EPA Sustainable Materials Management Web Academy

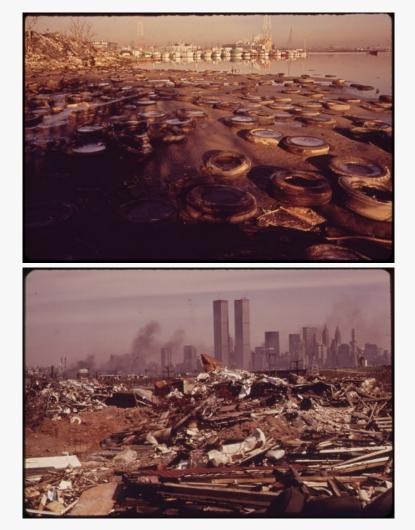


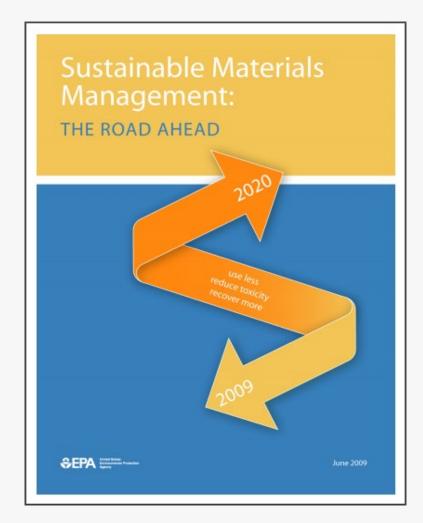
Sustainable Materials Management Prioritization Tools: Sustainability Insights at a Glance

April 23, 2020

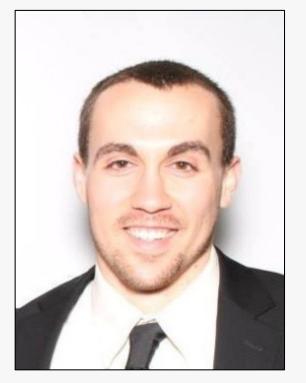
https://www.epa.gov/smm/sustainable-materials-management-web-academy

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.

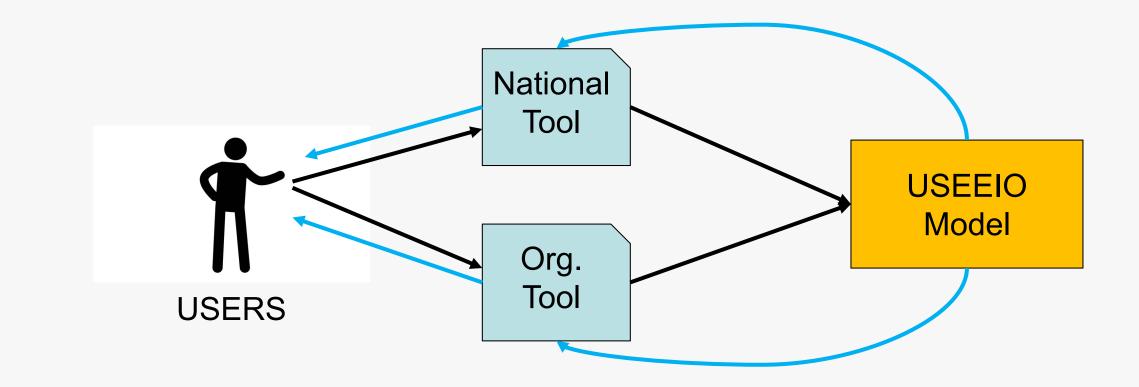
SMM Prioritization Tools: Background

- 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 cyclebased 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
- <u>Frequently Asked Questions</u>
- What is SMM?

Documentation About the SMM Prioritization Tools



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

Have Feedback?

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

Related Programs

- <u>Sustainable and Healthy</u>
 <u>Communities Research</u>
 <u>Program</u>
- <u>National Risk</u>
 <u>Management Research</u>
 <u>Laboratory</u>

Resources

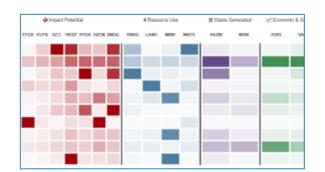
<u>Check out EPA's</u>
 <u>Sustainable Materials</u>
 <u>Management: The Road</u>
 <u>Ahead</u>

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.

