

Living in Harmony with Nature – Sustainability, Energy Conservation & Recycling

Or

Why it Matters and We Can All Make a Difference



The difference between genius and stupidity is that genius has its limits.

Albert Einstein



TRUE OR FALSE
ATTITUDE = BEHAVIOR



Environmental Impact of Buildings

65.2% of total U.S. electricity consumption

36 +% of total U.S. primary energy use

30% of total U.S. greenhouse gas emissions

136 million tons of demolition waste in the U.S.

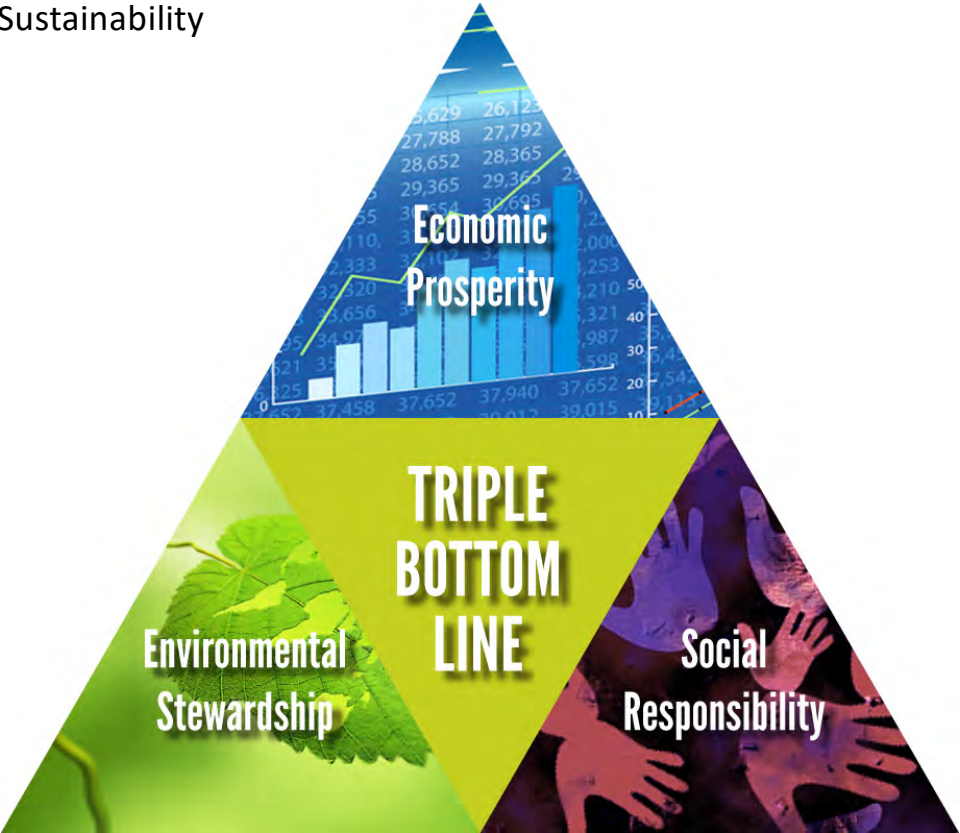
12% of potable water in the U.S.

3 billion tons/year of raw materials



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This is Sustainability



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Taking actions that affect how businesses
turn a profit so that they will be able to
continue for years to come.”
Adam Werbach, Strategy For Sustainability



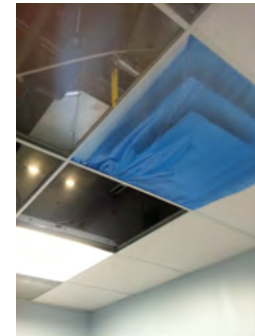
Thinking Globally and Acting Locally

"Taking actions which demonstrate that other people matter."

"Taking actions that protect and value cultural diversity from generation to generation."

SOCIAL RESPONSIBILITY

Putting Neighborhoods First and Helping Local Communities Thrive





LEED PROJECT OF THE YEAR:
RESIDENTIAL COMMUNITY INCLUSIVENESS
913 New York Ave, Union City, NJ



The project team included: Chartier Group; Minervini Vandermark Architecture; and Simplex Homes



NEW JERSEY

LEED PROJECT OF THE YEAR: RESIDENTIAL PASSIVE HOUSE

Candela Lofts



The project team included: City of Hoboken; nastasi architects; Steven Winter Associates; bldgtyp; Bijou Properties; Concord Atlantic Engineers; Christie Engineering; Bamco



NEW JERSEY

LEED PROJECT OF THE YEAR: SCHOOLS

Frank J. Gargiulo Campus,
Hudson County Schools of Technology



© 2018 Tom Drone Frank J. Gargiulo Campus, Hudson County Schools of Technology, Secaucus, NJ

The project team included: Hudson County Improvement Authority; Hudson County Schools of Technology; Joseph Sirangelo, Director of Research, Evaluation & Planning, HCST; RSC Architects; DMR Architects; Terminal Construction Corporation; MAST Construction Services, Inc.; McManimon, Scotland & Baumann; Johnson & Urban; PS&S; Metropolitan Technologies; Lewis S. Goodfriend & Associates; On-Tech Consulting; M&E Engineers; Raymond/Raymond Associates; Stages Consultants; Concord Engineering; Neglia Engineering; T & M Associates; Maser Consulting; Professional Systems Engineering; and Giampietro Associates.



NEW JERSEY

HONORABLE MENTION: COMMERCIAL COMMUNITY DEDICATION

Subaru of America Headquarters



The project team included: Granum A/I; Turner; O'Donnell and Naccaratto; AKF Engineers; Drago Illumination; Metropolitan Acoustics; Brandywine Realty Trust; New Jersey Economic Development Authority; and City of Camden.



NEW JERSEY

HONORABLE MENTION: COMMERCIAL LEED ZERO INITIATIVE

Colgate-Palmolive Burlington

Driving Towards LEED Zero



The project team included: Colgate-Palmolive Burlington Production Team; Re:Vision; and ProTech.



