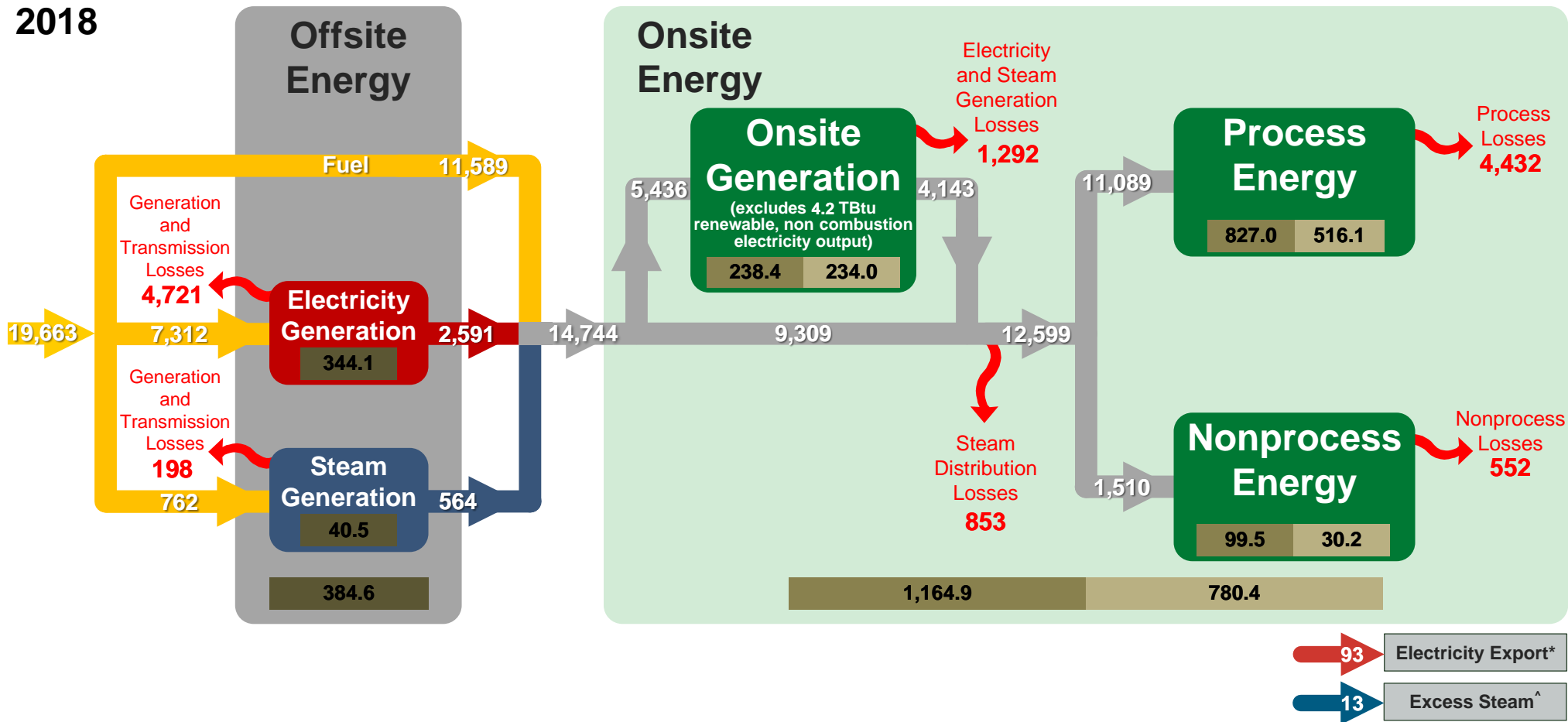


Manufacturing Energy and Carbon Footprint

Sector: All Manufacturing (NAICS 31-33)

Primary Energy Use: 19,663 TBtu
Total GHG Emissions: 1,165 MMT CO₂e

Primary Energy, 2018



Energy (TBtu = Trillion British Thermal Units)	Greenhouse Gas (GHG) Emissions (MMT CO ₂ e = Million Metric Tons Carbon Dioxide Equivalent)
Fuel	Offsite
Electricity	Total
Steam	Onsite
Combined	
Losses	

Total Emissions = Offsite Emissions + Onsite (Combustion + Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

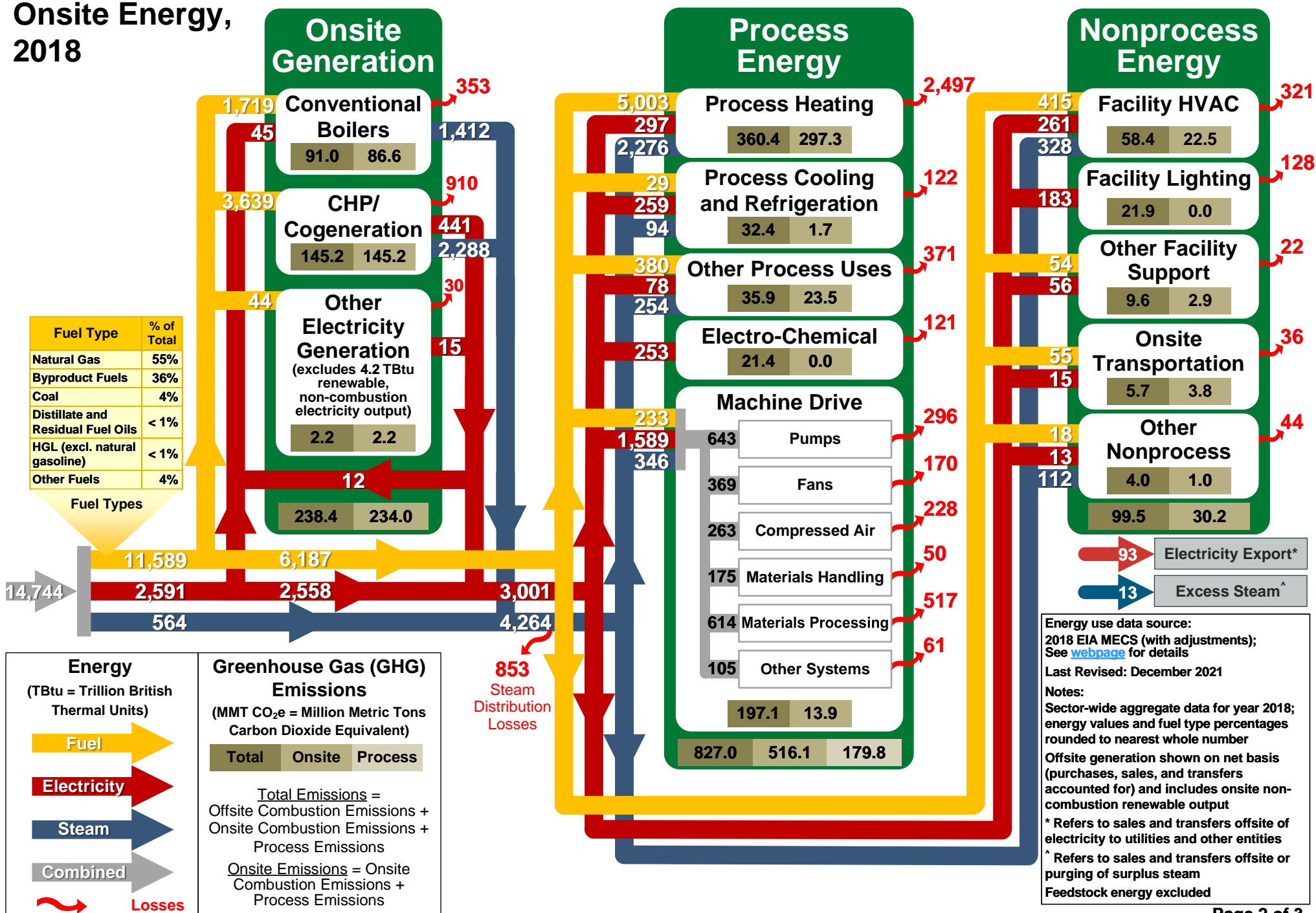
Energy for All Purposes estimated at 24,355 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: All Manufacturing (NAICS 31-33)

Onsite Energy Use: 14,744 TBtu
Onsite Emissions: 780 MMT CO₂e

Onsite Energy, 2018

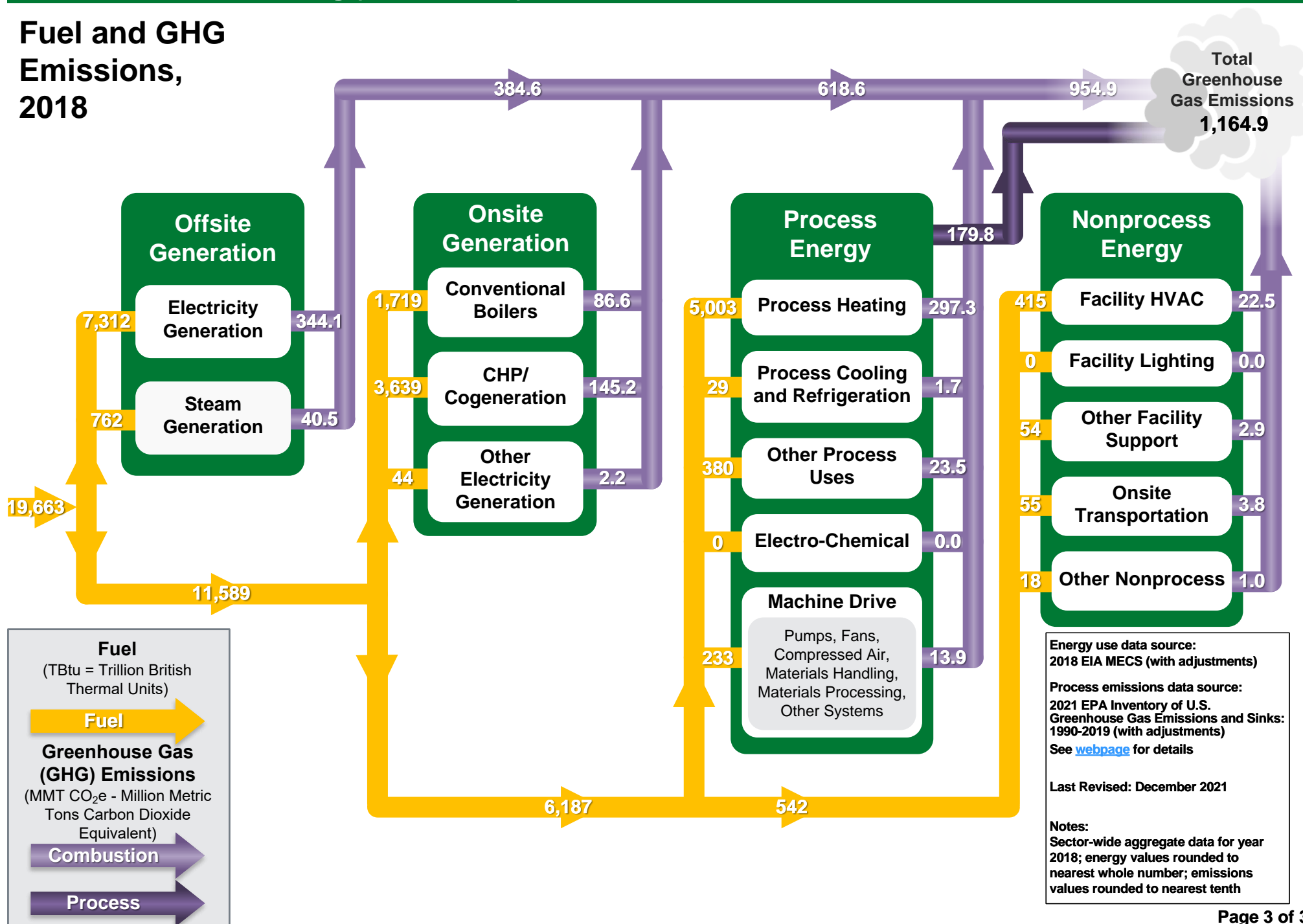


Manufacturing Carbon Footprint

Sector: All Manufacturing (NAICS 31-33)

Primary Energy Use: 19,663 TBtu
Total GHG Emissions: 1,165 MMT CO₂e

Fuel and GHG Emissions, 2018

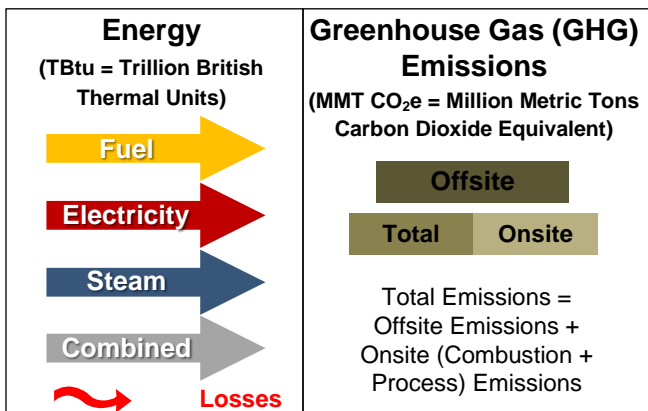
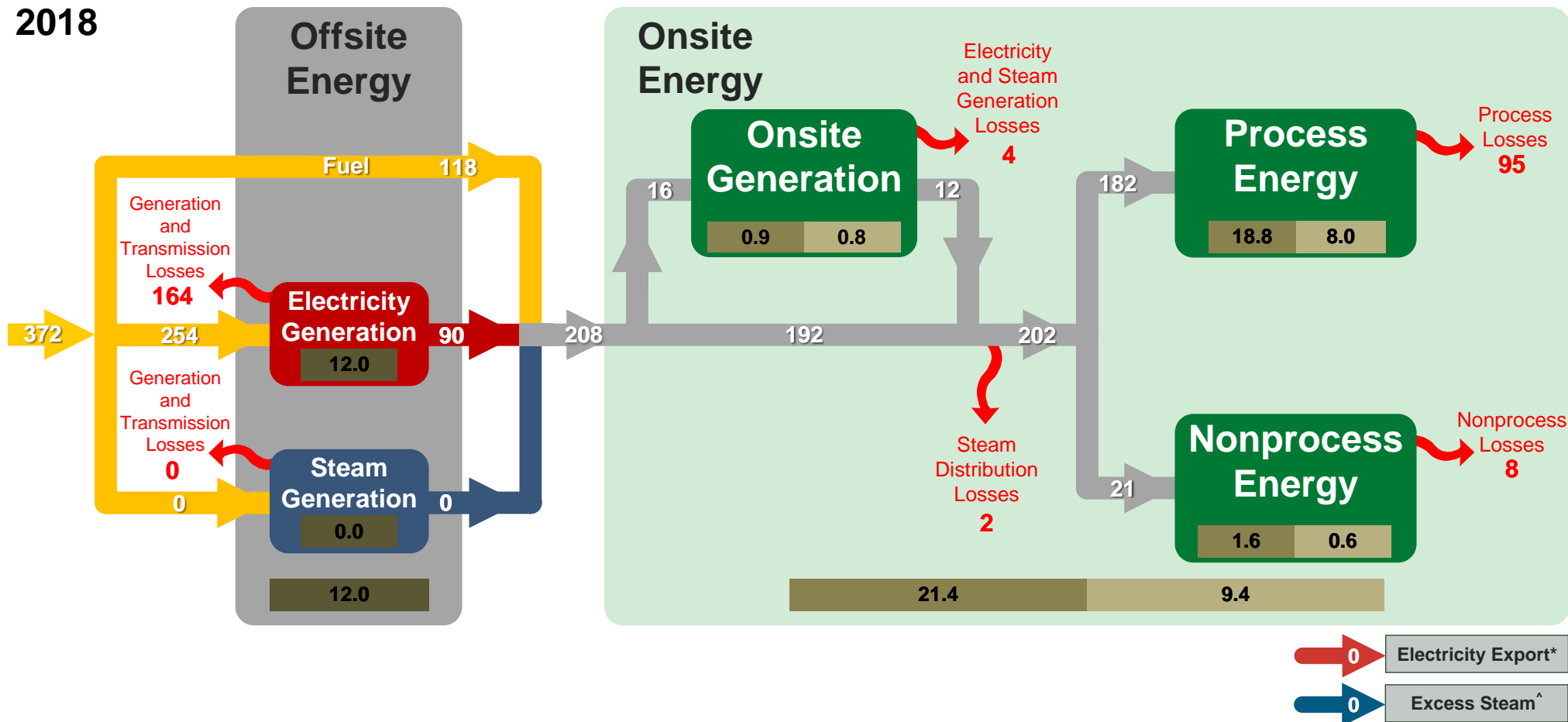


Manufacturing Energy and Carbon Footprint

Sector: Alumina and Aluminum (NAICS 3313)

Primary Energy Use: 372 TBtu
Total GHG Emissions: 21 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

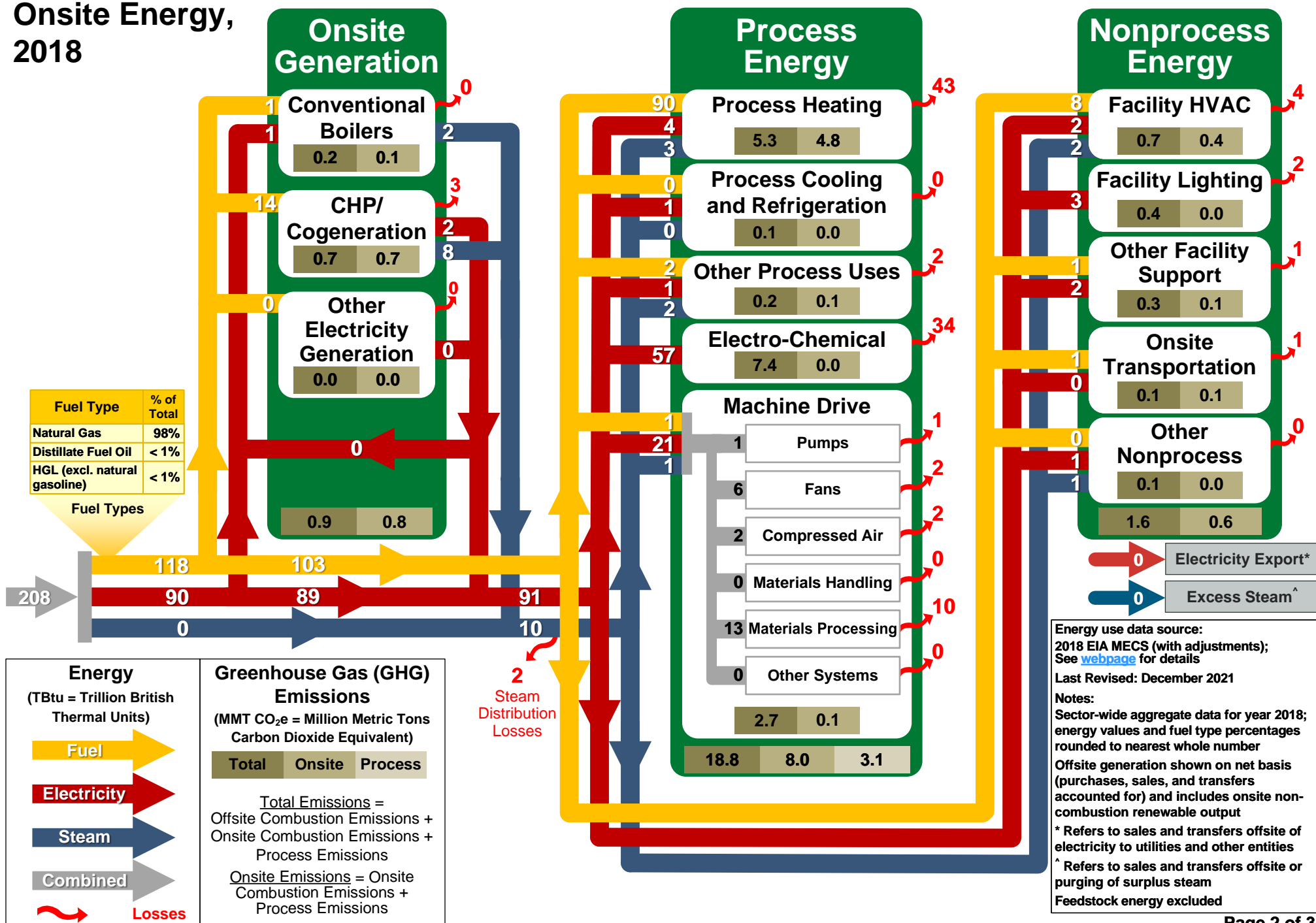
Energy for All Purposes estimated at 381 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Alumina and Aluminum (NAICS 3313)

Onsite Energy Use: 208 TBtu
Onsite Emissions: 9 MMT CO₂e

Onsite Energy, 2018

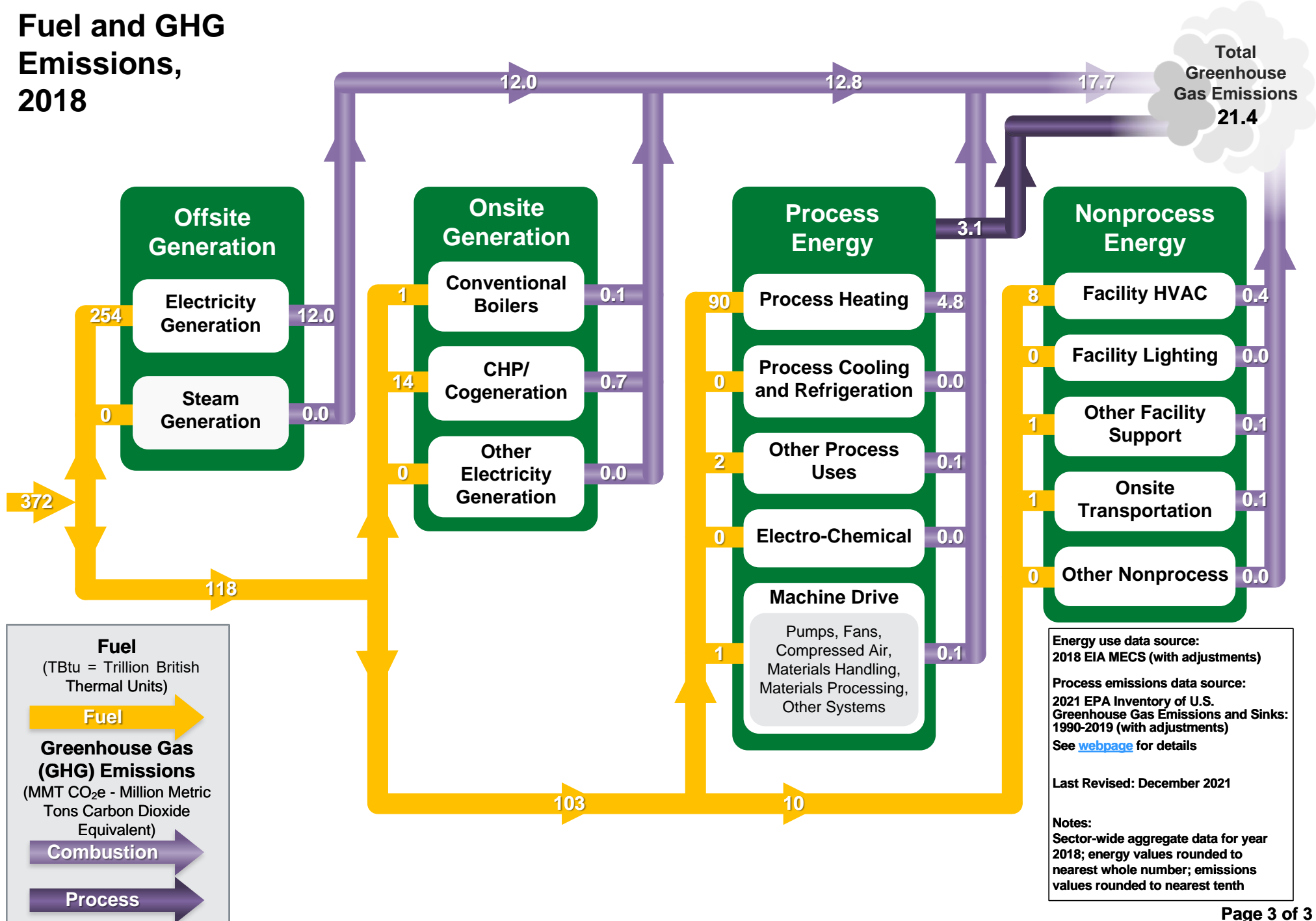


Manufacturing Carbon Footprint

Sector: Alumina and Aluminum (NAICS 3313)

Primary Energy Use: 372 TBtu
Total GHG Emissions: 21 MMT CO₂e

Fuel and GHG Emissions, 2018

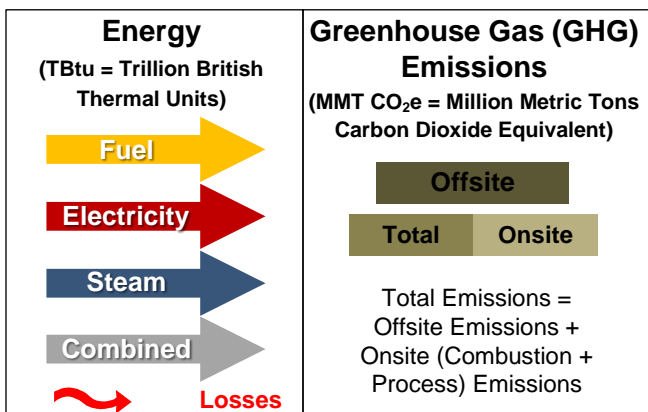
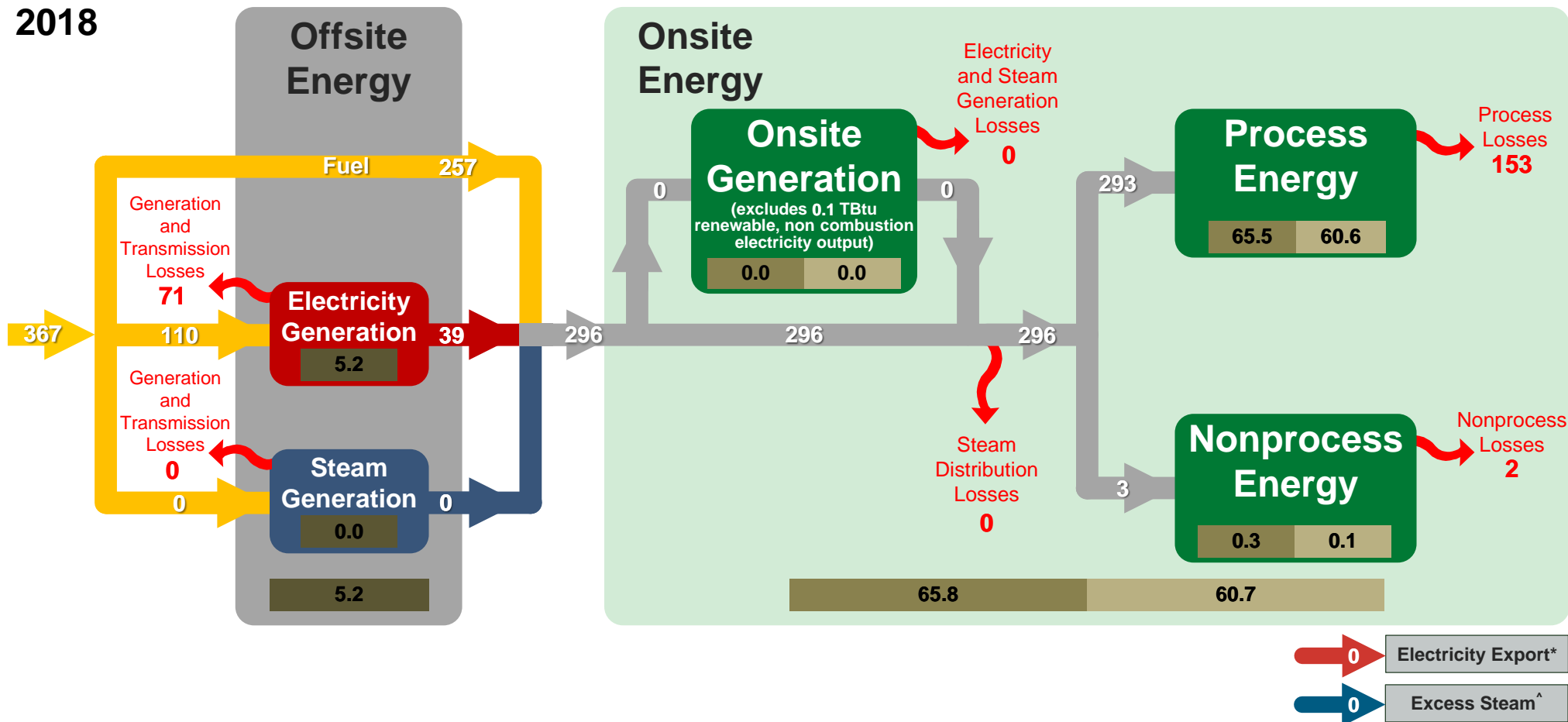


Manufacturing Energy and Carbon Footprint

Sector: Cement (NAICS 327310)

Primary Energy Use: 367 TBtu
Total GHG Emissions: 66 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 367 TBtu

Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

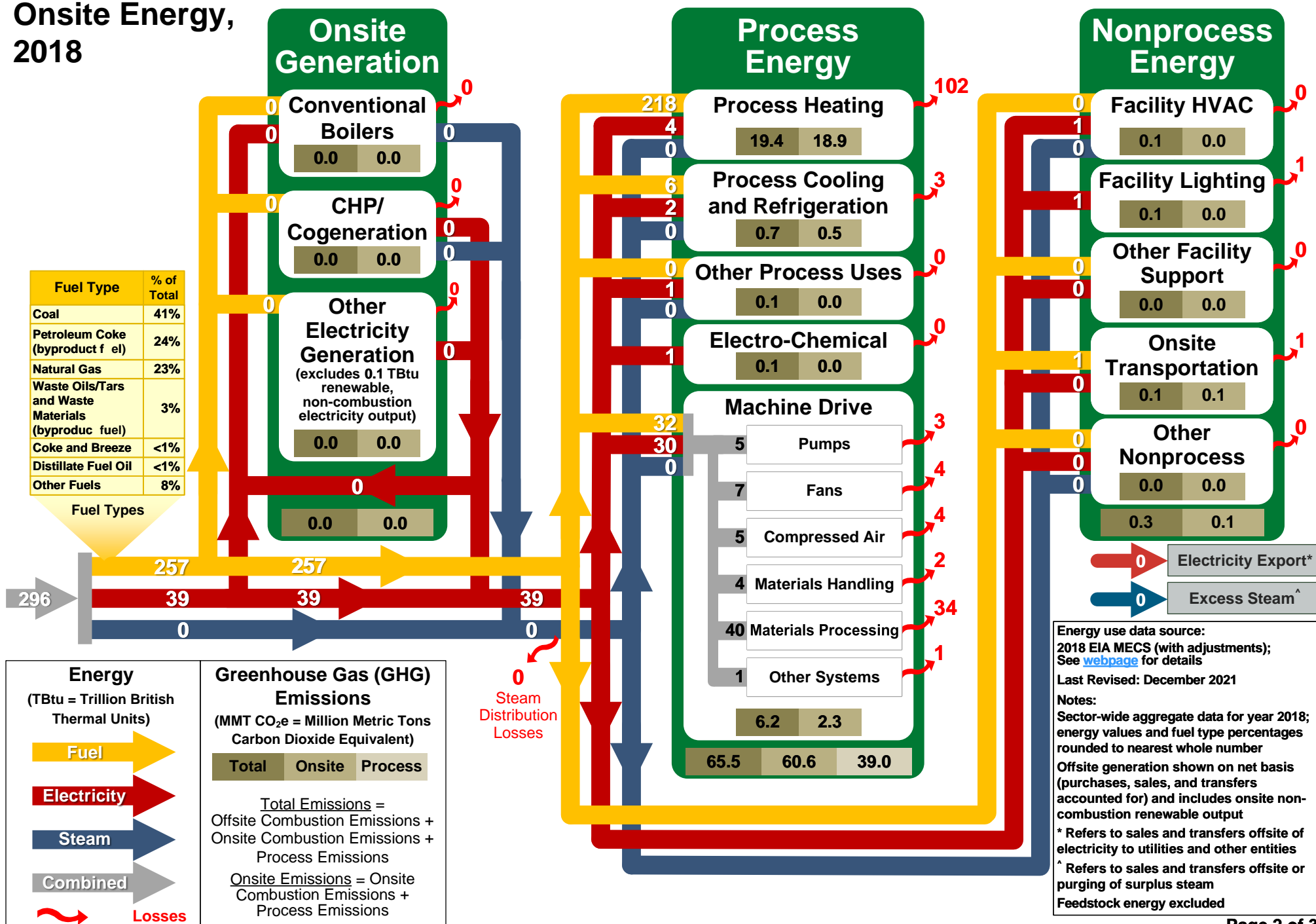
Sector: Cement (NAICS 327310)