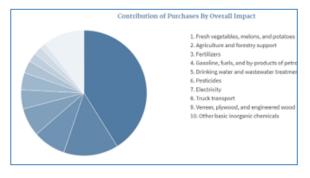


National

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



Organizational

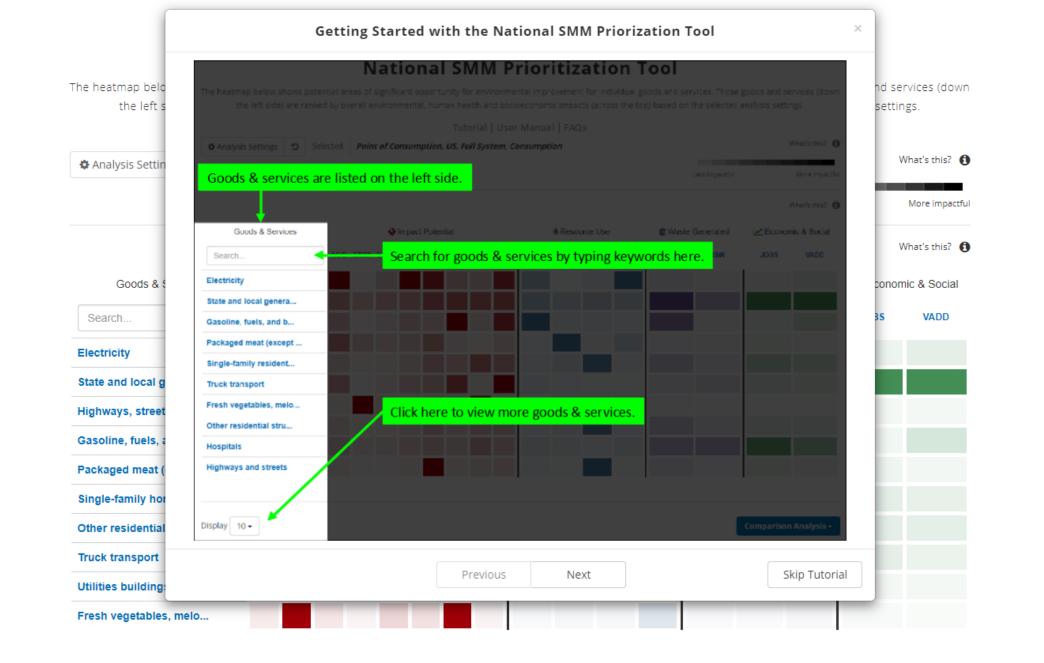


Quick snapshots for organizations, such as companies, small enterprises and their sustainability/procurement staff.



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

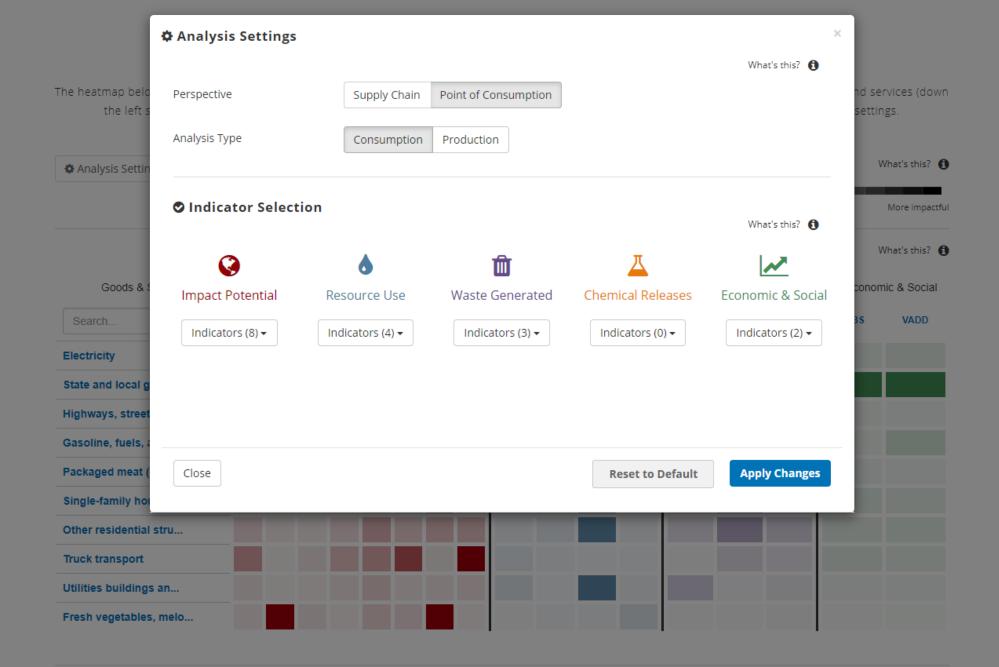
DISCLAIMER: These SMM Prioritization tools are for informational purposes only and should not be construed to represent Agency determinations or policy. They have been reviewed in accordance with U.S. Environmental Protection Agency policy and approved for release. Mention of trade names or commercial products does not constitute endorsement or recommendation for use. The U.S. EPA nor any of its employees assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information provided, or represents that its use would not infringe privately owned rights. The U.S. EPA does not assume responsibility for use and interpretation of these tools. However, as for all complex software, these tools may not be completely free of errors. In no event will the U.S. EPA be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of these tools, underlying models and/or associated documentation.

