Northern Engraving Corporation

Cooperative Environmental Agreement
Annual Report 2012

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Cooperative Environmental Agreement
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Northern Engraving Corporation

Introduction

On June 10, 2002, the Wisconsin Department of Natural Resources (WDNR) and Northern Engraving Corporation (NEC) signed an Environmental Cooperative Agreement that included the NEC facilities in Sparta and Holmen, Wisconsin. This Agreement was amended on June 23, 2003, to include West Salem, Wisconsin, facility. It was established and is maintained pursuant to Section 299.80, Wis. Statutes, to evaluate innovative environmental regulatory methods including whole-facility regulation.

On June 7, 2007 the WDNR and NEC signed a five year extension to the Environmental Cooperative Agreement. On September 4, 2007 an amendment to the extended Cooperative Agreement was signed by both parties. Correspondence between Northern Engraving and the WDNR resulted in mutual agreement to continue under the Cooperative Agreement until entry into Green Tier is finalized. This will be an area of focus in 2013.

Northern Engraving Corporation remains an active and dedicated steward of the environment. Internally, the environmental policy commits the company to reducing waste, continually improving processes, and doing no harm to the environment. The Cooperative Agreement manufacturing facilities are registered to the international environmental standard, ISO 14001. Corporate registration is maintained through successful annual audits from our third-party registrar SAI Global. The environmental management system gives the plants the tools needed to analyze environmental impacts, set objectives and targets, develop supporting programs, review results and redirect efforts. By using these tools and developing employee involvement, each facility has experienced ongoing success (See Appendices).

Collective Summary of 2012

Data from the baseline calendar year of 1996 and calendar year 2012 show that plant emissions of volatile organic compounds (VOC) and hazardous air pollutants (HAP) from the three Cooperative Agreement facilities decreased 75% (230 tons/ year) and 97% (113 tons/year), respectively. In comparing the three facilities' 2012 emissions to 2011, VOCs increased 19% (12 tons/year) while HAPs decreased 10% (0.4 tons/year).

In 2012, these facilities used 79% less water than in 1996.

During the 1996-2012 period, the three Cooperative Agreement facilities' generation of hazardous and solid wastes decreased 70% (40,997 gallons/year) and 84% (1,327 tons/year), respectively. Non-hazardous waste increased by 1,449 gal/yr compared to 1996. Reformulation of some solvent based materials to waterbased contributed significantly to the reduction in hazardous waste. The change also resulted in higher non-hazardous waste levels.

The environmental management system was instrumental to the success of the corporation's environmental initiatives. In 2012, the Cooperative Agreement facilities set a total of nine objectives with ten targets. Some of the significant environmental successes of 2012 were the following: Use of Chromium containing powders was eliminated at Sparta. A new West Salem washer was optimized to minimize energy and water use.

Cooperative Agreement Report

Interested Persons Group

On August 8, 2012, the Northern Engraving Interested Persons Group, represented by Mark McDermid, Scott Halbrucker, Cindy Struve, Scott Lindemann, Lynn Jerome, Darrell Zietlow and Mary Goodman met in Sparta. The meeting included a review of the results from the previous year's environmental efforts, business updates, environmental objectives and targets for 2012. An electronic copy of the presentation was sent to Dr. Ronald Amel not in attendance at the meeting.

The December 20, 2012 scheduled meeting of the Northern Engraving Interested Persons Group was postponed due to inclement weather. On January 11, 2013, the Northern Engraving Interested Persons Group, represented by Scott Lindemann, Cindy Struve, Lynn Jerome, Darrell Zietlow and Mary Goodman and Mark McDermid met in Sparta. The meeting included 2012 updates regarding, environmental projects and efforts toward the environmental objectives and targets for 2012. An electronic copy of the information presented was sent to Scott Halbrucker, and Dr. Ronald Amel, not in attendance at the meeting.

Commitment to Superior Environmental Performance

Internal audits of the environmental management system continue to be conducted at each facility. All elements of the environmental management system are audited at least once annually. These audits are conducted by trained and impartial auditors from corporate headquarters or another Northern Engraving facility.

During 2012, Northern Engraving successfully maintained a Corporate ISO14001 registration. At each facility a surveillance audit of the Environmental Management System was conducted by a third party auditor. There audits totaled four and one-half man-days. There were no non-conformances found. The opportunities for improvement were:

<u>Corporate Wide</u>
Over the many years, NEC facilities have implemented very strong recycling programs, however the tracking and communication of the success of these programs is not well known. Consider providing a format or mechanism for collection of this data and reviewing/communicating the results of the recycling program; and provide a big picture look at how much landfill avoidance was achieved.

<u>West Salem</u>
Consider adding the date of the oldest container for Universal Wastes. [to the hazardous waste tracking form]

<u>Corporate and West Salem</u>
Consider developing an objective/investigation to reduce the number of air permit deviations noted during the course of the year.

Compliance

On February 20th Subcontractor for the Wisconsin Department of Safety and Professional Services conducted a underground tank inspection at the Sparta facility. There were no violations found.
On December 19th the EPA and DNR conducted an inspection of the delisted Superfund site located on and adjacent to the Sparta facility property. There were no issues raised.

Operational Flexibility

(For a brief explanation of acronyms and terms, see the glossary at Appendix 5)

Time saved in obtaining air permits

Time saved by the reduction in record keeping and administrative requirements

These were established during the first year of the agreement and are as follows:

Requirement Eliminated:	Approximate Time Saved:
Calculations for demonstrating RACT compliance	
West Salem	3.5 hours/day
Sparta	2.5 hours/day
Calculation of VOC and HAP emissions	.75 hr/day per facility
Compiling formulas for demonstrating LACT compliance	
Sparta	
Holmen	10 hr/month
West Salem	10 hr/month
	20 hr/month
Discontinuation of reporting the above calculations as part of the annual monitoring summary.	10 hr/yr per facility

Energy savings from avoiding the use of the thermal oxidizer

Prior to the Cooperative Agreement, West Salem was required to operate two thermal oxidizers and Sparta was required to operate one thermal oxidizer from May 1 through September 31 to meet permit requirements. It is estimated that West Salem and Sparta avoided the usage of over 2400 MCF and 2500 MCF/month respectively, of natural gas associated with thermal oxidation for RACT.

Overall Assessment of the Success of the Agreement

For NEC the Cooperative Agreement continues to be a valuable tool for competing in an ever changing and highly competitive, global marketplace. The environmental management systems at Sparta, West Salem, and Holmen are now fourteen, thirteen and ten years old, respectively. As mature, successful systems they must concentrate on retaining environmental improvements while searching even deeper in their processes for innovative pollution prevention and waste reduction measures. The time saved, as a result of this agreement, allows NEC personnel to devote more of its effort toward pollution prevention and waste reduction measures. Reducing waste not only benefits the environment, it also helps NEC to contain its costs.

A strong working relationship has been developed with the Wisconsin Department of Natural Resources (WDNR). NEC values this working relationship and looks forward to continuing it into the future ultimately through the Green Tier program.

