EPA Sustainable Materials Management Web Academy

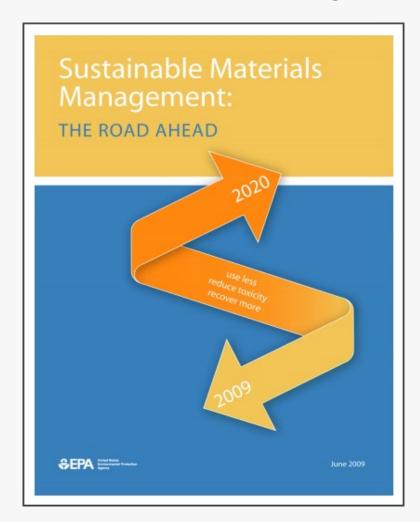


April 23, 2020

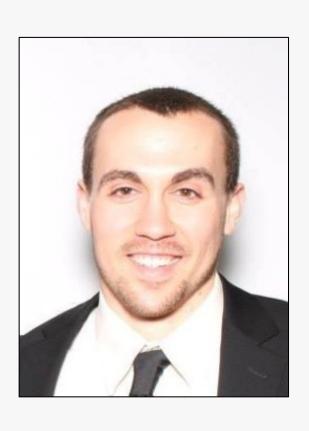
From Waste Management to Sustainable Materials Management







Speaker: Jarrod Bridge, EPA



- Physical Scientist in the Office of Resource Conservation and Recovery.
- Works on life cycle analytics, systems thinking and life cycle assessment, and provides input to international organizations on work related to SMM.
- Before joining EPA in 2016, worked in molecular biology and environmental engineering research labs for two years.
- M.S. in Sustainable Engineering from Villanova University.
- B.S. in Biology and B.S. in Forensic Science from University of New Haven.

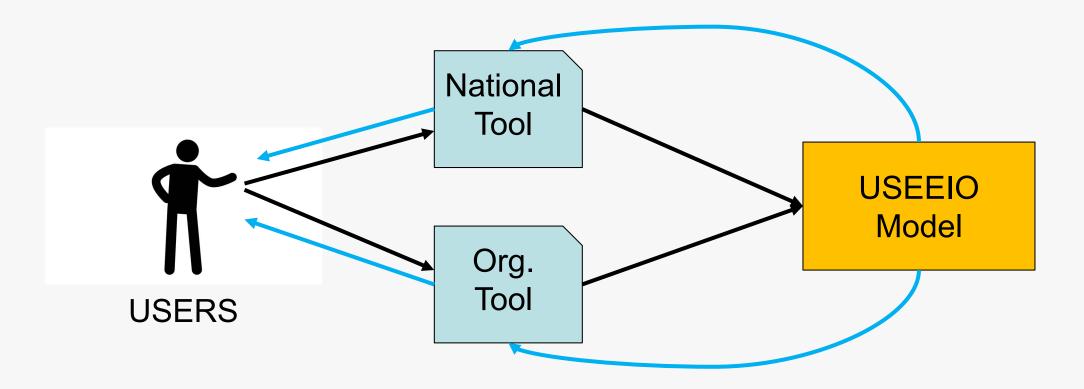
SMM Prioritization Tools: Background

- SMM Prioritization Tools: user interfaces that access, extract and display information from the United States Environmentally-Extended Input-Output (USEEIO) model.
- USEEIO model: fully transparent, reproducible and freely shareable life cycle assessment model that assesses over twenty indicators associated with ~386 categories of goods/services produced or consumed in the US.
- Provides big-picture information about potential environmental improvement opportunities in the United States and opportunities for benefits across a range of indicators.

Who Are the Intended Users?

- Individuals who are looking for environmental improvement opportunities or developing sustainability strategies, including:
 - Individuals who are not in the field of life cycle assessment;
 - Organizations who do not have the resources to hire consultants;
 - CEOs, procurement and sustainability professionals;
 - Government;
 - Non-profits;
 - Trade associations; and
 - Academic institutions.

SMM Prioritization Tools



SMM Prioritization Tool Demonstration

Thanks! Questions?

Jarrod Bridge: bridge.jarrod@epa.gov

Priscilla Halloran: Halloran.priscilla@epa.gov

Sustainable Materials Management Prioritization Tools

The Sustainable Materials Management Prioritization Tools (SMM Prioritization Tools) are life cycle-based tools to help users identify potential opportunities for environmental improvement in the production and consumption of goods and services. These tools can serve as a starting place to help prioritize actions, focus limited human and financial resources to achieve greater overall environmental benefit and consider key industries for collaboration.

Go to the SMM Prioritization Tools

Basic Information About the SMM Prioritization Tools



- SMM Prioritization Tools
- Frequently Asked Questions
- What is SMM?

Documentation About the SMM Prioritization Tools



- User Manual for the SMM Prioritization Tools
- United States Environmentally-Extended Input-Output (USEEIO) <u>Model Documentation</u>
- USEEIO in the Literature EXIT
- USEEIO Datasets

Have Feedback?

Let us know if you have any questions, comments, and/or feedback about the SMM Prioritization Tools.

Related Programs

- Sustainable and Healthy Communities Research Program
- National Risk

 Management Research

 Laboratory

Resources

Check out EPA's
 Sustainable Materials
 Management: The Road
 Ahead



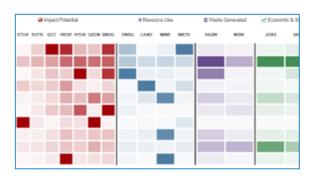
Sustainable Materials Management Prioritization Tools

Life cycle-based tools that give users a starting place to:

- Establish priorities for environmental improvement.
- Focus resources and action for greater holistic benefit.
- Consider key industries for collaboration.

Explore the SMM Prioritization Tools by clicking the buttons below the two tools.