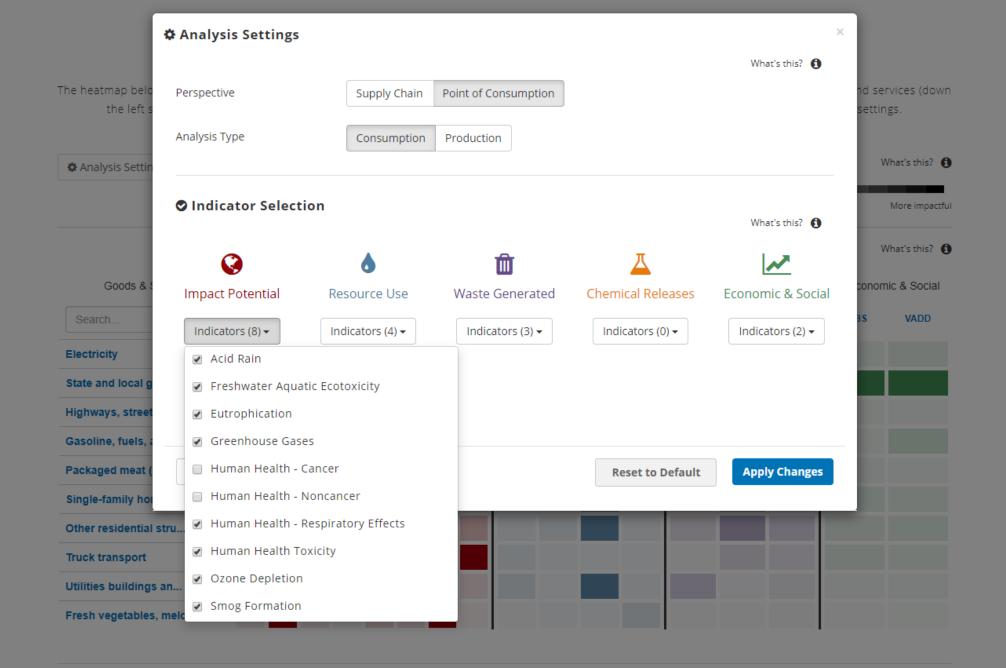


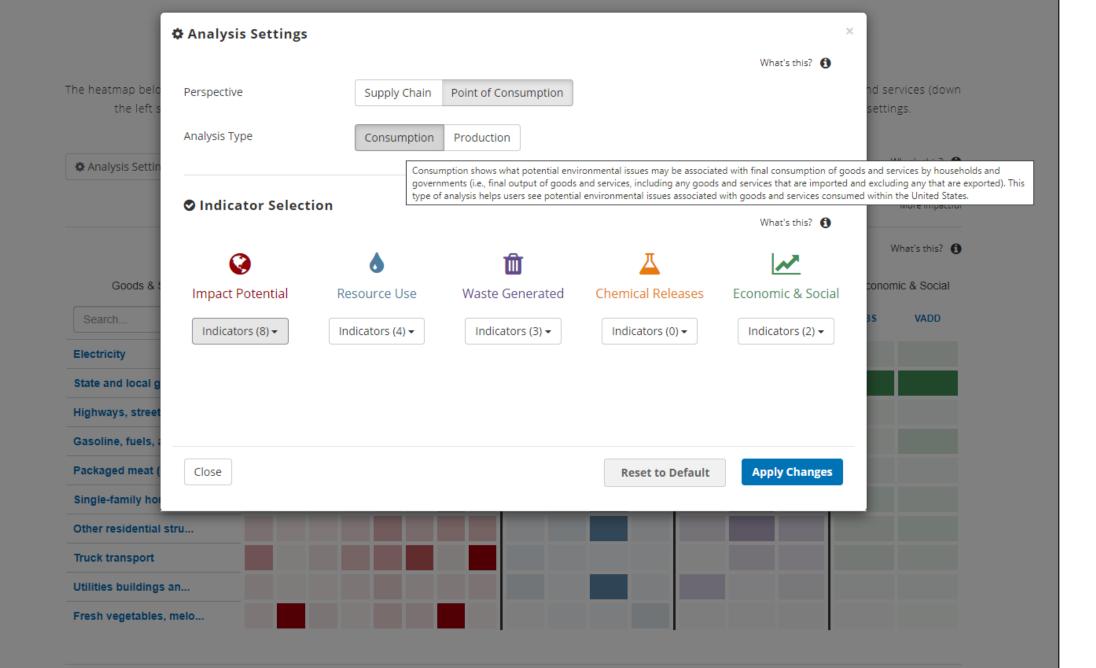
National SMM Prioritization Tool

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.

