BEAVERCREEK TOWNSHIP
AGENDA PACKET
REGULAR TRUSTEES' MEETING
MONDAY APRIL 13, 2015
1:00 P.M.

Agenda: Pages 2

Administrator: Pages 3-13

- Shared Service Agreement Pages 3-4
- OPWC Representative for Township Representatives - District 11 Integrating Committee Page 5
- Greene County Sheriff's Office Report Pages 6-13

Human Resources: Pages 14-15

- Biweekly Report Pages 14-15

Zoning: Pages 16-17

- Biweekly Report Pages 16-17

Information Technology: Pages 18-19

- Biweekly Report Pages 18-19

Road: Pages 20-91

- Purchase Request for Asphalt Page 20
- Biweekly Report Page 21
- Energy Assessment Report Pages 22-91

Fire: Pages 92-100

- Resolution to Accept a Donation Page 92
- Facility Use Request for the Beavercreek Youth Council Page 92
- Policy Recommendation for False Alarms Page 92
- Biweekly Report Pages 94-95

Agenda
Regular Trustees' Meeting
Monday, April 13, 2015, at 1:00 p.m.
At the Fire Administration Building at 851 N. Orchard Lane, Beavercreek, OH 45434

Pledge of Allegiance - Moment of Silence

- Approve Agenda for the April 13, 2015, Meeting
- Approve the April 15, 2015, Payroll in the amount of $
- Approval of Bills in the amount of $
- Approval of Minutes:
  - Regular Meeting held March 30, 2015

Citizens Desiring to Speak (Each Speaker is Limited to 3 Minutes)

Old Business: None.

New Business: None.

Administrator:
- Shared Service Agreement
- OPWC Representative for Township Representatives - District 11 Integrating Committee
- Greene County Sheriff's Office Report
- Request to Schedule Special Zoning Meeting

Human Resources:
- Biweekly Report

Zoning:
- Biweekly Report

Information Technology:
- Biweekly Report

Road:
- Purchase Request for Asphalt
- Biweekly Report

Fire:
- Resolution to Accept a Donation
- Facility Use Request for the Beavercreek Youth Council
- Policy Recommendation for False Alarms
- Biweekly Report

Legal Advisor:

Trustees:

Fiscal Officer:

Legal Invoices

Adjourn

SHARED SERVICE AGREEMENT BETWEEN THE TOWNSHIPS OF BEAVERCREEK AND XENIA FOR HUMAN RESOURCES SERVICES

This is an agreement by and between Xenia Township ("Xenia") 8 Brush Row Road, Xenia Township, Ohio, and Beavercreek Township ("Beavercreek"), 1981 Dayton-Xenia Road, Beavercreek, Ohio, entered into on the date of the final approval of this Agreement by both parties.

WHEREAS, the Townships of Beavercreek and Xenia are in need of Human Resources services for completion of various projects and other tasks on an interim and ongoing basis;

WHEREAS, Beavercreek Township has Human Resources services staff who are qualified to provide the needed Human Resources services within each of the townships and desires to enter into an agreement to provide services identified herein;

NOW, THEREFORE, in consideration of the mutual promises and agreements contained herein, the parties agree as follows:

1. **Scope of Services**. Beavercreek will provide the following services: Human Resources services; reimbursement for privately owned vehicle; and if needed office space for use providing services across jurisdictions pursuant to the agreement. Xenia will provide access to a work station, supplies, and equipment needed when work is provided at the location of the requesting township.

2. **Fees for Service**. Xenia agrees to pay the Beavercreek fees for the services identified in the scope of services. The reimbursement rate shall be calculated utilizing the specific employee's hourly rate, OPERS, Medicare, and medical insurance benefit. Xenia will approve all work to be performed. Beavercreek will submit invoices itemized by date and activity and will include both on-site and off-site time and activity. Both Township Administrators will approve the invoice before submitting it for payment. Xenia agrees to pay the invoices within 30 days of receipt.

3. **Expense Reimbursement**. Mileage will be reimbursed at the current IRS rate per mile. Expenses incurred for program supplies and equipment shall be reimbursed at actual cost. Reimbursement for expenses will be included in the invoice from Beavercreek.

4. **Professional Services**. Beavercreek agrees that the services provided to the Xenia will be delivered by staff with the appropriate qualifications for the specified Human Resources services. Beavercreek further agrees that the services will not be provided by a substituted professional without Xenia's express written consent.

5. **Contract Term**. The term of this agreement shall commence upon execution and continue in full force and effect until the scope of services has been completed, or December 31, 2016, or the contract is terminated as provided herein, whichever occurs first.

6. **Termination of Contract**. The parties agree that this contract will not be terminated until the services are provided herein, unless there is a complete failure to perform the duties herein. Xenia's Administrator will notify Beavercreek's Administrator when it is unsatisfied with the services being performed and

allow for correction. If Xenia is still dissatisfied with the services after giving notice and time to correct performance, it may terminate the contract with 30 days' notice in writing to Beavercreek. Beavercreek may terminate the contract if Xenia fails to make payment as agreed herein. Beavercreek must give 30 days' notice in writing to Xenia prior to terminating herein.

7. **Beavercreek Employees Not Considered Employees of Xenia**. The public employee is a Beavercreek Employee and shall at all times herein be considered a Beavercreek employee. The public employee will not be considered a Xenia employee. The Beavercreek employee shall be subject to the policies of Beavercreek.

8. **Indemnification**. Each party shall be liable for its own acts to the extent provided by law and hereby agrees to indemnify, hold harmless and defend the other, its officers and employees against any and all liability, loss, costs, damages, expenses, claims or actions, including attorney's fees which the other, its officers and employees may hereafter sustain, incur or be required to pay, arising out of or by reason of any act or omission of the party, its agents, servants or employees, in the execution, performance or failure to adequately perform its obligations pursuant to this Agreement. Said policies shall be kept in effect during the entire term of this Agreement.

9. **Assignment**. Neither Xenia nor Beavercreek may assign, delegate or otherwise transfer this Agreement or any of its rights or obligations hereunder without the prior written consent of the other, which consent shall not be unreasonably withheld.

10. **Entire Agreement**. This Agreement embraces the entire agreement between the parties. No oral agreement or representation concerning this Agreement shall be binding.

11. **Severability**. Every provision of this Agreement shall be construed, to the extent possible, so as to be valid and enforceable. If any provision of this agreement so constructed is held by a court of competent jurisdiction to be invalid, illegal or otherwise unenforceable, such provision shall be deemed severed from this Agreement, and all other provisions shall remain in full force and effect.

12. **Amendments**. This Agreement may be altered, extended, changed or amended in writing by mutual agreement of the parties when dated and attached hereto without altering the other terms of this agreement.

IN WITNESS THEREOF, the parties have set their hands as of the day and year below their respective signatures and by their signature agree to be bound by the promises, obligations, covenants and duties contained herein.

Xenia Township Administrator	**Date**
Beavercreek Township Administrator	**Date**

BEAVERCREEK TOWNSHIP

1981 Dayton-Xenia Road
Beavercreek, Ohio 45434-7158
(937) 429-4472
(937) 429-5678 Fax

Trustees - Carol Graff
Dan Paxson
Tom Kretz

Fiscal Officer - Christy L. Ahrens

Administrator - J. Alexander Zaharieff

BEAVERCREEK TOWNSHIP TRUSTEES
GREENE COUNTY, OHIO

RESOLUTION NUMBER: _____
ADOPTION DATE: APRIL 13, 2015

WHEREAS, The Ohio Revised Code section 164.04(6) in regards to the Ohio Public Works Commission – District 11 Integrating Committee requires: three members shall be appointed by the majority of board of township trustees located within the district, and

WHEREAS, the District 11 Integrating Committee's appointed members oversee the Ohio Public Works Infrastructure Program for the District's eight counties, including Champaign, Clark, Darke, Greene, Madison, Miami, Preble, and Union, and

WHEREAS, the 24 member committee will have three representatives from townships within District 11.

NOW THEREFORE BE IT RESOLVED THAT, the Board of Trustees of Beavercreek Township, Greene County, hereby nominates Scott Miller of Xenia Township as Representative and hereby nominates Carrie Smith of Spring Valley Township as Alternate.

THE VOTE WAS AS FOLLOWS:

Carol Graff ____ Tom Kretz ____ Daniel K. Paxson ____

APPROVED BY:

BEAVERCREEK TOWNSHIP TRUSTEES

_____

Tom Kretz, Chair

_____

Daniel K. Paxson, Vice Chair

_____

Carol Graff, Trustee

ATTESTED BY:

_____

Christy L. Ahrens

Fiscal Officer

DRAFT

Greene County Sheriff's Office
Incident Analysis - Beavercreek Twp

Incident Type	Incident Date And Time	Incident Number
911 Hang Up	03/31/2015 08:54:12	2015-00009944
		Type Totals: 1
Alarm - Business/Bank	03/25/2015 13:32:18	2015-00009207
Alarm - Business/Bank	03/31/2015 02:36:41	2015-00009917
Alarm - Business/Bank	04/02/2015 07:54:19	2015-00010181
Alarm - Business/Bank	04/03/2015 17:37:10	2015-00010402
Alarm - Business/Bank	04/04/2015 16:31:41	2015-00010545
		Type Totals: 5
Alarm - Residential	03/29/2015 21:54:22	2015-00009707
Alarm - Residential	04/07/2015 13:26:19	2015-00010903
Alarm - Residential	04/09/2015 08:58:36	2015-00011204
Alarm - Residential	04/09/2015 09:18:59	2015-00011205
		Type Totals: 4
Animal Complaint	03/29/2015 10:40:51	2015-00009665
		Type Totals: 1
Assist	04/03/2015 10:19:52	2015-00010359
Assist	04/03/2015 16:36:13	2015-00010397
Assist	04/03/2015 16:39:45	2015-00010396
Assist	04/05/2015 02:55:15	2015-00010604
Assist	04/07/2015 22:00:23	2015-00010972
Assist	04/09/2015 00:05:34	2015-00011151
		Type Totals: 6
Breaking & Entering	04/02/2015 16:03:21	2015-00010253
		Type Totals: 1
Business Check	03/25/2015 21:02:51	2015-00009244
Business Check	03/25/2015 21:07:26	2015-00009246
Business Check	03/25/2015 22:01:14	2015-00009253
Business Check	03/25/2015 22:43:00	2015-00009259
Business Check	03/25/2015 23:26:26	2015-00009265
Business Check	03/26/2015 02:01:37	2015-00009280
Business Check	03/26/2015 03:49:28	2015-00009286
Business Check	03/26/2015 14:33:00	2015-00009329
Business Check	03/26/2015 18:37:49	2015-00009349
Business Check	03/26/2015 21:00:18	2015-00009354
Business Check	03/26/2015 21:05:34	2015-00009355
Business Check	03/26/2015 22:38:02	2015-00009368
Business Check	03/27/2015 00:10:40	2015-00009383
Business Check	03/27/2015 00:41:03	2015-00009385
Business Check	03/27/2015 01:31:10	2015-00009388
Business Check	03/27/2015 03:15:51	2015-00009402
Business Check	03/27/2015 03:18:32	2015-00009403

Business Check	03/27/2015 13:11:01	2015-00009439
Business Check	03/27/2015 13:48:16	2015-00009445
Business Check	03/28/2015 01:33:45	2015-00009524
Business Check	03/28/2015 01:48:12	2015-00009529
Business Check	03/28/2015 03:08:08	2015-00009537
Business Check	03/28/2015 03:39:30	2015-00009539
Business Check	03/29/2015 01:25:22	2015-00009626
Business Check	03/29/2015 01:41:10	2015-00009628
Business Check	03/29/2015 01:57:26	2015-00009632
Business Check	03/29/2015 01:58:29	2015-00009633
Business Check	03/29/2015 02:58:30	2015-00009636
Business Check	03/30/2015 01:21:56	2015-00009741
Business Check	03/30/2015 01:24:28	2015-00009742
Business Check	03/30/2015 02:08:29	2015-00009754
Business Check	03/30/2015 02:21:22	2015-00009757
Business Check	03/30/2015 02:28:13	2015-00009758
Business Check	03/30/2015 08:36:42	2015-00009776
Business Check	03/30/2015 14:48:03	2015-00009836
Business Check	03/30/2015 14:50:03	2015-00009837
Business Check	03/30/2015 15:02:21	2015-00009840
Business Check	03/30/2015 17:00:05	2015-00009853
Business Check	03/30/2015 20:47:10	2015-00009871
Business Check	03/30/2015 21:00:39	2015-00009873
Business Check	03/30/2015 21:34:26	2015-00009879
Business Check	03/30/2015 21:40:44	2015-00009882
Business Check	03/30/2015 21:45:57	2015-00009884
Business Check	03/30/2015 23:00:54	2015-00009895
Business Check	03/30/2015 23:03:48	2015-00009896
Business Check	03/30/2015 23:06:25	2015-00009897
Business Check	03/31/2015 00:31:42	2015-00009901
Business Check	03/31/2015 00:40:31	2015-00009905
Business Check	03/31/2015 02:15:44	2015-00009916
Business Check	03/31/2015 02:43:36	2015-00009918
Business Check	03/31/2015 03:59:11	2015-00009923
Business Check	03/31/2015 04:45:11	2015-00009926
Business Check	03/31/2015 19:32:16	2015-00010004
Business Check	03/31/2015 20:53:53	2015-00010011
Business Check	03/31/2015 21:23:56	2015-00010015
Business Check	03/31/2015 21:33:03	2015-00010017
Business Check	03/31/2015 21:58:36	2015-00010020
Business Check	03/31/2015 22:00:46	2015-00010021
Business Check	03/31/2015 23:37:04	2015-00010030
Business Check	03/31/2015 23:40:01	2015-00010031

Business Check

	04/01/2015 03:21:17	2015-00010057
Business Check	04/01/2015 04:41:33	2015-00010062
Business Check	04/02/2015 02:12:22	2015-00010174
Business Check	04/03/2015 07:31:06	2015-00010318
Business Check	04/03/2015 07:36:54	2015-00010320
Business Check	04/03/2015 07:39:02	2015-00010321
Business Check	04/03/2015 07:43:20	2015-00010322
Business Check	04/03/2015 07:53:33	2015-00010324
Business Check	04/03/2015 07:58:41	2015-00010327
Business Check	04/03/2015 08:00:44	2015-00010329
Business Check	04/03/2015 08:04:00	2015-00010330
Business Check	04/03/2015 08:08:06	2015-00010331
Business Check	04/03/2015 08:26:55	2015-00010335
Business Check	04/03/2015 20:27:14	2015-00010410
Business Check	04/03/2015 20:34:13	2015-00010411
Business Check	04/03/2015 21:12:26	2015-00010420
Business Check	04/03/2015 21:22:07	2015-00010421
Business Check	04/03/2015 22:56:58	2015-00010430
Business Check	04/03/2015 23:29:34	2015-00010437
Business Check	04/04/2015 01:58:15	2015-00010465
Business Check	04/04/2015 02:01:20	2015-00010466
Business Check	04/04/2015 03:39:05	2015-00010481
Business Check	04/04/2015 08:48:14	2015-00010494
Business Check	04/04/2015 10:09:20	2015-00010511
Business Check	04/04/2015 15:25:38	2015-00010541
Business Check	04/04/2015 16:52:03	2015-00010546
Business Check	04/04/2015 16:54:47	2015-00010547
Business Check	04/04/2015 20:32:35	2015-00010556
Business Check	04/04/2015 20:36:31	2015-00010557
Business Check	04/04/2015 21:16:19	2015-00010562
Business Check	04/04/2015 22:10:03	2015-00010567
Business Check	04/05/2015 00:42:57	2015-00010577
Business Check	04/05/2015 01:21:41	2015-00010581
Business Check	04/05/2015 01:29:32	2015-00010583
Business Check	04/05/2015 02:44:01	2015-00010602
Business Check	04/06/2015 09:13:44	2015-00010730
Business Check	04/06/2015 10:22:31	2015-00010739
Business Check	04/06/2015 10:35:34	2015-00010742
Business Check	04/06/2015 13:58:09	2015-00010771
Business Check	04/06/2015 14:32:55	2015-00010776
Business Check	04/07/2015 01:14:48	2015-00010831
Business Check	04/08/2015 11:53:26	2015-00011036
Business Check	04/08/2015 18:55:59	2015-00011081
Business Check		

	04/08/2015 20:56:18	2015-00011092
Business Check	04/08/2015 20:57:45	2015-00011094
Business Check	04/08/2015 21:17:37	2015-00011104
Business Check	04/08/2015 21:26:34	2015-00011107
Business Check	04/08/2015 22:10:38	2015-00011123
Business Check	04/08/2015 22:12:50	2015-00011124
Business Check	04/08/2015 22:20:43	2015-00011125
Business Check	04/08/2015 23:04:29	2015-00011132
Business Check	04/08/2015 23:44:35	2015-00011140
Business Check	04/08/2015 23:54:16	2015-00011145
Business Check	04/09/2015 03:13:54	2015-00011171
Business Check	04/09/2015 04:10:19	2015-00011193
Business Check	04/09/2015 08:02:11	2015-00011198
Business Check	04/09/2015 12:43:56	2015-00011221
Business Check	04/09/2015 12:46:37	2015-00011222
		Type Totals: 118
Child Endangering	04/01/2015 13:10:32	2015-00010129
		Type Totals: 1
Civil Other	03/27/2015 09:22:19	2015-00009417
Civil Other	03/30/2015 15:58:58	2015-00009846
Civil Other	03/30/2015 19:02:04	2015-00009862
Civil Other	04/02/2015 20:27:51	2015-00010267
Civil Other	04/07/2015 19:47:03	2015-00010947
		Type Totals: 5
Crash - Property Damage	03/27/2015 17:55:44	2015-00009465
Crash - Property Damage	04/05/2015 14:40:42	2015-00010656
		Type Totals: 2
Crash - Unknown Injuries	04/03/2015 11:09:47	2015-00010360
		Type Totals: 1
Criminal Damaging	03/31/2015 10:16:25	2015-00009959
		Type Totals: 1
Detail - Other	03/28/2015 12:13:05	2015-00009571
Detail - Other	04/08/2015 13:10:30	2015-00011053
Detail - Other	04/08/2015 13:47:07	2015-00011057
		Type Totals: 3
Detail - School	04/08/2015 08:28:31	2015-00011008
		Type Totals: 1
Disabled Vehicle	03/26/2015 15:04:11	2015-00009334
Disabled Vehicle	03/30/2015 09:58:57	2015-00009802
Disabled Vehicle	03/31/2015 01:23:56	2015-00009912
Disabled Vehicle	04/02/2015 23:07:43	2015-00010275
Disabled Vehicle	04/04/2015 10:44:48	2015-00010515
Disabled Vehicle	04/06/2015 12:33:24	2015-00010754

Disabled Vehicle	04/07/2015 17:39:54	2015-00010932
Disabled Vehicle	04/08/2015 09:07:10	2015-00011017
		Type Totals: 8
Disturbance	04/07/2015 22:29:44	2015-00010974
		Type Totals: 1
Extra Patrol	03/28/2015 00:24:41	2015-00009502
Extra Patrol	03/28/2015 16:38:11	2015-00009586
Extra Patrol	03/29/2015 00:16:41	2015-00009611
Extra Patrol	03/29/2015 23:39:20	2015-00009709
Extra Patrol	03/30/2015 00:33:23	2015-00009734
Extra Patrol	04/02/2015 23:11:02	2015-00010276
Extra Patrol	04/03/2015 02:39:21	2015-00010311
Extra Patrol	04/06/2015 16:42:46	2015-00010789
Extra Patrol	04/07/2015 16:42:31	2015-00010930
Extra Patrol	04/08/2015 00:41:24	2015-00010983
Extra Patrol	04/08/2015 00:54:50	2015-00010986
		Type Totals: 11
Follow Up	03/25/2015 13:26:35	2015-00009206
Follow Up	03/25/2015 16:44:49	2015-00009234
Follow Up	03/28/2015 07:59:43	2015-00009545
Follow Up	04/09/2015 12:22:56	2015-00011219
		Type Totals: 4
Fraud/Forgery	03/29/2015 13:34:19	2015-00009676
		Type Totals: 1
House Check	03/25/2015 16:07:54	2015-00009228
House Check	03/25/2015 18:50:59	2015-00009238
House Check	03/25/2015 21:24:18	2015-00009247
House Check	03/25/2015 21:55:05	2015-00009252
House Check	03/26/2015 01:45:46	2015-00009277
House Check	03/26/2015 01:51:39	2015-00009278
House Check	03/26/2015 16:11:03	2015-00009338
House Check	03/26/2015 16:39:43	2015-00009340
House Check	03/26/2015 16:50:18	2015-00009342
House Check	03/26/2015 21:20:07	2015-00009356
House Check	03/26/2015 21:48:02	2015-00009361
House Check	03/26/2015 22:48:58	2015-00009370
House Check	03/26/2015 22:54:55	2015-00009371
House Check	03/27/2015 09:23:54	2015-00009418
House Check	03/27/2015 09:52:16	2015-00009423
House Check	03/27/2015 13:38:40	2015-00009443
House Check	03/27/2015 13:43:27	2015-00009444
House Check	03/28/2015 01:27:26	2015-00009522
House Check	03/28/2015 01:40:58	2015-00009527