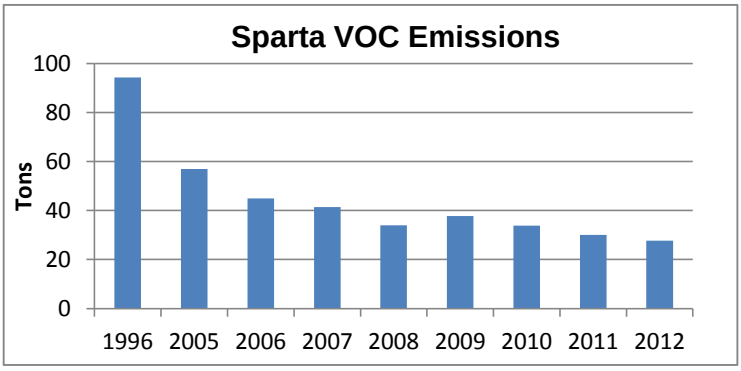
Appendix 1: Sparta

Air Emissions

	1996	2005	2006	2007	2008	2009	2010	2011	2012
VOCs (tons/year)	**94.3**	**57.0**	**44.9**	**41.4**	**34.0**	**37.8**	**33.8**	**30.1**	**27.7**
NOx	5.70	5.90	4.90	4.46	4.57	4.68	4.47	3.98	3.50
CO	1.20	2.61	2.47	2.22	3.71	3.88	3.69	3.30	2.93

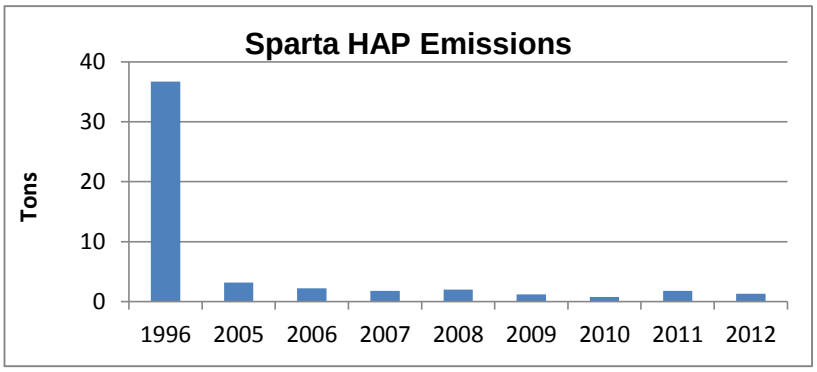
CLEAN AIR ACT CHEMICALS (lbs/yr)

CHEMICAL NAME	1996	2005	2006	2007	2008	2009	2010	2011	2012
Glycol Ethers	9,877		800	2,800	1,800	900	880	1,000	760
Cumene	258					140	240	240	260
Dimethyl-formamide	84								
Ethyl Benzene	3,210	600	400		400	140		380	320
Formaldehyde	8	16				20	20		
Hydrogen Fluoride	140								
2,2,4 Trimethyl-pentane		280	200	200					
Isophorone	1,085	1,300	400						
Methyl Alcohol	204					40		40	20
MEK	13,859	480							
MIBK	7,248	20							
Methylene Chloride	2,201	360	200			40	40		
Naphthalene	202	200	200	200	200	200	120	100	80
Toluene	21,636	640	600	400	400	440		240	
Xylene	11,297	2,240	1,200		1,200	340		1,340	880
Hydrogen Chloride						200	200	180	180
Perchloroethylene	2,152	200	200			20	20		
Total Tons	**36.7**	**3.2**	**2.2**	**1.8**	**2.0**	**1.2**	**.8**	**1.8**	**1.3**



VOC emissions dropped 8% due to lower etch activity and a cleanup material replacement with a lower VOC containing material.

HAPs dropped from 2011 level due to the skewed 2011 levels.

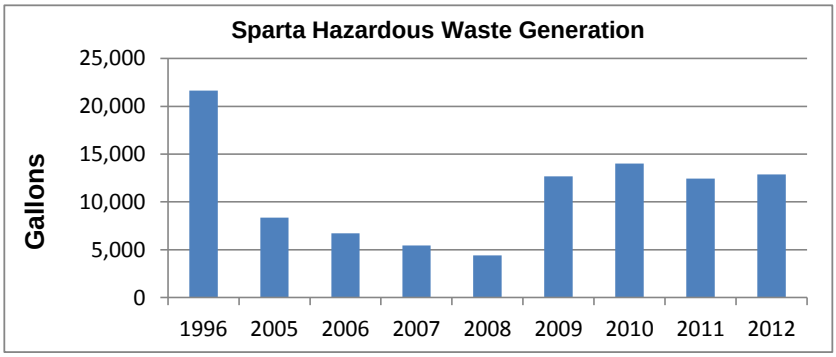


Appendix 1: Sparta

Hazardous Waste Generation

	Unit	1996	2005	2006	2007	2008	2009	2010	2011	2012
Solvent Waste	gals	9,374	1,540	1,210	935	880	2,805	3,465	2,365	2,090
Coating (Design)	gals		605	330	330	220	165	220	165	220
Liquid Coating	gals	8,470	1,375	880	770	605	495	605	990	1,269
Solid Coating	gals	1,650	935	770	660	550	825	440	550	495
Ink Waste	gals	1,540	550	550	440	275	275	330	385	330
Norlens Waste	gals	605								
Alodine Sludge	gals		55	605						
Still Bottoms	gals		825	605	660	550	550	385	385	330
CWU	gals		2,475	1,760	1,650	1,320	1,650	880	1,155	1,100
Acid Etch	gals						3,650	5,005	3,390	2,360
Alkaline Etch	gals						2,258	1,650	1,740	2,800
Haz. Waste Sludge	gals							385	220	385
Stainless Steel Cleaner	gals							660	870	1,510
Mis. Waste Obs. Material	gals								225	
Hydroxide Sludge	tons	53.8								
Sparta Totals	gals	**21,639**	**8,360**	**6,710**	**5,445**	**4,400**	**12,673**	**14,025**	**12,440**	**12,889**

- Hazardous waste sent to a Treatment Storage Disposal facility is included in this table. Hazardous waste distilled internally by Northern Engraving is excluded.

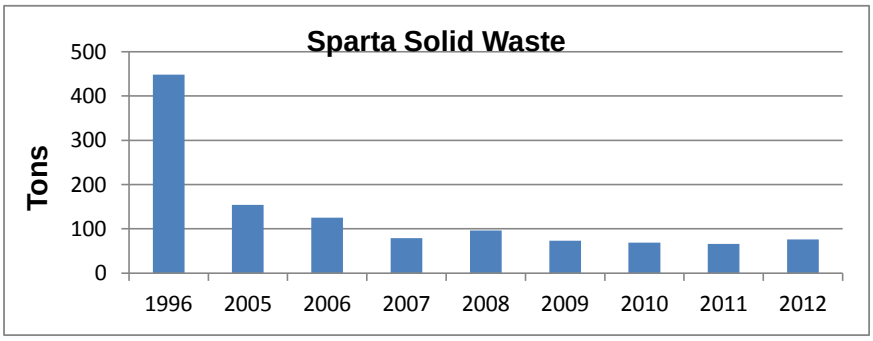


Hazardous Waste increased 3% due to more alkaline etch and stainless steel work. Some off-setting occurred with less acid etch production.

Solid Waste

	1996	2005	2006	2007	2008	2009	2010	2011	2012
Tons	448	154	125	79	96	73	69	66	76

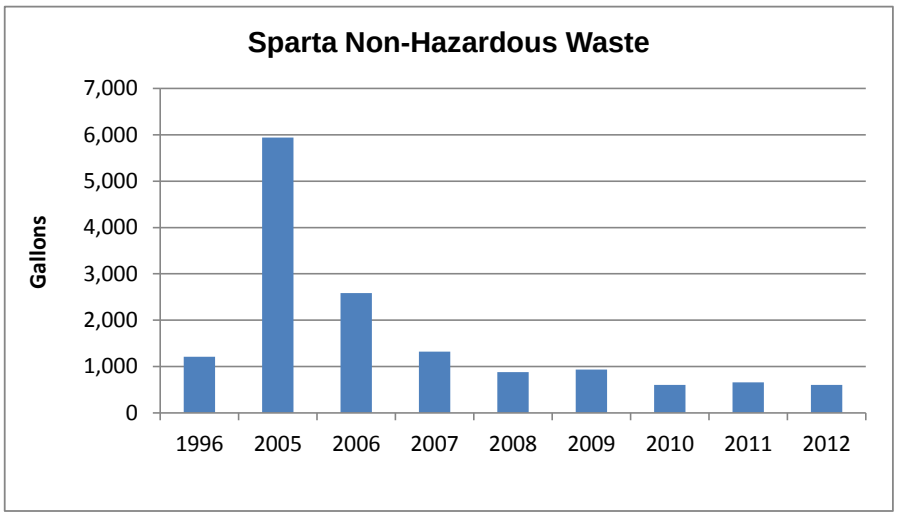
Solid Waste increased by 10 tons in 2012 compared to 2011. This continues to be an area of focus for 2013.



