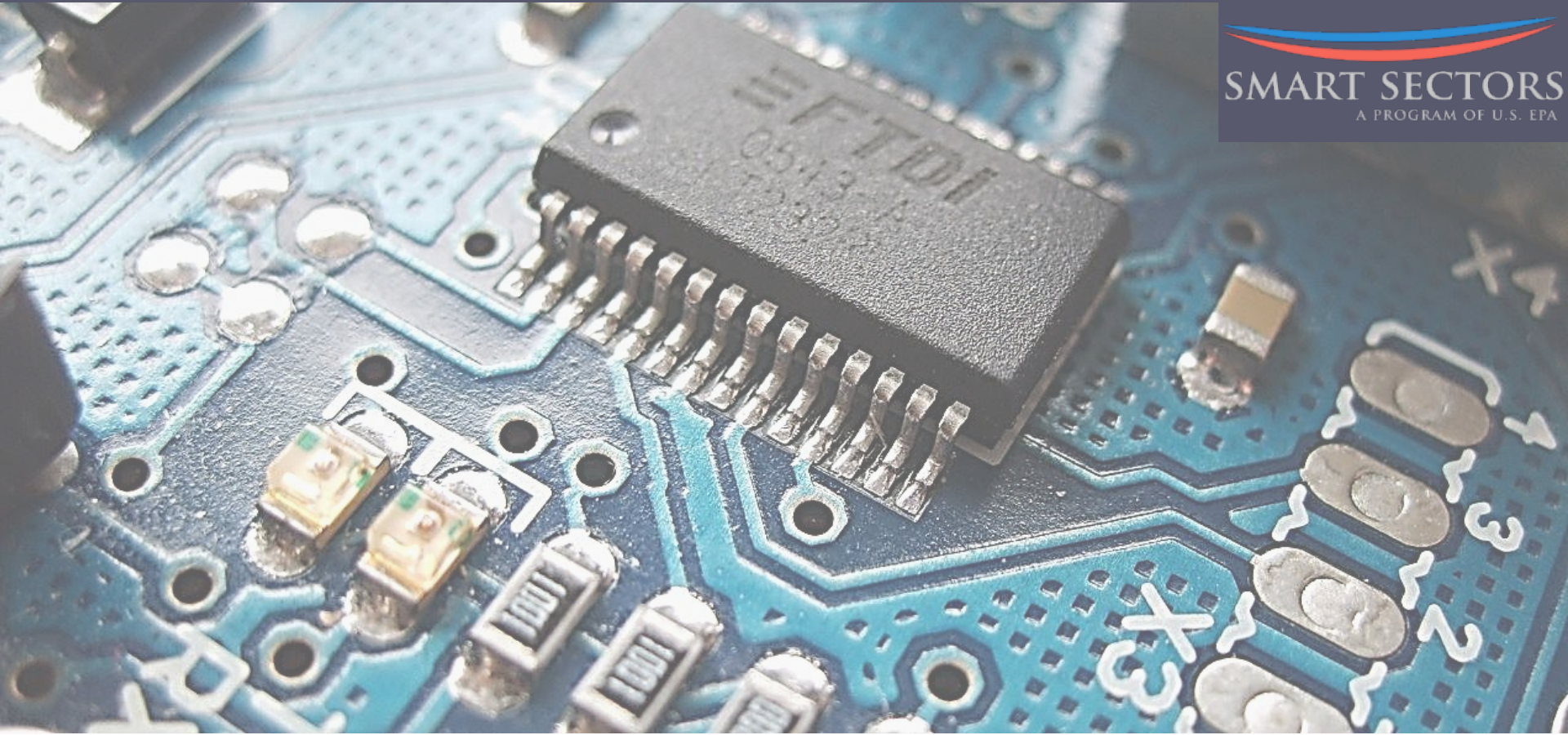


ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING



SMART SECTORS
A PROGRAM OF U.S. EPA



ECONOMICS

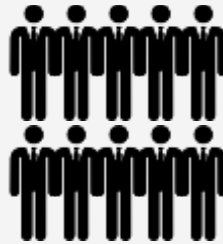


ENVIRONMENTAL
IMPACT



EFFICIENCY

ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING



The electronic products manufacturing sector employs approximately 1 million people, including roughly 393,000 people in semiconductor and other electronic component manufacturing.

