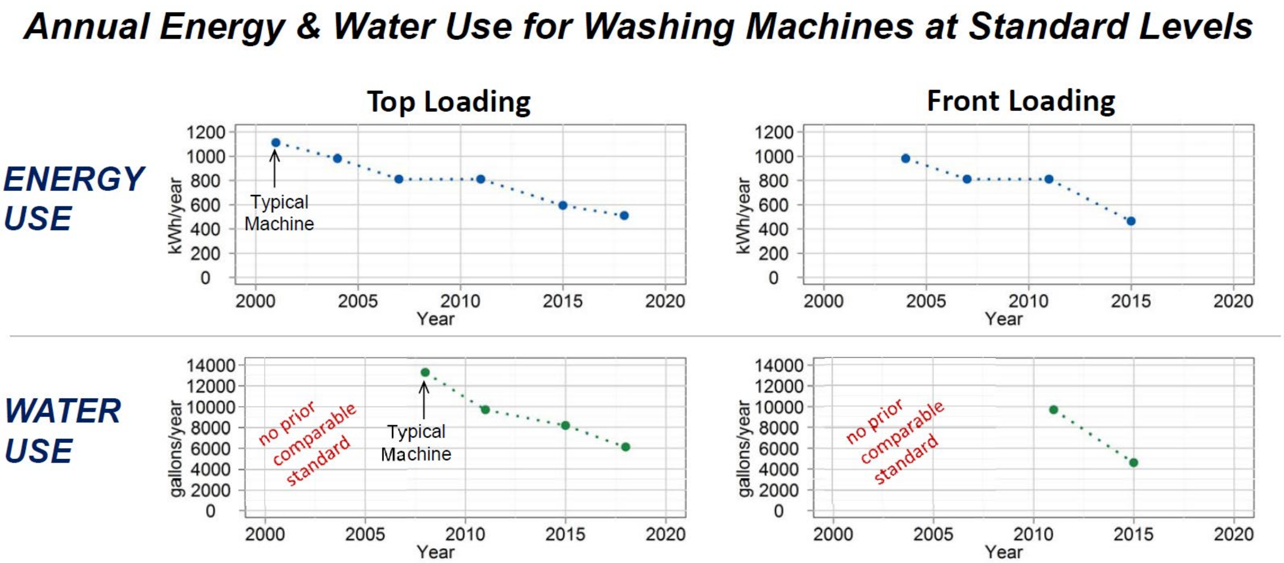
Changing consumer patterns could make a significant impact: if all households in the US washed laundry in cold water the country could save 3 percent of total domestic energy consumption. Proctor and

[3] New York Times (September 17, 2011). Cold-Water Detergents Get a Cold Shoulder. URL: http://www.nytimes.com/2011/09/17/business/cold-water-detergents-get-a-chilly-reception.html?pagewanted=all&_r=0

Gamble, maker of laundry detergent, has set up goal of having 70% of U.S. laundry loads washed in cold water by 2020; currently 38% of loads are done in cold.[4]

The move to more cold water washing is occurring at a time when washing machine energy and water efficiency standards are improving.[5] Energy use is projected to decrease 50% between the years 2000 and 2020, while water use has decreased by a similar amount for top loading machines.

Figure 5. Annual Energy and Water Use for Washing Machines at Standard Levels



Potential Reduction Opportunity:

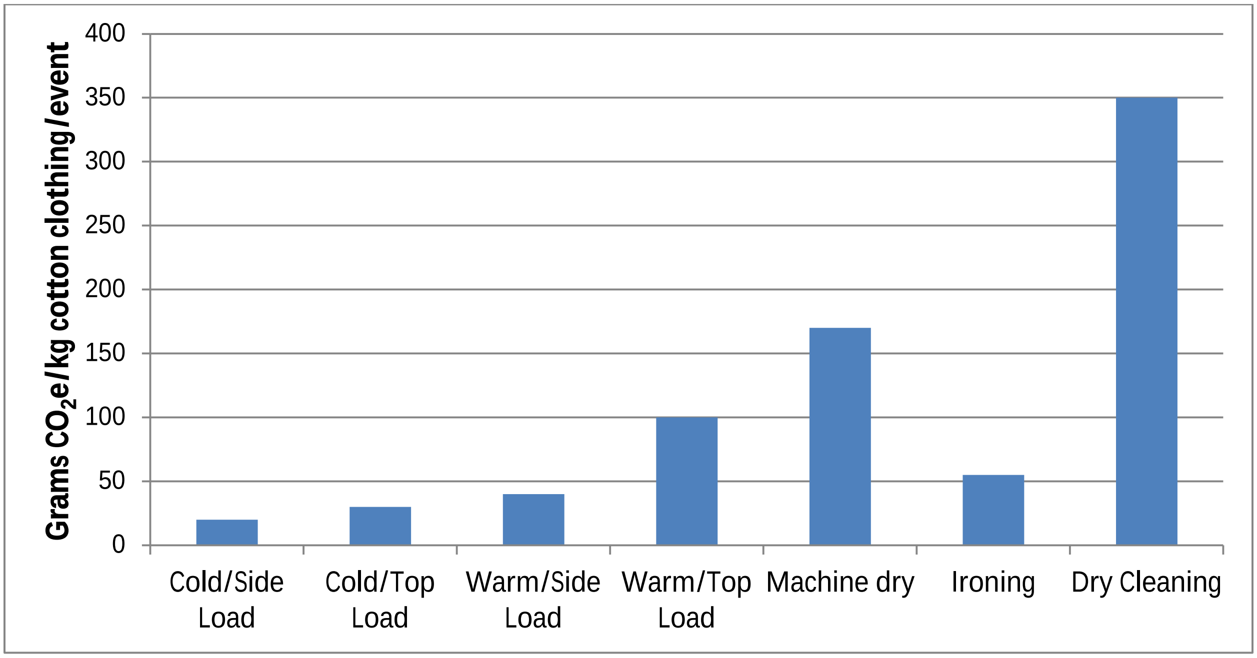
- **Discourage** departments from purchasing uniforms that require dry cleaning.

Dry cleaning apparel creates significant environmental impact, not only for GHGs but also in other environmental impact categories.[6] Perhaps most notably are the health and other toxicity impacts of the solvent perchloroethylene used in the dry cleaning process.[7] Ironing/pressing apparel also consumes significant amounts of energy, thus creating GHGs. Figure 5 displays the differences in GHG emissions among different washing temperatures, drying, ironing, and dry cleaning. At nearly 350 grams of GHG emissions per kilogram of apparel, dry cleaning is by the far the most GHG intense apparel care process.

[4] White, P. (2009). Building a Sustainability Strategy Into the Business.
http://www.eabis.org/uploads/media/White_Building_a_sustainability_strategy_into_business.PDF

[5] Appliance Standards
[6] U.S. Environmental Protection Agency (accessed February 11, 2013).
http://www.epa.gov/dfe/pubs/garment/ctsa/factsheet/ctsafaq.htm
[7] Minnesota Technical Assistance Program (access February 11, 2013).
http://www.mntap.umn.edu/drycleaning/index.htm

Figure 6. GHG Emissions from Apparel Care Scenarios (source: BSR 2009)