NEW JERSEY

HONORABLE MENTION: SUSTAINABLE
PRACTICES STORM AND PUBLIC SPACE RESILIENCY
700 Jackson Redevelopment & Resiliency Park

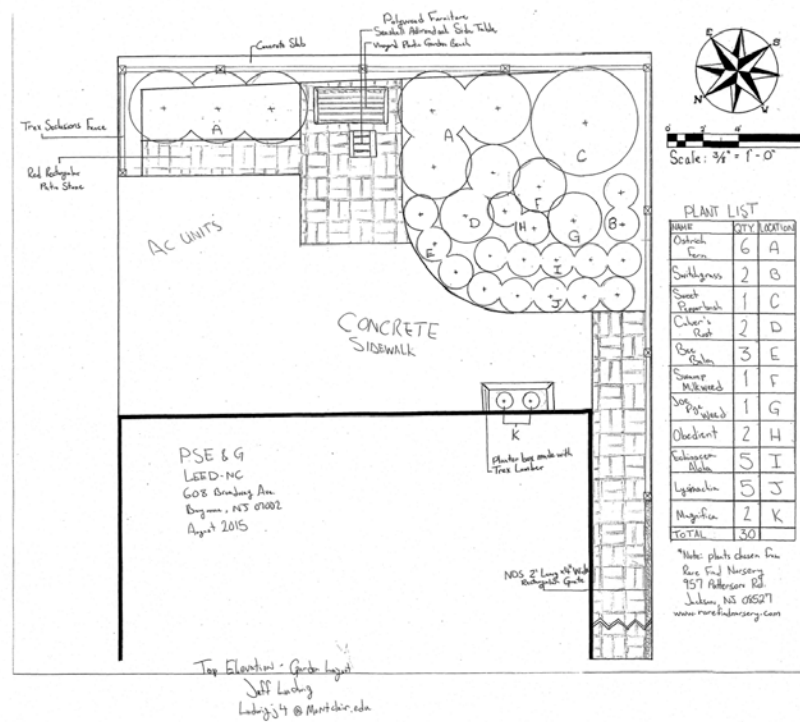


The project team included: Bijou Properties; Intercontinental Real Estate; Marchetto Higgins Stieve Architects; Langan Engineering; Arterial Studies; Tishman New Jersey; ICOR; Harman Group; and Greenbaum Rowe Smith & Davis.



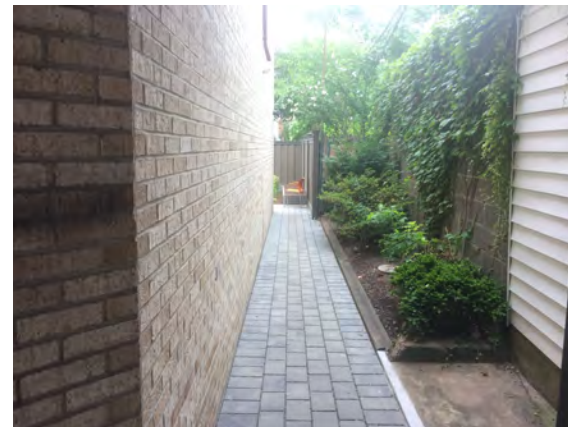
NEW JERSEY

Student Designed Rain Garden



Yes, this is hand drawn...I required that it be done this way!

Side by Side



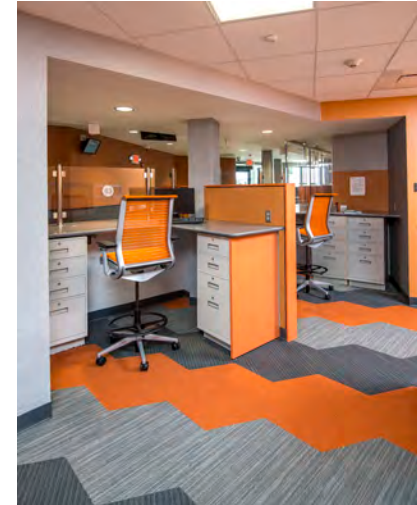
Environmental Pluses

- Trex Fencing utilized 100,800 LDPE Bags:
 - Equaling 10 barrels of oil
 - Keeping 1220 lbs of plastic out of the landfill
- Plantings Reduce Heat Island Effect
- Rain Water Percolates On Site
- Drainage Corrected
- Outdoor Area Pleasant for Employees to Use



Materials Matter





Need I Say More?

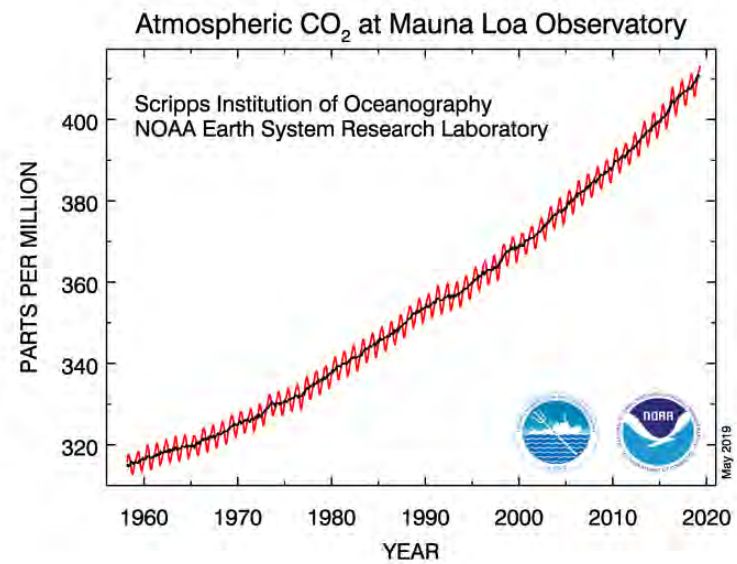
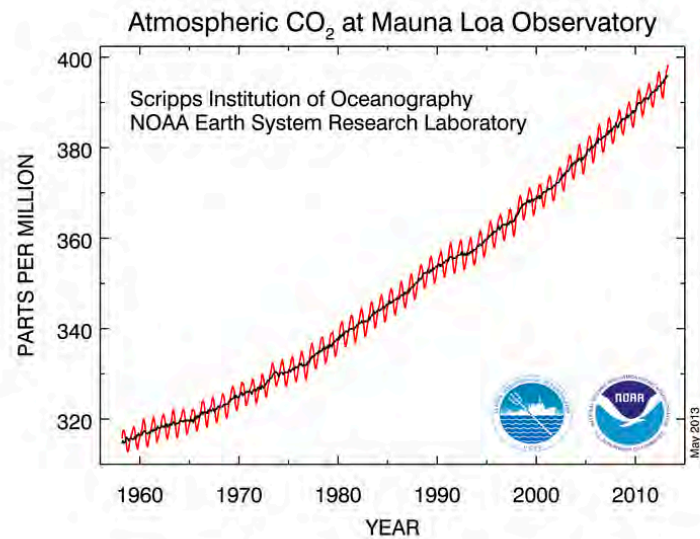
PNC Bank Study Finds that LEED Certified Bank Branches yield
\$461,300 more per employee than Non-Certified Branches.



