



Environmental Achievements Macungie Assembly Operations Macungie, PA



Overview

The Mack Trucks Inc., Macungie Assembly Operations assembles heavy-duty trucks from pre-manufactured components. The plant houses two chassis assembly lines, three cab assembly lines, an engine groom line, a modification center, a tire warehouse, a final department and a parts warehouse on 283 acres in western Lehigh County, PA.

In operating the Macungie facility, Mack has been striving to not only meet but to exceed expectations of responsible environmental management, in line with the company's core corporate value of Care for the Environment. Since 2002, numerous projects were developed and undertaken with defined targets and objectives. These projects included:

1. Development of an Environmental Management System that would meet the ISO 14001 requirements;
2. Elimination of hazardous air pollutants (HAP's) in paint purge solvent;
3. Elimination of heavy metals in basecoat paints;
4. Targeted reductions in waste to landfill by 2% every year normalized with production data;
5. Conversion from reliance on #6 fuel oil to natural gas to reduce emissions of CO₂, nitrogen oxide and sulfur dioxide, and x and reduce overall energy consumption with more efficient equipment;
6. Implementation of the Siemens Energy Management Program;
7. Elimination of "black-" and "grey listed" chemicals;
8. Participation in EPA Climate Leaders Program; and
9. Use of green energy.

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All of these projects have a direct positive impact on the surrounding community by decreasing waste to landfill, working towards improving overall air quality, reduction in toxic chemical use, resource conservation and improved energy efficiency. Since all of these goals and objectives were handled through our environmental management system, employees were continually informed on status and progress of these goals and objectives.

