



RETIRED ENGINEER  
TECHNICAL ASSISTANCE PROGRAM

# Michigan Environmental Compliance Conference

# RETAP

## Retired Engineer Technical Assistance Program

**2000 Years of  
Professional Experience for Free**

David Herb  
RETAP Manager  
517-284-6863

- n Onsite Pollution Prevention & Energy Conservation Assessments Conducted by Teams of Retired Engineers
- n Free
- n Confidential
- n Non-Regulatory
- n No Obligations
- n Objective

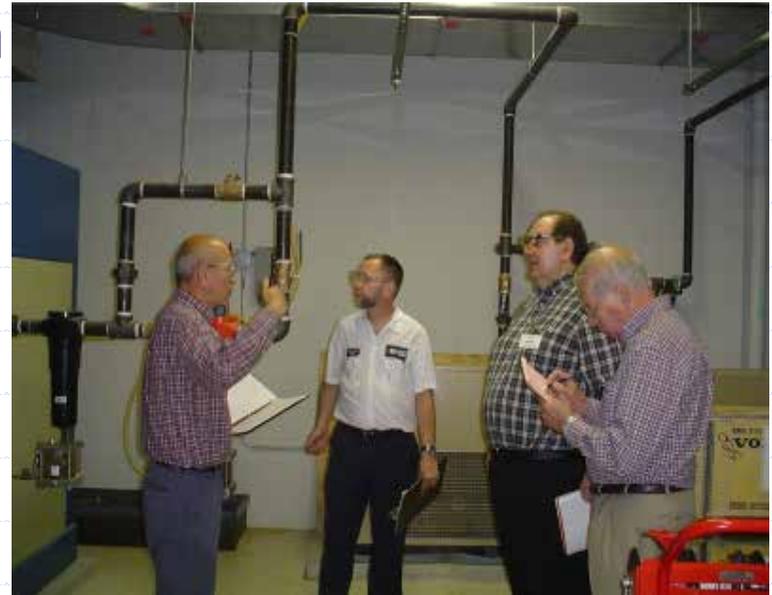
[www.michigan.gov/retap](http://www.michigan.gov/retap)



# RETAP Assessments

## Identify Pollution Prevention Opportunities:

- ◆ Reduce Energy Usage
- ◆ Eliminate Waste Generation
- ◆ Reuse & Recycle Wastes
- ◆ Green Alternatives
- ◆ Material & Water Usages
- ◆ Increase Process Efficiency
- ◆ Reduce Risks & Liability
- ◆ Identify Cost Savings
- ◆ Target Client Priorities



# RETAP Minimum Requirements



≤500 Full-Time Employees in Michigan (Businesses only)

Own Facility or Responsible for Building Improvements  
Significant Daily Use / Onsite Activities

Ongoing Operations Scheduled

≥\$25,000 Annual Energy, Water and Waste Bills

Provide Utility, Water & Waste Bills

Staff to Answer Questions During Onsite Assessment

Agreeable to two Annual Follow-up Surveys

Sign Indemnification Agreement

[www.michigan.gov/retap](http://www.michigan.gov/retap)

# RETAP

- ◆ Initiated in 1994

Natural Resources and Environmental Protection Act  
(NREPA), 1994 P.A. 452, Part 145