Appendix 1: Sparta

Non - Hazardous Waste Generation

	Unit	1996	2005	2006	2007	2008	2009	2010	2011	2012
Damascene Sludge	gals	1,100	1,100	935	1,100	660	330	275	275	165
Oil Absorbents	gals	110	4,235	1,155	0	0	0	0	0	0
Norlens Waste	gals	0	330	330	220	165	220	110	55	110
Waterbase Adhesive	gals	0	275	165	0	55	385	220	330	330
Hydroxide Sludge/ Wastewater Treatment Sludge	cubic yds	0	12	0	0	0	0	0	0	0
Total		**1,210**	**5,940**	**2,585**	**1,320**	**880**	**935**	**605**	**660**	**605**

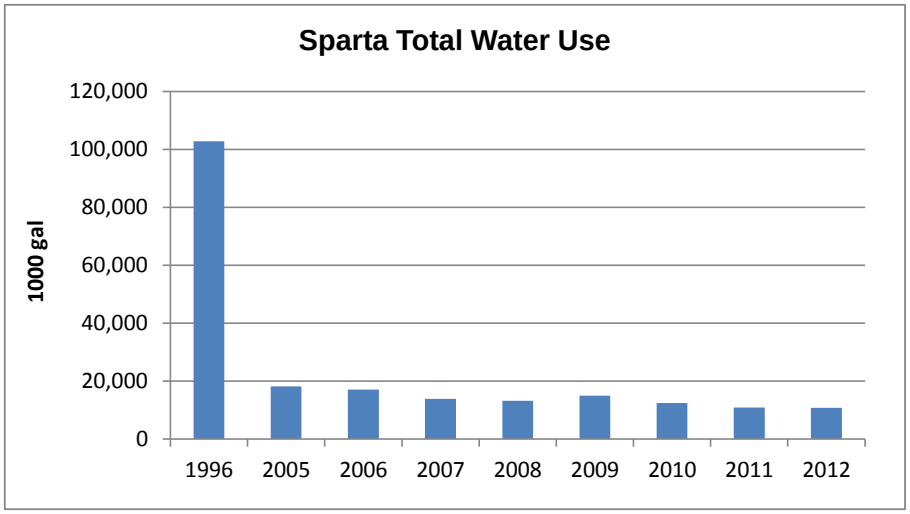


Lower non-hazardous waste was due to less brushed look work, generating less damascene sludge.

Water Use

Total Water	1996	2005	2006	2007	2008	2009	2010	2011	2012
1000 gal	102,783	18,145	17,096	13,890	13,158	15,010	12,413	10,900	10,783

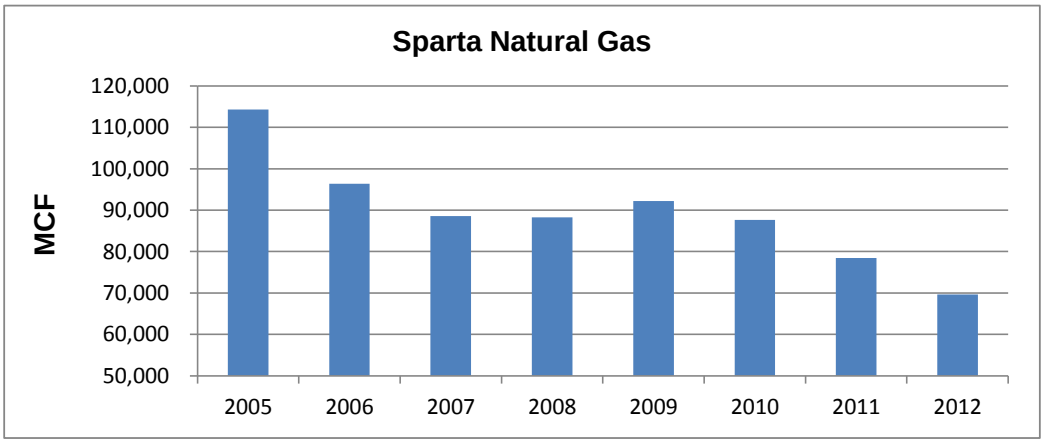
Water use held steady. Water saving efforts remain in place.



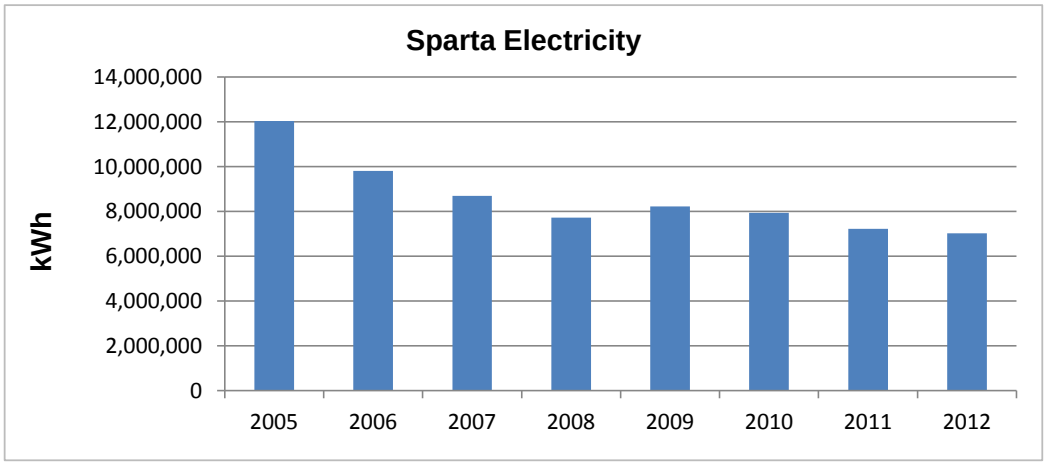
Appendix 1: Sparta

Energy Use

	2005	2006	2007	2008	2009	2010	2011	2012
Natural Gas (MCF)	114,288	96,348	88,547	88,289	92,200	87,655	78,469	69,620
Electricity (kWh)	12,032,000	9,806,000	8,688,000	7,726,000	8,223,000	7,943,000	7,222,000	7,027,000



Natural gas use decreased 11% and electric use decreased 3%. Energy saving efforts contributed to the lower energy usage. Mild winter weather early in 2012 also affected the natural gas usage.



Appendix 1: Sparta's Objectives and Targets Program

Results for 2012

Objective 1: Reduce facility energy use. Evaluate results of energy assessment

Recommendations moving forward included
- replacement of desiccant system with a refrigerated dryer in the compressor room.
- began replacement of the 50 exterior lights with LED lights. (7 replaced)
- identifying and fixing air leaks, >100 leaks fixed.

Hired a additional maintenance person dedicated to fixing air leaks, air filter maintenance and insulating steam lines.

Objective 2: Improve plant product yield by achieving yield improvements as reflected in turnaround projects.

Product yield improvements resulted from equipment modifications to address dirt rejects. Personnel changes to evaluate parts identified some initially rejected parts as acceptable. More experienced operators were assigned certain jobs.

Objective 3: Investigate Elimination of Chromium Containing Powders and report to Management by May 31, 2012

Efforts included inventory taking, material review, reformulation and removal of existing Cr containing powders from the facility. The report to management concluded that the elimination of chromium containing powders had been investigated and achieved.

Objective 4: Evaluate the management of recycled and solid waste. Quantify the amount of recycled, refuse for fuel and landfilled waste.

Began tracking amounts of various waste types. Some opportunities for better waste management were revealed. A website for discontinuing unwanted catalogs was found and shared.

Objectives and Targets for 2013

Objective 1: Reduce facility energy use. Continue implementation of energy assessment recommendations.

Objective 2: Improve plant product yield by achieving yields as reflected in the urgent turnaround projects.

Objective 3: Evaluate opportunities to reduce landfill waste. Characterize landfill waste.