| | | | | | | т | utorial L | ser Man | ual F | AQs | | | | | | |
|------------------------|----------|----------|------|---------|--------|-----------|----------------|---------|---------|----------|------|------|------------|-----------|---------|----------------|
| Analysis Settings | C | Selected | US, | Point o | of Con | sumption | , Consumpti | on | | | | | | | | What's this? 🚺 |
| | | | | | | | | | | | | | Less | impactful | | More impactful |
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| Goods & Servi | ices | | | 0 | Impact | Potential | | | la Reso | urce Use | | â W | /aste Gene | erated | 🛃 Econo | mic & Social |
| Search | | ACID | ΕΤΟΧ | EUTR | GHG | HRSP HTC | X OZON SMO | G ENRG | LAND | MNRL | WATR | CCDD | CMSW | CRHW | JOBS | VADD |
| Electricity | | | | | | | | | | | | | | | | |
| State and local gener | ra | | | | | | | | | | | | | | | |
| Highways, streets, a | nd | | | | | | | | | | | | | | | |
| Gasoline, fuels, and | b | | | | | | | | | | | | | | | |
| Packaged meat (exce | ept | | | | | | | | | | | | | | | |
| Single-family homes | | | | | | | | | | | | | | | | |
| Other residential stru | . | | | | | | | | | | | | | | | |
| Truck transport | | | | | | | | | | | | | | | | |
| Utilities buildings an | | | | | | | | | | | | | | | | |
| Fresh vegetables, me | elo | | | | | | | | | | | | | | | |

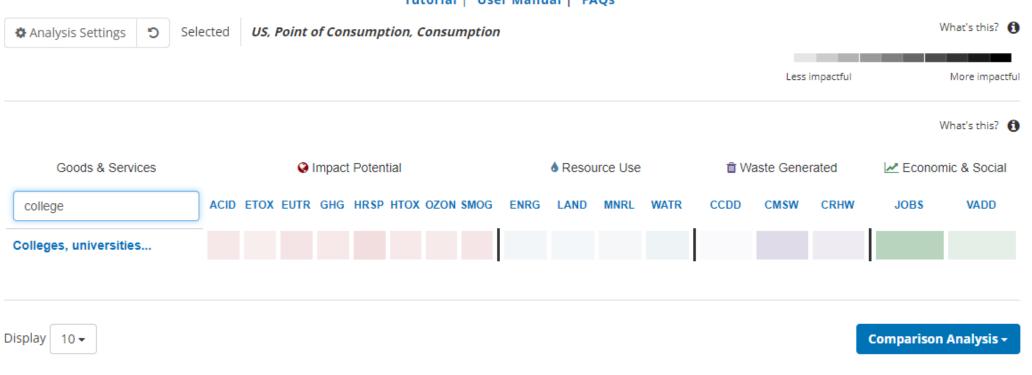






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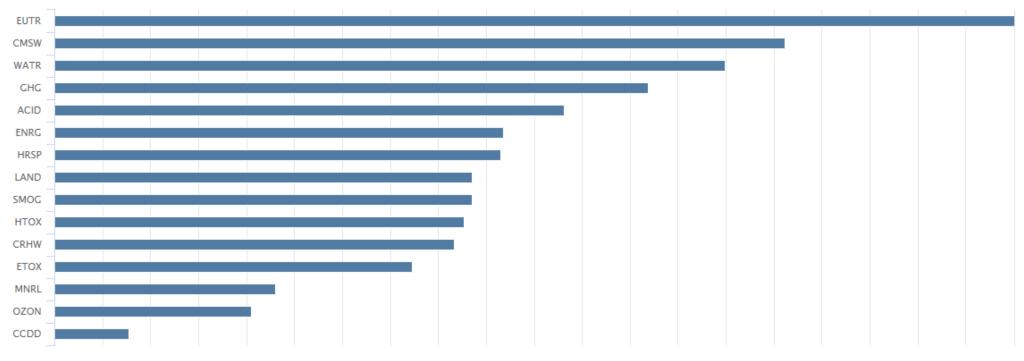
Tutorial | User Manual | FAQs

Analysis Settings US, Point of Consumption, Consumption

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

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

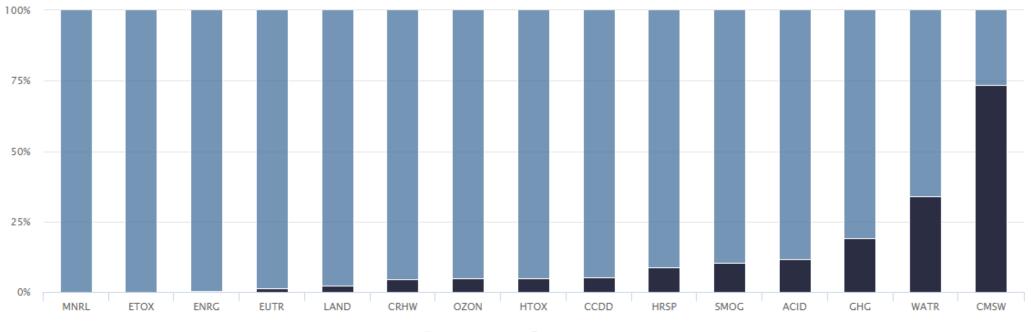
Back to Heatmap

Analysis Settings US, Point of Consumption, Consumption

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

| 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.