Bureau of Labor Statistics, 2024

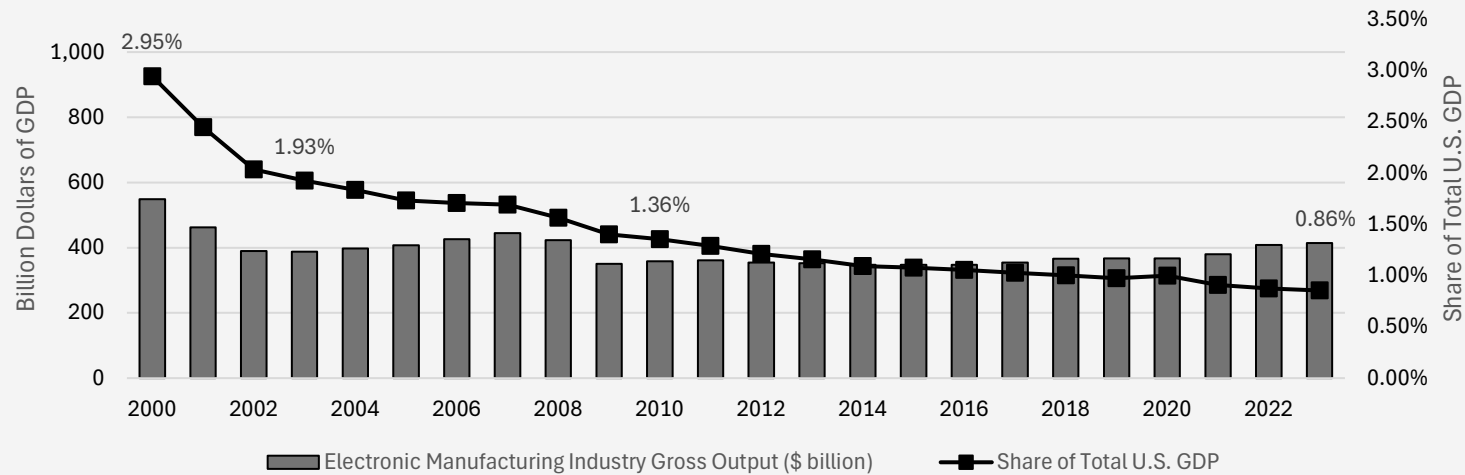


ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING



U.S. Electronic Manufacturing Industry's Gross Output and Share of GDP

SMART SECTORS
A PROGRAM OF U.S. EPA



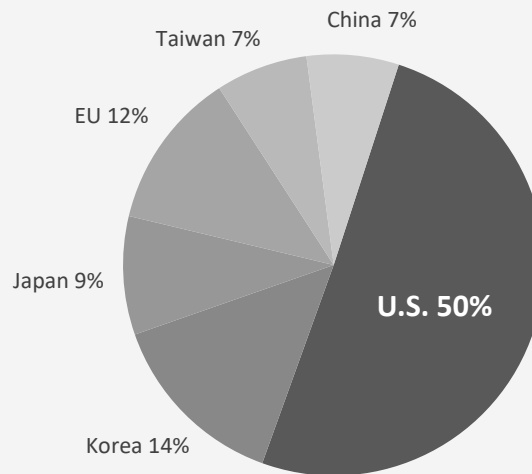
Between 2000 and 2023, the U.S. electronic manufacturing industry's share of GDP has decreased from 2.95 percent to 0.86 percent, and its gross output has decreased from \$549 billion in 2000 to \$414 billion in 2023.

Bureau of Economic Analysis, 2024





U.S. Share of Global Semiconductor Market (2023)



In 2023, sales by U.S.-based firms constituted 50% of the global semiconductor market, but U.S.-made semiconductors were only 12% of global production.

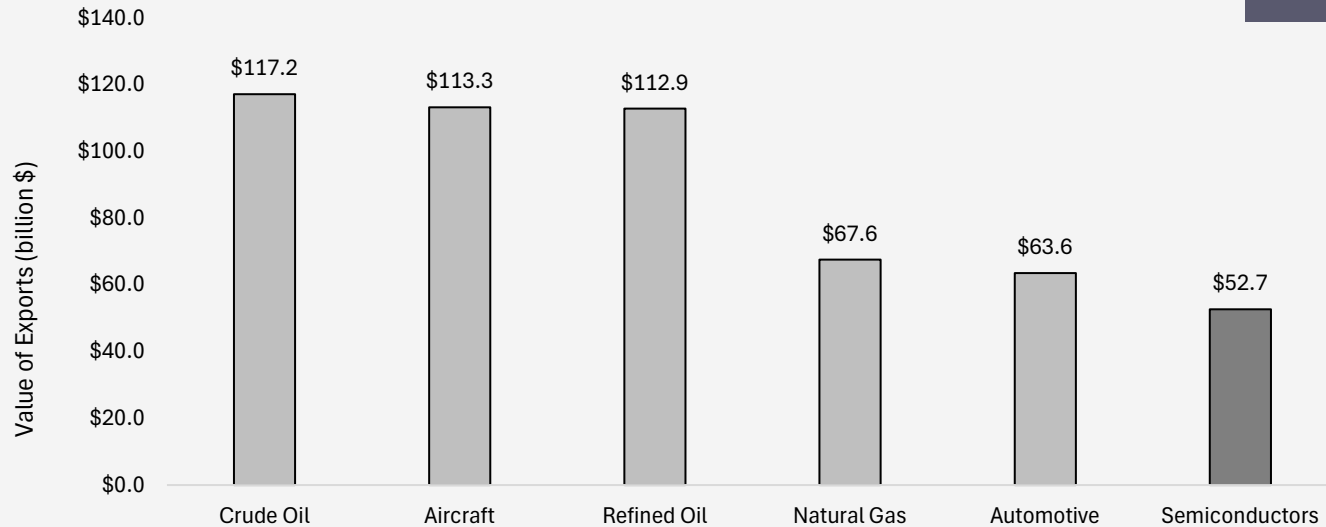
Semiconductor Industry Association, 2020; 2024



ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING



Top 6 U.S. Exports (2023)



Exports of semiconductors were worth \$52.7 billion in 2023, ranking sixth among all exports from the U.S.

Semiconductor Industry Association, 2024

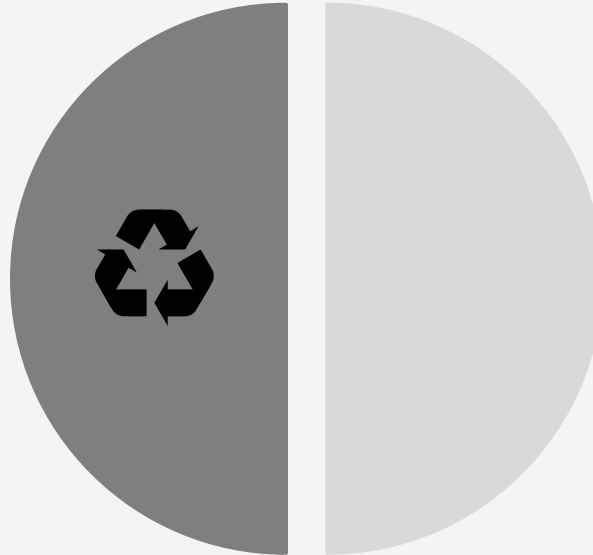


ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING



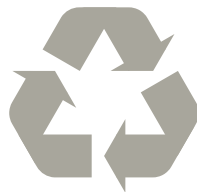
States with Electronic Waste Recycling Programs

CA
CT
HI
IL
IN
ME
MD
MI
MN
MO
NJ
NY
NC
OK
OR
PA
RI
SC
TX
UT
VT
VA
WA
WV
WI



25 states and the District of Columbia have passed legislation establishing electronic waste recycling programs.

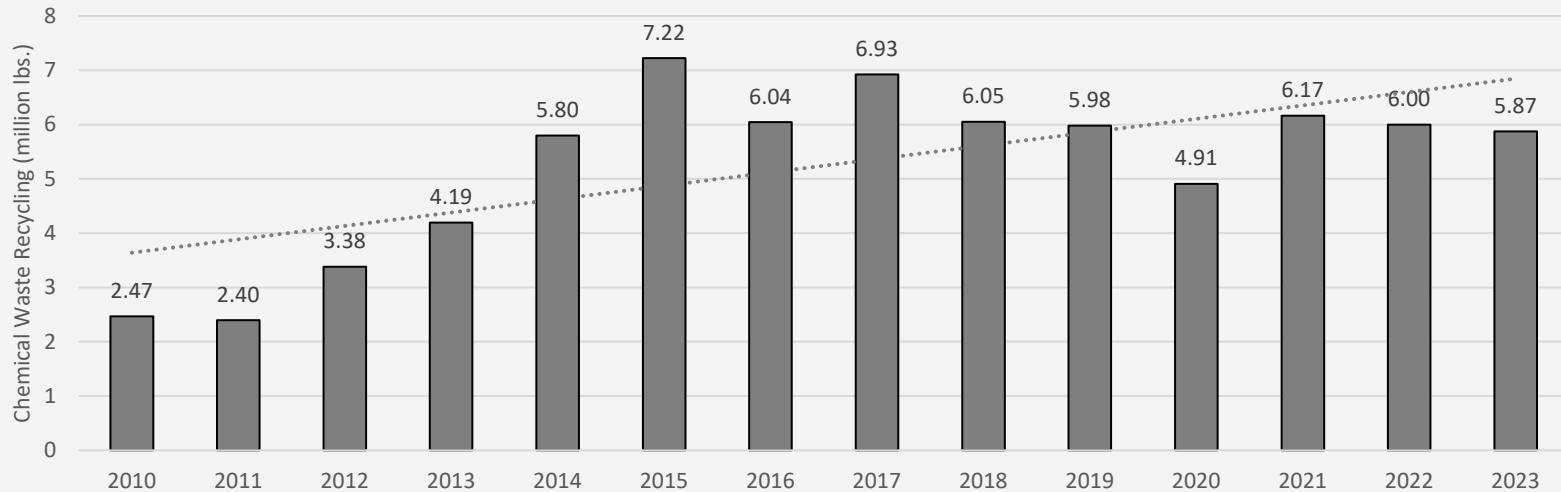
Electronics Recycling Coordination Clearinghouse, 2024



ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING



Chemical Waste Recycling Reported to TRI



Between 2010 and 2023, the quantity of chemical waste recycling reported to TRI increased from 2.47 to 5.87 million lbs.