House Check	03/28/2015 01:41:57	2015-00009528
House Check	03/28/2015 02:35:30	2015-00009533
House Check	03/28/2015 11:00:42	2015-00009565
House Check	03/28/2015 15:22:04	2015-00009578
House Check	03/28/2015 15:25:54	2015-00009580
House Check	03/29/2015 00:56:29	2015-00009617
House Check	03/29/2015 02:25:29	2015-00009635
House Check	03/30/2015 00:23:33	2015-00009726
House Check	03/30/2015 09:32:54	2015-00009794
House Check	03/30/2015 13:29:16	2015-00009824
House Check	03/30/2015 13:33:47	2015-00009825
House Check	03/30/2015 14:14:06	2015-00009831
House Check	03/30/2015 18:36:36	2015-00009859
House Check	03/30/2015 20:40:50	2015-00009867
House Check	03/30/2015 20:44:03	2015-00009869
House Check	03/31/2015 02:57:42	2015-00009919
House Check	03/31/2015 07:32:36	2015-00009932
House Check	03/31/2015 08:05:04	2015-00009934
House Check	03/31/2015 08:19:20	2015-00009936
House Check	03/31/2015 21:10:24	2015-00010013
House Check	03/31/2015 21:13:44	2015-00010014
House Check	03/31/2015 23:52:34	2015-00010035
House Check	04/01/2015 01:01:19	2015-00010044
House Check	04/03/2015 08:54:17	2015-00010339
House Check	04/03/2015 09:11:21	2015-00010343
House Check	04/03/2015 09:28:52	2015-00010345
House Check	04/03/2015 09:33:56	2015-00010346
House Check	04/03/2015 19:17:56	2015-00010406
House Check	04/03/2015 21:40:53	2015-00010424
House Check	04/03/2015 21:44:07	2015-00010425
House Check	04/03/2015 23:23:50	2015-00010435
House Check	04/04/2015 08:39:37	2015-00010492
House Check	04/04/2015 15:01:19	2015-00010538
House Check	04/04/2015 15:06:27	2015-00010539
House Check	04/04/2015 21:32:01	2015-00010563
House Check	04/04/2015 21:34:11	2015-00010564
House Check	04/04/2015 23:36:51	2015-00010572
House Check	04/06/2015 09:03:19	2015-00010728
House Check	04/06/2015 13:49:07	2015-00010766
House Check	04/06/2015 13:53:31	2015-00010769
House Check	04/07/2015 11:07:46	2015-00010884
House Check	04/07/2015 13:55:03	2015-00010906
House Check	04/08/2015 08:51:48	2015-00011013
House Check		

	04/08/2015 09:20:55	2015-00011018
House Check	04/08/2015 18:48:44	2015-00011079
House Check	04/09/2015 02:07:02	2015-00011168
		Type Totals: 65
Radar/Lidar Post	03/25/2015 07:25:27	2015-00009168
Radar/Lidar Post	03/25/2015 08:29:37	2015-00009180
Radar/Lidar Post	03/31/2015 14:21:57	2015-00009982
Radar/Lidar Post	04/08/2015 14:05:19	2015-00011062
		Type Totals: 4
Request Officer	03/30/2015 10:02:41	2015-00009815
Request Officer	04/01/2015 17:08:56	2015-00010150
Request Officer	04/04/2015 20:35:32	2015-00010559
		Type Totals: 3
Street / Road Obstruction	03/25/2015 08:39:10	2015-00009183
Street / Road Obstruction	04/03/2015 01:00:10	2015-00010305
Street / Road Obstruction	04/03/2015 11:47:57	2015-00010366
Street / Road Obstruction	04/03/2015 18:43:30	2015-00010405
Street / Road Obstruction	04/08/2015 11:06:07	2015-00011029
		Type Totals: 5
Suspicious Person	03/29/2015 19:02:37	2015-00009694
Suspicious Person	04/05/2015 22:30:11	2015-00010669
Suspicious Person	04/08/2015 23:23:22	2015-00011138
		Type Totals: 3
Suspicious Vehicle	04/03/2015 21:24:09	2015-00010422
Suspicious Vehicle	04/03/2015 21:51:26	2015-00010427
Suspicious Vehicle	04/04/2015 02:29:09	2015-00010469
		Type Totals: 3
Test Call	03/31/2015 08:40:11	2015-00009940
		Type Totals: 1
Theft	03/27/2015 16:01:22	2015-00009458
		Type Totals: 1
Traffic Complaint	03/25/2015 20:36:51	2015-00009243
		Type Totals: 1
Traffic Stop	03/25/2015 11:48:42	2015-00009199
Traffic Stop	03/25/2015 13:45:56	2015-00009209
Traffic Stop	03/26/2015 00:55:53	2015-00009269
Traffic Stop	03/27/2015 20:58:22	2015-00009479
Traffic Stop	03/31/2015 19:16:49	2015-00010001
Traffic Stop	04/02/2015 02:38:12	2015-00010176
Traffic Stop	04/03/2015 01:23:51	2015-00010307
Traffic Stop	04/03/2015 12:55:20	2015-00010372
Traffic Stop	04/03/2015 13:18:55	2015-00010376
Traffic Stop	04/03/2015 16:52:01	2015-00010399

Traffic Stop	04/04/2015 09:13:41	2015-00010500
Traffic Stop	04/04/2015 13:12:37	2015-00010529
Traffic Stop	04/04/2015 13:59:31	2015-00010531
Traffic Stop	04/04/2015 14:39:37	2015-00010535
Traffic Stop	04/04/2015 18:54:02	2015-00010552
Traffic Stop	04/05/2015 10:33:11	2015-00010639
Traffic Stop	04/06/2015 01:25:33	2015-00010695
Traffic Stop	04/06/2015 02:40:22	2015-00010705
Traffic Stop	04/06/2015 02:41:02	2015-00010706
Traffic Stop	04/07/2015 13:05:44	2015-00010898
Traffic Stop	04/07/2015 13:25:24	2015-00010902
Traffic Stop	04/07/2015 13:38:22	2015-00010905
Traffic Stop	04/07/2015 14:45:45	2015-00010919
Traffic Stop	04/07/2015 19:08:43	2015-00010937
Traffic Stop	04/08/2015 12:37:33	2015-00011046
Traffic Stop	04/08/2015 14:32:56	2015-00011067
Traffic Stop	04/09/2015 00:30:49	2015-00011155
Traffic Stop	04/09/2015 13:06:34	2015-00011224
		Type Totals: 28
Vehicle Maintenance	03/27/2015 08:40:10	2015-00009410
Vehicle Maintenance	04/07/2015 08:44:58	2015-00010861
		Type Totals: 2
Weapons / Shots Fired	04/04/2015 22:42:33	2015-00010569
		Type Totals: 1
Welfare Check	03/28/2015 19:07:21	2015-00009592
Welfare Check	03/31/2015 17:25:01	2015-00009994
Welfare Check	03/31/2015 20:08:31	2015-00010009
		Type Totals: 3

4/9/2015 1:50:36 PM

BEAVERCREEK TOWNSHIP
HUMAN RESOURCES DEPARTMENT
851 Orchard Lane, Beavercreek, Ohio 45434
Ph: (937) 426-1213 Fax: (937) 306-5150

BI-WEEKLY ACTIVITY REPORT

April 13, 2015

JOB TASKS:

1. 3 Workers' Compensation claim for 2015
   3 claims filed in 2014
2. Prepare bi-weekly report
3. Review bills
4. Work with labor attorney on multiple issues
5. Work on multiple insurance billing issues
6. Work on non-work related injuries
7. Work on insurance census
8. Review subpoenas and send to employees
9. Review applications
10. Prepare annual report
11. Work on return to work for injured employee
12. Work on personnel matters
13. Work on BWC paperwork
14. Work on FMLA issues
15. Work on unemployment matter (s)

MEETINGS AND OTHER ACTIVITIES:

Meet with the TA on multiple issues
Meet with Chief VandenBos on multiple issues
Attend staff meeting

BEAVERCREEK TOWNSHIP
HUMAN RESOURCES DEPARTMENT
851 Orchard Lane, Beavercreek, Ohio 45434
Ph: (937) 426-1213 Fax: (937) 306-5150

OSL training
Attend Safety Congress
Meet with employee on issues pertaining to FMLA

OVERVIEW: I was out of the office last week for Spring break, in addition to attending the BWC Safety Congress.

CHALLENGES: None at this time.

NEEDS: None at this time.

BEAVERCREEK TOWNSHIP
ZONING DEPARTMENT
851 Orchard Lane, Beavercreek, Ohio 45434
Ph: (937) 306-0065 Fax: (937) 427-6574

BI-WEEKLY REPORT

FOR THE TRUSTEES MEETING OF MONDAY, APRIL 13, 2015

ACTIVITY FROM THU. MARCH 26 THROUGH WED. APRIL8, 2015

PERMITS: Four permits for single-family dwellings were issued in this period. Other Zoning Permits issued included one deck, one fence, one commercial sign and one residential accessory structure.

The following chart compares Zoning Permits issued to this date this year and last:

	2014	2015
Single family dwellings/driveways	11/12	13/12
Additions	0	0
Fences	5	3
Pools (including fence)	0	2
Signs	1	2
Rights of Way	1	0
Accessory Decks & Covered Patio	0	1
Accessory Structures	0	3
Commercial Structures	0	0
Commercial Addition	0	0
Commercial Accessory Structures	1	0
Temporary Tents (permits/ # of tents)	2/5	2/5
Agricultural Exemption Certificate	0	1
Use Compliance Certificates	0	0
Cell Tower Co-location	0	0
Temporary Use Permits (Real Estate Sales)	0	0
Political Signs	1	0
Total (including driveways)	34	39

PENDING: Three single-family dwellings, one construction drawing review and one Record Plan review.

BEAVERCREEK TOWNSHIP
ZONING DEPARTMENT
851 Orchard Lane, Beavercreek, Ohio 45434
Ph: (937) 306-0065 Fax: (937) 427-6574

MEETINGS/OTHER ACTIVITIES:

1. Consulted with applicant/engineer for Specific Site Plan application at River Reserve.
2. Consulted with owners, legal counsel, Zoning Commission Chair and Township Administrator re: PUD Conditional Use Application from Valley Springs Farm.
3. Continued work on annual update of Zoning Map and Zoning Resolution Text for submission to Greene County Recorder.
4. Continued work on Highway Business District Overlay; several discussions with Township Administrator.
5. Met with RPCC Exec. Dir. re: Open Space Committee, Bexley 3A and, River Reserve.
6. Attended Trustees' Regular Meeting 3-30-15.
7. Attended Zoning Commission Meeting /Public Hearing 04-02-15.
8. Met with property owner re development options 04-03-15.
9. Corresponded with residents of Arlington Place re: drainage issue.
10. Corresponded with resident of Arlington Place re: fence permit.
11. Consulted with developer of Arlington Place re: establishment of a Homeowners' Association.
12. Conducted several inspections at Bexley Hills Section 3A.
13. Inspected placement of four single-family dwellings for compliance with permits.
14. Consulted with Greene County Flood Plain Administrator.
15. Attended Township Administrator's Staff Meeting 04-08-15.

BEAVERCREEK TOWNSHIP
INFORMATION TECHNOLOGY DEPARTMENT
851 Orchard Lane, Beavercreek, Ohio 45434
Ph: (937) 306.5049 Fax: (937) 426-8780

Bi-Weekly Report
Apr 6, 2015
(30 Mar – 6 Apr 15)

Trustees,

The following is a brief synopsis of the past two weeks in the IT department. I will be present to answer any questions or concerns you may have.

IT Projects/Management:

- Research and deploy video conferencing between all Fire Stations (on-hold)
  - Hope to start testing next week, done with OSL setup
  - Need to coordinate test with Fire Department
  - May need to purchase additional bandwidth dependant on test results.
- Upgrade Citrix environment (in-work)
  - Just purchased NetScaler AccessGateway (configuring/Testing)
- Move projector from Trustee Meeting Rm. to Fire Admin meeting room. (hold)
- Equipment Inventory, Surplus (Gov Deals) and Repurpose IT equipment (hold)
  - Decommission old mail server and domain controller (all 2003 servers)
- Hot/Warm site planning, station 64(hold)
  - Move equipment (old SAN and Citrix Host Servers)

Network Administration:

- Worked with TCG and configured phone switch and automated system for Township
  - Township's main line (937) 429-4472 is now automated
- Patched /Rebooted server
- Hard drive crash on AX 4-5i SAN.
  - Ordered and replaced failed drive
- Social Media—Website, Facebook, Twitter
  - Applied several updates to both Fire and TWP websites
  - Edited/Posted Trustees meeting to YouTube
  - Contacted owner of Beavercreek Buzz
    - Gave us permission to post directly to his page and he would forwarded based on content (worthiness)…
- Verified Backups are current and running
  - New version of Symantec available, will be updated soon
- Reviewed Span/Web filters for intrusions.

BEAVERCREEK TOWNSHIP
INFORMATION TECHNOLOGY DEPARTMENT
851 Orchard Lane, Beavercreek, Ohio 45434
Ph: (937) 306.5049 Fax: (937) 426-8780

- Deleted/Whitelisted as appropriate

Meetings:

- Department Heads meeting –OSL presentation

Training:

- Citrix –NetScaler Access Gateway configuration

Purchases:

- TCG – Program phone lines (setup automated answering system for Township)
- CDWG – Hard drives for AX 4-5i SAN (replace failed drive)
- CDWG – NetSclaler Access Gateway Virtual Appliance w/ 1 year service

Miscellaneous:

- Sheriff's In-Motion device not working properly. County currently working issue with Verizon.
- OSL configuration and deployment.
  - Been working directly with OSL assisting with the configuration and deployment.
  - No major issues and software is up and running
  - Posted how-to manuals on SharePoint site

I look forward to meeting with you at the 6 Apr meeting and answering any questions/concerns you may have on the preceding information. In the meantime, if you have any questions you can contact me via email or my cell @ 937.212.1379

Jeff Terry | Information Technology
Beavercreek Township
937.306.5049

To: Alex Zaharieff
From: Tim Parks
Date: April 9, 2015
Reference: April 13 Trustees Meeting

Alex:

On Monday April 13 I will be bringing the following:

- I will be bring a purchase request for $5,000to purchase bulk asphalt to start making repairs to roadways as needed.

  I move to approve the purchase request(00342) to Valley Asphalt for 448 asphalt, in the amount of $5,000; and to authorize the Township Administrator to sign for the Board.

- **Bi-weekly activity report**

BI-WEEKLY ACTIVITY REPORT FOR ROAD/MAINTENANCE DEPARTMENT

April 9, 2015

Calls for Service:

- High water- 6 hours

Accomplishment/Information:

- Attended Staff meeting
- Meeting with Administrator
- Meeting with resident and Soil and Water on drainage complaint Spring Ridge
- Researching easements for Conservancy
- Researching drainage complaint Arlington sub division
- Attended OSL training
- Met with several residents on Beaver Cemetery issues
- Began sodding leveling and sodding graves in Cemetery
- Closed Factory Road 2 times
- Working on building modification- pricing
- Checking on developments-
    - Bexley Hills 3A- working on erosion control issues
    - Spring Ridge 3A- continued sewer and storm pipe installation
- Continued working on catch basin replacements and curb repair in Stonehill Villige
- Energy Audit information- report attached
- Continued working on replacement for bucket truck- working on rental options- waiting on City rental option and checking if any other jurisdiction is interested in cost sharing
- Updated pricing for water line- awaiting results and additional pricing
- Ditch project Beaver Valley/Hunter Point- working on brush clearing as weather permits

Awareness Items:

- Water line upgrade Rotary park
- Annual paving purchase request

Energy Assessment Report

Beavercreek Township Beavercreek Fire Administration Building

Beavercreek, Ohio

March 30, 2015

Prepared by:
Heapy Engineering
1400 W Dorothy Lane
Dayton, OH 45409

Heapy Engineering
MEP Design Technology Planning Commissioning Energy
Nationally Recognized Leader in Sustainability

Cleveland • Columbus • Dayton • Findlay • Lawrenceburg • Indianapolis

ENERGY STAR PARTNER

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Table of Contents

I. Summary 1

II. Facility Overview 3

Building 3

HVAC 3

Lighting 5

Operational Considerations 5

Good Energy Efficiency Practices 8

III. Utility Analysis 9

Overview of Utility Use 10

IV. Energy Conservation Measures (ECM) 14

ECM 1: Program Computers to Enter "Sleep" Mode when Inactive 14

ECM 2: Adjust Administration Wing Unoccupied Temperature Setback 15

ECM 3: Utilize Energy Saving Mode on Copier 16

ECM 4: Unplug the Smaller Loads or Install a Time Schedule Power Strip 17

ECM 5: Exterior LED Lighting Retrofit 18

ECM 6: Install Low-Flow Aerators on All Lavatories 20

ECM 7: Reduce the Number of Printers or Centralize Office Functions 21

ECM 8: Install Occupancy Sensors to Control Lighting 22

ECM 9: Install Tinted Window Film 23

ECM 10: Insulate the 6 inch PVC Pipe in the Phone Room 24

V. Capital Improvements (CI) 25

CI 1: Building LED Lighting Retrofit 25

CI 2: Replace the HVAC Equipment with Higher Efficiency Units 27

VI. Appendix 28

I. Summary

Heapy Engineering was engaged to perform an ASHRAE (American Society of Heating Refrigeration and Air Conditioning Engineers) Level I Energy Audit in order to assess the energy performance of the Beavercreek Fire Administration Building and provide recommendations for improving its overall energy efficiency. The facility walk-through and utility analysis uncovered several areas where energy could be conserved.

Beavercreek Fire Administration Building utilizes about 10% more energy annually than the average office building according to ENERGY STAR. Considering that half of one wing has a township council chamber that is utilized sporadically, an opportunity may exist to save energy. It is also noted that the facility utilizes natural gas for heating and electricity for cooling.

ASHRAE separates energy improvements into two categories: low-cost/no-cost and capital improvements. Low-cost or no-cost improvements are classified as Energy Conservation Measures (ECM), which are detailed in Section IV. Measures requiring a more significant financial investment are classified as Capital Improvements (CI), which are detailed in Section V of the report. Significant financial investment has been defined as $10,000 or more for purposes of this study.

Using the data from the utility and walk-through analysis, a list of potential ECMs and CIs was compiled and summarized in Table 1 and 2 below along with estimated economic values.

Over $5,500 in potential annual energy savings were identified; however, some of the Energy Conservation Measures (ECM) and Capital Improvements (CI) listed may interact synergistically, therefore the total potential energy savings is most likely less than the sum of all individual energy conservation measure savings. By implementing all recommendations, Beavercreek Fire Administration Building may reduce its annual energy consumption by more than 40%.

Table 1: Summary of Energy Conservation Measures

	Energy Conservation Measures Identified	Estimated Cost Savings ($/year)	Estimated Investment Cost ($)	Simple Payback including Incentives (years)
ECM-1	Program Computers to Enter “Sleep” Mode When Inactive	$500	$75	2 months
ECM-2	Adjust Administration Wing Unoccupied Temperature Setback	$90	$40	6 months
ECM-3	Utilize Energy Saving Mode on Copier	$20	$25	1.3
ECM-4	Unplug the Smaller Loads or Install a Time Schedule Power Strip	$30	$40	1.3
ECM-5	Exterior LED Lighting Retrofit	$790	$1,630	1.8
ECM-6	Install Low Flow Aerators on All Lavatories	$125	$240	1.9
ECM-7	Reduce the Number of Printers or Centralize Office Functions	$38	$75	2.0
ECM-8	Install Occupancy Sensors to Control Lighting	$370	$1,620	3.6
ECM-9	Install Tinted Window Film	$630	$4,000	5.7
ECM-10	Insulate the 6-inch PVC Pipe in the Phone Room	$5	$90	18.0

Table 2: Summary of Capital Improvements

	Capital Improvements Identified	Estimated Cost Savings ($/year)	Estimated Investment Cost ($)	Simple Payback including Incentives (years)
CI-1	Building LED Lighting Retrofit	$1,820	$10,000	4.3
CI-2	Replace the HVAC Equipment with Higher Efficiency Units	$1,180	$12,000	9.3

II. Facility Overview

Building

The Beavercreek Fire Administration Building is approximately 6,400 square feet. It is a single story building where most mechanical equipment, ductwork and electrical feeds are mounted above the lay-in drop ceiling. The building is separated in three distinct wings with a lobby at the front entrance where all wings meet.