The Relationship between Corporate Sustainability and Firm Financial Performance, Conlon and Glavas, 2012

“The cheapest, cleanest energy is the energy you don’t use”





DeFeo Associates

Global warming does not mean just warmer temperatures. More energy (entropy) in the system means more extreme weather (chaos).



New Jersey's Vulnerability to Sea Level Rise



Less than 4 feet above sea level



4-10 feet above sea level

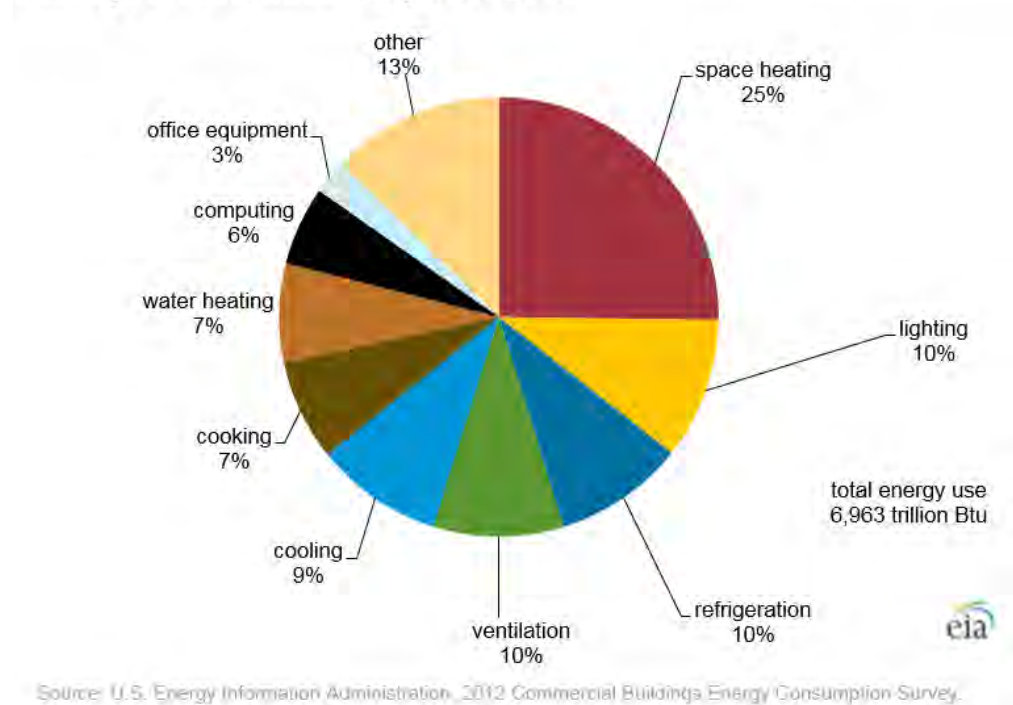


More than 10 feet above sea level

Railroads that carry passengers to the shore

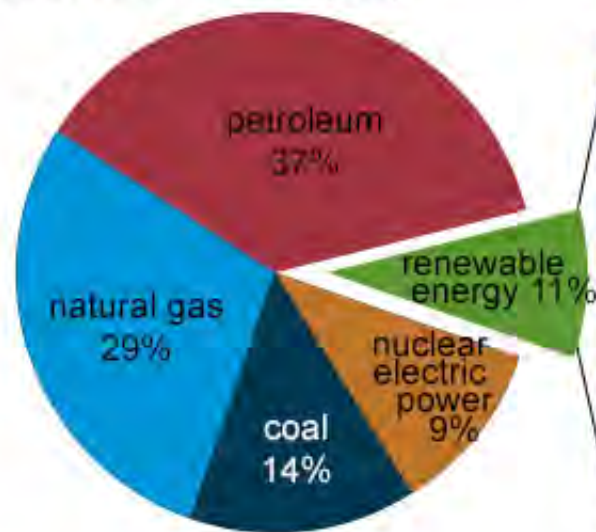
Source: US EPA

Figure 5. Space heating demanded the most overall energy use in commercial buildings in 2012, followed by other uses

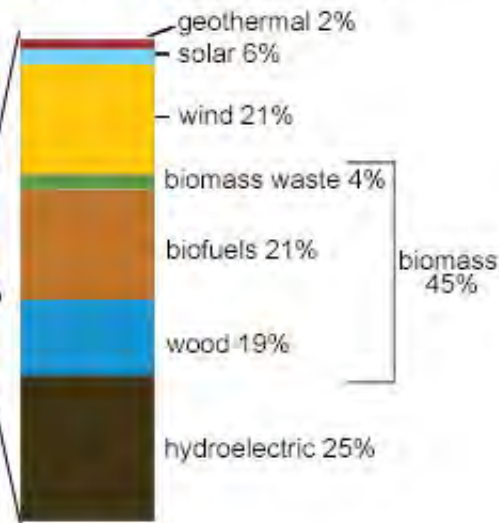


U.S. energy consumption by energy source, 2017

Total = 97.7 quadrillion
British thermal units (Btu)



Total = 11.0 quadrillion Btu



Note: Sum of components may not equal 100% because of independent rounding.
Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3 and 10.1, April 2018, preliminary data