Supply chain Operations

Download chart data as CSV file

Back to Heatmap

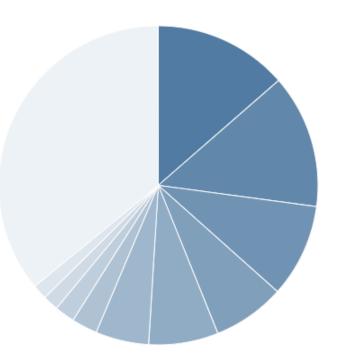
Analysis Settings US, Point of Consumption, Consumption

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

| Environmental Profile Supply Chain / Operations Impactful Purchases Supply Chain Hotspots E | Environmental Profile | Supply Chain / Operations | Impactful Purchases | Supply Chain Hotspots | | Back to Heatmap | |
|---|-----------------------|---------------------------|---------------------|-----------------------|--|-----------------|--|
|---|-----------------------|---------------------------|---------------------|-----------------------|--|-----------------|--|

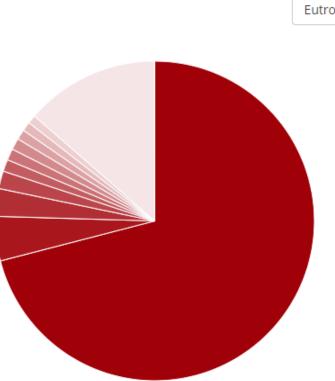
What purchases made by providers of this good or service are potentially embedding issues in this good or service? The charts below show the direct purchases potentially contributing significantly to overall environmental issues (first chart) and each individual issue (second chart). Click a good or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

Contribution of Purchases By Overall Impact



| 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 |
| 6. | Electricity |
| 7. | Waste management and remediation |
| 8. | Vegetable oils and by-products |
| 9. | Bread and other baked goods |
| 10. | Fluid milk and butter |

| | Related Tonics: Sustainable Materials Management | | Contact Us | |
|--------|--|-------------|--|---|
| | Drinking water | and wastewa | ater treatment | × |
| The mo | st significant potential environmental issues for this purchase are: | The m | nost significant supply chain sources of these issues for this purchase are: | |
| 1. | Eutrophication (EUTR) | 1. | Drinking water and wastewater treatment | |
| 2. | Minerals and Metals Use (MNRL) | 2. | Unrefined oil and gas | |
| 3. | Greenhouse Gases (GHG) | 3. | Nonresidential building repair and maintanence | |
| 4. | Human Health Toxicity (HTOX) | 4. | Pipeline transport | |
| 5. | Smog Formation (SMOG) | 5. | Electricity | |
| | | | | |
| | | Close | | |
| - | | | 1. Drinking water and wastewater treatment | |
| | | | Other real estate | |
| | | | 3. Gasoline, fuels, and by-products of petroleum r | |
| | | | 4. Packaged meat (except poultry) | |
| | | | 5. Natural gas | |
| | | | 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 | | | |
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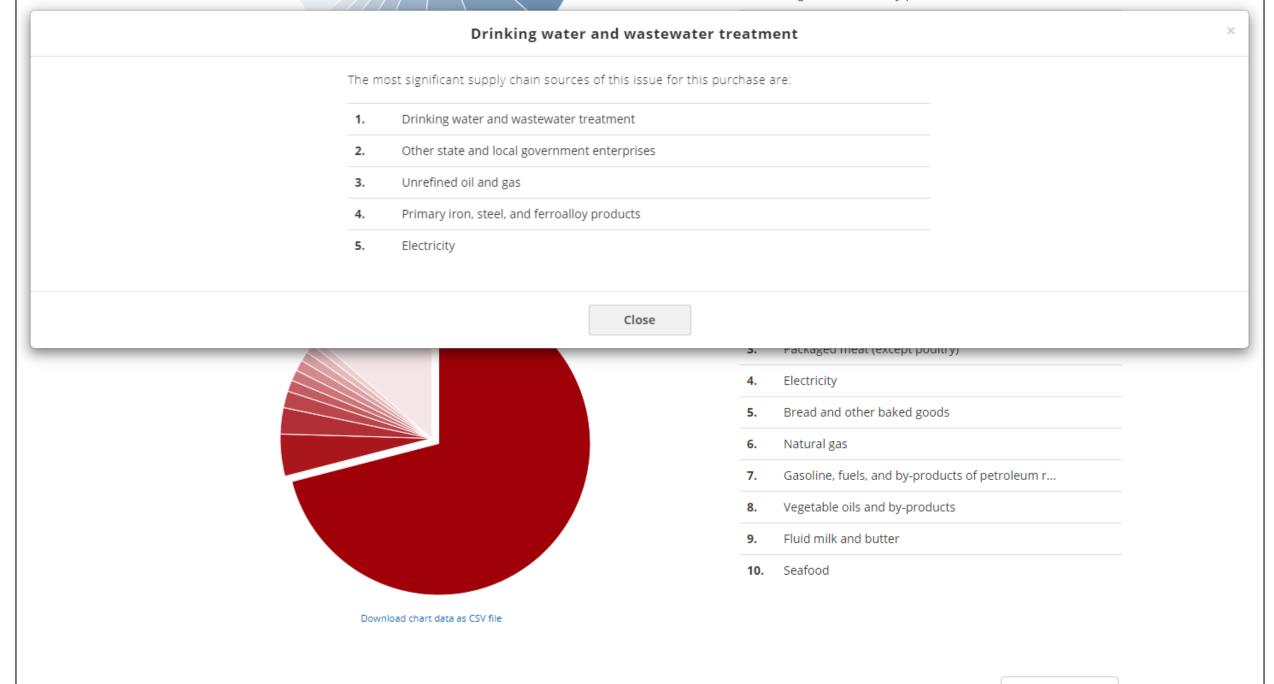
Download chart data as CSV file