Stakeholder Feedback

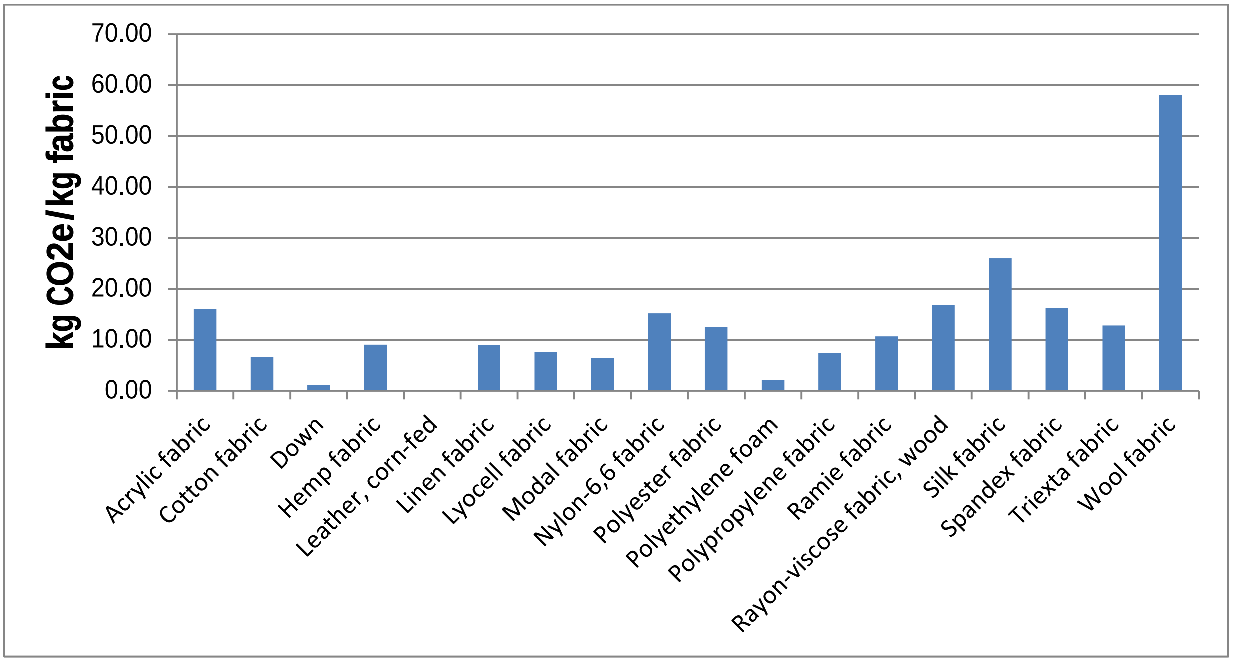
There was general consensus that discouraging dry cleaning of apparel would lead to environmental improvements, not only in energy use but also in reduced toxicity. The state pays for dry cleaning of trooper and other employee's dress uniforms (which contain wool). Other trooper, corrections, and department of natural resources uniforms are laundered by the employees themselves. The state does have laundering contracts for towels, rugs, mats, and a few other items.

Garment instruction targets recommend certain laundering methods based on fabric composition, coloring, and other considerations. However, stakeholders suggested that with new detergents nearly all clothing can be washed with cold water (saving water heating energy) without any negative effects.

Hotspot 2: Fabric Production

While laundering is the main GHG contributor, fabric production and processing comprises nearly 50% of the total GHG life cycle emissions (figure 4). The GHG intensity of fabric production depends on the choice of fabric. Figure 6 displays fabric production GHG estimates for a number of fabric types. The estimates cover the fiber production, spinning, dying, weaving, and other processes involved in producing one kilogram (kg) of finished fabric. Including all emission sources prior to the point of product distribution and use is often "cradle to gate" life cycle assessment. Data comes from the Higgs Index from the Sustainable Apparel Coalition; the data were originally developed by Nike for their Apparel Environmental Design Tool.

Figure 7. GHG Intensity of Select Apparel Fabrics



Note on organic cotton:

Organic cotton is often assumed to be more environmentally friendly than conventionally-grown cotton. The Nike Environmental Apparel Environmental Design tool does not include GHG estimate for organic cotton, and there are relatively few LCA studies comparing the two cotton types. A GHG LCA study by Anvil Knitwear found that their organic cotton t-shirt was 20% less GHG intensive than their conventional cotton t-shirt.[8] This reduction is party comprised of a 58% GHG reduction in cotton farming and ginning.

Potential Reduction Opportunity:

- **Promote** purchasing of lower GHG-intensity fabric apparel provided that they have the same or better wearable life of other apparel choices.