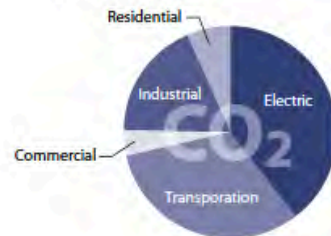
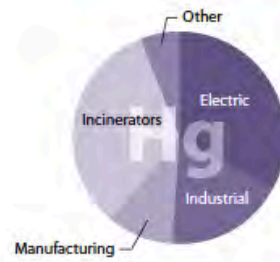
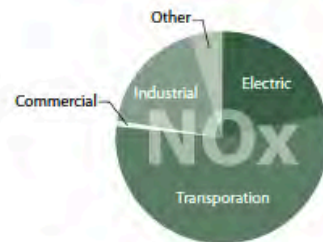
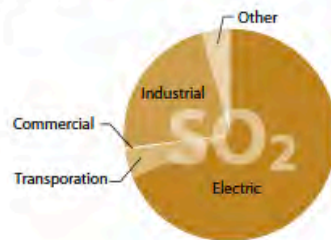
eia



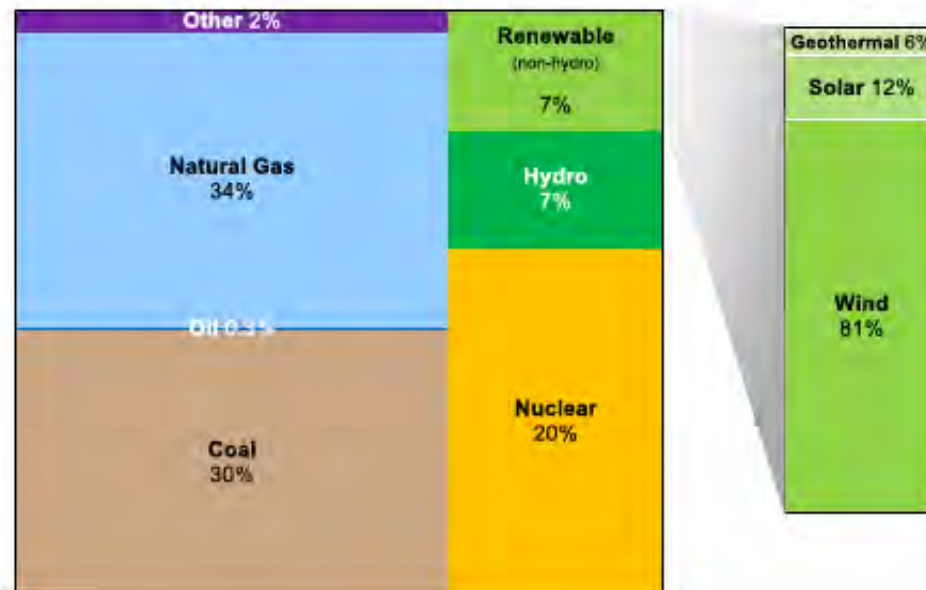
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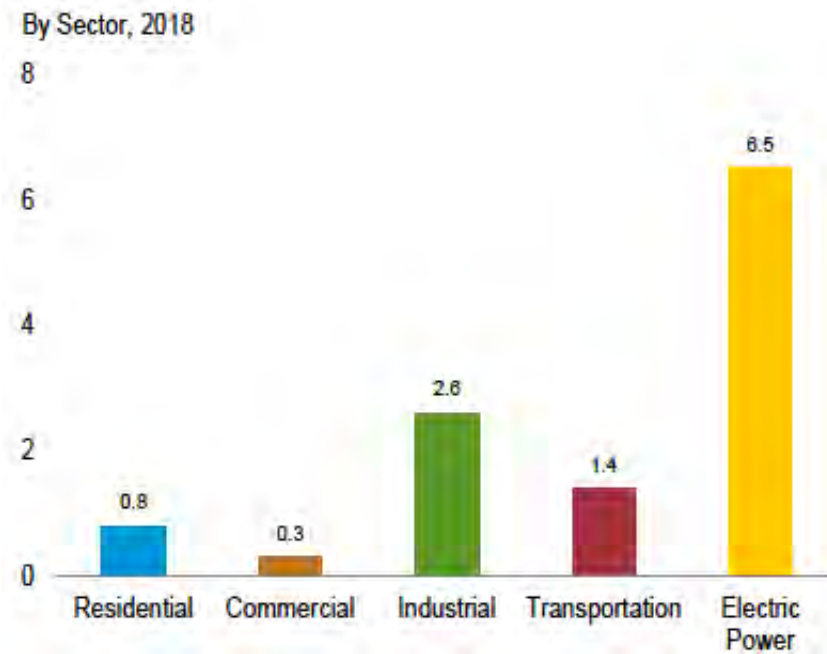
FIGURE 1
U.S. Electric Industry Contribution to
Total Emissions



U.S. Electricity Generation by Fuel Type (2016)



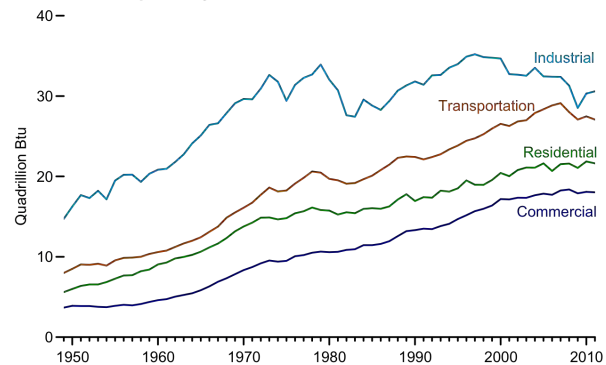
Renewable Energy Consumption By Sector



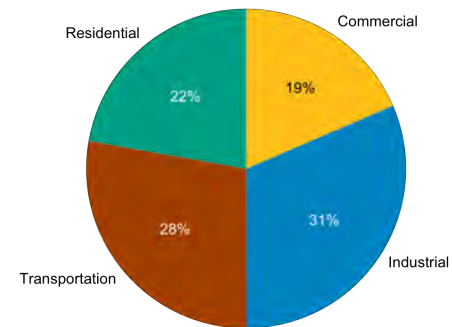
Source EIA

Figure 2.1a Energy Consumption Estimates by Sector Overview

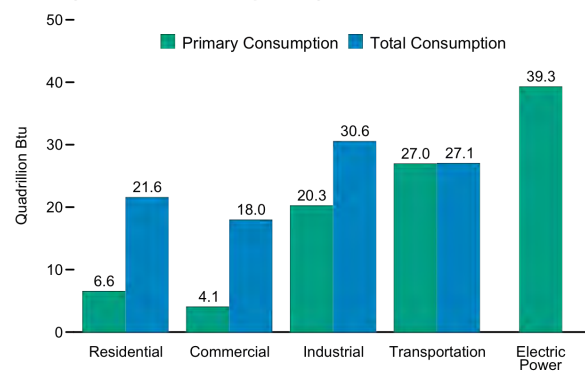
Total Consumption by End-Use Sector, 1949-2011