Contribution of Purchases By Indicator

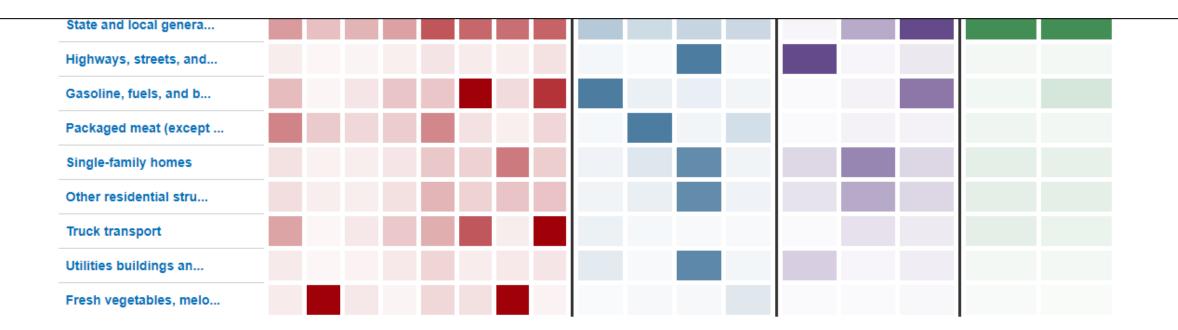
Eutrophication (EUTR) 🗸

- 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

Back to Heatmap



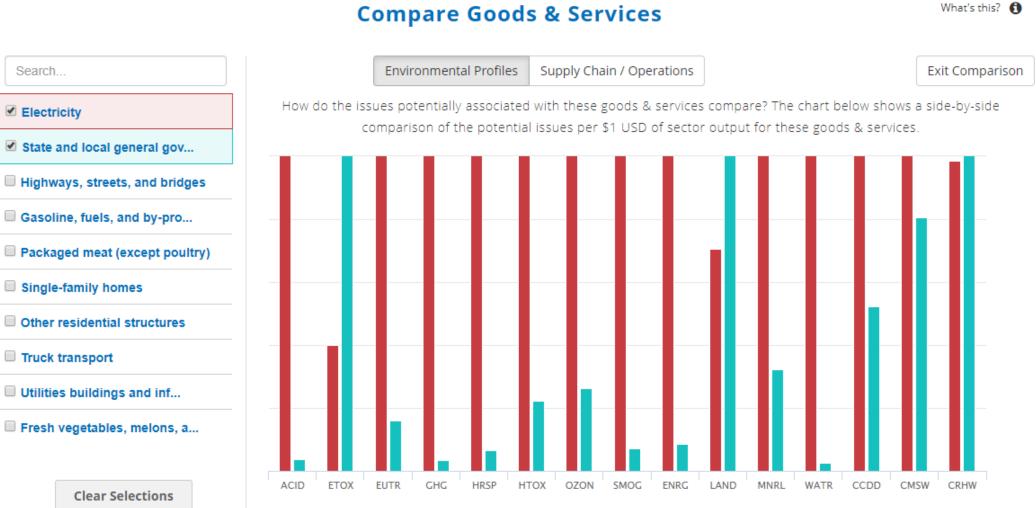
Back to Heatmap





Analysis Settings US, Point of Consumption, Consumption

Search



Download chart data as CSV file

Exit Comparison

Analysis Settings 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.