Onsite Energy Use: 296 TBtu
Onsite Emissions: 61 MMT CO₂e

Onsite Energy, 2018

Fuel Type	% of Total
Coal	41%
Petroleum Coke (byproduct fuel)	24%
Natural Gas	23%
Waste Oils/Tars and Waste Materials (byproduct fuel)	3%
Coke and Breeze	<1%
Distillate Fuel Oil	<1%
Other Fuels	8%

Fuel Types

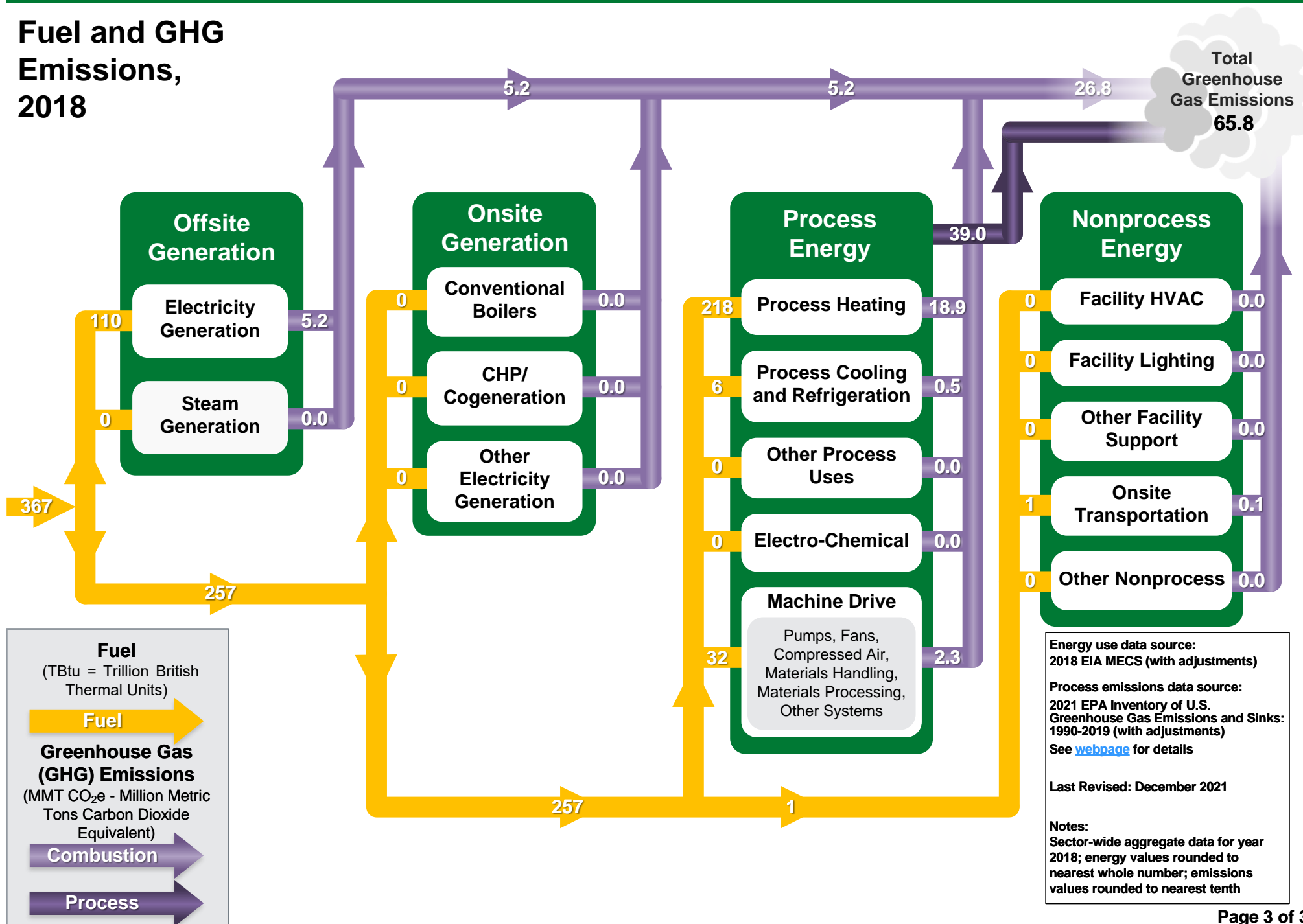


Manufacturing Carbon Footprint

Sector: Cement (NAICS 327310)

Primary Energy Use: 367 TBtu
Total GHG Emissions: 66 MMT CO₂e

Fuel and GHG Emissions, 2018

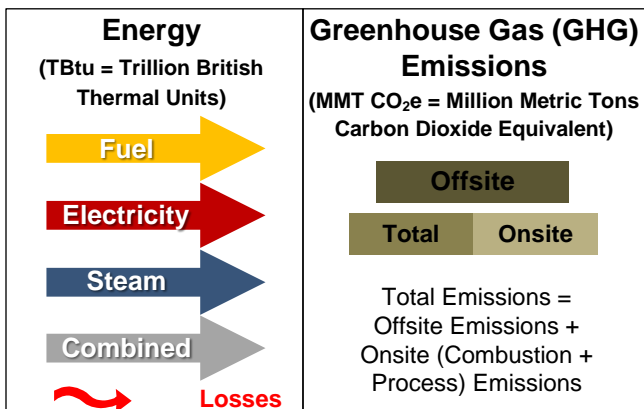
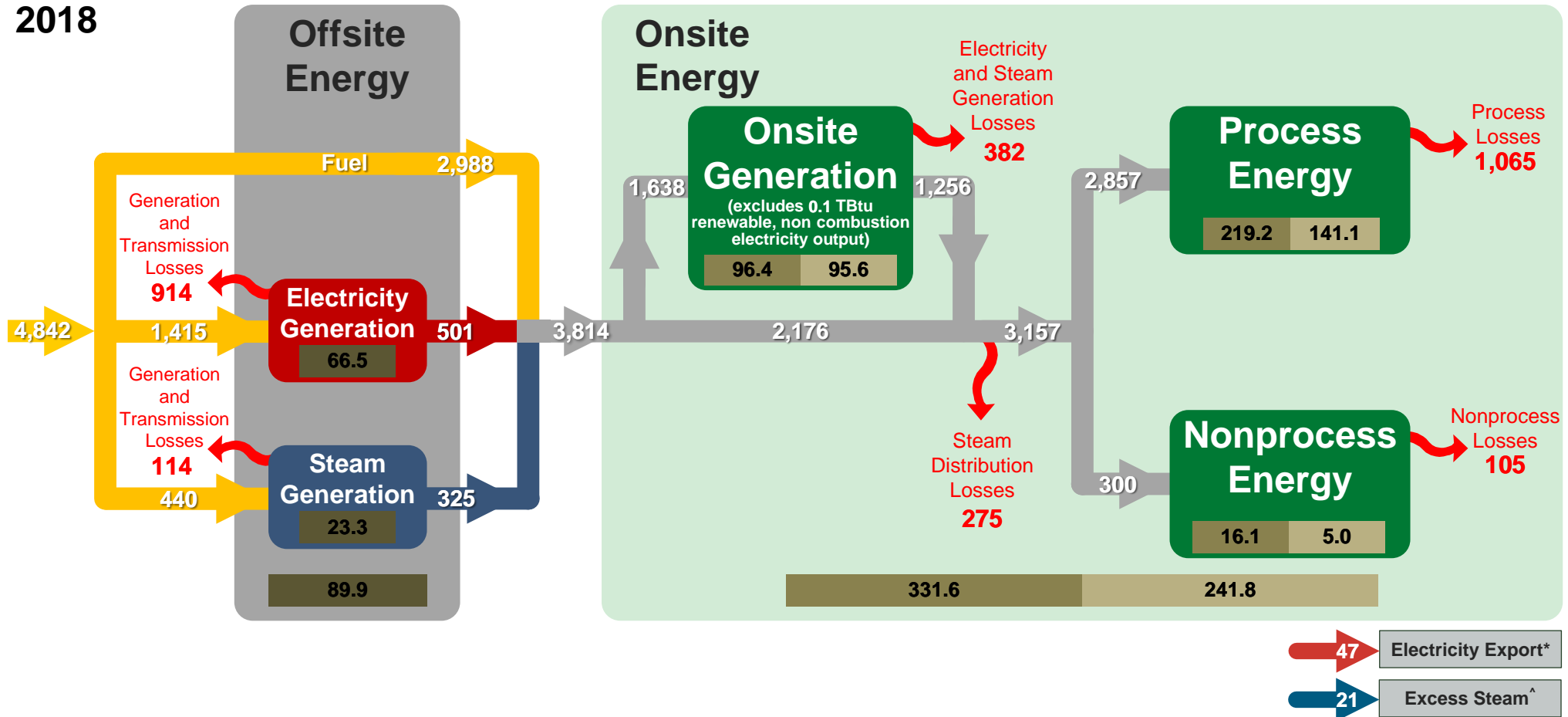


Manufacturing Energy and Carbon Footprint

Sector: Chemicals (NAICS 325)

Primary Energy Use: 4,842 TBtu
Total GHG Emissions: 332 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
[^] Excess steam refers to the sales and transfer offsite or purging of surplus steam

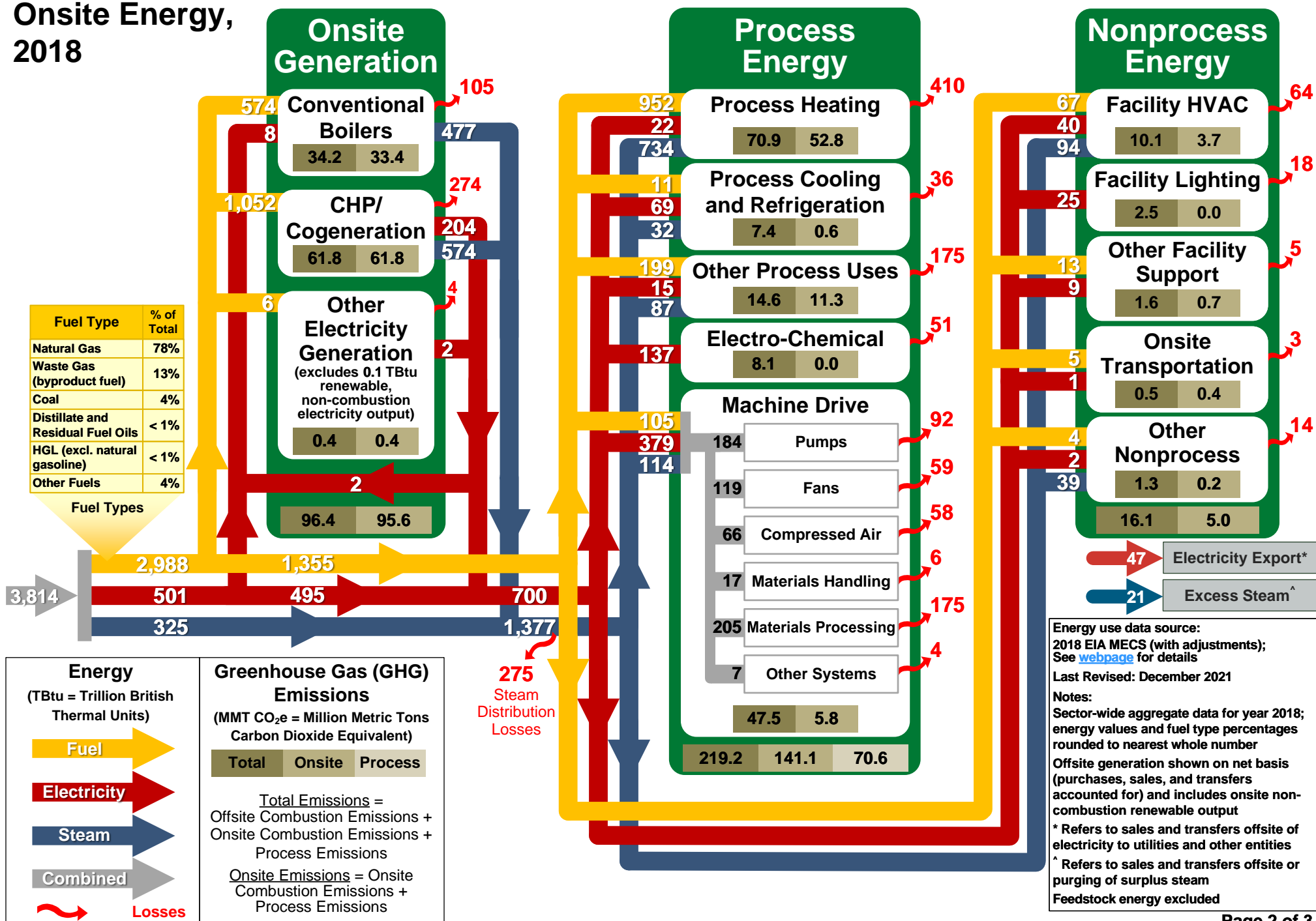
Energy for All Purposes estimated at 8,169 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Chemicals (NAICS 325)

Onsite Energy Use: 3,814 TBtu
Onsite Emissions: 242 MMT CO₂e

Onsite Energy, 2018

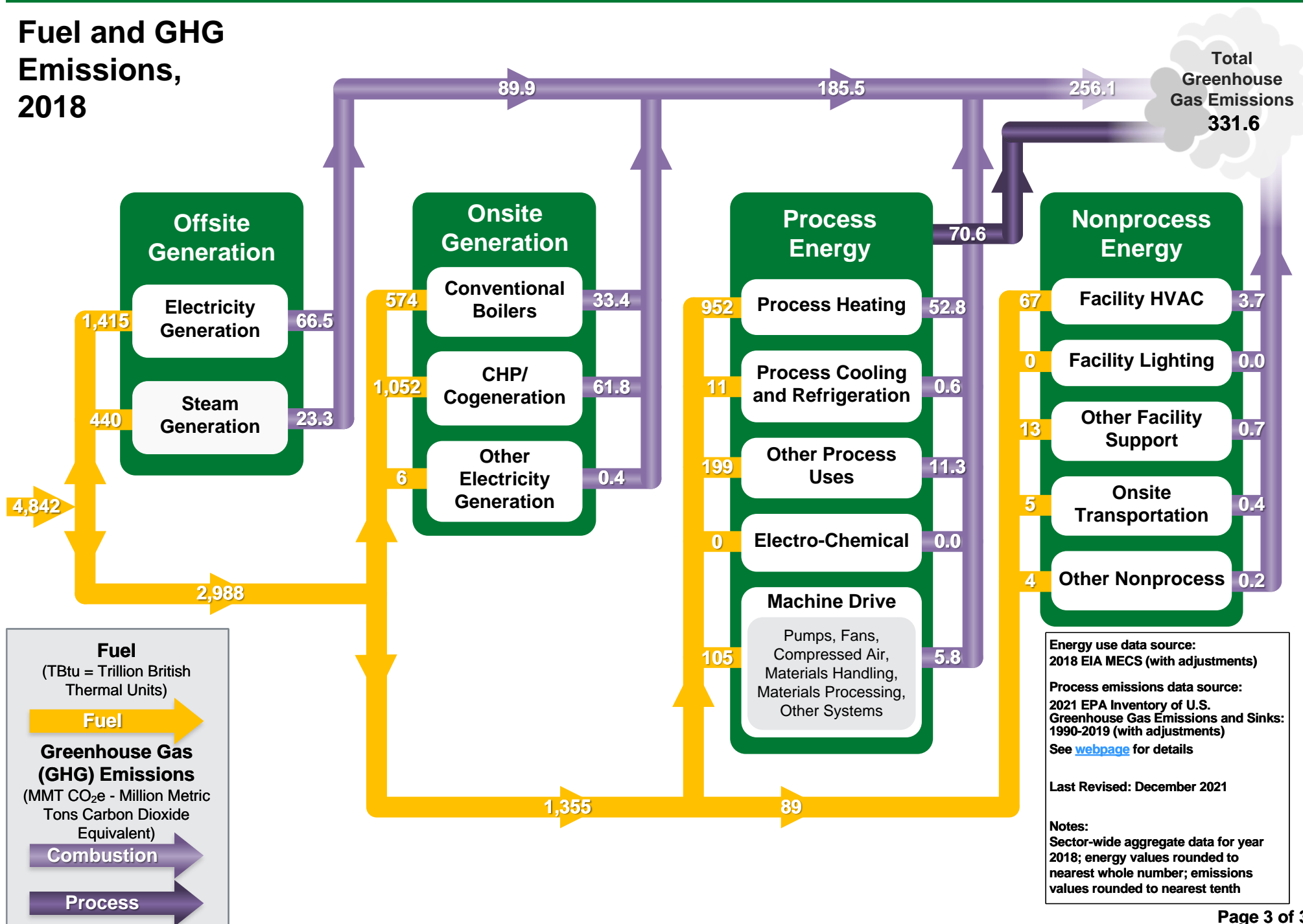


Manufacturing Carbon Footprint

Sector: Chemicals (NAICS 325)

Primary Energy Use: 4,842 TBtu
Total GHG Emissions: 332 MMT CO₂e

Fuel and GHG Emissions, 2018

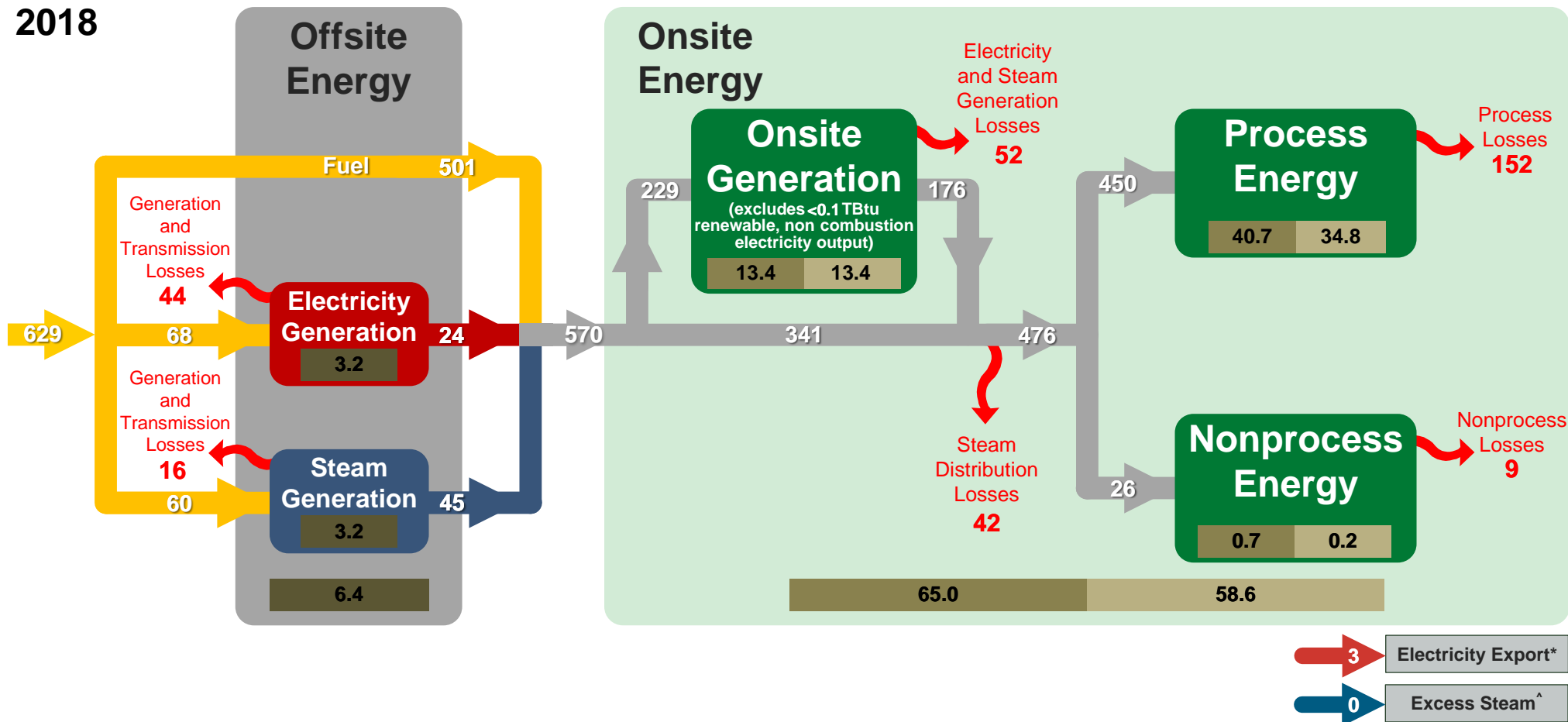


Manufacturing Energy and Carbon Footprint

Sector: Petrochemicals (NAICS 325110)

Primary Energy Use: 629 TBtu
Total GHG Emissions: 55 MMT CO₂e

Primary Energy, 2018



Energy (TBtu = Trillion British Thermal Units)	Greenhouse Gas (GHG) Emissions (MMT CO ₂ e = Million Metric Tons Carbon Dioxide Equivalent)
Fuel	Offsite
Electricity	Total
Steam	Onsite
Combined	
Losses	

Total Emissions = Offsite Emissions + Onsite (Combustion + Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: October 2022

Notes:

- Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
- Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
- * Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
- Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
- ^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

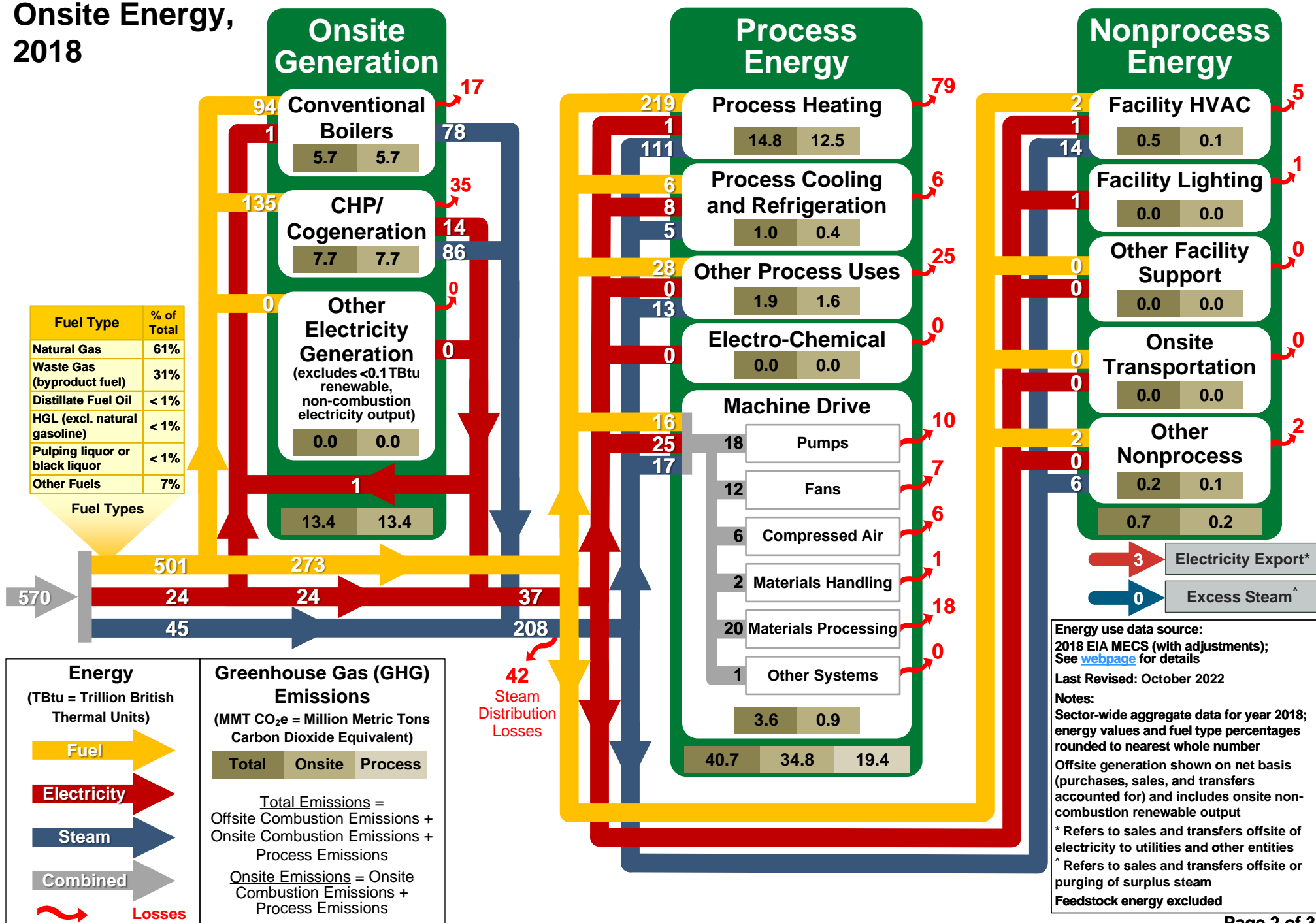
Energy for All Purposes estimated at 1,520 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Petrochemicals (NAICS 325110)

Onsite Energy Use: 570 TBtu
Onsite Emissions: 48 MMT CO₂e

Onsite Energy, 2018

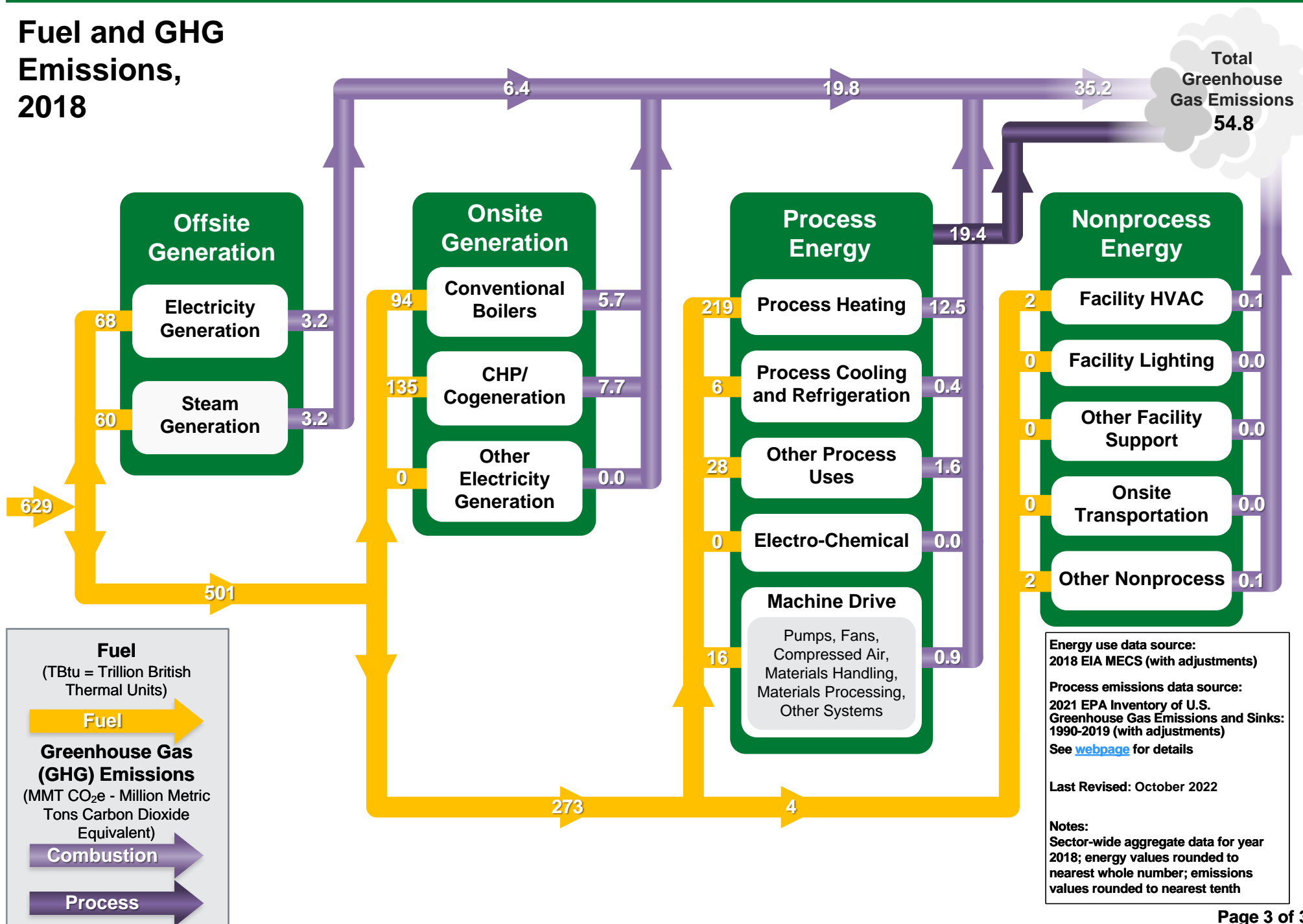


Manufacturing Carbon Footprint

Sector: Petrochemicals (NAICS 325110)

Primary Energy Use: 629 TBtu
Total GHG Emissions: 55 MMT CO₂e

Fuel and GHG Emissions, 2018

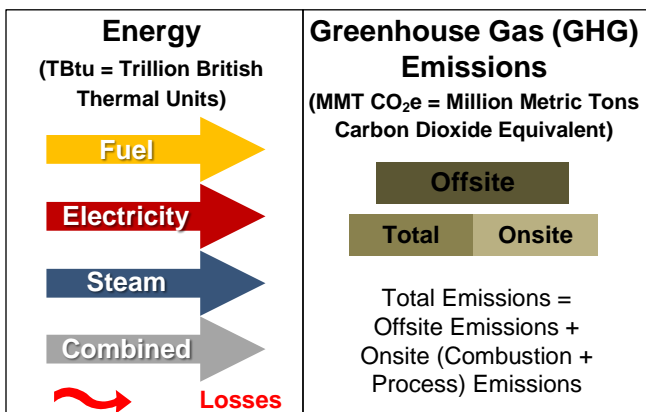
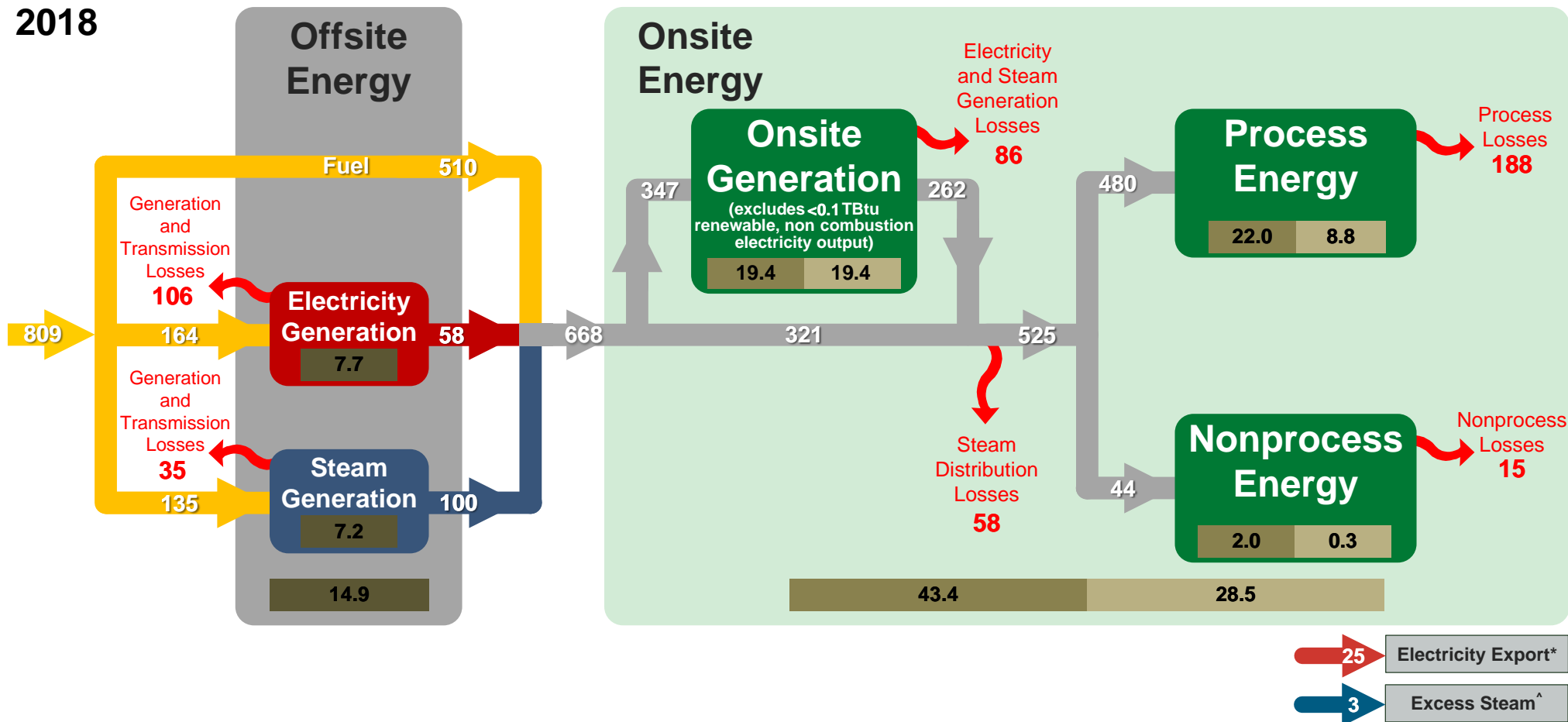