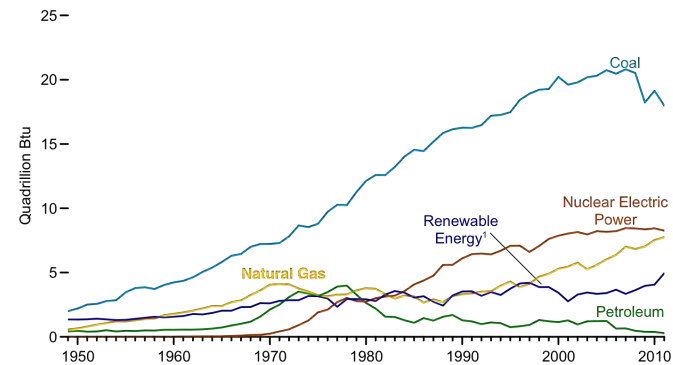
End-Use Sector Shares of Total Consumption, 2011



Primary and Total Consumption by Sector, 2011



Electric Power Sector, 1949-2011



¹ Conventional hydroelectric power, geothermal, solar/photovoltaic, wind, and biomass.
 Note: • See "Primary Energy Consumption" in Glossary. • Sum of components may not equal 100 percent due to independent rounding.

Sources: Tables 2.1a and 2.1f.



"I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait till oil and coal run out before we tackle that."

Thomas Edison, 1931, in a conversation with Henry Ford and Harvey Firestone



Before



After





Before



After



Before



After

The Top Ten List of Actions to Save Energy

- ☐ Turn out the lights when you are leaving a room for more than 10 minutes.
- ☐ Turn off the lights at the end of the work day.
- ☐ Use energy efficient task lighting and natural day lighting when possible.
- ☐ Set Computers to go to sleep in under 5 minutes and hibernate in 30 minutes
- ☐ Avoid screen savers that run continuously, they waste energy. Set the computer to turn off instead.
- ☐ Turn off TV's, computers, copiers, printers, monitors & speakers when leaving for the day.
- ☐ Use power strips with energy saving features to eliminate vampire power use.
- ☐ Set thermostats to the appropriate temperature and leave them alone...Use timers correctly.
- ☐ Do not tamper with HVAC controls! This will leave the heat and air conditioning running at the same time.
- ☐ Avoid portable heaters and fans.



<http://bit.ly/EnergyVideo19>

Where it all began - Recycling

- 1982 – “Recycling in the ‘80’s”
- 1987 – Mandatory Recycling
- “Floor” of Recycling “3 Materials, plus Leaves”
- Glass Containers, Aluminum Cans and Newspaper
- NO ONE Exempt!!!
- Down to “Kitchen Level”
- 1993 Plan and Integrated Waste Management