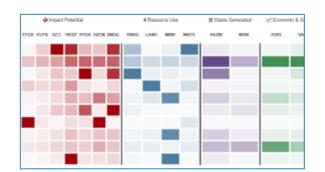
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|------------------------|----------|----------|------|---------|--------|-----------|----------------|---------|---------|----------|------|------|------------|-----------|---------|----------------|
| Analysis Settings | C | Selected | US, | Point o | of Con | sumption | , Consumpti | on | | | | | | | | What's this? 🚺 |
| | | | | | | | | | | | | | Less | impactful | | More impactful |
| | | | | | | | | | | | | | | | | What's this? 🚯 |
| Goods & Servi | ices | | | 0 | Impact | Potential | | | la Reso | urce Use | | â W | /aste Gene | erated | 🛃 Econo | mic & Social |
| Search | | ACID | ΕΤΟΧ | EUTR | GHG | HRSP HTC | X OZON SMO | G ENRG | LAND | MNRL | WATR | CCDD | CMSW | CRHW | JOBS | VADD |
| Electricity | | | | | | | | | | | | | | | | |
| State and local gener | ra | | | | | | | | | | | | | | | |
| Highways, streets, a | nd | | | | | | | | | | | | | | | |
| Gasoline, fuels, and | b | | | | | | | | | | | | | | | |
| Packaged meat (exce | ept | | | | | | | | | | | | | | | |
| Single-family homes | | | | | | | | | | | | | | | | |
| Other residential stru | . | | | | | | | | | | | | | | | |
| Truck transport | | | | | | | | | | | | | | | | |
| Utilities buildings an | | | | | | | | | | | | | | | | |
| Fresh vegetables, me | elo | | | | | | | | | | | | | | | |

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.

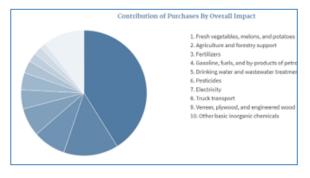


National

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.



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Organizational SMM Prioritization Tool

| Select Good/Service Environmental Profile Supply Chain/Operations Impactful Purchases Supply Chain Hotspots Summary | 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

erations Impactfu

Impactful Purchases

Supply Chain Hotspots

Summary

What's this?

Select the primary good or service provided by your organization

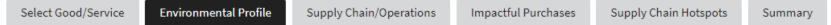
Colleges, universities, junior colleges, and professional schools

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

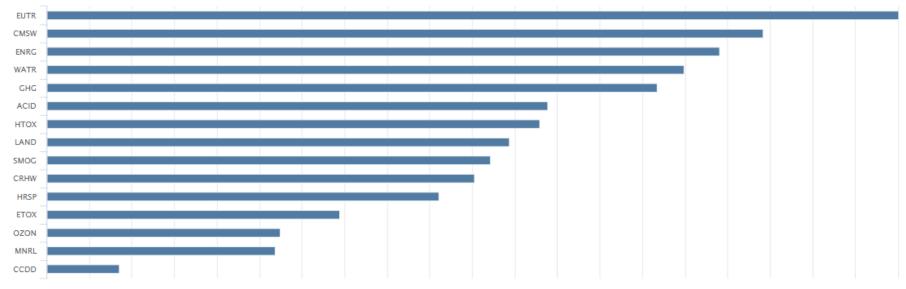
Organizational SMM Prioritization Tool



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



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

ations Impact

Impactful Purchases

Supply Chain Hotspots

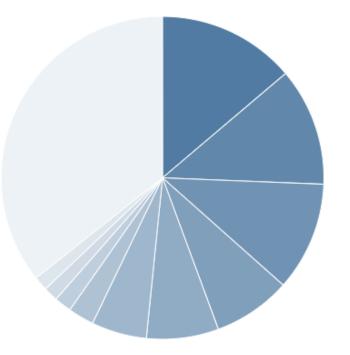
Summary

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

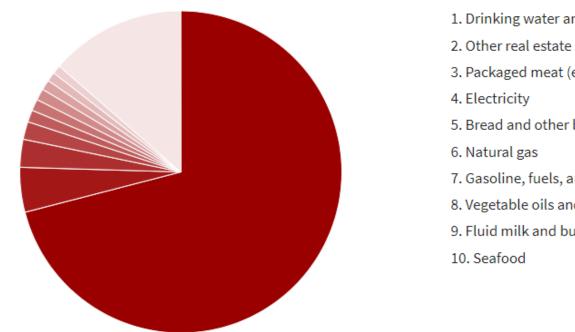
2. Drinking water and wastewater treatment

- 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

~

- 3. Packaged meat (except poultry)
- 5. Bread and other baked goods
- 7. Gasoline, fuels, and by-products of petroleum r...
- 8. Vegetable oils and by-products
- 9. Fluid milk and butter

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

Organizational SMM Prioritization Tool



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

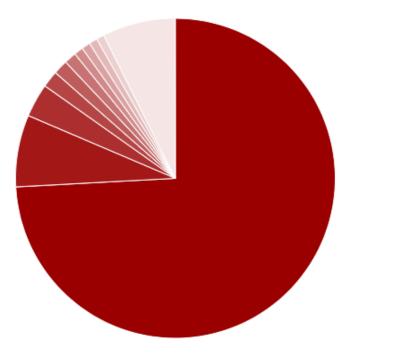
Colleges, universities, junior colleges, and pr...
 Unrefined oil and gas
 Electricity
 Drinking water and wastewater treatment
 Cattle ranches and feedlots
 Fresh wheat, corn, rice, and other grains
 Waste management and remediation
 Truck transport
 Natural gas
 Pipeline transport