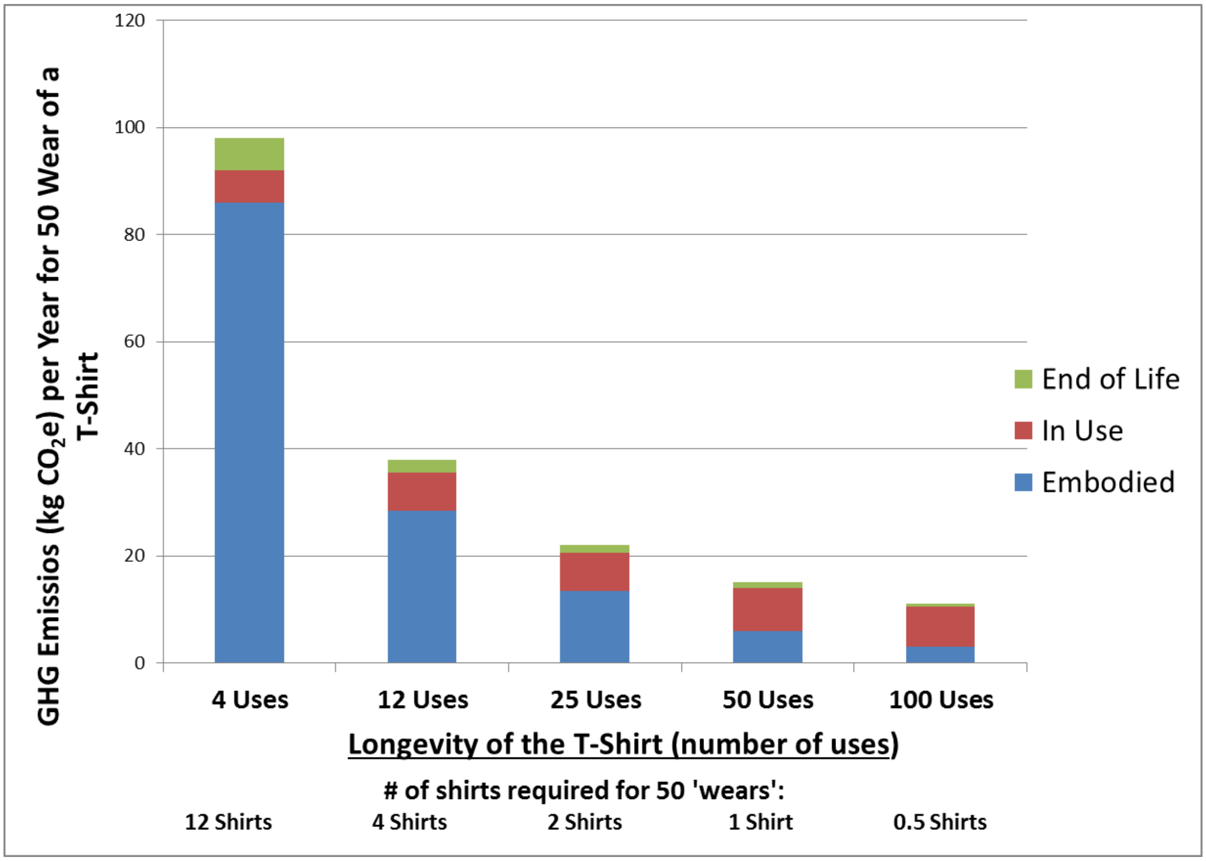
Hotspot 3: Apparel Durability

Apparel that lasts longer and is used for the full length of its useful lifespan reduces the need for more apparel production, reduces GHG emissions, and reduces total apparel purchasing costs over time.

For example, data from the Carbon Trust in figure 8 shows how increasing the number of wearings a single t-shirt provides reduces both the total number of t-shirts required and the GHG emissions per year from the apparel item. At the same time purchasing costs should decrease, since only half as many apparel items need to be purchased.

[8] Anvil Knitwear (2010). *Product Comparison: Breakdown of GHG Emissions by Activity*. http://www.anvilknitwearcsr.com/report/2010/wp-content/uploads/2010/07/Anvil_Comparative-Product-Life-Cycle-Assessment.pdf

Figure 8. GHG Emissions from 50 T-Shirt Wearings with Different T-Shirt Life Expectancies



Source: Carbon Trust. Data originally from Peter Grace, Queensland University of Technology; BCG analysis; Well Dressed? (2006).

Apparel durability is made up of a number of factors, including tensile strength, shrinkage, pilling, density, fastness to light, fabric weight, and flame retardancy.[9] Because of the many durability components it's nearly impossible to come up with a ranking of fabrics by their durability scores. However, the International Fabricare Institute has developed estimated life expectancy for select garment types that dry cleaners use in apparel damage complaint cases (see table 6). These estimates, and the GHG production intensity of fabrics from figure 7, can be combined for a rough estimate of the production GHG emissions per year of wearable life.

Potential Reduction Opportunities:

- **Request** apparel vendors provide information on the estimated wearable life of contract garments. Purchase apparel with higher durability.
- **Examine** state purchasing and department policies that effect these laundering and apparel durability recommendations.