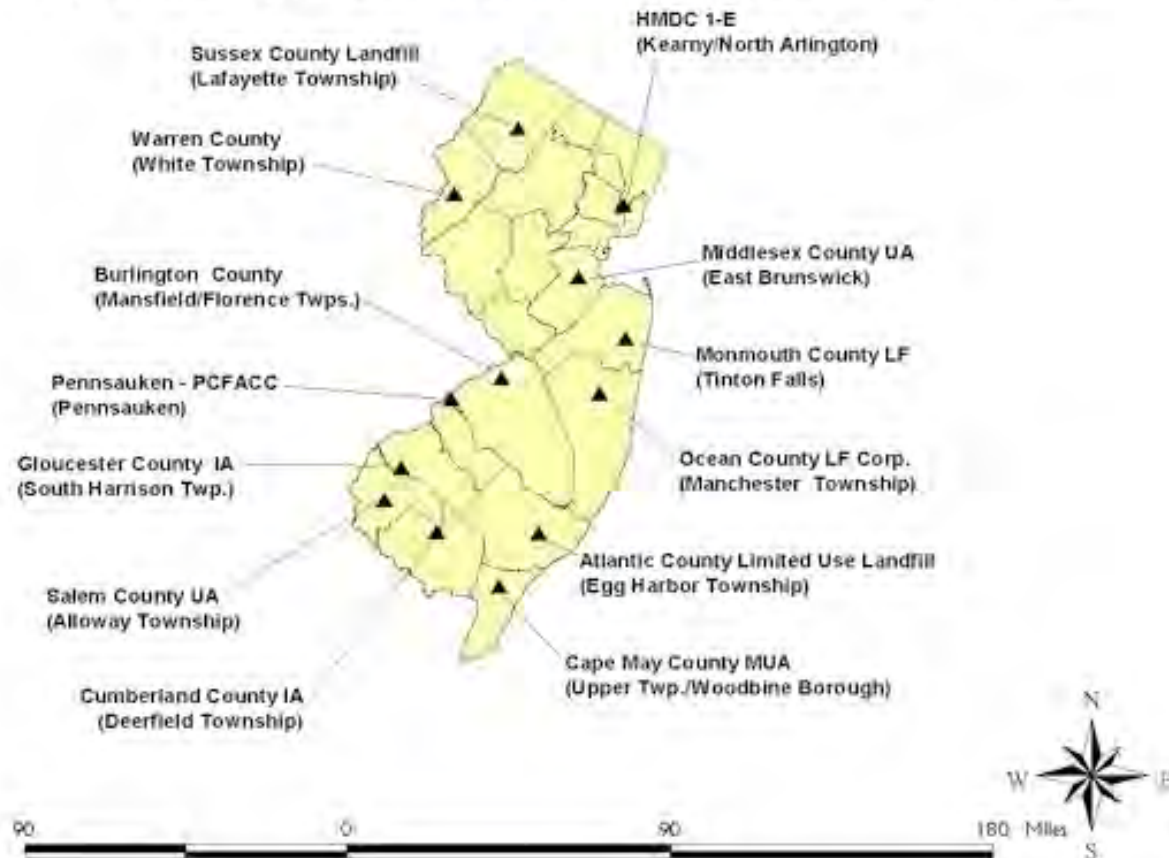


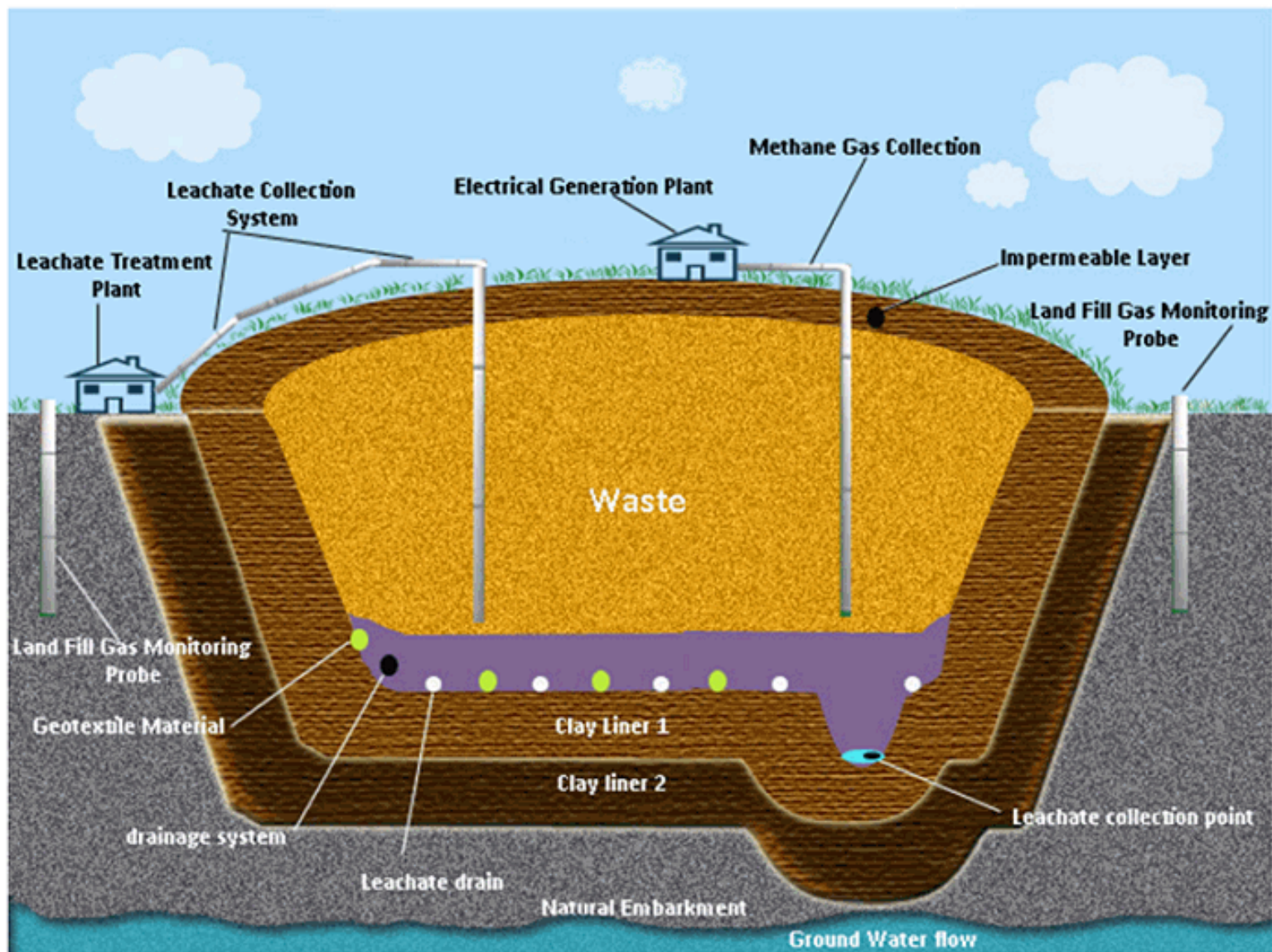
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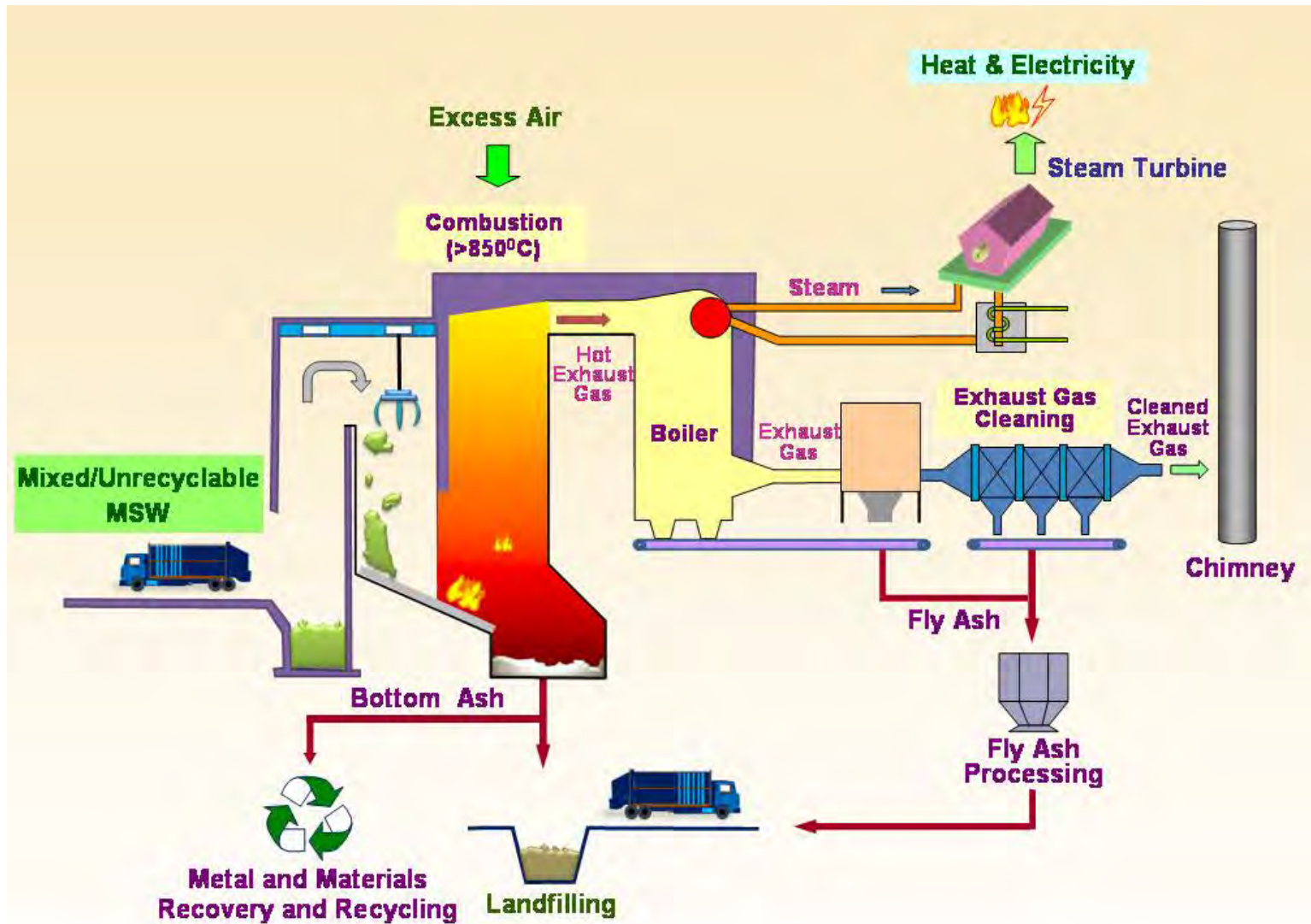
PHOTO: MATT CORDY/GETTY IMAGES