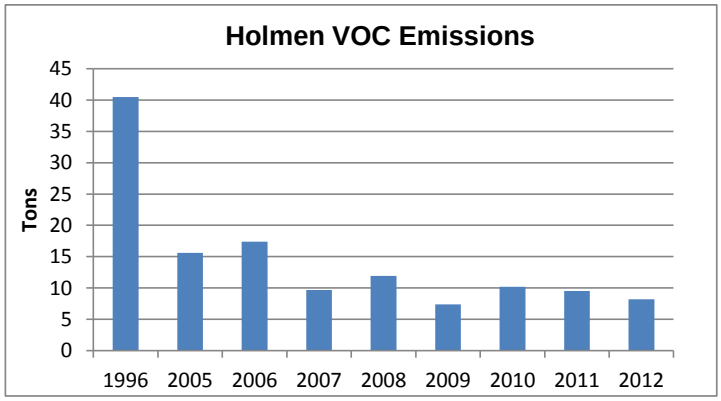
Appendix 2: Holmen

Air Emissions

	1996	2005	2006	2007	2008	2009	2010	2011	2012
VOCs (tons/year)	**40.5**	**15.6**	**17.4**	**9.7**	**11.9**	**7.4**	**10.2**	**9.5**	**8.2**
NOx	1.0	.54	.62	.74	.68	.53	.60	.58	.41
CO	.2	.11	.12	.14	.13	.10	.12	.11	.08

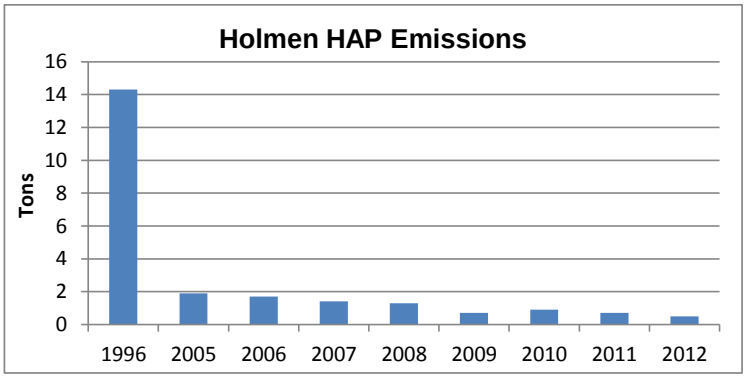
CLEAN AIR ACT CHEMICALS (lbs/yr)

CHEMICAL NAME	1996	2005	2006	2007	2008	2009	2010	2011	2012
Glycol Ethers	9792	3420	3200	2600	2400	1040	1280	840	800
Cumene	351								
Isophorone	1291								
MEK	3104	200							
MIBK	58								
Methanol							80		
Naphthalene	49	80	200	200	200	220	260	300	240
Toluene	13491	20				40	100	160	20
Xylene	507								
Total Tons	**14.3**	**1.9**	**1.7**	**1.4**	**1.3**	**.7**	**.9**	**.7**	**.5**



VOC emissions decreased by 14% in 2012 as a result of lower production.

HAP emissions dropped to historic low.

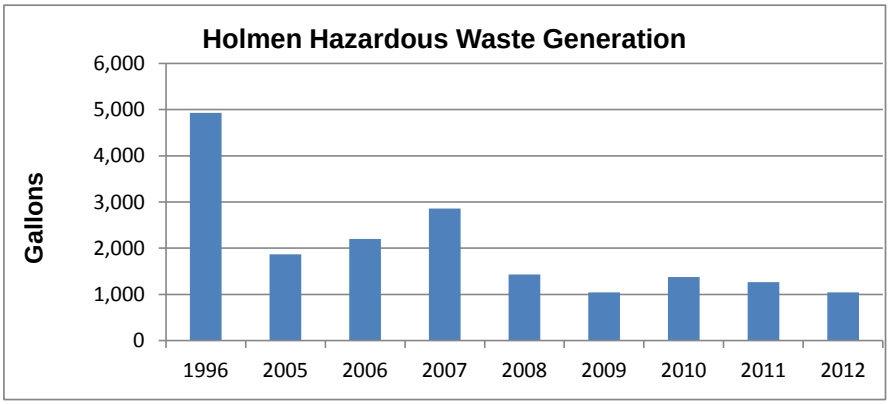


Appendix 2: Holmen

Hazardous Waste Generation

	Unit	1996	2005	2006	2007	2008	2009	2010	2011	2012
Solvent Waste	gals	3,224	935	935	1,100	275	220	385	330	330
Ink Waste	gals	1,705	880	1,265	1,760	1,155	825	990	935	715
Flexlens	gals		55							
Holmen Totals	gals	**4,929**	**1,870**	**2,200**	**2,860**	**1,430**	**1,045**	**1,375**	**1,265**	**1,045**

- Hazardous waste sent to a Treatment Storage Disposal facility is included in this table. Hazardous waste distilled internally by Northern Engraving is excluded.

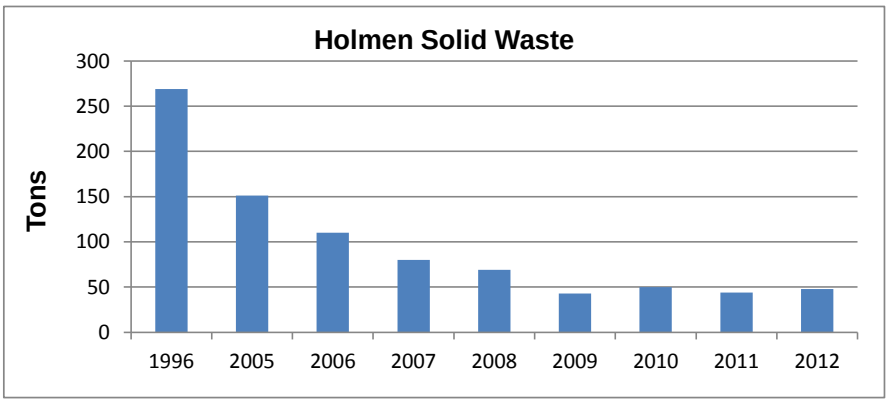


In 2012, lower production and material obsolescence focus resulted in a 17% decrease in hazardous waste.

Solid Waste

	1996	2005	2006	2007	2008	2009	2010	2011	2012
Tons	269	151	110	80	69	43	50	44	48

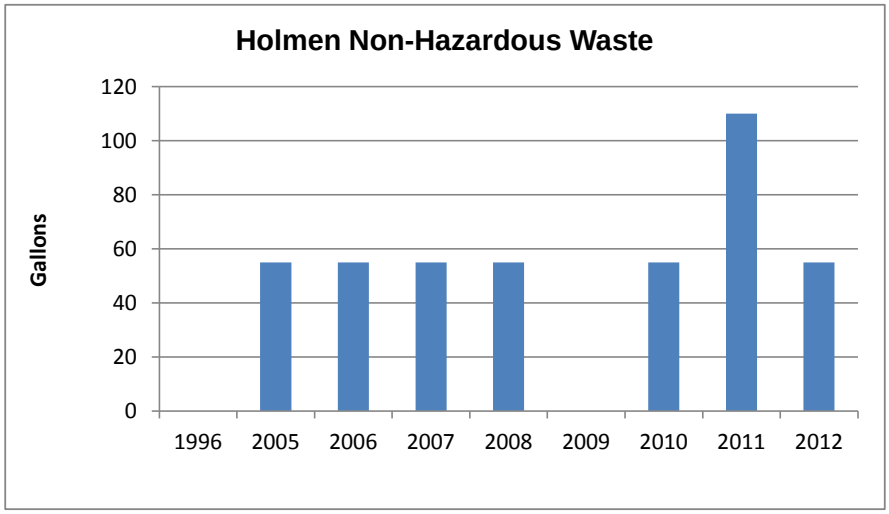
One waste pull in Jan of 2012 yielded a 9% increase for 2012 over 2011.