- ◆ Over 1800 assessments completed

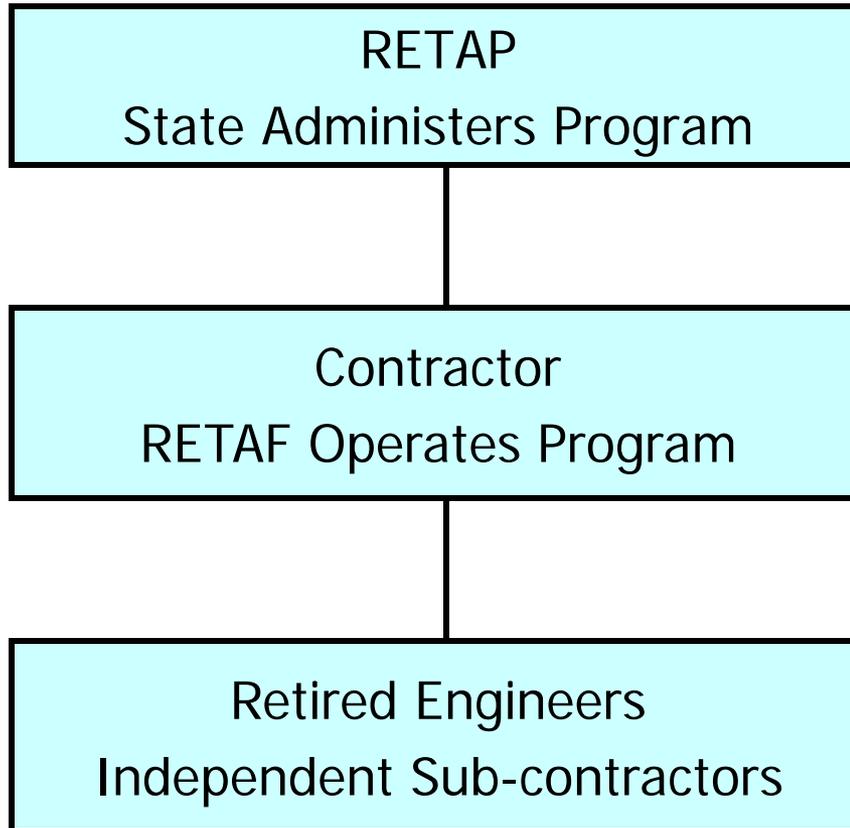
- ◆ 100 assessments per year

- ◆ 55 retired professionals

30 or more years professional experience

**Over 2000 Years of  
Combined Professional Experience**

# RETAP Structure



# RETAP Engineers

- n 27 Degreed Disciplines (15 Engineering Fields)
- n 22 Advanced Degrees (includes 3 PhDs)
- n 14 Licensed Professional Engineers
- n 5 AEE Certified Energy Auditors
- n 2 Certified Farm Energy Auditors
- n 11 Other Certifications
- n 1 Lawyer

[www.michigan.gov/retap](http://www.michigan.gov/retap)



# RETAP Engineer Skills

- Industrial production / plant operations / process engineering
- Energy management / energy conservation
- Environmental, health & safety
- Boilers, cooling towers, steam systems
- HVAC & industrial ventilation
- Lighting systems
- Materials & waste management
- Paint & coating operations
- Pneumatic systems
- Water & wastewater treatment
- Assembly operations
- Food processing
- Metal cleaning, cutting, forming, machining, stamping, plating, etc.
- Plastics manufacturing (blow molding, injection molding, extrusion)
- Organic & inorganic chemical processing
- Tool & die operations



# All Types of Facilities (>400 Classifications)

## ◆ Small Business (75%)

- Agricultural
- Manufacturing
- Services



## ◆ Government (12%)

- Community / Recreation Centers
- Maintenance Facilities
- Office Buildings
- Parking Facilities
- Police Stations / Jails
- Retirement / Senior Housing
- Water / Wastewater Treatment Plants



## ◆ Institution/Non-profit (12%)

- ◆ Hospitals / Medical Centers
- ◆ Museums / Cultural Centers
- ◆ Schools / Colleges



# RETAP Assessment Steps

- ◆ Request Assessment
- ◆ Assign Team Leader
- ◆ Obtain Utility Bills & Operational Information
- ◆ Perform "Preassessment"
- ◆ Assemble Team
- ◆ Perform Onsite Assessment
- ◆ Conduct Onsite Exit Meeting
- ◆ Write and Mail Report
- ◆ 8 Week, 12 Month, and 24 Month Follow-ups

# RETAP

# Assessment Report Outline

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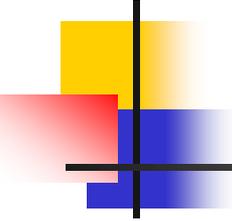
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## EXECUTIVE SUMMARY

A RETAP team conducted a pollution prevention and energy efficiency assessment of 1429 on November 12, 2008.

