OPERATIONAL SERVICES DIVISION

SERVING PUBLIC BUYERS AND VENDORS OF THE COMMONWEALTH OF MASSACHUSETTS

Operational Services Division

Environmentally Preferable Products (EPP)

Strategic Sourcing Services

EPP Procurement Program Annual Report for Fiscal Years 2017 - 2018

Including the Toxics Reduction Task Force Progress Report

Operational Services Division | One Ashburton Place, Suite 1017 | Boston, MA 02108 | 617-720-3300 | www.mass.gov/osd

Executive Summary

For more than 24 Years the Environmentally Preferable Products Procurement Program within the Operational Services Division (OSD) has been focused on finding ways to leverage the Commonwealth's purchasing power to provide cost effective sustainable purchasing choices that reduce our impact on public health and the environment. In 2009, the Commonwealth of Massachusetts formally established its Environmental Purchasing Policy (EPP) through *Executive Order 515* (EO 515).[1] The OSD's EPP Program measures annual progress in pollution and waste reduction, in addition to quantifying some of the cost savings associated with shifting the government's procurements toward a more sustainable future.

This report summarizes these achievements and documents progress for Fiscal Years 2017 and 2018 (FYs 2017-2018). It includes estimates on how much was spent on environmentally preferable products and services available and managed through the OSD's Statewide Contracts (SWCs). This report also includes updates on various projects, such as work done to advance environmentally preferable furniture purchasing, greening of the Maintenance, Repair, and Operations contracts, growing the environmentally preferable cleaning products contract, and implementing the Fuel Efficiency Standards for State Fleets.[2] It describes efforts to add commercial battery-powered landscape equipment to the existing landscape equipment contract, documents the results of participating in the Sustainable Purchasing Leadership Council's Benchmark program, and reviews progress in policy, guidance, outreach, and training to help further purchases of EPPs from SWCs.

In addition, this report includes a progress update on the *Toxics Reduction Task Force* (TRTF)[3] from January 2017 – December 2018. The TRTF was established in 2009 to help facilitate implementation of EO 515, and primarily assists in identifying ways to reduce toxic substances in products or services on SWCs. During this period, the TRTF continued its work to promote the use of environmentally preferable cleaning products and identified safer sanitizers and disinfectants.

Overall, the EPP Program estimates the following key accomplishments:

Table 1: EPP Estimated Environmental and Cost Benefits for FYs 2017 - 2018	FY 2017	FY 2018
Estimated EPP spending from statewide contracts (SWCs)	$274M	$281M
Estimated annual savings, primarily from energy efficient purchasing choices	$18,850,000	$12,187,000
Reduction in metric tons of carbon equivalent (MTCE[4]), primarily from purchasing energy efficient products and those containing post-consumer recycled content	389,827	65,270
Estimated tons of waste diverted from disposal to recycling	33,299	20,816

EPPs are found in more than 50 of the OSD's SWCs – and the data indicates that these products/services are an integral part of the contracts by helping the Commonwealth save millions of dollars per year and reduce the negative impacts on human health and the environment. The measures reported demonstrate the immense value of the OSD's EPP Program and helps confirm the business case for supporting sustainable product choices.

[1] https://www.mass.gov/files/documents/2016/08/vb/executive-order-515.pdf
[2] https://www.mass.gov/service-details/fleet-policies-including-fuel-efficiency-standard
[3] https://www.mass.gov/service-details/toxic-reduction-task-force
[4] MTCE is an international unit of measure used to compare the emissions from various greenhouse gases on the basis of their global warming potential, by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential. http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Carbon_dioxide_equivalent

Looking Ahead

The following are initiatives that the OSD, through its EPP Program, has worked on in FY 2019 and will continue working on in FY 2020, and these efforts will be reported on in future EPP reports:

- Working with sourcing staff to refine the new vendor report management system to include environmental data;
- Evaluating the possibility of conducting an environmental, social, and economic purchasing impact analysis;
- Developing two training classes and providing technical assistance to buyers on transitioning to battery powered landscape equipment;
- Continuing to work with the Maintenance, Repair, and Operations contracts to make EPPs readily available and help buyers find EPP products that feature more accurate and meaningful labeling in online catalogs;
- Improving outreach on EPPs to buyers and vendors through the OSD's newsletter, *Buy the Way*, guides, fact sheets, and social media;
- Supporting statewide programs to promote other environmental initiatives, such as the Leading By Example (LBE) Program, many of the energy efficiency programs in place at the Department of Energy Resources (DOER), and the Department of Capital Asset Management and Maintenance (DCAMM) that are targeted to state facilities, and recycling initiatives at the Department of Environmental Protection (DEP); and
- Continuing to foster partnerships with national organizations such as the Responsible Purchasing Network (RPN), the National Association of State Procurement Officials (NASPO), ValuePoint, the Sustainable Purchasing Leadership Council (SPLC), and others to pool resources and market successes.

During the FY 2019 the Toxics Reduction Task Force Program has:

- Continued to evaluate a number of chemicals of concern in products on SWCs, seeking alternatives, and finalize recommendations for using the Toxics Use Reduction Institutes' Green Cleaning Labs' online system that provides data endpoints for potential environmental and worker impacts [Pollution Prevention Options Assessment System (P2OASys)] for evaluating alternative approval of products on the green cleaning products contract.
- Continued reviewing various chemicals in products on SWCs and offer research and technical advice on alternatives.

CONTENTS

EPP Program Overview

The OSD provides management and oversight of the procurement of goods and services to be used by eligible entities,[5] which includes the direct management of more than 100 SWCs that have in excess of $1.4 billion in purchases. In addition, the OSD manages the state fleet of vehicles, the Commonwealth's COMMBUYS eProcurement Market Center, and certifies diverse businesses looking to do business with the Commonwealth. The OSD has supported an EPP Program for 22 years and is one of the longest standing state EPP programs in the country.

The EPP Program is administered by the OSD with the support of the Executive Office of Environmental Affairs (EOEEA) and the Massachusetts Department of Environmental Protection (DEP). One of the goals of the OSD is to find ways to leverage the Commonwealth's purchasing power to provide cost effective sustainable purchasing choices that reduce our impact on public health and the environment. This includes fostering markets for products with recycled content and promoting the purchase of goods and services that conserve energy, water, and other resources while reducing waste and the use of toxic substances. Through collaboration with the Department of Public Health (DPH), EOEEA's Office of Technical Assistance and Technology (OTA), and the Division of Energy Resources (DOER), which includes the Leading by Example (LBE), the Green Communities, and the Clean Cities Programs, the OSD develops a number of recommendations for consideration by the Strategic Sourcing unit as we developed solicitations for products that are in demand by purchasing customers.

In 2009, Executive Order (EO) #515, Establishing an Environmental Purchasing Policy, was issued to help the Commonwealth's Executive Departments further reduce their environmental footprint by focusing on purchasing environmentally preferable products, with a particular emphasis on those with toxic substances. The OSD's EPP Program administers EO 515 and provides overall program management. This includes, but is not limited to, establishing environmental procurement policies and goals[6] which may include minimum environmental standards for products and services procured by agencies, working closely with the Strategic Sourcing Services Teams (SSSTs) to research a product or service's market availability and cost, and assisting in crafting EPP specification language. The EPP Program promotes and tracks the purchase and use of EPPs in SWCs and assists the Strategic Sourcing Services Leads (SSSLs) by making sure that the EO requirements are met.

Beyond Massachusetts, the OSD collaborates with national purchasing organizations and sustainable purchasing advocates, such as the National Association of State Procurement Officials (NASPO),[7] the Responsible Purchasing Network,[8] and the Sustainable Purchasing Leadership Council,[9] and works with industry manufacturers and suppliers to identify and market the environmental, social, and economic benefits associated with more sustainable products and services. We also encourage emerging technologies that represent new opportunities for resource conservation and long-term cost savings.

Our efforts have helped raise the bar nationally on the quality, cost, and availability of EPPs, resulting in prominent changes in the marketplace to incorporate more sustainable business practices in public procurement. One example has been our efforts to establish the first exclusively ***green cleaning products*** statewide contract in 2009, which requires third party environmental certifications for chemical cleaners and janitorial paper products, as well as included specifications for safer sanitizers and disinfectants. With training and technical assistance for our Executive Departments, outreach and education efforts to municipalities and non-profits, and working closely with the vendors, it has allowed us to increase annual expenditure on this contract from $2M in 2010 to close to $15 million in FY 2017, and over $13 million in FY 2018, acknowledging an increase in market acceptance of these healthier cleaning products.

Additional details on the EPP Program may be found on the OSD's EPP website at www.mass.gov/epp.

[5] Eligible entities in the Commonwealth who may use SWC's: https://www.mass.gov/service-details/who-may-use-statewide-contracts
[6] EPP Program Policies and Goals Webpage, https://www.mass.gov/service-details/epp-program-policies
[7] National Association of State Procurement Officials, www.naspo.org
[8] Responsible Purchasing Network, www.responsiblepurchasing.org
[9] Sustainable Purchasing Leadership Council, www.sustainablepurchasing.org

Key Accomplishments in FY's 2017 - 2018

Tracking EPP Purchases on SWCs

The OSD's EPP Program documents annual environmentally preferable purchasing information made by state agencies and other public entities eligible to use Massachusetts' SWC through vendor reported sales reports. To determine the amount of sales attributed to EPPs, all purchases on the contract were reviewed, and those for EPP Products/ Services were tallied for the year. Some contracts are dedicated EPP contracts, and others have identifiable EPP spend, which has been calculated. Table 2 reflects FY's 2017 - 2018 estimated annual spend on EPPs. A full list of spend on environmentally preferable products by contract and by fiscal year may be found in *Appendix A: Estimated EPP Spend for FYs 2017 and 2018 through SWCs*.

Table 2: SWC Estimated Annual Spend on Environmentally Preferable Products/Services

FY 2017	FY 2018
$274,000,000	$280,700,000

Data estimates may fluctuate from year-to-year based on budget availability from buying entities to purchase goods and services. Fluctuations also may be due to issues with consistency of the vendor-reported data. Collecting, consolidating, reviewing, and validating vendor-reported data to measure the success of the EPP Program has been a constant challenge. In fact, it is a challenge for many organizations across the country, who struggle with piecemeal reporting systems to aggregate this type of data. The OSD's EPP Program typically relies on the information submitted by SWC vendors to track the purchases of environmentally preferable products and services and, per the terms of their respective contracts, vendors are required to submit this data on a quarterly basis. However, vendors are not always consistent with how they classify products as EPP in these reports, which may lead to data omissions or inconsistencies.

New Vendor Report Management System

In FY 2017, the OSD began working with a vendor to develop an online vendor report management system. The EPP Program worked closely with the development team through FY 2018 to identify specific data needs by contract, including determining EPP data fields and required reporting conventions to help with data consistency. The new system was launched for the FY 2019 data reporting period, and it is hoped that it will help alleviate data consistency issues for the OSD's EPP Program, and allow its Program staff to shift time requirements from pulling and scrubbing the data to analyzing and exploring automated solutions for metrics.

Cost Savings

In FYs 2017 - 2018 the Commonwealth quantified close to $32 million in savings by purchasing energy and water efficient products. Quantifying cost savings helps build the business case for incorporating EPPs into SWCs, and it also is an important metric for the OSD leadership. Table 3 reflects estimated cost savings for each year for the mentioned product areas

Table 3: Estimated Annual Cost Savings from Purchasing Various EPP Product on Statewide Contract for FYs 2017 - 2018

SAVINGS FROM….	RESOURCE SAVED…	FY 2017 $ Savings	FY 2018 $ Savings
Energy Efficient Lighting (LEDs and Energy Efficient Fluorescent)	energy and maintenance labor	$16,573,988	$10,157,004
EPEAT[10] Registered Equipment	energy and packaging	$1,339,200	$1,283,000
Remanufactured Toner Cartridges	plastic	$465,586	$584,000
Fuel Efficient Vehicles (executive fleet only)	fuel	$34,000	$42,000
Use of Microfiber Mops and Foaming Hand Soaps	water/sewer/energy/fuel	$452,535	$788,214
	TOTAL ESTIMATED ANNUAL SAVINGS	**$18,865,309**	**$12,854,218**

Cumulative savings over the lifetime of energy efficient lighting and EPEAT registered equipment also was calculated:

[10] EPEAT stands for the Green Electronic Council's Electronic Equipment Environmental Assessment Tool

Table 4: Lifetime Cost Savings for Light bulbs and EPEAT Registered Equipment			
SAVINGS FROM….	**RESOURCE SAVED…**	**FY 2017 $ Savings**	**FY 2018 $ Savings**
Energy Efficient Lighting (LEDs and Energy Efficient Fluorescent)	energy	$76,495,707	$45,708,178
	maintenance labor	$25,369,335	$3,275,955
EPEAT Registered Equipment	energy and packaging	$4,800,000	$5,460,000
	Total estimated annual savings	**$106,692,042**	**$54,444,133**

Cost Savings from Energy Efficient Lighting, Including Labor Savings

As specified in Section 7-A of EO 515, all SWCs are required to "take into account, in the procurement's specifications, the lifetime energy costs necessary to operate energy consuming products and equipment." As such, the OSD's EPP Program works closely with SSSTs to specify energy efficient lighting in all applicable SWCs. The energy efficient lighting options today primarily are light emitting diodes (LEDs) and compact and linear fluorescent bulbs, which use much less energy and last longer than incandescent bulbs and provide labor savings from reduced maintenance.

Cost savings were calculated by tallying the number of energy efficient light bulbs from vendor reported data in various SWCs, sorting them by wattage, and calculating the amount of energy saved compared to using an incandescent equivalent. The results were entered into a tool called *EnviroCalc*, which calculates cost savings and other environmental benefits for a number of products, including energy-efficient lighting. This tool was designed by OSD staff many years ago and it is pre-populated with formulas from other online calculators to automatically determine the savings in energy usage, costs, and reductions in labor. Table 5 reflects estimated cost savings from using LEDs and energy efficient lighting.