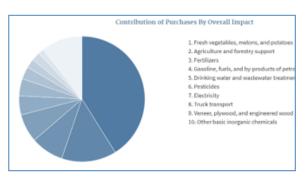
National



Big picture view for anyone with a national focus, such as government, trade associations and NGOs.



Organizational

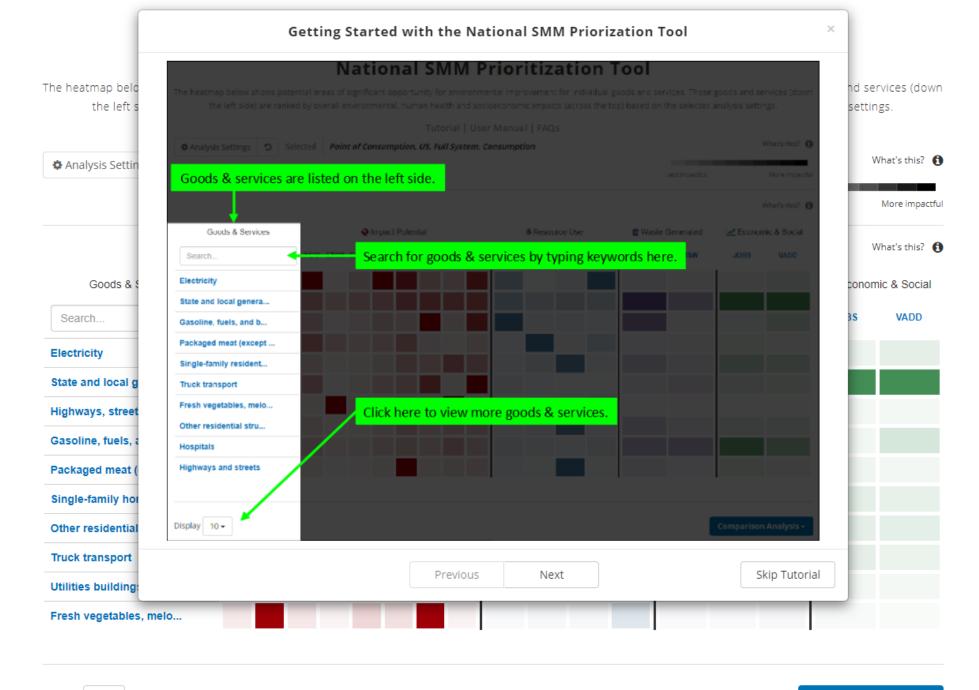


Quick snapshots for organizations, such as companies, small enterprises and their sustainability/procurement staff.

Get Started

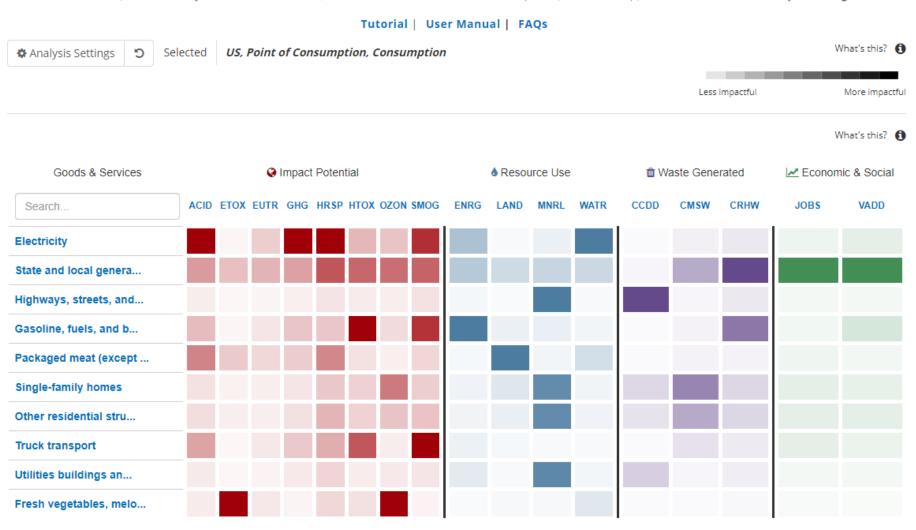
Explore the <u>User Manual</u> for more information on the SMM Prioritization Tools. Learn more about EPA's Sustainable Materials Management program <u>here</u>.