Manufacturing Energy and Carbon Footprint

Sector: Plastics Material and Resins (NAICS 325211)

Primary Energy Use: 809 TBtu
Total GHG Emissions: 43 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 1,816 TBtu

Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

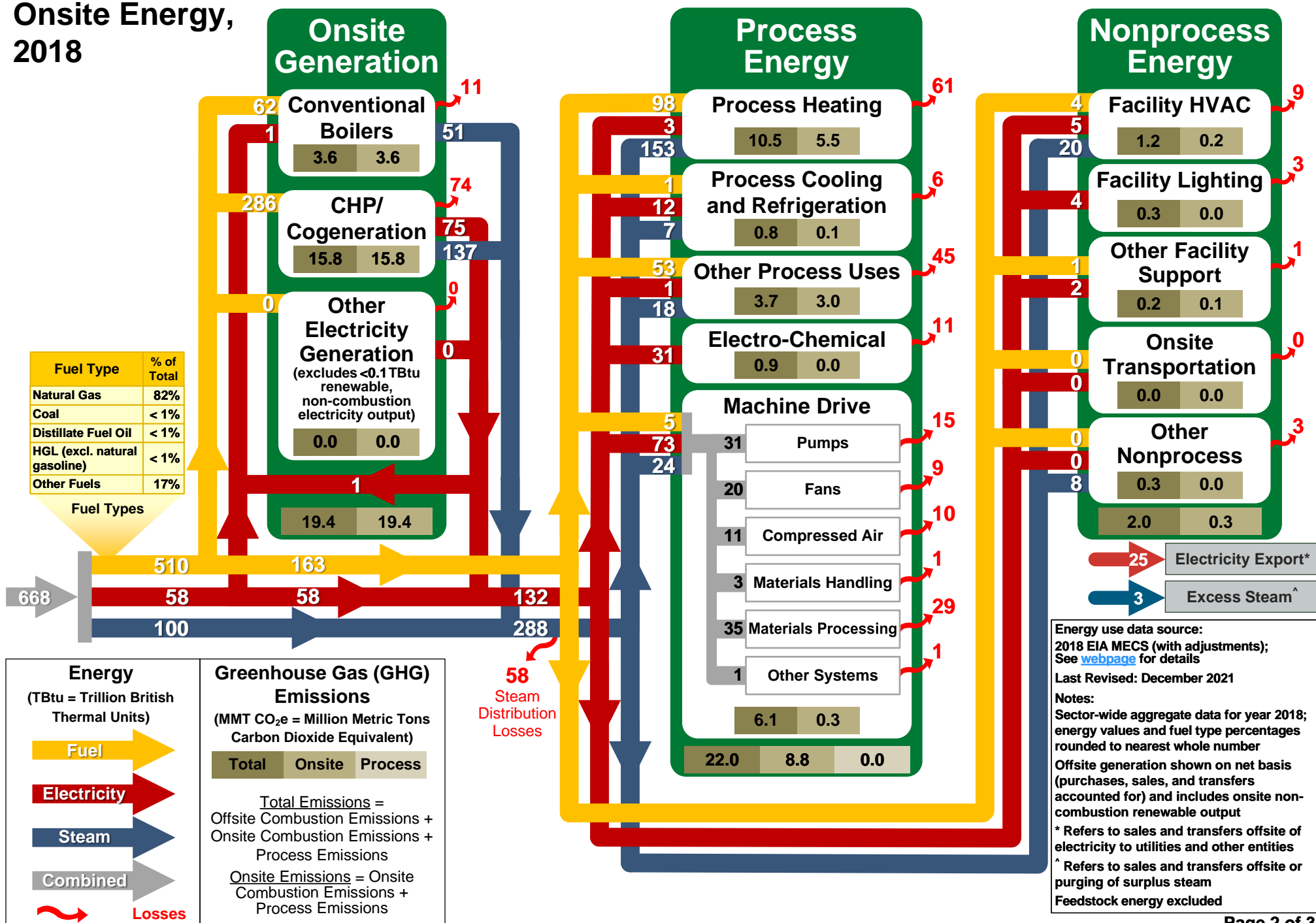
Manufacturing Energy and Carbon Footprint

Sector: Plastics Material and Resins (NAICS 325211)

Onsite Energy Use: 668 TBtu

Onsite Emissions: 29 MMT CO₂e

Onsite Energy, 2018

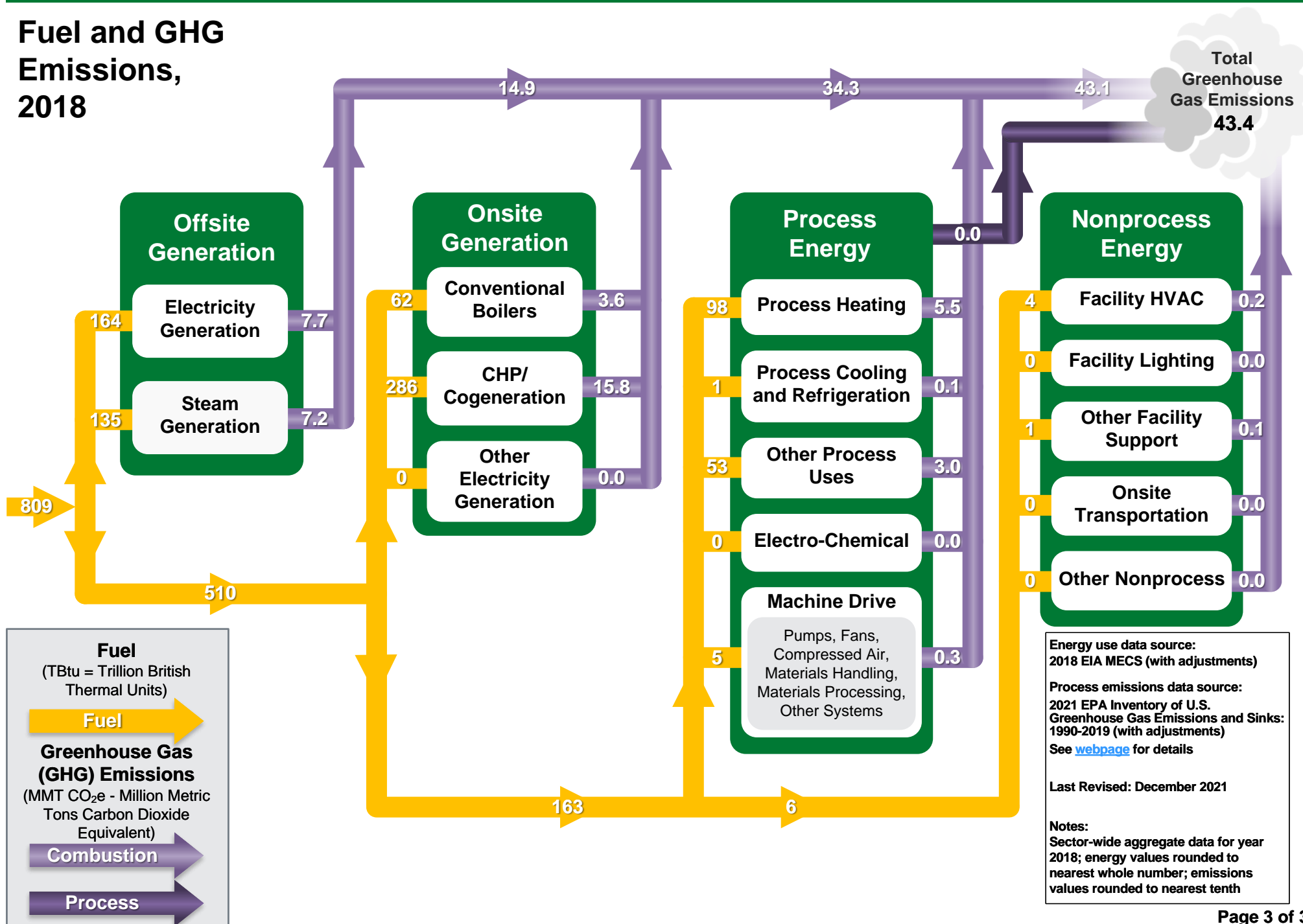


Manufacturing Carbon Footprint

Sector: Plastics Material and Resins (NAICS 325211)

Primary Energy Use: 809 TBtu
Total GHG Emissions: 43 MMT CO₂e

Fuel and GHG Emissions, 2018

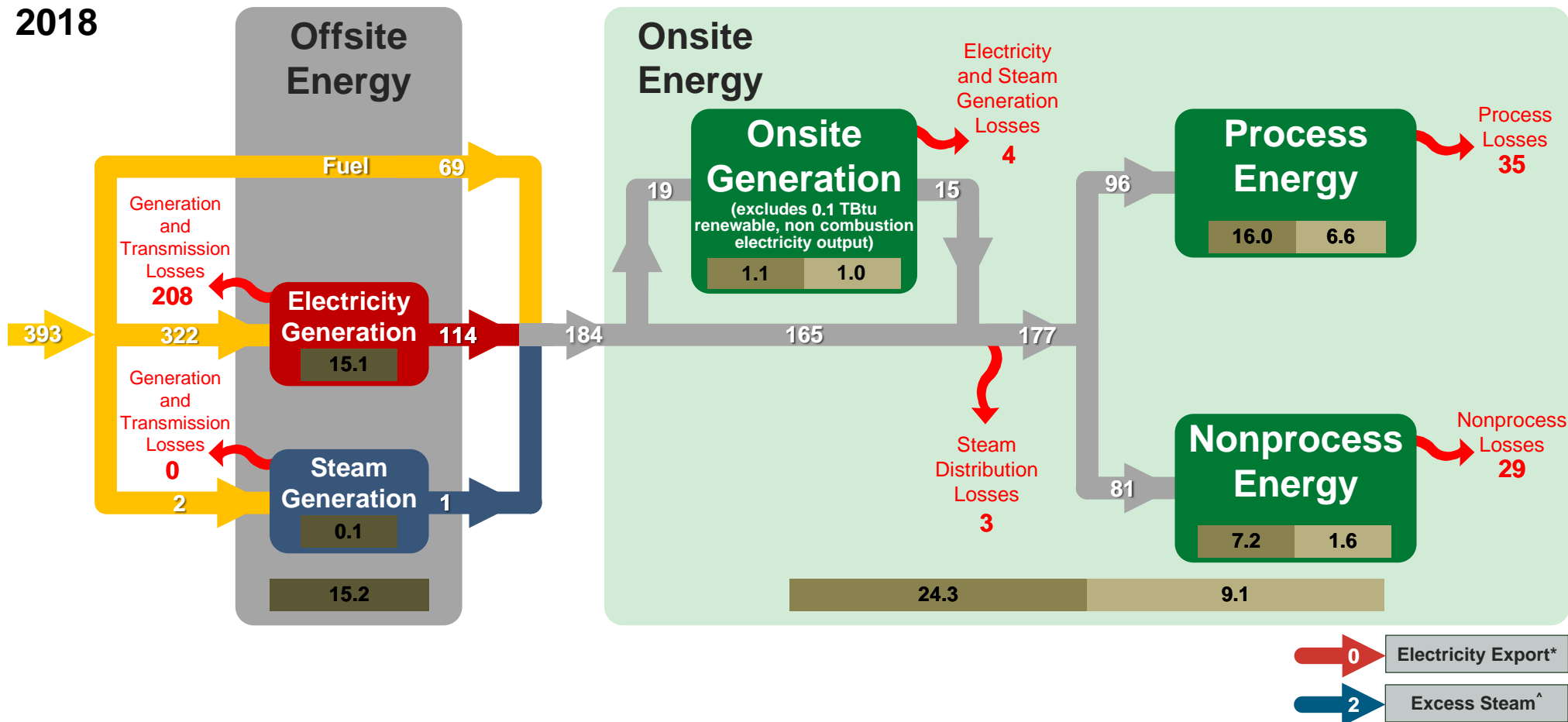


Manufacturing Energy and Carbon Footprint

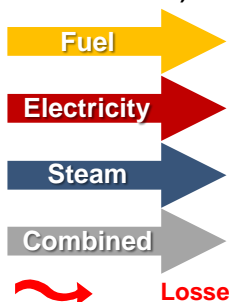
Sector: Computers, Electronics and Electrical Equipment (NAICS 334, 335)

Primary Energy Use: 393 TBtu
Total GHG Emissions: 24 MMT CO₂e

Primary Energy, 2018



Energy
(TBtu = Trillion British Thermal Units)



Greenhouse Gas (GHG) Emissions

(MMT CO₂e = Million Metric Tons Carbon Dioxide Equivalent)

Offsite	
Total	Onsite

Total Emissions = Offsite Emissions + Onsite (Combustion + Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes:

Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 403 TBtu

Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

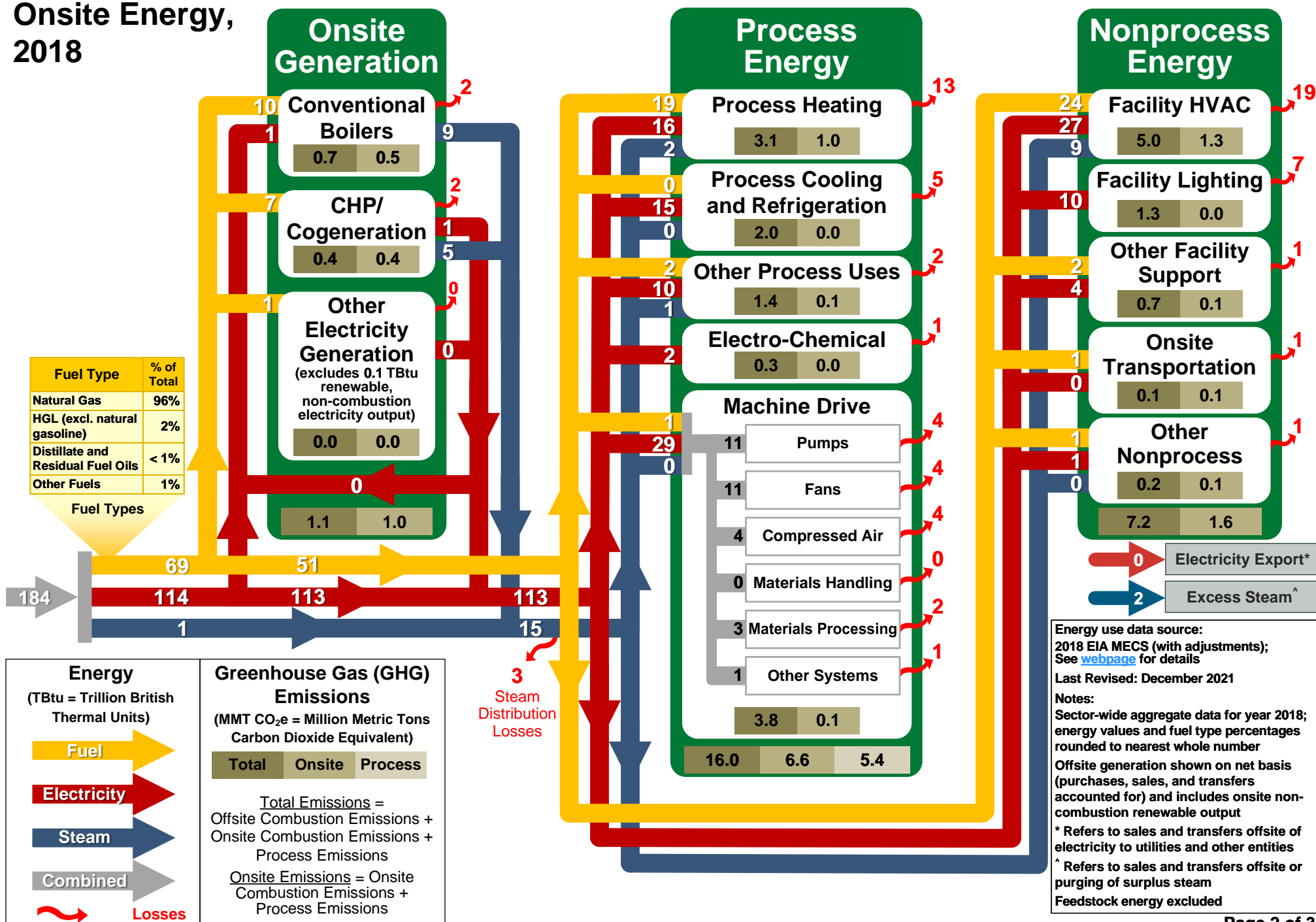
Manufacturing Energy and Carbon Footprint

Sector: Computers, Electronics and Electrical Equipment (NAICS 334, 335)

Onsite Energy Use: 184 TBtu

Onsite Emissions: 9 MMT CO₂e

Onsite Energy, 2018

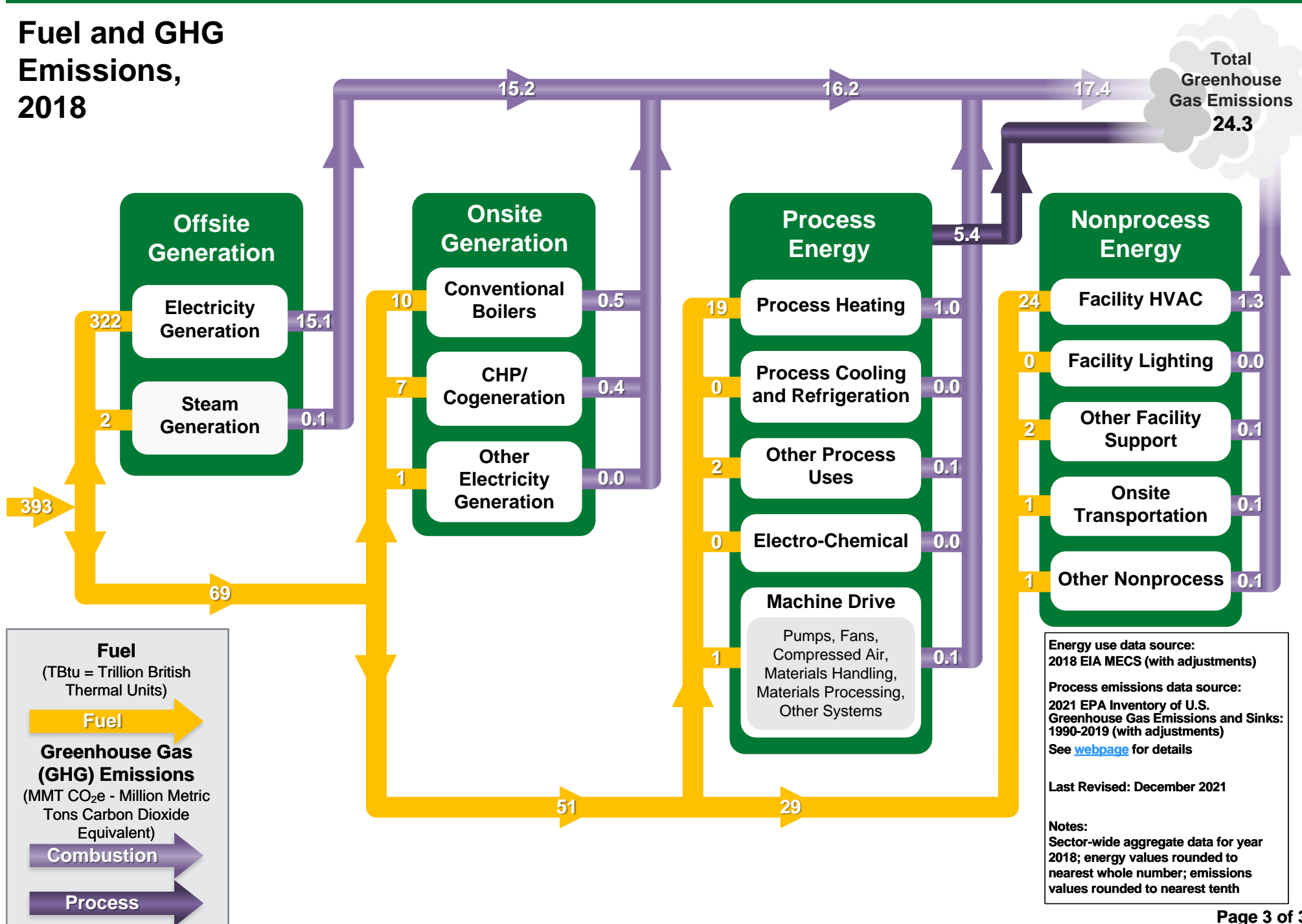


Manufacturing Carbon Footprint

Sector: Computers, Electronics and Electrical Equipment (NAICS 334, 335)

Primary Energy Use: 393 TBtu
Total GHG Emissions: 24 MMT CO₂e

Fuel and GHG Emissions, 2018



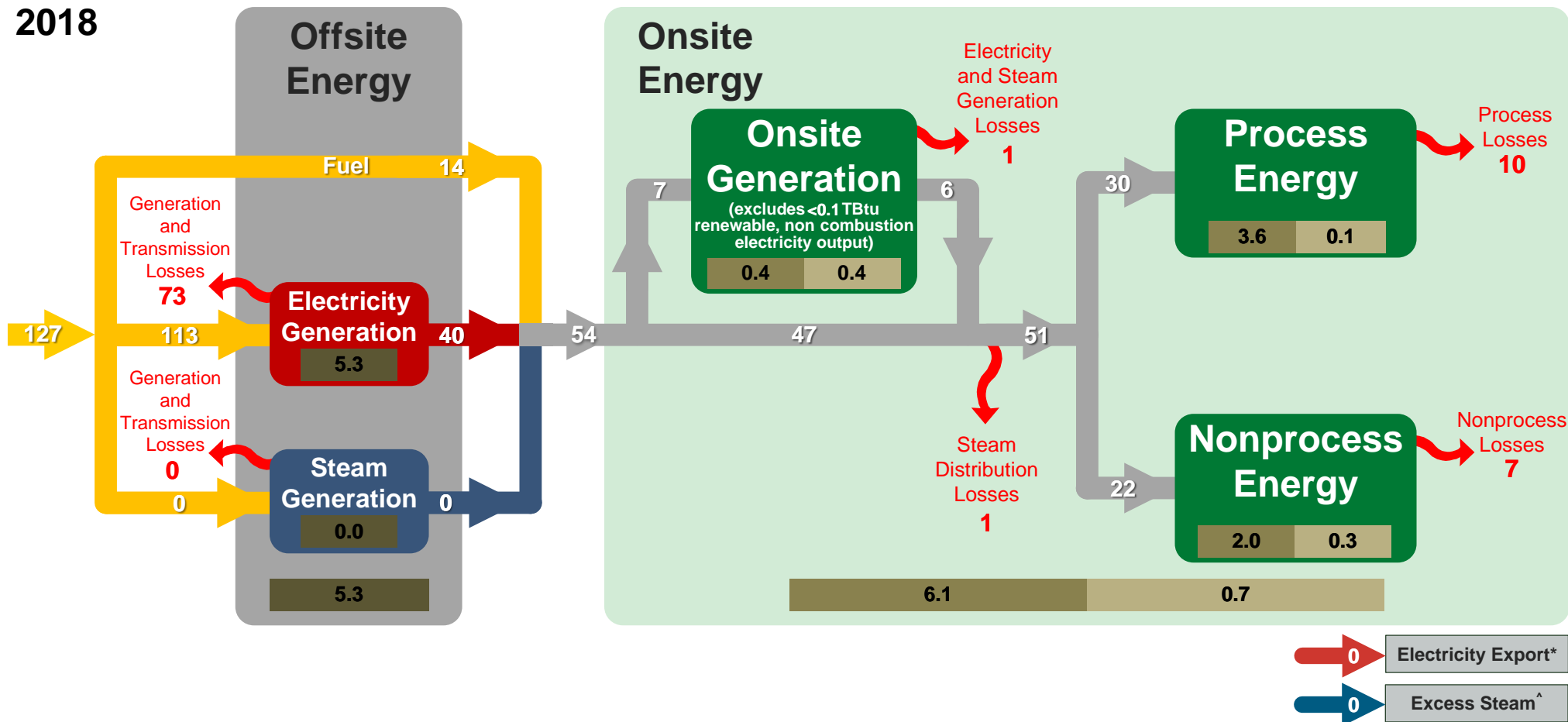
Manufacturing Energy and Carbon Footprint

Sector: Semiconductor and Related Devices (NAICS 334413)

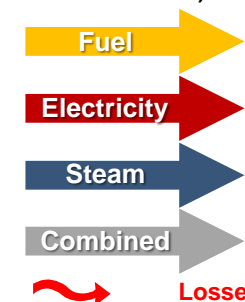
Primary Energy Use: 127 TBtu

Total GHG Emissions: 6 MMT CO₂e

Primary Energy, 2018



Energy
(TBtu = Trillion British Thermal Units)



Greenhouse Gas (GHG) Emissions

(MMT CO₂e = Million Metric Tons Carbon Dioxide Equivalent)

Offsite	
Total	Onsite

Total Emissions =
Offsite Emissions +
Onsite (Combustion +
Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 127 TBtu

Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

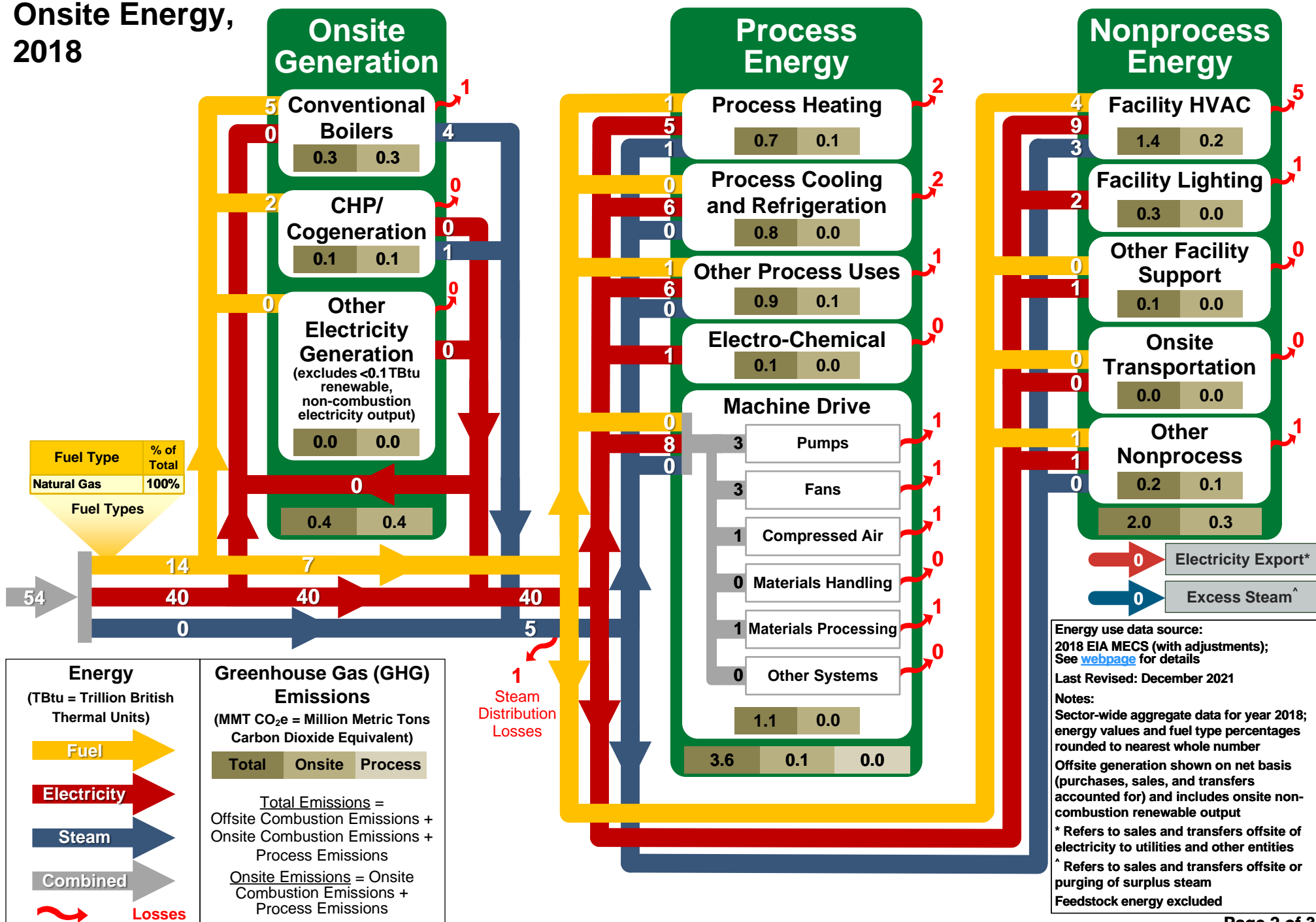
Manufacturing Energy and Carbon Footprint

Sector: Semiconductor and Related Devices (NAICS 334413)