Table 5: Estimated Energy Cost Savings from LEDs and Energy Efficient Lighting for FYs 2017 - 2018		
	FY 2017	FY 2018
Annual Savings		
Energy Efficient Lighting (LEDs and Energy Efficient Linear Fluorescent)	$13,105,245	$9,100,920
Reduced Maintenance Labor	$3,468,743	$1,056,083
Estimated Cost Savings Total:	**$16,573,988**	**$10,157,003**
Cumulative Lifetime Savings		
Energy	$76,495,707	$45,708,178
Reduced Maintenance Labor	$25,369,335	$3,275,955
Estimated Cumulative Lifetime Cost Savings Total:	**$101,865,042**	**$48,984,133**

It is important to note that LEDs and energy efficient fluorescent lighting have become a product of choice among buyers in the marketplace. The short return on investment, coupled with the variety, availability and declining costs of these high-quality products have contributed to a transformation in the lighting marketplace.

In April 2017, the OSD launched the FAC100: Building Maintenance, Repair and Operations Contract[11] and detailed new specifications for lighting by encouraging more energy efficient options, in addition to excluding specific lighting and bulbs, such as certain incandescent, halogen, compact fluorescent lamps and bulbs, mercury vapor lamps, probe start metal halide lamps, and low pressure sodium lamps. These specifications will be included in other MRO contracts going forward to provide contract consistency.

The data shows that energy efficient lighting is becoming the primary lighting type purchased on SWCs. This is a great environmentally preferable product success story in the marketplace and the OSD's EPP Program will need to consider whether LEDs and energy efficient fluorescent should become the "conventional" product in future calculations.

Cost Savings from Energy Efficient Office Equipment

The Commonwealth requires computers, laptops, tablets, monitors, copiers, and multifunctional devices sold from SWCs to be listed on the Electronic Product Environmental Assessment Tool (EPEAT) registry, which is managed by the Green

[11] FAC100: https://www.mass.gov/files/documents/2018/12/14/FAC100.pdf

Electronics Council. [12] The registry verifies that products meet multi-attribute environmental performance standards for electrical products, including component substance management, product packaging, design, product longevity, and end-of-life management. The registry also includes a lifecycle assessment and corporate responsibility component. Through vendor-reported data, the EPP Program quantified the purchase of nearly 156,000 EPEAT registered devices through various SWCs in FY 2017, and over 261,000 devices in FY 2018. The OSD's EPP Program uses the Green Electronics Council's EPEAT Benefits Calculator[13] to quantify annual and cumulative lifetime cost savings as shown in Table 6.

In 2018 the Green Electronics Council released its new standard for Servers,[14] which will be incorporated into the re-bid of the OSD's IT hardware and services SWC.

During the fourth annual EPEAT Purchaser Awards in May of 2018, the Commonwealth was acknowledged for its work to incorporate greener electronics choices into SWCs. The Commonwealth earned a Two-Star Award for its commitment to sustainable purchasing in two IT product categories – PCs and Displays and Imaging Equipment.

Table 6: Estimated Cost Savings from Energy Efficient Office Equipment for FYs 2017 - 2018

	FY 2017	FY 2018
EPEAT Registered Computers, Laptops, Tablets, Monitors	$1,300,000	$885,000.00
EPEAT Registered Copiers and Multifunctional Devices	$39,200	$ 398,000
Total:	**$1,339,000**	**$1,283,000**
Estimated Cumulative Lifetime Savings	**$4,800,000**	**$5,460,000**

Cost Savings from Using Remanufactured Laser Printer Toner Cartridges

Remanufactured toner cartridges (remans) are produced from recycled empty toner cartridges that are disassembled, inspected, cleaned, reassembled, refilled, and quality assurance tested to ensure optimal performance. In 2012, the ITD/OSD Enterprise Cartridge Acquisition Policy[15] was released that required all Executive Agencies to purchase remanufactured laser printer toner cartridges whenever they are available. This requirement also applies to Non-Executive Agencies using Commonwealth Information Technology Capital Funds.

Remans are available on SWC ITC66: Copiers, Printers, Scanners and Related Devices and Services.[16] They must be guaranteed to meet Original Equipment Manufacturer (OEM) standards and be certified to meet all test methods developed and used by the printer cartridge industry. All vendors also are required to offer cartridge recycling at no cost to customers and some may offer discounts for the return of cartridges.

In FYs 2017 - 2018 the OSD's EPP Program calculated total savings from choosing to use remans over the cost of using OEMs. All remanufactured and OEM printer toner cartridges sold were tallied, an average cost per cartridge was calculated, and the difference between the two was multiplied by the number of remanufactured cartridges sold, resulting in savings of approximately $1,049,600 in FY's 2017 -2018.

Table 7: Estimated Savings From Using Remanufactured Printer Toner Cartridges for FYs 2017 - 2018
(Difference in price between OEM and Reman was multiplied by # of Remans sold to get Total Contract Savings from Using Remans)

	# of OEM	Average $ Per OEM	# Reman	Average $ Per Reman	Total Contract Cost Savings From Using Remans
FY 2017	52,801	$115.79	8,387	$60.28	$465,586
FY 2018	100,035	$104.84	15670	$67.57	$584,014
Total:	**152,836**		**24,057**		**$1,049,600**

The OSD awarded a new contract, ITC69: Managed Print Services, in 2017 to several vendors. Through ITC69, a service

[12] The Green Electronics Council, www.greenelectronicscouncil.org
[13] EPEAT Benefits Calculator: https://greenelectronicscouncil.org/epeat-benefits-calculator/
[14] EPEAT for Servers: https://greenelectronicscouncil.org/wp-content/uploads/2019/04/List-of-Criteria-2018-v2.pdf
[15] ITD/OSD Enterprise Cartridge Acquisition Policy: https://www.mass.gov/files/documents/2016/07/ox/enterprise-toner-cartridges-policy-itdandosd.docx
[16] ITC66: Copiers, Printers, Scanners and Related Devices and Services: https://www.mass.gov/media/1256626/download

provider takes primary responsibility for meeting the customer's office printing needs, including the printing equipment, supplies, services, and the overall management of the printer fleet under a managed print services contract. The Commonwealth is working on migrating from the current copier and printer environment of leasing copiers and purchasing desktop printers, to a managed print services model, which is anticipated to reduce the purchase of laser printer toner cartridges. ITC69 indicates that if laser printer toner cartridges are needed, "high quality remanufactured supplies are a preferred product under this contract" and all vendors are required to offer them in their product selections.[17]

Cost Savings from Using Fuel Efficient Vehicles

To help fulfill the requirements of Chapter 169, Section 1, of the Green Communities Act,[18] the OSD's EPP Program and the Office of Vehicle Management (OVM)[19] worked closely with DOER's LBE Program to develop the Fuel Efficiency Standard for State Fleets (FES)[20] which went into effect in August 2016 (FY 2017). The standard requires the Commonwealth's state agencies to purchase more fuel-efficient vehicles and those using advanced technologies,[21] while also providing flexibility in meeting these requirements.

For all new vehicle requests, OVM now requires executive branch agencies to fill out the Vehicle Request and Fuel Efficiency Calculator[22] prior to making a purchase. The calculator was developed by DOER's LBE Program to assist agencies, and OVM, in working together to identify purchases that meet the standards. This important step opened the door to discussions with agencies regarding their requests and integrated fuel efficiency into the decision-making process.

The DOER's LBE Program reviewed data from Executive Agency purchases from FY's 2017 - 2018 and calculated savings of a total of $34,000 and $42,000, respectively, from improved fuel efficiency.[23] The average miles per gallon (MPG) of purchased vehicles was 25 MPG, compared to the average 18 MPG of turn-in vehicles (a 40% increase in combined MPG). This was calculated by comparing the vehicles turned in across 13 Executive Branch agencies to the 123 new vehicles acquired in FY 2017, as well as the 138 new vehicles acquired by 20 agencies in FY 2018 and calculating the cumulative fuel costs associated with the changes. In FY 2018 there was an 11% decrease in the average fuel gallons used per vehicle and $0.02 decrease in cost per fuel mile compared to FY 2017 acquisitions.[24]

In FY 2017 DOER awarded the VEH102: Advanced Vehicle Technology Equipment, Supplies and Services[25] statewide contract for electric vehicle supply equipment (EVSE), idle reduction technologies, and aftermarket vehicle conversion technologies to assist in reducing or eliminating vehicle gasoline consumption. The contract provides access to new and innovative technologies and was a first of its type nationally. In FY 2017, executive agencies retrofitted 52 vehicles (45 new vehicles and seven existing vehicles) with a hybrid conversion technology sold on this contract. In FY 2018, three additional retrofits were completed, increasing the total number of conversions to 55 vehicles.

Table 8: BEV, HEV, Hybrid Conversions and Estimated Fuel Efficiency Savings for FYs 2017 - 2018

	HEV	PHEV	BEV	Hybrid Conversion Completed	Estimated Fuel Efficiency Savings
FY 2017	1	1		52	$34,000
FY 2018	14		6	3	$42,000
TOTAL	**15**	**1**	**7**	**55**	**$76,000**

[17] Information about ITS69 may be found in the Master Blanket Purchase Order in COMMBUYS.
[18] https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter169
[19] The Office of Vehicle Management (OVM) is located within the Operational Services Division and oversees the Commonwealth's Executive Branch fleet vehicles used by authorized Executive Departments.
[20] https://www.mass.gov/files/documents/2018/03/21/FuelEfficiencyStandard_UPDATED_Fall2017.pdf
[21] Advanced technologies include idle reduction equipment and after-market electric conversion technologies and are both sold on statewide contract VEH102: Advanced Vehicle Technology Equipment, Supplies and Services.
[22] https://www.mass.gov/service-details/ovm-forms
[23] DOER Leading By Example Progress – Clean Transportation, https://www.mass.gov/info-details/leading-by-example-progress-clean-transportation
[24] As reported by the DOER Program to the OSD, May, 2019
[25] https://www.mass.gov/media/1133201/download

Cost Savings from Using Green Cleaning Products

In 2013, the OSD awarded an *all green* cleaning products contract, FAC85: Environmentally Preferable Cleaning Products, Programs, Equipment and Supplies,[26] to 15 vendors. This contract was developed through a multi-state collaboration that increased the purchasing power of this contract, resulting in substantially discounted prices for contract users. The contract currently has more than 16,000 high quality, lower cost, and environmentally preferable green cleaning products and is available for use by executive departments, municipalities, authorities, and other states.

Analysis of the FYs 2017 - 2018 quarterly reported vendor data for FAC85 reflects that the environmentally preferable products offered have, on average, a discount of approximately 47% off the manufacturer's suggested retail price, reflecting more than $40M in savings to contract users. The OSD's EPP Program also analyzed potential cost savings from using microfiber mops and foaming hand soaps, both environmentally preferable product alternative options found on FAC85:

- ***Microfiber Mops:*** The UMASS Lowell Safe Care Home Project reports that microfiber mops use considerably less water, disinfectant, and cleaning solution than loop or sponge mops, resulting in less energy used to heat the water and a reduced need to replace the cleaning solution. [27] For FYs 2017 - 2018 buyers were able to save an estimated $427,000 in cost savings from reduced energy and water use by using microfiber mops.
- ***Foaming Hand Soap:*** Foaming hand soap is environmentally preferable when compared to concentrated hand soaps since it contains less water and requires less water to rinse off, resulting in less energy needed to heat water used in hand washing. Buyers saved $120,000 in FYs 2017 - 2018 by choosing foaming hand soap over concentrated soap.

Table 9: Cost Savings from Using Microfiber Mops and Foaming Hand Soap for FYs 2017 - 2018

	FY 2017 Energy Cost Savings	FY 2017 Water/Sewer Cost Savings	FY 2018 Energy Cost Savings	FY 2018 Water/Sewer Cost Savings
Microfiber Mops	$243,235	$132,481	$481,569	$262,293
Foaming Hand Soaps	$49,732	$27,087	$28,713	$15,639
Total Cost Savings	**$292,967**	**$159,568**	**$510,283**	**$277,932**

Using calculation assumptions outlined in Appendix A, contract users were able to save an estimated total of $549,752 by using microfiber mops and foaming hand soaps in FYs 2017 - 2018.

Environmental and Health Benefits

The OSD's EPP Program encourages procurement staff to consider environmental and health impacts of a product or service throughout its lifecycle as part of its best value procurement strategy. Some of the considerations include raw materials used, the manufacturing process, product packaging and distribution methods, as well as ultimate disposal.

The Commonwealth defines EPPs as a product or service that has a lesser or reduced negative effect on human health and the environment when compared with competing products or services that serve the same purpose.[28] This includes:

- reduced air pollution and water emissions
- material and energy efficiency

[26] https://www.mass.gov/media/990146/download
[27] Ten Reasons to Use Microfiber Cleaning Tools, UMASS Lowell Department of Work Environment, 2013: http://www.sustainableproduction.org/downloads/TenReasonsforMicrofibercleaning012113.pdf and What's so great about Microfiber, Green Cleaning, Sanitizing, and Disinfecting: A Toolkit for Early Care and Education, California Department of Pesticide Regulation: https://www.epa.gov/sites/production/files/2013-08/documents/fact_sheet_whats_so_great_about_microfiber.pdf
[28] https://www.mass.gov/service-details/epp-program-overview

- less waste in landfills
- reductions in hazardous and toxic substances
- increased durability
- less impact to public health

Quantifying indirect health and environmental benefits helps validate the benefits of choosing sustainable products. Many EPPs often are recyclable and made from recycled content materials. A key aim of sustainable purchasing is reducing toxic threats to our citizens, waterways, and environment.