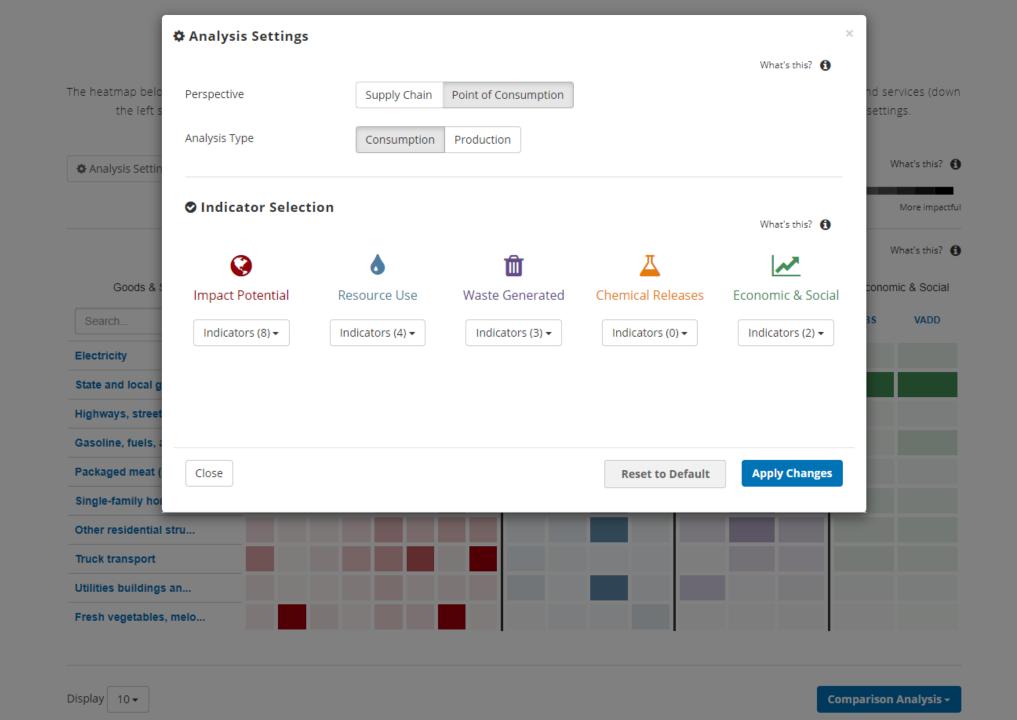
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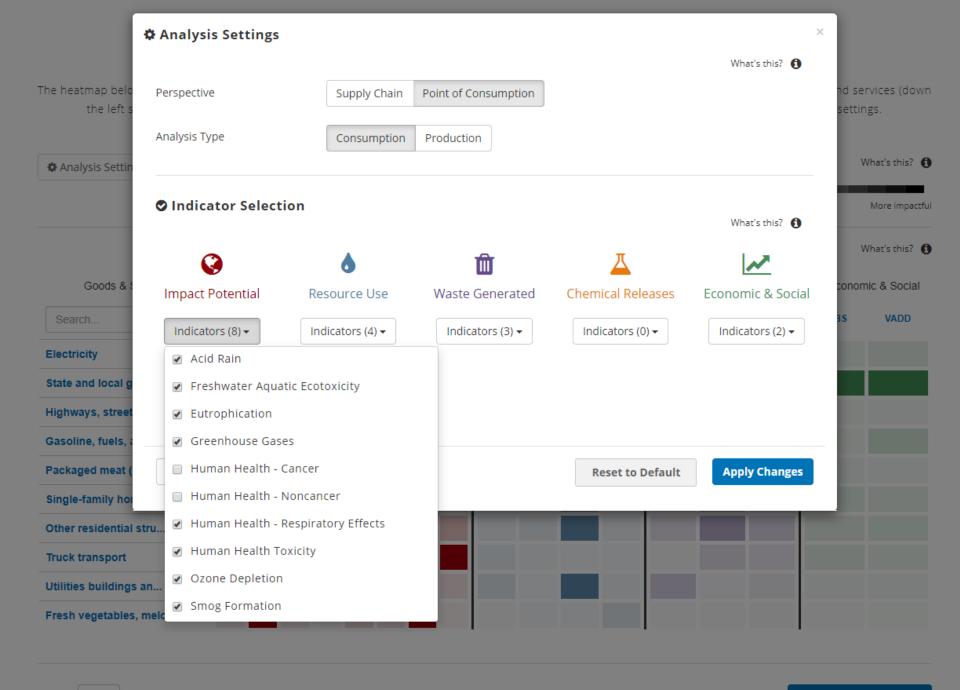


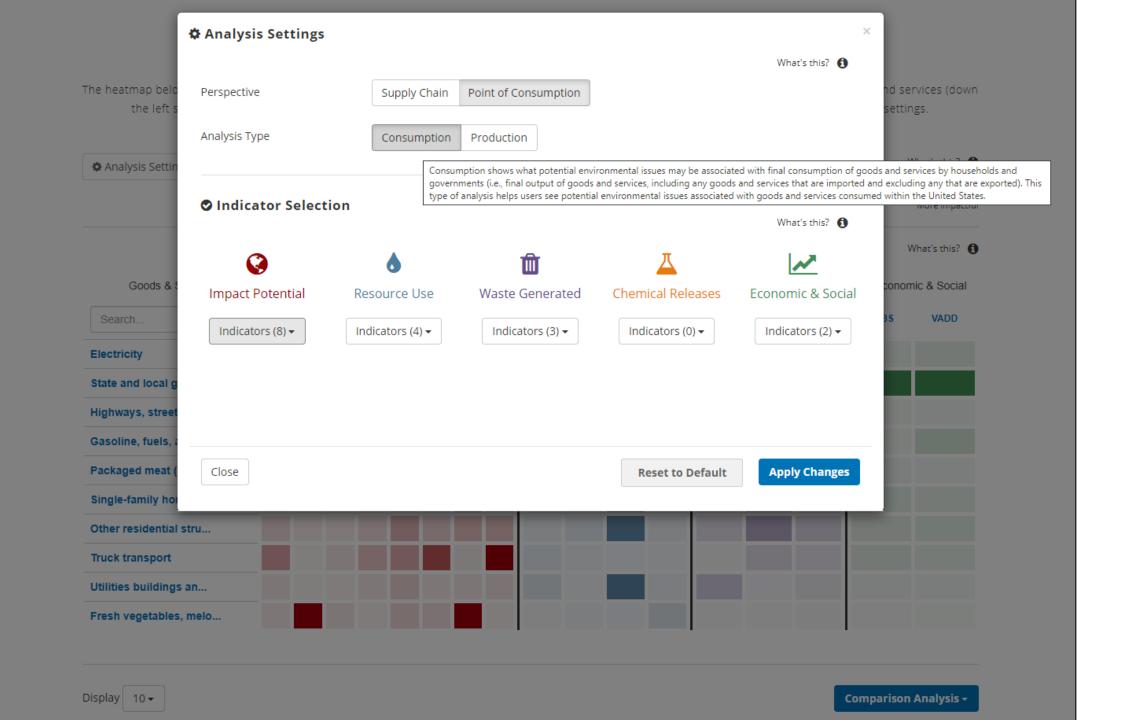
National SMM Prioritization Tool

The heatmap below shows potential areas of significant opportunity for environmental improvement for individual goods and services. Those goods and services (down the left side) are ranked by overall environmental, human health and socioeconomic impacts (across the top) based on the selected analysis settings.