Onsite Energy Use: 54 TBtu

Onsite Emissions: 1 MMT CO₂e

Onsite Energy,
2018

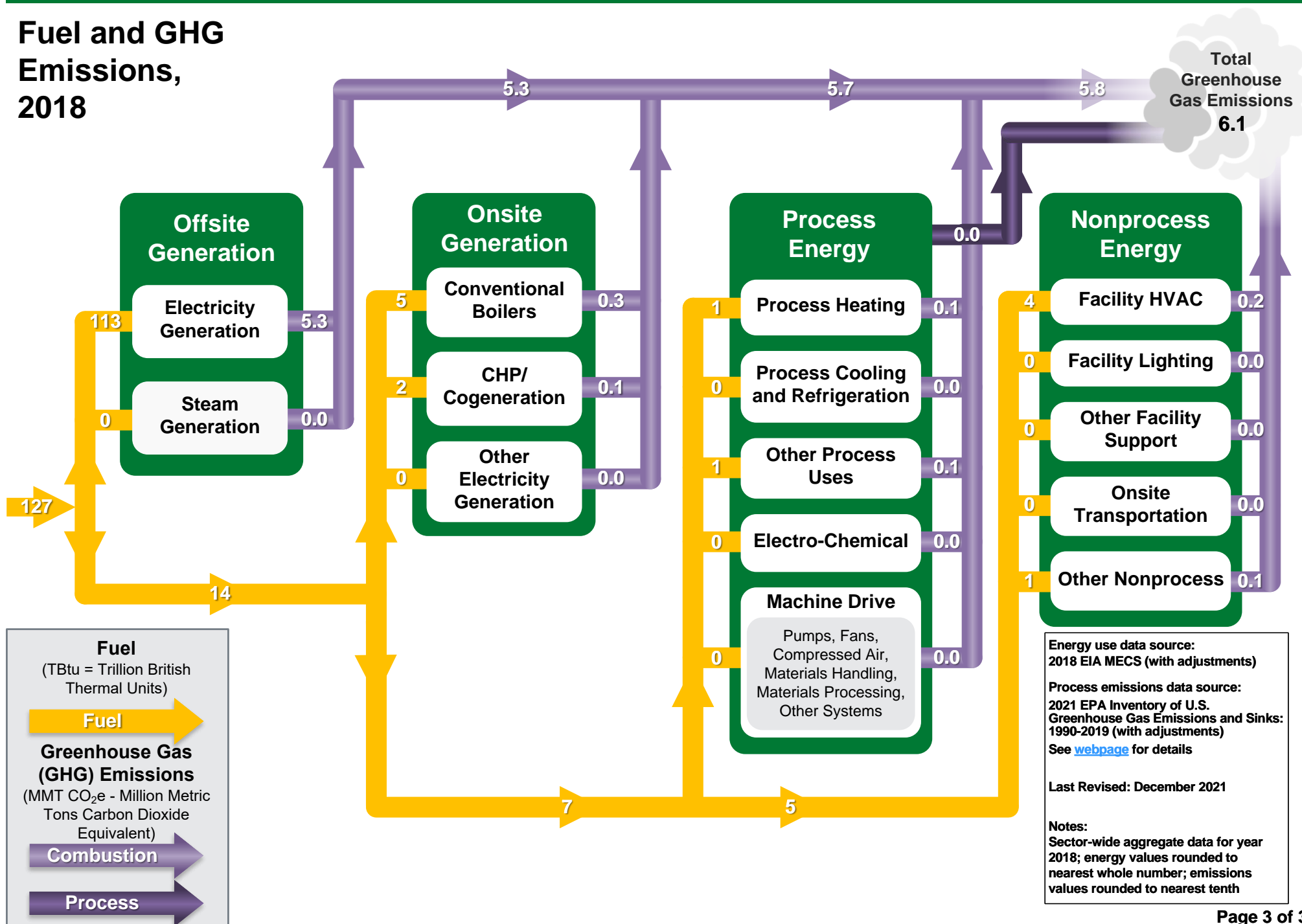


Manufacturing Carbon Footprint

Sector: Semiconductor and Related Devices (NAICS 334413)

Primary Energy Use: 127 TBtu
Total GHG Emissions: 6 MMT CO₂e

Fuel and GHG Emissions, 2018

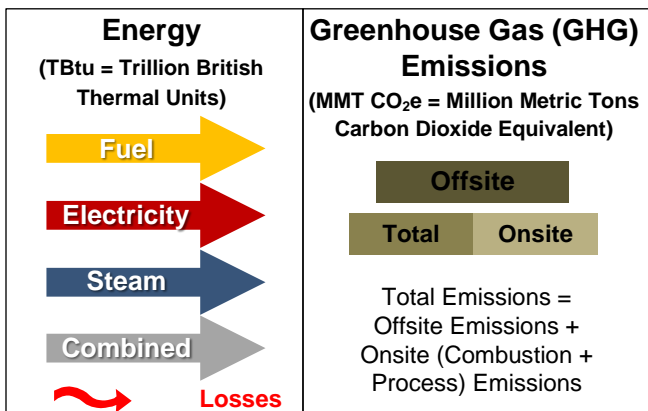
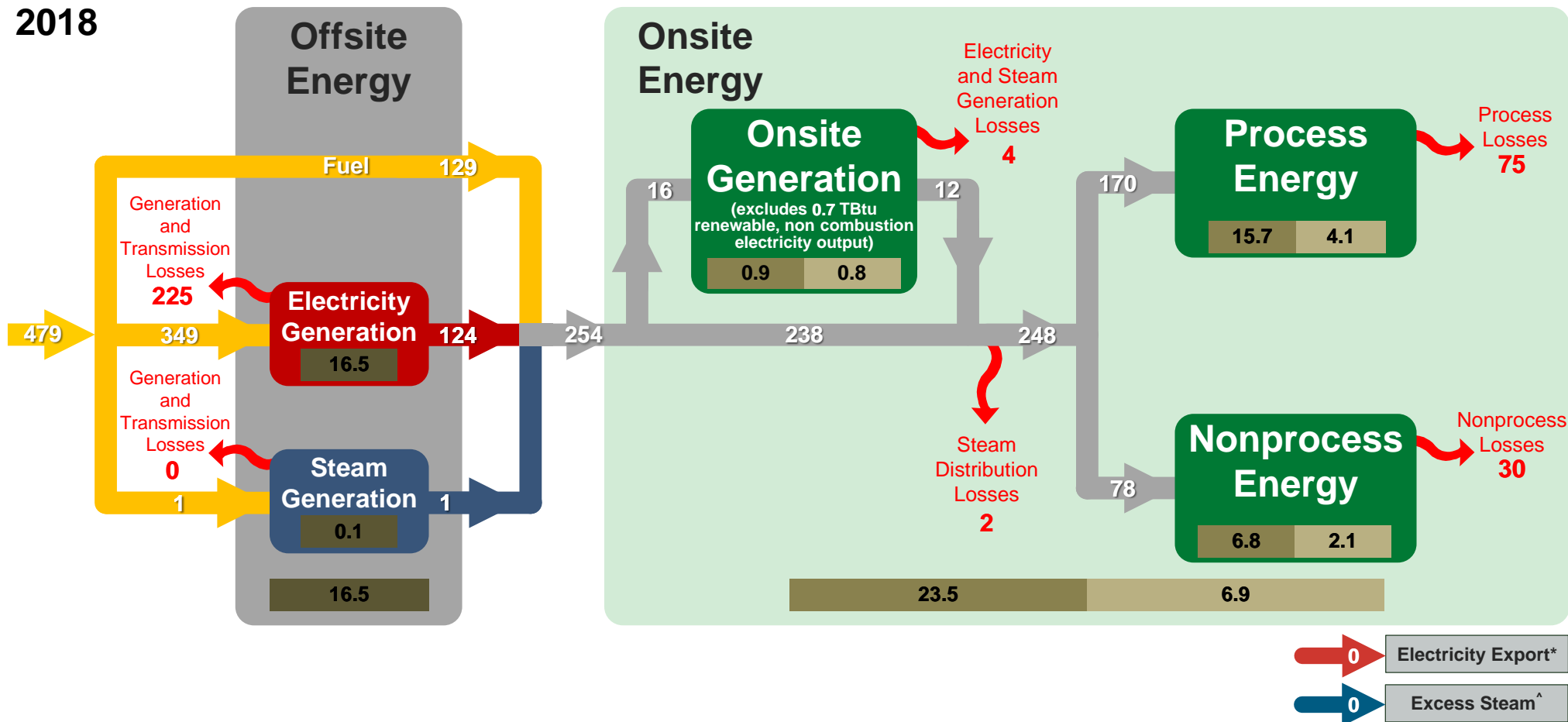


Manufacturing Energy and Carbon Footprint

Sector: Fabricated Metals (NAICS 332)

Primary Energy Use: 479 TBtu
Total GHG Emissions: 24 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

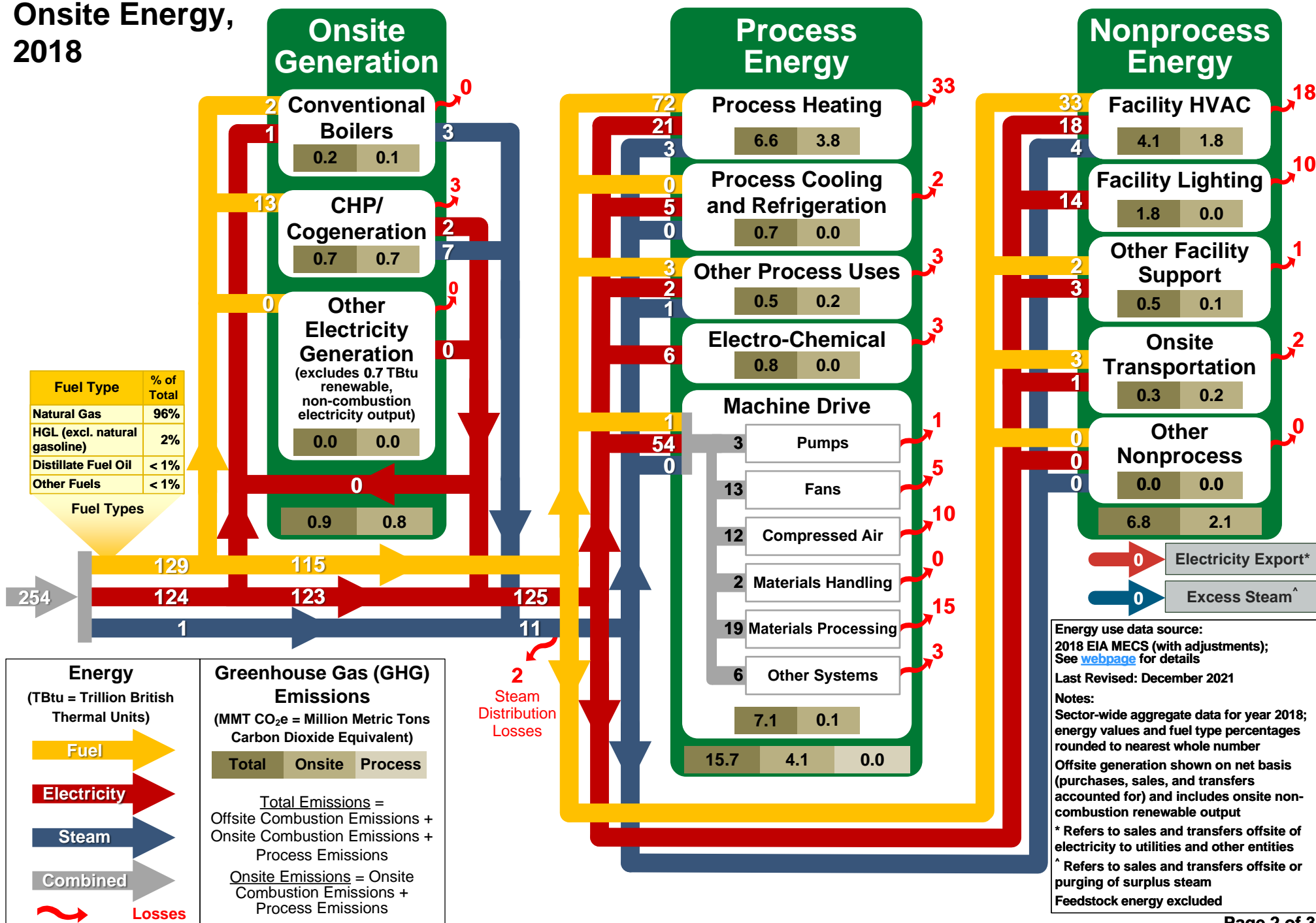
Energy for All Purposes estimated at 482 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Fabricated Metals (NAICS 332)

Onsite Energy Use: 254 TBtu
Onsite Emissions: 7 MMT CO₂e

Onsite Energy,
2018

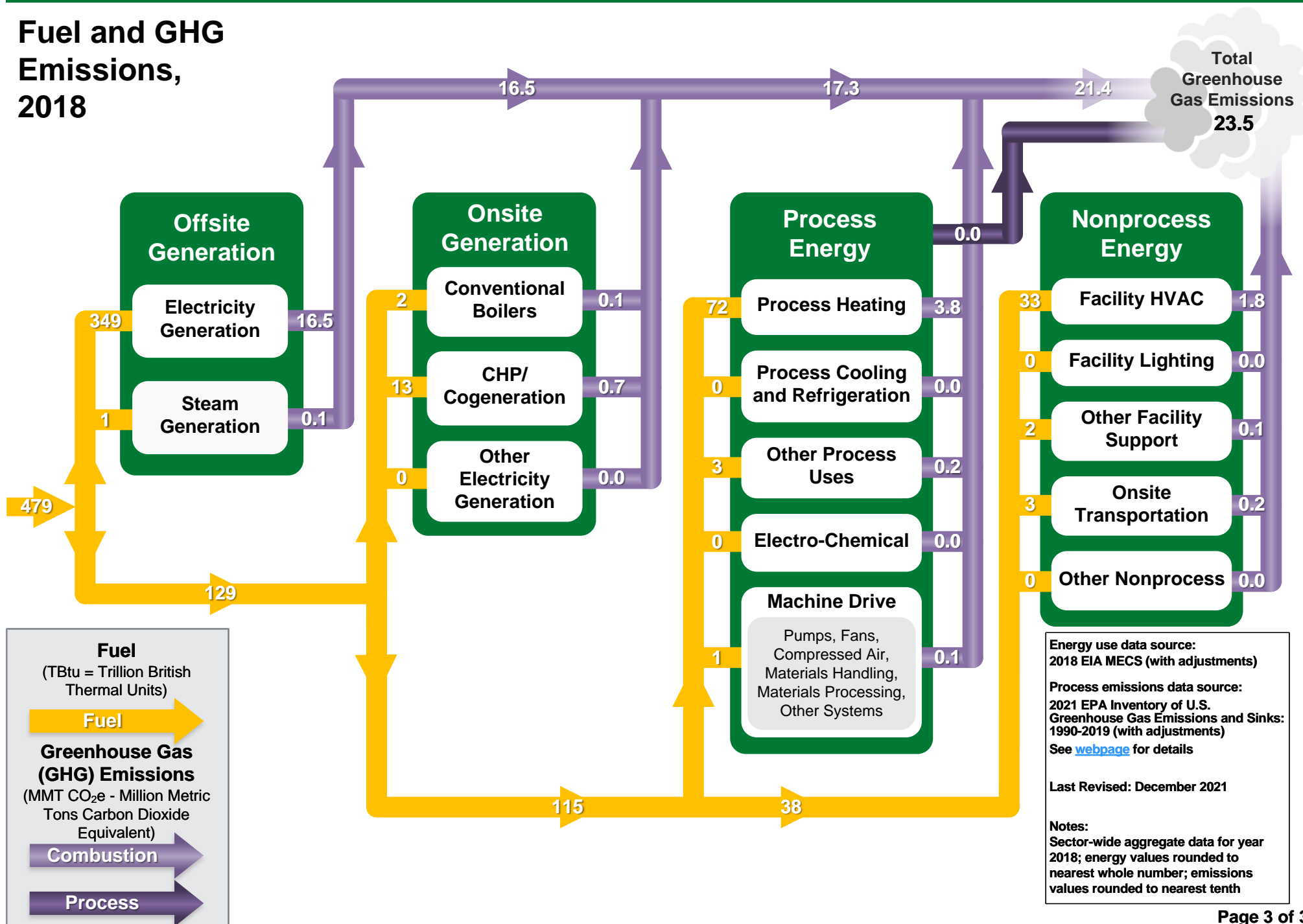


Manufacturing Carbon Footprint

Sector: Fabricated Metals (NAICS 332)

Primary Energy Use: 479 TBtu
Total GHG Emissions: 24 MMT CO₂e

Fuel and GHG Emissions, 2018



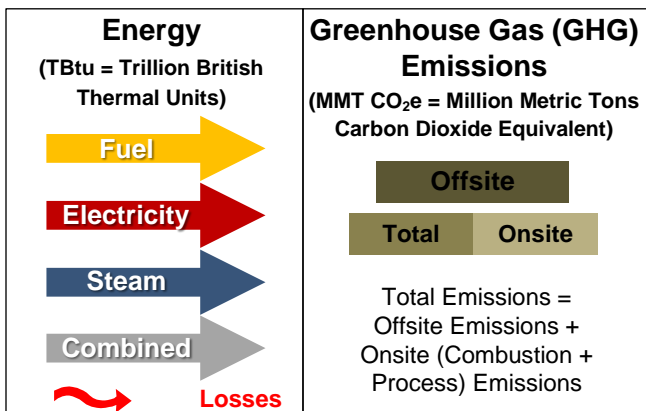
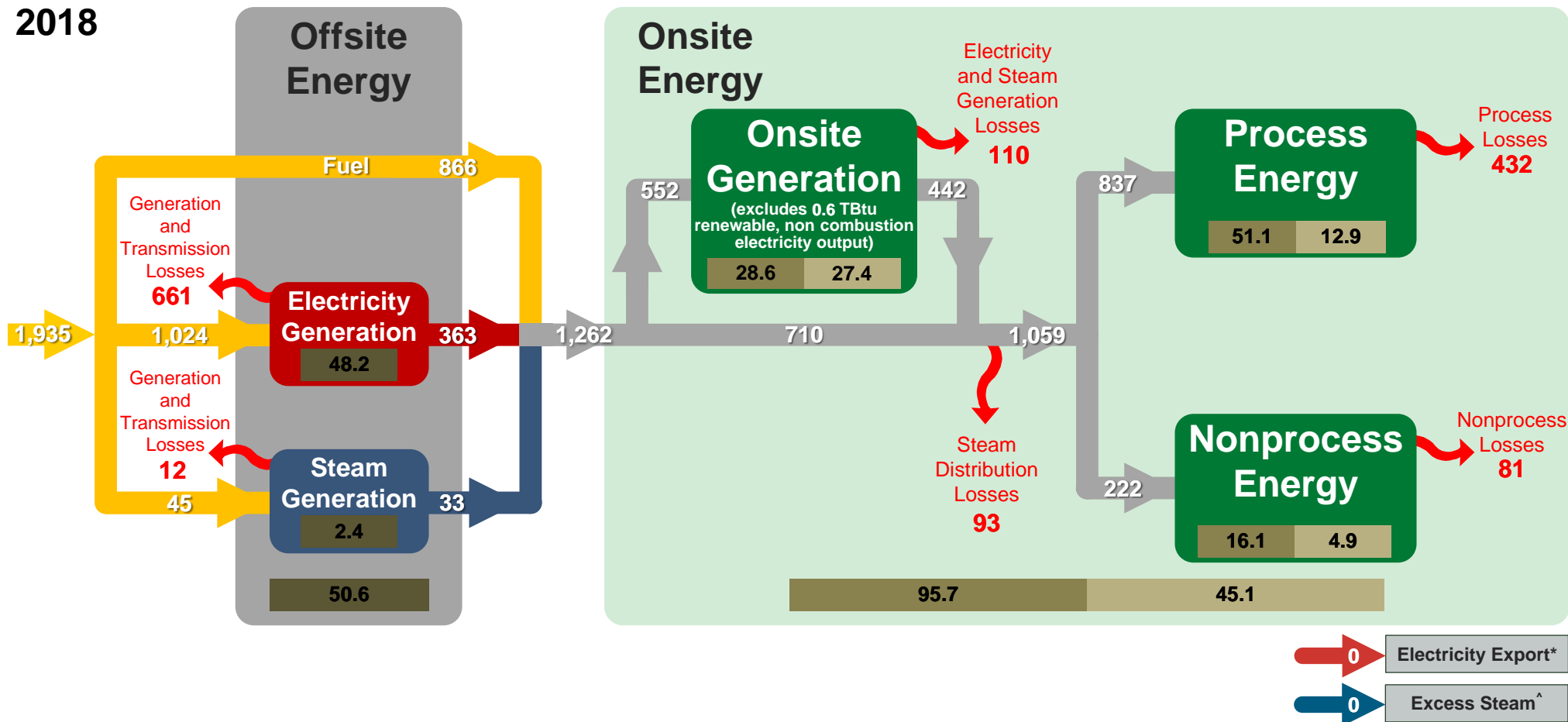
Manufacturing Energy and Carbon Footprint

Sector: Food and Beverage (NAICS 311, 312)

Primary Energy Use: 1,935 TBtu

Total GHG Emissions: 96 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 1,952 TBtu

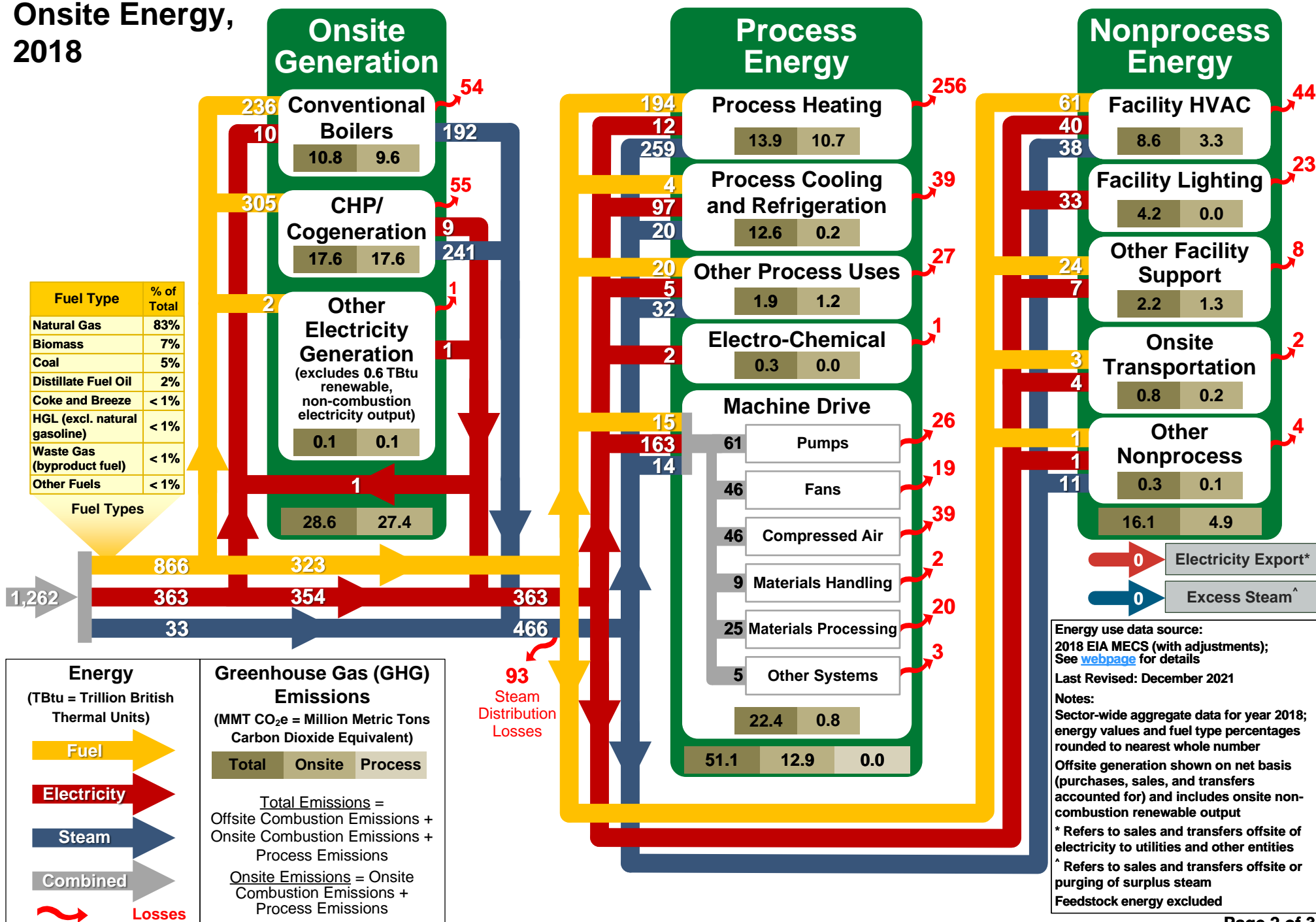
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Food and Beverage (NAICS 311, 312)

Onsite Energy Use: 1,262 TBtu
Onsite Emissions: 45 MMT CO₂e

Onsite Energy, 2018

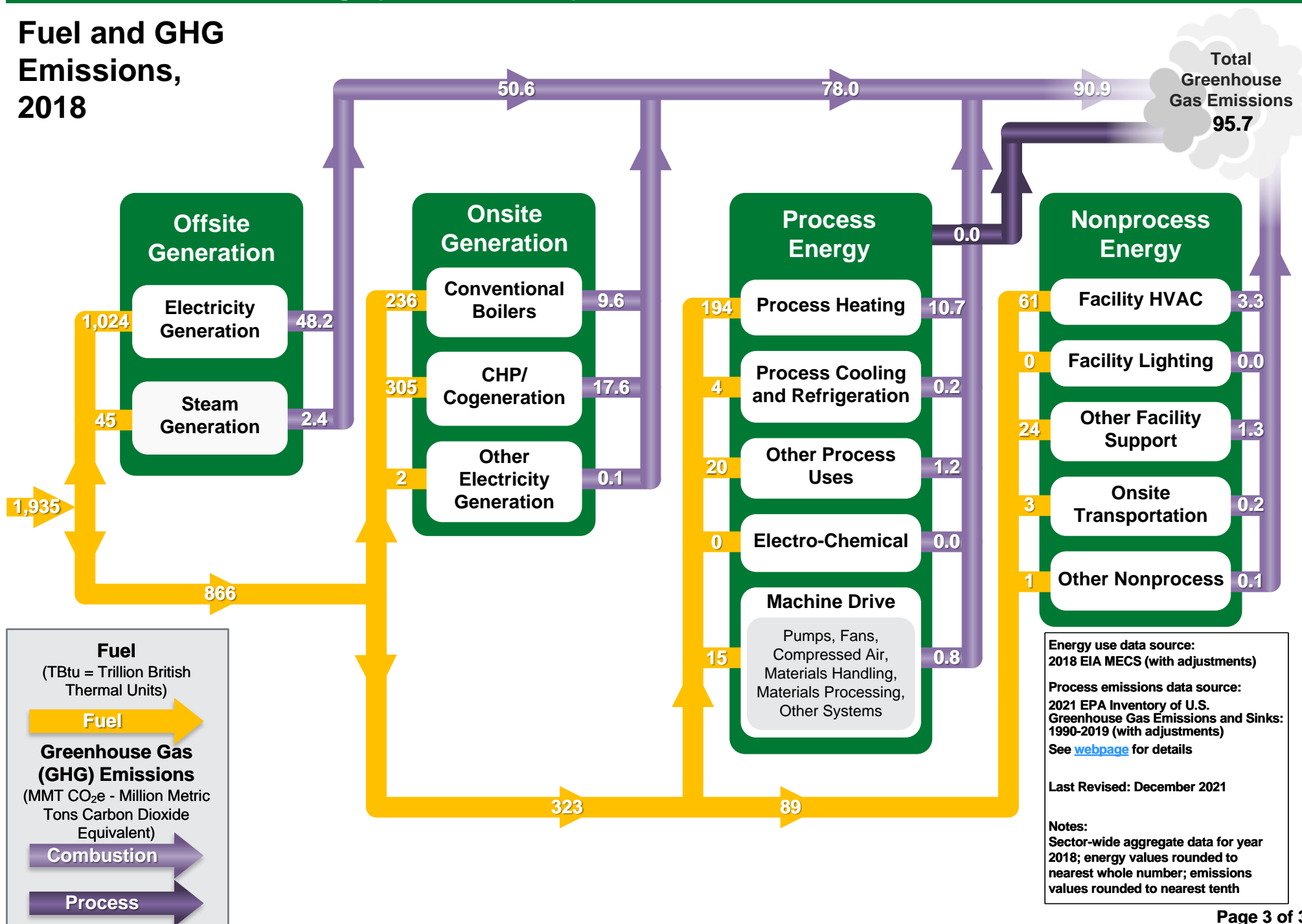


Manufacturing Carbon Footprint

Sector: Food and Beverage (NAICS 311, 312)

Primary Energy Use: 1,935 TBtu
Total GHG Emissions: 96 MMT CO₂e

Fuel and GHG Emissions, 2018



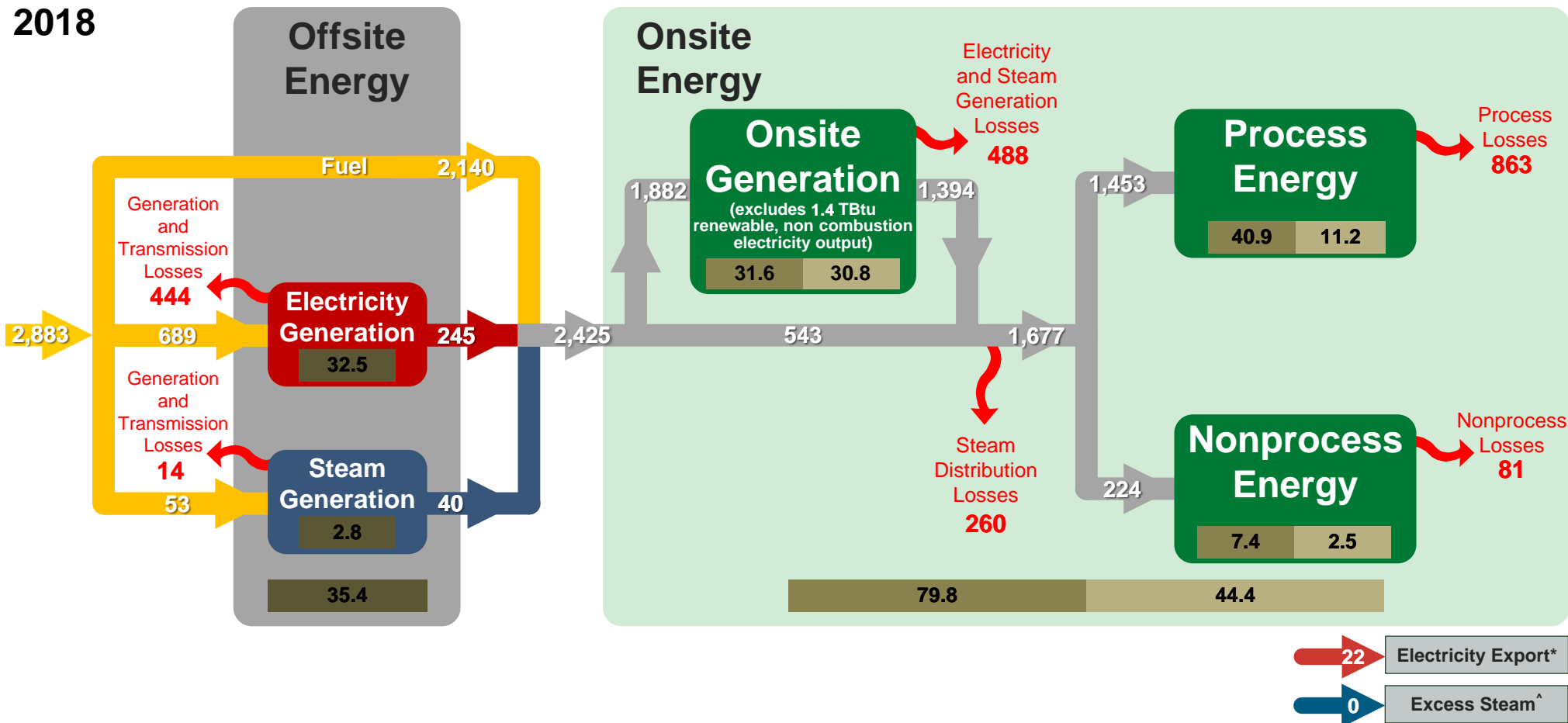
Manufacturing Energy and Carbon Footprint

Sector: Forest Products (NAICS 321, 322)

Primary Energy Use: 2,883 TBtu

Total GHG Emissions: 80 MMT CO₂e

Primary Energy, 2018



Energy (TBtu = Trillion British Thermal Units)	Greenhouse Gas (GHG) Emissions (MMT CO ₂ e = Million Metric Tons Carbon Dioxide Equivalent)
Fuel	Offsite
Electricity	Total Onsite
Steam	
Combined	
Losses	