Download chart data as CSV file

Contribution of Supply Chain Goods & Services By Indicator

Eutrophication (EUTR)



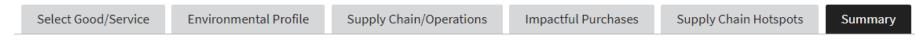


Download chart data as CSV file

Drinking water and wastewater treatment
 Fresh wheat, corn, rice, and other grains
 Electricity
 Fresh soybeans, canola, flaxseeds, and other oi...
 Unrefined oil and gas
 Colleges, universities, junior colleges, and pr...
 Other state and local government enterprises
 Primary iron, steel, and ferroalloy products
 Cattle ranches and feedlots
 Seafood

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

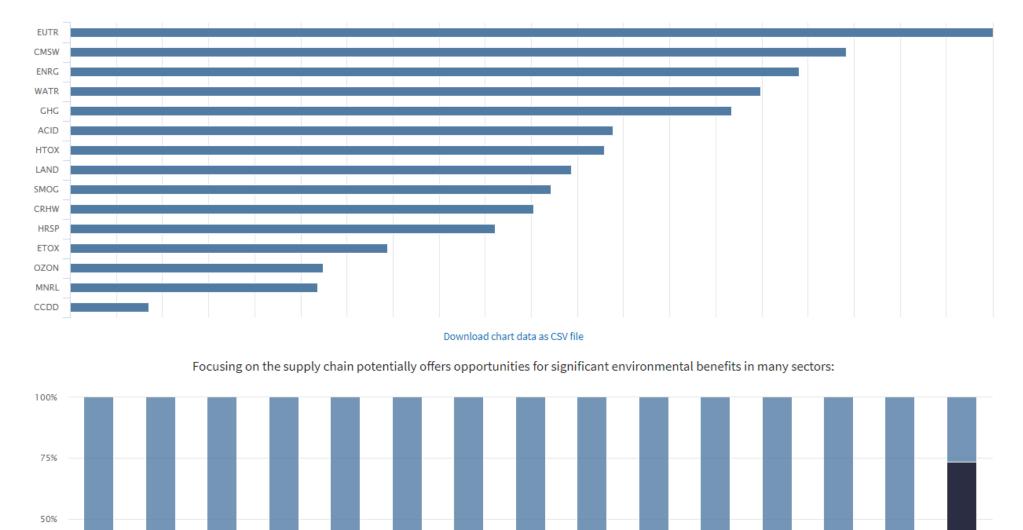
Organizational SMM Prioritization Tool

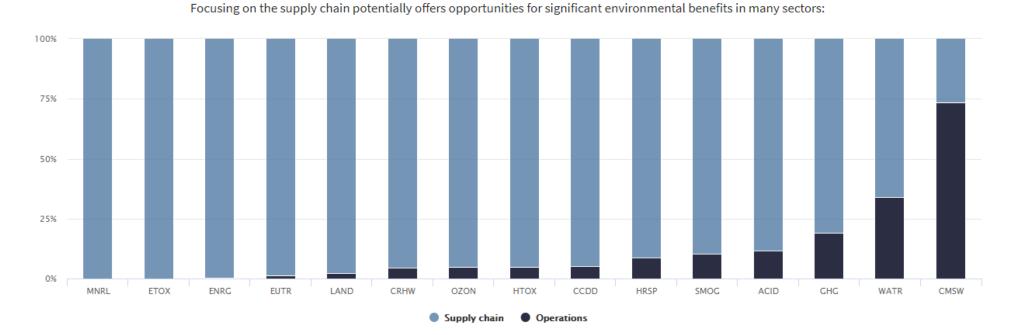


What's this?

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

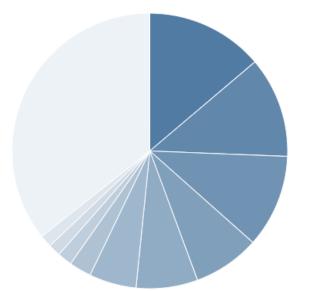
Here are the potential environmental issues associated with Colleges, universities, junior colleges, and professional schools, ordered from most to least significant.





Download chart data as CSV file

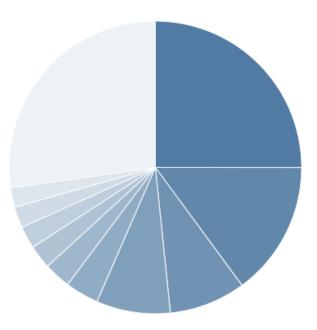
Purchases of Other real estate, Drinking water and wastewater treatment, and Gasoline, fuels, and by-products of petroleum refining potentially contribute the most to the supply chain portion of environmental issues for Colleges, universities, junior colleges, and professional schools:



- 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 <u>here</u>. 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.

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Thanks! Questions?

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