National SMM Prioritization Tool

The heatmap below shows potential areas of significant opportunity for environmental improvement for individual goods and services. Those goods and services (down the left side) are ranked by overall environmental, human health and socioeconomic impacts (across the top) based on the selected analysis settings.



US, Point of Consumption, Consumption

Examine: Colleges, universities, junior colleges, and professional schools

What's this?

Environmental Profile

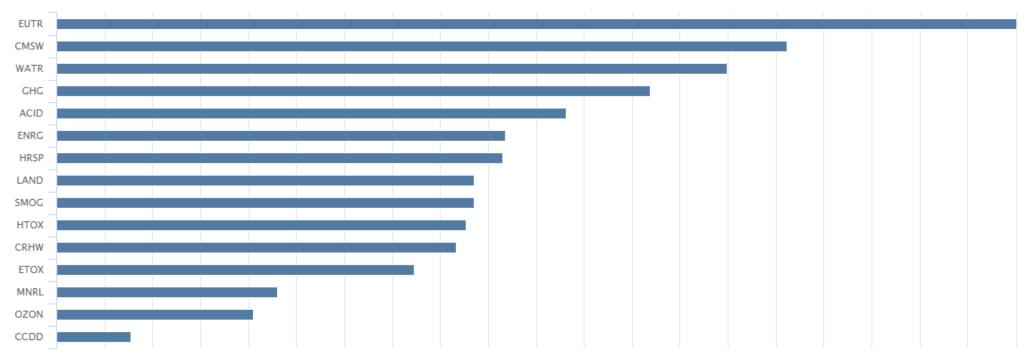
Supply Chain / Operations

Impactful Purchases

Supply Chain Hotspots

Back to Heatmap

What issues might be potentially significant for this good or service? The Environmental Profile below shows the issues potentially associated with this good or service from high to low significance. Level of significance is based on a good or service's percent contribution to overall issue in the US.



Download chart data as CSV file

Back to Heatmap

US, Point of Consumption, Consumption

Examine: Colleges, universities, junior colleges, and professional schools

What's this? 🚯

Environmental Profile

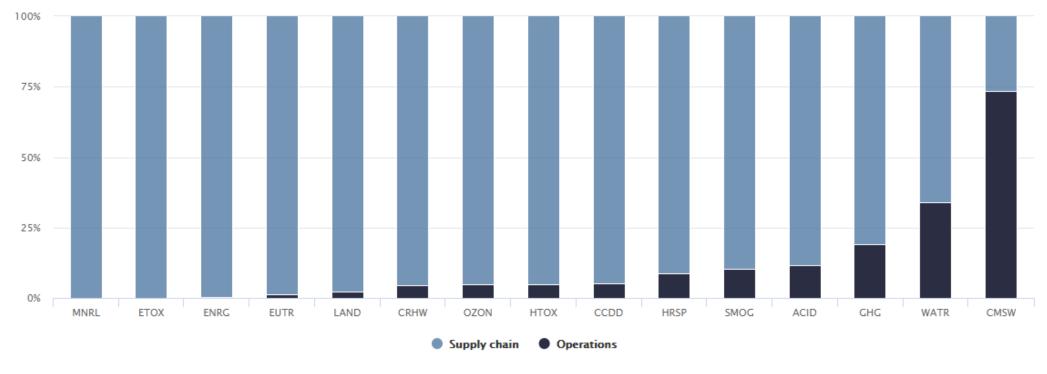
Supply Chain / Operations

Impactful Purchases

Supply Chain Hotspots

Back to Heatmap

Where are the potential issues originating from for this good or service? The chart below shows the share of environmental issues potentially associated with operations and the supply chain for this good or service.



Download chart data as CSV file

US, Point of Consumption, Consumption

Examine: Colleges, universities, junior colleges, and professional schools

What's this? 🚯

Environmental Profile

Supply Chain / Operations

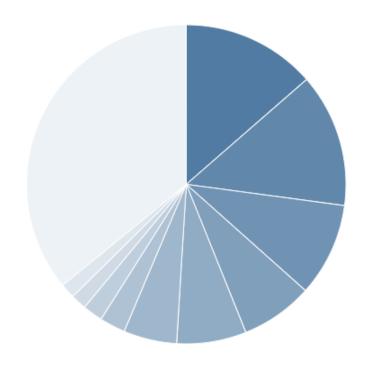
Impactful Purchases

Supply Chain Hotspots

Back to Heatmap

What purchases made by providers of this good or service are potentially embedding issues in this good or service? The charts below show the direct purchases potentially contributing significantly to overall environmental issues (first chart) and each individual issue (second chart). Click a good or service in the charts or lists to get more information.

Contribution of Purchases By Overall Impact



Download chart data as CSV file

Gasoline, fuels, and by-products of petroleum r...
 Packaged meat (except poultry)
 Natural gas
 Electricity
 Waste management and remediation
 Vegetable oils and by-products
 Bread and other baked goods
 Fluid milk and butter

Drinking water and wastewater treatment

Other real estate

Drinking water and wastewater treatment

The most significant potential environmental issues for this purchase are:

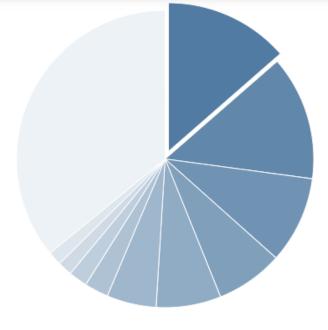
1. Eutrophication	(EUTR)
-------------------	--------

- 2. Minerals and Metals Use (MNRL)
- 3. Greenhouse Gases (GHG)
- 4. Human Health Toxicity (HTOX)
- Smog Formation (SMOG)

The most significant supply chain sources of these issues for this purchase are:

- 1. Drinking water and wastewater treatment
- 2. Unrefined oil and gas
- 3. Nonresidential building repair and maintanence
- 4. Pipeline transport
- 5. Electricity

