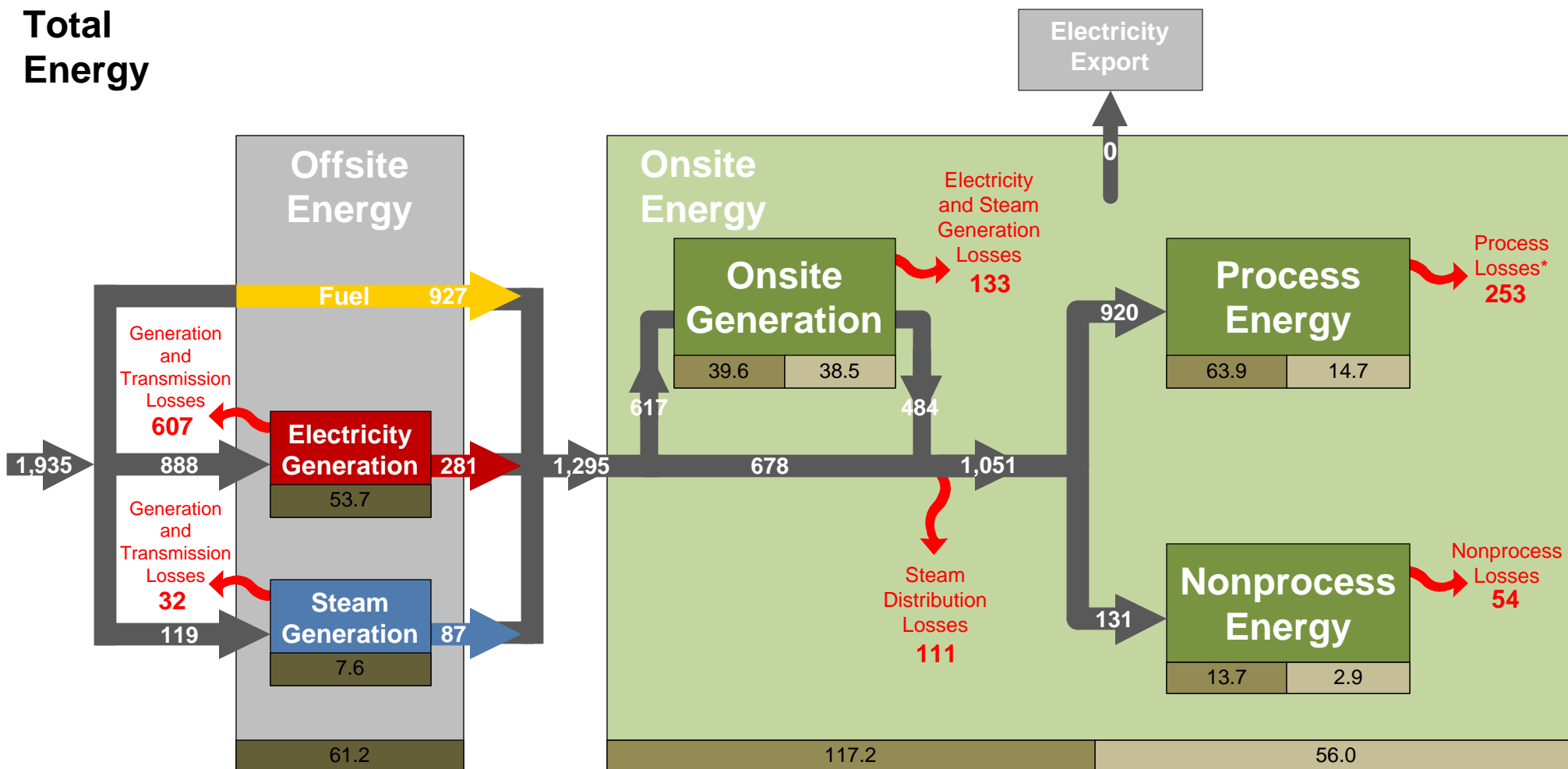


Manufacturing Energy and Carbon Footprint

Sector: Food and Beverage (NAICS 311, 312)

Total Primary Energy Use: 1,935 TBtu
Total Combustion Emissions: 117 MMT CO₂e

Total Energy



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

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

Manufacturing Energy and Carbon Footprint

Sector: Food and Beverage (NAICS 311, 312)

Onsite Energy Use: 1,295 TBtu
Onsite Combustion Emissions: 56 MMT CO₂e

Onsite Energy

Onsite Generation

Conventional Boilers

25.4 24.2

CHP/ Cogeneration

14.0 14.0

Other Electricity Generation**

0.2 0.2

39.6 38.5

Steam Generation 127

Electricity Generation 7

7

362

17

105

1

1

6

316

275

292

87

87

554

111

Steam Distribution

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

Process Energy

Process Heating

22.4 12.7

Process Cooling and Refrigeration

14.5 0.2

Other Process Uses

1.4 0.8

Electro-Chemical

0.0 0.0

Machine Drive

25.6 1.0

Machine-Driven Systems

Pumps	46
Fans	21
Compressed Air	22
Materials Handling	17
Materials Processing	73
Other Systems	19

63.9 14.7

Exhaust Losses*

94

28

2

0

42

88

Nonprocess Energy

Facility HVAC

7.1 1.9

Facility Lighting

4.0 0.0

Other Facility Support

1.8 0.5

Onsite Transportation

0.4 0.2

Other Nonprocess

0.4 0.2

13.7 2.9

29

20

2

3

0

0

0

0

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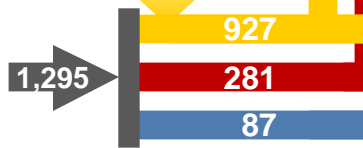
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Fuel Type	% of Total
Natural Gas	73%
Coal	18%
Distillate and Residual Fuel Oils	5%
Biomass	3%
Waste Gas (byproduct fuel)	1%
LPG and NGL	< 0.5%
Other Fuels	< 0.5%

Fuel Types



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

Feedstock energy not included

Energy values <0.5 TBtu shown as 0