The Commonwealth has incorporated EPP specifications into more than 50 SWCs. The mandatory and desirable environmental specifications in contracts are documented in the *Minimum Environmentally Preferable Products and Services Specifications Guide*.[29]

For this report several tools were used to determine environmental benefits calculations to help measure greenhouse gas (GHG) emissions reductions which are typically expressed in metric tons of carbon equivalent (MTCE) from either the use of products containing recycled content, energy and water efficient products, or amount of materials diverted from disposal to recycling facilities. The results of these calculations are presented in Table 10 and consolidates the reductions in MTCE reported in Tables 10-15 below:

Table 10: Reduction in Metric Tons of Carbon Equivalent from Various Purchasing Decisions (from tables 11-15)

	FY 2017 MTCE Reduced	FY 2018 MTCE Reduced
Purchasing Recycled Content Products	618	5,979
Purchasing LEDs and Energy Efficient Lighting	373,673	36,497
Purchasing EPEAT Registered Products	6076	6579
Using Microfiber Mops	843	1,669
Using Hand soap	172	100
Diverting Waste from Disposal to Recycling	8,445	14,446
Total Reduction in MTCE	**389,827**	**65,270**

Recycled Content Products

The OSD's EPP Program reviewed a number of FY's 2017 - 2018 vendor sales reports to find and quantify products containing recycled content: office papers; janitorial/food service paper goods; plastic products; recycling containers, compost bins, trash can liners and Pay-As-You-Throw bags; remanufactured toner cartridges; recycled mulch; and compost. Amounts were entered into EnviroCalc, the Commonwealth's environmental procurement calculation tool, to determine various environmental benefits estimates, in addition to providing some translation of the environmental benefits into comparable and sometimes more understandable terms:

Table 11: Estimated Environmental Benefits Summary from Purchasing Recycled Content Products for FYs 2017 - 2018
(office papers; janitorial/food service paper goods; plastic products; recycling containers, compost bins, trash can liners and Pay-As-You-Throw bags; remanufactured toner cartridges; recycled mulch; and compost)

Compiled from Vendor Reported Data and used EnviroCalc

Environmental Benefit Estimates:	**FY 2017**	**FY 2018**
Weight of Material Recycled (tons)	67,606	1,715,110
Landfill space savings (cubic yards)	218,544	5,788,228
Wood saved (trees)	1,014,789	29,100,378
Energy saved (million BTUs)	93,093	2,640,570
Metric Tons of Carbon Equivalent (MTCE) Reduced	618	5,979
Environmental Benefit Equivalent to….		
Annual Solid Waste Generation of:		
# of Households	29,465	805,973
# of Loaded Garbage Trucks	10,927	289,411

[29] https://www.mass.gov/files/documents/2016/09/wf/epp-specifications_0.xlsx

Energy content of # of Barrels of Oil	16,094	455,271
Emissions from # of vehicles driven for one year	121	1,174

Energy Efficient Products

Quantities of LEDs and energy efficient fluorescent lighting from various contracts were tallied by wattage, and entered into EnviroCalc to determine environmental benefits estimates and benefit equivalents from reduced energy use:

Table 12: Estimated Environmental Benefits Summary from Purchasing LEDs and Energy Efficient Lighting for FYs 2017 - 2018		
Compiled from Vendor Reported Data, EnviroCalc, EPA's Greenhouse Gas Equivalencies Calculator		
Environmental Benefit Estimates:	**FY 2017**	**FY 2018**
Electrical energy savings (kWh)	89,151,323	61,911,024
Carbon dioxide emissions reduced (MTCE)	373,673	36,497
Environmental Benefit Equivalent to….		
Annual electricity usage of # homes for one year	7,862	5,460
Emissions from # of vehicles driven for one year:	10,320	7,167

EPEAT registered office equipment, including computers, laptops, tablets, monitors, multi-functional devices, printers, copiers, fax machines, and scanners from various contracts were tallied by EPEAT registration type (gold, silver, bronze) and entered into the EPEAT Benefits Calculator. This calculator assists organizations in estimating the environmental benefits of greening their purchase, use, and disposal of electronics.

Table 13: Estimated Environmental Benefits Summary from Purchasing Energy Efficient Office Products for FYs 2017 - 2018		
Compiled from Vendor Reported Data, EPEAT Benefits Calculator, EPA's Greenhouse Gas Equivalencies Calculator		
Environmental Benefit Estimates:	**FY 2017**	**FY 2018**
Electrical energy savings (KwH)	12,979,000	12,440,000
Metric Tons of Carbon Equivalent Reduced	6076	6579
Reduced Solid Waste Generation (tons)	919	214
Environmental Benefit Equivalent to….		
Greenhouse gas emissions from # of vehicles for one year	1,378	1,868

Cleaning Products

The EPP Program analyzed purchases from the FAC85: Environmentally Preferable Cleaning Products, Programs, Equipment and Supplies contract to determine environmental benefits from using microfiber mops and low toxicity foaming hand soap. The following environmental benefits were identified in Table 14, and a description of the methodology for the calculations may be found in Appendix D.

The EPP program also was able to calculate that 7,000 gallons of certified low toxicity glass cleaners were used in FYs 2017 - 2018, replacing glass cleaner typically containing ammonia, a respiratory sensitizer known to cause asthma among workers and trigger asthma attacks among building occupants.[30] In addition, an estimated million gallons of "safer" sanitizers and disinfectants that contained "allowable active ingredients" per the FAC85 contract replaced products with "prohibited active ingredients" such as chlorine bleach (sodium hypochlorite), hydrogen chloride (HCL), and quaternary ammonium chloride compounds.

Table 14: Estimated Environmental Benefits by Using Microfiber Mops and Low-Toxicity Foaming Hand Soap				
Compiled from Vendor Reported Data and EPA's Greenhouse Gas Equivalencies Calculator				
		Water Conserved (Gallons)	Electricity Saved (kWe)	MTCE Reduced from Reduced Energy
Purchase of Microfiber Mop heads				
FY 2017	7,793 Mop Heads	13,248,100	1,192,329	843
FY 2018	15,429 Mop Heads	26,229,300	2,360,637	1669

[30] Ammonia, CDC Agency for Toxics Substance and Disease Registry, https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=2

Table 14: Estimated Environmental Benefits by Using Microfiber Mops and Low-Toxicity Foaming Hand Soap				
Compiled from Vendor Reported Data and EPA's Greenhouse Gas Equivalencies Calculator				
		Water Conserved (Gallons)	Electricity Saved (kWe)	MTCE Reduced from Reduced Energy
Purchase of Certified Low-Toxicity Foaming Hand Soap				
FY 2017	38,679 Gallons	2,708,723	243,785	172
FY 2018	22,322 Gallons	1,563,909	140,752	100

Fuel Efficiency

The Commonwealth is working to increase the state fleet with highly efficient hybrid, alternative fuel, or electric vehicles. In FY 2017, the first full year following the promulgation of the Fuel Efficiency Standards, the average miles per gallon (MPG) of the 123 executive fleet vehicles acquired improved from 14.1 MPG to 18.6 MPG -- a 32% increase – when compared with the vehicles turned in.[31]

Waste Diversion

In April 2013, MassDEP published its "vision of the future of solid waste reduction and management in the Commonwealth" – a master plan entitled, *Massachusetts 2010-2020 Solid Waste Master Plan: Pathway to Zero Waste*. The plan states that "Diverting material from the waste stream by reducing generation and increasing reuse, recycling, and composting, saves everyone money, captures valuable resources, protects our environment, and feeds our economy."[32]

In FY 2017, the OSD published the *Manage Your Organization's Waste Stream in a More Sustainable Manner*[33] flyer providing buyers information on recycling services on statewide contract, in addition to products that would help establish or expand a waste diversion program.

The OSD also collects vendor-reported data regarding materials disposed of, recycled, and composted on various SWCs. Users of the contracts ultimately save money through avoided disposal costs by diverting materials from disposal facilities (landfill and waste to energy) to recycling and composting facilities. The OSD's EPP Program has not been able to quantify any associated per ton savings from reported data due to vendor bundled billing practices. This practice allows vendors to bundle disposal and recycling costs together - making it impossible to quantify any related savings for diverting materials from disposal to reuse/recycling.

In FYs 2017 - 2018 the OSD's EPP Program documented a combined estimate of 50,000 tons of materials diverted from disposal to recycling from the following contracts: FA82: Hazardous/Universal, Medical, and Electronic Waste Disposal and Emergency Response; FAC86: Solid Waste and Recycling; FAC90: Carpet and Mattress Recycling Services; and FAC96: Records Management, Storage and Archiving Services and Moving Services. The OSD's EPP Program used standard estimates on tonnage drawn from the EPAs Volume to Weight Conversion Factors[34] to estimate volume of tonnage from the contracts. These conversions were used to populate the EPA's Waste Reduction Model (WARM) [35] to calculate estimated reductions in greenhouse gas emissions as shown in Table 15. A detailed breakout of tonnages is shown in Appendix E.

[31] DOER Leading By Example Progress – Clean Transportation, https://www.mass.gov/info-details/leading-by-example-progress-clean-transportation
[32] MassDEP Solid Waste Master Plan: https://www.mass.gov/files/documents/2016/08/nw/swmp13f.pdf
[33] https://www.mass.gov/files/documents/2019/01/04/Recycling%20Flyer%20Nov-2018.pdf
[34] https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf
[35] EPA created the Waste Reduction Model (WARM) to help solid waste planners and organizations track and voluntarily report greenhouse gas (GHG) emissions reductions from several waste management practices. http://epa.gov/epawaste/conserve/tools/warm/index.html

Table 15: MTCE from Various Wastes Diverted From Disposal FY's 2017 - 2018		
Compiled from vendor reported data from FAC82, FAC86, FAC90, FAC96 and using US EPA's WARM Model to calculate environmental benefit, and EPAs Greenhouse Gas Equivalency Calculator[36]		
	FY 2017	**FY 2018**
Tons of waste diverted to recycling	33,299	20,816
Environmental Benefits Equivalent to….		
Reduction in MTCE	8,445	14,446
Greenhouse gas emissions from # of passenger vehicles driven for one year	6,574	11,246
Carbon Dioxide emissions from # pounds of coal burned	33,849,989	57,908,283

Commercial Battery Powered Electric Landscape Equipment

In FY's 2017 - 2018 the OSD's EPP Program, based on significant progress in battery powered technology, embarked on a project to explore adding *commercial* grade battery powered landscape equipment (mowers, blowers, and other handheld landscape equipment) to Statewide Contract FAC88 - Lawns & Grounds, Equipment, Parts and Services.[37]

The OSD's EPP Program applied for and received two grants from the ***National Association of State Procurement Officials Green Technical Assistance Funds***, enabling us to hire Quiet Communities (QC)[38] to help with the project. QC is a non-profit that has worked with multiple communities across the country to promote clean, sustainable, and quiet outdoor maintenance practices as the valued norm. During FY's 2017 - 2018 we completed the following:

- Researched and developed the first *commercial grade* specifications for battery powered landscape equipment in the country, which would serve as a model for other communities.
- Re-opened FAC88 and added a new category for commercial battery powered equipment
- Developed bid evaluation criteria
- Awarded four new vendors to the contract who provide commercial battery powered equipment
- Provided technical assistance to a number of public entities, including the Town of Lexington, the Department of Conservation and Recreation (including Walden Pond), and the Department of Transportation's Mass Aeronautics Department to explore a transition to battery powered landscape equipment
- Developed an economic and environmental modeling calculator that compares multi-year costs of electric battery powered lawn and garden equipment to gas powered counterparts with similar specifications and performance characteristics to help decision makers understand the environmental and cost benefits of transitioning to battery powered equipment.

Table 16: Environmental, health and cost savings benefits of Battery Powered Landscape Equipment

Environmental benefits:

- Help the Commonwealth meet its environmental goals in climate change, clean air, and toxics use reduction
- Reduces carbon emissions, toxic exposure, air pollution, hazardous waste, and spills
- Reduces noise pollution and nuisance complaints
- Reduces wildlife and habitat exposure to toxic emissions, excessive noise, and ground-sourced particulates
- Does not contribute to smog

Health benefits:

- Reduces worker exposures to toxic emissions, excessive noise, excessive vibrations, and ground-sourced particulates
- Reduces public exposure to toxic emissions, excessive noise, and ground-sourced particulates

Cost benefits:

- Avoids fuel costs
- Lowers maintenance costs
- The possibility for extended work hour options and holiday operation due to lower noise levels

[36] EPA's Greenhouse Gas Equivalency Calculator: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator
[37] FAC88: Lawns & Grounds, Equipment, Parts, and Services Contract User Guide, https://www.mass.gov/media/844091/download
[38] Quiet Communities www.quietcommunities.org

- Began to plan for two unbranded full day technical assistance workshops to be held in FY 2019, for the purpose of bringing together technical experts, buyers, and vendors to explore environmental, health, and cost issues

See the Master Blanket Purchase Order in COMMBUYS to view all the documentation listed above.[39]

Greening the Maintenance Repair and Operations Contracts

In FY 2016, the EPP Program completed a project to identify EPPs for inclusion in Maintenance, Repair and Operations (MRO) contracts, document specific environmental third-party certifications for those products, and provide multiple recommendations to incorporate a universal green structure into these bids.[40] In FY 2017, the OSD's EPP Program and the Responsible Purchasing Network joined the OSD's FAC100: Building Maintenance Repair and Operations sourcing team and provided sustainability specification assistance that allowed the sourcing team to develop mandatory environmental specifications on particular products within the 10 categories, including:

- Requiring accurate and meaningful labeling of products and their certifications;
- Offering environmentally preferable products that include identified third-party environmental specifications (see list in Appendix B);
- *For electrical and lighting products and supplies*, identifying specific allowable lighting equipment (e.g., Energy Star or Design Lights Consortium listed LEDs and energy efficient fluorescents), and identifying excluded products (e.g., incandescent and halogen bulbs for which more energy-efficient lamps are readily available, and low efficient fluorescent fixtures/luminaires);
- *For LED Roadway and Outdoor Area Lighting*, requiring all lighting to be Design Lights Consortium Certified and requiring certain documentation to prove equipment contains the required criteria;
- *For Lumber Products and Supplies,* all plastic dimensional lumber must contain post-consumer recycled content plastic material;
- *For Concrete and Masonry products,* must comply with the EPA's Comprehensive Procurement guidelines for cement, concrete, and flowable fill; and
- *For Paint Products and Supplies,* all non-recycled paints must be certified by either Green Seal, Master Painters Institute Green Performance Standards, UL Ecologo, and the most current Indoor Air Quality portion of California Section 01350 standard and includes a list of prohibited ingredients. All zone and traffic-marking coatings must be free of lead, and all recycled/reprocessed paints must be Green Seal certified.[41]

In addition, the team added *Category 10: Environmentally Preferable Products* which provided a means to enable manufacturers and suppliers of innovative energy efficient, less toxic, or otherwise environmentally preferable products and technologies to make those products available to the Commonwealth directly. The team chose to use an innovative technique by awarding all categories on FAC100 and leaving Category 10 open for rolling enrollment throughout the term of the contract.[42]

In FY 2017, the OSD's EPP Program presented the findings from the MRO project during several webinars, including those hosted by the Responsible Purchasing Network, NASPO, the National Association of State Facility Administrators, and the Federal Department of Energy.