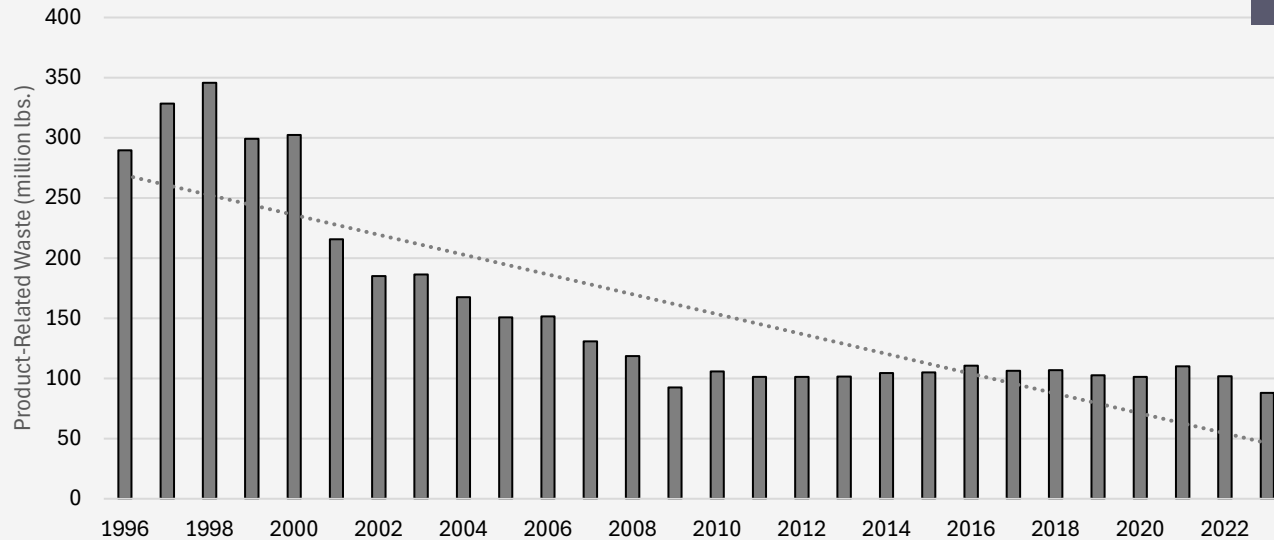
EPA Toxics Release Inventory, 2024



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Production-Related Waste Reported to TRI



Between 1996 and 2023, production-related waste reported to TRI by the electronic products manufacturing sector decreased from roughly 290 million to 88 million pounds.

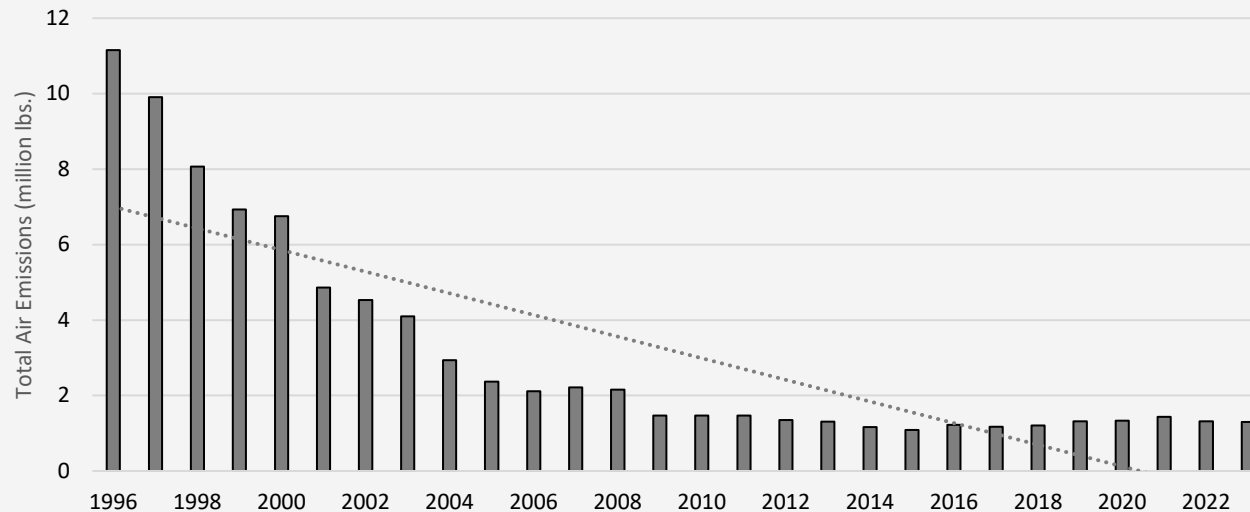
EPA Toxics Release Inventory, 2024



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Air Emissions Reported to TRI