[9] Ballestero (2004). Selecting Textile Products by Manufacturing Companies Under Uncertainty. Asia-Pacific Journal of Operations Research. Vol. 21, No. 2 (2004), 141-161.

Additional Policy Considerations

Some contracts specify the uniform allocation for each employee.[10] If an employee needs additional uniform garments or replacements during the year they must pay for the garments themselves. However, if the garment lasts longer than the 1 year, there is no incentive for the employee not to replace it with a new garment from the year's allocation. The allocation is determined during contract negotiations with employee unions and management.

In the January 2013 Stakeholder meeting there was feedback that manufacturers do not provide estimated wearable life figures for their apparel; this will make it difficult for vendors to provide durability information to the state. Working with larger groups, such as the Sustainable Apparel Coalition or the National Association of State Procurement Officials, could be successful in having a number of large customers request this data from manufacturers.

Table 6. Average Life Expectancy, GHG Production Intensity by Apparel Type

Apparel Type	Average Life Expectancy (years)	GHG Production Intensity (kg CO_2e/kg fabric)	GHG Production Intensity/ Expected Wearable Life
Coats and Jackets (down)	3	1.1	0.4
Coats and Jackets (plastic)	2	6.2 - 7.5 [2]	3.1 - 3.7
Blouses (100% cotton)	3	6.6	2.2
Sweaters (100% cotton)	3	6.6	2.2
Blazer (cotton and blends)	3	6.6	2.2
Coats and Jackets (cotton and blends)	3	6.6	2.2
Blouses (50% cotton/50% polyester blend)	3	9.6	3.2
Shirts (100% cotton)	2	6.6	3.3
Trousers (cotton blends)	2	6.6	3.3
Shirts (50% cotton/50% polyester blend)	2	9.6	4.8
Rainwear and Windbreakers (film and plastic coated)	2	15.2 [3]	7.6
Rainwear and Windbreakers (fabric, lined and unlined)	3	15.2 [3]	7.6
Shirts (silk)	2	26	13.0
Blazers (wool)	4	58.0	14.5
Coats and Jackets (wool)	4	58.0	14.5
Trousers (wool blends)	4	58.0	14.5
Sweater (wool)	3	58	19.3
Shirt (wool)	2	58	29.0
Uniforms	1	depends on fabric	
Vests	2	depends on fabric	

Average Life Expectancy Data: Source: http://www.drycleaningcomplaints.com/Fair%20Claims%20Guide=DIA.pdf. Originally from International Fabricare Institute.

[1] Leather emissions are attributed to cattle production

[2] depends on plastic type

[3] intensity figure assumes 100% nylon 6,6 fabric

[10] See DNR contract.

Procurement Specification Options

Translating these apparel life cycle recommendations into procurement specifications for use in product request for proposals (RFPs) is the main goal of this project. There are two proposed procurement specification options:

Option 1: Allocate RFP Environmental Points based on Life Cycle Hotspots

Figure 4 shows that apparel supply chain GHG emissions come from roughly half from apparel care, half from upstream fabric production. The recommendations around these apparel hotspots can be used with existing RFP environmental point allocations to reward vendors for product attributes that directly reduce GHG emissions. Figure 9 includes the proposed point allocation by life cycle hotspot.

Figure 9. Procurement Specifications by Life Cycle Hotspot

Life Cycle Hotspot	Apparel Type	100% Points	50% Points	0% Points
50% Points: APPAREL CARE	All Apparel Types	• Cold water wash + line/hang dry (to avoid ironing and tumble drying) • No Impact Care: Product care requires no water, energy or cleaning agents (excludes single-use items)	• Cold water wash + tumble dry • Hand wash • Warm water wash • Hot water wash • Iron • Tumble dry (low, medium, or high)	• Dry clean only • Machine wash separately • Wash before first use • Extra rinse cycle
50% Points: GHG INTENSITY OF FABRIC PRODUCTION	Blouses	• 100% cotton	• 50% cotton/50% polyester blend	• Silk
	Coats and Jackets	• Down • Plastic-based	• Cotton and cotton blends	• Wool
	Shirts	• 100% cotton	• 50% cotton/50% polyester blend	• Silk
	Trousers	• Cotton blends		• Wool blends

If vendors can demonstrate that their apparel items meet or exceed the environmental performance of the default fabric or care assumptions they should be eligible for points in line with their product's performance.