In FY 2018, the EPP Program joined the NASPO ValuePoint cooperative Facilities MRO sourcing team which bid out and

[39] See FAC88 Master Blanket Purchase to view the these documents: FAC88 Performance Specifications Battery Powered Equipment, FAC88 RFR Battery Powered Revisions, FAC88 Battery Powered Price Sheet, FAC88 Economic and Environmental Calculator: https://www.commbuys.com/bso/external/purchaseorder/poSummary.sdo?docId=PO-15-1080-OSD01-OSD10-00000003434&releaseNbr=0&parentUrl=contract

[40] EPP Procurement Program Annual Report Fiscal Year 2016, https://www.mass.gov/service-details/epp-annual-reports-progress-reports-and-other-publications

[41] EPP Products and Services Guide, Description for Building Materials and Supplies, https://www.mass.gov/info-details/environmentally-preferable-products-index#building-materials-and-supplies-

[42] FAC100: Building Maintenance, Repair and Operations rolling enrollment for Category 10: Environmentally Preferable Products, https://www.commbuys.com/bso/external/bidDetail.sdo?docId=BD-17-1080-OSD03-SRC3-14684&external=true&parentUrl=bid

awarded a national MRO contract used by over 35 states. We incorporated some of the previously developed universal green contract language recommendations into the bid,[43] including requiring that bidders provide a "robust supply of green/sustainable products" and to provide "accurate and meaningful labeling of environmentally preferable products offered in the on-line catalog and search capability". To prevent greenwashing, the bid went further to outline specific criteria on what constitutes an environmentally preferable product and required bidders to "describe the designation (symbol) that you will use to identify these EPP products provided, including the certification or standard that it meets, and where a buyer would find clarification on the website about its designation.

The team also included sustainable/environmentally preferable products in the "market basket." By incorporating EPPs into the market basket, we were able to further reduce pricing on a number of products.

Environmentally Preferable Cleaning Products

As reported in the FY 2016 EPP Annual Report,[44] the OSD green cleaning products contract, *FAC85: Environmentally Preferable Cleaning Products, Programs, Equipment and Supplies*[45], continues to be a strong focus of the OSD's EPP Program. FAC85 is a multi-state contract that offers a comprehensive line of environmentally preferable cleaning products. The chemicals and janitorial paper products included in this contract are required to be "Independently Third-Party Certified,"[46] ensuring that contract users do not have to analyze technical data to be assured that the product will perform well. In addition, vendors were selected for their ability to provide assistance in transitioning eligible entities to a green cleaning program.

All purchases of environmentally preferable products reported by FAC85 vendors, which include sales to state departments, municipalities, authorities, and other states, indicate growth in total contract usage from $12.5 million in FY 2016 to $14.7 million in FY 2017 and a drop to $13.3 million in FY 2018. There may be a few reasons for this decrease. The OSD's EPP Program has worked with various sourcing teams to provide consistency with specifications over multiple contracts. In this case, MRO contracts may sell cleaning products that are required to comply with the specification set forth in the FAC85 contract. There may have been a shift in purchases from the FAC85 contract to the MRO contracts, which we have not been able to quantify from vendor reporting. In addition, the Toxics Reduction Task Force (see below) encouraged MassCor Industries[47] to certify a new line of cleaning products so that they could become a vendor on this contract. In FY 2017, they received Green Seal certification for a number of products. Unfortunately, the OSD has not received vendor reports from MassCor Industries, so there is no way to determine if sales have shifted to this new vendor.

In FY 2017, we were honored to be chosen for a NASPO Bronze Cronin Award[48] that recognizes outstanding state procurement initiatives and approaches. Although the green aspects of the contract are innovative in themselves, the processes used: engaging multi-state and technical cooperation, using third party specification as the basis of qualifying products, and developing a "living" contract to allow for products to be added/deleted throughout the contract term resulting in a longer contract that will keep up with latest innovations and changes in the marketplace, are all models that we believe other organizations may use for successful contracts.

The EPP Program was invited to speak at multiple workshops and participated in a NASPO-sponsored webinar, and the SPLC

[43] NASPO/ValuePoint Facilities Maintenance, Repair and Operations Contract and bid document: https://www.naspovaluepoint.org/portfolio/facilities-mro-industrial-supplies/
[44] FY 2016 EPP Annual Report, https://www.mass.gov/service-details/epp-annual-reports-progress-reports-and-other-publications
[45] FAC85: Environmentally Preferable Cleaning Products, Programs, Equipment and Supplies, https://www.mass.gov/media/990146/download
[46] See the FAC85: Environmentally Preferable Cleaning Products, Programs, Equipment and Supplies Attachment A: Mandatory Specification and Desirable Criteria to a list of required environmental third party requirements, https://www.commbuys.com/bso/external/purchaseorder/poSummary.sdo?docId=PO-15-1080-OSD01-OSD10-00000003619&releaseNbr=0&parentUrl=contract
[47] MassCor is a Commonwealth correctional industries program providing vocational training experience, http://www.masscor.us/about-us.html
[48] https://www.naspo.org/LinkClick.aspx?fileticket=Xxk9MdvI6eA%3d&tabid=3884&portalid=16&mid=9145

Healthier Procurement Webinar on *How to Specify for Human & Environmental Health*.

Toxic Reduction Task Force (TRTF)

To facilitate implementation of EO 515, the TRTF was established in 2009 with oversight and leadership by the OSD and the EEA's Office of Technical Assistance and Technology (OTA). The TRTF is comprised of staff from the OSD and OTA and the Department of Public Health (DPH), the Department of Labor Standards (DLS), the Toxics Use Reduction Institute (TURI)[49] and the Department of Environmental Protection (DEP). The goals and objectives of the TRTF are to select priority focus areas for reduction in toxic substances in products or services The TRTF reported separately on the accomplishments in the calendar year 2016 *Toxics Reduction Task Force Annual Report, which* is available online.[50] Going forward, TRTF progress will be included as a section in the EPP Annual Reports. In this report, we discuss progress from January 2017 to June 30, 2018, except for metrics associated with the vendor reported data, which is compiled by fiscal year.

For FYs 2017 - 2018 the TRTF engaged in a process to evaluate TURI's Green Cleaning Lab's Pollution Prevention Options Assessment System (P2OASys)[51] to determine if the screening tool could replace the manual review process the TRTF normally uses to evaluate products submitted for an FAC85 alternative approval. The P2OASys tool compiles current environmental, health, and safety information about products and chemicals, and uses both qualitative and quantitative data. The tool meets many of the screening needs for the TRTF for its alternative review and will be used moving forward.

The TRTF also discussed additional chemicals of concern in products on SWCs and identified specific recommendations for the OSD to disclose, limit, or remove products with these chemicals. Chemicals identified include Per- and Polyfluoroalkyl substances (PFAS), Methylene Chloride, and N-Methylpyrrolidone (NMP). The TRTF also continued discussions on identifying products with alternatives for flame retardants.

Lastly, the TRTF consulted on environmental specifications recommended for two contracts: FAC98: Floorcoverings and Accessories, Floorcovering Installation, Maintenance and Repairs, and FAC100: Building Maintenance Repair and Operations; final language was integrated into the bids.

Green Cleaning – Tracking Executive Agency Usage of FAC85

The TRTF has been tracking FAC85 purchases from Commonwealth executive agencies since completing outreach and education efforts in FY 2015 and FY 2016 and found a downward trend in usage from $4,215,000 in FY 2016 to $4,017,230 in FY 2017 and then to $2,990,298 in FY 2018. This equates to a 31% decrease in overall usage from FYs 2017 - 2018 (see Table 10). As reported above in the Environmentally Preferable Cleaning Products section of this report, a drop in total volumes may be from buyers purchasing from other contracts. However, the TRTF will discuss educational efforts in FY 2019 to encourage these agencies to continue to use the environmentally preferable products on this contract.

Table 17: FY's 2017 and 2018 Top 10 Executive Department Usage of FAC85

Compiled from vendor reported data

Commonwealth Executive Department/Agency	**FY 2017**	**FY 2018**	**$ Purchases**
Department of Correction	$2,087,290	$1,515,910	$3,603,200
Department of Public Health	$411,597	$368,333	$779,930
Department of Mental Health	$394,747	$326,295	$721,042
Soldiers Homes (including Chelsea and Holyoke)	$276,165	$78,692	$354,857
Department of Conservation and Recreation	$166,476	$74,742	$241,218
Department of Developmental Services	$174,407	$53,137	$227,543
Department of Youth Services	$118,910	$92,607	$211,517
Department of Children and Families	$101,482	$69,660	$171,142

[49] TURI is located at UMass Lowell and was established by the Massachusetts Toxics Use Reduction Act (TURA) of 1989. TURI collaborates with businesses, community organizations and government agencies to reduce the use of toxic chemicals protect public health and the environment and promote the competitiveness of Massachusetts businesses. www.turi.org

[50] CY2016 Toxics Reduction Task Force Annual Report, https://www.mass.gov/service-details/epp-annual-reports-progress-reports-and-other-publications

[51] P2OASys, https://p2oasys.turi.org/

Division of Capital Asset Management	$73,633	$49,704	$123,337
Executive Office of Energy and Environmental Affairs	$75,228	$33,406	$108,634
TOTALS	**$3,879,935**	**$2,662,485**	**$6,542,420**

Department of Labor Standards Encourages Healthier Product Use

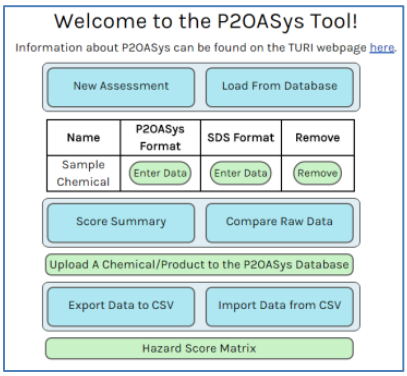
An industrial safety and health inspector from the Department of Labor Standards ("DLS") participates in the TRTF to represent workplace safety concerns. DLS also works collaboratively with the DPH's Work-Related Asthma Surveillance and Prevention Program. DLS conducts safety inspections and accident investigations at public sector workplaces to help employers reduce work-related injuries. In March 2018, Governor Baker updated M.G.L. c. 149 § 6-1/2 to clarify that as of February 1, 2019, all public sector employers are required to comply with OSHA safety and health standards. DLS conducted more than 125 orientations to municipalities and state agencies to help implement the new requirement, and 44 employers requested a voluntary audit. The purchase of asthma-free products and FAC85 is reviewed during these voluntary surveys.

In FY 2018, DLS conducted eight inspections in response to employee injuries involving an asthma attack, chemical burn, or floor stripping. These inspections included an evaluation of chemical selection and use, personal protective equipment, and employee training. DLS conducted an additional 38 site inspections at schools with a focus on custodial areas and kitchen chemical products. These inspections included a recommendation to select products on FAC85 that will not trigger asthma.[52]

DLS also includes recommendations for EPP products and FAC85 in trainings and webinars. DLS hosted 12 workshops for school custodians in which choices of cleaning products, labeling, and asthma prevention were discussed. In addition, the DLS website contains a fact sheet on EPP. [53]

P2OaSYS – A TURI Tool to Evaluate Safer Cleaning Products

As part of the FAC85 contract, existing vendors may receive an alternative approval for products/innovative technologies/services which either fall outside the existing required specifications or categories from the contract. The alternative review was added to encourage and foster innovation into safer cleaning products.



The TRTF established product efficacy, environmental and health screening, and evaluation criteria to comply with the FAC85 specifications. It is a manual process where weights are applied to the criteria, and those meeting the evaluation criteria may be accepted for use on the contract. Last year the TRTF approved *Food Grade Dichloroisocyanurate (NaDCC) with CAS#2893-79-9*[54] as an approved active ingredient for use as a disinfectant (including antimicrobial mold & mildew cleaners) and non-food contact surface sanitizer.

TURI suggested exploring the use of their Pollution Prevention Options Analysis System (P2OASys) tool to help the TRTF streamline the process for screening and evaluating products. P2OASys is an online system[55] that provides data endpoints for potential environmental and worker impacts based on user input of product information. P2OASys also has the ability to input quantitative and qualitative data on the chemical toxicity, ecological effects, physical properties, and changes in worker environments. It draws on information from Safety Data Sheets (SDSs) and other external resources and allows users to apply weighting to emphasize issues of higher concern. The tool would allow the TRTF to more easily set weights on endpoints – which would be consistent with the specifications in FAC85 and

[52] As reported by Mary Dozois, Supervisor, Workplace Safety & Health Programs for Public Employees on May 24, 2019 to the TRTF.
[53] Green Cleaning, DLS, https://www.mass.gov/files/documents/2016/08/tu/green-cleaners-bulletin.pdf
[54] See the FAC85: Environmentally Preferable Cleaning Products, Programs, Equipment and Supplies' Attachment A: Mandatory Specifications and Desirable Criteria, page 7, https://www.commbuys.com/bso/external/purchaseorder/poSummary.sdo?docId=PO-15-1080-OSD01-OSD10-00000003619&releaseNbr=0&parentUrl=contract
[55] https://p2oasys.turi.org/

could be used as an evaluation tool in itself. This, in turn, would allow procurement staff overseeing the contract and vendors an easier way to screen their products for compliance with specifications in the contract.