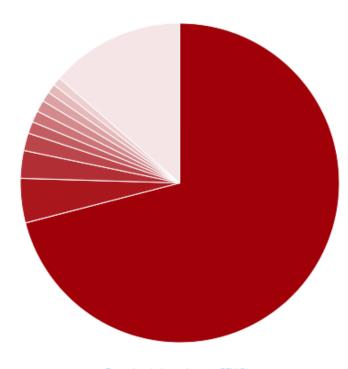
Close



- 1. Drinking water and wastewater treatment
- 2. Other real estate
- 3. Gasoline, fuels, and by-products of petroleum r...
- 4. Packaged meat (except poultry)
- 5. Natural gas
- Electricity
- 7. Waste management and remediation
- 8. Vegetable oils and by-products
- 9. Bread and other baked goods
- 10. Fluid milk and butter

Contribution of Purchases By Indicator

Eutrophication (EUTR) ▼



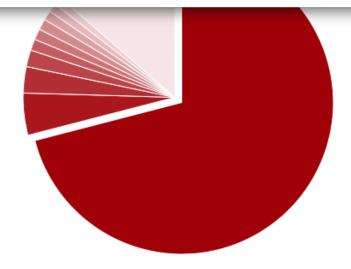
Download chart data as CSV file

Drinking water and wastewater treatment
 Other real estate
 Packaged meat (except poultry)
 Electricity
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 Natural gas
 Gasoline, fuels, and by-products of petroleum r...
 Vegetable oils and by-products
 Fluid milk and butter
 Seafood

Back to Heatmap

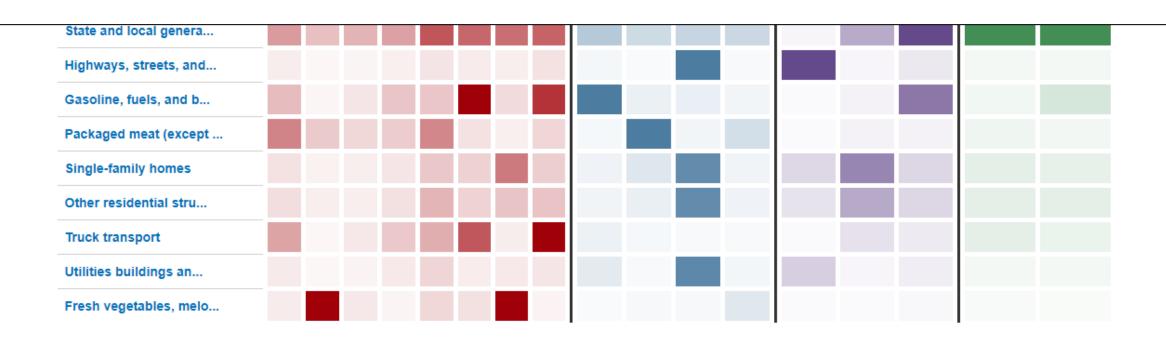
- 1. Drinking water and wastewater treatment
- 2. Other state and local government enterprises
- 3. Unrefined oil and gas
- 4. Primary iron, steel, and ferroalloy products
- Electricity

Close



Download chart data as CSV file

- Packageu meat (except poultry)
- 4. Electricity
- 5. Bread and other baked goods
- Natural gas
- 7. Gasoline, fuels, and by-products of petroleum r...
- 8. Vegetable oils and by-products
- 9. Fluid milk and butter
- 10. Seafood



Display 10 ▼

Comparison Analysis -

Compare Goods & Services
Compare Perspectives
Compare Analysis Types



Λ-----

US, Point of Consumption, Consumption

Compare Goods & Services

What's this? 🚯

Search... ✓ Electricity State and local general gov... Highways, streets, and bridges Gasoline, fuels, and by-pro... ■ Packaged meat (except poultry) Single-family homes Other residential structures ■ Truck transport Utilities buildings and inf... Fresh vegetables, melons, a... **Clear Selections**

Environmental Profiles Supply Chain / Operations Exit Comparison How do the issues potentially associated with these goods & services compare? The chart below shows a side-by-side comparison of the potential issues per \$1 USD of sector output for these goods & services. ACID ETOX **EUTR** GHG HRSP HTOX OZON SMOG **ENRG** LAND MNRL WATR CCDD CMSW Download chart data as CSV file

US, Point of Consumption, Consumption

Compare Perspectives

This analysis compares the ranked list of goods & services according to the selected analysis settings with a ranked list generated by changing only the *Perspective* setting.