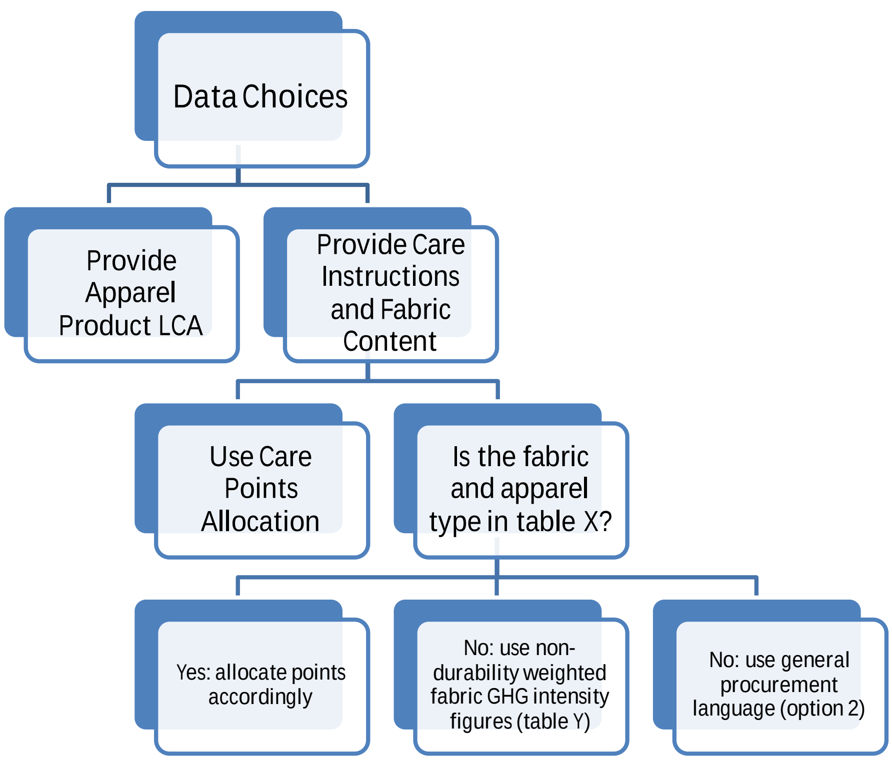
Option 2: Use Procurement Preference Language

Figure 10. Procurement Specification by Recommendation

Recommendation	Procurement Language
· Encourage employees to wash uniforms and other clothes in cold water.	· **Preference will be given to vendors who provide low impact laundering apparel instructions.**
· Discourage departments from purchasing uniforms that require dry cleaning.	· **Dry clean only apparel will be considered only if no other apparel with alternative care options is available.**

Recommendation	Procurement Language
· Promote purchasing of lower GHG-intensity fabric apparel, provided that the fabric has the same or better wearable life of other apparel choices	· **Preference will be given to apparel fabrics with comparatively lower GHG fabric production intensity and longer expected wearable lives.** See table 6 (*column 'GHG Production Intensity/ Expected Wearable Life'*) for a ranking list of fabrics by apparel type. For fabrics not listed please refer to figure 7 '*GHG Intensity for Select Apparel Fabrics*' for more fabric GHG intensity data.
· Request vendors provide information on the estimated wearable life of contract garments.	· **Preference will be given to vendors who provide information on the estimated wearable life of apparel items.** Apparel items' estimated life and related durability metrics should be measured with relevant ASTM Standards or equivalent industry standards (http://www.astm.org/Standards/textile-standards.html)
· Encourage vendors to calculate and report environmental life cycle results of contract products.	· **Preference will be given to bids submitted with product environmental product declarations (EPD) developed in conformance with the Sustainable Apparel Coalition Product Category Rule or equivalent guidance.**

Figure X. Apparel Vendor Data Decision Tree



Related Initiatives

Sustainable Apparel Coalition

The Sustainable Apparel Coalition (www.apparelcoalition.org) is an industry-wide group of over 75 leading apparel and footwear brands, retailers, suppliers, non-profits, and NGOs working to reduce the environmental and social impacts of apparel and footwear products around the world. SAC members represent more than a third of the global market share for apparel and footwear, based on revenue. The SAC seeks to inspire industry collaboration that leads to better environmental and social performance along the entire value chain.