Between 1996 and 2023, air emissions reported to TRI by the electronic products manufacturing sector decreased from roughly 11 million to 1 million pounds.

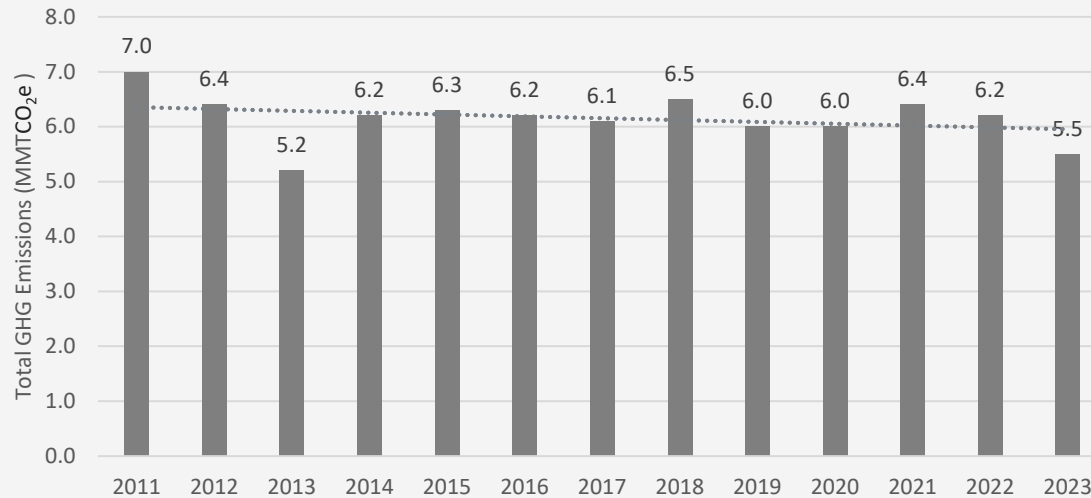
EPA Toxics Release Inventory, 2024



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GHG Emissions Reported to EPA GHGRP



Between 2011 and 2023, total reported GHG emissions in the electronics manufacturing sector declined by 4.3%.

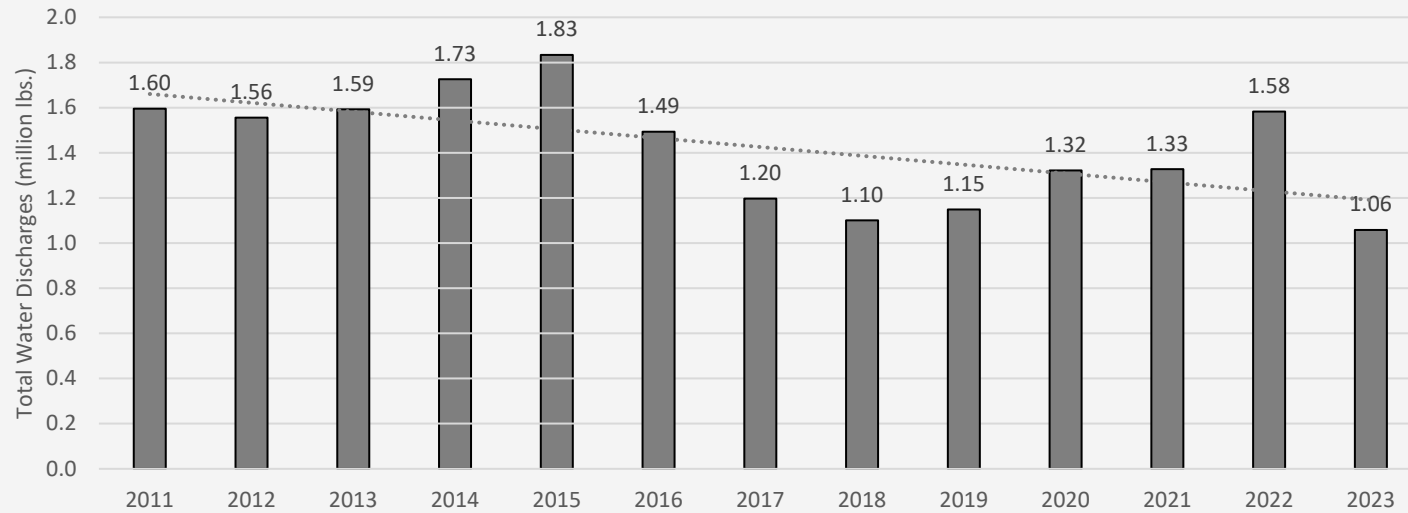
U.S. Environmental Protection Agency, 2025