Appendix 2: Holmen

Non - Hazardous Waste Generation

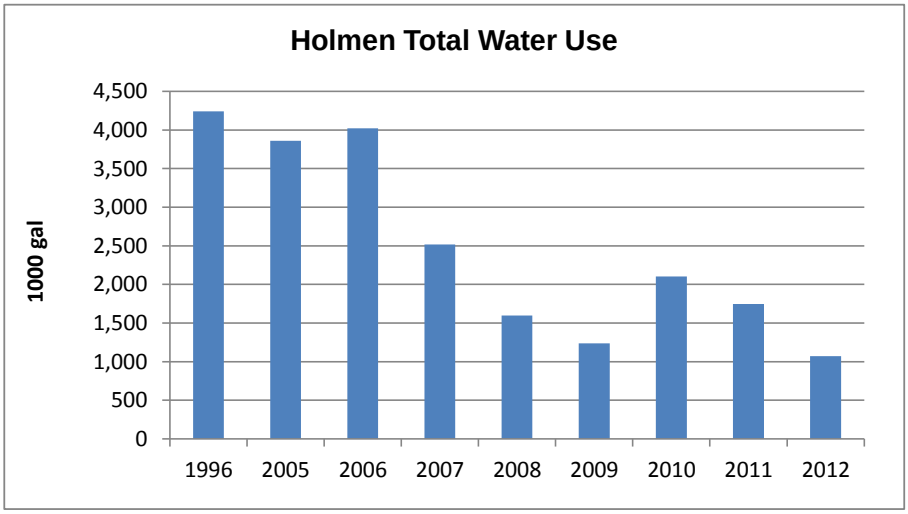
	Unit	1996	2005	2006	2007	2008	2009	2010	2011	2012
Oil Absorbents	gals	110	0	0	0	0	0	0	110	0
Digital Ink Waste	gals	0	55	55	55	55	0	0	0	55
Total		**0**	**55**	**55**	**55**	**55**	**0**	**55**	**110**	**55**



Water Use

Total Water	1996	2005	2006	2007	2008	2009	2010	2011	2012
1000 gal	4,242	3,861	4,019	2,517	1,597	1,235	2,104	1,745	1,069

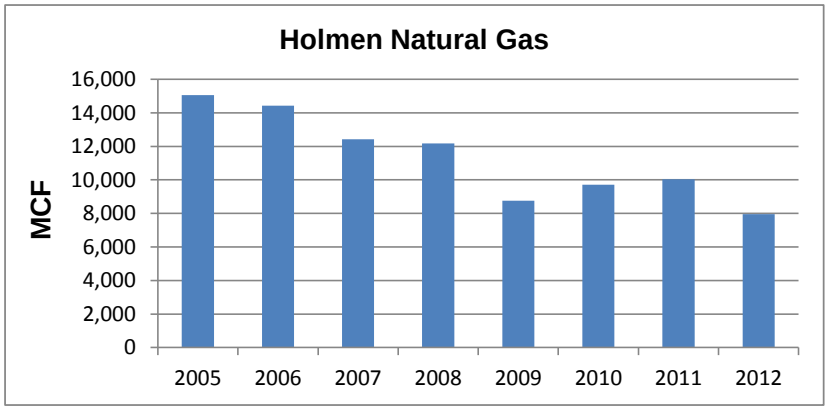
Lower production level along with the ongoing benefit of a discontinued water intensive process (mid 2011) resulted in a 39% drop in water use in 2012.



Appendix 2: Holmen

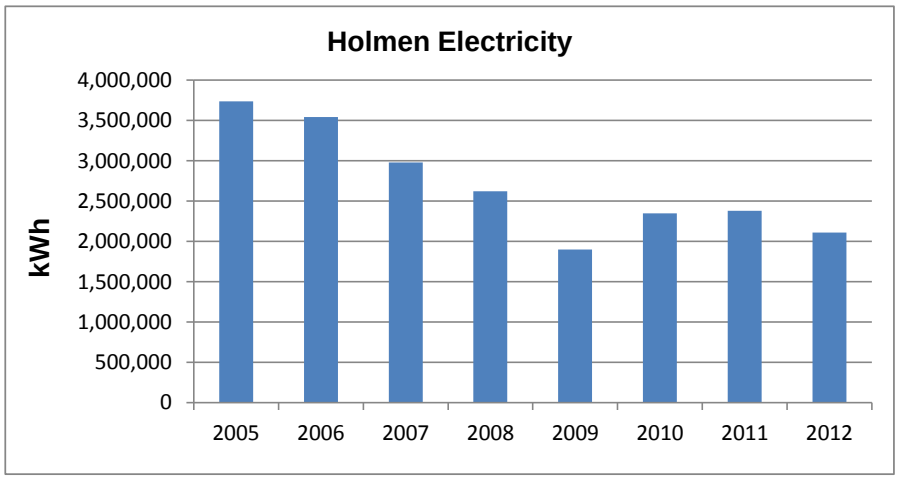
Energy Use

	2005	2006	2007	2008	2009	2010	2011	2012
Natural Gas (MCF)	15,059	14,436	12,419	12,180	8,749	9,721	10,030	7,955
Electricity (kWh)	3,735,600	3,542,000	2,978,000	2,620,000	1,899,000	2,348,000	2,380,000	2,108,000



The 21% decrease in Natural gas usage was due to a combination of lower production, replacement of an air handler and mild winter weather early in 2012.

Electricity use decreased by 11% in 2012. Overall energy efficiency dropped as a result of dramatically lower production. However the electricity baseline was lowered by utilizing a new energy efficient air handler.



Appendix 2: Holmen's Objectives and Targets Program

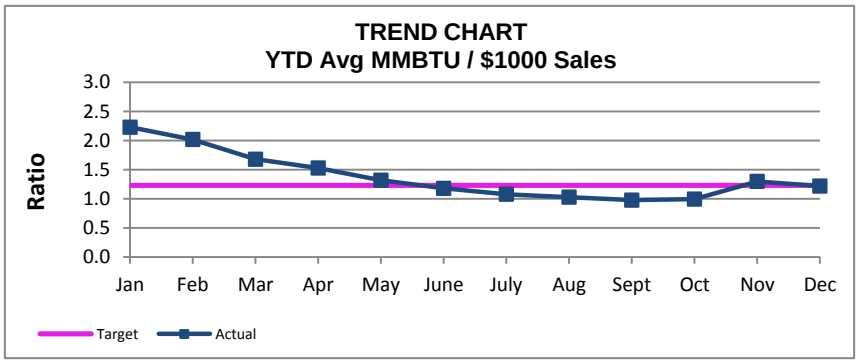
Results for 2012

Objective 1: Improve plant product yield by achieving yield improvements as reflected in turnaround projects.

Holmen management identified priority jobs on which to focus efforts for yield improvement. Process modifications which resulted in higher yield included changes in screening mesh size, printing sequence, formula changes, and adjusting machine settings before specific production runs.

Objective 2: Reduce facility energy use.

Target: Achieve a natural gas/LPG ratio of 1.23 MMBTU / $1000 Sales for CY2012. At year end the ratio was 1.22.



Target: The initial ratio based Electricity target was changed when, due to lower sales, it became apparent it was not achievable. The target became implementation of two energy saving projects. An energy saving air handler was installed. A compressed air system evaluation was conducted.

Objectives and Targets for 2013

Objective 1: Reduce facility energy use. Implement two energy saving projects.

Objective 2: Enhance facility grounds. Investigate planting of trees and shrubs.

Objective 3: Evaluate opportunities to reduce waste. Track waste amounts by by category and weight.

Objective 4: Improve plant product yield by achieving yields as reflected in the urgent turnaround projects.