Higg Index

A major focus of the Sustainable Apparel Coalition is to create and implement an assessment framework, called the Higg Index, to measure the environmental and social performance of apparel and footwear products. SAC's index work started with the development of largely qualitative "indicator" questions designed to assess the environmental performance of products and organizations without the need for collecting actual data on performance. These indicators are organized into sections that correspond with the product's lifecycle as well as the specific environmental impacts from facilities.

The Higg Index 1.0 was released in July 2012 and specifically addresses environmental impacts for apparel products. In this version, indicator questions are organized into three different modules to address the three primary influencing factors on the sustainability of an apparel product: the Brand Module, Product Module, and Facilities Module. Higg Index 1.0 scores the responses to each question, weights each section of questions, and calculates a weighted average score out of 100 points for each module (Brand, Product Life Cycle, Facilities). Future releases of the Higg Index will expand in scope to include social and labor indicators, footwear products and life cycle-based metrics.

Apparel Product Category Rule

Product Category Rules (PCRs) are LCA standards for specific product categories. They provide detailed product guidance on LCA components. The reports created from PCRs are known as Environmental Product Declarations (EPDs). EPDs provide information on a product's environmental footprint. EPDs created from PCRs enable valid comparisons of the same products manufactured by different vendors. For example, an apparel PCR should enable valid comparison of a t-shirt produced by two different companies.

The draft PCR is available at: http://iere.org/wp-content/uploads/Style-PCR-T-shirts.pdf

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Appendix A: Stakeholder Advisory Group Members

Name	**Organization**
Deanna Simon	Responsible Purchasing Network
Dick Thompson	W.J. Thom Company
Georgia Rubenstein	Environmental Initiative
Jennifer Schmitt	University of Minnesota Northstar Initiative for Sustainable Enterprise
Katie Scott	Scott and Associates
Anupama Pasricha	St. Catherine University
Toby Brill	American Custom Uniform Co, Inc.
Project Staff	
Madalyn Cioci	Minnesota Pollution Control Agency
Johanna Kertesz	Minnesota Pollution Control Agency
Holly Lahd	EI Analytics (consultant)