Figure 1: Entrance to the Beavercreek Fire Administration Building and Lobby

The three wings are the fire administration personnel, county human resources, and township council chambers for periodic meetings with permanent offices behind the meeting room.

The roof is green metal and built over wooden trusses. The outside of the building is finished in brick with insulation between the studs and finished in drywall on the occupied space interior. The windows are double-paned, aluminum frame and appear to be well sealed.

There do not appear to be any recent renovations. The equipment and the building itself appear to date from approximately 1990, but county records indicate it may have been purchased last closer to 2000.

HVAC

The HVAC system consists of natural gas furnaces with split system condensing units for cooling. There are two furnaces mounted horizontally above the drop ceiling with catch pans and drains. There are flues penetrating the roof for removing flue gases, and refrigerant pipe that connects to the outdoor condensers.

Programmable thermostats are provided for each system. No upgrades are apparent unless the thermostats have been upgraded from the original system.

There is also one Bard self-contained unit mounted on the outside wall of the network equipment room providing cooling for that space.

Figure 2: Furnace Example in the Township Council Wing

Figure 3: Outdoor Condensing Units

Lighting

The lighting ranges from typical 4 foot fluorescent lamps to incandescent task lighting. There were also some halogen can lights, and light emitting diode (LED) lighting in the lobby. The LEDs are of more recent origin than the rest of the lighting, but no information is provided to indicate when or why they were installed. LEDs are the latest technology within the lighting market and save the greatest amount of energy.

Figure 4: (Top Left) Can Light, (Top Right) Fluorescent Fixture, (Bottom Left) Incandescent, and (Bottom Right) LED Lobby Examples

Operational Considerations

During the energy audit, the team identified several operational issues. Correcting these issues may result in a reduction in energy consumption. However, a more in-depth study would be required to fully gauge each issue's impact.

Operational Consideration 1: ENERGY STAR Appliances

When purchasing new appliances, the administration should consider buying only ENERGY STAR rated products. Products labeled with the ENERGY STAR logo will be more efficient and may qualify for local utility rebates in helping to offset additional cost if any. This would include refrigerators, freezers, stoves, microwaves, furnaces, washers, dryers, ice machines, battery chargers, etc.

Operational Consideration 2: Space Heater Policy

The team noticed several individual space heaters located around desks. Rather than increasing the electrical cost for the building by operating the heaters, it may be better to address potential zoning problems within the HVAC system. It is recommended a policy be instituted as to when an individual can operate these personal heaters if they are deemed necessary after a zoning evaluation and HVAC fix has been instituted.

Figure 5: Individual Electric Space Heater Example

Operational Consideration 3: Plumbing Fixture Changes as Areas are Upgraded or Replaced

Plumbing fixture flow rates have continued to decrease over time. The flow rate improvements are not so significant that they would have a timely payback. However, they do use less water and sewage, and will save money and resources once replaced. A typical water closet can go from 1.5-1.6 gallons per flush (gpf) reduced to 1.2 gallons per flush for example.

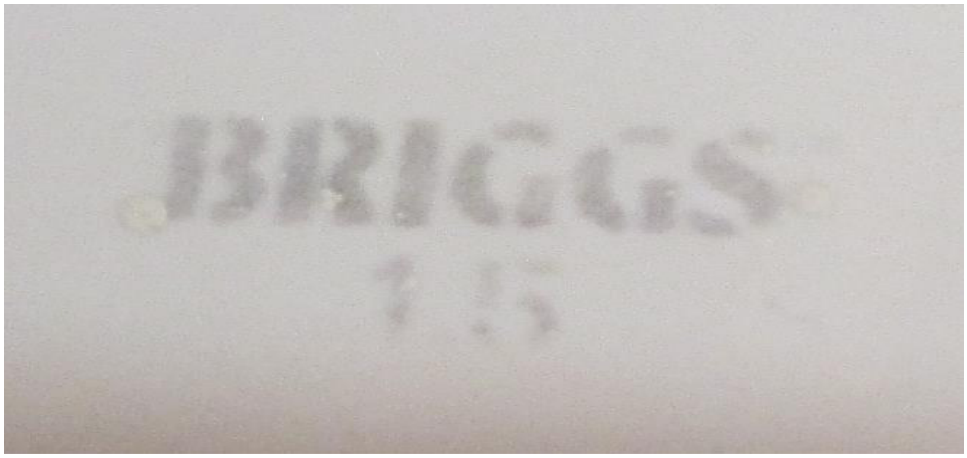


Figure 6: Water Closet Example from the Site (1.5 gpf)

Operational Consideration 4: Fix the Zoning Damper for the Right Wing of the Building to Separate the Meeting Room and Offices

The right wing of the office where the council meeting room is located has a single furnace and air conditioning system serving the large council room and the smaller office area behind it. A zone damper is installed in the ductwork branch towards the office, but this is not typically being used nor is it automated. The unit has a thermostat in the office area associated with this branch but remains off when council is not meeting. This can be uncomfortable for the remaining occupants within the offices as there is no system to heat or cool them under these operating conditions.

Figure 7: Stand-Alone Wireless Damper and Thermostat Example

There are wireless, two-position zoning dampers with thermostats (such as a Jackson system shown above) that can control individual zones to prevent overheating or overcooling. The main thermostat from the unit would need to be replaced and a square zoning damper added to the main trunk to match the square duct. Then the two zones can be separated by temperature differences and allow the unit to operate as needed.

This may not save energy and could potentially use more, but would make the inhabitants of the space more comfortable. The council does not meet on a regular basis, so keeping the system off for this uninhabited space seems unnecessary while not conditioning the rest of the wing.

It is estimated to cost approximately $1,500 to $2,000 per zone to install this method of control.

Operational Consideration 5: Replacing Water Heaters with Higher Efficiency Units and Increased Insulation

Two electric water heaters are providing hot water for the lavatories within the building. A 30 gallon tank is located within a closet near the front entrance and a 15 gallon heater is located in the lounge in an alcove. The 30 gallon A.O. Smith heater has an R-value of 16; the 15 gallon A.O. Smith water heater has an R-value of 9.

Figure 8: Water Heaters 15 Gallon and 30 Gallon Tanks

Once the existing water heaters fail and need to be replaced, an efficiency rating of (efficiency factor EF) of 0.93 should be chosen as opposed to the older standard of 0.86.

Hot water is expensive to produce, but not as expensive as the heated water waiting to be used. This water loses energy on a constant basis from the tank and pipes. The water heater tanks remain as they were produced in the factory per approximately 15 year-old standards and an estimated efficiency factor of 0.86.

The costs are estimated at $900 per heater. The savings are estimated at 62 kWh per year. Because the payback is beyond the rated life of the unit, it does not make financial sense to replace before failure but something to consider upon replacement.

Good Energy Efficiency Practices

The intent of this paragraph is to point out areas where the Beavercreek Fire Administration Building staff or the building itself is performing well or behaving in an environmentally friendly manner. For example, the energy audit team discovered a recycling bin in a maintenance closet and by the copy room. This is a great first step toward saving resources and requires staff cooperation. Furthermore, it was noticed that most overhead lights were extinguished in vacated areas and offices. Later in this report it is recommended to also turn the task lighting off in some of these unoccupied offices that are not extinguished. The outdoor lighting was found to be extinguished during the walk-through so the time clock appeared to be operating correctly. The building appeared to be well insulated with no sign of drafts or leaks around window frames.

III. Utility Analysis

Over the course of time, patterns in utility use arise for all buildings. For example, the increase in energy consumption experienced in the winter for heating a building is a typical pattern. A utility analysis scrutinizes the patterns of a facility's utility use to make inferences about how the building uses energy now, in the past, and how it may in the future. It can also be used to estimate savings that may occur when improvements are made. Utility bills from December of 2012 through November of 2014 were used to:

- Characterize the typical energy use of the facility.
- Compare annual energy consumption to similar buildings.
- Determine if the building's energy use patterns are changing over time.
- Determine the temperatures at which the building begins heating or cooling, which are used to calculate the energy savings from conservation measures.

The electricity and natural gas utility bills were tabulated, graphed for energy usage and efficiency trends, and then the average Energy Use Intensity (EUI) was calculated. EUI is a measure of the annual energy used per square foot of building area and is used to compare energy use between similar buildings. The total energy intensity was evaluated by averaging the annual utility use, $Q_{utility}$, in 1,000 British Thermal Units per year (kBTU/year), over the number of years of utility data available, n, then dividing the result by the building floor area in square feet.

$$\mathrm{EUI} = \left(\frac{\sum_{i=1}^{n} \mathrm{Q_{utility_n}}}{\mathrm{n}}\right)\frac{\mathrm{kBTU}}{\mathrm{year}}/\mathrm{Area\ ft^2}$$

By averaging the annual utility use over the number of years of available data, the EUI is less influenced by the vagaries of a single year of weather.

Overview of Utility Use

Table 3: Utility Providers and Annual Energy Costs at Beavercreek Fire Administration Building

Utility	Utility Provider	Average Annual Energy Cost ($/yr)	Average Cost of Utility ($/unit)	Average Cost of Energy ($/kBTU)
Electricity	DP&L and Direct Energy	$7,056	$0.095	$0.03
Natural Gas	Vectren	$2,011	$0.776	$0.02
Water	Not Provided	N/A	N/A	-
Total		**$9,067**		**$0.02**

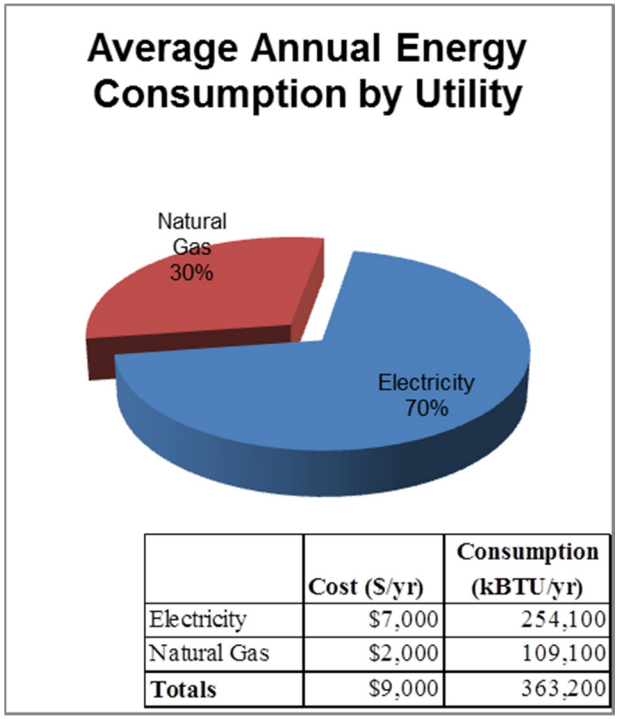


Figure 9: Breakout of Total Annual Energy Use by Utility

A typical office building uses more electricity than natural gas if it is mostly occupied. The internal heat load from people, computers, office equipment lends itself toward more cooling for the building as opposed to heating. Since cooling typically uses electricity and heating is fueled by natural gas, it is not a surprise that electricity makes up 70% of the use at this facility.

Electricity Use

Electricity is generally used for cooling, lighting, office equipment including computers, and ventilation. The graph below depicts consumption in kWh and the ongoing trend for electricity usage at the Beavercreek Fire Administration Building.

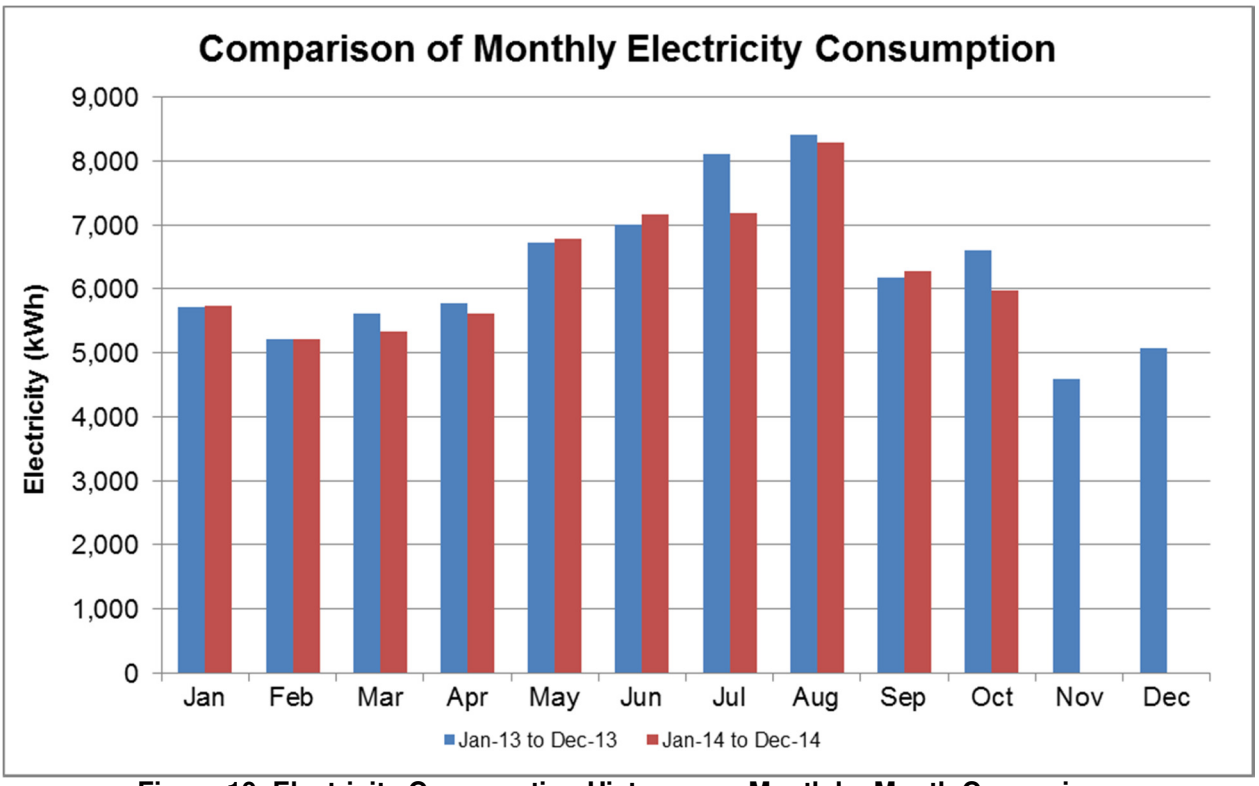


Figure 10: Electricity Consumption History on a Month by Month Comparison

The figure above displays a slight upward trend in the electricity use over time for the facility. Potentially, this slight increase would be indicative of equipment and controls wearing out on a yearly basis. It may also be explained through the weather variation from year to year.

Electricity, generally used for air-conditioning, lighting, and office equipment, typically experiences increased usage during summer months. Figure 10, above, increases in the summer displaying the typical trend. This is the graphical representation of summer cooling needs for the building.

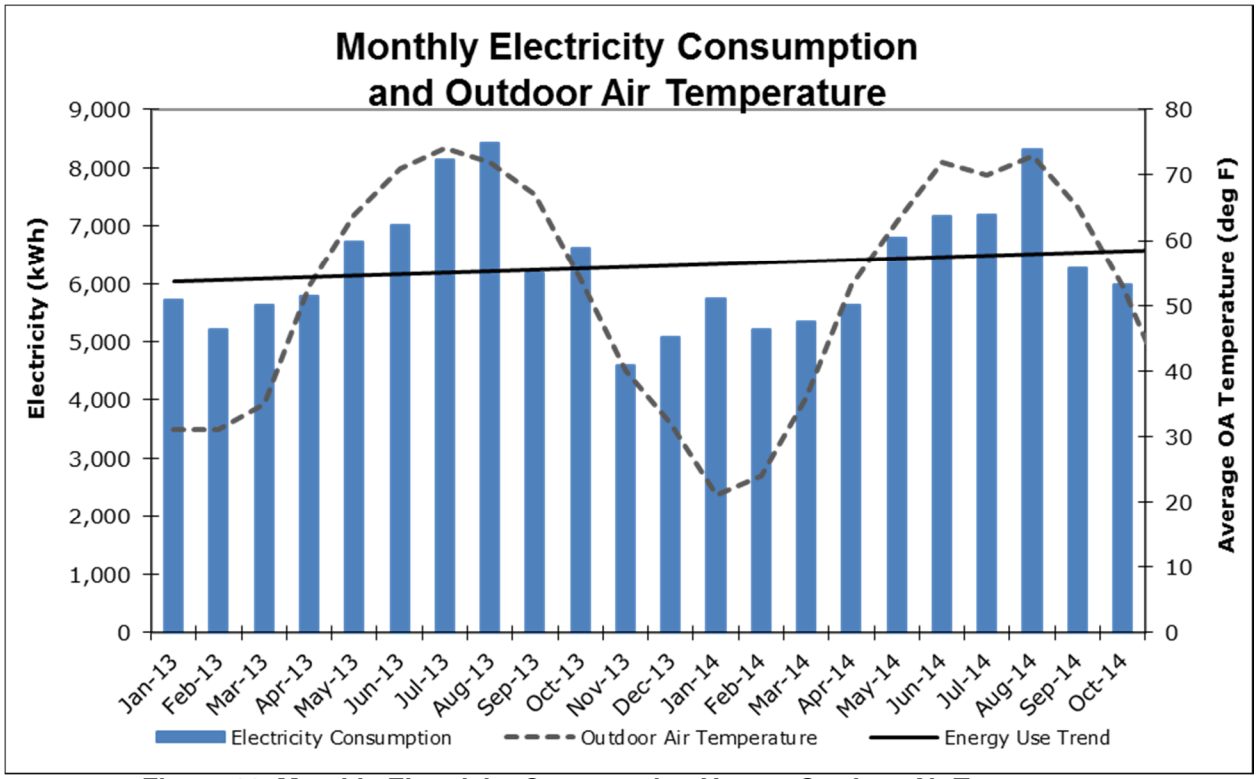


Figure 11: Monthly Electricity Consumption Versus Outdoor Air Temperature

It is noted that July and August of 2014 were lower than the year before. This may be due to the summer weather being milder in 2014 as opposed to 2013. The outdoor air displayed above is the average mean temperature observed from that month as reported by weather underground. The data suggests that the summer of 2014 was indeed slightly lower in temperature than 2013, especially in the month of July.

In spite of a milder summer, the energy use trend shows a slight upward direction as discussed above. This does not appear to be fully explained by weather alone, but lends credit to the idea that equipment is slowly wearing out as it nears the end of its useful life.

Natural Gas Use

Natural gas is generally used for water and space heating along with cooking in commercial applications. The graph below depicts consumption in therms and the ongoing trend for as usage at the Beavercreek Fire Administration Building.

