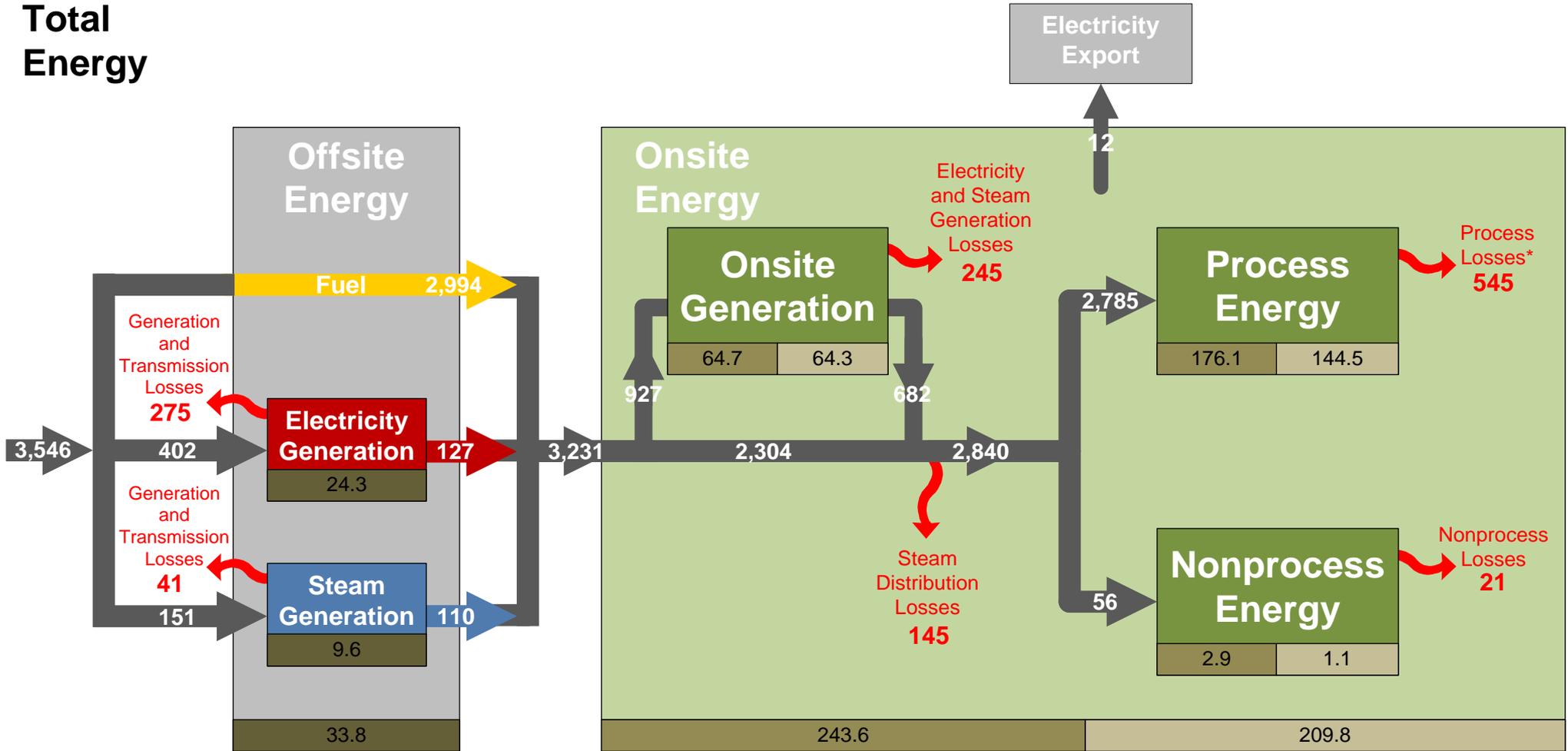


Manufacturing Energy and Carbon Footprint
Sector: Petroleum Refining (NAICS 324110)

Total Primary Energy Use: 3,546 TBtu
Total Combustion Emissions: 244 MMT CO₂e

Total Energy



Energy Use (TBtu)	All Energy
	Fuel
	Electricity
	Steam
	Losses
Combustion Emissions (MMT CO ₂ e)	Offsite
	Onsite
	Total
Total = Onsite + Offsite	

* Exhaust losses from process heating are not estimated

Data source: 2006 MECS

Published: August 2010, revised December 2010

Units: TBtu = Trillion British Thermal Units

MMT CO₂e = Million Metric Tons Carbon Dioxide Equivalent

Notes: Feedstock energy not included

Energy values <0.5 TBtu shown as 0

Manufacturing Energy and Carbon Footprint

Sector: Petroleum Refining (NAICS 324110)

Onsite Energy Use: 3,231 TBtu
 Onsite Combustion Emissions: 210 MMT CO₂e

Onsite Energy

Onsite Generation

Conventional Boilers	32.4	32.0
CHP/Cogeneration	31.7	31.7
Other Electricity Generation**	0.6	0.6
Total	64.7	64.3