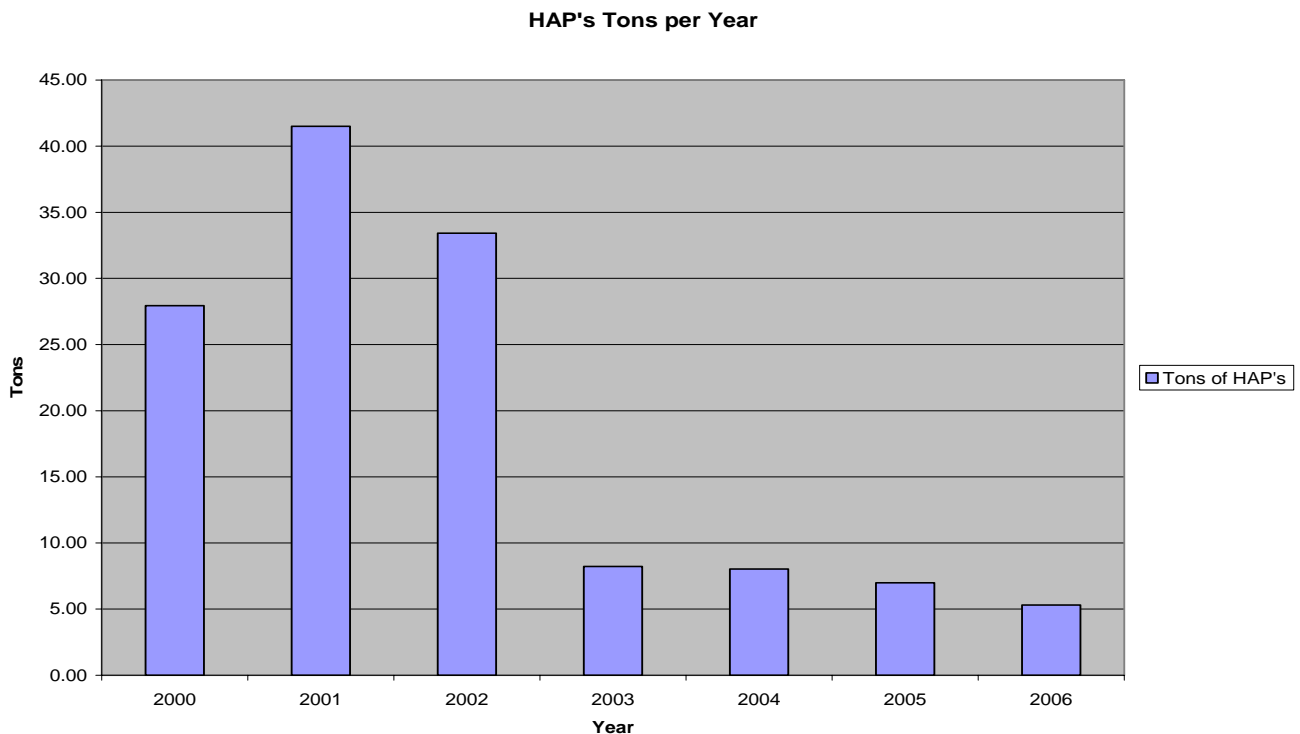
ISO 14001 Certifications

- Recommended for certification to ISO 14001:1996 standard in December 2003.
- Upgraded to the ISO 14001:2004 standard in June 2005.
- Recertified to the ISO 14001:2004 standard in June 2006.

Elimination of Hazardous Air Pollutants (HAP's) in Paint Purge Solvent

Macungie has incorporated a purge solvent that is free of hazardous air pollutants (HAP's). This action resulted in:

- A decrease of HAP's emissions by nearly 83% from 2001 to 2005.
- A decrease in HAP's per unit produced from 6.68 pounds per unit in 2001 to 0.65 pounds per unit in 2005.



Elimination of Heavy Metals in Basecoat Paints

Use of paints developed in conjunction with DuPont has allowed for elimination of heavy metals, mainly lead and chromium compounds in basecoats. Four (4) of eight (8) chemicals have been removed from Macungie's Toxic Release Inventory (TRI) report since 2001.

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Targeted Reductions in Waste to Landfill

A Waste Hunters Team was developed consisting of both management and hourly employees to explore new opportunities in recycling. The result is a reduction of waste to landfill per unit of 30 percent – from 199.9 pounds per unit in 2004 to 139 pounds per unit in 2006. These reductions are a result of increased recycling activities and awareness and the continuous improvement in returnable containers. Under evaluation: using shredded wood waste as feedstock for biofuel generation. Wood waste accounts for approximately 64% of all of the waste Macungie sends to landfill.

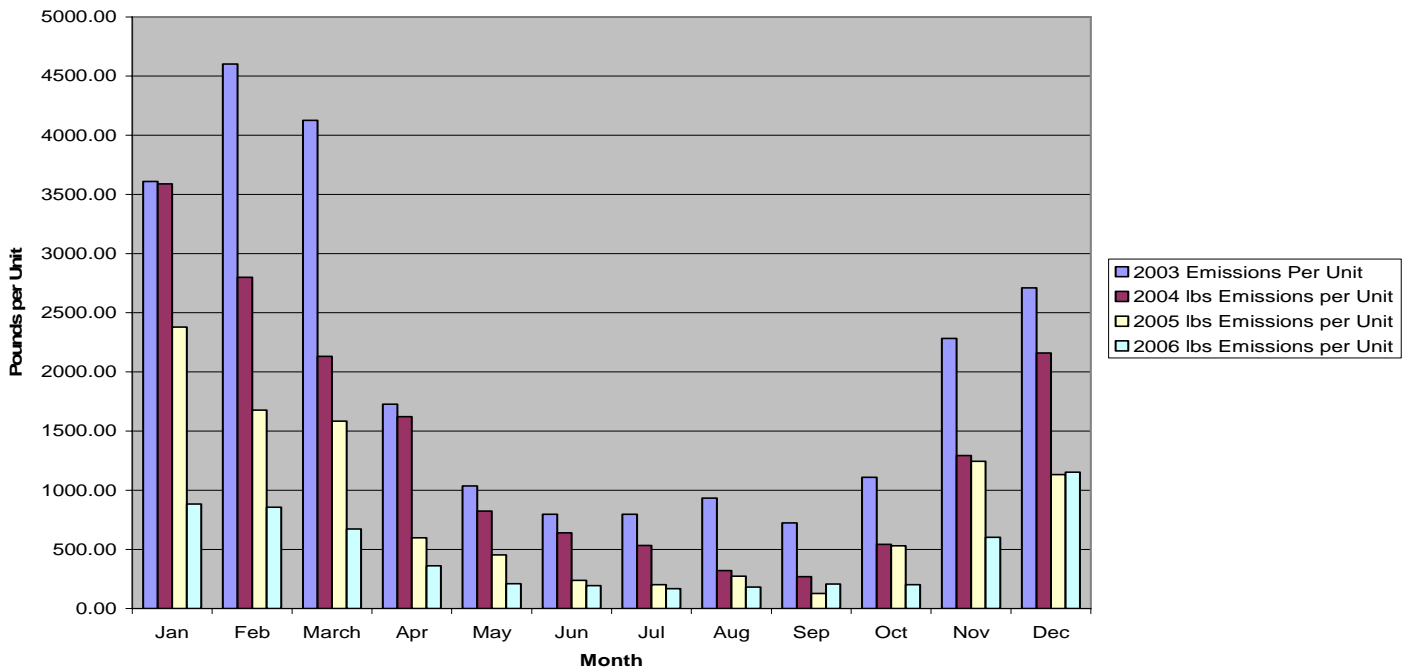
Conversion from #6 fuel oil to natural gas

