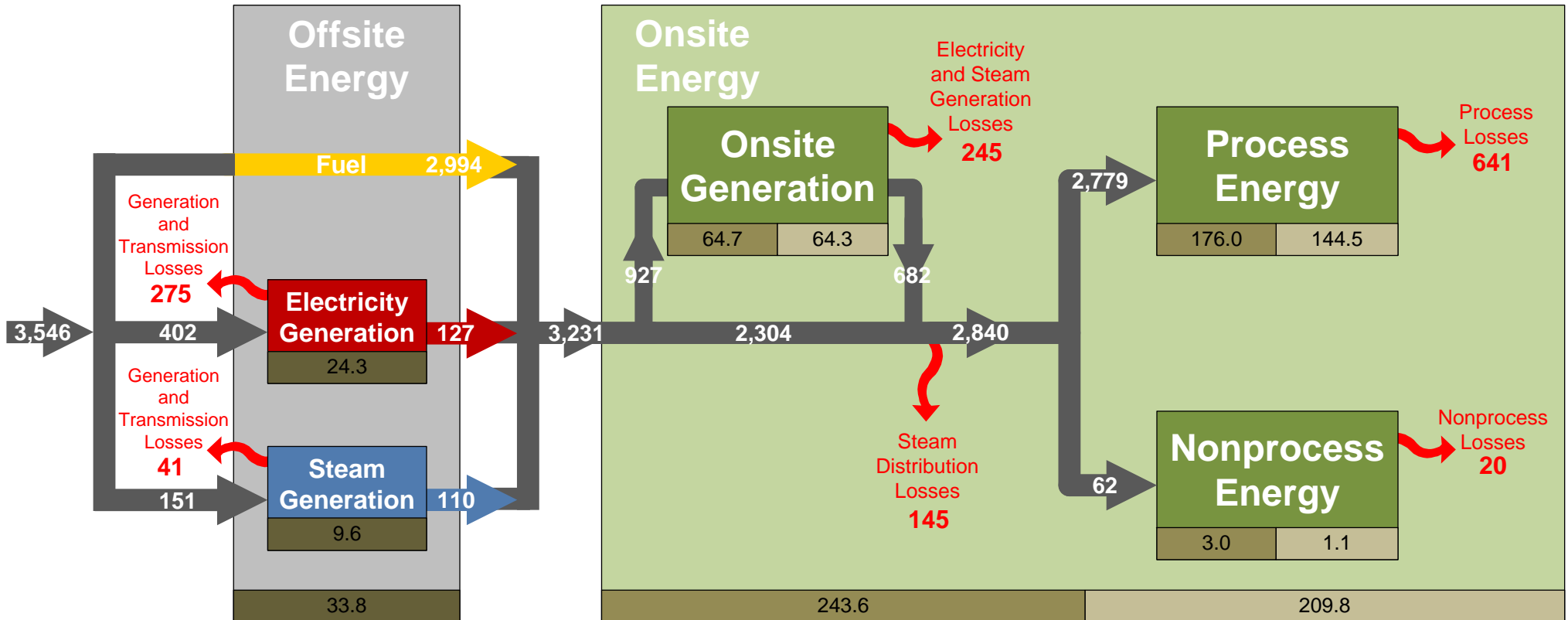


Manufacturing Energy and Carbon Footprint

Sector: Petroleum Refining (NAICS 324110)

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

Total Energy



Energy Use (TBtu = Trillion British Thermal Units)	Combustion Emissions (MMT CO ₂ e = Million Metric Tons Carbon Dioxide Equivalent)
All Energy	Offsite
Fuel	Total
Electricity	Onsite
Steam	
Losses	

Total Emissions = Offsite Emissions + Onsite Emissions

12 Electricity Export

Energy use data source: 2006 MECS (with adjustments)
 Last Revised: October 2012
 Notes: Feedstock energy not included
 Energy values <0.5 TBtu shown as 0
 Values represent aggregate data
 Offsite generation shown on net basis

Manufacturing Energy and Carbon Footprint

Sector: Petroleum Refining (NAICS 324110)

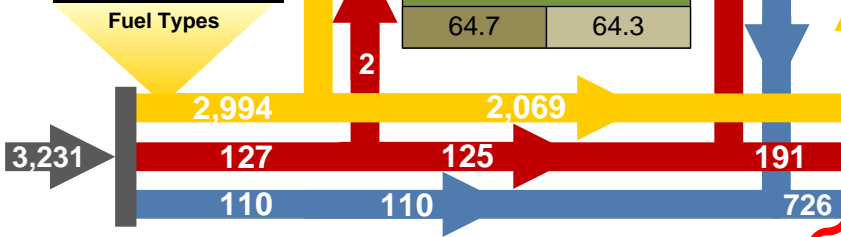
Onsite Energy Use: **3,231 TBtu**
 Onsite Combustion Emissions: **210 MMT CO₂e**

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

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%



Steam Generation Losses **205**
 Electricity Generation Losses **40**

Process Energy

Process Heating	143.5	137.7
Process Cooling and Refrigeration	1.7	0.2
Other Process Uses	4.4	3.4
Electro-Chemical	0.0	0.0
Machine Drive	26.4	3.1
Machine-Driven Systems		
Pumps	179	
Fans	29	
Compressed Air	46	
Materials Handling	8	
Materials Processing	34	
Other Systems	6	
Total	176.0	144.5

145 Steam Distribution Losses

Nonprocess Energy

Facility HVAC	1.7	0.8
Facility Lighting	0.6	0.0
Other Facility Support	0.4	0.2
Onsite Transportation	0.1	0.1
Other Nonprocess	0.2	0.0
Total	3.0	1.1

12 Electricity Export

Energy Use
(TBtu = Trillion British Thermal Units)

- All Energy
- Fuel
- Electricity
- Steam
- Losses

Combustion Emissions
(MMT CO₂e = Million Metric Tons Carbon Dioxide Equivalent)

Total	Onsite
Total Emissions = Offsite Emissions + Onsite Emissions	

Energy use data source: 2006 MECS (with adjustments)
 Last Revised: October 2012

Notes:
 Feedstock energy not included
 Energy values <0.5 TBtu shown as 0
 Values represent aggregate data
 Offsite generation shown on net basis

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