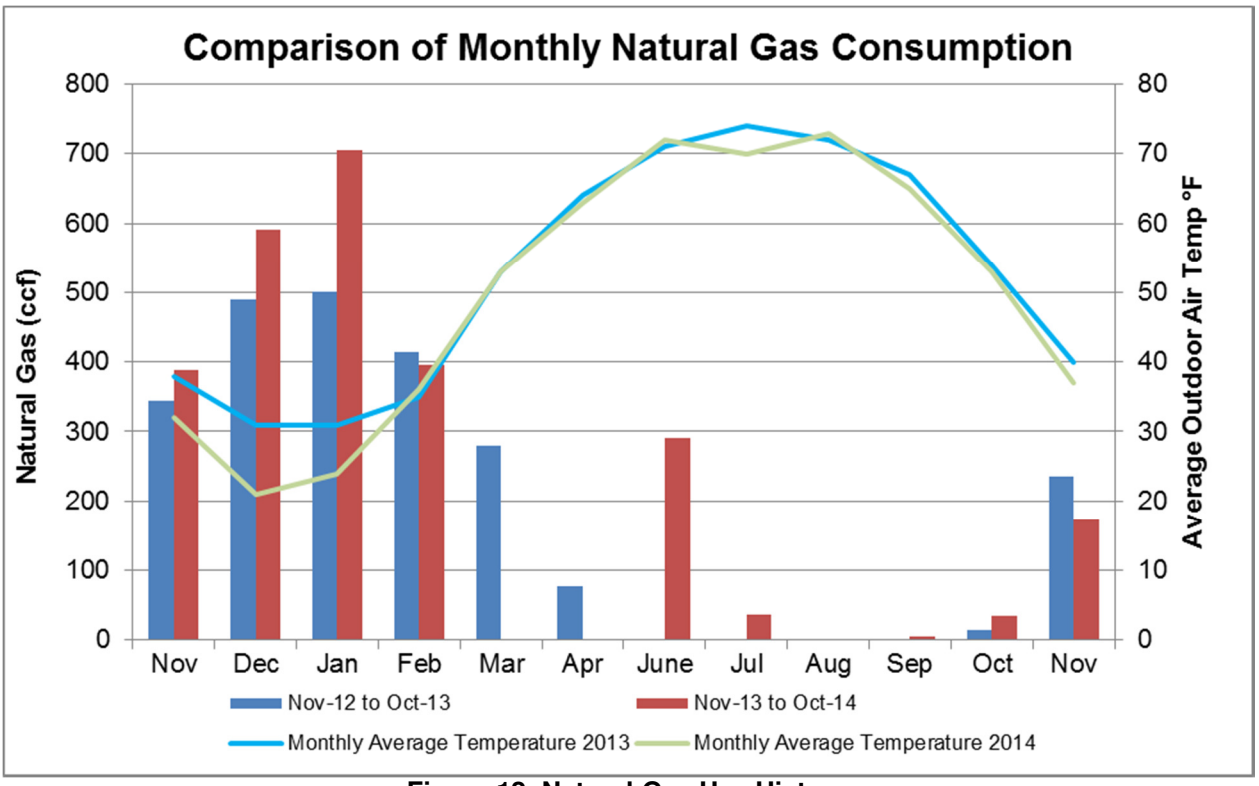


Figure 12: Natural Gas Use History

The natural gas trend is shown over the course of 2 years. It is unclear why there is usage in the summer on a sporadic basis (such as June and July of 2014) since the building is heated by gas in the winter through the furnaces. The water is heated by electricity and there are no cooking facilities onsite.

When utility bills were consulted, June of 2014 was a make-up month for the previous 3 months. This indeed is an anomaly and should not be repeated. The summer use may be accounted for in this billing error. No natural gas should be used over the summer as opposed to the bills graphed above. Please note that the gas use does generally follow the average outdoor weather temperature such that as the outdoor air temperature decreases, the gas usage increases.

It appears that the increased gas usage in 2014 can be attributed to the average lower temperatures over the winter.

IV. Energy Conservation Measures (ECM)

This section contains information pertaining to measures that, if implemented, could conserve energy at Beavercreek Fire Administration Building. An estimate of the cost of implementation and of the savings that may be realized is included in each section.

The savings associated with each conservation measure are calculated on a per measure basis and are broad estimates based on industry rules of thumb in addition to the assumptions identified for each ECM. The sum of all energy savings does not take into account synergistic effects and will not accurately reflect the total savings possible from implementing all conservation measures.

All cost estimates contained in this report should be treated as broad estimates. A contractor's estimate should be obtained before proceeding with any of the measures detailed below.

ECM 1: Program Computers to Enter "Sleep" Mode when Inactive

Existing Condition: Currently, all of the observed computers in the facility are operating continuously. While the monitor is programmed to enter sleep mode (as shown in the figure below), the computer continues to be fully active.

Figure 13: Example of Computer Still Operating

Recommendations: Program all computers to enter "Sleep" mode after 15 minutes of inactivity.

Benefits: The surge of energy expended when a computer starts is quite small when compared to the energy consumed as it runs for long periods. While "Sleep" mode does not eliminate the energy consumption, it greatly reduces it.

Costs: It is estimated that it will take approximately 1 hour at $75 per hour to adjust the power settings for all the Beavercreek Fire Administration Building computers.

Economic Summary:

Program Computers to Enter "Sleep" Mode when Inactive	
Total Estimated Cost	**$75**
Estimated Annual Electricity Savings (kWh/year)	5,200
Estimated Annual Natural Gas Savings (therms/year)	-11
Total Estimated Cost Savings ($/year)	**$500**
Simple Pay Back (years)	**2 months**

Savings assume there are 14 computers throughout the Beavercreek Fire Administration Building. It is assumed that each computer uses 75 Watts on average and 25 Watts per monitor. Sleep mode reduces the energy to 15 Watts and 2 Watts respectively. It is assumed that the computers are operating for 8,000 hours per year currently and will be reduced to 2,340 hours in the future.

ECM 2: Adjust Administration Wing Unoccupied Temperature Setback

Existing Condition: Each furnace and condensing unit utilizes a corresponding programmable thermostat. The heating set point for the wing to the left of the lobby (administration's wing) is 73°F beginning at 7:15 AM with a setback of 68°F at 5 PM and then 64°F at 10 PM that then brings it back to 68°F at 6 AM. These set points and setbacks are assumed to be the same temperature difference in the cooling season with the occupied hours being at 73°F and setbacks going to 82°F during unoccupied hours. The temperature set points for the administration wing are shown in the table below for clarity as described above.

Table 4: Current Temperature Set Points of the Administration Wing

Time	Temperature °F
6:00 AM	64
7:15 AM	73
5:00 PM	68
10:00 PM	64

The council chamber wing is set at 68°F beginning at 6 AM setting back to 65°F after 5 PM. This wing to the right of the lobby is not included in the ECM evaluated here as it has zoning problems and has been previously discussed in an operational consideration.

Recommendations: Program the thermostat for additional setback hours in the administration wing when it is unoccupied. A 64°F heating setback saves energy during the heating season while maintaining the system's ability to return to the occupied hour's set point. This change will save an additional 5 hours for 5 days per week during the heating and cooling season. No temperature changes are recommended for the council chamber wing other than the changes to the zoning discussed in an operational consideration.

Benefits: Programming heating and cooling setbacks reduces the energy used during hours when the facility is unoccupied.

Costs: Since programmable thermostats are already installed for the air handling units, no materials are required for this energy cost saving measure. The only cost is the time that it will take employees to program the setback into each of the thermostats. This is estimated at $40 for the administration wing or approximately 30 minutes.

Economic Summary:

Adjust Administration Wing Unoccupied Temperature Setback	
Total Estimated Cost	**$40**
Estimated Annual Electricity Savings (kWh/year)	300
Estimated Annual Natural Gas Savings (therms/year)	70
Total Estimated Cost Savings ($/year)	**$90**
Simple Pay Back (years)	**6 months**

Savings assume setback will occur for an additional 25 hours a week for the heating and cooling seasons. The heating and cooling season are assumed at 20 weeks each. It further assumes the airflow is approximately 1,400 CFM for the system.

ECM 3: Utilize Energy Saving Mode on Copier

Existing Condition: There is a single copier within the copy room. It is of Savin make, model C3030 and can make color copies typically using an estimated 900 Watts when in "active" mode. System timer settings are currently programmed to enter energy-saving mode after 22 minutes and to Auto Off after 2 hours. The low power mode (energy saving) reduces the power to 97 Watts and sleep mode reduces it to 2 Watts.

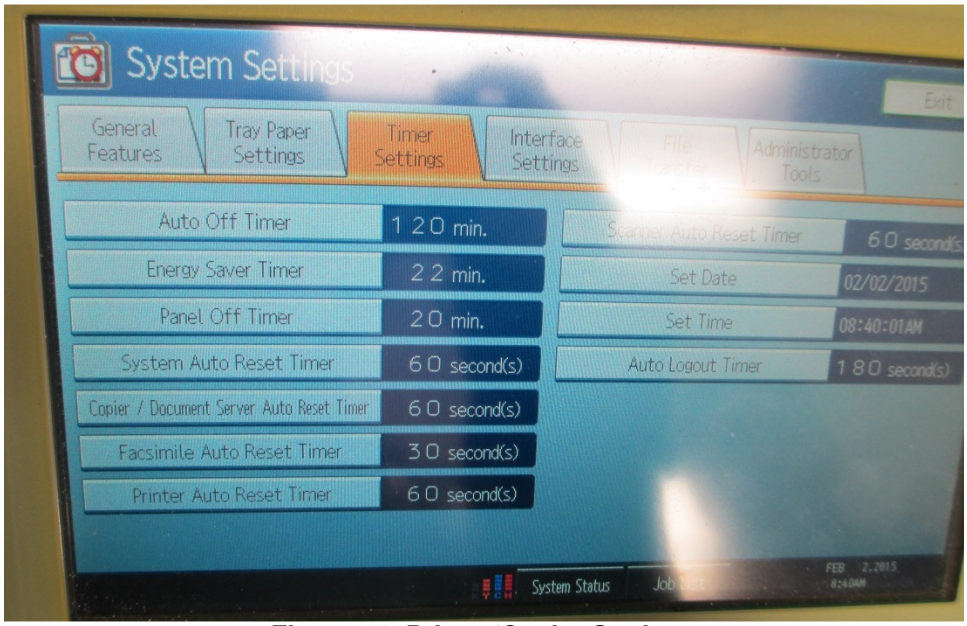


Figure 14: Printer/Copier Settings

Recommendations: Program the machine to enter "Energy Saver" mode between uses in shorter amounts of time. The copier has the added feature of an automatic "Auto-Off" mode that should be activated after a recommended 10 minutes of being idle to reduce unnecessary energy usage. The printer Energy Saver timer should be adjusted from 22 minutes down to 1 minute along with the panel off timer.

It is also recommended that all future models be verified to be ENERGY STAR compliant to further reduce copier and printer energy consumption and warm-up times as newer models reduce power further.

Benefits: Reduce the amount of energy used by the copier. The copier/printers consume approximately 200 Watts while in "Active" Mode and the panel is active (no printing) and 2 Watts in Sleep modes. The shorter time settings will increase energy savings during non-use periods.

Costs: It is estimated that it will take approximately 20 minutes to adjust the copier settings. The implementation of this recommendation is estimated to cost: $25 if labor is $75 per hour.

Economic Summary:

Utilize Energy Saving Mode on Copier	
Total Estimated Cost	**$25**
Estimated Annual Electricity Savings (kWh/year)	200
Total Estimated Cost Savings ($/year)	**$20**
Simple Pay Back (years)	**1.3**

Savings assume the copier is active approximately 5 hours per day (due to timer settings). The new settings are assumed to reduce this time by 2 hours per day in energy saver mode and 1 additional hour in "auto-off" mode.

ECM 4: Unplug the Smaller Loads or Install a Time Schedule Power Strip

Existing Condition: Energy.gov lists the small loads that are plugged into outlets as energy vampires because they sip electricity constantly while plugged in. (http://www.energy.gov/energysaver/articles/energy-vampires-are-attacking-your-home-here-s-how-stop-them) There are multiple pieces of equipment plugged into outlets around the office. Battery chargers are one example. These devices can drain as much as 1- 25 Watts when turned off depending on the age.

Figure 15: Plug Load Example

Recommendations: Unplug all devices that are not being used on a regular basis or for certain periods of the day. A time schedule power strip can also be beneficial to make this an automatic action based on how it is programmed.

Figure 16: 8-Outlet Daily Segment Timer Power Strip Example

Benefits: These amounts of energy may seem small, but over the course of a year they can add up quickly. At the building's current electricity rates, 10 Watts of power can equal $8.50 saved per year.

Costs: A timer built-in to the plug strip lists for $15.98 at Home Depot such as is pictured below. This has been rounded to $20 to include tax for each plug strip.

Economic Summary:

Unplug Smaller Plug Loads or Install a Time Schedule Power Strip	
Total Estimated Cost	**$40**
Estimated Annual Electricity Savings (kWh/year)	300
Total Estimated Cost Savings ($/year)	**$30**
Simple Pay Back (years)	**1.3**

Savings assume there are 10 plug loads spread between 2 plug strips that could benefit from this measure. Each load is assumed to be 5 Watts of energy vampires on average. Each load is expected to be turned off 6,136 hours per year or planning on approximately 50 hours of use per week. If a plug load occupancy sensor strip is installed instead of a timer then they qualify for $20 per strip in utility incentives each.

ECM 5: Exterior LED Lighting Retrofit

Existing Condition: There are 24, 60 Watt incandescent façade can lights under the eaves; and 6, 26 Watt CFLs at the covered entrance on the exterior of the building. These are all operated on a time clock that is automatically adjusted by software depending on the time of year and located within the server closet.

Figure 17: Exterior Lighting Examples

Recommendations: Replace all exterior can lights with LED PAR 30 long neck lamps or similar that will fit within the existing cans. Continue to operate the lighting from the time clock. A 14 Watt lamp replacement is recommended and will actually increase the light output, but cost slightly more than the halogen lamps. See an example shown below.

Figure 18: LED 12 Watt Lamp Option Example

Benefits: LED lamps use less energy to produce the same amount of light. They also last longer than the incandescent lamps. This offers the potential to save on re-lamping costs. LED lamps operate better in cold weather and are instant start for instant light similar to the halogens.

Although the site visit was conducted during normal “off” hours, the team noted that many of these lamps may be burned out. The longer LED lamp life would make maintenance easier with fewer replacements necessary. If the light is not required in this area), then the lamps should remain off at all times and save further energy. However, this recommendation assumes they are operating and that these lamps will be replaced with the LEDs recommended above.

Costs: Each lamp is assumed as a halogen can lamp at 60 Watts currently. A more than equivalent LED with a screw-in base is estimated at $68 each to include labor.

Rebates: A DP&L Rapid Rebate is available for exterior recessed downlight luminaires or screw-in base lamps replacing incandescent and must be ENERGY STAR rated. This incentive is provided at $10 per lamp.

Economic Summary:

Exterior LED Lighting Retrofit	
Total Estimated Cost	**$1,630**
Estimated DP&L Rebate ($)	$240
Estimated Annual Electricity Savings (kWh/year)	4,890
Estimated Annual Re-lamping Costs ($/year)	$330
Total Estimated Cost Savings ($/year)	**$460**
Simple Pay Back including Incentive (years)	**1.7**

Savings assume that the 24 existing can lights under the eaves and 6 can lights at the entrance are in working order and illuminated 4,289 hours per year. The maintenance savings are based on a rated life per lamp of 2,000 hours, $12 to replace each lamp, and 25,000 hours and $68 per lamp for the LED. A utility incentive of $10 per lamp is offered for exterior recessed downlight luminaires or screw-in base lamps replacing incandescent.

ECM 6: Install Low-Flow Aerators on All Lavatories

Existing Condition: The lavatories within the Beavercreek Fire Administration Building are equipped with 2 gallon per minute aerators.

Figure 19: 2.0 gpm Aerator Example

Recommendations: Replace the existing aerators with 0.5 gallon per minute aerators.

Benefits: Reducing the amount of flow through the faucets will save the energy required for heating water as well as the water and sewer itself.

Costs: Each aerator costs approximately $5. Installation would take an estimated 30 minutes and may be accomplished by internal staff for an estimated total of $40 per lavatory at a labor rate of $75 per hour.

Economic Summary:

Install Low-Flow Aerators on All Lavatories	
Total Estimated Cost	**$240**
Estimated Annual Water Savings (ccf/year)	13
Estimated Annual Electrical Savings (kWh/year)	850
Total Estimated Cost Savings ($/year)	**$125**
Simple Pay Back (years)	**1.9**

Costs assume $40 per sink including labor. Savings assume 6 lavatories excluding the kitchen sinks, at 50% hot water savings per lavatory with a temperature rise of 65°F. This further assumes a staff of 17 for 260 days per year. An average water and sewer rate of $6/ccf is used for water savings.

ECM 7: Reduce the Number of Printers or Centralize Office Functions

Existing Condition: The team noticed that several individuals and offices had printers or copiers even though there was a central copy room with a large copier. This admittedly is in the Fire Administration Wing, but all functions within the building could potentially benefit from centralizing this function. It is assumed there are 5 additional printers within the building that could centralize to the main copy room.

Figure 20: Individual Copier/ Printer Example

Recommendations: Reduce the number of printers and centralize the office functions. When each machine is plugged into a receptacle, it is always using Watts even if it is a small amount. These "vampire" Watts averaged over several machines over the course of an entire year can begin to add up, not to mention various cartridges that must be stocked. Referenced from www.ENERGYSTAR.gov, an HP printer color laserjet (model M750dn or D3L09A) that can print up to 30 pages per minute (ppm) uses 191 kWh per year on average and 9 Watts while in sleep mode. ENERGY STAR rated equipment such as this use less power than non-rated equipment.

Benefits: Reducing the number of printers and centralizing the office functions can reduce all of the types of printer cartridges and inventory that must be bought and distributed and the power that is needlessly being used when the equipment is not in use.

Costs: This should require minimal cost. It is assumed that everyone is connected to the network and can print to the main copy room. If sensitive documents need to be printed, then the individual printer could be plugged in and operated at that time. It is estimated that this might cost one hour of labor at $75

per hour to unplug all of the individual machines and set default printing to the main printer. The main Savin printer appears to have the capability to print in color as well. This is according to research on the website for that model.

Economic Summary:

Reduce the Number of Printers or Centralize Office Functions	
Total Estimated Cost	**$75**
Estimated Annual Electricity Savings (kWh/year)	400
Total Estimated Cost Savings ($/year)	**$38**
Simple Pay Back (years)	**2.0**

Savings assume that 5 printers are unplugged and no longer used. The savings are based on the total of 5 printers being offline in the future and that they were plugged into the wall receptacle for the entire year before this measure is implemented using 9 Watts of "vampire" electricity on an average basis. This amounted to 41% of the average energy use for the entire year for the printer.

ECM 8: Install Occupancy Sensors to Control Lighting

Existing Condition: It is noted that the illuminated spaces relied on manual light switches to turn the lights on and off. This method of control often leaves lights illuminated during times when the space is unoccupied.

Recommendations: To reduce energy consumption, consider placing occupancy sensors in the restrooms and large offices to ensure lights are turned off when the space is not in use. The occupancy sensors would be able to turn the lights off after a certain set time period of the room being vacant. Those equipped with a manual override would ensure that the occupant maintains the lighting level of preference, but when possible, the lights would be turned off. There are several different types of sensors available, including infrared, ultrasonic and a combination of the two. Consult a professional prior to investing in sensors to ensure the proper technology is selected for the specific application.

Benefits: Light operation time will be reduced, resulting in lower energy consumption. This ECM is aimed at controlling the fluorescent fixtures connected to the light switches rather than task lighting that is typically incandescent. The task lighting could have occupancy plug strips installed or be left off as the sensors will turn the switched lights on and off based on occupancy.

Costs: An occupancy switch would cost approximately $180, installed. It is estimated that there are 9 areas that would have an opportunity. This included John Mercs, Scott Dorsten, Chief 1 office, restroom main; restroom men (middle wing), restroom women (middle wing), lounge; and restroom men, restroom women in the council wing. The utility incentive is calculated at $30 per sensor as all spaces appeared to have the switch controlling more than 100 Watts.

Rebates: Dayton Power and Light is currently offering $30 per occupancy sensor controlling more than 100 Watts.

Economic Summary:

Install Occupancy Sensors to Control Lighting	
Total Estimated Cost	**$1,620**
Estimated DP&L Rebate ($)	$270
Estimated Annual Electricity Savings (kWh/year)	2,300
Estimated Annual Natural Gas Savings (therms/year)	-8
Estimated Annual Maintenance Savings ($/year)	$160
Total Estimated Cost Savings ($/year)	**$210**
Simple Pay Back including Incentive (years)	**3.6**

Savings assume a 30%-50% reduction in illumination time of all controlled, T12 or incandescent fixtures, 9 occupancy sensors for offices, restrooms, and the lounge. Incandescent task lights in offices should be left off whenever possible; however, they are not accounted for in this calculation unless the switch controls them now. The utility incentive assumes that all sensors are controlling more than 100 Watts each otherwise the rebate decreases to $5 per sensor. Maintenance savings are based on $12 for incandescent lamps and $15 for fluorescent lamps at the rated life of 2,000 and 24,000 hours respectively compared to less time being illuminated.

ECM 9: Install Tinted Window Film

Existing Condition: The current windows in the Beavercreek Fire Administration Building are clear and therefore have a poor solar heat gain coefficient, meaning that excess heat is entering the building through the clear windows. The glare must be an issue as every window has blinds that are drawn and shut to keep the sun out.

Recommendations: Apply tinted, low-e reflective film to the windows, which will reflect some of the sun's radiation and help keep the building cooler. It should also reduce glare.

Benefits: Windows are primarily rated by their insulating value and solar heat gain coefficient. The worse the solar heat gain coefficient, the greater the sun will impact the temperature of the space. If tinted, reflective films were added and the solar heat gain coefficient increased, then the sun would have less of an impact on the space and therefore would not increase the mechanical conditioning. Window film provides sun control, UV protection, window tinting, and privacy while increasing energy savings. Window films help improve tenant comfort by reducing glare on computer screens and minimizing solar hot spots.