Exit Comparison

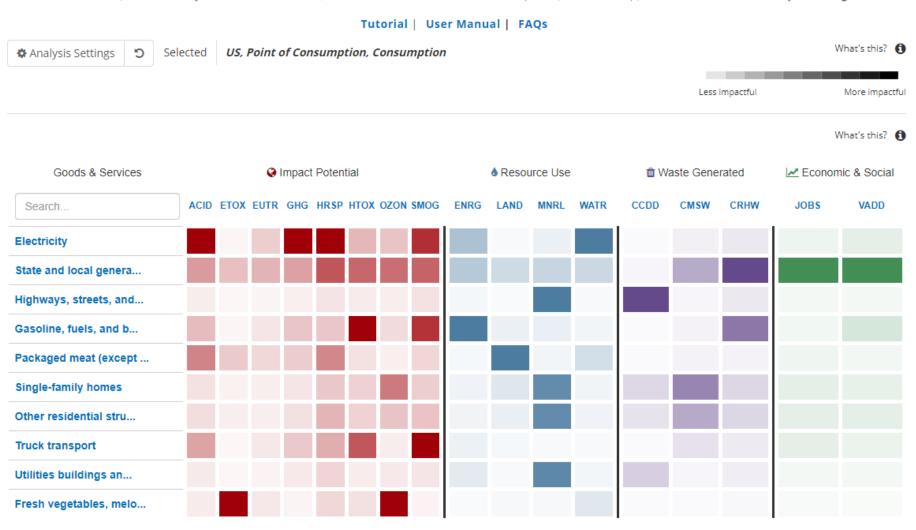
Supply Chain

Point of Consumption

1.	Electricity	1.	Electricity
2.	Unrefined oil and gas	2.	State and local general government
3.	Dimensional stone	3.	Highways, streets, and bridges
4.	Truck transport	4.	Gasoline, fuels, and by-products of petroleum r
5.	Fresh wheat, corn, rice, and other grains	5.	Packaged meat (except poultry)
6.	Tobacco, cotton, sugarcane, peanuts, sugar beet	6.	Single-family homes
7.	Cattle ranches and feedlots	7.	Other residential structures
8.	Highways, streets, and bridges	8.	Truck transport
9.	Timber and raw forest products	9.	Utilities buildings and infrastructure
10.	Drinking water and wastewater treatment	10.	Fresh vegetables, melons, and potatoes
	View Heatmap		View Heatmap

National SMM Prioritization Tool

The heatmap below shows potential areas of significant opportunity for environmental improvement for individual goods and services. Those goods and services (down the left side) are ranked by overall environmental, human health and socioeconomic impacts (across the top) based on the selected analysis settings.





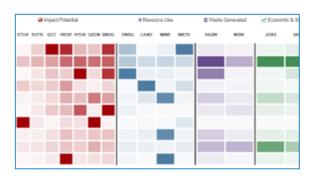
Sustainable Materials Management Prioritization Tools

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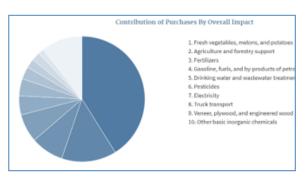
National



Big picture view for anyone with a national focus, such as government, trade associations and NGOs.



Organizational



Quick snapshots for organizations, such as companies, small enterprises and their sustainability/procurement staff.

Get Started

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Organizational SMM Prioritization Tool

Select Good/Service

Environmental Profile

Supply Chain/Operations

Impactful Purchases

Supply Chain Hotspots

Summary

What's this?

Select the primary good or service provided by your organization

Enter keywords here to describe your organization

Select an option from a list

No good or service has been selected.

Organizational SMM Prioritization Tool

Select Good/Service

Environmental Profile

Supply Chain/Operations

Impactful Purchases

Supply Chain Hotspots

Summary

What's this?

Select the primary good or service provided by your organization

Colleges, universities, junior colleges, and professional schools

Select an option from a list

About: Colleges, universities, junior colleges, and professional schools

BEA Code & Name is '611A00: Junior colleges, colleges, universities, and professional schools'. Description of the primary industry producing this good or service, adapted from the Census Bureau NAICS 2007 descriptions: The Educational Services sector comprises establishments that provide instruction and training in a wide variety of subjects. This instruction and training is provided by specialized establishments, such as schools, colleges, universities, and training centers. These establishments may be privately owned and operated for profit or not for profit, or they may be publicly owned and operated. They may also offer food and/or accommodation services to their students. Educational services are usually delivered by teachers or instructors that explain, tell, demonstrate, supervise, and direct learning. Instruction is imparted in diverse settings, such as educational institutions, the workplace, or the home, and through diverse means, such as correspondence, television, the Internet, or other electronic and distance-learning methods. The training provided by these establishments may include the use of simulators and simulation methods. It can be adapted to the particular needs of the students, for example sign language can replace verbal language for teaching students with hearing impairments. All industries in the sector share this commonality of process, namely, labor inputs of instructors with the requisite subject matter expertise and teaching ability. Related NAICS codes are: 6112-3

Organizational SMM Prioritization Tool

Select Good/Service

Environmental Profile

Supply Chain/Operations

Impactful Purchases

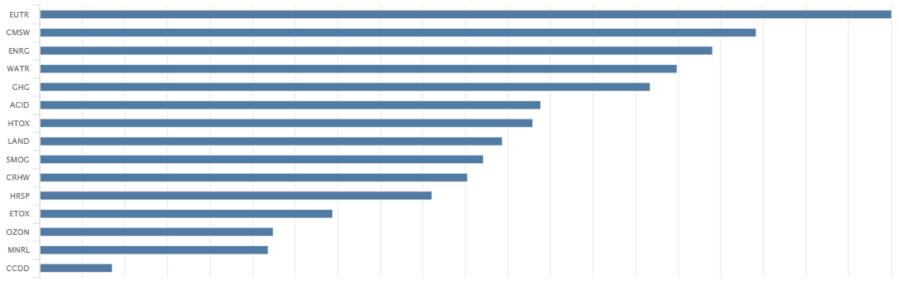
Supply Chain Hotspots

Summary

What's this?

What are the potentially significant environmental issues associated with Colleges, universities, junior colleges, and professional schools?

The Environmental Profile below shows the issues potentially associated with *Colleges, universities, junior colleges, and professional schools* from high to low significance. Level of significance is based on a good or service's contribution to the overall issues in the US.



Download chart data as CSV file

The three potentially significant environmental issues for Colleges, universities, junior colleges, and professional schools appear to be:

- 1. Eutrophication (EUTR)
- 2. Commercial Municipal Solid Waste (CMSW)
- 3. Energy Use (ENRG)

Go to the next step to learn how much on-site activities and the supply chain contribute to environmental issues associated with Colleges, universities, junior colleges, and professional schools.