### Summary of P2, Waste Reduction, and Energy Conservation Recommendations

Ref. No.	Recommendation Description	Resource Savings	Dollar Savings	Est. Cost	Payback Time	Page No.
EA-1	Expand scope of safety committee and set specific, measurable goals	All forms of waste and energy	\$100,000 for 1% reduction goal			6
HW-1	Recycle spent fluorescent and metal halide lamps as they contain mercury	7,000 mg Hg 400 lbs	P2	Low		8
SW-1	Change from daily container pick-up to only during the week and none on weekends	Disposal Cost	\$5,200	\$0	Zero	11
SW-4	Decrease Compactor pick-up to bi-weekly instead of weekly	Disposal Cost	\$8,450	\$0	Zero	11
SW-6	Separate corrugated and cardboard paper roll cores for recycling	380 tons	\$11,600 or more			12
EL-1	Minimize on-peak electricity demand	7,000 kW for 5% reduction	\$140,000	\$0	Zero	13
EL-2	Increase power factor to a minimum of 0.85 to eliminate penalty		\$4,800 to \$57,000		Typically 1+ year	13
LT-3	Retrofit 200 eight foot, 2-lamp, T12 lighting with T8 lamps and electronic ballasts	98,500 kWh	\$6,400	\$14.7K	2.3 years	16
WS-1	Evaluate new water conservation technologies for restroom applications	50-65% water reduction		\$120-\$230		18



# RETAP

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## Achievements 1/01/13 – 12/31/13

46 Pollution Prevention Reports

8 Energy Conservation Reports

85 Buildings

1,817 Recommendations

### Business Savings

Operating Costs

Electricity Usage

Natural Gas Usage

Waste Disposal

Water Usage

### Amounts

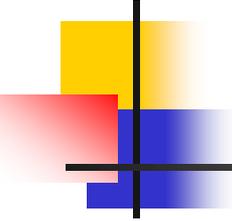
2.6 million dollars

13.7 million kWh

0.5 million CCF

1.7 million pounds

16.3 million gallons



# RETAP

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## Achievements 1/01/12 – 12/31/12

53 Pollution Prevention Reports

36 Energy Conservation Reports

208 Buildings

3,127 Recommendations

### Business Savings

Operating Costs

Electricity Usage

Natural Gas Usage

Waste Disposal

Water Usage

### Amounts

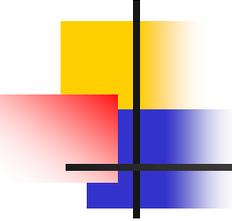
4.0 million dollars

21.2 million kWh

0.8 million CCF

2.7 million pounds

13.7 million gallons



# RETAP

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## Achievements 1/01/11 – 12/31/11

22 Pollution Prevention Reports

67 Energy Conservation Reports

184 Buildings

2,625 Recommendations

### Business Savings

Operating Costs

Electricity Usage

Natural Gas Usage

Waste Disposal

Water Usage

### Amounts

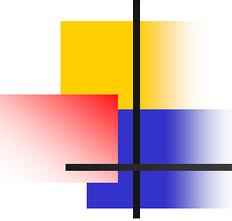
4.1 million dollars

19.7 million kWh

1.3 million CCF

2.5 million pounds

34.8 million gallons



# RETAP

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## Achievements 1/01/10 – 12/31/10