The TRTF completed a gap analysis to identify current endpoints used to evaluate products and compared them to endpoints found in P2OASys. Appendix C lists the existing endpoints included in P2OASys, seven endpoints that P2OASys does not cover but the existing evaluation does, and endpoints that P2OASys covers that the TRTF has not yet evaluated. The TRTF further analyzed each of the specific criteria for the endpoint and their weighting and began to make recommendations for changes that would be consistent for use with the FAC85 specifications. The TRTF will continue to fine tune the criteria weighting in FY 2019 and hopes to be able to use P2OASys as the main screening and evaluation tool for alternative approvals in the future.

Review of Per- and Polyfluoroalkyl (PFAS) in Products

Per- and polyfluoroalkyl substances, a family of chemicals commonly referred to as PFAS, have been found in many brands of disposable plates, bowls, and "clamshells" made of molded paper and agricultural fibers (e.g., bagasse and wheat straw).[56] This class of chemicals has come under increasing scrutiny from toxicologists, ecologists, and regulators given their persistence and connection to potential health effects, including kidney and testicular cancer, thyroid disruption, attention-deficit hyperactivity disorder (ADHD), delayed puberty, and obesity.[57] The Environmental Protection Agency (EPA) has released drinking water health advisories for PFAS from drinking water[58] and Massachusetts has announced its intention to initiate the process to develop Maximum Contaminant Levels (MCL's) for PFAS.[59]

The TRTF reviewed language in the Statewide Contract GRO35: *Foodservice Supplies and Equipment, Institutional Commercial Grade Large and Small,* which includes all disposable dishware. Currently, all compostable service ware is required to have a third-party environmental certification and comply with the American Society of Testing and Materials (ASTM) d6400-99 specifications for compostable plastics and ASTM d6868 specifications for biodegradable plastic coatings on paper and other compostable substrates.

Acceptable third-party environmental certifications for compostable foodservice ware in the GRO35 contract include:

- **Biodegradable Products Institute (BPI)**
- **Cedar Grove Composting Approved**
- **OK Compost – TUV Austria**
- **Australian Bioplastics Association**
- **Japan BioPlastics Association**
- **DIN CERTCO (European Union)**

It was identified that many of the certifiers will be requiring "no intentionally added fluorinated chemicals" to their certified products by December 2019.[60]

However, other service ware was not required to meet environmental certifications. At the end of FY 2018, the GRO35 contract manager received multiple requests from buyers looking for PFAS-free products. Working with the EPP Program and the TRTF, the contract manager reached out to the four vendors on the contract who provide service ware and required them to update their price sheets to disclose which products contained PFAS. Vendors were also allowed to add PFAS-free products to their offerings. In FY 2019, the price sheets will be updated and any new PFAS free products will be added.

Review of Methylene Chloride and N-Methylpyrrolidone in Products

The TRTF also has identified methylene chloride, also called dichloromethane, and N-methylpyrrolidone (NMP) as chemicals of concern and began a review of these chemicals in products on SWCs. Methylene chloride is a volatile chemical that has a

[56] Center for Environmental Health, Avoiding Hidden Hazards, A Purchaser's Guide to Safer Foodware, https://www.ceh.org/wp-content/uploads/CEH-Disposable-Foodware-Report-final-1.31.pdf
[57] See Grandjean, Philippe et al. "Estimated Exposures to Perfluorinated Compounds in Infancy Predict Attenuated Vaccine Antibody Concentrations at Age 5-Years." Journal of Immunotoxicology 14.1(2017): 188–195. PMC.Web. 17 Jan. 2018, Registry of Toxic Effects of Chemical Substances (RTECS), The National Institute for Occupational Safety and Health (NIOSH) Centers for Disease Control and Prevention, 7 March 2017. Web 17 Jan. 2018, C8 Probable Link Reports, C8 Science Panel, 17 Jan. 2018, http://www.c8sciencepanel.org/prob_link.html, New York State Approved EO4 Specification for food service containers and wrappers, https://ogs.ny.gov/greenny/food-service-containers-and-wrappers
[58] https://www.epa.gov/pfas
[59] https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas#development-of-a-pfas-drinking-water-standard-(mcl)-
[60] Biodegradable Products Institute, Position on Fluorinated Chemicals, https://bpiworld.org/Fluorinated-Chemicals

variety of uses, including paint and coating removal and it is found in a range of adhesives and other products used for automotive care, lubrication, lithography, and general cleaning.[61] NMP is a solvent used in paint and coating removal, and it also is present in a range of coating products, including adhesives, cleaners, dyes, and more.[62]

There are a number of safer alternative paint strippers, which have been documented by *Safer Chemicals, Healthy Families*[63] and TURI[64] which concluded that, "new solvent blends developed by UMass Lowell…worked comparably to methylene chloride-based paint strippers and significantly better than other commercially available alternatives."

In 2017, based on worker and consumer exposures to methylene chloride and NMP in paint and coating removal, the EPA identified risks of concern associated in these applications and proposed a rule to discontinue their use under the reformed Toxic Substances Control Act (TSCA) stating that "methylene chloride and NMP in paint and coating removal present an unreasonable risk to human health."[65] For methylene chloride, the health impacts of its use in paint and coating removal include death by asphyxiation, central nervous system depression, liver toxicity, kidney toxicity, reproductive toxicity, specific cognitive impacts, and cancers such as brain cancer, liver cancer, certain lung cancers, non-Hodgkin's lymphoma, and multiple myeloma.[66] EPA has identified 49 fatalities since 1976 resulting from consumer or commercial worker exposure to methylene chloride during paint and coating removal.[67] From 2000 – 2011 alone, Methylene chloride was associated with the death of 13 bathtub refinishers in ten states, including one in Massachusetts.[68] For NMP, health effects include developmental toxicity (e.g., fetal death or decreased infant birth weight), neurotoxicity, immunotoxicity, liver and kidney toxicity, and reproductive toxicity.[69]

A number of retailers, including AutoZone, PPG, Lowe's, Home Depot, Sherwin-Williams, and Amazon have agreed to remove these products from sale.[70] Walmart removed NMP products in February 2019.[71]

At the end of FY 2018 the TRTF requested that the contract manager overseeing the OSD's Maintenance, Repair and Operations contracts that include these types of products ask all contract vendors to disclose any product that contains either Methylene Chloride or NMP. The Federal Administration announced in May 2018 that it would move to finalize a rule to discontinue methylene chloride use and on May 15, 2019 the EPA issued a news release that the "EPA Bans Consumer Sales of Methylene Chloride Paint Removers."[72] The TRTF will work with the OSD to communicate this new ban to buyers and contract vendors, and continue to evaluate other products and alternatives to explore whether there are enough alternatives available to recommend removal of products with these chemicals from the contracts.

---

[61] https://saferchemicals.org/get-the-facts/chemicals-of-concern/methylene-chloride/
[62] https://saferchemicals.org/get-the-facts/chemicals-of-concern/n-methylpyrrolidone/
[63] Safer Chemicals, Healthy Families is a non-profit who advocates for safer chemical policy and compiled a list of *Paint Strippers – Safer Alternatives Sold by Major U.S. Retailers*, https://saferchemicals.org/sc/wp-content/uploads/2018/03/paint_strippers_safer_alternatives.pdf?x15132
[64] www.turi.org/TURI_Publications/TURI_Reports/Assessment_of_Safer_and_Effective_Alternatives_to_Methylene_Chloride_for_Paint_Stripping_Product
[65] www.epa.gov/sites/production/files/2017-01/documents/prepublicationcopy_paintremovers_nprm_2017-01-12assigned.pdf, www.publicintegrity.org/2015/09/21/17980/three-decades-death, www.regulations.gov/document?D=EPA-HQ-OPPT-2016-0231-0001>
[66] EPA TSCA Work Plan Chemical Risk Assessment Methylene Chloride: Paint Stripping Use. CASRN 75-09-2. EPA Document# 740-R1-4003. August 2014. Office of Chemical Safety and Pollution Prevention, Washington, D.C. https://www.epa.gov/sites/production/files/2015-09/documents/dcm_opptworkplanra_final.pdf
[67] US EPA Regulation of Certain Uses under Toxic Substances Control Act: Methylene Chloride and N-Methylpyrrolidone, EPA-HQ-OPPT-2016-0231-0001, January, 2017: https://www.regulations.gov/document?D=EPA-HQ-OPPT-2016-0231-0001
[68] CDC MMWR 2012 Fatal Exposure to Methylene Chloride Among Bathtub Refinishers — United States, 2000–201161(7):119-122 https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6107a2.htm, OSHA Fatal Facts, No. 13 – 2016, https://www.osha.gov/Publications/OSHA3883.pdf
[69] EPA, TSCA Work Plan Chemical Risk Assessment N-Methylpyrrolidone: Paint Stripping Use. CASRN 872-50-5. EPA Document# 740-R1-5002. March 2015. Office of Chemical Safety and Pollution Prevention, Washington, D.C. *https://www.epa.gov/sites/production/files/2015-11/documents/nmp_ra_3_23_15_final.pdf*
[70] PPG: www.bloomberg.com/news/articles/2018-10-11/autozone-ppg-halt-sale-of-paint-strippers-with-toxic-chemicals,
Lowe's: https://newsroom.lowes.com/inside-lowes/lowes-commitment-methylene-chloride-nmp/,
Home Depot: https://corporate.homedepot.com/methylene-chloride,
Sherwin-Williams: https://saferchemicals.org/newsroom/sherwin-williams-commits-to-ban-deadly-paint-strippers/,
Amazon: https://sellercentral.amazon.com/gp/help/external/help.html?itemID=W6HK2RDRNNFW2ML&language=en-US&ref=efph_W6HK2RDRNNFW2ML_cont_XMGGPL6LC4CVXHT
[71] https://corporate.walmart.com/newsroom/2018/08/20/walmart-phasing-out-paint-removal-products-with-methylene-chloride-and-nmp
[72] https://www.epa.gov/newsreleases/epa-bans-consumer-sales-methylene-chloride-paint-removers-protecting-public

Flame Retardants

The OSD's EPP Program continued to publicize its collaboration with the Center for Environmental Health[73] to develop criteria for environmentally preferable lines of furniture in Statewide Contract OFF38: Office, School, and Library Furniture, Accessories & Services.[74] As reported in the CY2016 TRTF Annual Report, the impetus for this project came from the growing environmental and health concerns related to the use of polybrominated diphenylethers (PBDEs) or flame retardants in commercial and consumer products to meet flammability standards. The project expanded to create a resource that helped buyers identify important information to help guide productive discussion with vendors so they could make environmentally informed choices when purchasing furniture from the contract. All of the project information was published on an EPP Furniture webpage.[75] The OSD also published information about this work in the OSD Newsletter *Buy the Way*[76] and the OSD Blog.[77] In addition, the EPP Program was recognized for this work by the Sustainable Purchasing Leadership Council and received an Outstanding Case Study Award for the Healthier Furniture Project.[78]

The TRTF has begun to review other products in SWCs containing flame retardants, including firefighting foam and electronics, and will explore alternatives recommendations.

Contract Specifications:

The TRTF weighed in on specifications for two new contracts:

- FAC98: Floorcoverings and Accessories, Floorcovering Installation, Maintenance and Repairs: this contract is for carpet and flooring and includes requirements for vendors to disclose chemicals and ingredients, and encourages the use of an Environmental Product Declaration (EPD).[79] In addition, carpet, adhesives, carpet cushion, hard surface flooring, and resilient flooring are required to meet third-party certifications.[80]
- FAC100: Building Maintenance, Repair and Operations: all non-recycled paint is required to meet third party certifications. In addition, vendors are required to offer environmentally preferable and third-party certified options for adhesives, lead free products, and solvents and degreasers.

TRTF Looking Ahead

The TRTF will continue to analyze the use of P2OASys as a screening and evaluation tool for cleaning products. It also will continue reviewing PFAS, methylene chloride, NMP, and flame retardants in products on SWCs and offer research and technical advice on alternatives. The TRTF remains a technical advisory group to help the OSD's EPP Program identify additional toxics in products on SWCs and explore safer and healthier options.

Sustainable Purchasing Leadership Council Benchmark Program

In FY 2018 the EPP Program participated in the SPLC's Benchmark pilot which is a program that allows organizations to assess their own sustainable purchasing activities against SPLC's definition of leadership; and benchmark the maturity of their sustainable purchasing program against other programs. This program works with participants to complete an

[73] Center for Environmental Health, is a non-profit organization dedicated to working with parents, communities, businesses, workers, and government to protect children and families from toxic chemicals in homes, workplaces, schools, and neighborhoods. www.ceh.org
[74] https://www.mass.gov/media/1471791/download
[75] EPP Program's Environmentally Preferable Furniture Webpage, https://www.mass.gov/guides/epp-program-environmentally-preferable-products-and-services-on-statewide-contracts#-furniture,-environmentally-preferable-
[76] *Buy The Way*, Find Environmentally Preferable Furniture on Statewide Contract OFF38, page 3, https://conta.cc/2IizQF5
[77] OSD Blog, Find Environmentally Preferable Furniture on Statewide Contract OFF38, https://blog.mass.gov/osd/environmentally-preferable-purchasing/find-environmentally-preferable-furniture-on-statewide-contract-off38/
[78] Sustainable Purchasing Leadership Council 2017 Leadership Awards, https://www.sustainablepurchasing.org/blog/2017/05/17/press-release-2017-sustainable-purchasing-leadership-award-winners-announced/
[79] An Environmental Product Declaration (EPD) is an independently verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products https://www.environdec.com/What-is-an-EPD/
[80] See EPP Products and Services Guide Description for Floorcoverings and Accessories, https://www.mass.gov/info-details/environmentally-preferable-products-index#floorcoverings-and-accessories-

"inventory" of sustainable purchasing program activities, benchmarks the maturity of the activities against SPLC's Principles of Leadership in Sustainable Purchasing and the Maturity Model for Leadership,[81] compares results to members and peers, and uses results to identify strengths, opportunities, and resources to help with planning. The Commonwealth had a high level of maturity compared to member peers and identified four main areas for continuous improvement:

- Explore opportunities for supplier diversity for sustainable suppliers;
- Complete an Environmental, Social, and Economic purchasing impact analysis to identify top three target areas;
- Define sustainability performance and measures for the top three performance areas; and
- Formally assign responsibility and accountability of the sustainable purchasing program to a top or executive leader/sponsor.