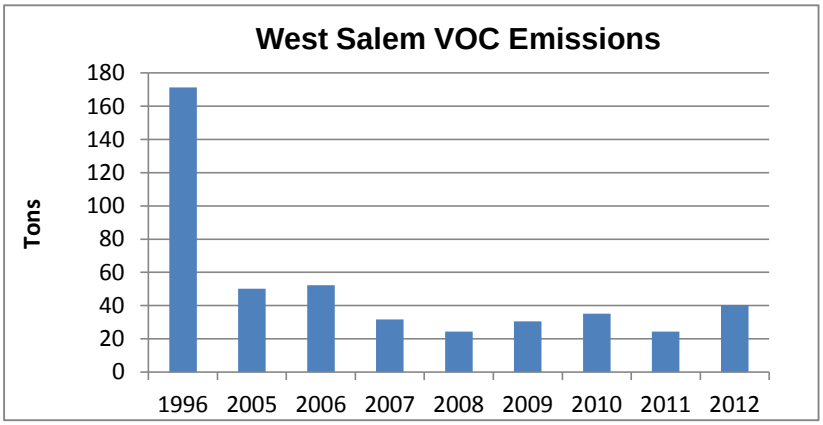
Appendix 3: West Salem

Air Emissions

	1996	2005	2006	2007	2008	2009	2010	2011	2012
VOCs (tons/year)	**171.3**	**50.1**	**52.3**	**31.7**	**24.3**	**30.5**	**35.1**	**24.3**	**40.3**
NOx	1.50	1.95	1.80	1.89	2.21	2.42	2.52	2.92	2.95
CO	.34	1.01	.90	.99	1.06	1.13	1.11	1.23	1.24

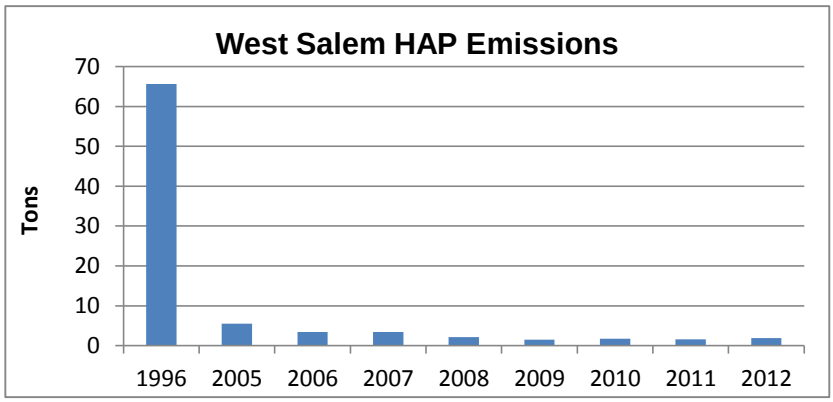
CLEAN AIR ACT CHEMICALS (lbs/yr)

CHEMICAL NAME	1996	2005	2006	2007	2008	2009	2010	2011	2012
Glycol Ethers	7,964	4,740	3,400	4,800	3,000	2,540	2,800	2,440	3,200
MEK	30,969	1,680							
Methanol	6,381	200		200					
Triethylamine		80							
2,2,4 Trimethyl-pentane		260	200						
Toluene	37,071	3,680	2,200	1,400	800	120		600	220
Xylene	21,423	260	600	200	200			140	160
Ethyl Benzene	3,601		200						100
P-Xylene							40		
O-Xylene							20		
MIBK	23,717	60							
M-Xylene							80		
Naphthalene	10	80	200	200	200	320	400	120	80
Cumene								20	
Total Tons	**65.6**	**5.5**	**3.4**	**3.4**	**2.1**	**1.5**	**1.7**	**1.6**	**1.9**



VOC emissions numbers show a 16 ton increase from 2011. This increase was the result of a significant rise in production.

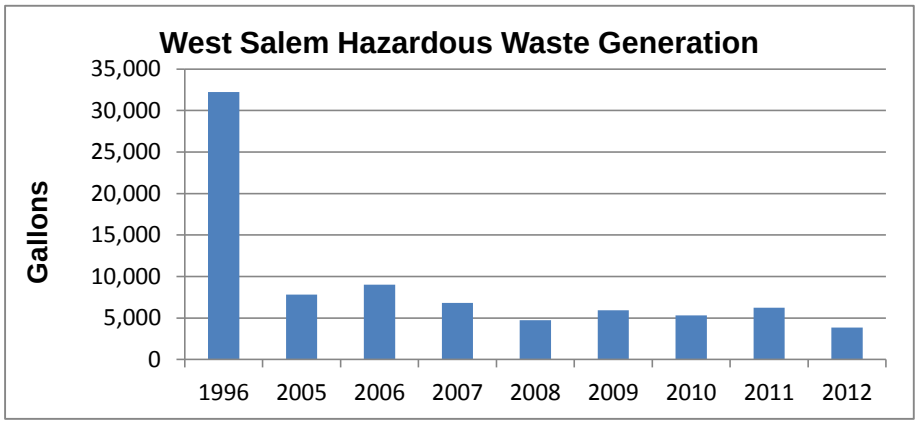
HAP emissions increased but continue to be low.



Appendix 3: West Salem

Hazardous Waste Generation

	Unit	1996	2005	2006	2007	2008	2009	2010	2011	2012
Solvent Waste	gals	30,470	2,750	2,475	1,815	1,100	1,430	1,320	825	550
CWU			2,772	4,188	3,371	2,700	3,009	2,600	4,160	2,437
Liquid Coating		880	1,870	1,925	1,320	715	1,100	1,210	1,100	880
Solid Coating	gals	770	385	385	330	220	385	165	165	
Waste Absorbents	gals	110	55	55						
West Salem Totals	gals	**32,230**	**7,832**	**9,028**	**6,836**	**4,735**	**5,924**	**5,295**	**6,250**	**3,867**

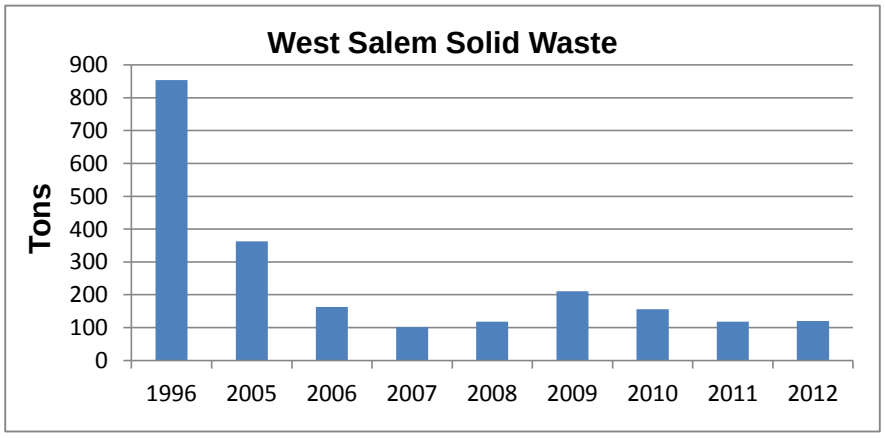


Longer production runs with less frequent process cleanups helped result in less waste generation.

Solid Waste

	1996	2005	2006	2007	2008	2009	2010	2011	2012
Tons	854	363	163	101	118	211	156	118	120

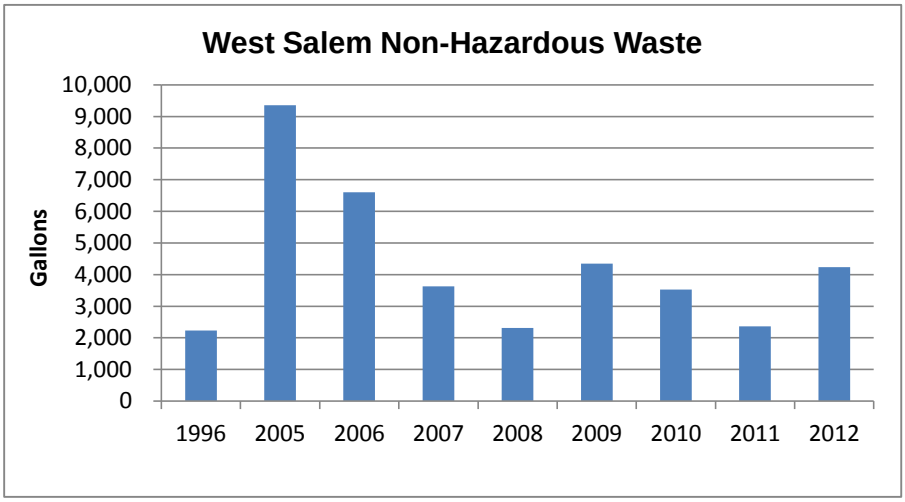
Solid waste generation increased slightly (2 tons) Continued recycling and waste separation efforts helped avoid further increase from higher production.



