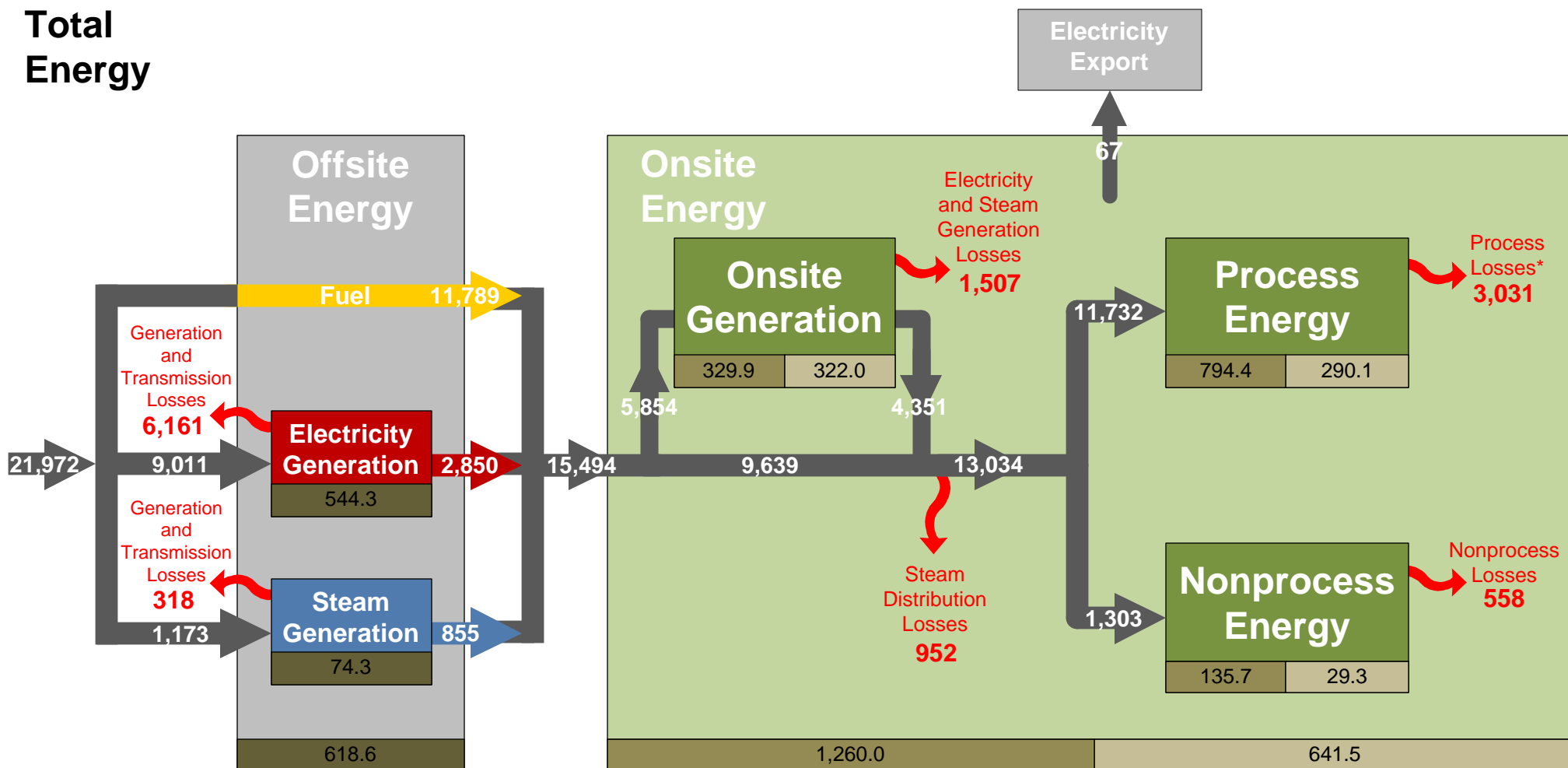


# Manufacturing Energy and Carbon Footprint

## Sector: All Manufacturing (NAICS 31-33)

Total Primary Energy Use: 21,972 TBtu  
Total Combustion Emissions: 1,260 MMT CO<sub>2</sub>e

### Total Energy



Energy Use (TBtu)	All Energy
	Fuel
	Electricity
	Steam
	Losses
Combustion Emissions (MMT CO <sub>2</sub> 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 CO<sub>2</sub>e = Million Metric Tons Carbon Dioxide Equivalent

Notes:

Feedstock energy not included

Energy values <0.5 TBtu shown as 0

Prepared for the Industrial Technologies Program (ITP) by Energetics Incorporated

# Manufacturing Energy and Carbon Footprint

## Sector: All Manufacturing (NAICS 31-33)

**Onsite Energy Use: 15,494 TBtu**  
**Onsite Combustion Emissions: 642 MMT CO<sub>2</sub>e**

### Onsite Energy

### Onsite Generation

#### Conventional Boilers

122.5 | 114.7

#### CHP/ Cogeneration

205.4 | 205.4

#### Other Electricity Generation\*\*

1.9 | 1.9

329.9 | 322.0

Steam Generation 1,299

Electricity Generation 208

952  
Steam Distribution

### Process Energy

#### Process Heating

390.0 | 260.8

#### Process Cooling and Refrigeration

41.3 | 1.9

#### Other Process Uses

19.8 | 11.2

#### Electro-Chemical

39.3 | 0.0

#### Machine Drive

304.0 | 16.2

#### Machine-Driven Systems

Pumps	632
Fans	349
Compressed Air	403
Materials Handling	311
Materials Processing	574
Other Systems	110

794.4 | 290.1

Exhaust Losses\*

1,288

92

25

155

463

1,009

### Nonprocess Energy

#### Facility HVAC

76.6 | 22.3

#### Facility Lighting

37.8 | 0.0

#### Other Facility Support

13.3 | 1.8

#### Onsite Transportation

5.6 | 4.2

#### Other Nonprocess

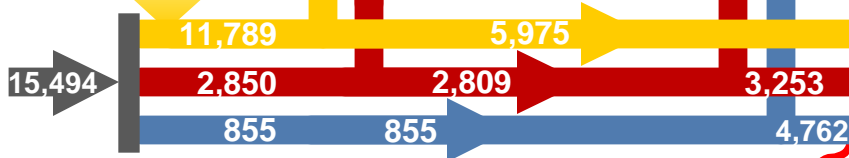
2.5 | 1.0

135.7 | 29.3

67  
Electricity Export

Fuel Type	% of Total
Natural Gas	47%
Byproduct Fuels	37%
Coal	9%
Distillate and Residual Fuel Oils	3%
LPG and NGL	1%
Other Fuels	4%

#### Fuel Types



### Energy Use (TBtu)

All Energy
Fuel
Electricity
Steam
Losses

### Combustion Emissions (MMT CO<sub>2</sub>e)

Offsite
Onsite
Total

Total = Onsite + Offsite

\* Exhaust losses from process heating are not estimated

\*\* Onsite, renewable, non-combustion generation contributes 4 TBtu

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Feedstock energy not included

Energy values <0.5 TBtu shown as 0