The Commonwealth has a robust EPP Program compared to other states and has benefitted from integrating EPPs into the OSD operations. We offer a variety of services in support of creating contracts that enhance the inclusion of EPP products.

EPP Policy, Guidance, Outreach and Training

The OSD's EPP Program works with the OSD's Training unit to incorporate and present information about EO 515 and buyer and vendor requirements at training sessions. We have participated in the OSD's annual MASSUYS EXPO, the Commonwealth's largest business to government event, which brings together thousands of buyers to meet with SWC vendors and assisted the OSD's Strategic Sourcing Services Unit to conduct the Sustainable Facilities training for buyers.

The EPP Program worked closely with the OSD's Marketing, Communication, and Events team (MCE) to increase marketing of EPP information to our customers/constituents through the following communications:

- ***Buy the Way*, Blog Posts, and Tweets**: The EPP Program provides content to the MCE unit to include the OSD's EPP highlights on a regular basis through multiple OSD communication platforms.
- **Green Awareness for Facility Managers**: a two-page flyer that highlights categories of produces in associated SWCs specific to facility managers.[82]
- **EPP Recycling Flyer**: a flyer that highlights recycling related products and services found on SWCs.[83]
- *Environmentally Preferable Products and Services Guide:* there are thousands of EPP products available in more than 50 SWCs. The MCE team assisted with updates to this guide which includes several resources for public purchasers, such as guidance on integrating green specifications into bids and summaries of all products and services considered environmentally preferable in our SWCs.[84]

Awarding Statewide Contracts with EPPs

During FYs 2017 - 2018 the OSD's EPP Program staff served as a SSST member or provided guidance on many new SWCs as described below.

EPP Assisted on the Following SWCs from FYs 2017 - 2018	
CLT08 - Clothing, Uniforms, Footwear, Accessories, Personal Care Products and Bedding:	This contract includes a category for "environmentally preferable clothing." Items in this category may be made with recycled materials (e.g. recycled polyester and/or PET plastic); organically grown cotton, be bleached without the use of chlorine, or similar environmental attributes. Contact vendors to request additional information on the products provided.
FAC88 - Lawns & Grounds, Equipment, Parts, and Services	Reopened contract to add Category 13: Environmentally Preferable, which includes a selection of commercial-grade battery electric mowers, blowers, and other handheld equipment

[81] SPLC Principles for Leadership in Sustainable Purchasing, https://www.sustainablepurchasing.org/principles/
[82] Green Awareness for Facility Managers
https://www.mass.gov/files/documents/2019/01/04/Green%20Awareness%20for%20Facility%20Managers%20Nov2018.pdf
[83] EPP Recycling Flyer, https://www.mass.gov/files/documents/2019/01/04/Recycling%20Flyer%20Nov-2018.pdf
[84] https://www.mass.gov/files/documents/2017/09/11/epp-product-guide.docx

FAC98 - Floorcoverings and Accessories, Floorcovering Installation, Maintenance and Repairs:	Many of the products offered on this carpet and flooring contract require mandatory third-party environmental certifications. Contractors have disclosed chemicals and ingredients, identified product labeling capabilities, and whether product lines have an Environmental Product Declaration (EPD). The following specifications are required: **Carpet:** NSF/ANSI-140® Standard (most recent version) OR Certified by the Cradle to Cradle Innovation Institute at the Silver achievement level or higher.
	• **Adhesives:** must be:
	  ○ Green Seal, UL EcoLogo, Scientific Certifications Systems (SCS) FloorScore, UL GREENGUARD Gold, Carpet and Rug Institute (CRI) Green Label Plus, SQ certified OR
	  ○ Comply with the VOC limit (50) established in Rule 1168[85] by the South Coast Air Quality Management District (SCAQMD) *and* may not contain chemicals on the Proposition 65 List OR
	  ○ Not be listed by the Association of Occupational and Environmental Clinics (AOEC) as an asthmagen.[86]
	  ○ It also is desirable to offer "no glue" installations, which would eliminate the VOCs from installation.
	• **Carpet Cushion:** must meet one of the following third-party certifications - Carpet and Rug Institute's Green Label Plus, Scientific Certification System's FloorScore, UL GREENGUARD Gold, Cradle to Cradle (C2C) Innovation Institute (at the Silver level or higher) and it is desirable to meet the EPA's Comprehensive Procurement Guidelines[87] for recycled content.
	• **Hard Surface Flooring:** Must be certified by one of the following - Cradle to Cradle Innovation Institute at the Silver Level or Higher, Scientific Certification System (SCS) Under Its FloorScore Standard, UL GREENGUARD Gold, Forest Stewardship Council (FSC) and it is desirable to be made from 30% post-consumer recycled content.
	• **Resilient Flooring:** must meet several American Society of Testing and Materials (ASTM)[88] requirements

FAC100 - Building Maintenance Repair and Operations:	This contract includes a wider selection of environmentally preferable MRO products. Vendors are required to label third-party certified products in their online catalogs, and have certain restrictions on products and chemicals as described in Appendix B.
FAC103 - Landscaping Services, Snow Removal, Tree Care and Related Services	This contract contains invasive plant control practices, outdoor integrated pest management services, low water irrigation management practices, and has the ability to provide compost and organic fertilizers, native and drought tolerant plants, integration of xeriscape and permaculture practices, compost all yard waste, and use zero-emission battery electric landscaping equipment.
FAC104 - Landscaping Products, Parks and Recreation Equipment and Related Products, Supplies and Service	This contract offers a number of native plants, organic products, and products containing post-consumer recycled materials.
FAC106 - Water Treatment Chemicals and Alternative Treatment Systems:	This contract offers alternative water treatment technologies, systems, and related services and includes chemical-free systems for cooling towers, saltwater generation technology, and ionization systems for swimming pools, as well as outdoor water fountain treatment systems that may reduce the use of chlorine by up to 70%.
ITC66 - Copiers, Printers, Scanners and Related Devices and Services:	• EPEAT Bronze Registration: All copiers, multifunctional devices, printers, and scanners must meet the Electronic Procurement Environmental Assessment Tool (EPEAT) EPEAT Bronze registration or higher to be sold on the contract. • Remanufactured copiers are available for purchase and undergo extensive refurbishing after a period of use before they are offered for resale or rental. Under the terms of the contract, remanufactured equipment is held to the same performance standards as new equipment. • Remanufactured Toner Cartridges and toner cartridge returns: a wide selection of high-performing third-party certified remanufactured toner are available on this contract. All vendors provide no-charge methods for returning empty cartridges.

[85] http://www.aqmd.gov/docs/default-source/planning/1168/PAR1168-090617.pdf?sfvrsn=6
[86] http://www.aoecdata.org/expcodelookup.aspx
[87] https://www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products#03
[88] https://www.astm.org/

	• Networking and Multifunctional Capabilities: The vast majority of copying equipment available on the contract may be connected to a computer network and serve as a printer. Most of the equipment available performs more than one office function, including scanning to email and scanning to computer memory. • Energy-saving and Duplex Copying and Printing: All equipment is required to be delivered with energy-saving features enabled. Copiers with speeds faster than 15 copies per minute, printers faster than 21 pages per minute, and fax machines that prints six pages per minute must have duplexing features.
ITC69 – Managed Print Services:	This contract was bid in FY 2017 and awarded vendors take primary responsibility for meeting the Customer's office printing needs, including the printing equipment, supplies, services, and the overall management of the printer fleet.
OFF47 - Office Supplies, Recycled Paper and Envelopes:	The EPP Program began working with the OFF47 team to develop EPP Specifications.

Additional information on the dozens of contracts in Massachusetts now containing EPPs may be found in the *Environmentally Preferable Products and Services Guide*.

EPP Partnerships

In FYs 2017 - 2018, the EPP Program continued to actively work with other state agencies, organizations, and states to find common ground on EPP product and service specifications and market purchasing guidance to buyers. Some of the key organizations are included in Appendix F.

The OSD's EPP Program supports the goals of the Commonwealth's DOER Clean Cities Program, Green Communities Program, and the LBE Program, EEA Interagency Electric Vehicle Workgroup, the MassDEP Solid Waste and Recycling Programs, and provides information to these programs related to the availability of EPPs on SWCs. In addition, the OSD's EPP Program participates in the Interagency Electric Vehicle and Water Workgroups.

Nationally, the OSD's EPP Program was a member of the NASPO Best Practices Committee and it was selected to present at NASPO's FY 2018 REACH Conference, which is the largest conference for state procurement staff. The presentation was entitled "Leveraging the Contract to Create a Framework for Sustainable Purchasing." The EPP Program also was selected to participate on the SPLC's Strategic Advisory Committee and presented at both SPLC Annual Conferences.

Conclusions and Considerations for FY 2019

EPPs are found in more than 50 of the OSD's SWCs – and the data indicates that these products/services are an integral part of the contracts and through their use have helped save the Commonwealth millions of dollars per year and reduced the negative impacts on human health and the environment. The measures reported demonstrate the immense value of the OSD's EPP Program and helps confirm the business case for supporting sustainable product choices.

The OSD's EPP Program partners with many other state and non-state entities to market and provide technical assistance to buyers on the multitude of EPPs available. The OSD's EPP Program also has established minimum environmental standards for products and services and together these programs and policies have contributed to purchasing nearly $555 million of products and services that have a reduced impact on human health and the environment during FYs 2017 - 2018. In addition, select products have saved the Commonwealth more than $31M in FYs 2017 - 2018, and significantly more if calculating lifetime savings.

Choosing products that contain recycled content, products that use less energy and water, and diverting products to recycling instead of disposal contributes to reductions in overall greenhouse gas production. The OSD's EPP Program calculated a reduction in more than 455,000 MTCE in FYs 2017 - 2018, which is equivalent to removing greenhouse gas emissions from 354,211 vehicles for one year.

Each year, the OSD's EPP Program identifies areas for further research and development of EPP policies, specifications, or partnerships. In FY 2017, the EPP Program continued its work on MRO contracts and joined the NASPO MRO sourcing team to advocate for EPP considerations in the national contract. We were successful in adding language for accurate and meaningful labeling of EPPs, requiring more robust options for EPPs, and integrating EPPs into the market basket.

In FYs 2017 - 2018, the EPP Program partnered with the LBE program and QC to develop the first state specifications for *commercial* battery powered landscape equipment and helped decision makers understand the environmental and cost benefits of transitioning to battery powered equipment. We also developed an economic and environmental modeling calculator that compares multi-year costs of electric battery powered lawn and garden equipment to gas powered counterparts with similar specifications and performance characteristics. Lastly, we began to plan two training sessions and provided technical assistance to help various entities transition to a clean fleet of landscape equipment.

The TRTF remains a technical advisory group to help the OSD's EPP Program identify additional toxics in products on SWCs and explore safer and healthier options. In FYs 2017 - 2018 the TRTF evaluated the use of TURI's P2OASys, an online system that provides data endpoints for potential environmental and worker impacts, as a screening and evaluation tool for FAC85 alternative approval for products. The TRTF also identified Per- and Polyfluoroalkyl (PFAS), Methylene Chloride and N-nethylpyrrolidone as chemicals of concern and began to review products containing these chemicals in SWCs to identify alternatives. In addition, the TRTF continues to explore alternatives to products with flame retardants and follows up with agencies on their use of safer cleaning products.

The OSD's Office of Vehicle Management continues to work with the LBE Program to track progress with the Fuel Efficiency Standards and assists executive fleet managers with their purchasing decisions to reduce the overall MPG of the fleet. There are a number of incentive programs that will become available through FY 2019 and beyond for public entities to expand the infrastructure and fleet of alternative fuel vehicles. The OSD's EPP Program will continue to provide assistance to advance these options.

In FY 2019 the OSD's EPP Program improved outreach regarding EPPs to buyers and vendors through website revisions, newsletters, guides, and social media; worked with Strategic Sourcing Staff to research and identify additional EPPs to include in new Requests for Proposals (RFPs) and strengthen specifications for re-bids; and participated in vendor and buyer kick-off events to highlight EPPs on contracts. In addition, we are excited to use the new online vendor report management tool to streamline the collection of data used to develop this report.

The OSD's EPP Program has worked on the following areas in FY 2019:

- Working with sourcing staff to refine the new vendor report management system for pulling environmental data.

- Developing two training sessions and provide technical assistance to buyers related to transitioning to battery powered landscape equipment.
- Continuing to work with the MRO contracts to make EPPs more available and help buyers find EPP products with more accurate and meaningful labeling in online catalogs.
- Improving outreach on EPPs to buyers and vendors through the OSD's newsletter, *Buy the Way*, guides, fact sheets, social media, and updating the EPP Products and Services Guide.
- Supporting statewide programs to promote other environmental initiatives, such as the LBE Program, many of the energy efficiency programs in place at the Department of Energy Resources (DOER) and the Department of Capital Asset Management and Maintenance (DCAMM) that are targeted to state facilities, and recycling initiatives at the Department of Environmental Protection (DEP).
- Continuing to foster partnerships with national organizations such as the Responsible Purchasing Network (RPN), National Association of State Procurement Officials (NASPO), ValuePoint, the Sustainable Purchasing Leadership Council (SPLC), and others to pool resources and market successes.
- The Toxics Reduction Task Force continues to evaluate chemicals of concern in products on SWCs to find alternatives and work to finalize using P2OASys for evaluating alternative approval of products on FAC85.

Building a sustainable future requires persistent innovation as Massachusetts works together to shift from an inefficient use of energy and materials toward a new paradigm that emphasizes efficiency, closed-loop, and cradle-to-cradle product purchasing, toxic-free products and practices, and the protection of natural resources and ecosystems.