Total Emissions = Offsite Emissions + Onsite (Combustion + Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
 Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
 * Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
 Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
 ^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 2,887 TBtu
 Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

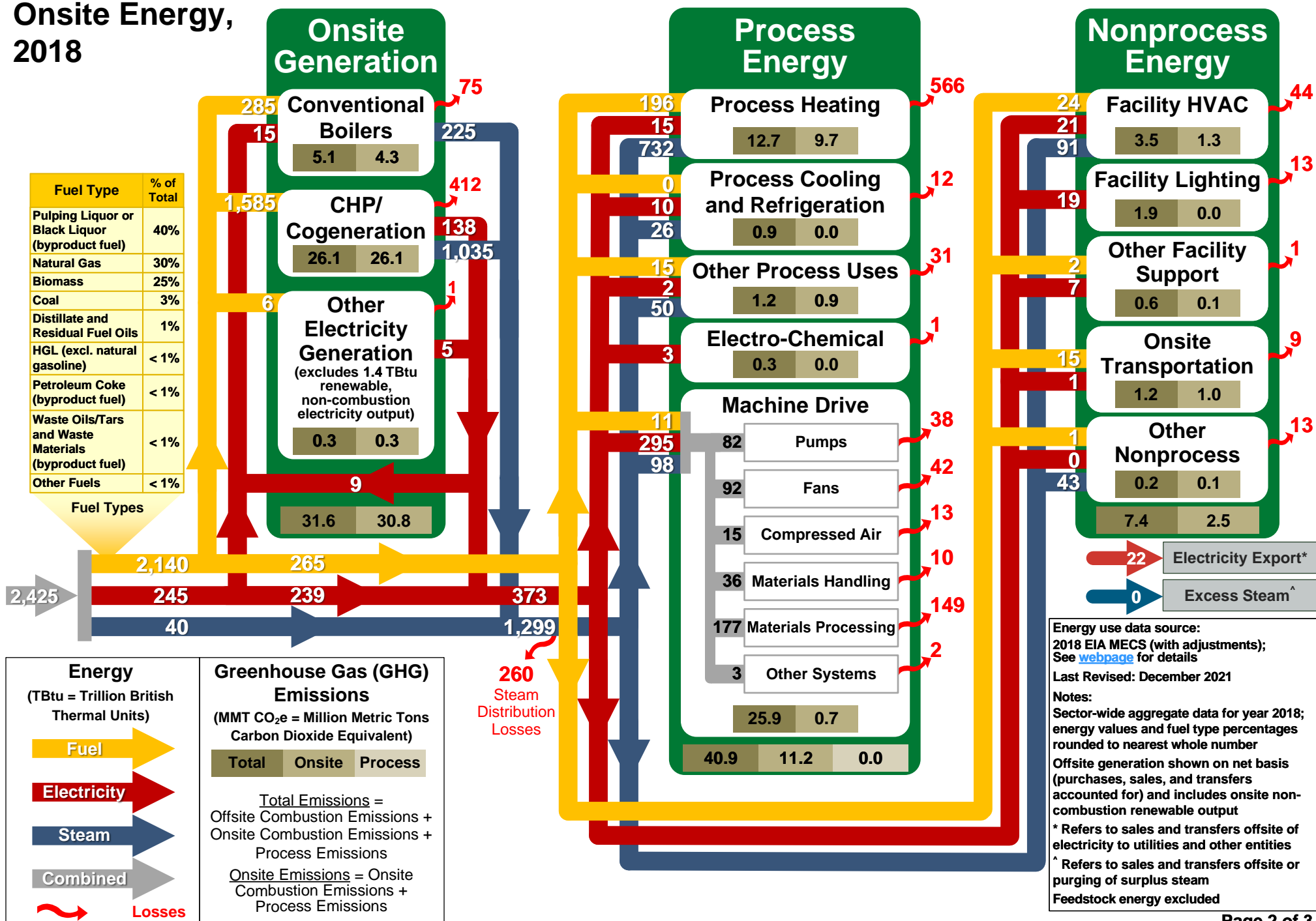
Manufacturing Energy and Carbon Footprint

Sector: Forest Products (NAICS 321, 322)

Onsite Energy Use: 2,425 TBtu

Onsite Emissions: 44 MMT CO₂e

Onsite Energy, 2018

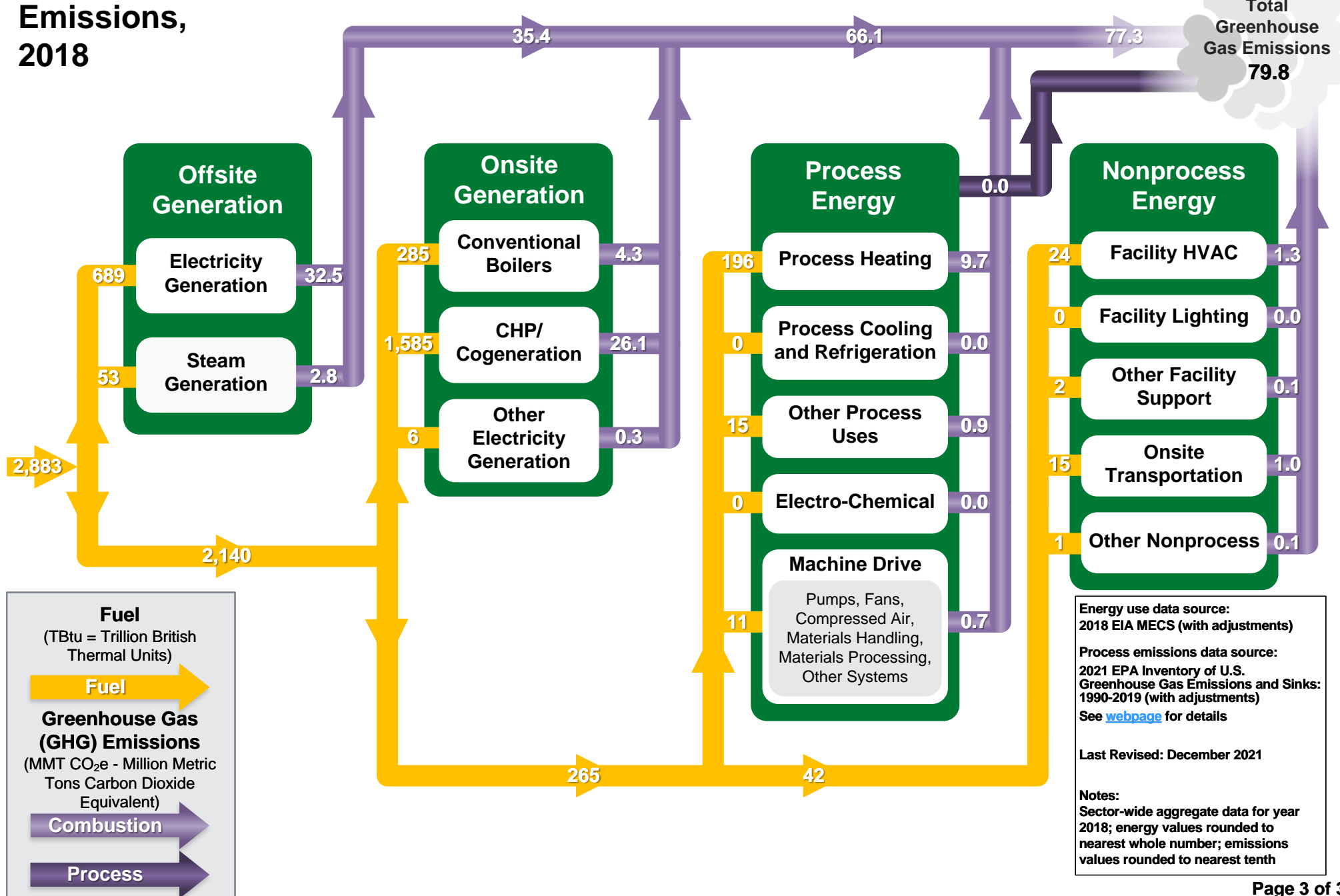


Manufacturing Carbon Footprint

Sector: Forest Products (NAICS 321, 322)

Primary Energy Use: 2,883 TBtu
Total GHG Emissions: 80 MMT CO₂e

Fuel and GHG Emissions, 2018

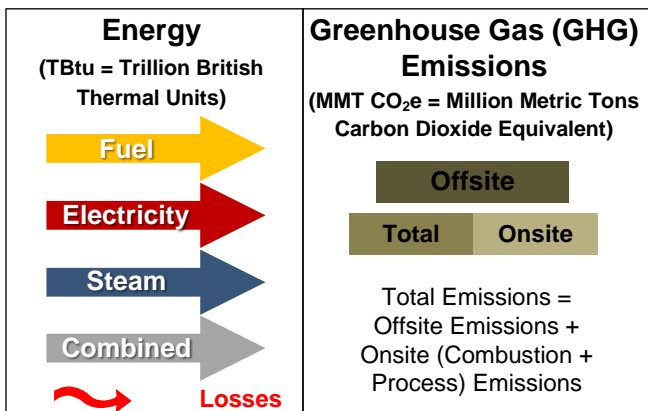
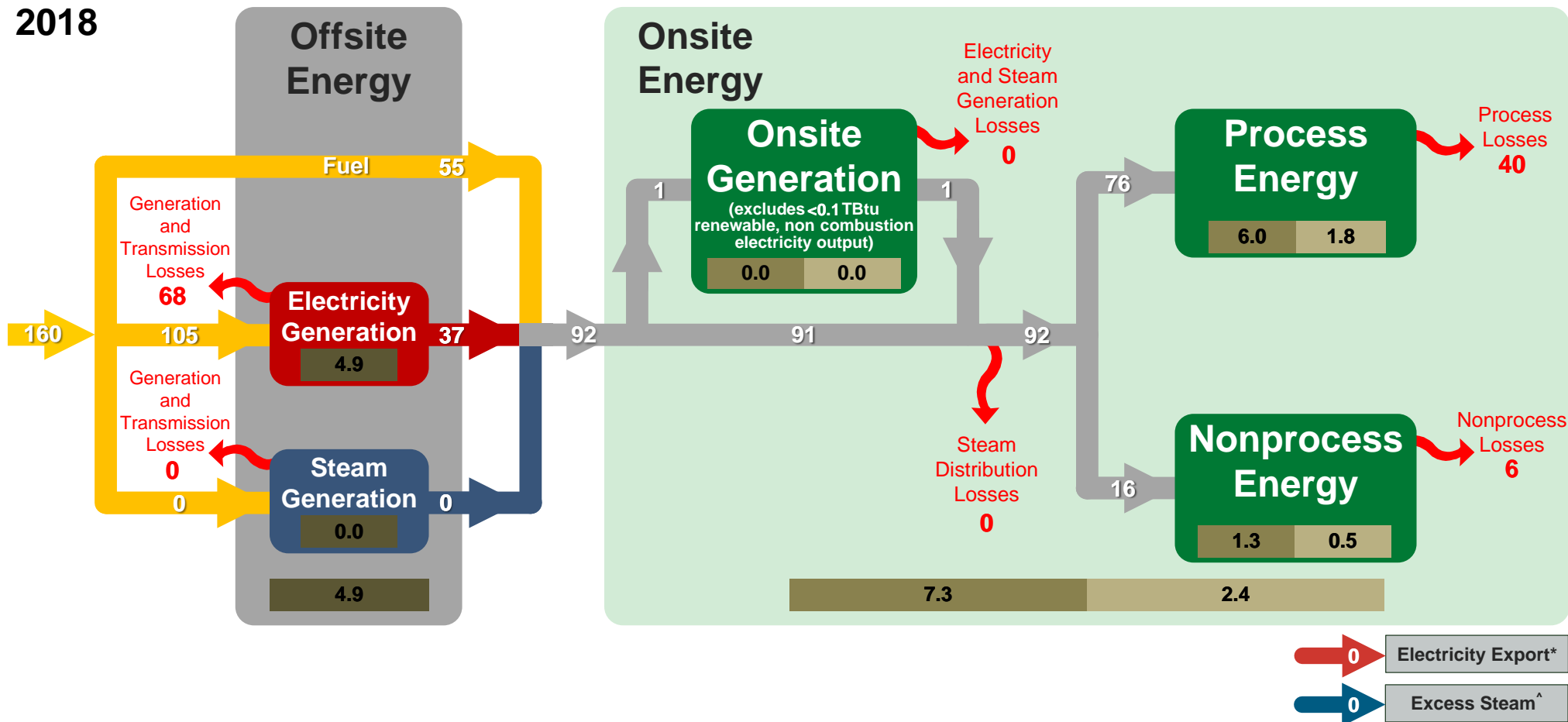


Manufacturing Energy and Carbon Footprint

Sector: Foundries (NAICS 3315)

Primary Energy Use: 160 TBtu
Total GHG Emissions: 7 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
[^] Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 161 TBtu

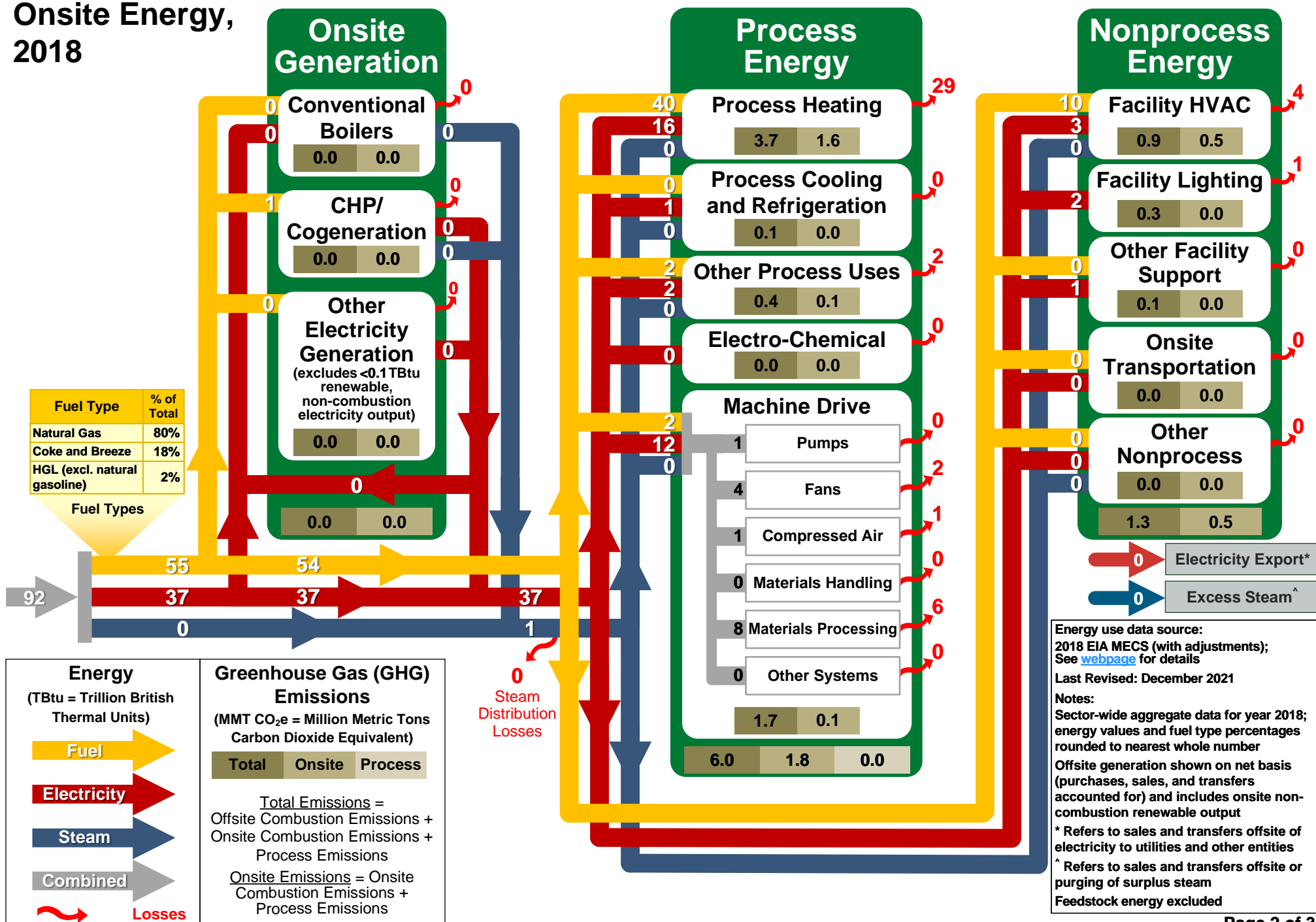
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Foundries (NAICS 3315)

Onsite Energy Use: 92 TBtu
Onsite Emissions: 2 MMT CO₂e

Onsite Energy,
2018

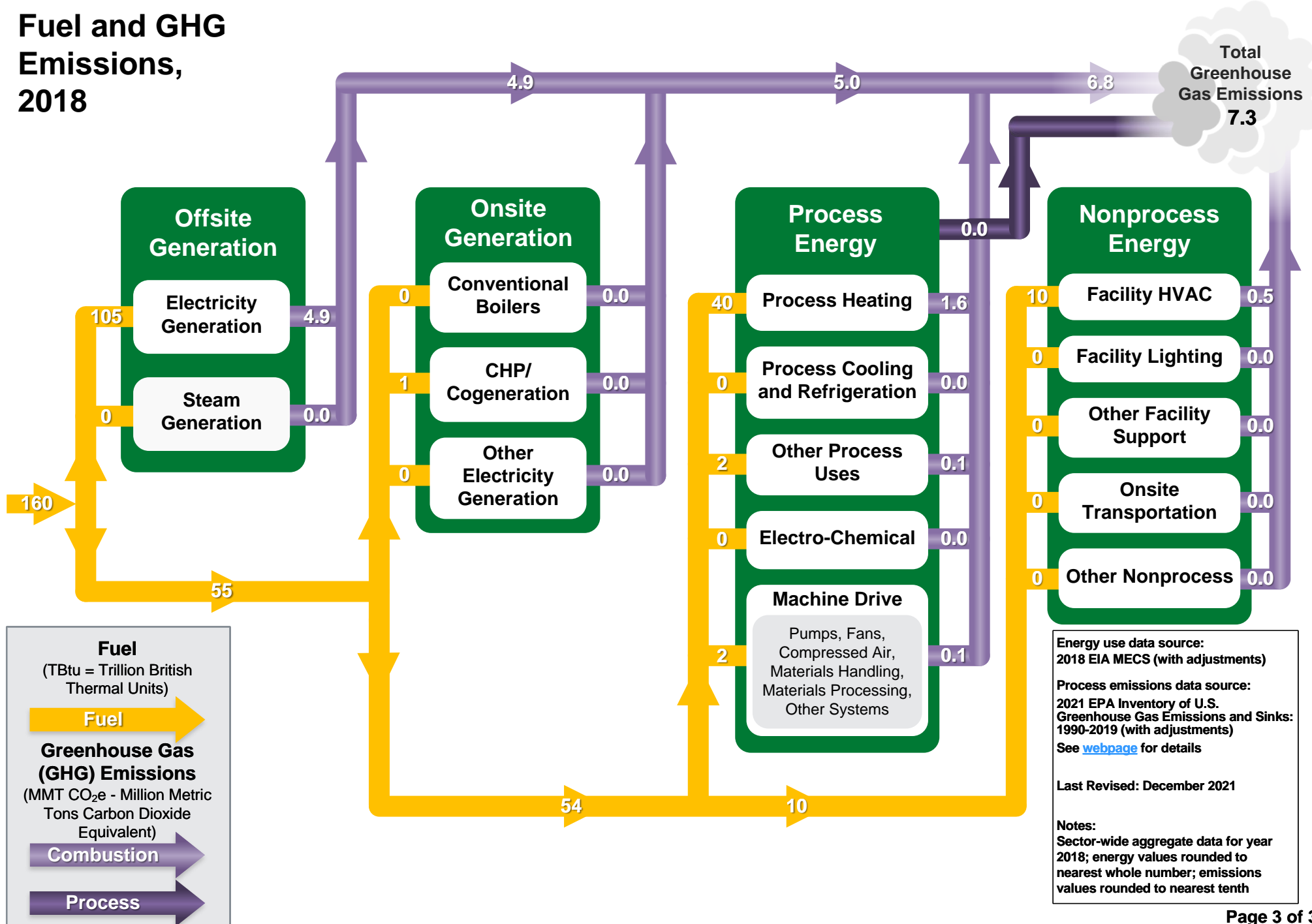


Manufacturing Carbon Footprint

Sector: Foundries (NAICS 3315)

Primary Energy Use: 160 TBtu
Total GHG Emissions: 7 MMT CO₂e

Fuel and GHG Emissions, 2018



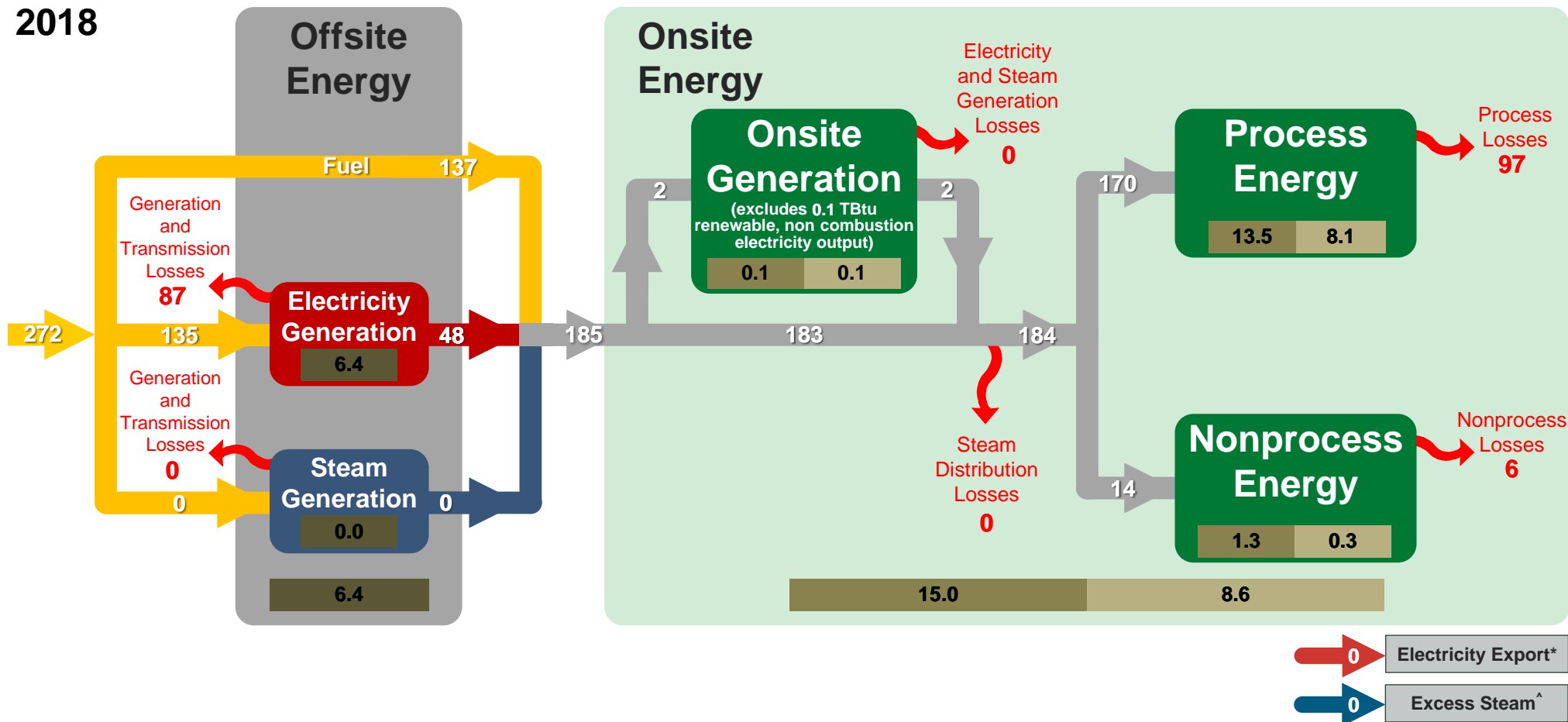
Manufacturing Energy and Carbon Footprint

Sector: Glass and Glass Products (NAICS 3272, 327993)

Primary Energy Use: 272 TBtu

Total GHG Emissions: 15 MMT CO₂e

Primary Energy, 2018



Energy (TBtu = Trillion British Thermal Units)	Greenhouse Gas (GHG) Emissions (MMT CO ₂ e = Million Metric Tons Carbon Dioxide Equivalent)
Fuel	Offsite
Electricity	Total Onsite
Steam	
Combined	
Losses	
	Total Emissions = Offsite Emissions + Onsite (Combustion + Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
 Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
 * Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
 Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
 ^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 274 TBtu

Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

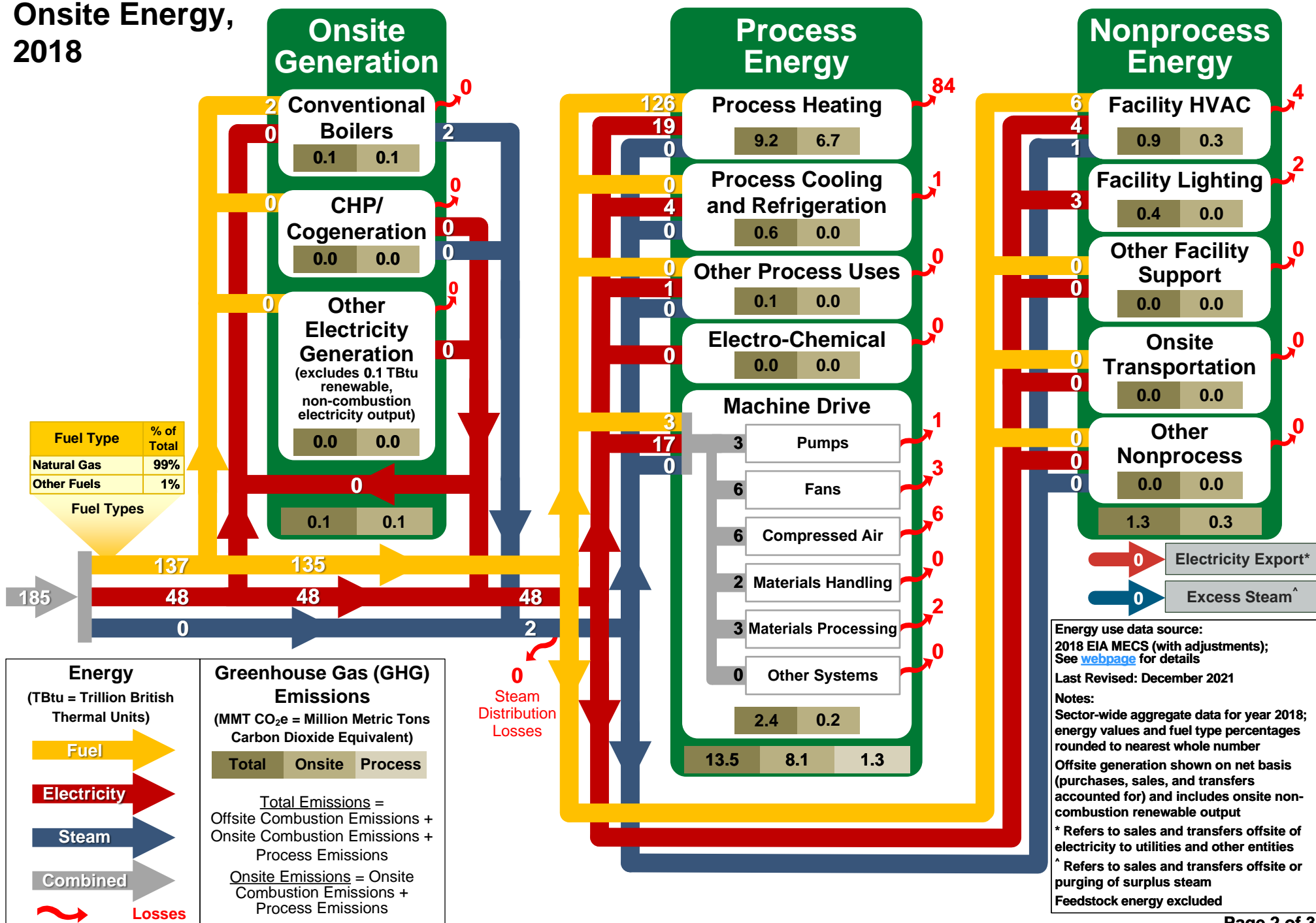
Manufacturing Energy and Carbon Footprint

Sector: Glass and Glass Products (NAICS 3272, 327993)

Onsite Energy Use: 185 TBtu

Onsite Emissions: 9 MMT CO₂e

Onsite Energy,
2018

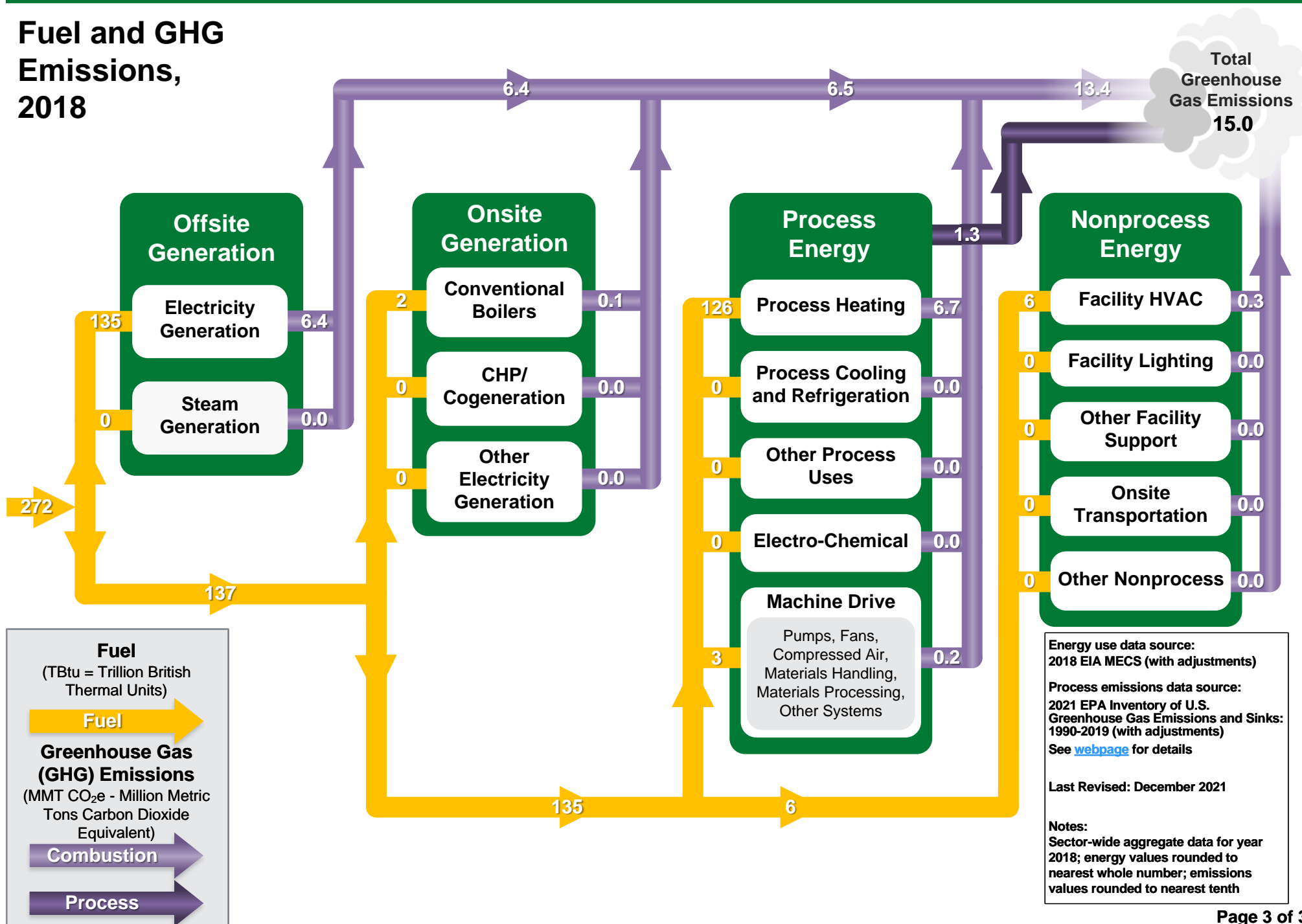


Manufacturing Carbon Footprint

Sector: Glass and Glass Products (NAICS 3272, 327993)