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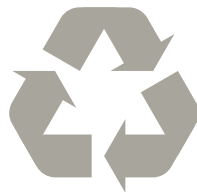


Surface Water Discharges Reported to TRI



Between 2011 and 2023, surface water discharges by the electronics manufacturing sector decreased from 1.60 to 1.06 million lbs.

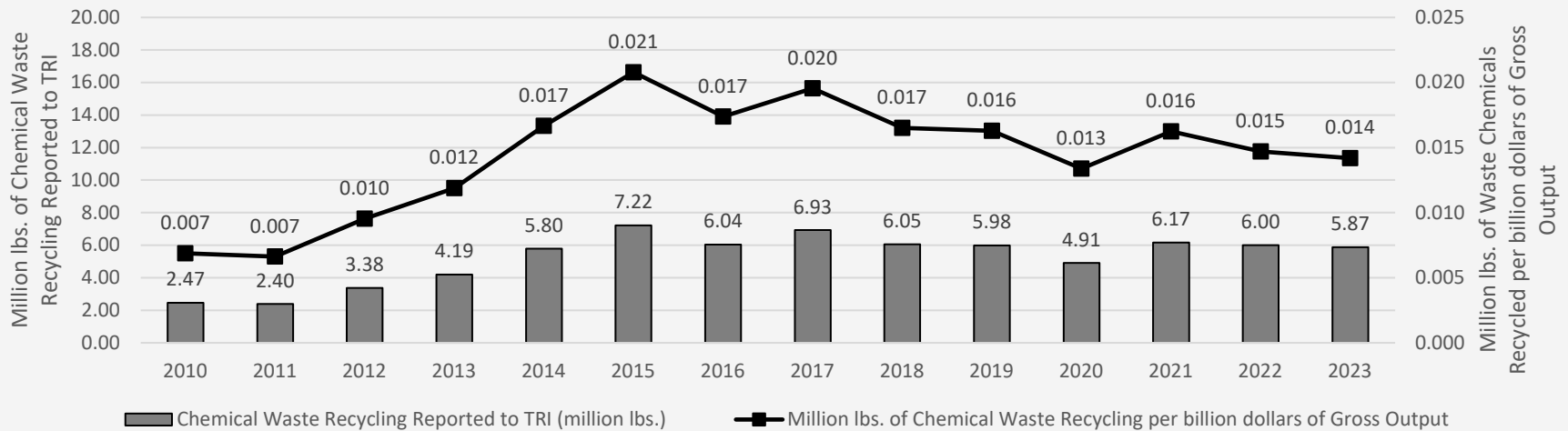
EPA Toxics Release Inventory, 2024



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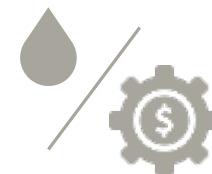


Million pounds of Chemical Waste Recycling per billion dollars of Gross Output



Between 2010 and 2023, the ratio of chemical waste recycling reported to TRI vs. Gross Output increased from 0.007 to 0.014, constituting a 200 percent increase.

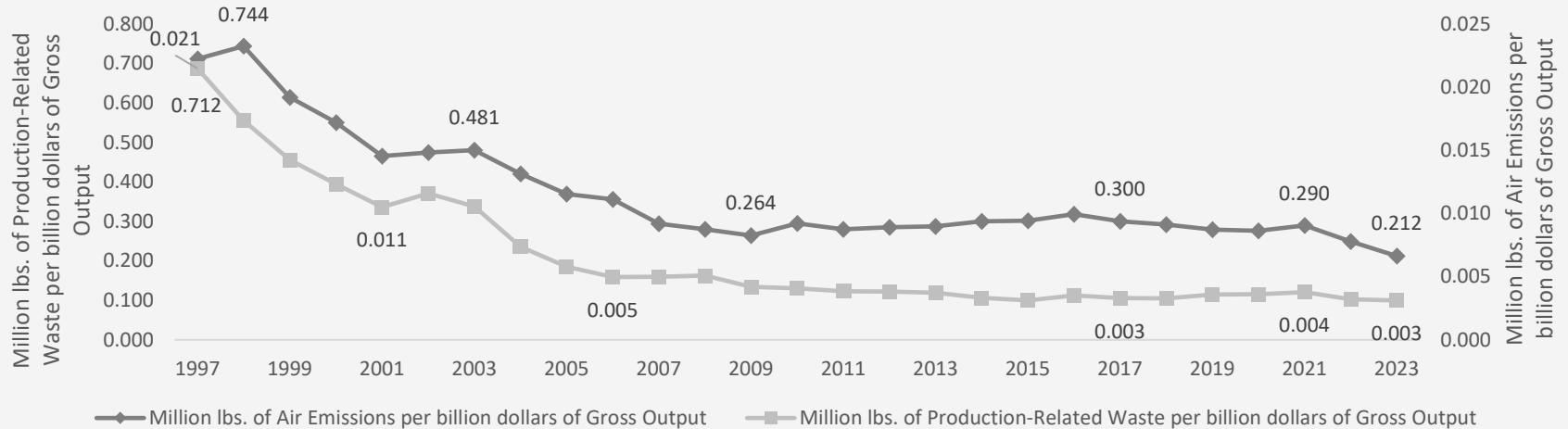
EPA Toxics Release Inventory, 2024; Bureau of Economic Analysis, 2024



ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING

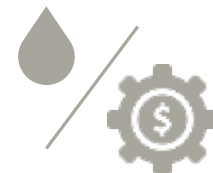
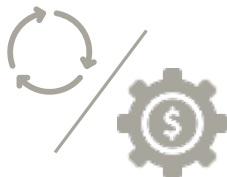


Million pounds of Air Emissions and Production-Related Waste Reported to TRI per billion dollars of Gross Output



Between 1997 and 2023, the ratio of production-related waste and air emissions reported to TRI to Gross Output declined by 70 percent and 85 percent, respectively.

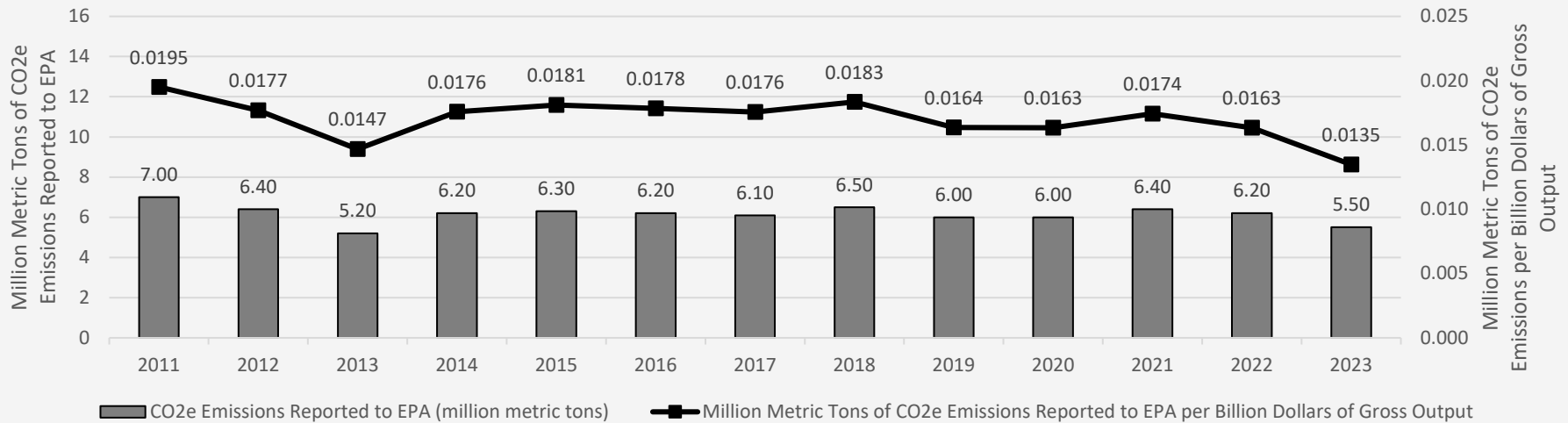
EPA Toxics Release Inventory, 2024; Bureau of Economic Analysis, 2024



ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING

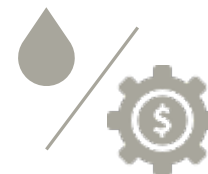
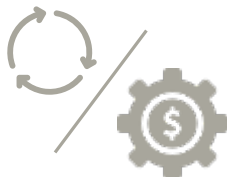


Million Metric Tons of CO₂e Emissions per billion dollars of Gross Output



Between 2011 and 2023, the ratio of CO₂e emissions reported to EPA vs. Gross Output decreased from 0.0195 to 0.0135.