Organizational SMM Prioritization Tool

Select Good/Service

Environmental Profile

Supply Chain/Operations

Impactful Purchases

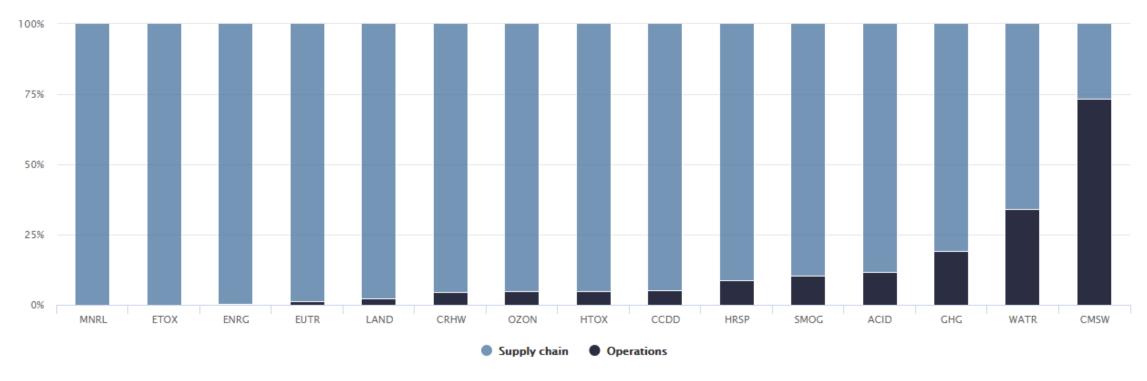
Supply Chain Hotspots

Summary

What's this?

Where are the potential issues originating from for this good or service?

The chart below shows the share of environmental issues associated with operations and the supply chain for this good or service.



Download chart data as CSV file

Click on the button below to find out what types of purchasing decisions cause these environmental impacts.

Organizational SMM Prioritization Tool

Select Good/Service

Environmental Profile

Supply Chain/Operations

Impactful Purchases

Supply Chain Hotspots

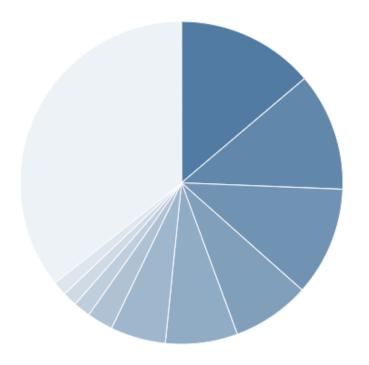
Summary

What's this?

What purchases made by providers of this good or service are potentially embedding issues in this good or service?

The charts below show the direct purchases potentially contributing to overall environmental issues (first chart) and each individual issue (second chart). Click on a good or service in the charts or lists to get more information.

Contribution of Purchases By Overall Impact

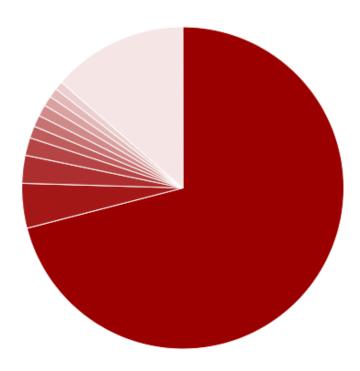


- 1. Other real estate
- 2. Drinking water and wastewater treatment
- 3. Gasoline, fuels, and by-products of petroleum r...
- 4. Natural gas
- 5. Packaged meat (except poultry)
- 6. Electricity
- 7. Waste management and remediation
- 8. Vegetable oils and by-products
- 9. Bread and other baked goods
- 10. Fluid milk and butter

Download chart data as CSV file

Contribution of Purchases By Indicator

Eutrophication (EUTR)



Download chart data as CSV file

- 1. Drinking water and wastewater treatment
- 2. Other real estate
- 3. Packaged meat (except poultry)
- 4. Electricity
- 5. Bread and other baked goods
- 6. Natural gas
- 7. Gasoline, fuels, and by-products of petroleum r...
- 8. Vegetable oils and by-products
- 9. Fluid milk and butter
- 10. Seafood

Go to the next step to see the supply chain hotspots for these purchases.

Organizational SMM Prioritization Tool

Select Good/Service

Environmental Profile

Supply Chain/Operations

Impactful Purchases

Supply Chain Hotspots

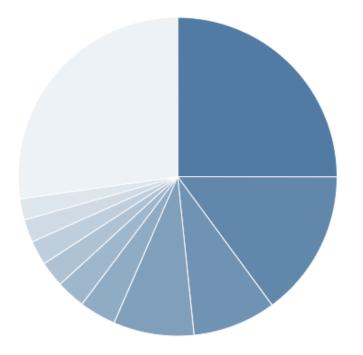
Summary

What's this?

Where are the supply chain hotspots for this good or service?

The charts below show the potential origin (upstream of direct purchases) of environmental issues in the supply chain of this good or service. Click on a good or service in the charts or lists to get more information.

Contribution of Supply Chain Goods & Services By Overall Impact

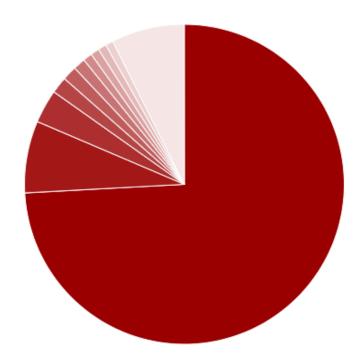


- 1. Colleges, universities, junior colleges, and pr...
- 2. Unrefined oil and gas
- 3. Electricity
- 4. Drinking water and wastewater treatment
- 5. Cattle ranches and feedlots
- 6. Fresh wheat, corn, rice, and other grains
- 7. Waste management and remediation
- 8. Truck transport
- 9. Natural gas
- 10. Pipeline transport

Download chart data as CSV file

Contribution of Supply Chain Goods & Services By Indicator

Eutrophication (EUTR)



Download chart data as CSV file

- 1. Drinking water and wastewater treatment
- 2. Fresh wheat, corn, rice, and other grains
- 3. Electricity
- 4. Fresh soybeans, canola, flaxseeds, and other oi...
- 5. Unrefined oil and gas
- 6. Colleges, universities, junior colleges, and pr...
- 7. Other state and local government enterprises
- 8. Primary iron, steel, and ferroalloy products
- 9. Cattle ranches and feedlots
- 10. Seafood

Go to the next step for a summary of results from all steps.