Costs: The cost is estimated to be approximately $20 per square foot per a 3M window film web resource. The cost can range from $13 to $22 per square foot depending upon the product chosen for solar films according to RS Means Costworks. Therefore, the average cost used in the estimated price is $20 per square foot.

Rebates: Dayton Power and Light is currently offering $2 per square foot of window film added with a solar heat gain coefficient of 0.40 or less.

Economic Summary:

Install Tinted Window Film	
Total Estimated Cost	**$4,000**
Estimated DP&L Rebate ($)	$400
Estimated Annual Electricity Savings (kWh/year)	6,450
Estimated Annual Natural Gas Savings (therms/year)	25
Total Estimated Cost Savings ($/year)	**$630**
Simple Pay Back including Incentive (years)	**5.7**

Savings assume there are 200 sf of window area. The existing windows were assumed to have a U-factor of 0.476 and SHGC of 0.701, which is standard for double pane clear windows. The SHGC after the film was assumed to be 0.394, which is standard for double pane coated windows.

ECM 10: Insulate the 6 inch PVC Pipe in the Phone Room

Existing Condition: A 6-inch PVC pipe penetrates the outside wall to bring network cabling, power, and fiber into the data room. The PVC is uninsulated and exposed to outside air conditions bringing cold and warm air indoors during the course of the year.

Figure 21: Temperature Measured Within the PVC Fiber Pipe from Indoors (21°F)

Recommendations: Insulate the inside of the pipe to stop the exchange of energy. Seal around the pipe to reduce any infiltration. The bin data hours above 65°F outdoors are 2,378 hours per year.

Benefits: This reduces energy gained or lost to the outdoors through this pipe. The heat gain is estimated at 50 BTUH (based on Georg Fischer Harvel's PVC pipe physical properties table) being reduced to 2 BTUH in the future. This will be especially important during the warm weather to keep the conditioned cool air within the room and warm air out.

Costs: The cost is estimated at $90 to include a half hour of labor and $55 in materials for insulation and sealing materials.

Economic Summary:

Insulate the 6 inch PVC Pipe in the Phone Room	
Total Estimated Cost	**$90**
Estimated Annual Electricity Savings (kWh/year)	35
Total Estimated Cost Savings ($/year)	**$5**
Simple Pay Back (years)	**18.0**

Savings assume using bin hours above 65°F (2,378) outdoors for cooling savings. Winter (colder) hours below 65 are assumed to aid in cooling this room. The mechanical insulation design guide from the Whole Building Design Guide (a program of the National Institute for Building Sciences) was consulted for insulation calculators and savings www.wbdg.org.

V. Capital Improvements (CI)

One of the goals of a building walk-through is to get an understanding of building operations and how they may improve. Possible building improvements are tabulated and investigated, then sorted and summarized.

There are two categories of building improvements. Low-cost or no-cost improvements are classified as energy conservation measures (ECMs). These are detailed in Section IV. This section contains information pertaining to energy saving measures that represent a more significant financial investment than ECMs. Significant financial investment has been defined as $10,000 or more for purposes of this study. An opinion of probable cost of implementation and of the savings that may potentially be realized is included in each section.

The savings associated with each CI is calculated on a per measure basis and is a broad estimate based on industry rules of thumb in addition to the assumptions identified for each CI. The sum of all energy and cost savings does not take into account synergistic effects and will not accurately reflect the total savings possible from implementing all CIs.

All cost estimates contained in this report should be treated as broad estimates. A contractor's estimate should be obtained before proceeding with any of the measures detailed below.

CI 1: Building LED Lighting Retrofit

Existing Condition: The installed lighting within the Beavercreek Fire Administration Building is typically T12, 40 Watt lamps with electronic ballasts. These are usually 4 lamp fixtures depending upon the location and did include 5 fixtures with T8 lamps. There are also 2 lamp U-tube T12 fixtures and lamps within individual offices that are typically incandescent. The team discovered a few can lights in the lobby with LEDs. There are 99 fixtures on-site.

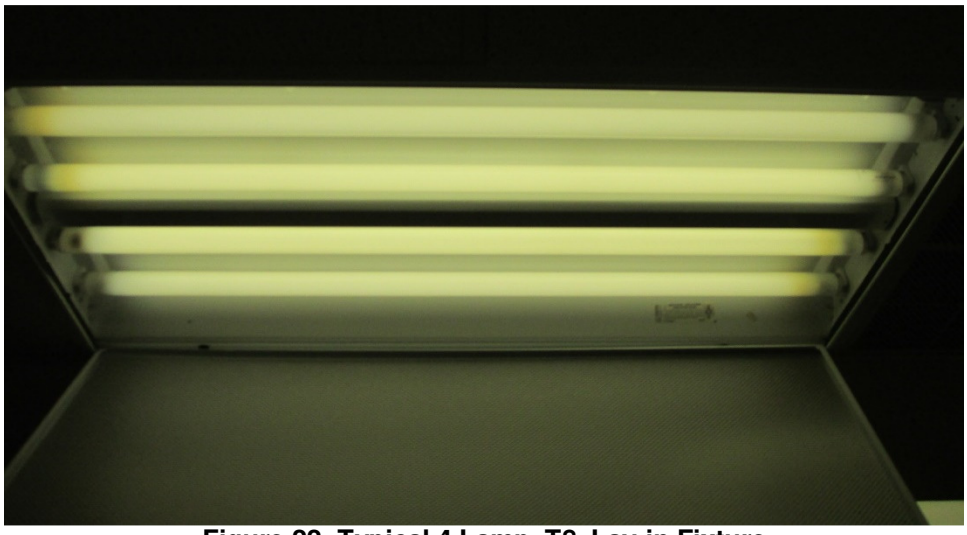


Figure 22: Typical 4 Lamp, T8, Lay-in Fixture

Recommendations: It is recommended that all fluorescent and incandescent lighting at the facility be upgraded to LED lamps. The lay-in fixtures will require an LED retrofit kit such as the Philips EVOKit. These are available in 2x2 and 2x4 kits. The retrofit kits can be installed in approximately 10 minutes. The product leaves the basic fixture but replaces the ballasts and lamps with LED technology. The brochure is found in Appendix 1.

Benefits: The LED retrofit kits produce light at lower Wattages. The kits will fit in the existing troffers as the original fluorescent fixtures and produce a similar, if not more perceptible, whiter light with a higher

CRI. The incandescent lamps are replaced by LEDs with identical bases in order to keep the existing fixtures. They also last approximately twice as long, saving on re-lamping costs.

A four-lamp, single ballast, T12 fixture typically consumes 136 Watts. A comparable retrofit LED fixture uses only 72 Watts. That is a 47% reduction in power.

Figure 23: Example of the LED T8/T12 Retrofit Kit

Costs: A cost of $130 per retrofit kit includes all required LED lights and internal powered connectors and has been used in the estimate where appropriate. With the additional labor, each 4 lamp fixture retrofit would cost $150 for the retrofit. The cost below includes the necessary labor and materials to remove the existing fluorescent lamps and replaces them with new 4 foot LED kits or replacement lamps. The work is based on regular business hours.

Rebates: Dayton Power and Light is currently offering $15, $25, or $35 under the rapid rebate program for LEDs replacing HID or fluorescent lighting. The incandescent replacements are incentivized at $10 per screw-in lamp.

Economic Summary:

Building LED Lighting Retrofit	
Total Estimated Cost	**$10,000**
Estimated DP&L Rebate ($)	$2,105
Estimated Annual Electricity Savings (kWh/year)	12,280
Estimated Heating Energy Increase (ccf/year)	-60
Estimated Annual Re-lamping Cost Savings ($/year)	$700
Total Estimated Cost Savings ($/year)	**$1,120**
Simple Pay Back Including Incentive (years)	**4.3**

Savings assume there are 99, T12, T8, or incandescent lights being retrofit onsite. The maintenance savings are based on a rated life per lamp of 24,000 hours (fluorescent) or 2,000 (incandescent) hours and $12 to replace each lamp or 50,000 hours, and $28 or $25 to replace each fluorescent or incandescent lamp for LEDs. The heating increase takes into account the heating and cooling degree days, efficiency of the heating equipment (80 percent in this case), and 15% of heat being added to the space from the lighting. The utility incentive is based on the Wattage of the existing fixture and is worth $15, $25, or $35 accordingly for the rapid rebates of LEDs replacing HID or fluorescent lighting. The incandescent lamp to LED replacement is incentivized as a screw-in base lamp at $10 each.

CI 2: Replace the HVAC Equipment with Higher Efficiency Units

Existing Condition: The existing air handlers are gas-fired furnaces with direct expansion air conditioning split systems for cooling. The existing equipment is more than 15 years old and less efficient than the newer units in the marketplace. The sizes are 3 and 3.5 ton systems with matching furnaces.

Figure 24: An Example of a Horizontal Furnace with Condensate Piping Shown

Recommendations: Upgrade to 95% efficient furnaces and at least 13 SEER condensing units.

Benefits: The equipment is nearing the end of its useful life (typically 15 years) and will benefit by using less utility resources once upgraded. Since the equipment will need to be replaced shortly, even higher efficiency systems should be chosen. The comparisons below are for minimum efficiency ratings of current new equipment that are still more efficient than the existing equipment.

Costs: Each furnace and split system (2) can be replaced for an estimated $6,000 per system.

Rebate: The rebate assumes the DP&L incentive at $200 per qualifying condensing unit and Vectren incentive of $300 for each high efficiency furnace.

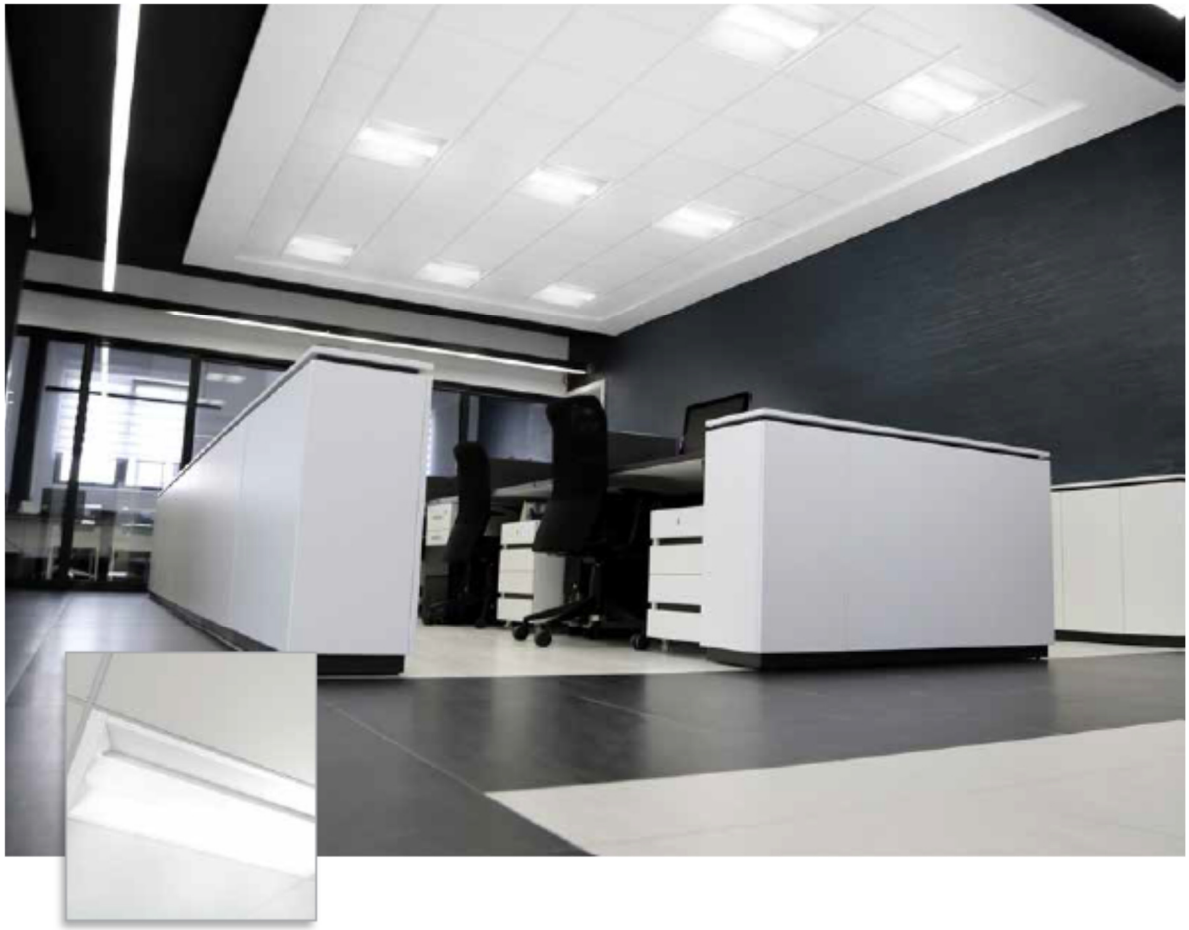
Economic Summary:

Replace the HVAC Equipment with Higher Efficiency Units	
Total Estimated Cost	**$12,000**
Estimated Vectren Rebate ($)	$1,000
Estimated Annual Electricity Savings (kWh/year)	330
Estimated Annual Natural Gas Savings (therms/year)	1,450
Total Estimated Cost Savings ($/year)	**$1,180**
Simple Pay Back including Incentive (years)	**9.3**

The electrical savings assume the existing condensing units are currently rated at 10 SEER, and will be replaced with 13 SEER in the future. The existing furnaces are assumed at 80% efficiency becoming 92% efficient after the retrofit.

VI. Appendix

1. Philips EVOKit LED Retrofit Kit Brochure.



Make the switch to the Philips EvoKit LED Retrofit Kit

Available in 2'×2' and 2'×4' configurations

PHILIPS

Easy to install, energy efficient, and affordable… what's stopping you from making the move?

The Philips EvoKit LED Retrofit Kits are an energy efficient, easy to install solution to upgrade your fluorescent troffers to LED. Compatible with both standard and narrow T-grids, they offer a simple retrofit that will improve the look of your ceiling with its architectural styling without the need to actually break the ceiling plenum. The units also come standard with dimming capabilities, making them perfect for applications such as offices, classrooms, healthcare facilities, retail space and more.

The Philips EvoKit LED Retrofit Kits offer the latest advances in LED technology, resulting in quality lighting with extremely high efficacies of up to 110 lm/w. Both the 2'x2' and the 2'x4' EvoKit are manufactured with quality components and finishes, meaning a consistent, balanced lighting scheme when using both configurations in the same space. The main diffuser and slanted troffer help reduce glare and create a pleasant, uniform throw of the light. Combine the aesthetics and quality with the ease of installation, and this product can literally transform your space in minutes!

Specifications

2'x4'

Part Number	Description	Watts	Volts	Lumen Maintenance (Hrs.)[1]	Approx. Lumens[2]	CRI	Color Temp. (K)
501817	EvoKit 2x4 P42L39W 835 2.0-10.7 C2	39	120-277	70,000	4180	80	3500
501866	EvoKit 2x4 P42L39W 840 2.0-10.7 C2	39	120-277	70,000	4280	80	4000
501874	EvoKit 2x4 P42L40W 835 1 Mk10.7 C2	40	120	70,000	4180	80	3500
501882	EvoKit 2x4 P42L40W 840 1 Mk10.7 C2	40	120	70,000	4280	80	4000
501924	EvoKit 2x4 P42L42W 835 5 Mk10.7 C2	42	277	70,000	4180	80	3500
501940	EvoKit 2x4 P42L42W 840 5 Mk10.7 C2	42	277	70,000	4280	80	4000

2'x2'

Part Number	Description	Watts	Volts	Lumen Maintenance (Hrs.)[1]	Approx. Lumens[2]	CRI	Color Temp. (K)
501734	EvoKit 2x2 P32L31W 835 2.0-10.7 C2	31	120-277	70,000	3210	80	3500
501759	EvoKit 2x2 P32L31W 840 2.0-10.7 C2	31	120-277	70,000	3280	80	4000
501775	EvoKit 2x2 P32L32W 835 1 Mk10.7 C2	32	120	70,000	3210	80	3500
501783	EvoKit 2x2 P32L32W 840 1 Mk10.7 C2	32	120	70,000	3280	80	4000
501791	EvoKit 2x2 P32L34W 835 5 Mk10.7 C2	34	277	70,000	3210	80	3500
501809	EvoKit 2x2 P32L34W 840 5 Mk10.7 C2	34	277	70,000	3280	80	4000

1) L70 72,000 hours @ 35 °C based on TM21 and LM80
2) Based on photometric testing consistent with IES LM-79.

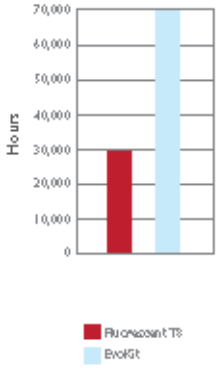
Philips EvoKit LED is an energy efficient LED alternative to traditional linear fluorescent troffers. Not only does it offer energy savings, it also reduces maintenance costs due to its long lifetime. Simple construction helps decrease the installation time meaning you can have an LED solution in your ceiling in just minutes.

The US Government predicts there are over 2.4 billion linear fluorescent lamps in the market, over 1 billion of which are T12*. Troffers that use T12 consume more energy than necessary and are not sufficient to meet new legislative standards, making them the perfect candidates for the Philips EvoKit LED Retrofit Kits. Installing in less than 5 minutes, the kit will not only improve the look of the ceiling, but also consume much less energy and decrease the cost of maintenance due to its long life. The EvoKit is expected to last 70,000 hours and comes standard with a 5 year warranty (See Philips.com/warranties for details).

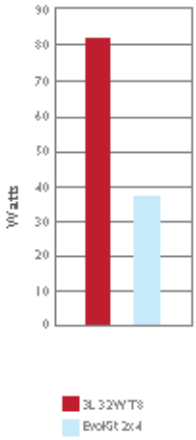
Longer Life and Less Energy

Philips EvoKit LED provides many benefits compared to its fluorescent counterpart

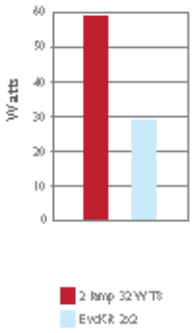
Rated Average Life
230% More Life[1,2]



Present Wattage
2x4 Consumes 54% Less Energy[3]



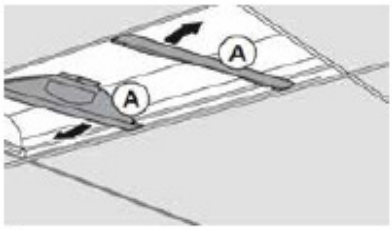
Present Wattage
2x2 Consumes 51% Less Energy[4]



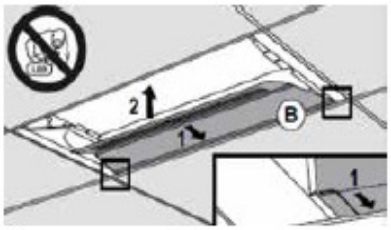
1) Lumen maintenance of B50L70 of 70,000 hours @ 35C based on TM21 and LM80
2) Rated Average Life of a fluorescent is the length of operation (in hours) at which point an average of 50% of the lamps will still be operational and 50% will not, assumed at 30,000 hours for a standard F32T8
3) Assumes 3 lamp 32 W T8 lamps on a .88 factor ballast consumes 85W of energy compared with the EvoKit 2x4 at 39W
4) Assumes 2 lamp 32W U-bent T8 consumes 59W compared with the EvoKit 2x2 at 30W
* Source 2010 US DOE Lighting Market Characterization Report

Installation

1.

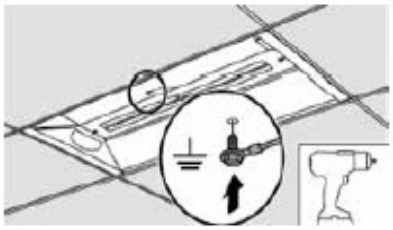


2.

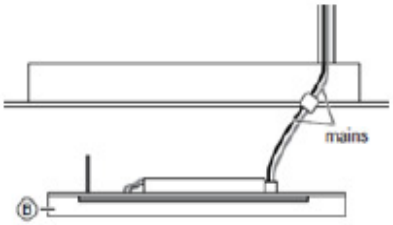


3.

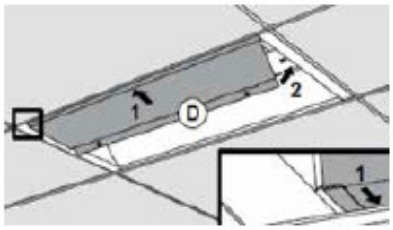
3a.