Steam Generation 205
 Electricity Generation 40

Process Energy

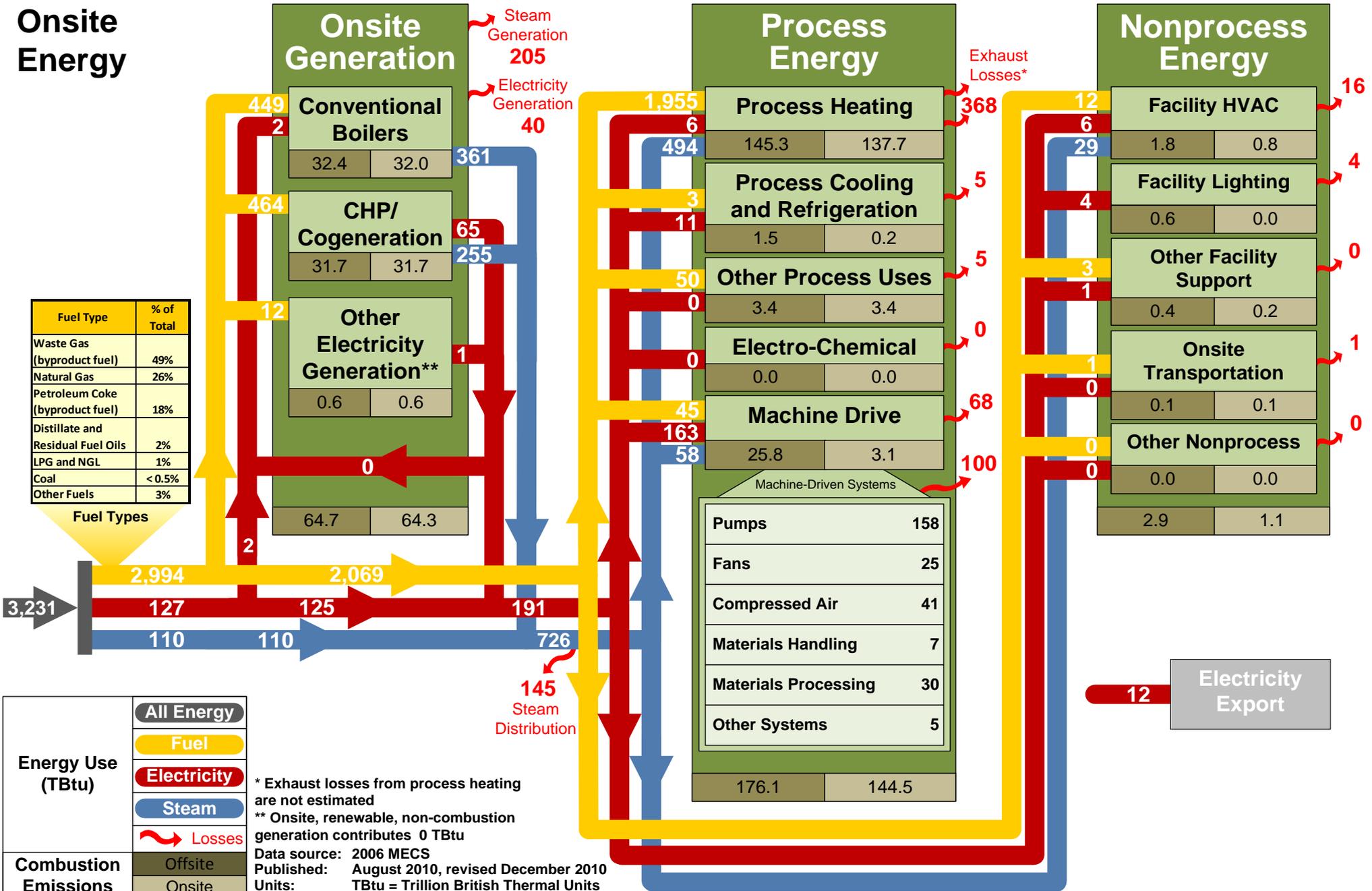
Process Heating	145.3	137.7
Process Cooling and Refrigeration	1.5	0.2
Other Process Uses	3.4	3.4
Electro-Chemical	0.0	0.0
Machine Drive	25.8	3.1
Machine-Driven Systems		
Pumps	158	
Fans	25	
Compressed Air	41	
Materials Handling	7	
Materials Processing	30	
Other Systems	5	
Total	176.1	144.5

Exhaust Losses*

Nonprocess Energy

Facility HVAC	1.8	0.8
Facility Lighting	0.6	0.0
Other Facility Support	0.4	0.2
Onsite Transportation	0.1	0.1
Other Nonprocess	0.0	0.0
Total	2.9	1.1

Fuel Type	% of Total
Waste Gas (byproduct fuel)	49%
Natural Gas	26%
Petroleum Coke (byproduct fuel)	18%
Distillate and Residual Fuel Oils	2%
LPG and NGL	1%
Coal	< 0.5%
Other Fuels	3%



Energy Use (TBtu)	All Energy
	Fuel
	Electricity
	Steam
Combustion Emissions (MMT CO ₂ e)	Offsite
	Onsite
	Total
Total = Onsite + Offsite	

* Exhaust losses from process heating are not estimated

** Onsite, renewable, non-combustion generation contributes 0 TBtu

Data source: 2006 MECS

Published: August 2010, revised December 2010

Units: TBtu = Trillion British Thermal Units

MMT CO₂e = Million Metric Tons Carbon Dioxide Equivalent

Notes: Feedstock energy not included

Energy values <0.5 TBtu shown as 0