Appendix

A. Estimated EPP Spend for FYs 2017 - 2018 through Statewide Contracts

Source Data: Quarterly Vendor Sales Report, MMARS Data, Vendor Reported Sales for 1% Fee Data

Contract Name	Contract Number	2017 Spend	2018 Spend	Spend Source Data	EPP Product/Service
Clothing, Uniforms, Footwear, Accessories, Personal Care Products, and Bedding	CLT07 & 08	$20,299	$13,081	Quarterly Vendor Sales Report	Fleece products
Biodiesel and Ultra Low Sulfur Diesel (ULSD)	ENE33 & ENE40	$809,866	$686,187	MMARS Spend	B5 Premium ULSD, Biodiesel, Biodiesel Clear
#2 Heating Oil Bioheat, No 4 & 6 Residual Oil	ENE34 & 45	$1,763,792	$0	Quarterly Vendor Sales Report	#2 heating oil Bioheat, No 4 & 6 Residual Oil
Integrated Pest Management	FAC74 &FAC92	$4,775,380	$2,351,355	Vendor Reported Sales for 1% Fee	Integrated pest management service
Maintenance, Repair and Operations	FAC76	$2,421,451	Became FAC100	Quarterly Vendor Sales Report	All energy efficient lighting, and other products considered EPP or with third party certification
Landscaping Services	FAC77 & FAC103	$1,032,260	$4,237,701	Quarterly Vendor Sales Report	IPM, planting, tree pruning, invasive control, mulching
Landscape Products, Parks and Recreation Equipment	FAC79 & FAC104	$4,028,770	$2,547,537	Quarterly Vendor Sales Report	Compost, mulch, organic fertilizers, recycled aggregate, green roof supplies, recycled plastic products, erosion control products,
Water Treatment Chemicals	FAC80 & FAC106	$30,533	$96,588	Quarterly Vendor Sales Report	Less toxic/non-toxic water treatment technologies
Environmentally Preferable Janitorial Services	FAC81	$10,455,642	$14,519,258	Quarterly Vendor Sales Report	Vendors approved to use third party certified product
Hazardous Waste and Recycling	FAC82	$5,859,392	$4,854,395	Quarterly Vendor Sales Report	Safe management and disposal of hazardous waste
Renewable /Alternative Energy Credits	FAC83 & FAC109	$103,394	$132,288	Vendor Reported Sales for 1% Fee	Management of solar energy credits
Environmentally Preferable Cleaning Products, Program, Equipment and Supplies	FAC85	$14,653,367	$13,266,810	Quarterly Vendor Sales Report	All products are environmentally preferable or third party certified
Solid Waste and Recycling/Pay as You Throw (PAYT) Bags	FAC86	$3,924,755	$3,618,442	Quarterly Vendor Sales Report	Recycling of multiple materials, recycling credits, and PAYT bags
Recycling Containers and Bins	FAC87	$4,728,302	$3,036,992	Quarterly Vendor Sales Report	Recycling bins with recycled content and solar trash/ recycling containers
Lawns and Grounds Equipment	FAC88	$352,384	$216,215	Quarterly Vendor Sales Report	Non-gas lawn and grounds equipment
Electricity Demand Response and Forward Capacity Market Services	FAC89	$353,929	$1,012,720	Quarterly Vendor Sales Report	Demand response program
Carpet and Mattress Recycling Services	FAC90	$435,686	$340,316	Vendor Reported Sales for 1% Fee	Mattress recycling (note: there are not carpet recycling vendors yet)
Solar PV Inspection Services	FAC91	$9,350	$22,869	Vendor Reported Sales for 1% Fee	Solar panel inspections to extend life of panels
Facilities Maintenance, Repair & Operations with Small Hand & Power Tools	FAC94	$803,947	$494,069	Quarterly Vendor Sales Report	Energy efficient lighting, products with third party certification, recycled content, solar, or low toxic
Records Management, Storage, Archiving and Moving Services	FAC96	$1,193,488	$3,625,724	MMARS Spend	Document destruction recycling services
Walk-in Building Supplies/MRO Industrial and Building Supplies	FAC99 & FAC105	$713,542	$100,541	Quarterly Vendor Sales Report	Energy efficient lighting, products with third party certification, recycled content, solar, or low toxic
Building Maintenance, Repair and Operations	FAC100	$536,187	$898,903	Quarterly Vendor Sales Report	Energy efficient lighting, products with third party certification, solar, or low toxic

Foodservice Supplies and Equipment	GRO29 & 35	$1,825,794	$904,032	Quarterly Vendor Sales Report	Compostable dishware, products with recycled content, Energy Star & WaterSense certified, biobased
Prime Grocer	GRO30	$999	$2,181	Quarterly Vendor Sales Report	Organic or locally sourced
Dairy Products	GRO32	$5,573	$0	Quarterly Vendor Sales Report	Organic or locally sourced
Drinking Water-General and Emergency Services	GRO34	$207,956	$630,504	Quarterly Vendor Sales Report	Onsite filtration system, organic coffee
IT Hardware and Service	ITC47	$76,129,534	$117,270,488	Vendor Reported Sales for 1% Fee	EPEAT Registered and Energy Star equipment
IT Asset Lease Service	ITC49	$509,713	$9,894,745	Vendor Reported Sales for 1% Fee	EPEAT Registered and Energy Star equipment
Managed Print Services	ITS69	$0	$767	MMARS Spend	EPEAT Registered and Energy Star Equipment, management of printing to reduce paper and toner use, transition to paperless
Document Solutions	OFF27	$49,796,537	$1,392,607	Vendor Reported Sales for 1% Fee	EPEAT Registered and Energy Star equipment
Copiers, Printers, Scanners and Related Devices and Services	ITC66, OFF16, OFF32	$42,165,244	$39,806,836	Vendor Reported Sales for 1% Fee	EPEAT Registered and Energy Star equipment and peripherals, remanufactured toner cartridges
Art and Instructional School Supplies	OFF35 & OFF45	$2,248,131	$1,735,945	Quarterly Vendor Sales Report	Products with recycled content or with third party environmental certifications
Office Products, Recycled Paper & Envelopes	OFF36	$8,246,455	$4,533,444	Vendor Reported Sales for 1% Fee	Recycled content paper, envelopes and office supplies in addition to low toxic and third party certified
Office, School and Library Furniture, Accessories & Installation	OFF38	$222,541	$147,840	Quarterly Vendor Sales Report	Lines of furniture meeting the OSD EPP Criteria
Audio, Video, Multimedia Presentation Equipment and Services	OFF40	$13,620,452	$12,472,723	Vendor Reported Sales for 1% Fee	Energy star equipment
Print, Copy & Mail Services, and Printed Promotional Products	OFF44	$2,028,733	$14,855,029	Quarterly Vendor Sales Report	Printers meet EPP criteria, and all printing on recycled content paper
Windshield and Glass Replacement	OVM08 & VEH103	$301,743	$283,734	Vendor Reported Sales for 1% Fee	Windshield glass recycling
Short-Term Rental of Various Light Duty Vehicles	OVM09	$2,745	$9,436	Quarterly Vendor Sales Report	Alternative fuel vehicle rental
Management Consultants, Program Coordinators and Planners	PRF61	$1,395,321	$1,247,979	Quarterly Vendor Sales Report	Environmental consulting work
Energy Consultants	PRF62	$3,096,476	$4,075,854	Vendor Reported Sales for 1% Fee	Energy consultants
Environmental Engineering, Diagnostics, and Testing	PRF67	$957,324	$1,480,465	Vendor Reported Sales for 1% Fee	Environmental consulting work
Facilities Engineer Services	PRF69	$0	$482,059	Quarterly Vendor Sales Report	Environmental consulting work
Fuel Cards and Fuel Management Services	VEH10	$6,205,229	$7,238,958	MMARS Spend	Paperless management of fuel purchases
Vehicle Maintenance Management Services & Accident Subrogation Services	VEH84A	$2,311,475	$2,251,674	Quarterly Vendor Sales Report	Preventative maintenance and inspections
Light, Medium, Heavy Duty OEM & NON-OEM Motorized Vehicle Parts, Refined Motor Oil, Lubricants	VEH96	$1,403,760	$1,546,810	Quarterly Vendor Sales Report	Remanufactured, refurbished, recycled auto parts, oil and antifreeze
Light Duty Vehicles - Passenger Cars, SUVs, Trucks, Vans, SSVs and PPVs	VEH98	$2,091,035	$1,314,477	Quarterly Vendor Sales Report	All battery electric, plug-in electric and hybrid electric vehicles
Fleet Information Management System	VEH99	$139,770	$88,659	Vendor Reported Sales for 1% Fee	Service that tracks vehicle usage
Advanced Vehicle Tech Equipment, Supplies and Services	VEH102	$0	$ 906,656	Vendor Reported Sales for 1% Fee	Electric vehicle supply equipment, idle reduction technologies, and after-market vehicle conversion technologies
Homeland Security, Public Safety, and Traffic Safety Supplies	HLS05	$30,128	$7,077	Quarterly Vendor Sales Report	Products with recycled content
TOTAL SWC SPEND		**$273,948,384**	**$280,652,970**		

B. FAC100: Building Maintenance, Repair and Operations EPP Specifications

The following are EPP specifications that have been identified for FAC100.

Vendors are required to label third-party certified products in their online catalogs and have certain restrictions on products and chemicals, as described below. It is recommended to choose products with the following environmentally preferable certifications or attributes:

a. Biodegradable Products Institute (compostable bags and food service ware)
b. Consortium for Energy Efficiency (LED and fluorescent tube lamps)
c. Cradle to Cradle (building materials, construction adhesives, paint)
d. Design Lights Consortium (LED lighting equipment)
e. ENERGY STAR (appliances, HVAC and lighting equipment, roofing materials, etc.)
f. Forest Stewardship Council (wood and paper products)
g. Green Seal (adhesives, cleaners, deodorizers, degreasers, floor polish/strippers, hand soaps, janitorial paper products, paints, windows)
h. Master Painters Institute (MPI) Green Performance Standard (paints and coatings)
i. NEMA Premium Efficiency (motors and ballasts)
j. Sustainable Forestry Initiative (SFI)
k. SCS Indoor Advantage Gold (adhesives, building materials, furniture, paints and coatings)
l. SCS FloorScore (carpet, flooring, flooring adhesives, underlayment)
m. UL GREENGUARD Gold (adhesives, flooring, insulation, sealants, etc.)
n. UL EcoLogo (cleaners, deodorizers, degreasers, disinfectants/sanitizers, graffiti removers, hand soaps/sanitizers, floor polish/strippers, janitorial paper products)
o. USDA Biobased (lubricants, building materials)
p. US EPA Safer Choice (cleaners, hand soaps, deicers, dish/laundry detergents, furniture/metal polish, graffiti removers, etc.)
q. US EPA WaterSense (water-efficient fixtures, toilets, irrigation equipment)

Vendors on this contract are required to offer environmentally preferable products in all categories, in addition to mandatory specifications as summarized below:

Category 1: Electrical and Lighting Products and Supplies:

- Light Emitting Diodes (LEDs) and efficient fluorescent lighting are available – while standard incandescent and compact fluorescent (CFLs) are not. CFLs are more efficient than incandescent but they include a trace amount of mercury, which poses a health and disposal challenge so CFLs have been eliminated from the contract.
- All LED luminaires, fixtures, and lamps with integrated drivers sold under this contract must be on one of the following lists: Design Lights Consortium, ENERGY STAR, or on the Consortium for Energy Efficiency.
- Tubular Fluorescent lamps, ballasts, and other specialty lamps must meet environmental and warranty requirements.
- LED Roadway and Outdoor Lighting. All fixtures must be Design Lights Consortium certified.
- 80% of the luminaire material by weight are recyclable at end of life and designed for ease of component replacement and end-of-life disassembly.
- Fixtures have a seven-year warranty and comply with multiple standards.

Category 2: Plumbing and Heating Products and Supplies:

- Includes EPA Water$ense products, including toilets, urinals (including waterless options), faucets, showerheads, and landscape irrigation products.
- Includes alternatives to PVC (Polyvinyl Chloride) piping, including, but not limited to, low-emitting PVC and Chlorinated Polyvinyl Chloride (CPVC) compounds.

Category 3: HVAC and Refrigeration Products and Supplies: Includes air source heat pumps that meet the Northeast Energy Efficiency Partnership (NEEP) Cold Climate Air Source Heat Pump (ccASHP) minimum specification.

Category 4: Roofing Products and Supplies: Includes sustainable roofing materials (SRMs) made with recycled materials and/or promote the use of renewable energy sources, and/or will reduce energy use for a building by lowering the roof surface temperature and decreasing the amount of heat transferred into the building.

- Choose SRMs that meet or exceed manufacture, installation, and performance requirements as set forth in the most current version of the LEED (Leadership in Energy and Environmental Design) green building standards. Such products should be appropriate for commercial facilities and may include metal roofs with pigmented coatings, asphalt roofs with cooling granules, roof tiles, spray polyurethane foam roof systems, single ply membranes, modified bitumen, and other roof coating products, structurally insulated roofing panels, renewable energy generation roofing systems, vegetated roofing systems, or roofing systems that reduce heat island effects.
- SRMs are labeled by the U.S. Environmental Protection Agency's ENERGY STAR program Roof Product Specifications (Version 2.0 or later).
- Choose products also approved by the Cool Roof Rating Council (CRRC), a non-profit organization whose mission is to promote credible radiative properties of roof materials. Sustainable roofing materials do NOT include vegetative roofing systems.

Category 5: Lumber Products and Supplies: Choose lumber that is certified through the Forest Stewardship Council (FSC) and/ or the Sustainable Forestry Initiative (SFI) for sustainably grown and harvested lumber. In addition, the Act Relative to Economic Investments in the Commonwealth to Promote Job Creation, Economic Stability, and Competitiveness in the Massachusetts Economy (Chapter 123 of the Acts of 2006) directs the State Purchasing Agent to grant a preference to products of agriculture grown or produced using locally grown products. Such locally grown or produced products shall be purchased unless the price of the goods exceeds the price of products of agriculture from outside the Commonwealth by more than 10%.

Category 6: Envelope Systems, Products and Supplies:

- Insulation: choose insulation that is compliant with the EPA's Comprehensive Procurement Guidelines for building insulation and meets ASTM D 5359, Glass Cullet Recovered from Waste for Use in Manufacture of Glass Fiber standard.
- Structural Fiberboard: choose structural fiberboard that is compliant with the EPA's Comprehensive Procurement Guidelines for Structural fiberboard and meets ASTM Standard Specification C 208 and ANSI/AHA specification A194.1.