The change in technology that allowed for the biggest improvement was the conversion of our three main paint drying ovens from oil-fired steam heat to direct-fired natural gas air handlers, and the conversion of one of our three #6 fuel oil-fired boilers to a 29.9 million-BTU dual fuel (natural gas/#2 oil) boiler to supply the plant with heat.

These investments have resulted in the following improvements:

- A reduction in average pounds of emissions per unit:
 - 2003 1943.71 pounds/unit
 - 2004 1305.15 pounds/unit
 - 2005 847.46 pounds/unit
 - 2006 467.58 pounds/unit

Pounds of Emissions per Unit

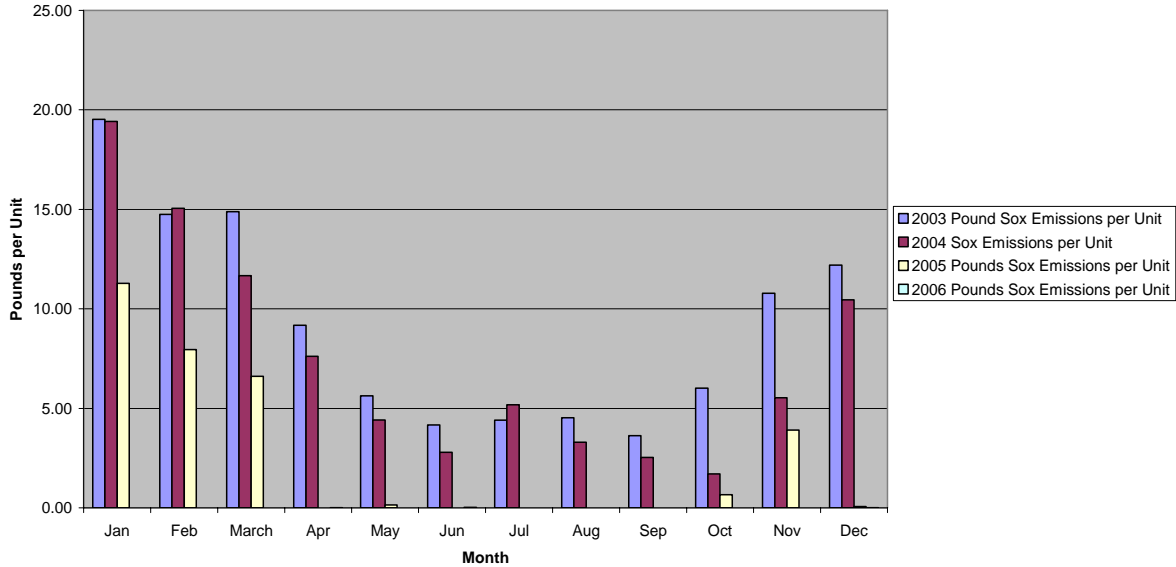


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Since full use of natural gas systems, we have seen reductions in:

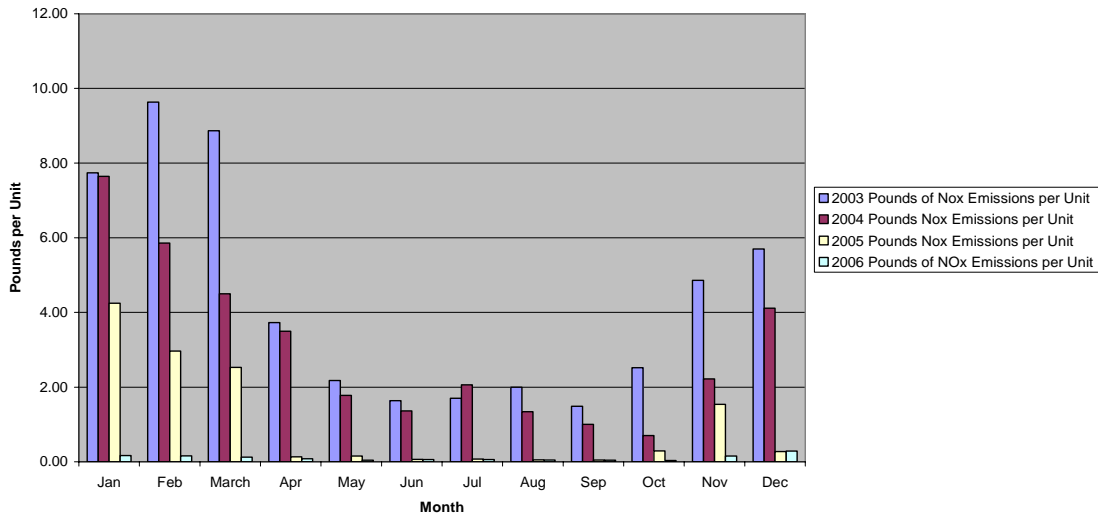
- SOx pounds/unit:
 - CY 2003 9.14 pounds/unit
 - CY 2004 7.47 pounds/unit
 - CY 2005 2.45 pounds/unit
 - CY 2006 0.007 pounds/unit

Sox Emissions per Unit



- Nitrogen oxide (NOx) pounds/unit:
 - CY 2003 4.34 pounds/unit
 - CY 2004 3.01 pounds/unit
 - CY 2005 0.99 pounds/unit
 - CY 2006 0.096 pounds/unit