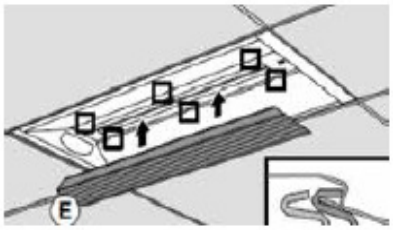
4.



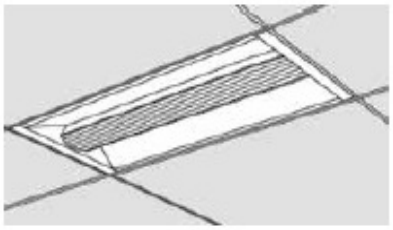
5.



6.



7.



8.

(See installation guide for full instructions on installing the product)

1. Cut power to host fixture and remove louvers/lens, lamps, belly pan and disconnect mains from ballast
2. Install side panels A in between troffer and T-Grid, sliding outward as far as possible
3. Install LED panel between troffer and T-Grid, fixing tab on panel B through slot hole of panel A
   a. Twist the fastener 90°
4. Establish ground connection (see installation guide for different scenarios)
5. Connect mains cable and hide connected wires behind LED panel B
6. Install closing panel C between troffer and T-Grid, fixating panels over slots
   a. Twist the fastener 90° – same as 3a
7. Slide diffuser under tabs on one side and press diffuser over tabs on opposite panel
8. Energize unit

Energy Assessment Report

Beavercreek Township Fire Station 62 and 63

Beavercreek, Ohio

March 30, 2015

Prepared by:
Heapy Engineering
1400 W Dorothy Lane
Dayton, OH 45409

Heapy Engineering
MEP Design Technology Planning Commissioning Energy
Nationally Recognized Leader in Sustainability

Cleveland • Columbus • Dayton • Findlay • Lawrenceburg • Indianapolis

ENERGY STAR PARTNER

THIS PAGE WAS INTENTIONALLY LEFT BLANK

Table of Contents

I. Summary 1

II. Facility Overview 2

Building 2

HVAC 2

Lighting 5

Operational Considerations 6

Good Energy Efficiency Practices 9

III. Utility Analysis 11

Overview of Utility Use 12

IV. Energy Conservation Measures (ECM) 22

ECM 1: Adjust Heating Set Point Controls in Dormitories 22

ECM 2: Reduce the Set Point on the Tower Vestibule Electric Wall Heater (FS 63) 23

ECM 3: Program Computers to Enter "Sleep" Mode when Inactive 24

ECM 4: Adjust Heating Set Point Controls in Apparatus Bay (FS 62) 25

ECM 5: Reduce the Number of Refrigerators 25

ECM 6: Weather Seal Garage Doors (FS 63) 26

ECM 7: Install Low-Flow Aerators on All Lavatories 27

ECM 8: Exterior LED Lighting Retrofit 28

ECM 9: Install Tinted Window Film (FS 62) 30

ECM 10: Install Occupancy Sensors to Control Lighting (FS 62) 30

V. Capital Improvements (CI) 32

CI 1: Building LED Lighting Retrofit 32

I. Summary

Heapy Engineering was engaged to perform an ASHRAE (American Society of Heating Refrigeration and Air Conditioning Engineers) Level I Energy Audit in order to assess the energy performance of Beavercreek Fire Station 62 and Beavercreek Fire Station 63 and provide recommendations for improving overall energy efficiency. The facility walk-through and utility analysis uncovered several areas where energy could be conserved.

ASHRAE separates energy improvements into two categories: low-cost/no-cost and capital improvements. Low-cost or no-cost improvements are classified as Energy Conservation Measures (ECM), which are detailed in Section IV. Measures requiring a more significant financial investment are classified as Capital Improvements (CI), which are detailed in Section V of the report. Significant financial investment has been defined as $10,000 or more for purposes of this study.

Using the data from the utility and walk-through analysis, a list of potential ECMs and CIs was compiled and summarized in Table 1 and 2 below along with estimated economic values.

Over $6,000 in potential annual energy savings were identified in both buildings; however, some of the Energy Conservation Measures (ECM) and Capital Improvements (CI) listed interact synergistically, therefore the total potential energy savings is most likely less than the sum of all individual energy conservation measure savings. By implementing all recommendations, the Fire Stations may reduce annual energy consumption by approximately 21%.

Table 1: Summary of Energy Conservation Measures

	Energy Conservation Measures Identified	Estimated Cost Savings ($/year)	Estimated Investment Cost ($)	Simple Payback (years)
ECM-1	Adjust Heating Set Point Controls in Dormitories	$400	$40	1 month
ECM-2	Reduce the Set Point in the Tower Hallway Electric Space Heater (FS 63)	$340	$25	1 month
ECM-3	Program Computers to Enter 'Sleep' Mode when Inactive	$280	$30	2 months
ECM-4	Adjust Heating Set Point Controls in Apparatus Bay (FS 62)	$330	$75	3 months
ECM-5	Reduce the Number of Refrigerators	$190	$70	5 months
ECM-6	Weather Seal Garage Doors (FS 63)	$300	$580	1.9
ECM-7	Install Low-Flow Aerators on All Lavatories	$140	$360	2.7
ECM-8	Exterior LED Lighting Retrofit	$830	$2,770	4.0
ECM-9	Install Tinted Windows (FS 63)	$520	$4,250	8.2
ECM-10	Install Occupancy Sensors to Control Lighting (FS 62)	$30	$240	9.0

Table 2: Summary of Capital Improvements

	Capital Improvements Identified	Estimated Cost Savings ($/year)	Estimated Investment Cost ($)	Simple Payback (years)
CI-1	Building LED Lighting Retrofit	$2,600	$17,330	6.7

II. Facility Overview

Building

Fire Station 62 is approximately 6,200 square feet and was renovated in 2008. Fire Station 63 is approximately 11,865 square feet and built in 1998. Both Fire Stations are single story buildings containing an apparatus bay for the fire trucks, and dormitories, kitchen, lounge, conference room, and offices for the firemen. The buildings are occupied 24 hours a day, 7 days a week.

The roof of Fire Station 62 is a shingled, built-up roof over wooden trusses. The outside of the building is finished in brick with insulation between the studs and finished in drywall on the occupied interior space. The windows are all double-paned and appear to be well sealed. The roof of Fire station 63 is a shingled, built-up roof over wooden trusses. The outside of the building is brick and is similar to the same general build as Fire Station 63. Although the occupied spaces are well-sealed, the apparatus bay garage doors appear to have some leakage, as addressed further in the report.

HVAC

Fire Station 62 utilizes 2 natural gas, variable speed furnaces with split system condensing units for conditioning the space. There are two hanging, horizontal furnaces in a mechanical room connected to the apparatus bay. Programmable thermostats are provided for each system within the office areas of the facility for control. The building is cooled through 2 condensing units located behind the station, one 4-ton and one 3-ton. There is an energy recovery ventilator (ERV) treating outdoor ventilation air before it is conditioned thereby saving energy.

Figure 1: Horizontal Furnace Example

The apparatus bay is heated by three gas-fired unit heaters. These 100 MBH have corresponding digital thermostats mounted on the walls of the bay.

Figure 2: Gas-Fired Unit Heater Example

There is also an engine fume evacuation system that connects to fire trucks or other vehicles in the bay via the tailpipe through flexible hose suspended from the trusses.

A telephone closet also has its own ductless mini split system for cooling along with a wall-mounted Nortec humidifier.

Figure 3: Ductless Mini Split and Humidifier in Telephone Equipment Room

Fire Station 63 utilizes 3, natural gas furnaces and split system condensing units for conditioning office spaces. One of the 3 furnace sets is actually a twinned system where two furnaces are connected to the same ductwork. The apparatus bay has an open mezzanine where the three furnaces are located.

Figure 4: Furnaces on the Mezzanine

Five gas-fired infrared heaters provide heat to the apparatus bay and are suspended from the trusses between overhead doors.

There is also a small network equipment room that houses telecom equipment and has a small portable air conditioner (DeLonghi Penguino) providing the cooling but exhausting to the hallway. The condensing units are located against the building on the concrete pad near the dormitory wing shown below.

Figure 5: Condensing Unit Examples

Lighting

Both Fire Stations utilize typical 4-foot, T8 fluorescent lamps and compact fluorescent lamp fixtures. Exterior fixtures include metal halide flood lamps, pole lights, and CFL wall packs. The team discovered occupancy sensors in Fire Station 63 controlling areas such as sleeping quarters and hallways. Currently there are no LED fixtures at either station 62 or 63 and no recent upgrades are evident.

Figure 6: Typical Light Fixtures in Fire Station 62

Figure 7: Typical Fixtures in Fire Station 63

Operational Considerations

During the energy audit, the team identified several operational considerations. Correcting these considerations may result in a reduction in energy consumption. However, a more in-depth study would be required to fully gauge each issue's impact.

Operational Consideration 1: ENERGY STAR Appliances

When purchasing new appliances consider buying only ENERGY STAR rated products. Products labeled with the ENERGY STAR logo will be more efficient and may qualify for local utility rebates in helping to offset any additional cost if any. This would include refrigerators, freezers, stoves, microwaves, furnaces, washers, dryers, ice machines, etc.

Operational Consideration 2: Turn Off Entertainment System When Not In Use

While on-site, Heapy noticed the use of a large entertainment system in Fire Station 63. This entertainment system included a sound system and television. Although these systems may be turned off, they still use some energy while plugged in. It is recommended to place all entertainment equipment on the same smart energy power-strip so when the system is turned off, there will be no vampire loads and energy will be conserved. It is estimated that this may save up to $10 per year.

Figure 8: Entertainment System in Fire Station 63

Leaving AV equipment powered up when it is not being used, wastes energy. By utilizing a power-strip, firemen have the ability to shut down all equipment at once. This will allow for easy control as there is only one switch to press for power-management and saving further energy.

Operational Consideration 3: Space Heater Policy

The team noticed several individual space heaters located in the dormitories. Rather than increasing the electrical cost for the building by operating the heaters, it may be better to adjust thermostat set points to address occupant comfort. It is also recommended for a policy to be instituted as to when an individual

can operate these personal heaters if they are deemed necessary after the thermostat set points have been readjusted.

Operational Consideration 4: Install Lower-Flow Shower Heads

The current shower heads have a 2.5 gpm flow rate. Reducing the amount of flow through the showers will save the energy required for heating water as well as the water itself. It is recommended to replace these showerheads with low 1.5 gpm showerheads. Each showerhead costs approximately $25. Installation would take 30 minutes and may be accomplished by internal staff for an estimate of $40 per showerhead at a labor rate of $75. It is difficult to assume savings for this recommendation due to the unknown quantity of times the showers are actually used. The more often these showers are used, the greater the savings.

Figure 9: 2.5gpm Shower Head in Fire Station 63

Operational Consideration 5: Replacing Water Heaters with Higher Efficiency Units and Increased Insulation

Each fire station has a natural gas fired water heater that provides hot water for the lavatories within each building. A 119 gallon tank is in Fire Station 62 and a 30 gallon tank is in Fire Station 63. The 119 gallon Rheem water heater was manufactured in April of 2009. It is peculiar that the two sizes are different in storage capacity. 30 gallons seems too low if showers are frequent at station 63, and 120 gallons seems too high for use at Station 62. Since the use is assumed to be similar between fire stations, a standard size should be agreed upon. The smaller the storage tank, the more energy will be saved. Therefore, if 30 gallons can handle all of the hot water needs, then that is the size that should be installed at both locations.

When the existing water heaters fail and need to be replaced, an efficiency rating of 0.93 or better should be chosen for even further energy savings. Instantaneous water heaters may also be considered.

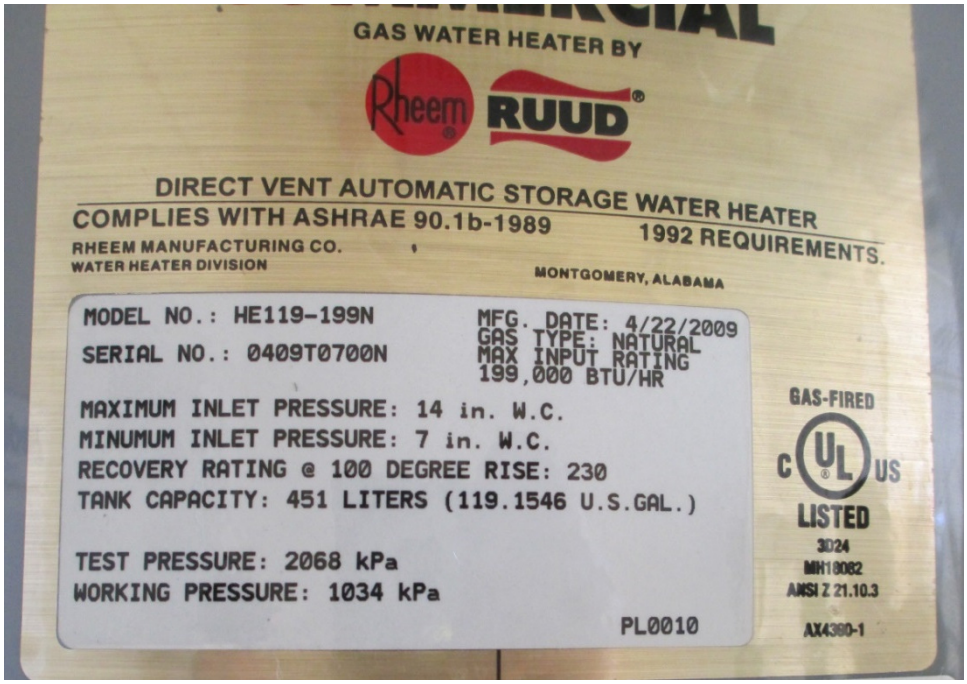


Figure 10: Water Heater Tank in Fire Station 62

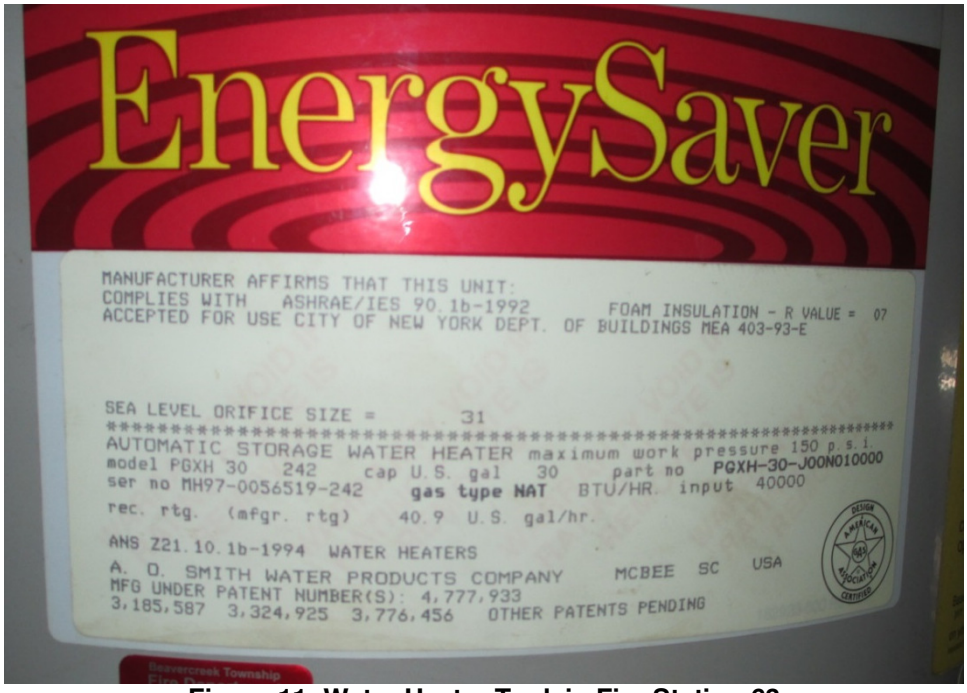


Figure 11: Water Heater Tank in Fire Station 63

Operational Consideration 6: Install Ductless Mini-Split Cooling Only Air Conditioner in the Radio Equipment Room (FS 63)

There is a portable air conditioner used to condition the radio equipment room in Fire Station 63. This unit has a cooling capacity of 11,900 BTU. All the exhaust goes directly into the hallway outside the dormitories instead of outdoors, thereby adding heat to the space year round. It is recommended to replace the existing air conditioner with a ductless mini split system. Removing the heat from the hallway reduces the energy consumed during the summer to cool the space, thereby saving energy and money. Please keep in mind that by doing this upgrade, there will be a slight increase in heating energy during

the colder months. A potential savings of $380 was calculated by making this upgrade, which included the savings from the warmer months and subtracted the heat lost from the cooler months.

Figure 12: Current Portable Mini-Split Air Conditioner

Operational Consideration 7: Adjust Cooling Set Point Controls in Dormitories

While onsite, the team did not verify the cooling set point temperature at either Fire Station as the facilities were operating in heating mode. Assuming the dormitories are mostly occupied during the night, it is recommended to increase the cooling temperature set point to 75°F from 8:00AM to 8:00PM. Because employees will most likely not be spending a majority of their time in this space, setting a higher temperature set point will not cause employee discomfort. Adjusting this cooling set point is expected to take 15 minutes and creates potential for energy savings. If concerned that employees will change the temperature settings, place a clear plastic box lock over the thermostat to prevent tampering.

Good Energy Efficiency Practices

The audit team discovered behaviors or equipment that is leading to greater sustainability and saving further energy than standard practice at either one or both Fire Stations. Some of these details include recycling, use of occupancy sensors, some energy efficient lighting, and double pane windows. These are great steps toward saving resources and require staff cooperation in some cases. In addition, both buildings appeared to be well insulated.

Figure 13: Recycling Container in Fire Station 62

III. Utility Analysis

Over the course of time, patterns in utility use arise for all buildings. For example, the increase in energy consumption experienced in the winter for heating a building is a typical pattern. A utility analysis scrutinizes the patterns of a facility's utility use to make inferences about how the building uses energy now, in the past, and how it may in the future. It can also be used to estimate savings that may occur when improvements are made. Utility bills from December 2012 through November 2014 were used to:

- Characterize the typical energy use of the facility.
- Compare annual energy consumption to similar buildings.
- Determine if the building's energy use patterns are changing over time.
- Determine the temperatures at which the building begins heating or cooling, which are used to calculate the energy savings from conservation measures.

The electricity and natural gas utility bills were tabulated, graphed for energy usage and efficiency trends, and then the average Energy Use Intensity (EUI) was calculated. EUI is a measure of the annual energy used per square foot of building area and is used to compare energy use between similar buildings. The total energy intensity was evaluated by averaging the annual utility use, $Q_{utility}$, in 1,000 British Thermal Units per year (kBTU/year), over the number of years of utility data available, n, then dividing the result by the building floor area in square feet.

$$\mathrm{EUI} = \left(\frac{\sum_{i=1}^{n} Q_{\mathrm{utility}_n}}{n}\right)\frac{\mathrm{kBTU}}{\mathrm{year}}/\mathrm{Area\ ft}^2$$

By averaging the annual utility use over the number of years of available data, the EUI is less influenced by the vagaries of a single year of weather.

Overview of Utility Use

The following sections provide an overview of utility usage for Fire Station 62 and Fire Station 63.

Fire Station 62

Table 3: Utility Providers and Annual Energy Costs at Fire Station 62

Utility	Utility Provider	Average Annual Energy Cost ($/yr)	Average Cost of Utility ($/unit)	Average Cost of Energy ($/kBTU)
Electricity	DP&L and Direct Energy	$6,163	$0.089	$0.03
Natural Gas	Vectren	$3,719	$0.939	$0.01
Water	Not Provided	N/A	N/A	-
Total		**$9,881**		**$0.02**

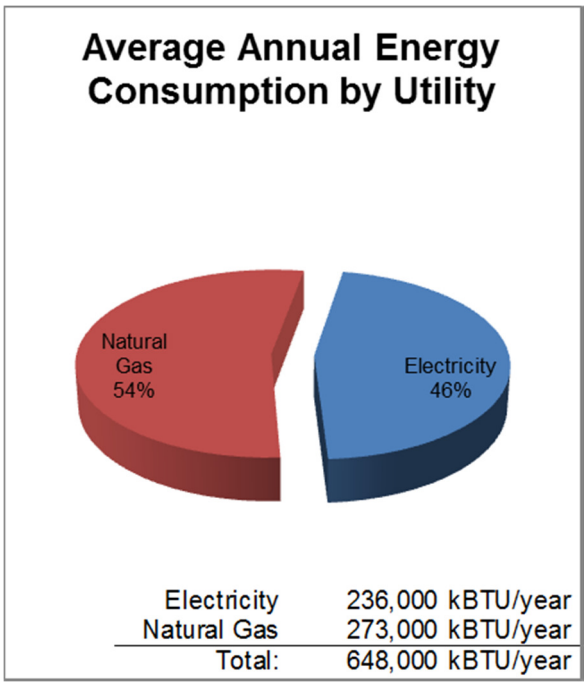


Figure 14: Breakout of Total Annual Energy Use by Utility

A typical building in our region will use more electricity than natural gas; however, Fire Station 62 uses both electricity and natural gas somewhat evenly. The increased natural gas usage is likely due to the three gas fired heaters and infrared heaters in the apparatus bays where the fire trucks are located. The bay takes up a large portion of the total building area and has less insulation. The garage doors also open and close regularly allowing warm conditioned air to escape the area and cool outdoor air to enter during the winter months. This creates an increased use of natural gas to heat this large space.