Appendix B: Other Environmental Impacts of Select Fabrics

Data from Nike's Environmental Design Tool/Higgs Index

Figure 11. Water Production Intensity of Select Apparel Fabrics

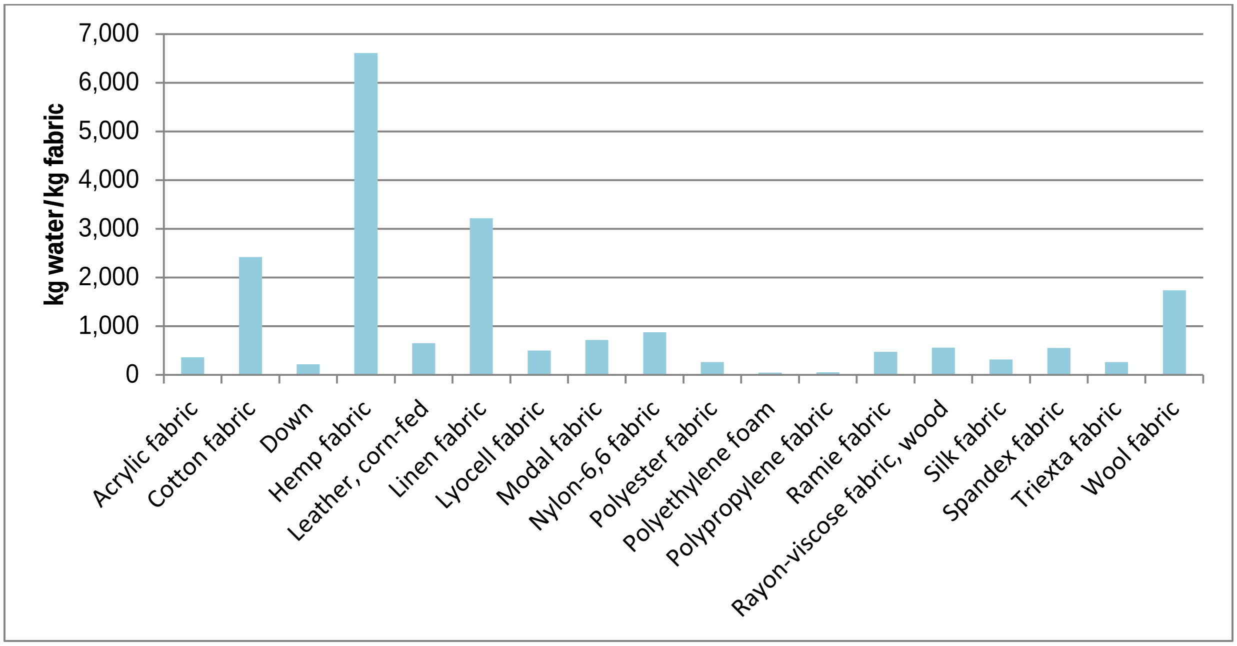

Figure 12. Hazardous Waste Production Intensity of Select Apparel Fabrics

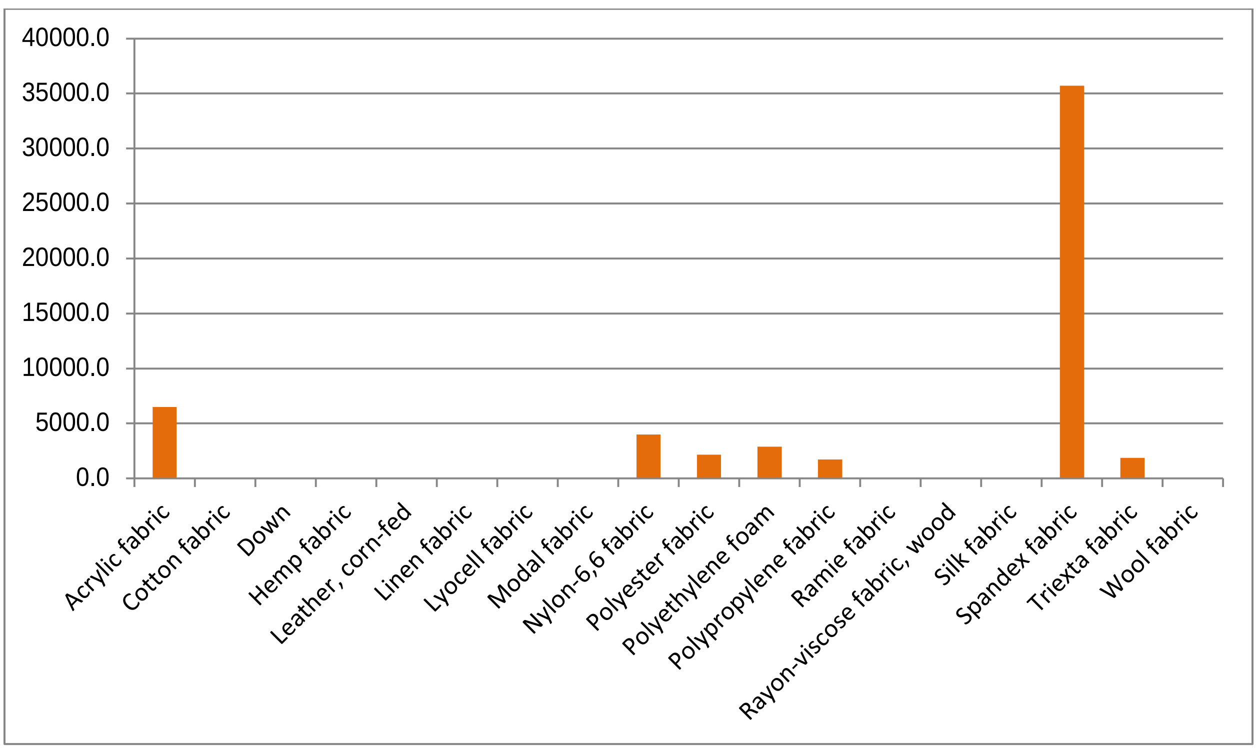

Figure 13. Carcinogenicity Production Intensity of Select Apparel Fabrics