Category 7: Concrete and Masonry Products and Supplies:

- Ask for alternative concrete, and masonry products that include at least 15-25% fly ash. In addition, cement, concrete and flowable fill must comply with the following guidelines:
    - Cement and Concrete: must comply with EPA's Comprehensive Procurement Guidelines For Cement and Concrete which incorporate recycled content, including coal fly ash, ground granulated blast furnace slag (GGBF slag), cenospheres, or silica fume.
    - Flowable Fill: must comply with the EPA's Comprehensive Procurement Guidelines for Flowable Fill.

Category 8: Paint Products and Supplies:

- All non-recycled paints must be certified to meet the Indoor Air Quality portion of California Section 01350s standard or the following:
    - California High Performance Schools (CHPS) Low Emitting Materials (LEM) Table
    - Scientific Certification Systems (SCS) Gold Indoor Advantage Certification
    - GREENGUARD Product Emission Standard for Children & Schools™
- The following are prohibited ingredients for non-recycled paints:
    - 1,2-dichlorobenzene
    - Alkylphenol ethoxylates (APEs)
    - Formaldehyde-donors
    - Heavy metals, including lead, mercury, cadmium, hexavalent chromium, and antimony in the elemental form or compounds.
    - Phthalates
    - Triphenyltins (TPT) and tributyl tins (TBT)
    - PCBs
    - Triclosan
- It is recommended to choose paints that have the following certifications:

- Green Seal 11: Paints and Coatings: The GS-11 standard covers architectural paints and coatings that are applied on-site to indoor and outdoor surfaces, and stains and finishes for wood and metal surfaces, but does not cover recycled latex paints or aerosol paints.
- Green Seal 43: Recycled Latex Paint: The GS-43 standard applies to recycled content (consolidated and reprocessed) interior and exterior latex paint. The standard does not apply to stains, clear finishes, paints sold in aerosol cans, or oil-based paint.
- Master Painters Institute (MPI) Green Performance Standards (GPS):
- MPI Extreme Green (X-Green) sets a maximum VOC limit of 50 grams/liter and requires the products to be low-emitting (e.g., compliant with California Section 03150 testing requirements)
    - MPI GPS-1 standard sets VOC limits by paint/coating category.
    - MPI GPS-2 standard sets a maximum VOC limit of 50 grams/liter
- Underwriters Laboratories (UL) Ecologo
- UL 102 - 2012 Silver - Standard for Sustainability for Door Leafs
- UL 2760 - 2011 Standard for the Sustainability for Surface Coatings: Recycled
- UL 2767 - 2011 Standard for the Sustainability for Paint and Varnish Remover
- UL 2818 - 2013 GREENGUARD Gold Standard for Chemical Emissions for Building Materials, Finishes, and Furnishings
- Cradle to Cradle bronze, silver, gold, or platinum levels.

Category 10: Environmentally Preferable Products: All products approved in this category are environmentally preferable.

C. Toxics Reduction Task Force P2OASys Gap Analysis

Current Endpoints Reviewed and Included in P2OASys

- Carcinogenicity
- Reproductive Toxin
- Respiratory
- Asthma
- Acute Human Toxicity - Dermal
- Acute Human Toxicity - Eye
- Corrosive
- Aquatic Toxicity (including chronic)
- Bioaccumulation potential
- Persistence

Endpoints that P2OASys Does Not Cover

- Eutrophication
- Fragrance
- Colorants
- Optical Brightners
- Prohibited ingredients
- Approved active ingredients
- Performance Ratings

Endpoints P2OASys Adds to Review

- Acute Human Toxicity
- Aquatic Biodegradability
- Combustability Ignitability
- Endocrine disruptor
- Air pollutants
- Mutagens
- Neurotoxicity
- Repeated dose toxicity
- Volitile organic compounds
- National Fire Protection Association Ratings /Hazardous Material Identification System
- Process Factors (heat, noise generation, vibration, ergonomic hazard, psychosocial hazard, high pressure system, high temperature system, water use, energy use, exposure potential
- Life Cycle Factors (sub-category, upstream effects, consumer hazard, disposal hazard, reportable quantity, recycling renewable to non-renewable resource)

D. FAC85 Environmental Benefit Cost Savings

Massachusetts requires each of its FAC85 awarded vendors to document the types and quantities of cleaning products they sold to buyers on a quarterly basis. Using the vendor reported data from FY's 2017 - 2018, the following assumptions were used to calculate energy, water, and other benefits from using foaming hand soap and microfiber mops.

1. Gallons of water saved:
   - Foaming Hand Soap Assumptions:
     - More than 95% of hand soap products sold is foaming products.
     - A report by DEB, a soap manufacturer, estimated 0.000211338 gallons of water is used per wash.[89]
     - GOJO noted that approximately 14,800 gallons of water is saved for every 1 million hand washes that use foaming hand soap instead of liquid soap.[90]
   - Microfiber Mops Assumptions:
     - A single mop will be used 200 days/year
     - An average of 10 rooms cleaned per day, per mop.
     - 95% water usage savings. (UMASS Lowell reports that with loop or sponge mops, soiled mops are rinsed in the cleaning solution. This requires frequent cleaning solution changes to prevent cross-contamination between rooms. Microfiber mops are soaked in a small volume of cleaning solution. Hence, there is no need to replace the solution, considerably reducing the amount of water and disinfectant used and disposed down the drain. The EPA reports in their "Using Microfiber Mops in Hospitals" case study that using a microfiber mop would reduce water use from 105 gallons to five gallons per 100 rooms cleaned.[91]
     - If using a loop or sponge mop, 9.5 gallons of water would be used per day, per mop. If a using microfiber mop, one gallon of water would be used per day, per mop, resulting in savings of 8.5 gallons per day, per mop.
     - 7,000 microfiber mops x 200 days/year x 8.5 gallons/mop/day = 11.9 million gallons
2. Metric tons of carbon dioxide equivalent (MTCO2e) reduced:[92]
     - Foaming Hand Soap Assumptions:
       - It takes 0.18 kWh of electricity to heat a gallon of water.
       - Assumes, conservatively, that 50% of hand-washing water saved would have been heated to determine the amount of kWh of electricity used to heat water.
       - Use EPA's Greenhouse Gas Equivalency Calculator to determine reduction in MTCE
     - Microfiber Mops Assumptions:
       - It takes 0.18 kWh of electricity to heat a gallon of water.
       - Assumes, conservatively that 50% of the water used to mop floors would be heated to determine the amount of kWh of electricity used to heat water.
       - Use EPA's Greenhouse Gas Equivalency Calculator to determine reduction MTCE
3. Dollars saved:
   - Discount: FAC85 offers discounts ranging from 2% to 75% on more than 16,000 green cleaning products. For FY 2017, Manufacturer's Suggested Retail Price (MSRP) was calculated for all items and actual discounts were calculated reflecting savings. (MSRP) x actual discounts provided per line item x number of units of measure.
   - Use of foaming hand soaps and microfiber mops would equate to annual savings in reduced water usage,[93] and reduced energy usage from heating water.
   - Used an average of Massachusetts Water Resources Authority water and sewer rates of .01 cent per gallon [94]
   - Used an average of .18 kWh of electricity to heat one gallon of water.
   - Not calculated, but also noted is that users may save money by purchasing one product that uses different dilution rates for different levels of cleaning, sanitizing, or disinfecting, instead of purchasing multiple products. In addition, the contract

---

[89] Make a healthy resolution with hand washing, SC Johnson Professional Blog, https://info.debgroup.com/blog/make-a-healthy-new-years-resolution-with-handwashing#_ftn2

[90] GOJO, Liquid Soap vs. Foam Soap: Which One Wins the Water Savings Battle? 2014: http://gojo.com/en/newsroom/blog/2014/Liquid-Soap-Water-Savings-Battle

[91] Using Microfiber Mops in Hospitals, US EPA, Environmental Best Practices for Health Care Facilities, November, 2002: https://www3.epa.gov/region9/waste/p2/projects/hospital/mops.pdf, Ten Reasons to Use Microfiber Cleaning Tools, UMASS Lowell Department of Work Environment, 2013: http://www.sustainableproduction.org/downloads/TenReasonsforMicrofibercleaning012113.pdf

[92] *US EPA, Greenhouse Gas Equivalencies Calculator,* https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

[93] US EPA WaterSense estimates the cost of water is approximately $3/200 gallons; public agencies get utility discount = $2/200 gallons = $0.01/gallon.

[94] https://www.bwsc.org/business-customers/rates, http://mwraadvisoryboard.com/wp-content/uploads/2019/01/2018-Water-and-Retail-Rate-Survey.pdf

requires the use of closed loop dilution systems, which portion controls product, restricting ability of users to pour more than is needed, which increases cost.

4. Hazardous materials reduced:
   - Low Toxicity Hand Soaps: assumes that 50% of the “green” hand soaps replaced antimicrobial hand soap, commonly used by institutions.
   - EPP Glass Cleaner: These products often replace glass cleaners that contain ammonia, a known respiratory sensitizer that may cause asthma among workers and trigger asthma attacks among building occupants.
   - Safer Sanitizers and Disinfectants: FAC85 identifies approved and prohibited active ingredients. All sanitizers and disinfectants sold do not contain the following:
     - Chlorine Bleach (Sodium hypochlorite)
     - Hydrogen chloride (HCl)
     - Phenols (e.g., Ortho-phenylphenol)
     - Pine oil
     - Quaternary ammonium chloride compounds (e.g., Benzalkonium chloride, ADBACs, DDACs)
     - Silver
     - Thyme oil

E: Estimates of Solid Waste Diverted

The following are estimates of materials diverted from disposal to recycling from multiple SWCs.

Quantity of Waste Diverted From Disposal from Various Statewide Contacts and Environmental Benefits for FYs 2017 - 2018		
** Compiled from vendor reported data from FAC82, FAC86, FAC90, FAC96 and using US EPA's WARM Model to calculate environmental benefits*		
Material	**Total Tons FY 2017**	**Total Tons FY 2018**
Construction & Demolition Debris (C&D)	2689	2545
Carpet	50	37
Comingled Containers	343	352
Document Destruction	3314	3394
Electronics	16	5
Food Waste	353	42
High Density Polyethylene (HDPE) Plastic	7	22
Mattresses	0	13
Metals	254	141
Cardboard	2199	504
Paper	465	3162
Single Stream (containers and paper)	2143	4441
Street Sweepings	15915	5138
Tires	180	237
Vegetable Oil	1	
Yard Waste	4393	269
Total Tons – Solid Waste	32322	20302
Total Tons – Hazardous Waste	977	514
TOTAL TONS ALL WASTE DIVERTED	33,299	20,816

F: EPP Partnerships

Asthma Regional Council of New England	Asthma Regional Council of New England (ARC): The mission of ARC is to reduce the impact of asthma across New England, through collaborations with health, housing, education, and environmental organizations focused on the contribution of schools, homes, and communities to the disease and with attention to its disproportionate impact on populations at greatest risk. The EPP Program has worked with ARC to distribute green cleaning information. www.asthmaregionalcouncil.org
CEH center for environmental health	Center for Environmental Health (CEH): The CEH is a non-profit organization dedicated to working with parents, communities, businesses, workers, and government to protect children and families from toxic chemicals in homes, workplaces, schools, and neighborhoods. The EPP Program continued to participate in a national workgroup to discuss flame retardants in furniture and other products. www.ceh.org
	Healthy Schools Network: Non-profit that promotes collaborative research and policy development and advanced systemic reforms in three core areas defining children's environmental health at schools. The EPP Program works with the Health Schools Network to distribute green cleaning information and identify healthier products in schools. www.healthyschools.org
MASSACHUSETTS CLEAN ENERGY CENTER	Massachusetts Clean Energy Center (CEC): A publicly funded agency dedicated to accelerating the success of clean energy technologies, companies, and projects in Massachusetts. The EPP Program has worked with the CEC to market the FAC100 Category 10 program for innovative environmentally preferable products in MRO contracts. www.cec.org
Massachusetts Coalition For Occupational Safety And Health	Massachusetts Coalition for Occupational Safety and Health (MassCOSH): MassCOSH works with workers, unions, community groups, and environmental and health activists, to end dangerous working conditions; organize for safe, secure jobs; and advocate for healthy communities through training, technical assistance, and building community/labor alliances. MassCOSH has worked with the EPP Program to advance green cleaning in schools within Massachusetts and participated on the FAC85 Sourcing team. www.masscosh.org
NASPO National Association of State Procurement Officials	National Association of State Procurement Officials (NASPO) Green Purchasing Committee: The EPP Program Director served on the NASPO Best Practices Committee which works to identify and share best practices, including environmentally preferable (green) purchasing. www.naspo.org
NERC NORTHEAST RECYCLING COUNCIL	Northeast Recycling Council (NERC): NERC's mission is to advance an environmentally sustainable economy by promoting source and toxicity reduction, recycling, and purchasing of environmentally preferable products and services. www.nerc.org
RPN Responsible Purchasing Network	Responsible Purchasing Network (RPN): Massachusetts was one of the founding members of this highly visible and valuable on-line resource and consulting network for responsible state purchasing. The RPN provided significant technical assistance to Massachusetts in developing specifications for Maintenance, Repair, and Operations contracts. The organization continues to provide guidance and comprehensive materials on a broad range of green purchasing issues. www.responsiblepurchasing.org
qc	Quiet Communities: Non-profit that works with multiple communities across the country to promote clean, sustainable, and quiet outdoor maintenance practices as the valued norm. The EPP Program has worked with QC to advance commercial battery powered landscape equipment in the Commonwealth. www.quietcommunities.org
SILENT SPRING INSTITUTE	Silent Springs Institute: Non-profit that partners with physicians, public health, and community advocates and other scientists to identify and break the links between environmental chemicals and women's health, especially breast cancer. The EPP Program has worked with the Silent Spring Institute on flame retardant research. www.silentspring.org
TURI TOXICS USE REDUCTION INSTITUTE UMASS LOWELL	Toxics Use Reduction Institute (TURI) at the University of Massachusetts Lowell provides resources and tools to help make the Commonwealth a safer place to live and work. TURI's Green Cleaning Lab participates on the Toxics Reduction Task Force (TRTF). www.turi.org