Organizational SMM Prioritization Tool

Select Good/Service

Environmental Profile

Supply Chain/Operations

Impactful Purchases

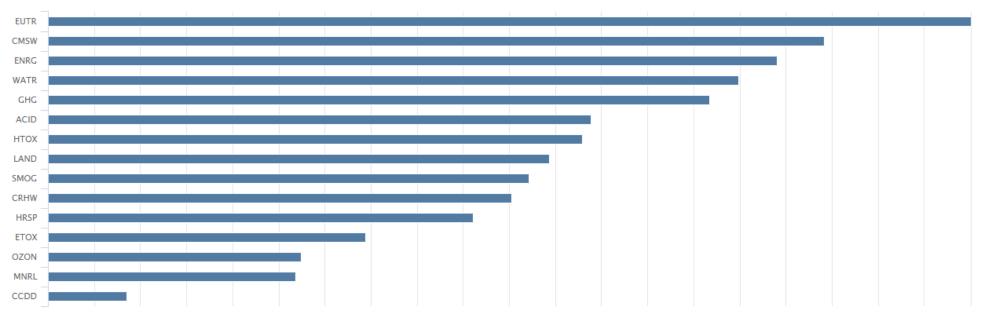
Supply Chain Hotspots

Summary

What's this?

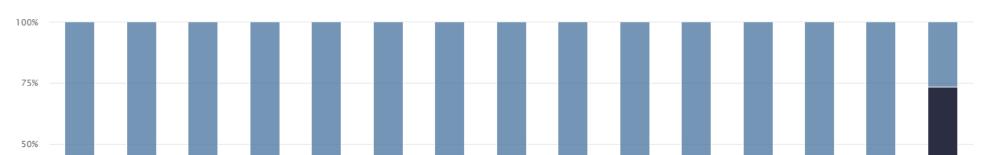
Summary of Potential Environmental Issues Associated with Colleges, universities, junior colleges, and professional schools

Here are the potential environmental issues associated with Colleges, universities, junior colleges, and professional schools, ordered from most to least significant.

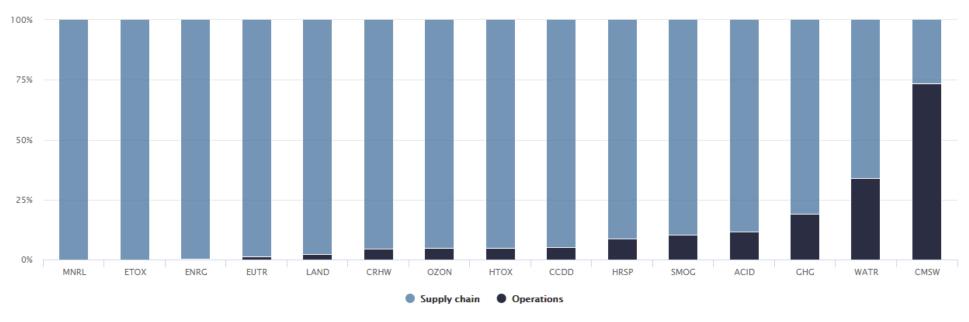


Download chart data as CSV file

Focusing on the supply chain potentially offers opportunities for significant environmental benefits in many sectors:

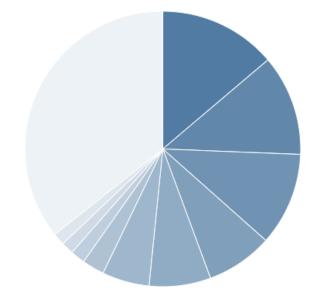


Focusing on the supply chain potentially offers opportunities for significant environmental benefits in many sectors:



Download chart data as CSV file

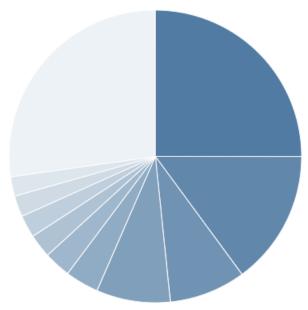
Purchases of Other real estate, Drinking water and wastewater treatment, and Gasoline, fuels, and by-products of petroleum refining potentially contribute the most to the supply chain portion of environmental issues for Colleges, universities, junior colleges, and professional schools:



- 1. Other real estate
- 2. Drinking water and wastewater treatment
- 3. Gasoline, fuels, and by-products of petroleum r...
- 4. Natural gas
- 5. Packaged meat (except poultry)
- 6. Electricity
- 7. Waste management and remediation
- 8. Vegetable oils and by-products
- 9. Bread and other baked goods
- 10. Fluid milk and butter

Download chart data as CSV file

Colleges, universities, junior colleges, and professional schools, Unrefined oil and gas and Electricity are potentially the most significant hotspots for environmental issues in the supply chain of Colleges, universities, junior colleges, and professional schools:



Download chart data as CSV file

- 1. Colleges, universities, junior colleges, and pr...
- 2. Unrefined oil and gas
- 3. Electricity
- 4. Drinking water and wastewater treatment
- 5. Cattle ranches and feedlots
- 6. Fresh wheat, corn, rice, and other grains
- 7. Waste management and remediation
- 8. Truck transport
- 9. Natural gas
- 10. Pipeline transport

Next Steps

This information represents the life cycle environmental performance of an average provider of *Colleges, universities, junior colleges, and professional schools* in the US. This information is meant to serve as a starting place to help organizations engage in life cycle thinking and action. In a future version of this tool, users will be able to input their own data to produce organization-specific results for benchmarking against industry averages. This information will not be saved on the web.

Information on underlying data quality can be found here. Download the Excel file on that page, open the file and read the 'Contents' tab to learn more about the data quality scores and where to find them in the file.

Print this Summary

Thanks! Questions?

Jarrod Bridge: bridge.jarrod@epa.gov

Priscilla Halloran: Halloran.priscilla@epa.gov