Appendix 3: West Salem

Non - Hazardous Waste Generation

	Unit	1996	2005	2006	2007	2008	2009	2010	2011	2012
Mask Washer Waste	gals	2,236	1,870							
Damascene Sludge	gals		55	275	550	385	330	385	330	715
Waterbase Paint	gals		5610	5170	3080	1925	4015	3142	2035	3520
Oil Absorbents	gals		1815	1155						
Total		**2,236**	**9,350**	**6,600**	**3,630**	**2,310**	**4,345**	**3,527**	**2,365**	**4,235**

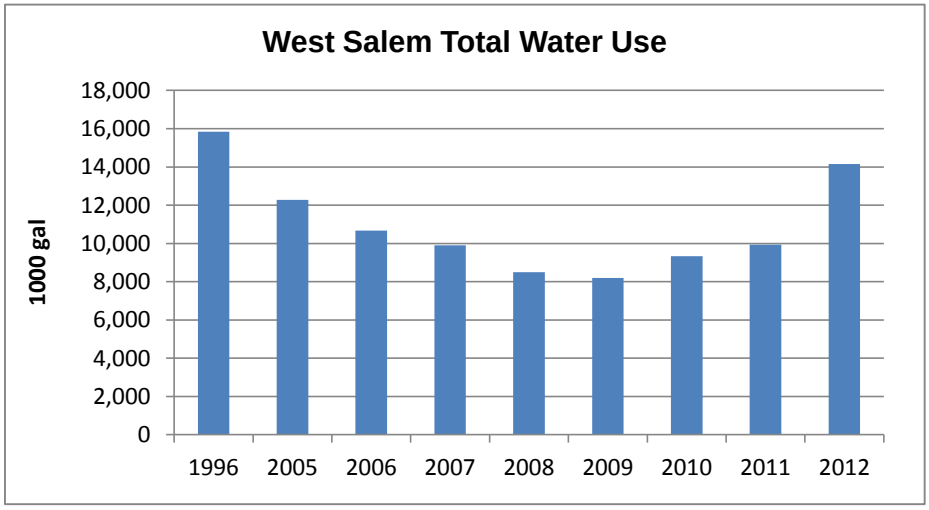


The increase in damascene sludge was the result of higher production of brushed parts. Discontinuation of in-house processing of water base waste contributed to the additional waterbase paint waste.

Water Use

Total Water	1996	2005	2006	2007	2008	2009	2010	2011	2012
1000 gal	15,842	12,270	10,669	9,893	8,498	8,187	9,326	9,927	14,156

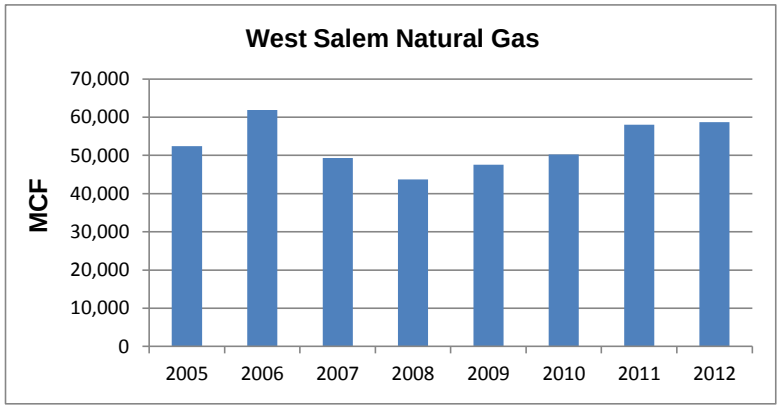
Water use rose 43% above the 2011 level. This increase was due to higher production including brushed and spun parts. Further increase was held at bay by counter-current water flow in new brush washer.



Appendix 3: West Salem

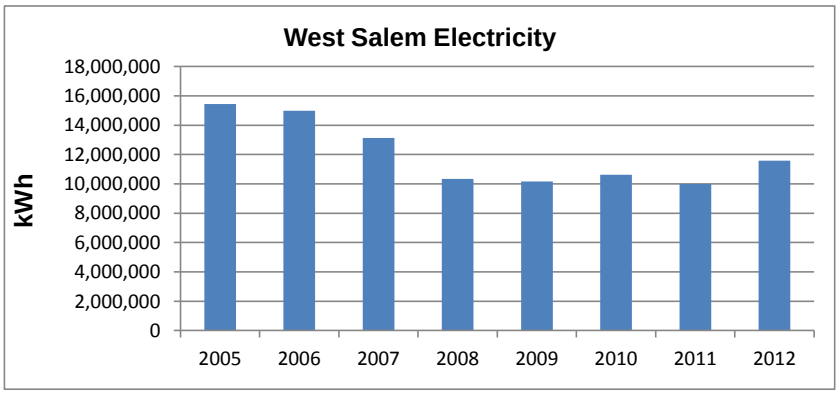
Energy Use

	2005	2006	2007	2008	2009	2010	2011	2012
Natural Gas (MCF)	52,409	61,905	49,357	43,671	47,531	50,224	58,014	58,692
Electricity (kWh)	15,438,000	14,979,000	13,139,000	10,339,000	10,167,000	10,630,000	9,978,000	11,591,000



Natural gas usage increased minimally compared to the prior year. Mild winter weather early in 2012 offset higher production effects.

Electricity use rose 16% in 2012 due to higher production. Further increase was avoided by environmental efforts (see Objective 2.) and replacement of reciprocating type air compressor with a screw type.



Appendix 3: West Salem's Objectives and Targets Program

Results for 2012

Objective 1: Improve plant product yield by achieving yields as reflected in the urgent turnaround projects.

Yield improvements resulted from more frequent preventative maintenance on dies to reduce slug rejects, modifying coating formula to improve laydown, refashioning molds to address scratches and switching process sequence to lessen rejects.

Objective 2: Reduce facility energy use by optimizing new brush washer efficiency.

Features incorporated into the brush washer design:

- VFDs on pumps, conveyors and exhaust
- infrared heaters for drying
- auto start mode, warms up before entirely operational
- zone management, operate sections independently
- adjustable steam heating
- covered tanks and insulated piping
- counter-current water flow

Objective 3: Evaluate the management of recycled and solid waste. Quantify the amount of recycled, refuse for fuel and land filled waste.

Established tracking of purgings, regrind, saleable scrap plastic, aluminum.

Objectives and Targets for 2013

Objective 1: Enhance facility grounds. Investigate planting trees and shrubs.

Objective 2: Improve plant product yield by achieving yields as reflected in the urgent turnaround projects.

Objective 3: Reduce facility raw material/product overruns in four applicable activities.

Appendix 4: Greenhouse Gas Emissions

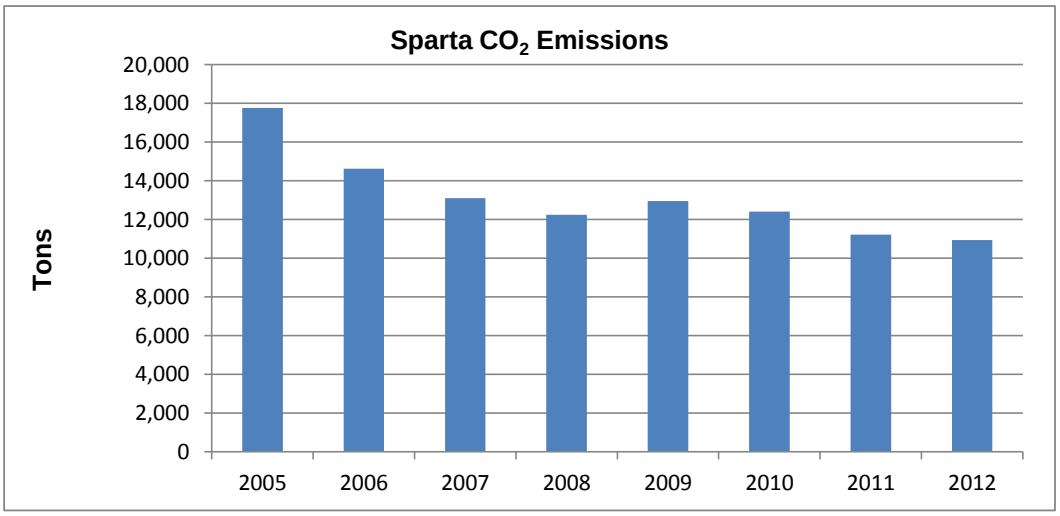
For Northern Engraving the primary source of greenhouse gas emissions is from the use of energy in its manufacturing facilities. Carbon dioxide (CO_2) is directly emitted by burning of natural gas and propane at NEC facilities. Use of electricity results in the emission of CO_2 at the generating facility, thus use of electricity results in indirect emissions of CO_2.