Please note, Heapy was not provided with all the utility data information for the natural gas usage. The average cost of Utility for natural gas is higher than expected. Each bill for this building should have come with two sets of data for each month. Only one bill is provided and that was for November 2014 with both sets of usage data. Because all the information was not available, Heapy used only the first set of data to determine the average cost of energy likely overstating the cost.

Electricity Use

Electricity is generally used for cooling, lighting, office equipment including computers, and ventilation. The graph below depicts consumption in kWh and the ongoing trend for electricity usage at Fire Station 62.

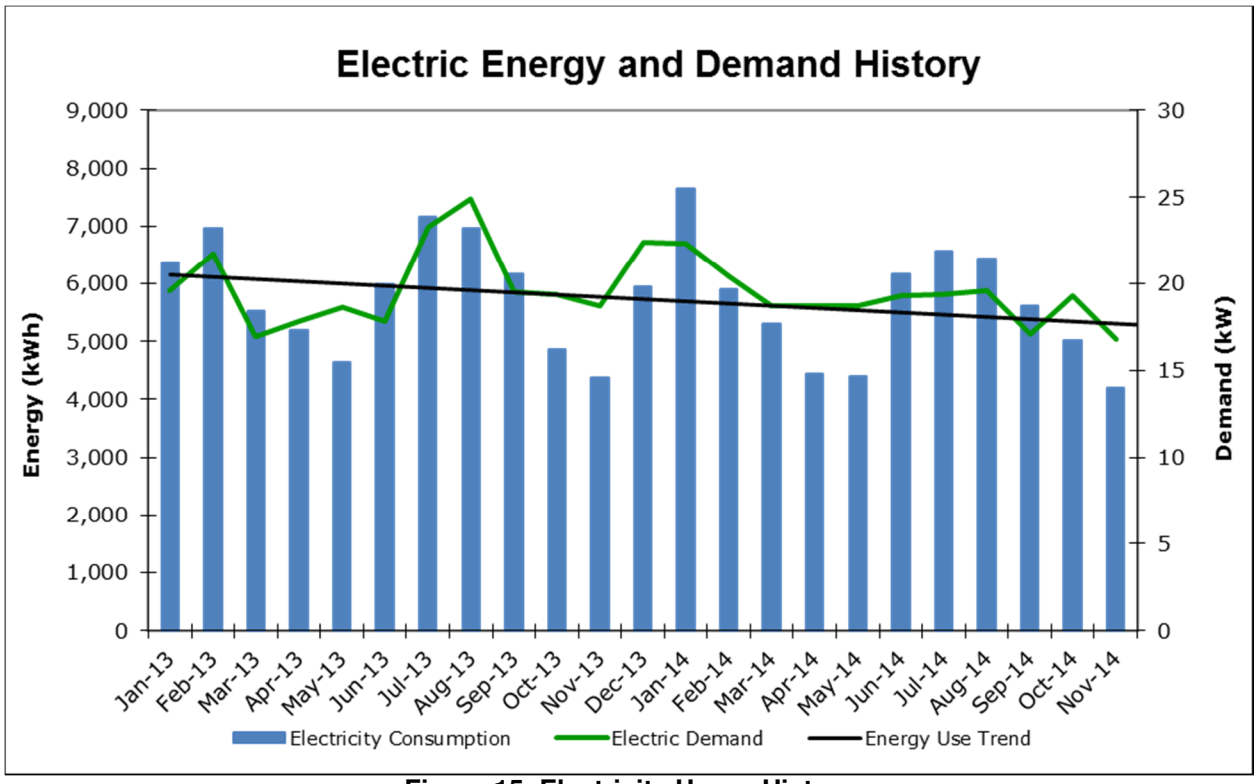


Figure 15: Electricity Usage History

The figure above displays a mostly steady downward trend in the electricity use of the facility. Electricity, generally used for air-conditioning, lighting, and office equipment, typically experiences increased usage during summer months. The figure above, however, displays an increase in both the summer and winter months. Increased lighting use during the dark winter months can sometimes cause energy use in winter to rise. Because the Fire Station is occupied 24 hours a day, 7 days a week, employees will constantly be occupying the space and consuming energy. The individual space heaters may also be contributing to this increased use in the winter.

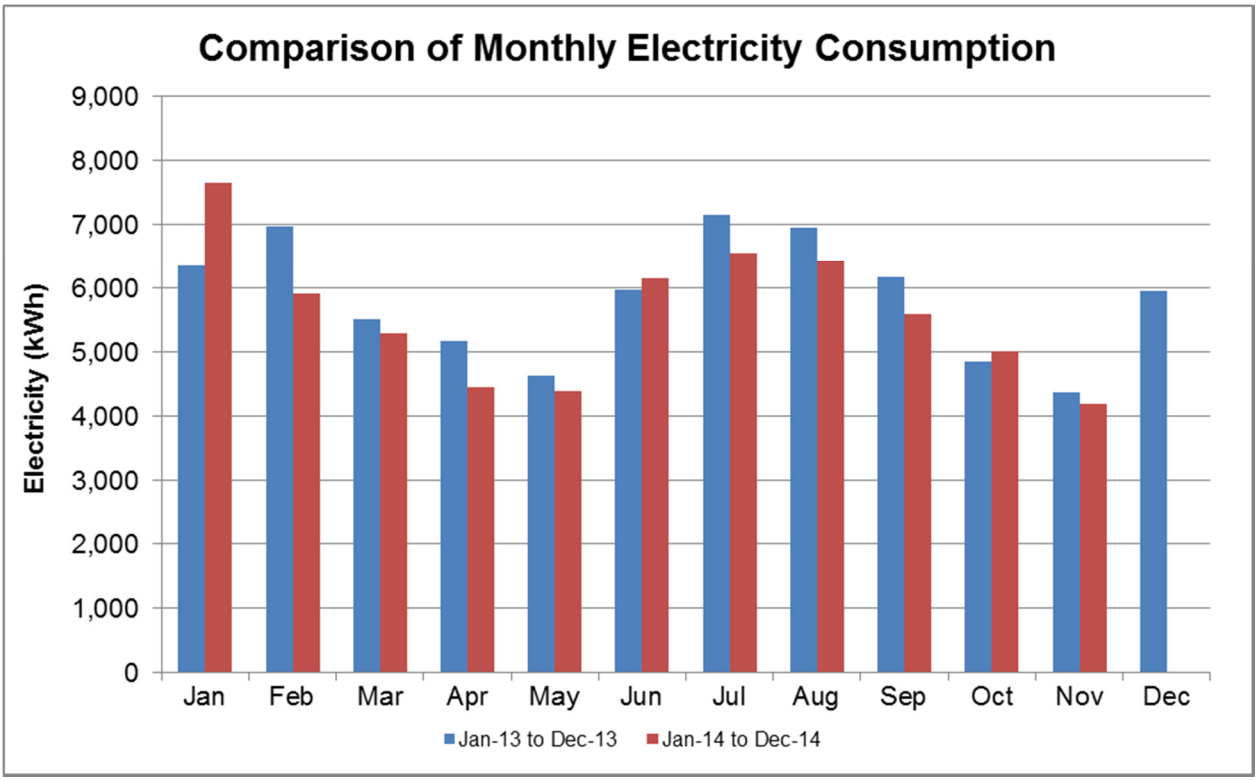


Figure 16: Month to Month Comparison of Electricity Consumption

In general, the month-to-month electricity consumption has remained consistent from 2013 to 2014. There was a spike in January of 2014 compared to January of 2013, which can be explained by the extreme cold weather during this time. In general, there isn't any significant change month to month over the course of the past two years.

.

Natural Gas Use

Natural gas is generally used for water and space heating along with cooking in commercial applications. The graph below depicts consumption in therms and the ongoing trend for as usage at Fire Station 62.

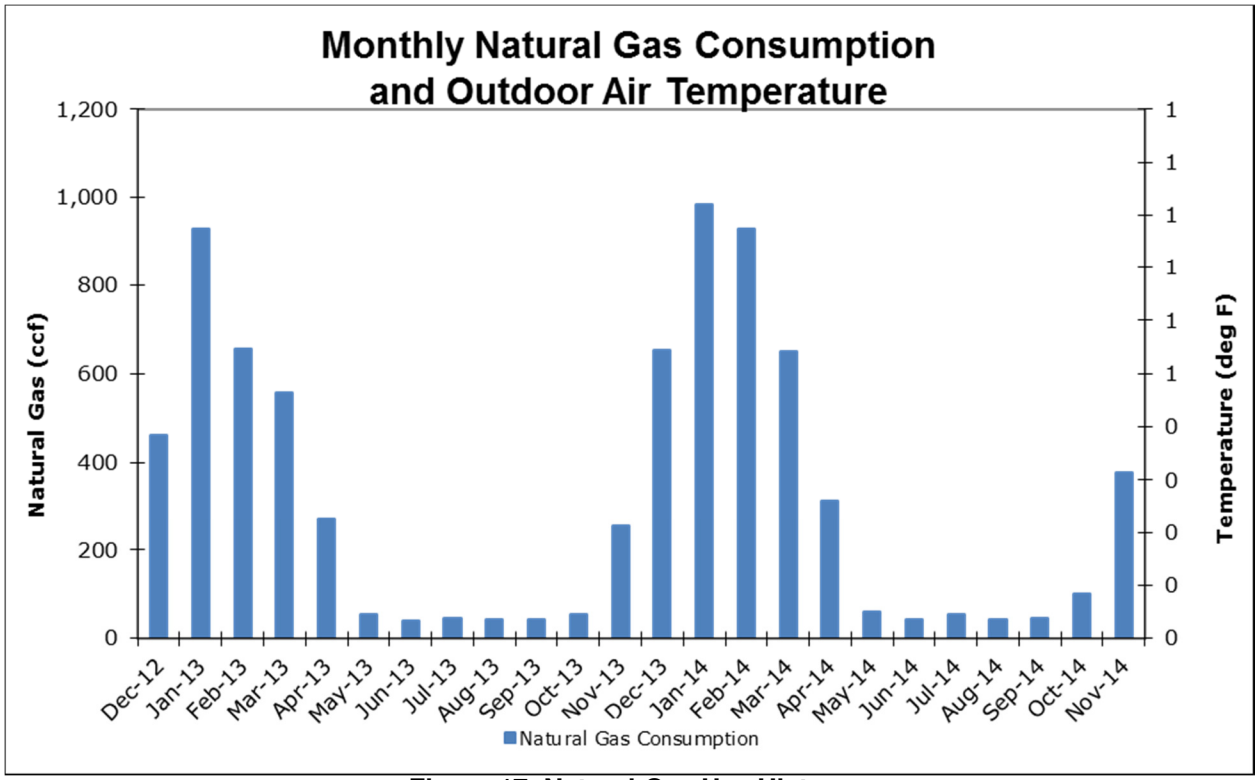


Figure 17: Natural Gas Use History

The above natural gas use history graph shows an upward trend over the course of two years. The actual consumption for 2014 is greater than 2013. There is a very small amount of natural gas used through the summer and the primary consumption of natural gas is for space heating in the winter in the dorm and common areas, as well as the apparatus bay.

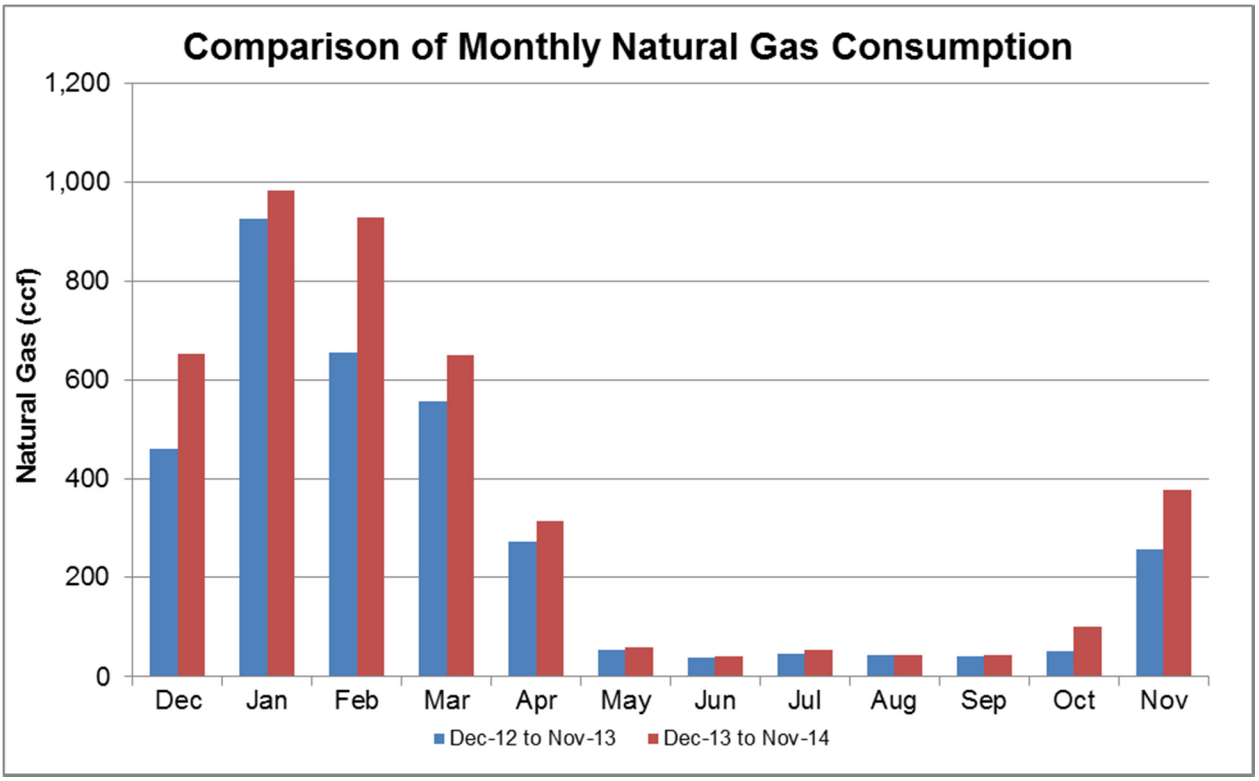


Figure 18: Month to Month Comparison of Natural Gas Consumption

When monthly natural gas consumption is compared, natural gas consumption increased in winter of 2014 compared to winter of 2013. This is most likely due to the extreme cold weather that Dayton had in 2014. There is minimum consumption in the summer time primarily for hot water.

Fire Station 63

Table 4: Utility Providers and Annual Energy Costs at Fire Station 63

Utility	Utility Provider	Average Annual Energy Cost ($/yr)	Average Cost of Utility ($/unit)	Average Cost of Energy ($/kBTU)
Electricity	DP&L and Direct Energy	$12,059	$0.081	$0.02
Natural Gas	Vectren	$8,890	$0.724	$0.01
Water	Not Provided	N/A	N/A	-
Total		**$20,949**		**$0.01**

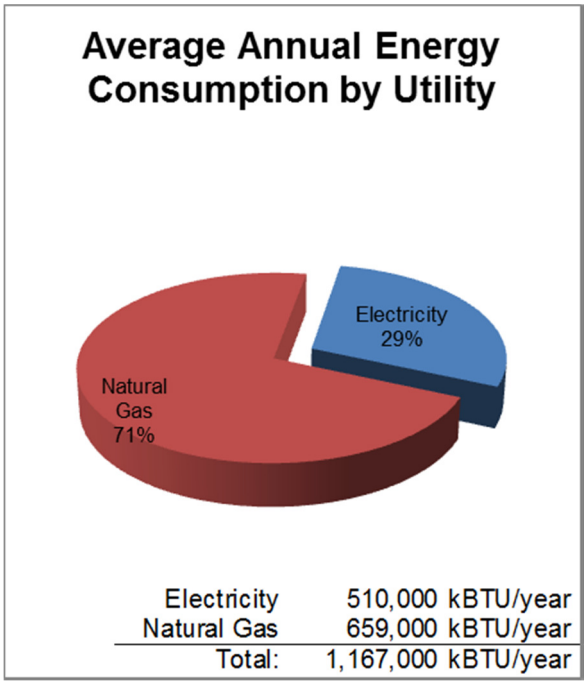


Figure 19: Breakout of Total Annual Energy Use by Utility

Unlike Fire Station 62, Fire Station 63 uses much more natural gas than electricity. This is also due to the five gas fired infrared heaters in the apparatus bay where the fire trucks are located. The bay takes up a large portion of the total building area and has less insulation. The bay in 63 also had noticeable gaps around the large overhead doors where energy can escape more easily. Due to the continuous opening and closing of the overhead doors in the apparatus bay, warm conditioned air leaves the space and allows cool outdoor air to enter. Due to this, the infrared heaters perform extra work to keep the area warm and therefore the building uses more natural gas than electricity.

Please note, the natural gas bills provided contained two sets of usage data for each month. This information was added for each month to determine the final average cost of utility, as shown in the table above.

Electricity Use

Electricity is generally used for cooling, lighting, office equipment including computers, and ventilation. The graph below depicts consumption in kWh and the ongoing trend for electricity usage at Fire Station 63.

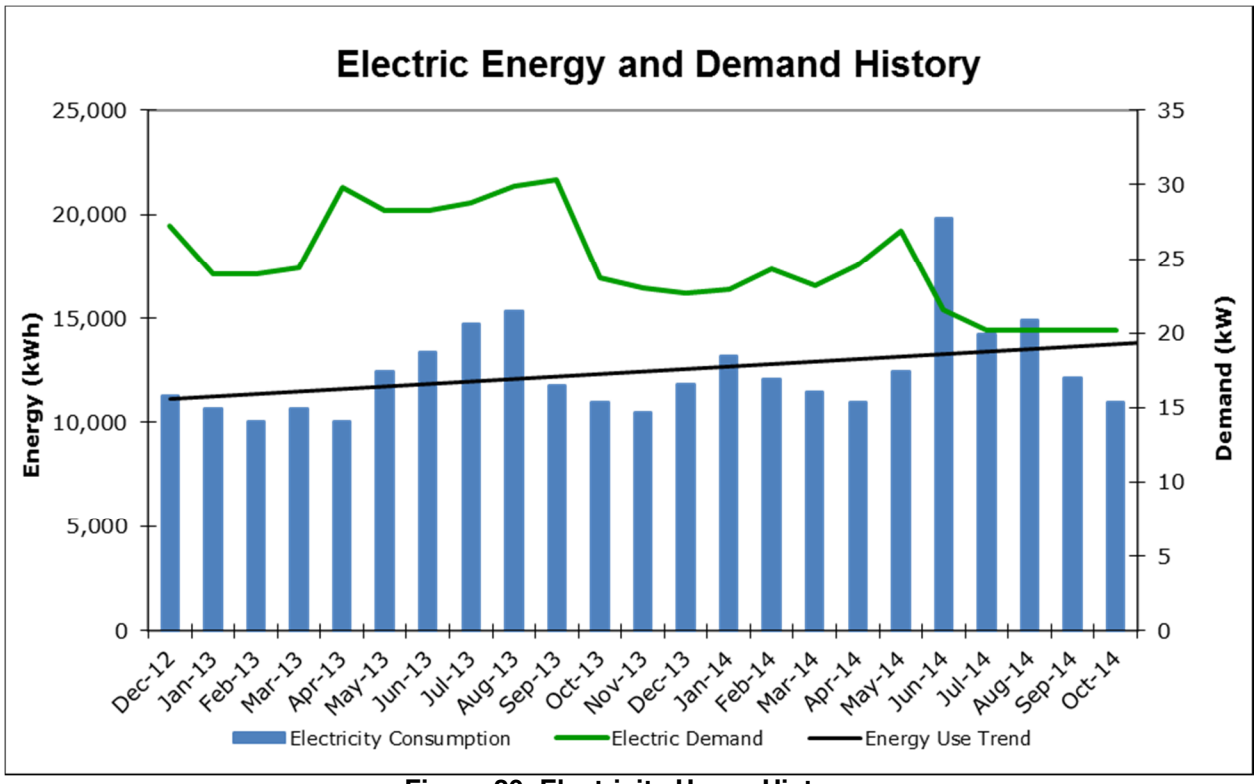


Figure 20: Electricity Usage History

The figure above displays an upward trend in the electricity use of the facility. This may be due to aging equipment. There is a spike in June of 2014 which may be due to a billing error. As mentioned before, electricity is generally used for air-conditioning, lighting, and office equipment. There is a general increase in the summer months due to the use of air-conditioning on the hot summer days. Please note that kW demand has been trending downward slightly. This generally means that something that uses electricity on a continuous basis (such as lighting) has been replaced with something more efficient.