Operating Commercial Sanitary Landfills









Resource Recovery Facilities

- ▶ Essex County – 3,000 TPD
- ▶ Union County – 1,440 TPD
- ▶ Camden County – 1,050 TPD
- ▶ Gloucester County – 575 TPD

TOTAL CAPACITY = 6,065 TPD



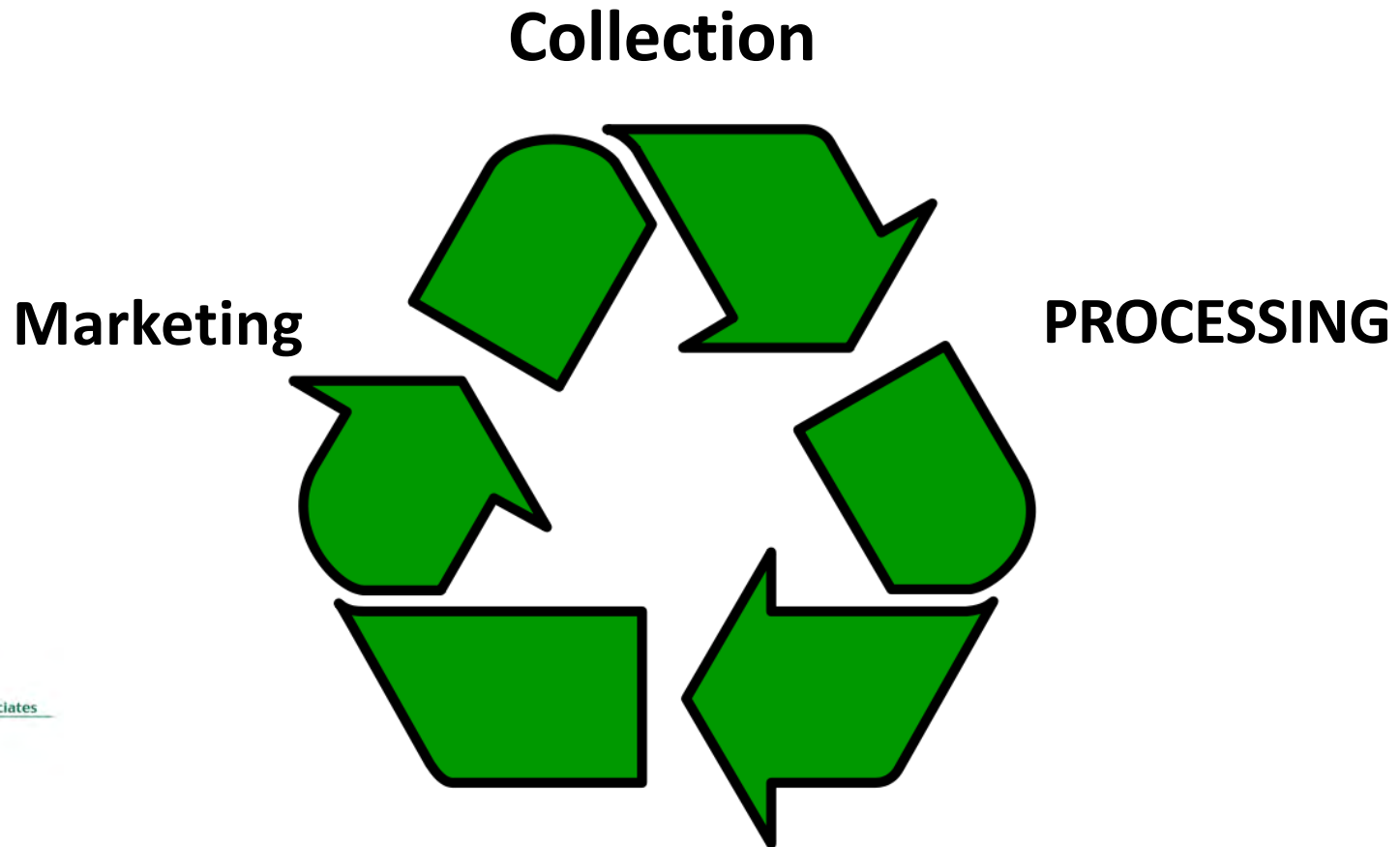
Source or Waste Reduction



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Photo credit: Bob Mugaas, U of MN

Significance of “the Chasing Arrows”





Find the Problem





Best Buy, Best Before; What's the Difference?