Carbon dioxide equivalent (CO_2-e) emission calculations for methane and nitrous oxide from natural gas, propane and electricity were reviewed. Because methane and nitrous oxide emissions are minor, contributing less than 1% to a combined total, they have not been included.

Changes in CO_2 emissions are associated with changes in the amount of energy used. Each facility had environmental targets relating to energy use. CO_2 emissions decreases/avoidances are proportional to the energy savings resulting from the environmental programs.

Sparta

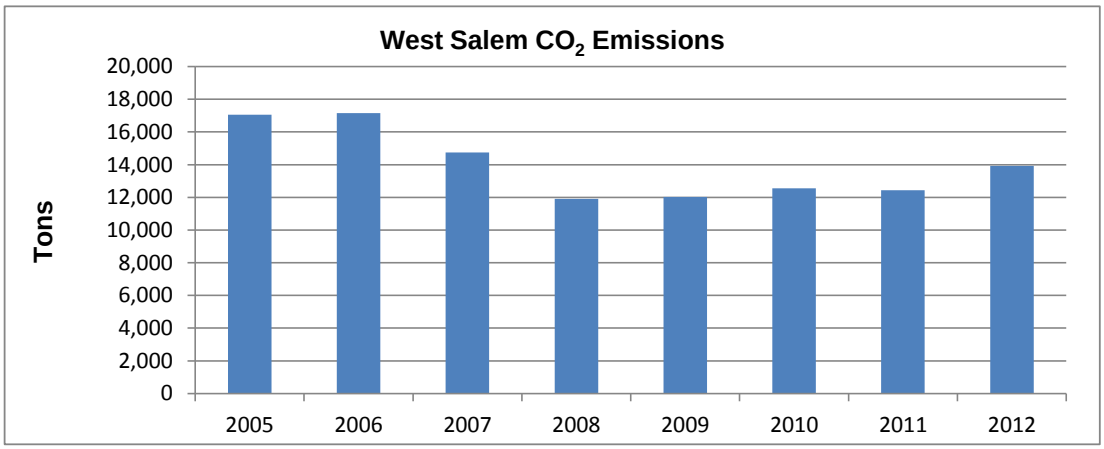
	2005	2006	2007	2008	2009	2010	2011	2012
MMBTU	116,095	97,162	88,755	88,774	92,890	88,499	79,067	69,841
tons CO_2	6,982	5,838	5,327	5,331	5,580	5,310	4,749	4,192
1000 KWh	12,032	9,806	8,688	7,726	8,223	7,943	7,222	7,527
tons CO_2	10,781	8,786	7,784	6,922	7,368	7,117	6,471	6,744
Total Tons	**17,763**	**14,623**	**13,111**	**12,253**	**12,948**	**12,417**	**11,220**	**10,936**
% Change	**11%**	**-18%**	**-10%**	**-7%**	**6%**	**-4%**	**-10%**	**-3%**



Appendix 4: Greenhouse Gas Emissions - Continued

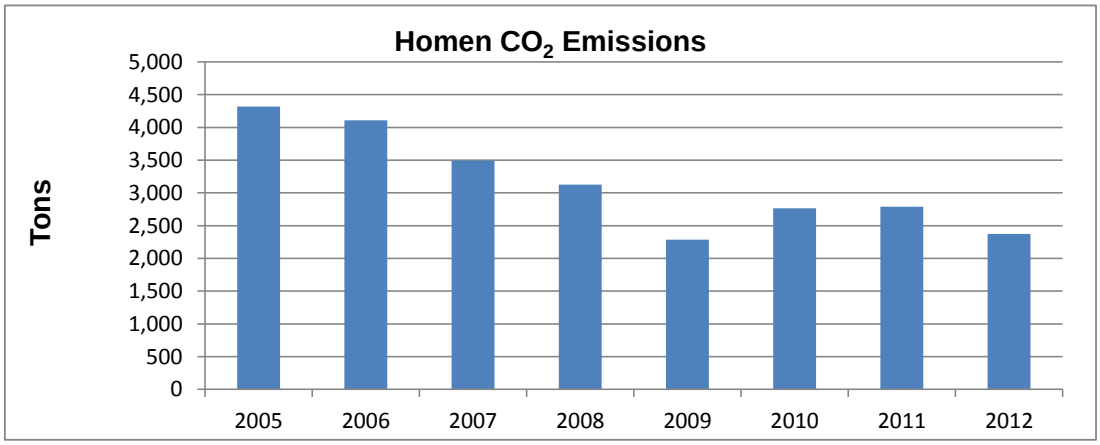
West Salem

	2005	2006	2007	2008	2009	2010	2011	2012
MMBTU	53,440	62,221	49,358	43,942	48,466	50,372	58,244	58,904
tons CO_2	3,216	3,736	2,964	2,639	2,917	3,024	3,497	3,537
1000 KWh	15,438	14,979	13,140	10,339	10,167	10,630	9,979	11,591
tons CO_2	13,832	13,421	11,773	9,264	9,110	9,524	8,941	10,386
Total Tons	**17,048**	**17,160**	**14,737**	**11,903**	**12,027**	**12,548**	**12,438**	**13,923**
% Change		**1%**	**-14%**	**-19%**	**1%**	**4%**	**-1%**	**12%**



Holmen

	2005	2006	2007	2008	2009	2010	2011	2012
MMBTU	16,055	15,402	13,551	12,870	9,627	10,825	10,840	8,039
tons CO_2	973	933	823	779	586	660	658	483
1000 KWh	3,736	3,542	2,978	2,620	1,899	2,348	2,380	2,108
tons CO_2	3,347	3,174	2,668	2,348	1,702	2,104	2,132	1,889
Total Tons	**4,320**	**4,107**	**3,491**	**3,127**	**2,288**	**2,764**	**2,790**	**2,372**
% Change		**-5%**	**-15%**	**-10%**	**-27%**	**21%**	**1%**	**-15%**



Appendix 5: The Glossary

VOCs - Volatile Organic Compounds: Organic materials that evaporate into the air.
Examples: Solvents used for cleanup or present in coatings, inks and sprays.

HAPs - Hazardous air pollutants: A group of hazardous chemicals listed by the EPA. These chemicals are believed to carry a greater health risk.
Examples: Toluene, Xylene, Glycol Ethers, ect.

RACT - Reasonably available control technology: Application of RACT provisions provide the lowest emission rate that a particular source is capable of achieving by the application of control technology that is reasonably available considering technological and economic feasibility. Such technology may previously have been applied to similar, but not necessarily identical, source categories.

LACT - Latest available control technology: This is required when it is determined that a source is technologically infeasible of controlling 85% of its organic compounds. LACT control measures are determined by the permit writer taking into account the control techniques and operating practices used by similar facilities.

NO_x - Nitrogen oxides (Emission amounts are determined by the WDNR from data provided by Northern Engraving Corporation.)

CO - Carbon monoxide (Emission amounts are determined by the WDNR from data provided by Northern Engraving Corporation.)

MCF - Thousand cubic feet: The standard measure of volume for natural gas used.

kWh - Kilowatt-hours: The standard measure for electricity used.

YTD - Year to Date

Hazardous Waste - Waste with a chmical composition or other properties that make it capable of causing harm to humans and other life forms when managed improperly or released to the environment. Hazardous wastes are characterized for ignitability, corrosivity, reactivity, and toxicity. The majority of Northern Engraving's hazardous waste is ignitable or corrosive.

Non-Hazardous Waste - Waste that does not exhibit ignitability, corrosivity, reactivity, or toxicity and would not be expected to cause harm to humans or the environment but may require special processing prior to disposal.

Solid Waste - All waste sent to a landfill or the La Crosse County waste-to-energy incinerator.

Questions and requests for additional information should be directed to Mary Goodman at the address below:

Northern Engraving Corporation
803 Black River Street
Sparta, Wisconsin 54656
mgoodman@norcorp.com

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revised/submitted May 7, 2013
by Mary K. Goodman