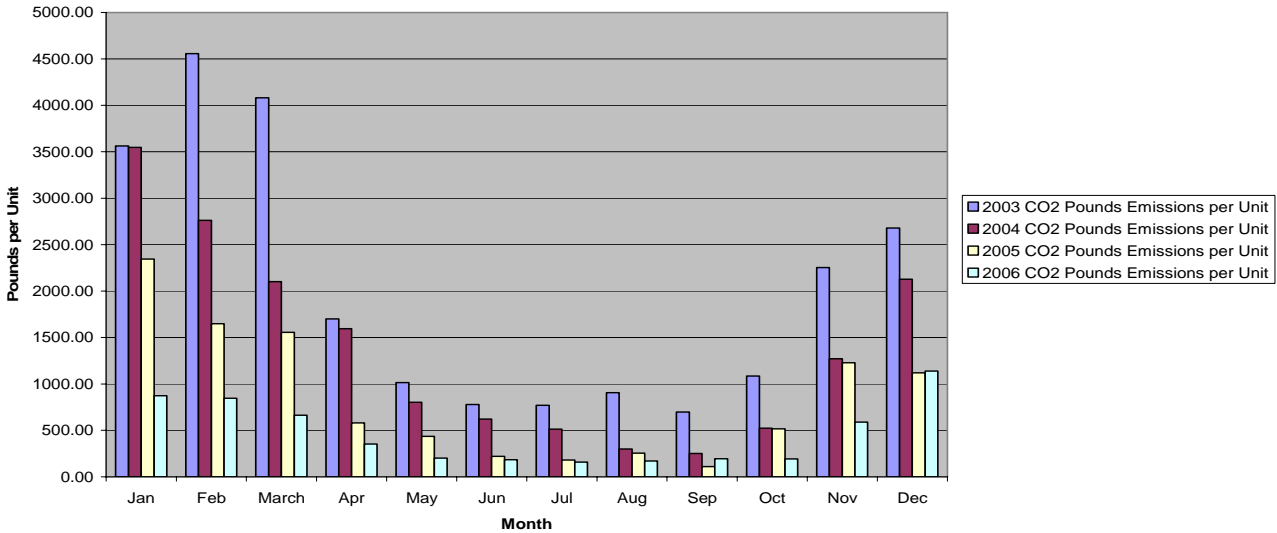
Pounds Nox Emissions per Unit



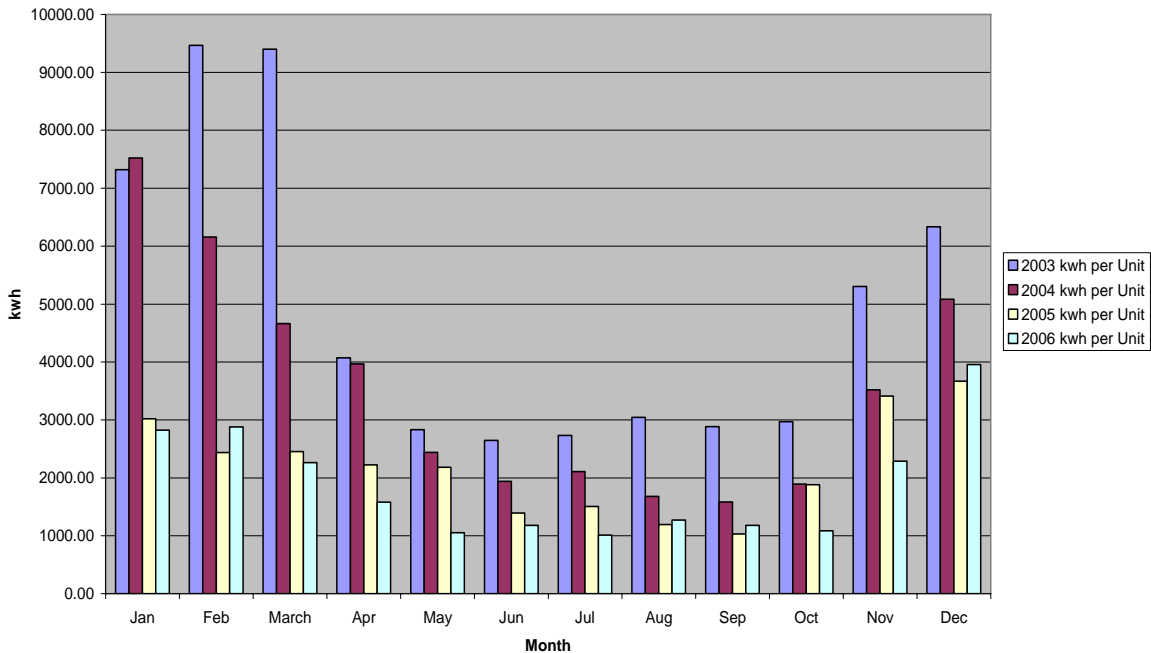
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- Carbon dioxide (CO2) pounds/unit
 - CY 2003 2006.7 pounds/unit
 - CY 2004 1367.5 pounds/unit
 - CY 2005 827.2 pounds/unit
 - CY 2006 456.4 pounds/unit