Primary Energy Use: 272 TBtu
Total GHG Emissions: 15 MMT CO₂e

Fuel and GHG Emissions, 2018



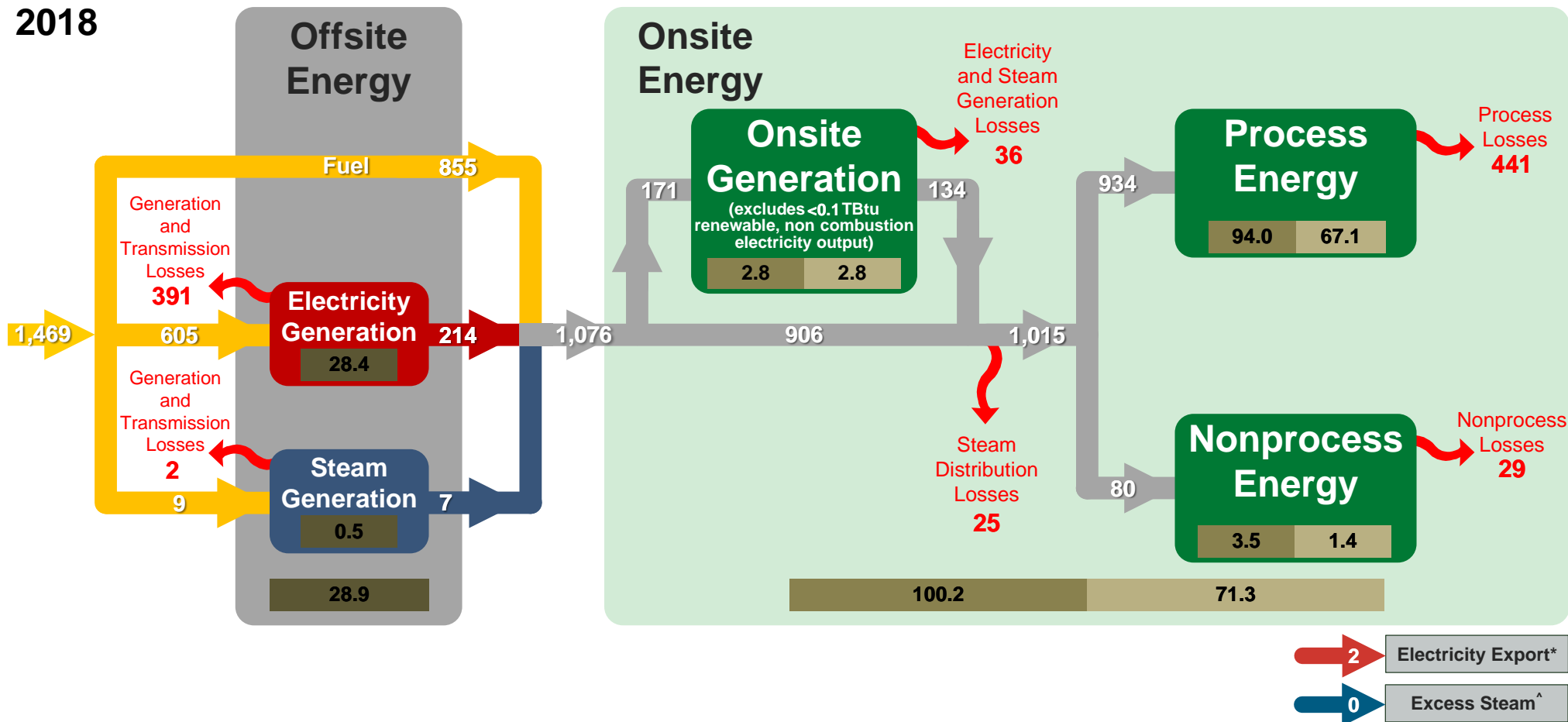
Manufacturing Energy and Carbon Footprint

Sector: Iron and Steel (NAICS 331110, 3312)

Primary Energy Use: 1,469 TBtu

Total GHG Emissions: 100 MMT CO₂e

Primary Energy, 2018



Energy (TBtu = Trillion British Thermal Units)	Greenhouse Gas (GHG) Emissions (MMT CO ₂ e = Million Metric Tons Carbon Dioxide Equivalent)
Fuel	Offsite
Electricity	Total Onsite
Steam	
Combined	
Losses	

Total Emissions = Offsite Emissions + Onsite (Combustion + Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
 Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
 * Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
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[^] Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 1,493 TBtu

Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

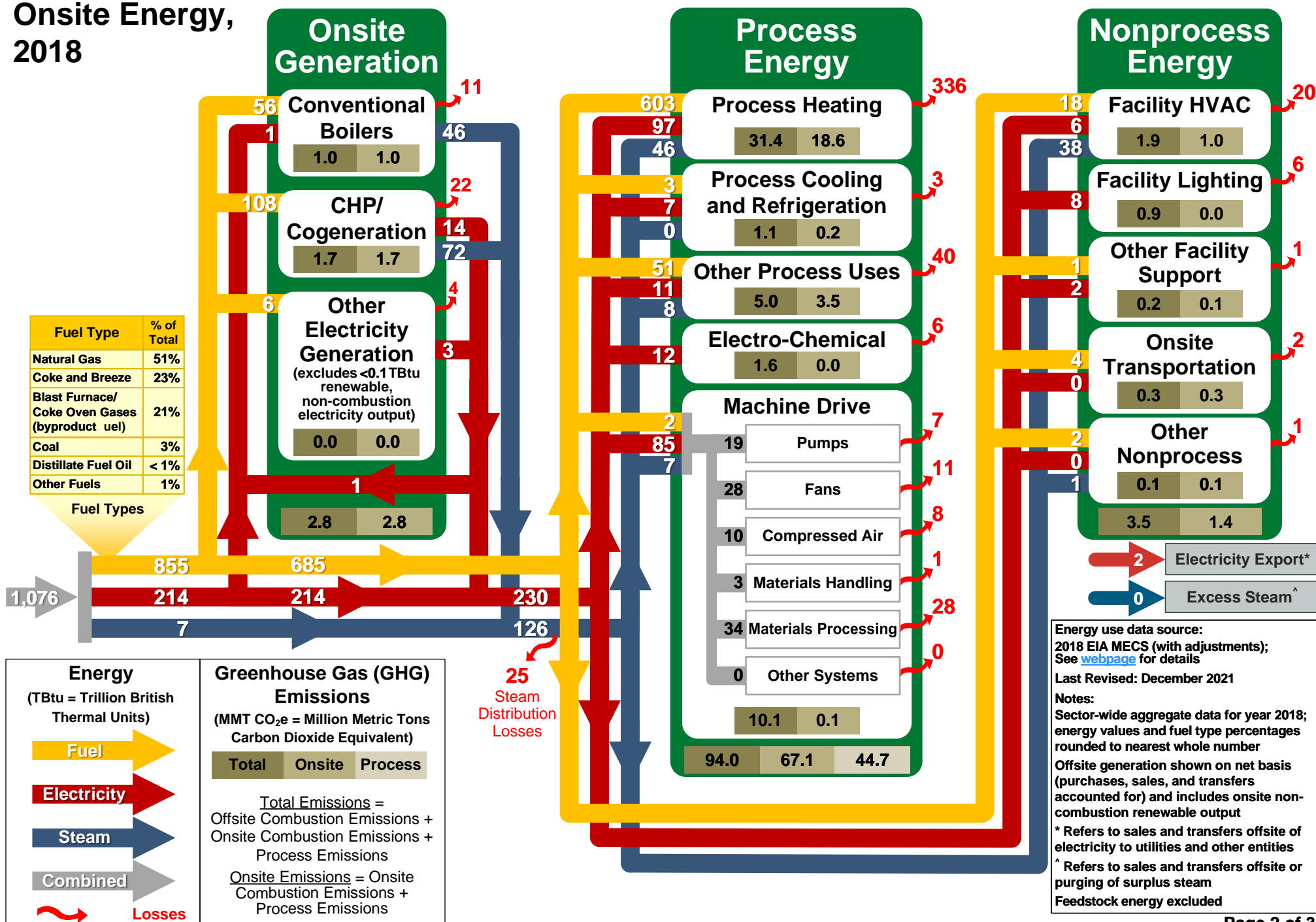
Manufacturing Energy and Carbon Footprint

Sector: Iron and Steel (NAICS 331110, 3312)

Onsite Energy Use: 1,076 TBtu

Onsite Emissions: 71 MMT CO₂e

Onsite Energy, 2018

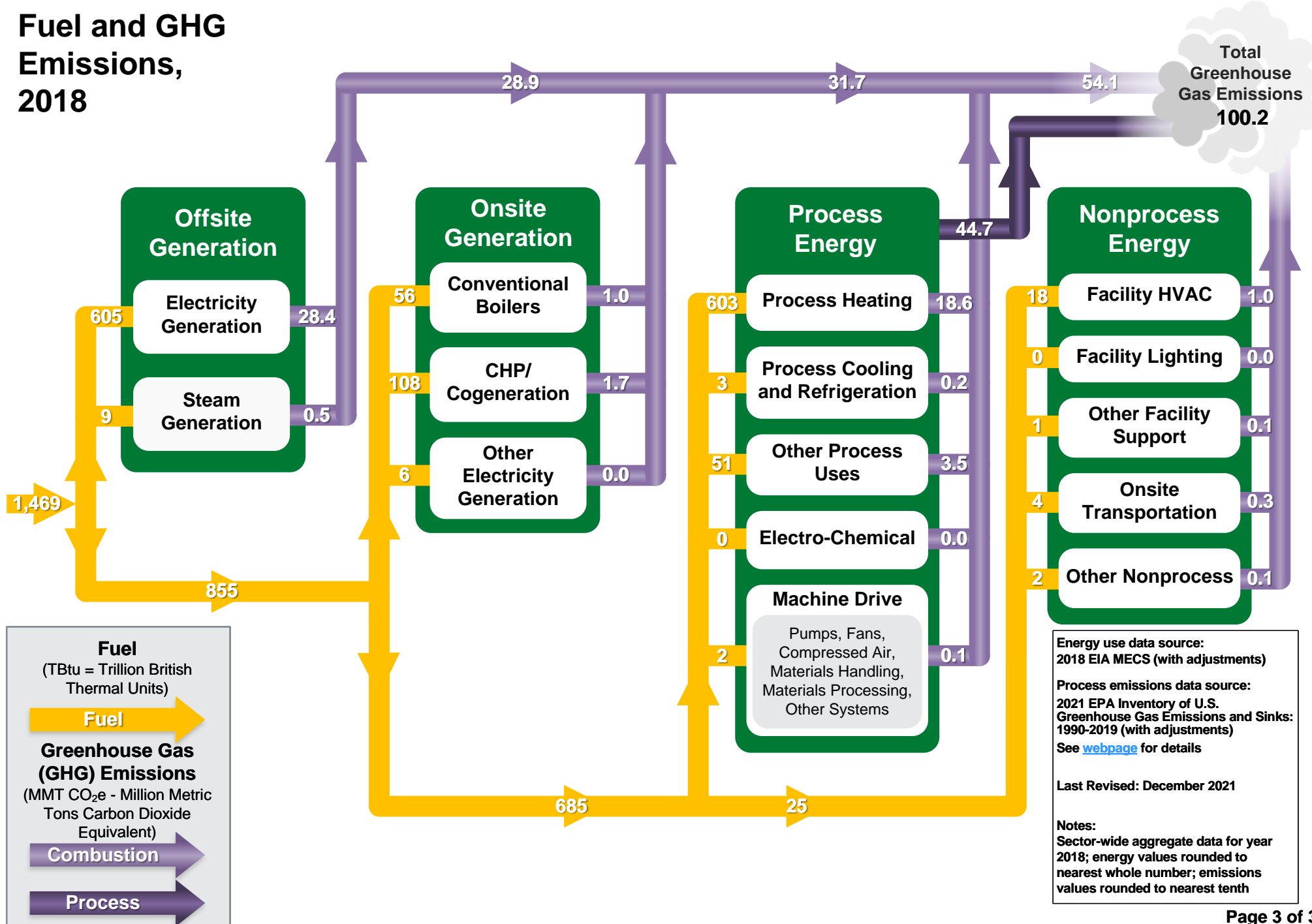


Manufacturing Carbon Footprint

Sector: Iron and Steel (NAICS 331110, 3312)

Primary Energy Use: 1,469 TBtu
Total GHG Emissions: 100 MMT CO₂e

Fuel and GHG Emissions, 2018

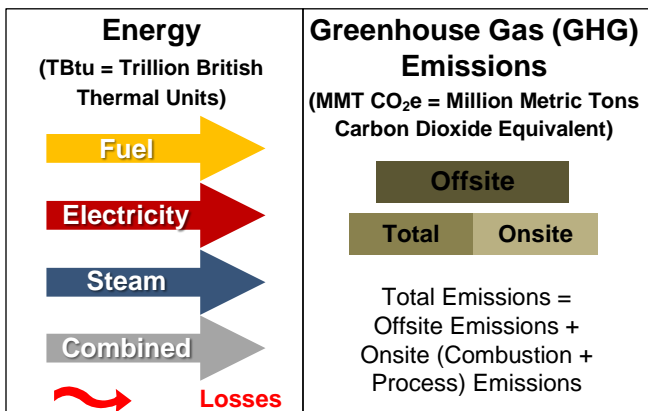
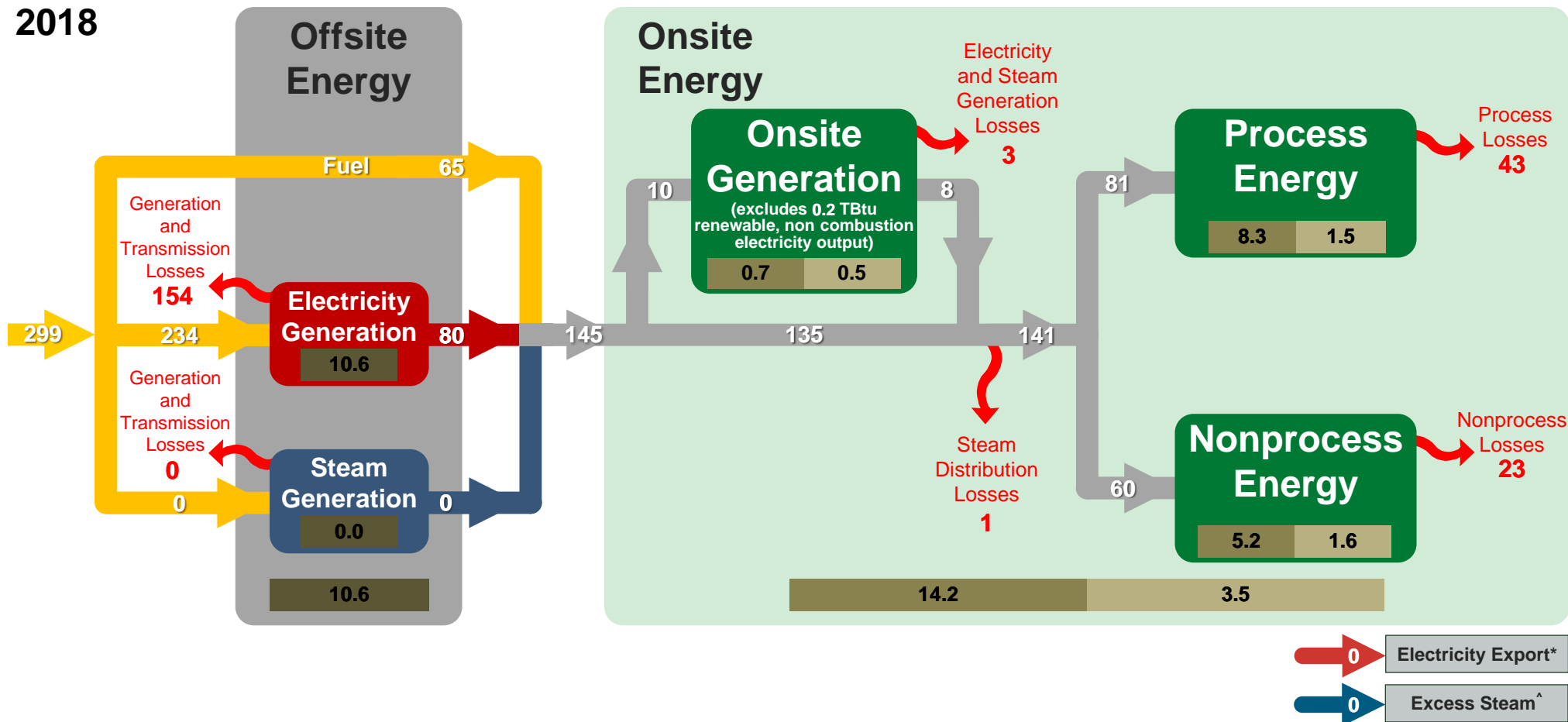


Manufacturing Energy and Carbon Footprint

Sector: Machinery (NAICS 333)

Primary Energy Use: 299 TBtu
Total GHG Emissions: 14 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes:

- Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
- Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
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- Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
- ^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

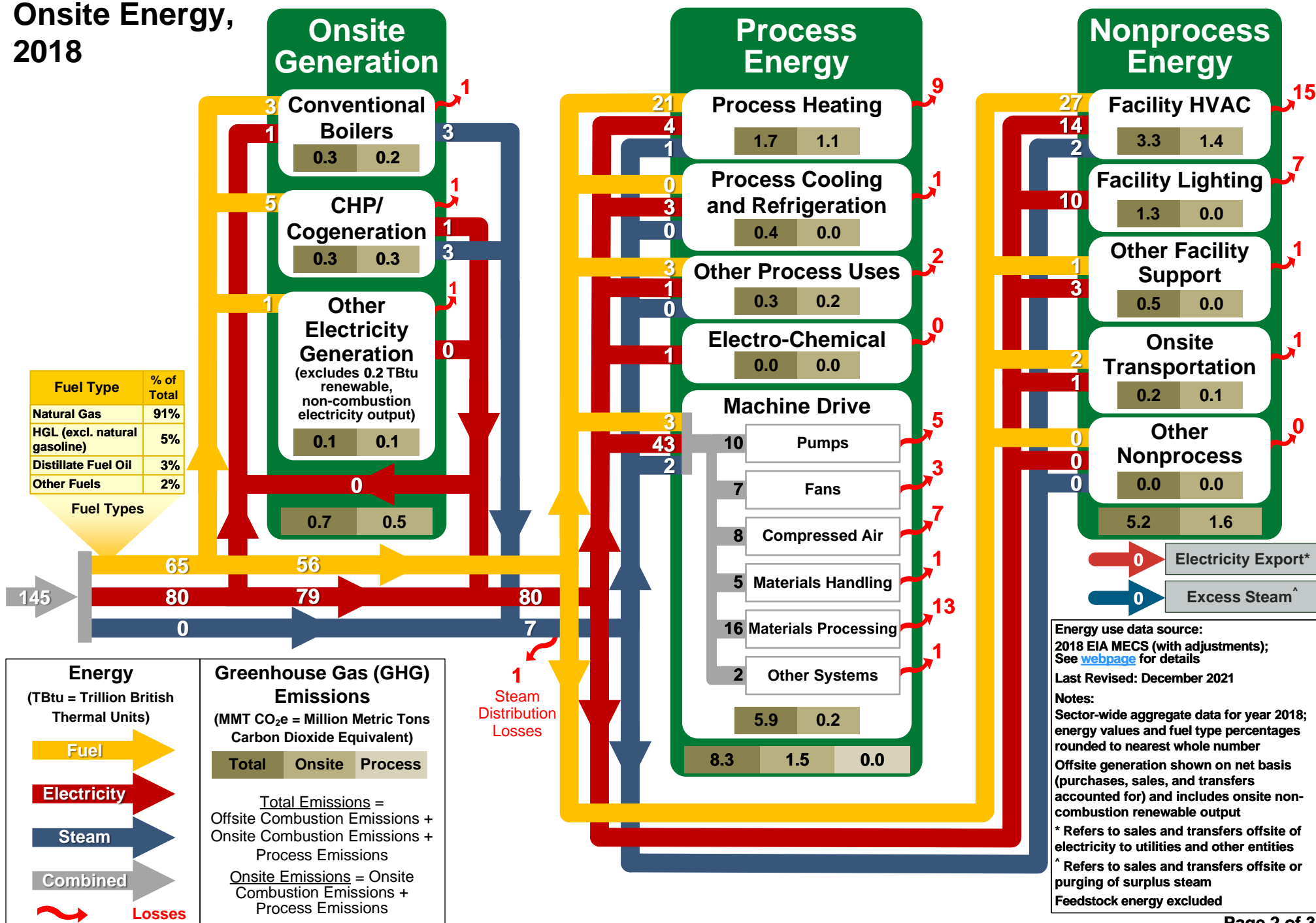
Energy for All Purposes estimated at 302 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Machinery (NAICS 333)

Onsite Energy Use: 145 TBtu
Onsite Emissions: 4 MMT CO₂e

Onsite Energy,
2018

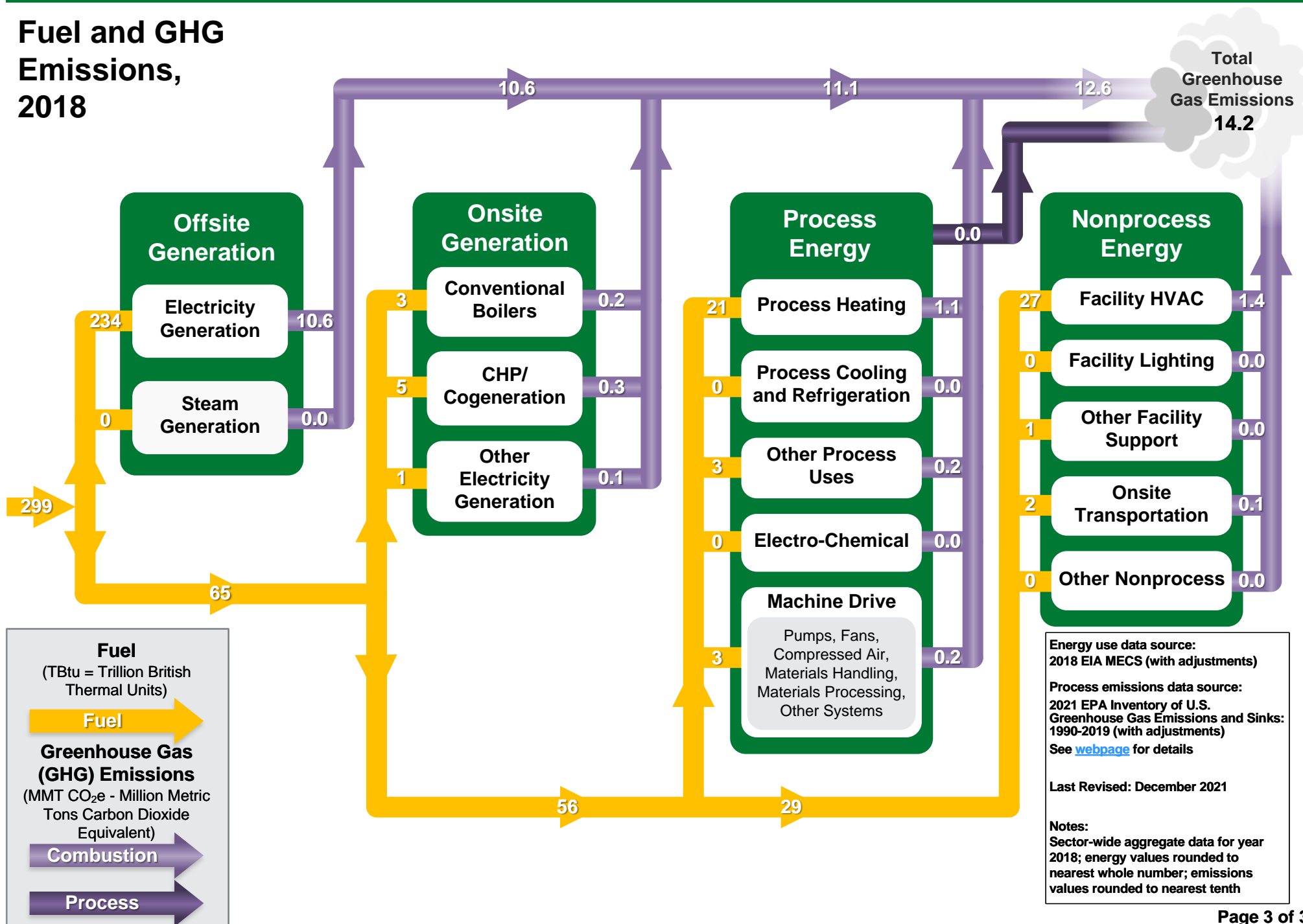


Manufacturing Carbon Footprint

Sector: Machinery (NAICS 333)

Primary Energy Use: 299 TBtu
Total GHG Emissions: 14 MMT CO₂e

Fuel and GHG Emissions, 2018

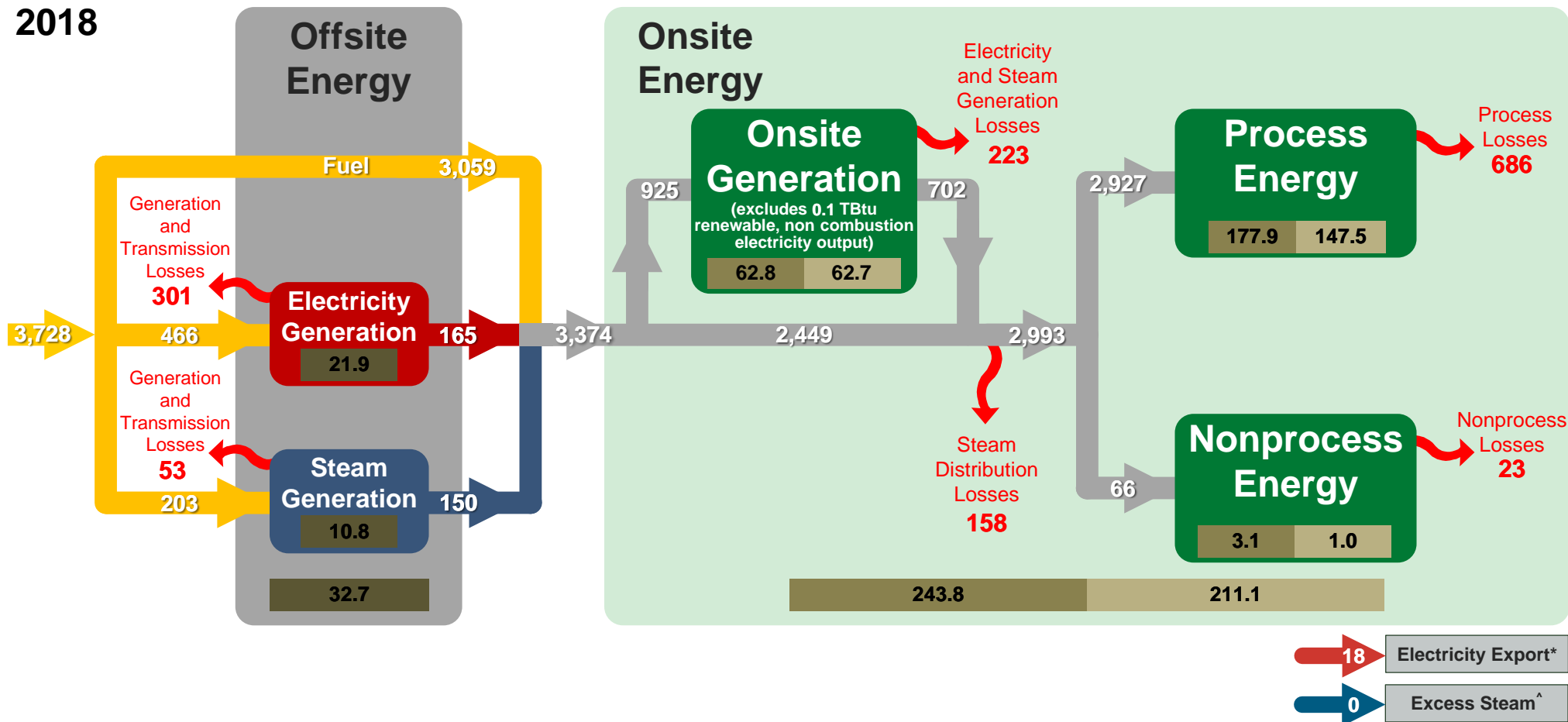


Manufacturing Energy and Carbon Footprint

Sector: Petroleum Refining (NAICS 324110)

Primary Energy Use: 3,728 TBtu
Total GHG Emissions: 244 MMT CO₂e

Primary Energy, 2018



Energy (TBtu = Trillion British Thermal Units)	Greenhouse Gas (GHG) Emissions (MMT CO ₂ e = Million Metric Tons Carbon Dioxide Equivalent)
Fuel	Offsite
Electricity	Total Onsite
Steam	
Combined	
Losses	

Total Emissions = Offsite Emissions + Onsite (Combustion + Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
* Electricity export refers to sales and transfers offsite of electricity to utilities and other entities
Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
[^] Excess steam refers to the sales and transfer offsite or purging of surplus steam

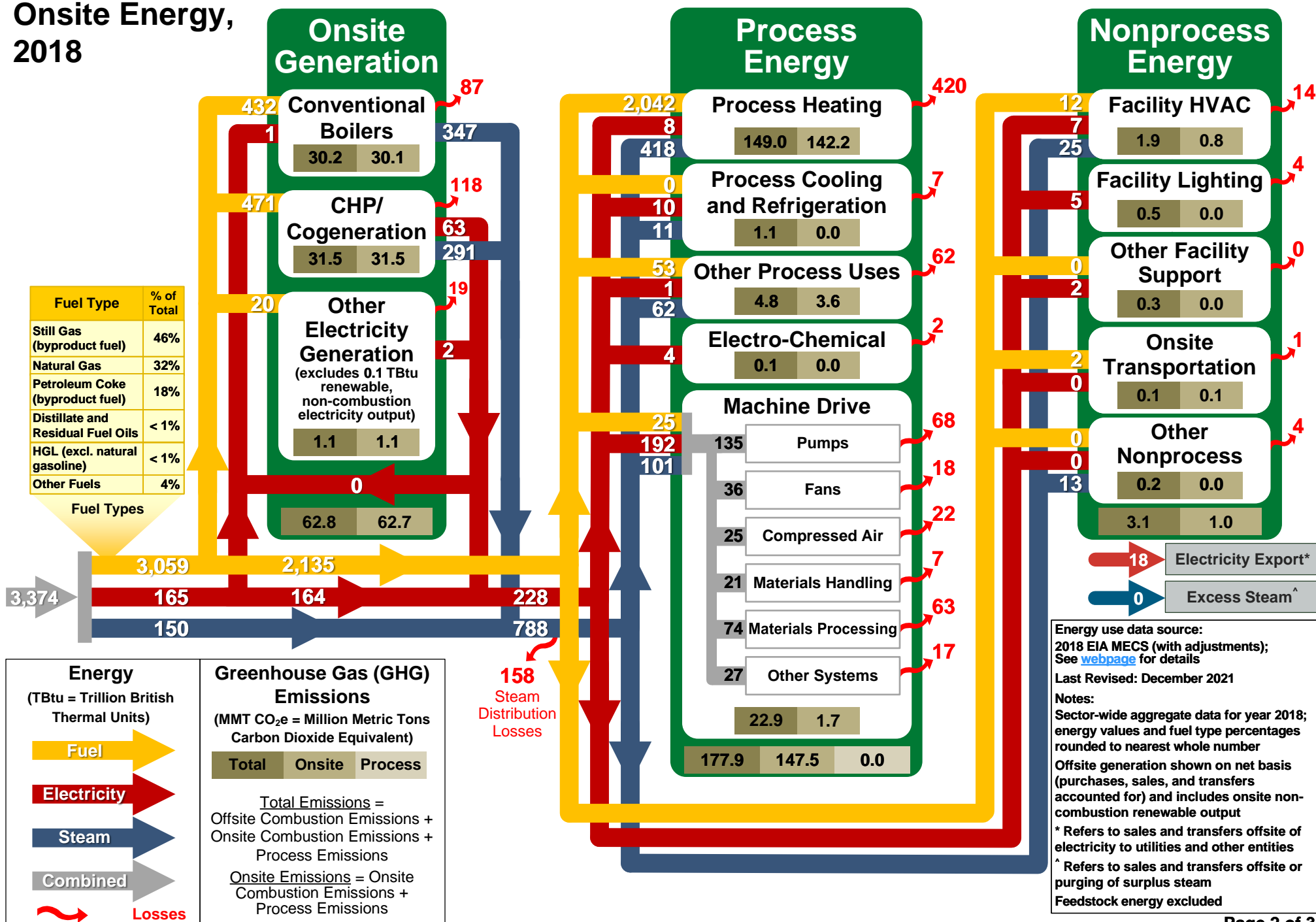
Energy for All Purposes estimated at 3,728 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Petroleum Refining (NAICS 324110)