134 Energy Conservation Reports

230 Buildings

2,547 Recommendations

### Business Savings

Operating Costs

Electricity Usage

Natural Gas Usage

Waste Disposal

Water Usage

### Amounts

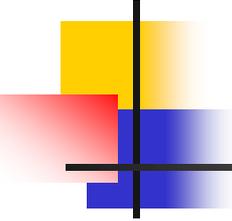
3.2 million dollars

21.2 million kWh

1.0 million CCF

NA million pounds

NA million gallons



# RETAP

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## Achievements 1/01/09 – 12/31/09

81 Pollution Prevention Reports  
2,210 Recommendations

### Business Savings

Operating Costs

Electricity Usage

Natural Gas Usage

Waste Disposal

Water Usage

### Amounts

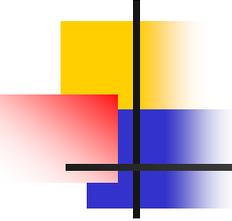
3.9 million dollars

19.8 million kWh

1.0 million CCF

2.9 million pounds

21.6 million gallons



# RETAP

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## Achievements 1/01/08 – 12/31/08

129 Pollution Prevention Reports  
3,405 Recommendations

### Business Savings

Operating Costs

Electricity Usage

Natural Gas Usage

Waste Disposal

Water Usage

### Amounts

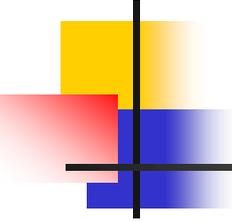
5.8 million dollars

31.6 million kWh

1.1 million CCF

10.7 million pounds

93.0 million gallons



# RETAP

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## Achievements 1/01/07 – 12/31/07

108 Pollution Prevention Reports  
2,878 Recommendations

### Business Savings

Operating Costs

Electricity Usage

Natural Gas Usage

Waste Disposal

Water Usage

### Amounts

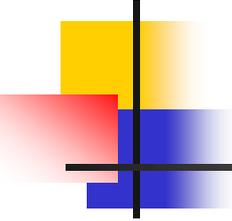
5.6 million dollars

40.0 million kWh

0.7 million CCF

28.7 million pounds

50.2 million gallons



# RETAP Follow-up Surveys

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## One Year

**44%** Implementation / Partial Implementation

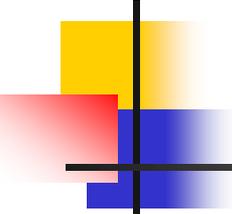
**37%** Achieved Cost Savings

## Two Years

**61%** Implementation / Partial Implementation

**79%** Achieved Cost Savings

**77% - 84%** Eventual Implementation



# RETAP Testimonials

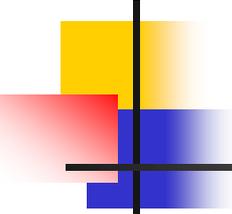
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## Date Company / Organization

04/24/14 AG Manufacturing  
 11/05/13 St. John Providence Health  
 10/04/13 Hillsdale County ISD  
 09/16/13 Kenwal Steel  
 07/02/13 Tennant Company  
 06/03/13 EMP, Inc.  
 05/21/13 Boyne District Library  
 04/18/13 Petoskey News Review  
 01/24/13 City of Birmingham  
 01/24/13 R.F. Engine  
 11/08/12 Linn Products, Inc.  
 08/21/12 Alger Correctional Facility  
 04/12/12 Action Mold & Machining, Inc.  
 04/02/12 ESPEC North America, Inc.  
 03/06/12 Katterman Trucking, Inc.  
 03/06/12 Magic Steel Sales, Inc.  
 02/07/12 Action Packaging, Inc.  
 01/24/12 Gary Oil & Propane  
 01/11/12 Michigan Air National Guard  
 12/22/11 Powers Clothing, Inc.  
 12/15/11 Portland Products, Inc.