CO2 Emissions per Unit

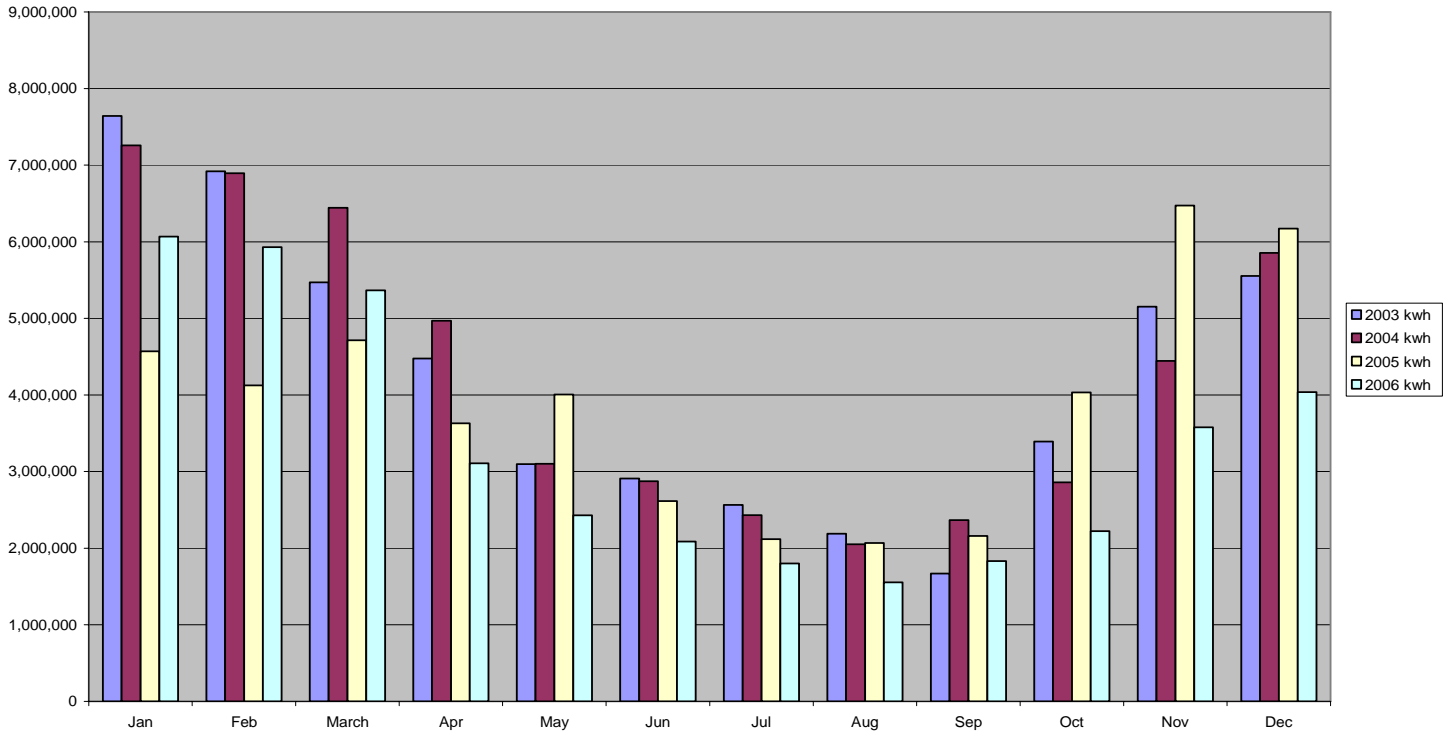


- Kilowatt- hours (kwh) per unit:
 - CY 2003 4916.6 kwh/unit
 - CY 2004 3546.5 kwh/unit
 - CY 2005 2178.5 kwh/unit
 - CY 2006 1814.5 kwh/unit



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From 2003 to 2006, Macungie reduced its overall energy usage by 21.6 percent – or by more than 11 million kwh.



Siemens Energy Management Program

A partnership with Siemens in an energy management program started in early 2006, based on the success of a similar effort at the New River Valley Plant, and in line with our core corporate values and our ISO 14001 Environmental Management Program. The six targeted areas in the Siemens Energy Management Program are:

- Lighting retrofit
- Energy management system
- Boiler plant retrofit
- Engine exhaust ventilation
- Paint booth oven heat recovery
- Compressed air system retrofit

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Elimination of Black- and Grey-Listed Chemicals

Elimination of “black-“ and “grey-listed” chemicals was targeted through an ISO 14001 Environmental Management System Program. Macungie has initiated a two-phase operation in its attempt to remove black- and grey-listed chemicals from its facility.

Phase One (completed 12/2005):

1. Complete an initial screening of products by year-end 2005 and eliminate all known products in the plant containing black-listed ingredients. The screening process will utilize a visual cross-reference of all Material Safety Data Sheets (MSDS's) on file in the HS&E department for black-listed ingredients.
2. Implement a Chemical Approval process requiring all approved purchasers in the plant to complete a New Chemical Approval Form to evaluate/screen all new products proposed for use in the plant.

Phase Two (underway as of August 2007)

1. Utilize MSDSPro program to screen all electronic MSDS's for black and grey listed components and incorporate the newly defined list of chemicals in the search. Evaluate and eliminate all identified products as done in Phase One.
2. Conduct a complete physical sweep of the plant Tool Crib for inventory that is no longer required/requested. Dispose of all dead inventory and remove item from CMMS purchasing system.
3. Identify all current Tool Crib inventory by approved product name and eliminate the practice of free substitution of product by suppliers.

Participation in EPA Climate Leaders Program

Macungie has entered into the EPA Climate Leaders Program as part of Mack's commitment to the initiative. (Please note from above that Macungie is currently realizing a potential 77% reduction in the generation of CO2 per unit produced.)

Green Energy

Macungie has initiated a comprehensive study of “green energy” options – including the potential for state and federal grants to support research and possibly procurement of new technologies. This has been targeted by the ISO 14001 Cross Functional Team as a potential new Environmental Management Program, dependent upon the results of studies to be conducted.

Updated: September 2007