Onsite Energy Use: 3,374 TBtu
Onsite Emissions: 211 MMT CO₂e

Onsite Energy, 2018

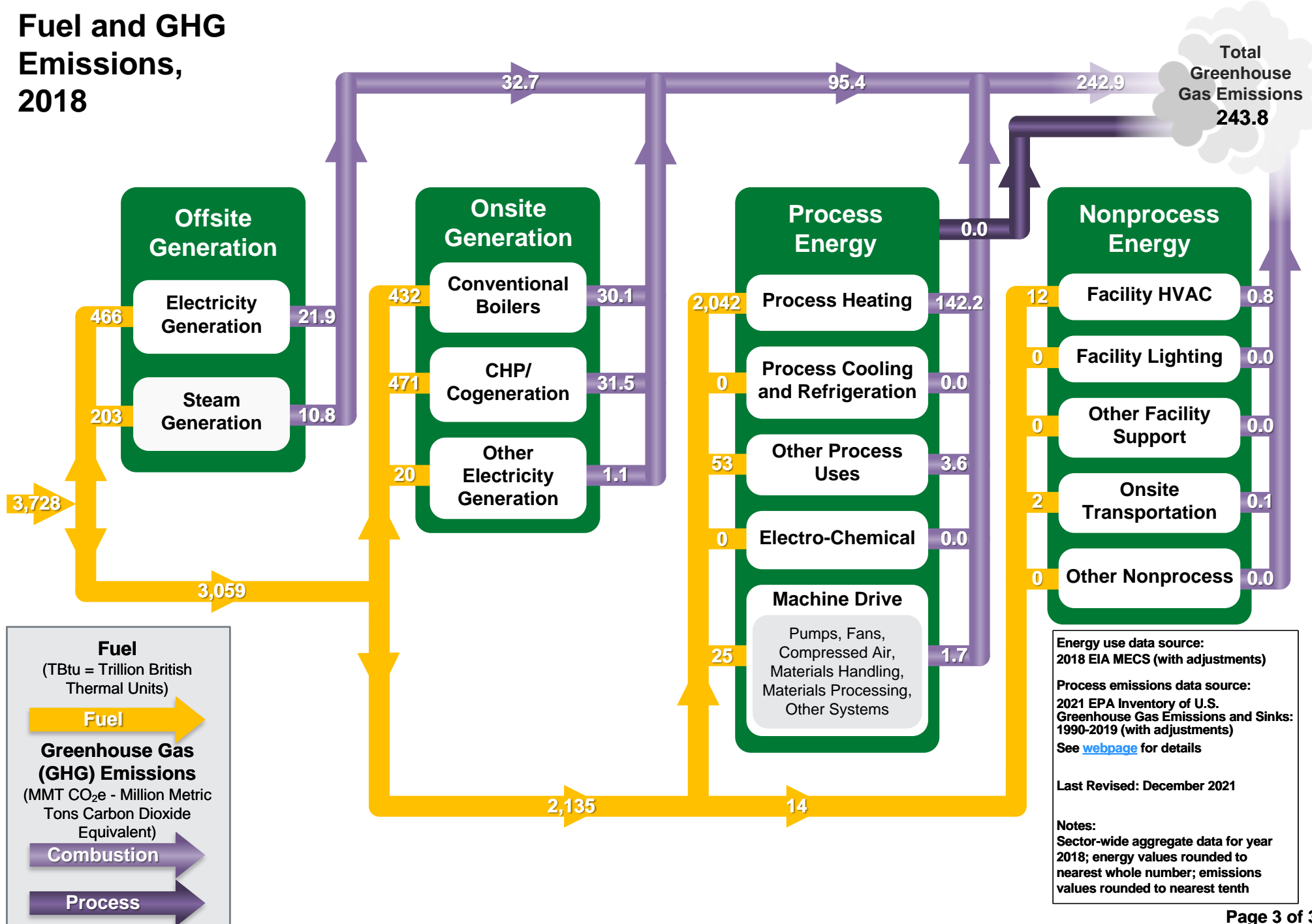


Manufacturing Carbon Footprint

Sector: Petroleum Refining (NAICS 324110)

Primary Energy Use: 3,728 TBtu
Total GHG Emissions: 244 MMT CO₂e

Fuel and GHG Emissions, 2018



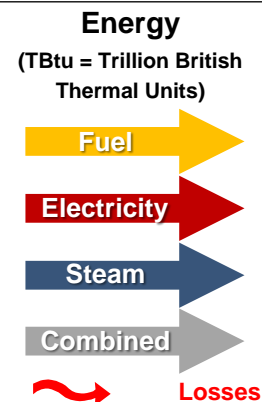
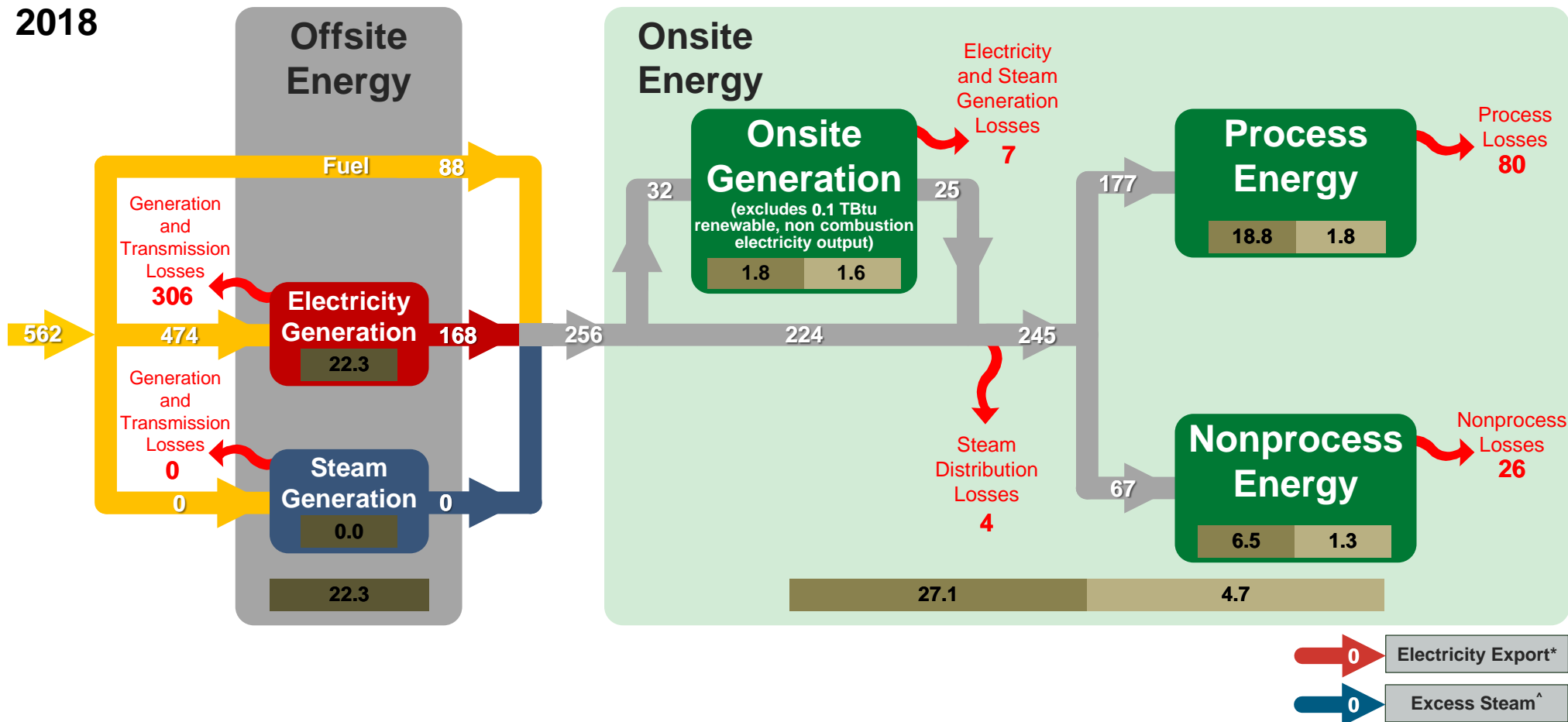
Manufacturing Energy and Carbon Footprint

Sector: Plastics and Rubber Products (NAICS 326)

Primary Energy Use: 562 TBtu

Total GHG Emissions: 27 MMT CO₂e

Primary Energy, 2018



Greenhouse Gas (GHG) Emissions
(MMT CO₂e = Million Metric Tons Carbon Dioxide Equivalent)

Category	Value (MMT CO ₂ e)
Offsite	22.3
Onsite	4.7
Total	27.1

Total Emissions = Offsite Emissions + Onsite (Combustion + Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes:

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- ^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

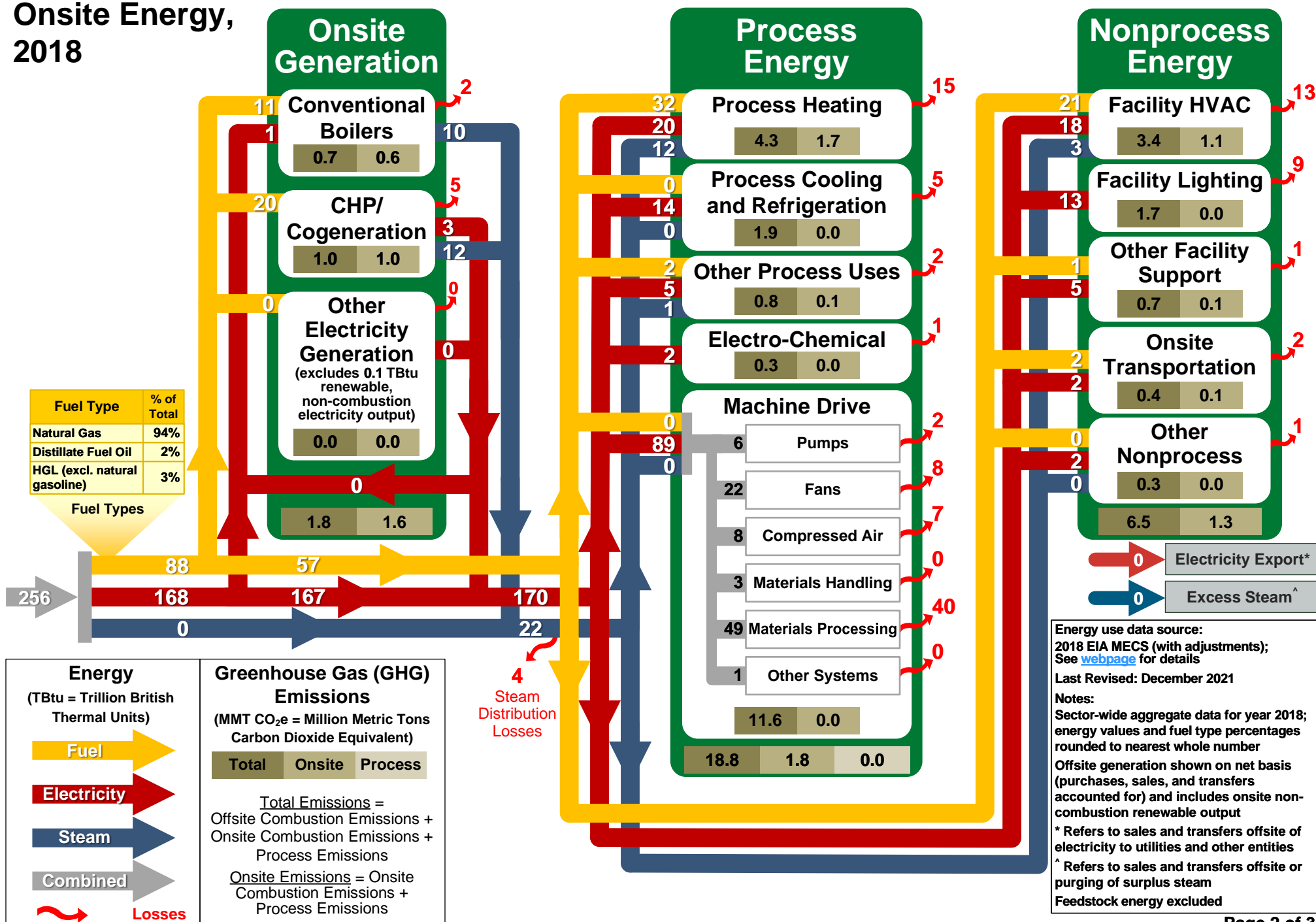
Energy for All Purposes estimated at 563 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Plastics and Rubber Products (NAICS 326)

Onsite Energy Use: 256 TBtu
Onsite Emissions: 5 MMT CO₂e

Onsite Energy,
2018

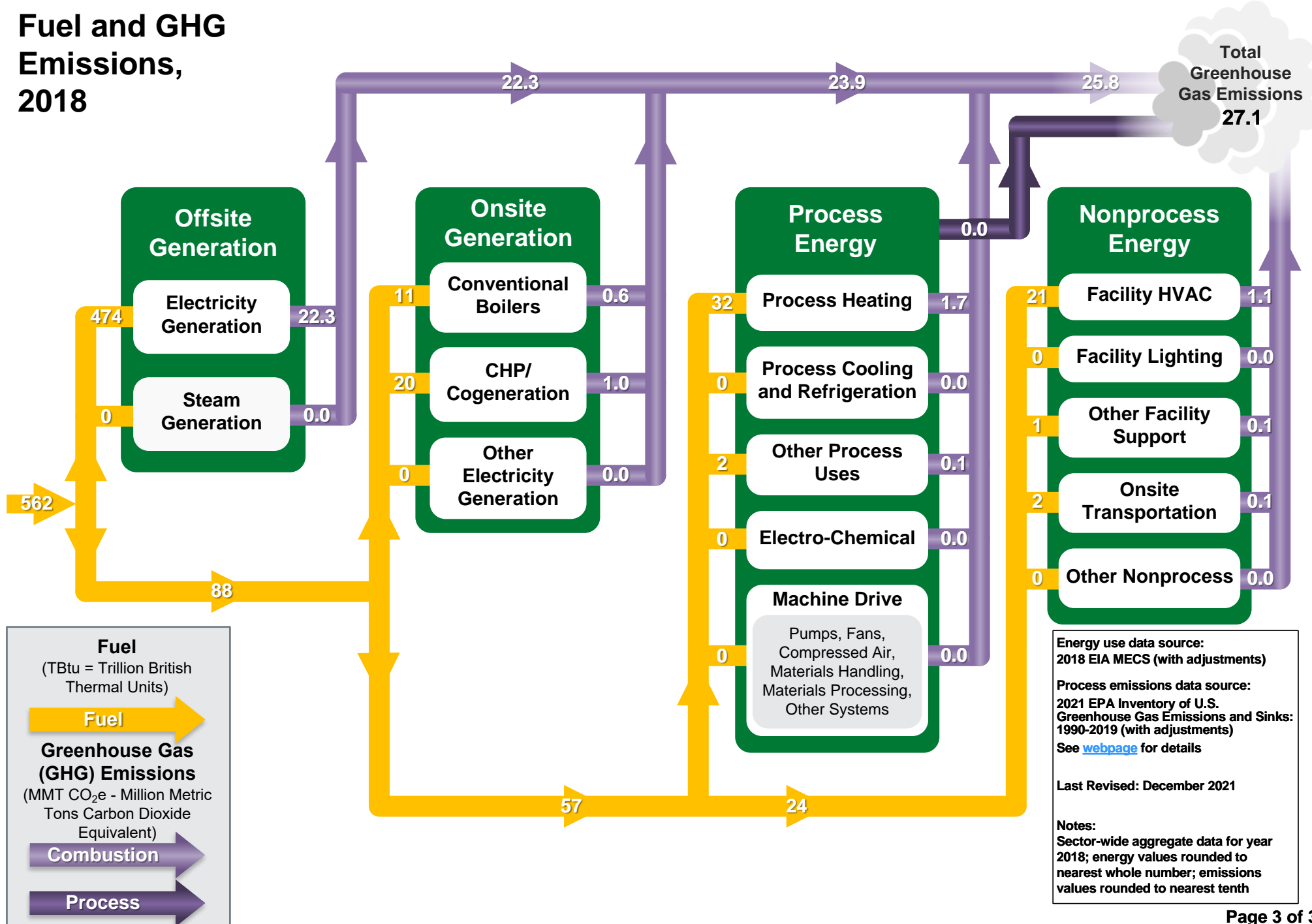


Manufacturing Carbon Footprint

Sector: Plastics and Rubber Products (NAICS 326)

Primary Energy Use: 562 TBtu
Total GHG Emissions: 27 MMT CO₂e

Fuel and GHG Emissions, 2018

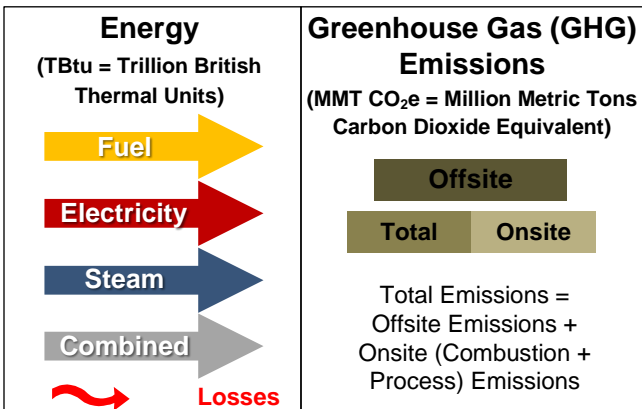
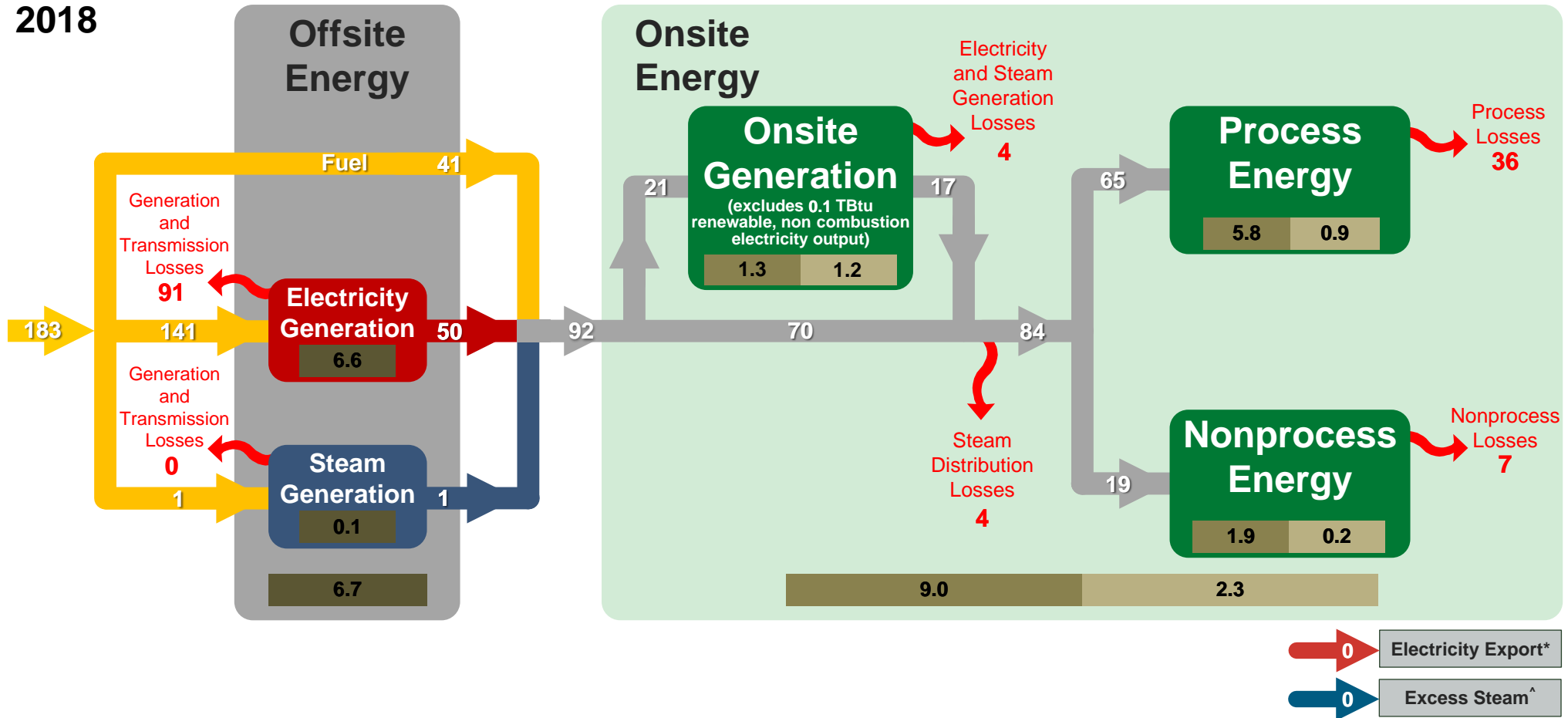


Manufacturing Energy and Carbon Footprint

Sector: Textiles (NAICS 313-316)

Primary Energy Use: 183 TBtu
Total GHG Emissions: 9 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
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Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

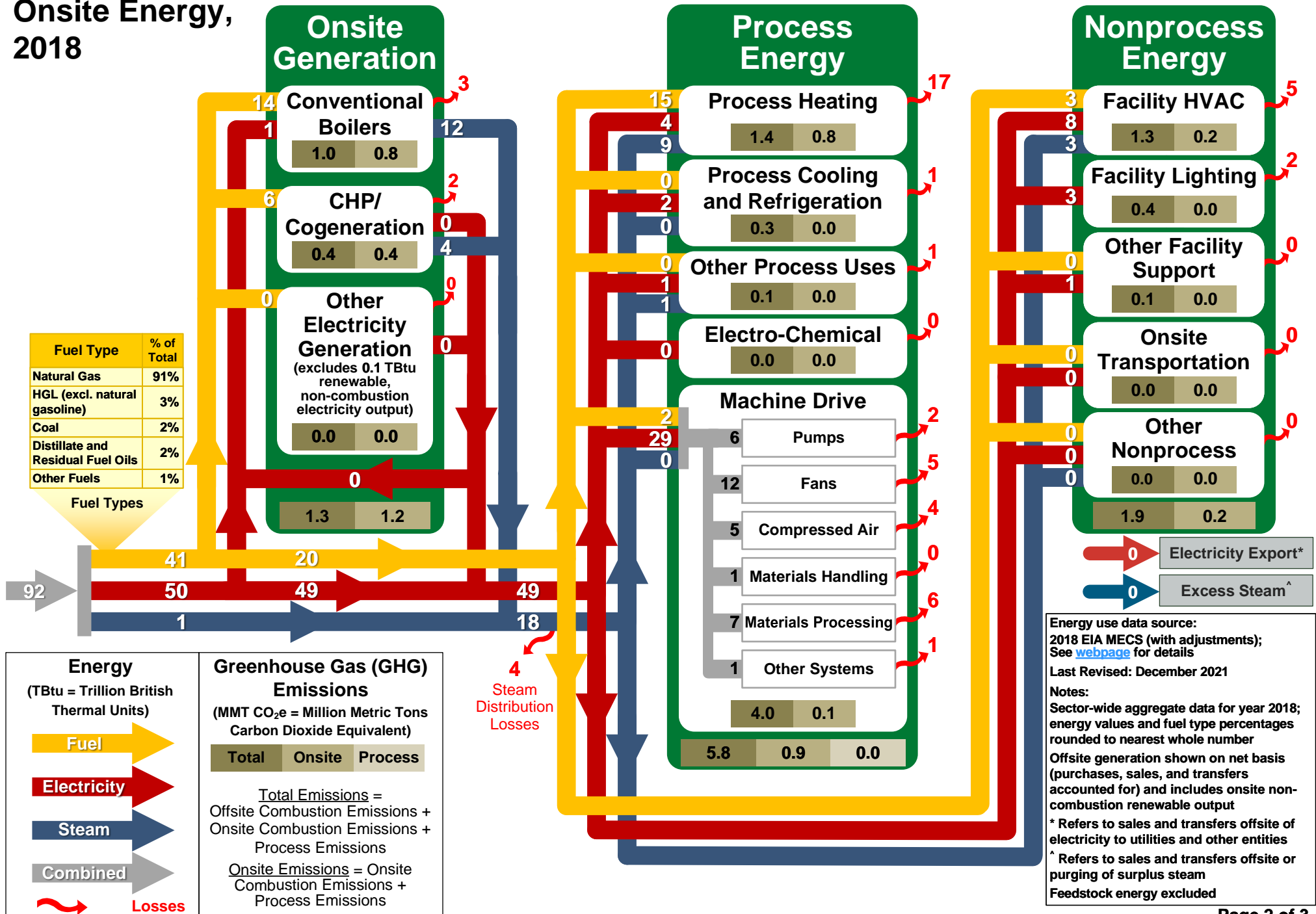
Energy for All Purposes estimated at 183 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Textiles (NAICS 313-316)

Onsite Energy Use: 92 TBtu
Onsite Emissions: 2 MMT CO₂e

Onsite Energy, 2018

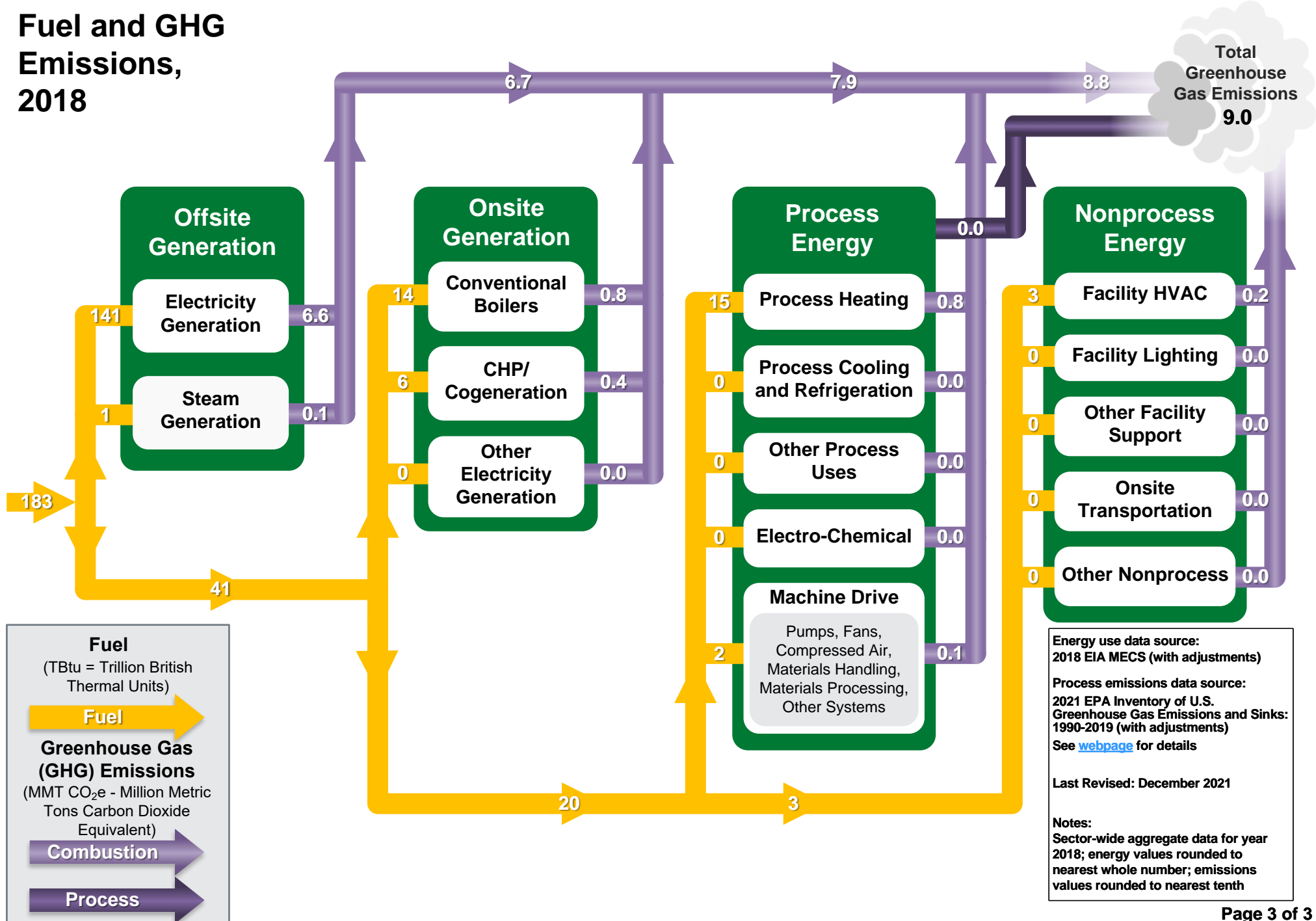


Manufacturing Carbon Footprint

Sector: Textiles (NAICS 313-316)

Primary Energy Use: 183 TBtu
Total GHG Emissions: 9 MMT CO₂e

Fuel and GHG Emissions, 2018

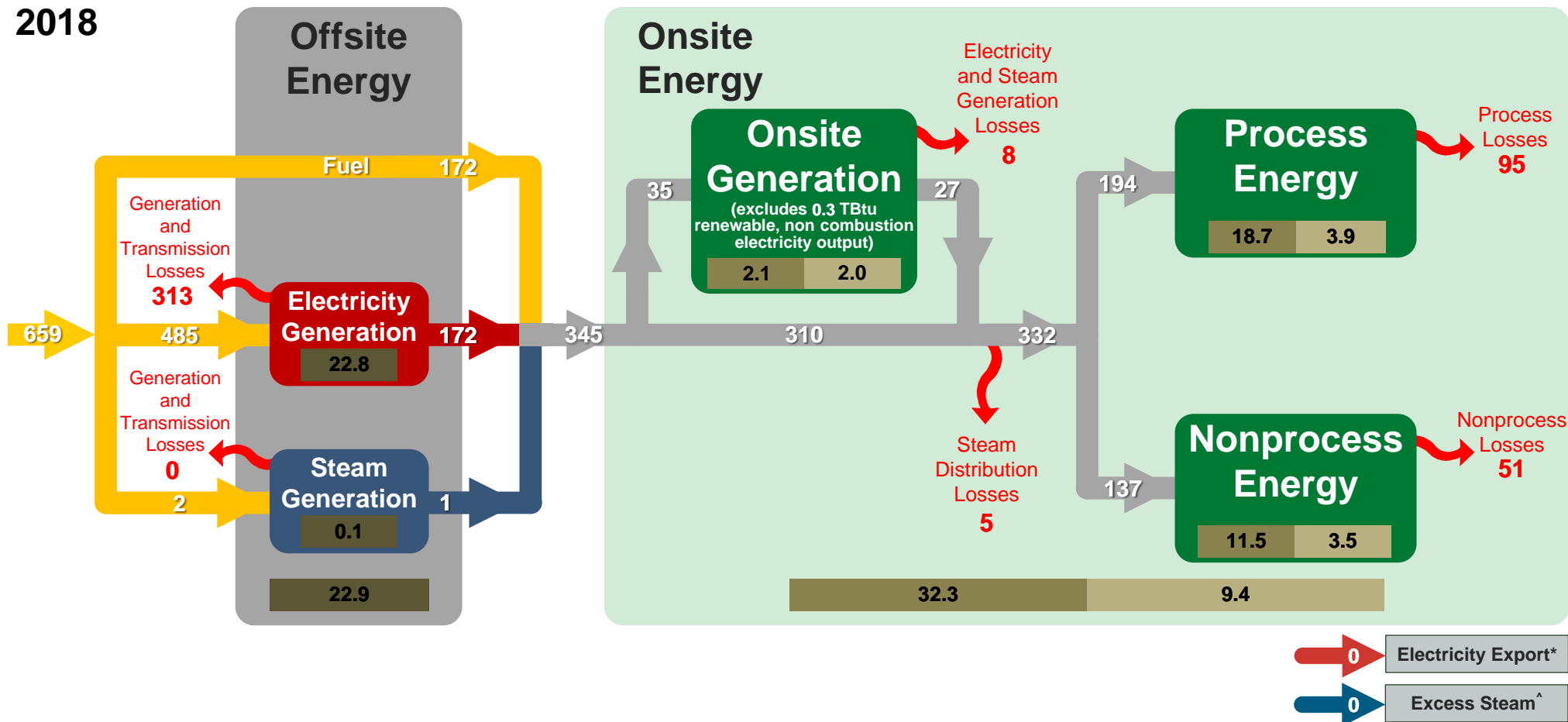


Manufacturing Energy and Carbon Footprint

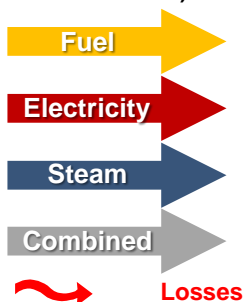
Sector: Transportation Equipment (NAICS 336)