## Date Company / Organization

12/14/11 Flexfab, LLC  
 11/28/11 Century Extrusion  
 11/23/11 SUSPA, Inc.  
 11/20/11 Model Coverall Service, Inc.  
 11/16/11 Aldinger, Inc.  
 11/15/11 Great Lakes Stainless, Inc.  
 11/14/11 Rose Hill Center  
 11/08/11 Trelleborg Automotive Americas  
 11/09/11 H&L Advantage  
 11/02/11 Viking Corporation  
 11/01/11 Brose North America, Inc.  
 10/28/11 Consumers Energy  
 10/28/11 Rocky Top Farms  
 10/27/11 The Argus-Press Company  
 10/25/11 All Washed Up Coin Laundry  
 10/24/11 ISRINGHAUSEN, Inc. USA  
 10/24/11 Capitol Bedding  
 10/03/11 Watervliet Public Schools  
 09/15/11 Zingerman's Businesses  
 07/14/11 Siemens Metallurgical Services



# RETAP Testimonials

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**09/16/2013**

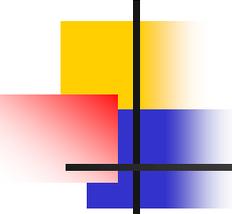
*"This group of retired engineers in their fields of expertise has been an invaluable asset to Kenwal Steel. The assessment produced over 40 recommendations, and two years after receiving the RETAP report, we achieved annual cost reductions of over \$185,000."*

Larry Bogner, Vice President Operations  
Kenwal Steel

**07/02/2013**

*"Tennant is already saving more than \$17,000 per year by taking action on many of the recommendations offered by the RETAP engineers. We are quite pleased with their assessment and appreciated RETAP's assistance in reducing energy costs."*

Richard Diekema, Maintenance Supervisor  
Tennant Company



# RETAP Testimonials

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**01/24/2012**

*"The RETAP engineer was very knowledgeable and very thorough. He was able to point out improvements we should make that we had not contemplated or considered. The report that was generated did help us make changes."*

Rod Matthews, Shop Manager  
Gary Oil & Propane

**11/01/2011**

*"We invited a RETAP assessment team to review our facility. The engineers quickly impressed us with their professionalism and knowledge. They identified several thoughtful recommendations, including estimated costs and savings and a definitive payback period for each suggestion."*

Jessie Richmond, Quality & Environment Systems  
Bose North America, Inc.

# RETAP

## Program Support

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10/28/2011

*"The RETAP program and the assessments that they provide are a quality and professional service that greatly enhance a company's ability to better manage waste, energy, and valuable resources. The recommendations that the RETAP provide will ultimately afford the client significant savings while reducing their environmental footprint and impact."*

Patrick Zombo, Waste Minimization Program Manager  
Consumers Energy

# RETAP

## Program Support

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11/22/2011

*“This is the kind of program our small and medium sized manufacturers need. With the RETAP Program, Michigan manufacturers have a valuable pool of experienced people to help with these complex pollution prevention and energy issues.”*

Andy Such, Director of Env. & Regulatory Policy

Michigan Manufacturers Association

# RETAP

## Program Awards Received

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Michigan Green Leaders Award

*Detroit Free Press*

Most Valuable P2 Program Award

*National Pollution Prevention Roundtable*

International Green Apple Award

*The Green Organization*

Base Challenge Award

*Michigan Air National Guard*

Community Service Award

*Michigan Park & Recreation Association*

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# RETAP

(5/1/14 thru 4/30/17)

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## Minimum Program Requirements

Assessments  $\geq$  270 Facilities

Energy Audits  $\geq$  15 Buildings

5400 Hours of Additional Assistance

[www.michigan.gov/retap](http://www.michigan.gov/retap)

# How to contact RETAP or get more Info?

**David Herb**

**800-662-9278**

**517-284-6863 (direct)**

**herbd@michigan.gov**

**Retired Engineer  
Technical Assistance  
Foundation**

**888-749-7886**

**248-478-8192 (fax)**



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