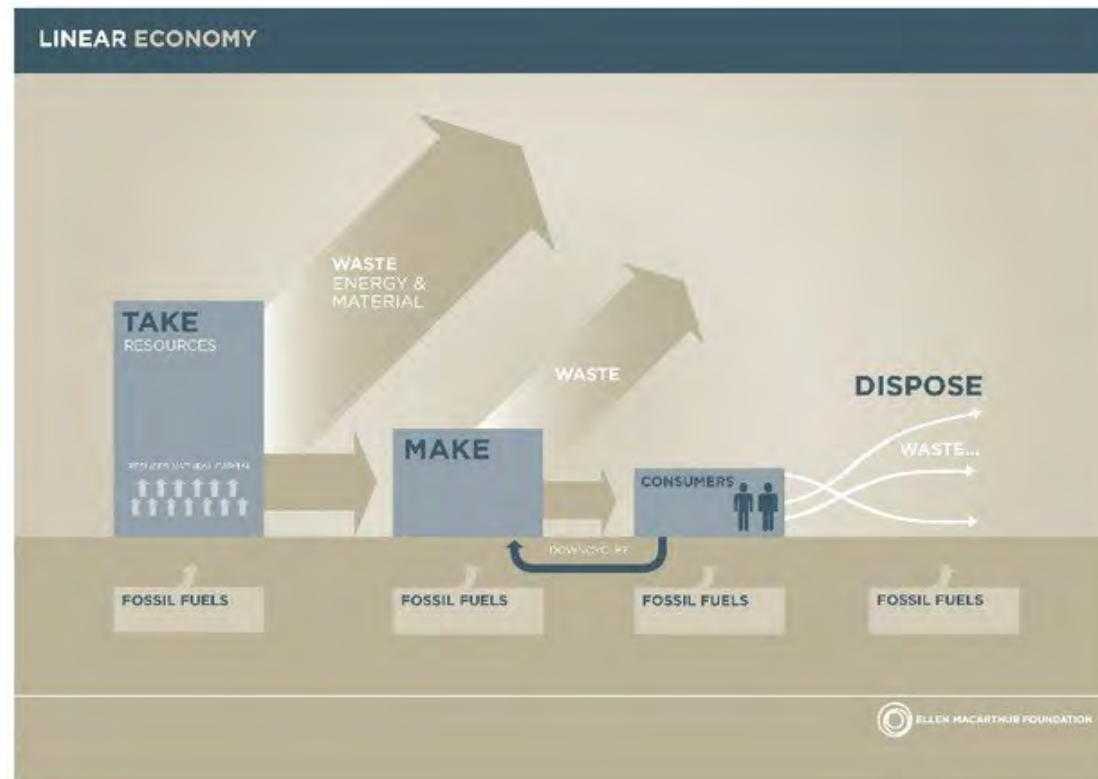
- There aren't any differences!
- Arbitrary dates put on by the Manufacturer
- Their best suggestion/opinion for when it's still "Fresh"
- NOT FDA regulated
- Manufacturers benefit with increased sales from discarded food, and it's still fresh and edible



Composting is Easy



The Old



The New

OUTLINE OF A CIRCULAR ECONOMY

PRINCIPLE

1

Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows
ReSOLVE levers: regenerate, virtualise, exchange

PRINCIPLE

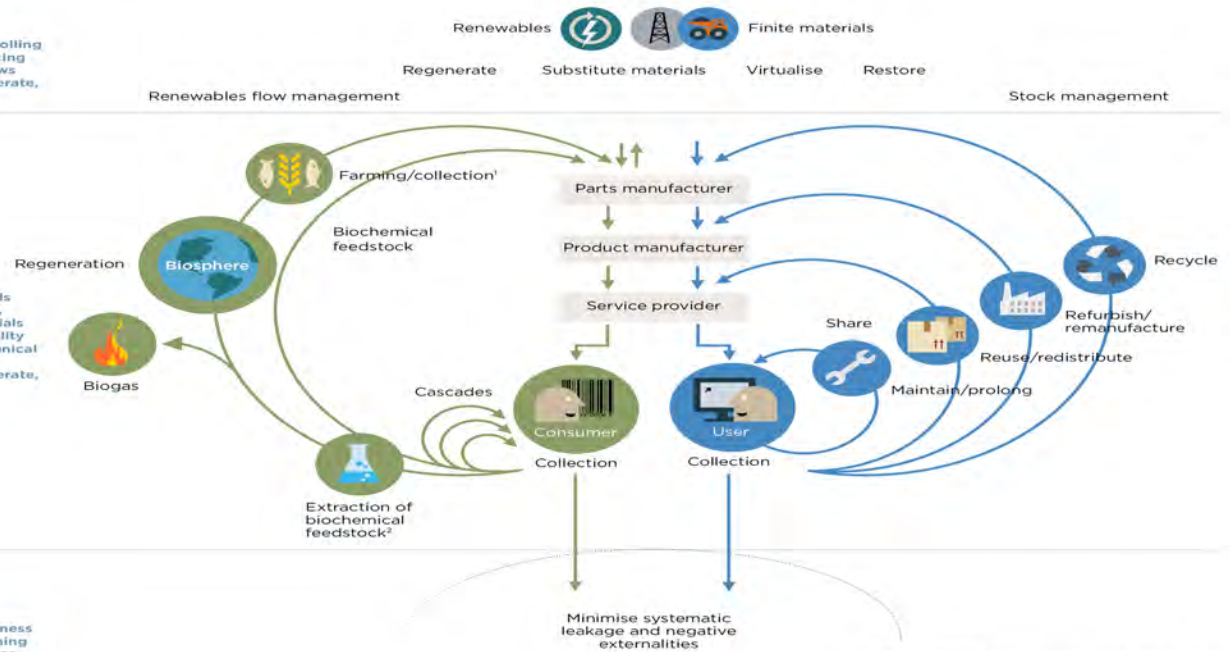
2

Optimise resource yields by circulating products, components and materials in use at the highest utility at all times in both technical and biological cycles
ReSOLVE levers: regenerate, share, optimise, loop

PRINCIPLE

3

Foster system effectiveness by revealing and designing out negative externalities
All ReSOLVE levers



1. Hunting and fishing
2. Can take both post-harvest and post-consumer waste as an input
Source: Ellen MacArthur Foundation, SUN, and McKinsey Center for Business and Environment; Drawing from Braungart & McDonough, Cradle to Cradle (C2C).