Primary Energy Use: 659 TBtu
Total GHG Emissions: 32 MMT CO₂e

Primary Energy, 2018



Energy
(TBtu = Trillion British Thermal Units)



Greenhouse Gas (GHG) Emissions

(MMT CO₂e = Million Metric Tons Carbon Dioxide Equivalent)

Offsite	
Total	Onsite

Total Emissions =
Offsite Emissions +
Onsite (Combustion +
Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes:

Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
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Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
[^] Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 662 TBtu

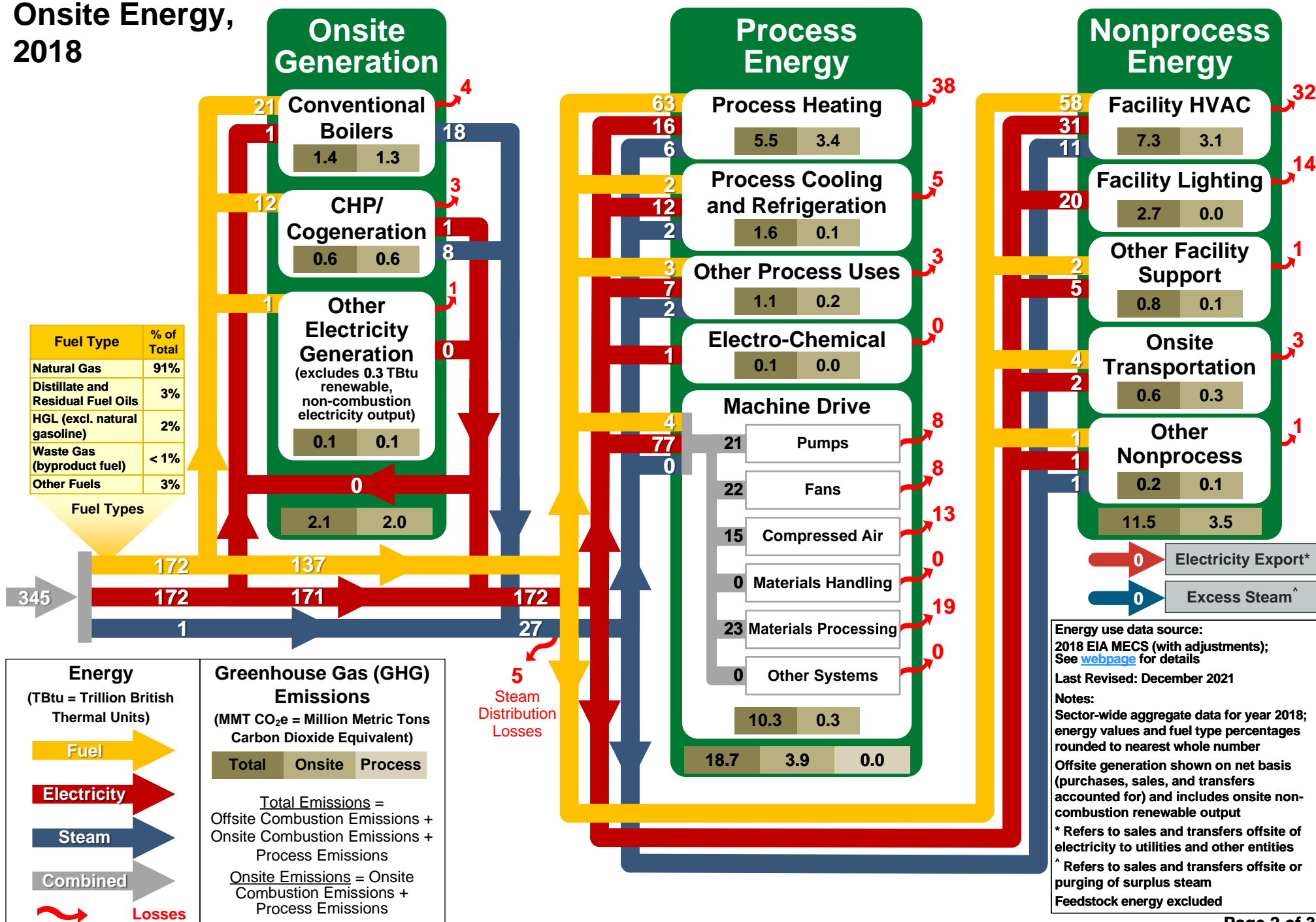
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Transportation Equipment (NAICS 336)

Onsite Energy Use: 345 TBtu
Onsite Emissions: 9 MMT CO₂e

Onsite Energy,
2018

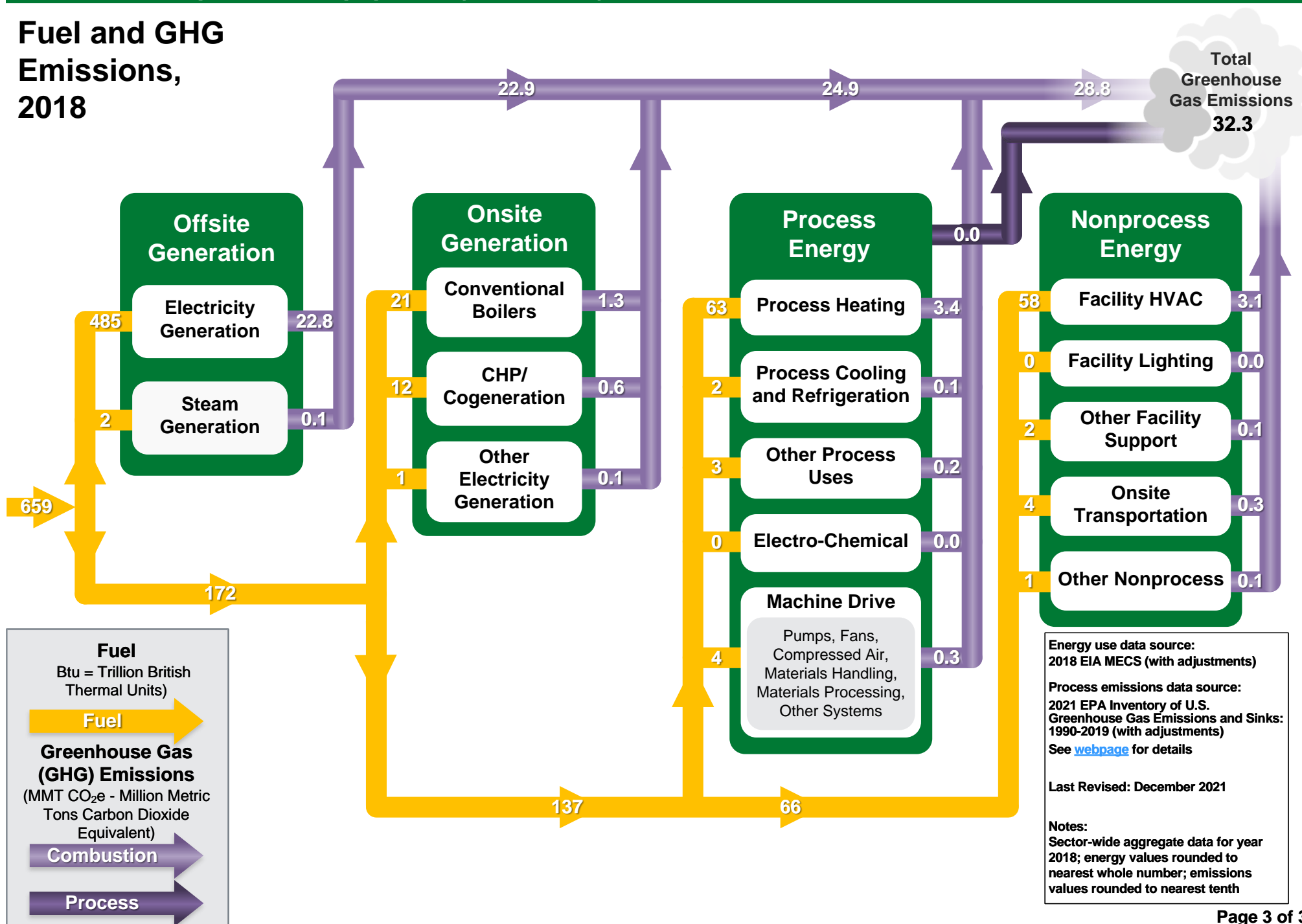


Manufacturing Carbon Footprint

Sector: Transportation Equipment (NAICS 336)

Primary Energy Use: 659 TBtu
Total GHG Emissions: 32 MMT CO₂e

Fuel and GHG Emissions, 2018

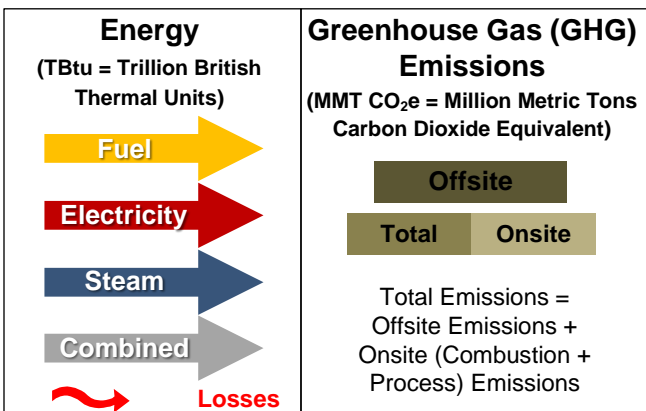
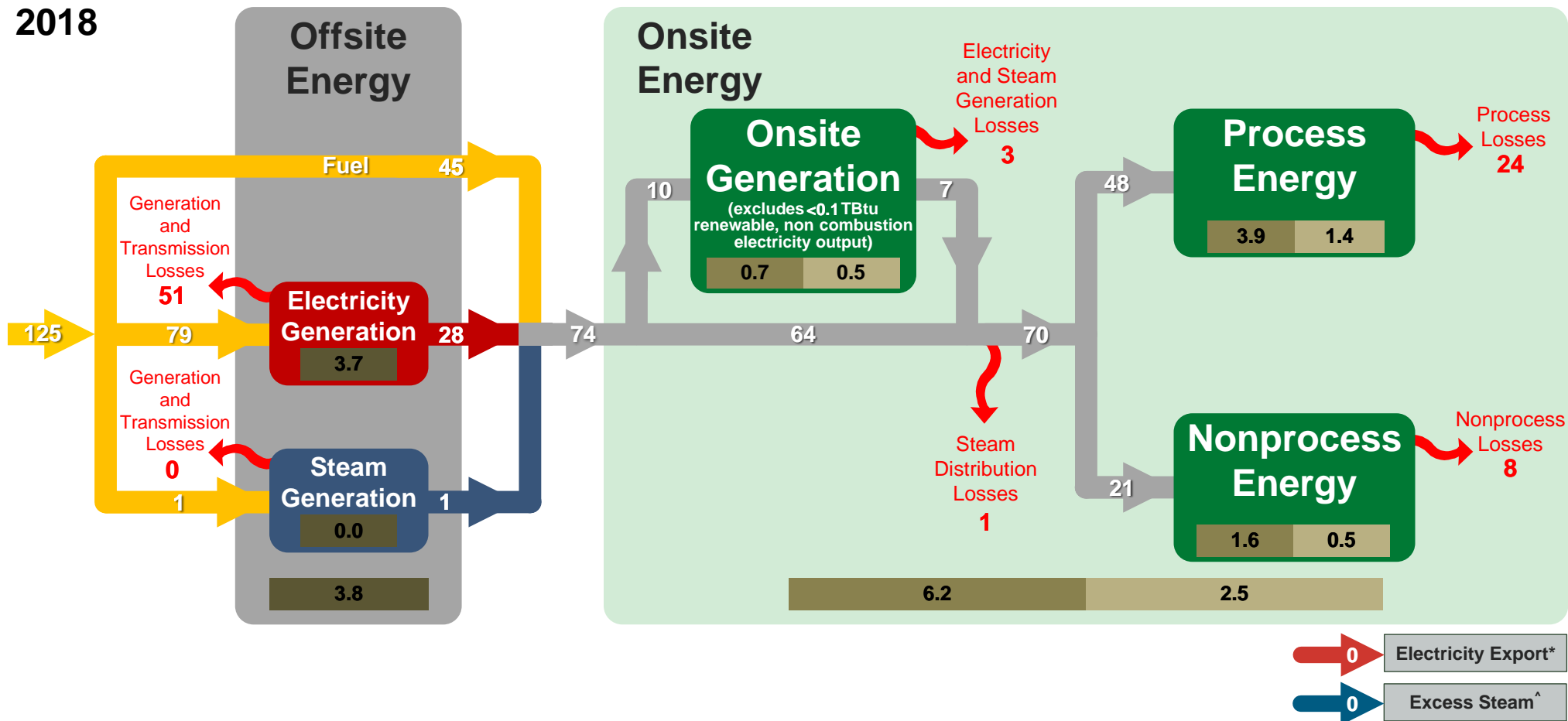


Manufacturing Energy and Carbon Footprint

Sector: Automobile and Light Duty Motor Vehicle (NAICS 33611)

Primary Energy Use: 125 TBtu
Total GHG Emissions: 6 MMT CO₂e

Primary Energy, 2018



Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes: Sector-wide aggregate data for year 2018; energy values rounded to nearest whole number
Offsite generation shown on net basis (purchases, sales, and transfers accounted for) and includes onsite non-combustion renewable output
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Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
^ Excess steam refers to the sales and transfer offsite or purging of surplus steam

Energy for All Purposes estimated at 126 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

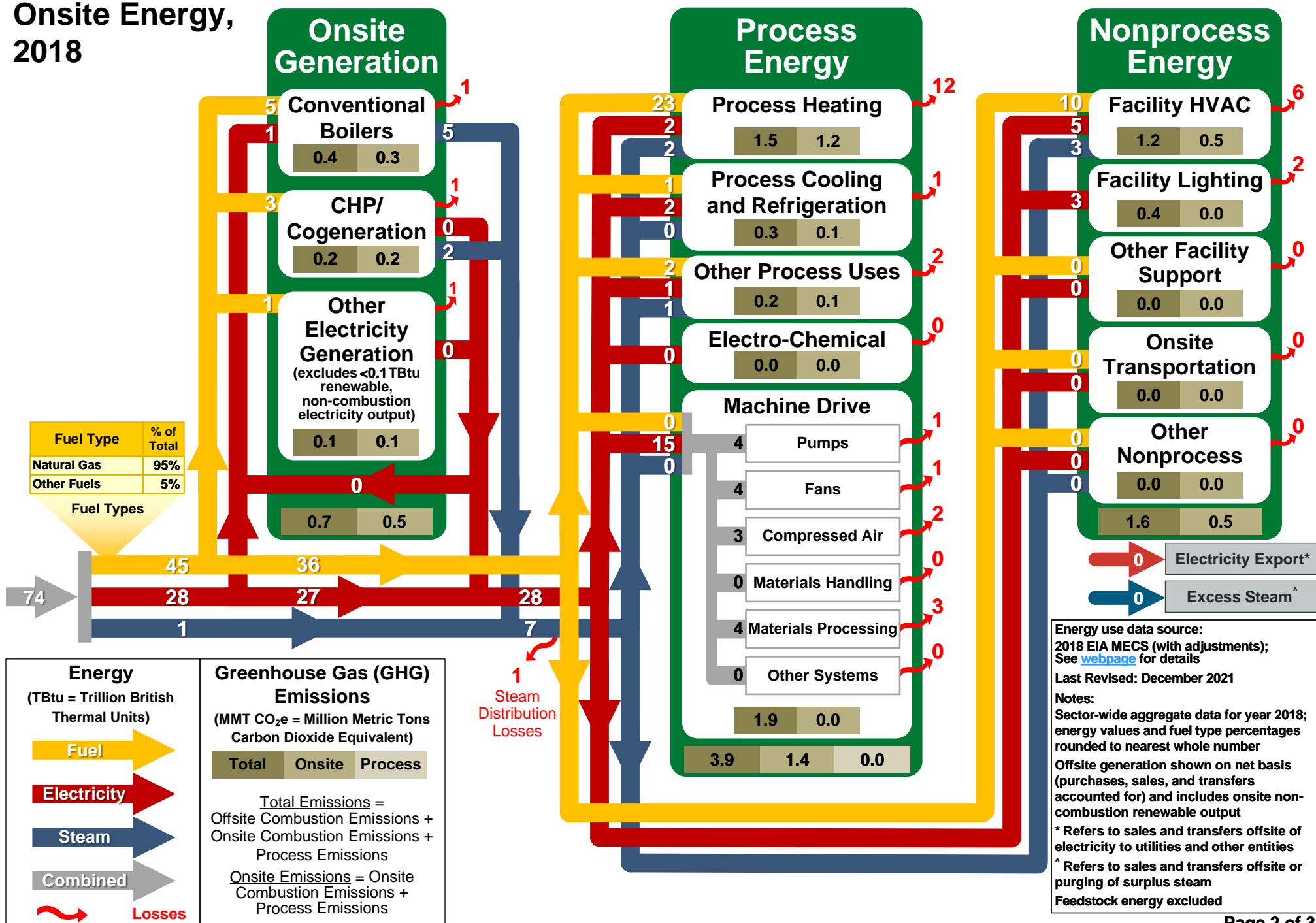
Manufacturing Energy and Carbon Footprint

Sector: Automobile and Light Duty Motor Vehicle (NAICS 33611)

Onsite Energy Use: 74 TBtu

Onsite Emissions: 3 MMT CO₂e

Onsite Energy, 2018

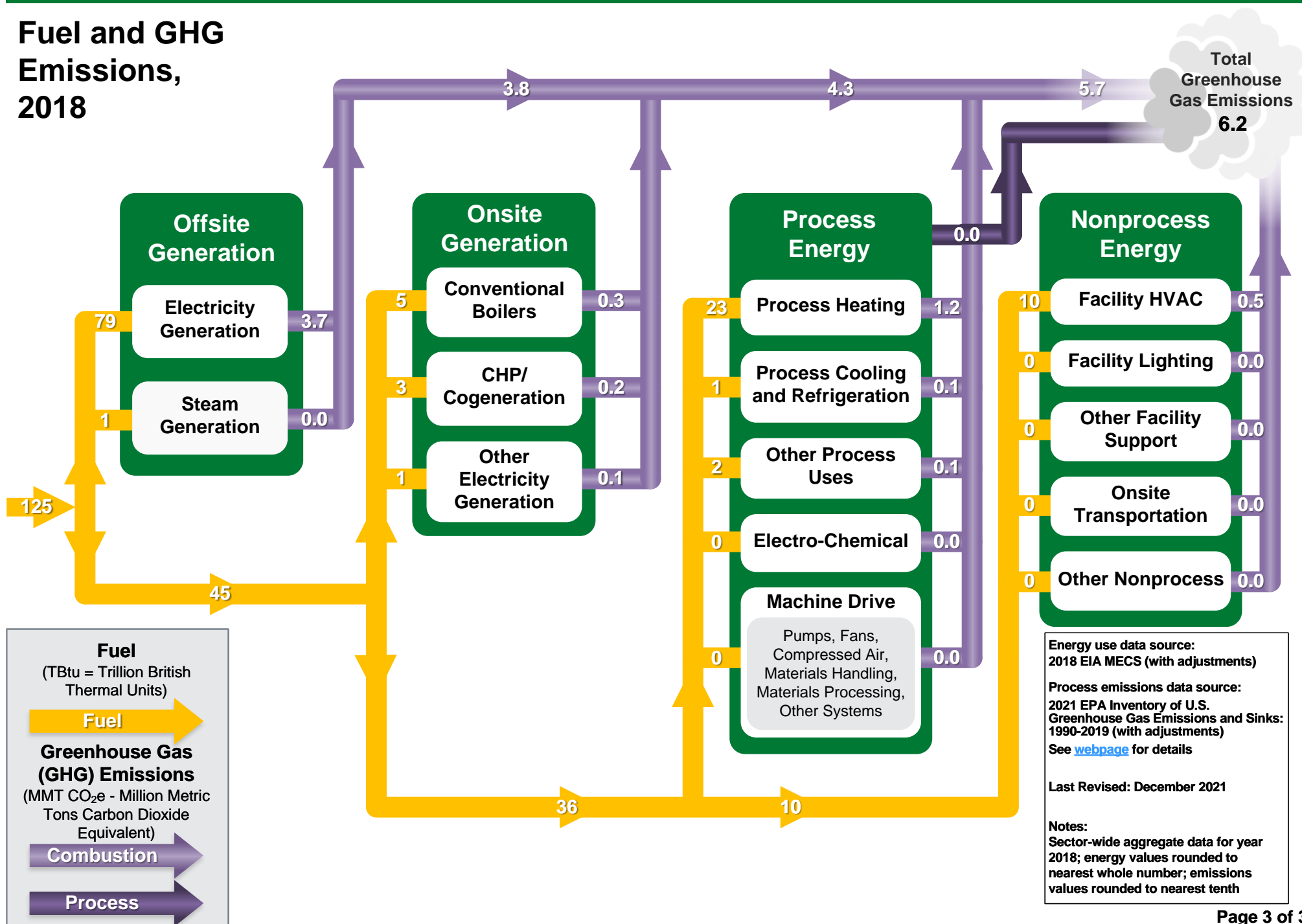


Manufacturing Carbon Footprint

Sector: Automobile and Light Duty Motor Vehicle (NAICS 33611)

Primary Energy Use: 125 TBtu
Total GHG Emissions: 6 MMT CO₂e

Fuel and GHG Emissions, 2018

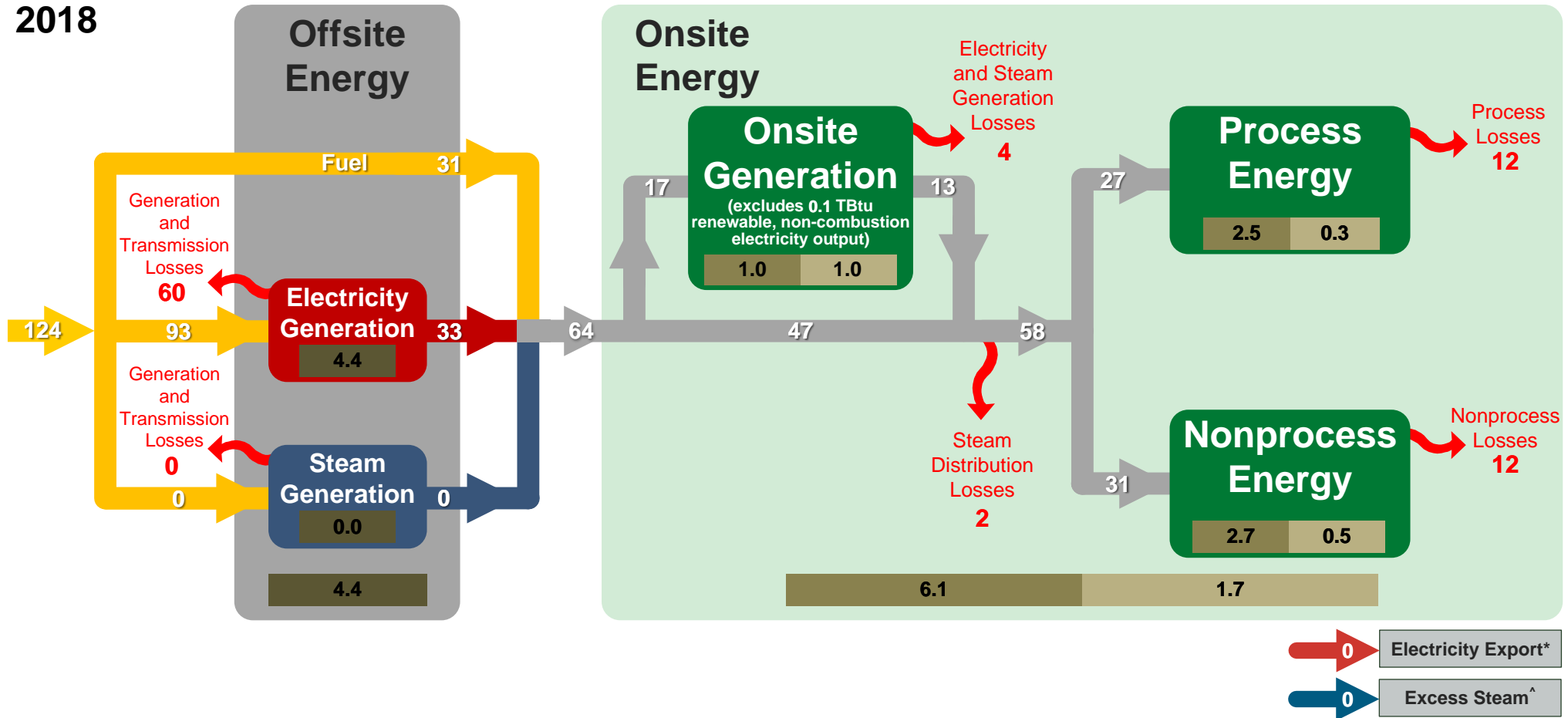


Manufacturing Energy and Carbon Footprint

Sector: Aerospace Product and Parts (NAICS 3364)

Primary Energy Use: 124 TBtu
Total GHG Emissions: 6 MMT CO₂e

Primary Energy, 2018



Energy (TBtu = Trillion British Thermal Units)	Greenhouse Gas (GHG) Emissions (MMT CO ₂ e = Million Metric Tons Carbon Dioxide Equivalent)
Fuel	Offsite
Electricity	Total Onsite
Steam	
Combined	
Losses	

Total Emissions = Offsite Emissions + Onsite (Combustion + Process) Emissions

Energy use data source: 2018 EIA MECS (with adjustments). For full information on references, definitions, assumptions, and other sectors, visit this [webpage](#)

Last Revised: December 2021

Notes:

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- Feedstock energy excluded from primary, offsite, and onsite energy values and included in Energy for All Purposes
- [^] Excess steam refers to the sales and transfer offsite or purging of surplus steam

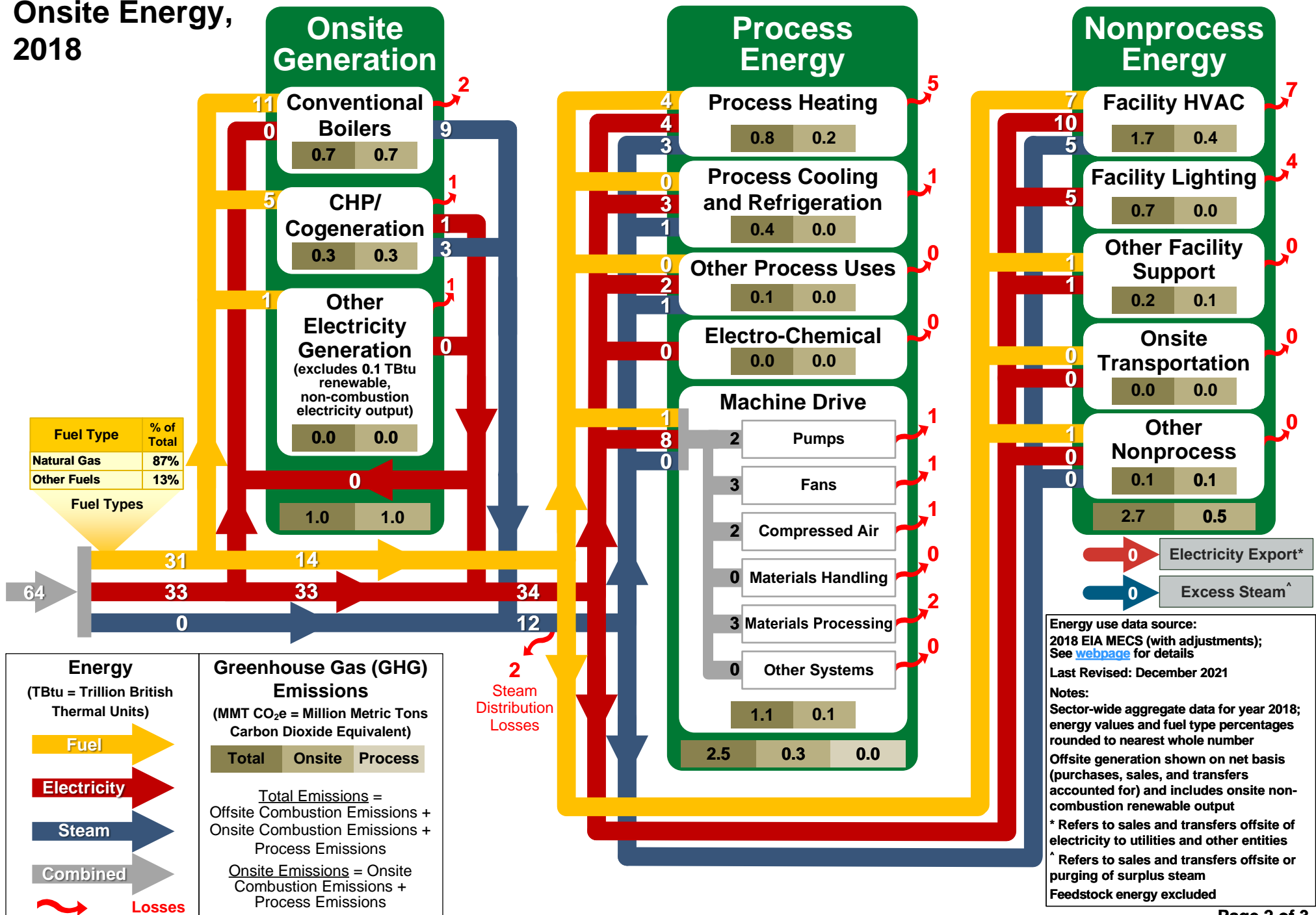
Energy for All Purposes estimated at 126 TBtu
Includes primary energy plus net energy consumed for nonfuel purposes, including feedstock use

Manufacturing Energy and Carbon Footprint

Sector: Aerospace Product and Parts (NAICS 3364)

Onsite Energy Use: 64 TBtu
Onsite Emissions: 2 MMT CO₂e

Onsite Energy,
2018



Manufacturing Carbon Footprint

Sector: Aerospace Product and Parts (NAICS 3364)

Primary Energy Use: 124 TBtu
Total GHG Emissions: 6 MMT CO₂e

Fuel and GHG Emissions, 2018