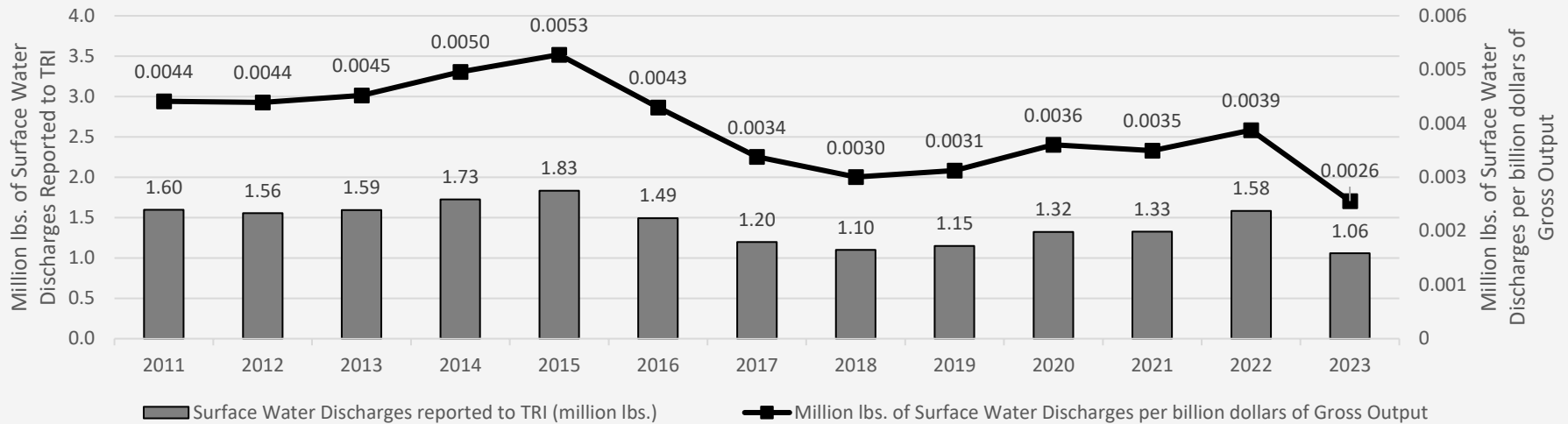
U.S. Environmental Protection Agency, 2025; Bureau of Economic Analysis, 2024



ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING



Million pounds of Surface Water Discharges per billion dollars of Gross Output



Between 2011 and 2023, the ratio of surface water discharges reported to TRI vs. Gross Output decreased from 0.0044 to 0.0026.

EPA Toxics Release Inventory, 2024; Bureau of Economic Analysis, 2024





ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING



References



 [Bureau of Labor Statistics, 2024](#)



  [Bureau of Economic Analysis, 2024](#): Obtained annual gross output for the construction sector by selecting “Gross Output by Industry” under the Gross Output drop-down and editing the output by selecting “2000-A” as the first year and “2023-A & Q” as the last year in the “Modify” menu



 [Semiconductor Industry Association, 2020](#)



 [Semiconductor Industry Association, 2024](#)

 [Electronic Recycling Coordination Clearinghouse, 2024](#)

  [EPA Toxics Release Inventory, 2024](#): Obtained air emissions data by clicking on “Flat (Denormalized) Form R” at the bottom of the page and then selecting “Reporting Year,” “Primary NAICS Code,” and “SUM” in the row immediately below “Air Total Release” as the variables from the table of elements. In the Enter Search Criteria menu, operators were switched to “Between” for “Reporting Year” and “Beginning with” for “Primary NAICS Code”, the “Reporting Year” Sort Column was set to “1”, the “Primary NAICS Code” Where Only box was ticked, and the Search Value for “Primary NAICS Code” was set to “334.”

  [EPA Toxics Release Inventory, 2024](#): Obtained production-related waste data by repeating the steps detailed above, except “SUM” in the row immediately below “Total Production Related Waste” was selected instead of “SUM” in the row immediately below “Air Total Release.”

  [EPA Toxics Release Inventory, 2024](#): Obtained chemical waste recycling data by repeating the steps detailed above, except “SUM” in the row immediately below “Recycling Onsite Current Year Quantity” was selected instead of “SUM” in the row immediately below “Air Total Release.”

  [EPA Toxics Release Inventory, 2024](#): Obtained water release data by repeating the steps detailed above, except “SUM” in the row immediately below “Water Total Release” was selected instead of “SUM” in the row immediately below “Air Total Release.”

  [EPA Greenhouse Gas Reporting Program, 2025](#)

ELECTRONIC PRODUCTS & SEMICONDUCTOR MANUFACTURING



The electronic products ([NAICS 334](#)) and semiconductor manufacturing sector ([NAICS 3344](#)) produce computers, electronic products, communication equipment as well as smaller electronic device components such as semiconductors, circuit boards, capacitors, resistors, and coils.

The Smart Sectors [Electronics and Semiconductor Sector Information](#) page has more details on the industry and related EPA programs.