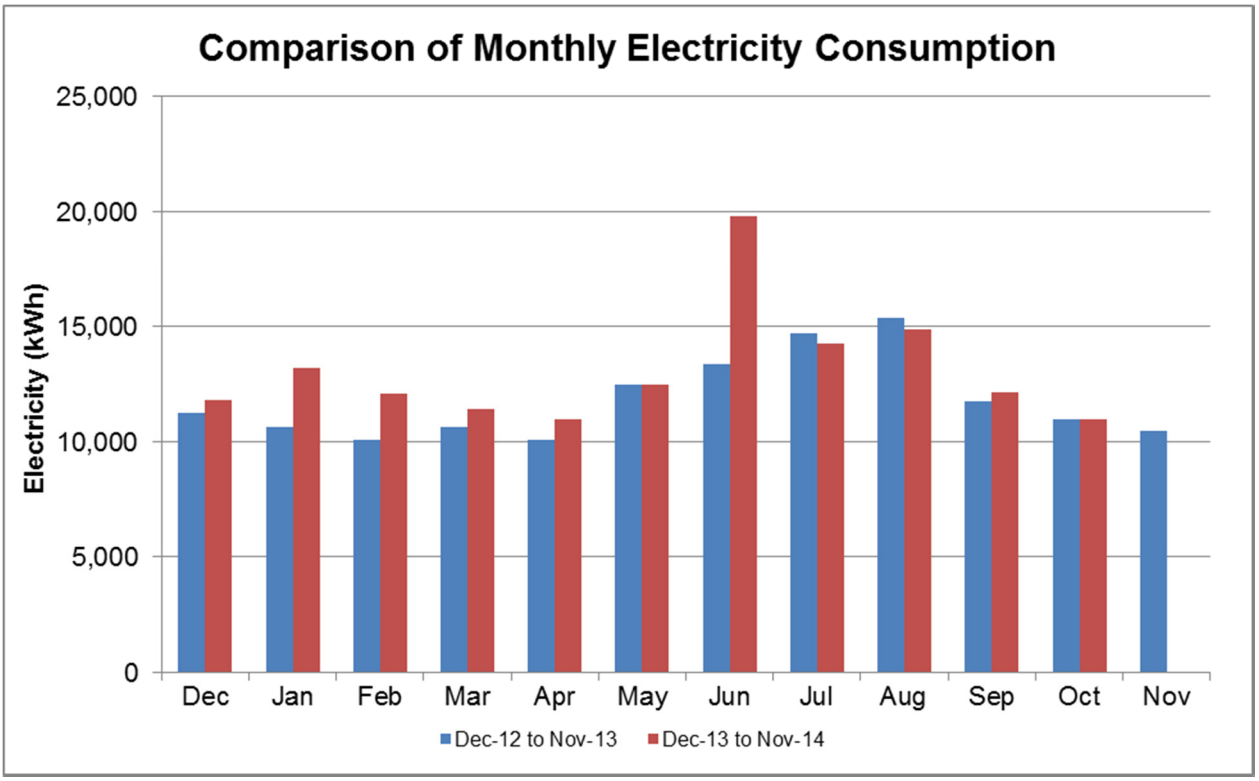


Figure 21: Month to Month Comparison of Electricity Consumption

There is an unusual peak in June of 2014 as mentioned above, most likely due some kind of billing error. However, there does not appear to be a correction for this month in the months that follow, possibly indicating something was using more energy within the building. The remainder of the months follows a fairly consistent pattern from 2013 to 2014 with a slight peak in the summer due to use of air conditioning in the area. The winter months of 2014 saw increased use, likely due to space heaters and a colder winter in comparison to 2013.

Natural Gas Use

Natural gas is generally used for water and space heating along with cooking in commercial applications. The graph below depicts consumption in therms and the ongoing trend for as usage at Fire Station 63.

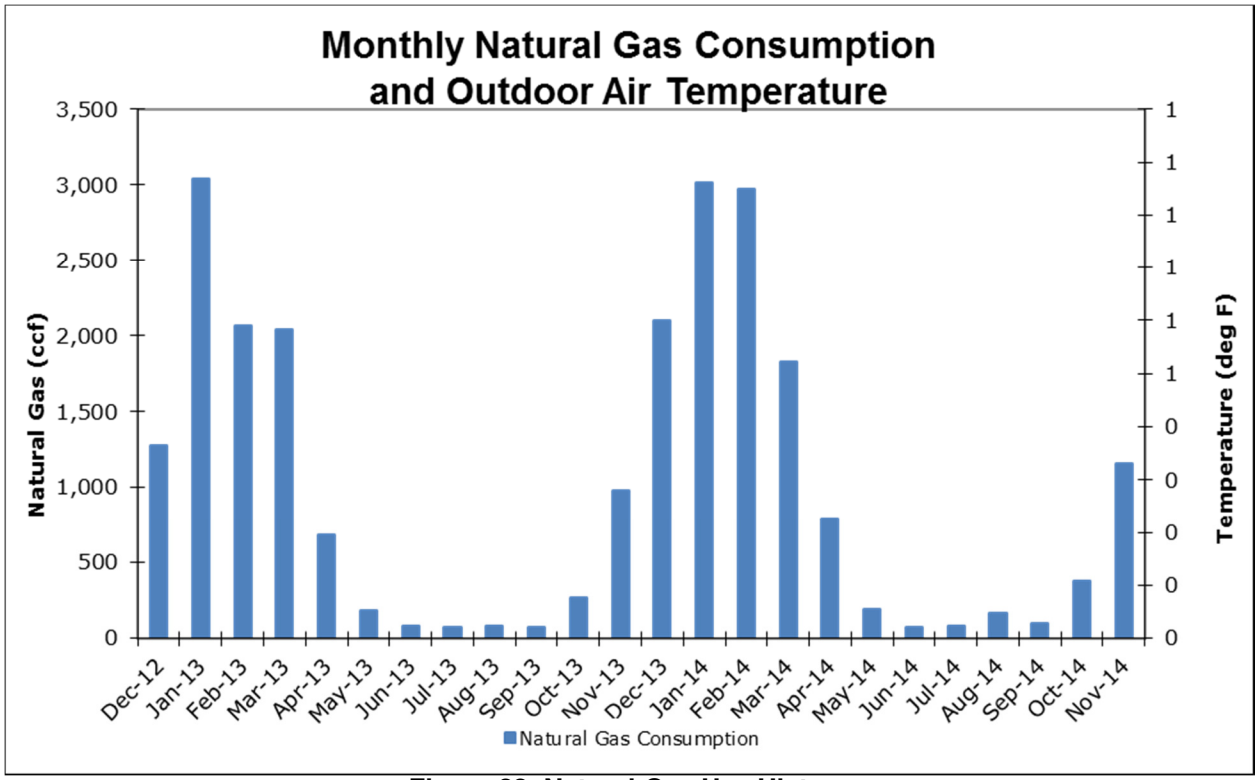


Figure 22: Natural Gas Use History

The natural gas use for Fire Station 63 is trending upward. Looking at the winter months from 2013 to 2014, there is clearly more usage in 2014, likely due to the extreme cold weathers during the winter. Natural gas is used for water and space heating in the building. It is clear from the figure above that there isn't much natural gas usage in the summer months. The usage shown above follows an expected seasonal pattern based on the outdoor weather.

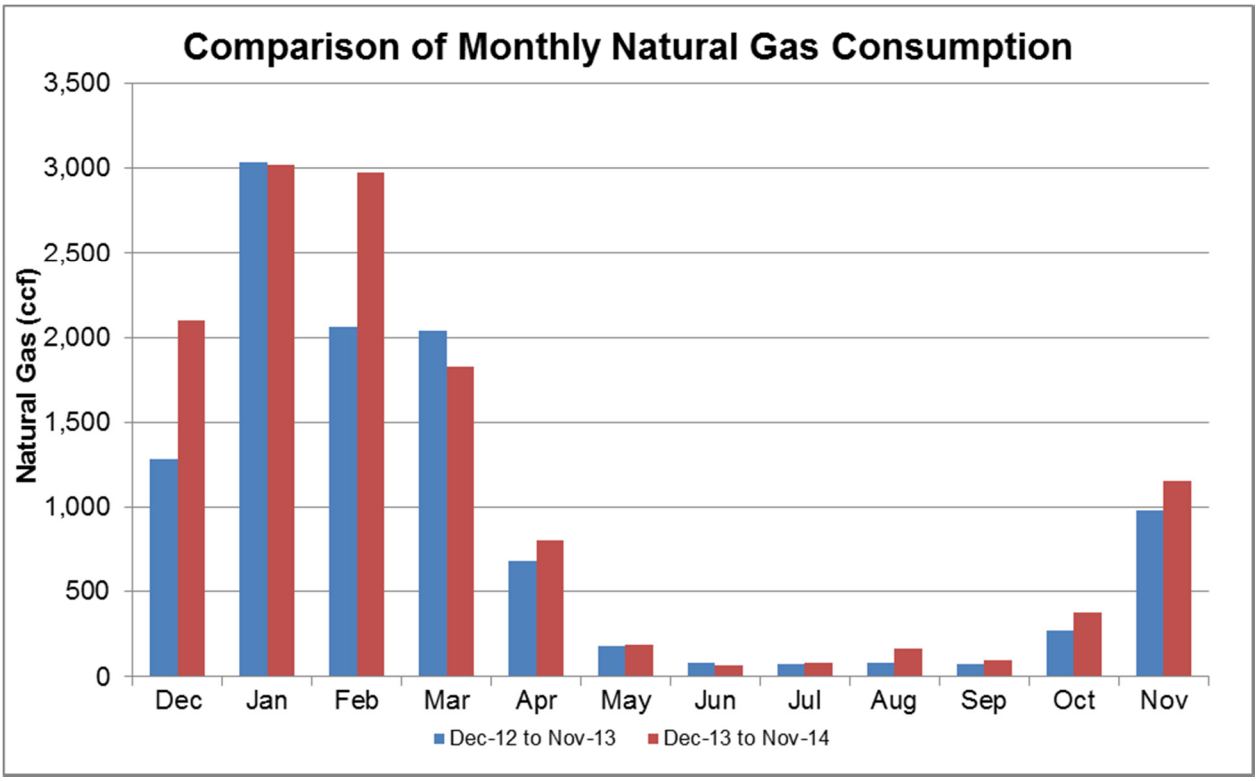


Figure 23: Month to Month Comparison of Natural Gas Consumption

From December and February of 2013 and 2014, there is a clear spike in natural gas usage in 2014. This is highly likely due to the extreme cold weather. These months experienced a large increase in consumption over the previous year.

IV. Energy Conservation Measures (ECM)

This section contains information pertaining to measures that, if implemented, could conserve energy at Fire Station 62 and Fire Station 63. An estimate of the cost of implementation and of the savings that may be realized is included in each section.

The savings associated with each conservation measure are calculated on a per measure basis and are broad estimates based on industry rules of thumb in addition to the assumptions identified for each ECM. The sum of all energy savings does not take into account synergistic effects and will not accurately reflect the total savings possible from implementing all conservation measures.

All cost estimates contained in this report should be treated as broad estimates. A contractor's estimate should be obtained before proceeding with any of the measures detailed below.

ECM 1: Adjust Heating Set Point Controls in Dormitories

Existing Condition: Heapy observed the thermostats within Fire Station 62 and Fire Station 63 showing 70°F, although the heating setting was lower in Fire Station 63.

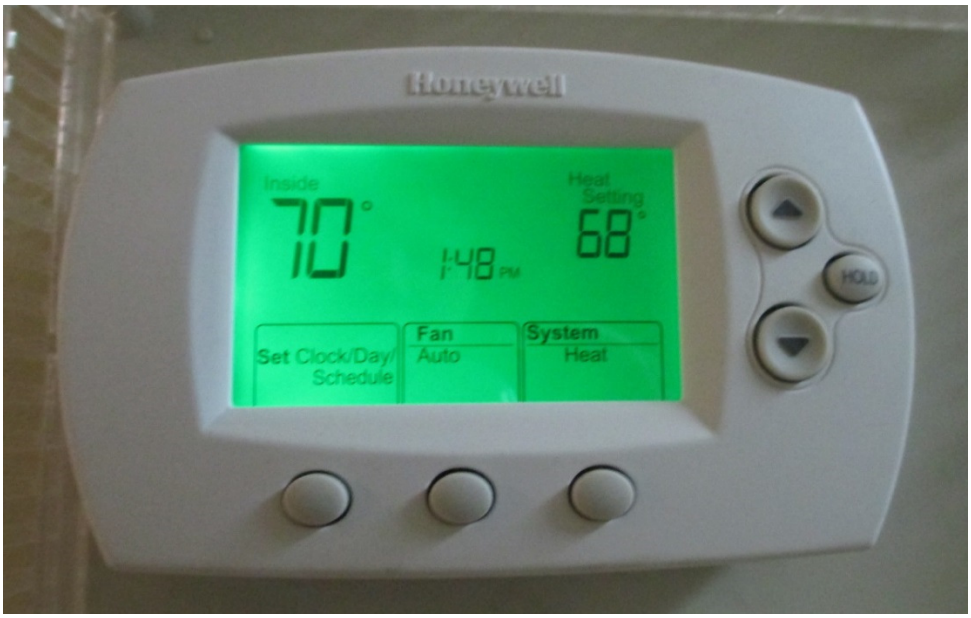


Figure 24: Temperature set point in Fire Station 63

Figure 25: Temperature set point in Fire Station 62

Recommendations: Due to the varying occupancy, it is difficult to create a set schedule for when this temperature can be reduced in the winter. Assuming the dormitories are mostly occupied during the night, it is recommended to program the temperature set point in the winter from 68°F to 65°F during the day when the space is most likely unoccupied. If concerned that employees will change the temperature settings, place a clear plastic box lock over the thermostat to prevent tampering.

Benefits: There is a potential for energy savings with the addition of a temperature setback.

Costs: The dormitories already have a thermostat. It is expected to take 15 minutes for an individual to program a setback schedule to 65°F in the colder months.

Economic Summary:

Adjust Heating Set Point Controls in Dormitories	FS 62	FS 63
Total Estimated Cost	**$20**	**$20**
Estimated Annual Natural Gas Savings (therms/year)	90	350
Total Estimated Cost Savings ($/year)	**$80**	**$320**
Simple Pay Back (years)	**3 months**	**1 month**

Savings assume the set point will be adjusted from 68°F down to 65°F in the winter for 12 hours a day, 7 days a week for the dormitory areas. The hours were based on what is expected to be mostly unoccupied time (8:00AM to 8:00PM). The area used for FS 62 that will be affected by this change is 633 ft^2 and for FS 63 is 2,168 ft^2. The calculations also took into account the heating degree days.

ECM 2: Reduce the Set Point on the Tower Vestibule Electric Wall Heater (FS 63)

Existing Condition: There is an electric wall heater rated at 4 kW heating the tower vestibule and entrance toward Kemp Road at Station 63. At the time of the audit, Heapy measured a temperature of 78° F in this space although it is not a regularly occupied space.

Figure 26: Outside of the Tower and Vestibule

Recommendations: Program the thermostat with a new set point for the winter months. A 60° F heating set point saves energy during the cooler months of the year.

Benefits: Programming a new set point reduces the energy used during all hours.

Costs: The electric wall heater already has a thermostat inside the cover. It is expected to take 15 minutes for an individual to open the cover, reduce the set point to 60°F, and close the cover.

Economic Summary:

Reduce the Set Point in the Tower Vestibule Electric Wall Heater	
Total Estimated Cost	**$25**
Estimated Annual Electricity Savings (kWh/year)	4,200
Total Estimated Cost Savings ($/year)	**$340**
Simple Pay Back (years)	**~1 month**

Savings assume the current temperature is set at 78°F and will be set back to 60°F. The hours to determine the savings are 22 weeks in the winter, 7 days a week, 24 hours a day. The general formula used is BTUh = cfm x 1.08 x delta T(°F) converted into kWh at 3,412 BTU per kWh.

ECM 3: Program Computers to Enter "Sleep" Mode when Inactive

Existing Condition: Currently, all of the observed computers in both Fire Stations are operating continuously. While the monitor is programmed to enter sleep mode, the computer continues to be fully active.

Recommendations: Program all computers to enter "Sleep" mode after 15 minutes of inactivity.

Benefits: The surge of energy consumed when a computer starts is quite small when compared to the energy consumed as it runs for long periods of time. While "Sleep" mode does not eliminate the energy consumption it greatly reduces it.

Costs: It is estimated that it will take about 15 minutes to adjust the power settings for each Fire Station computer.

Economic Summary:

Program Computers to Enter "Sleep" Mode when Inactive	FS 62	FS 63
Total Estimated Cost	**$15**	**$15**
Estimated Annual Electrical Savings (kWh/year)	1,670	1,661
Estimated Annual Natural Gas Savings (therms/year)	-3	-4
Total Estimated Cost Savings ($/year)	**$150**	**$130**
Simple Pay Back (years)	**~1 month**	**~1 month**

Savings assume 3 computers per Fire Station. It is assumed that each computer uses 75 watts on average and 25 watts per monitor. Sleep mode reduces the energy to 15 watts and 2 watts respectively. It is assumed that the computers are operating 8,760 hours per year currently and will be reduced to 1,095 hours (3 hours/day, 365 days/year) in the future.

ECM 4: Adjust Heating Set Point Controls in Apparatus Bay (FS 62)

Existing Condition: In Fire Station 62, there are 3 gas fired unit heaters in the apparatus bay heating the area. There are three thermostats in the area each averaging a heating set point temperature at 67° F at all hours with no setback during unoccupied hours.

Recommendations: Program all thermostats with new set points. A 60° F heating set point saves energy during the cooler months of the year. Because this space could be occupied at any given time, there are no setbacks recommended, just a set point adjustment.

Benefits: Programming heating set point reductions saves energy during the winter.

Costs: A set point adjustment is assumed to require 1 hour of time for all three thermostats. It is estimated that this will cost $75 of labor.

Economic Summary:

Adjust Heating Set Point Controls in Apparatus Bay (FS 62)	FS 62
Total Estimated Cost	**$75**
Estimated Annual Natural Gas Savings (therms/year)	350
Total Estimated Cost Savings ($/year)	**$330**
Simple Pay Back (years)	**~3 months**

Savings assume the set point will be adjusted from 68°F down to 60°F for 168 hours a week for the three thermostat settings. This is calculated for 22 winter weeks per year.

ECM 5: Reduce the Number of Refrigerators

Existing Condition: In each Fire Station kitchen, there were three full-size refrigerators. Ben confirmed only 5 individuals would occupy Fire Station 63 and 3 individuals would occupy Fire Station 62 at any given time. While on-site, Heapy noticed some refrigerators not completely full with food.

Figure 27: 3 Refrigerators at Fire Station 62 and Fire Station 63

Recommendations: It is recommended to remove or unplug 2 of the 3 refrigerators at each Fire Station.

Benefits: The refrigerator at Fire Station 62 uses about 499 kWh per year and the refrigerator at Fire Station 63 uses about 598 kWh per year. Since all three full-size refrigerators at each Fire Station are not being used to their full capacity, energy is being wasted.

Costs: The anticipated cost to remove one refrigerator is $35 for a half hour of labor. The refrigerators could be donated or recycled.

Economic Summary:

Reduce the Number of Refrigerators	FS 62	FS 63
Total Estimated Cost	**$35**	**$35**
Estimated Annual Electricity Savings (kWh/year)	500	600
Total Estimated Cost Savings ($/year)	**$90**	**$100**
Simple Pay Back (years)	**2.5 years**	**2.7 years**

Savings assume the full-size refrigerator in Fire Station 63 is a 2001-2008 model and a size between 19.0 to 21.4 cubic feet. The annual kWh consumption of the full-size refrigerator was determined to be 598 kWh via Energy Star's Calculator. The model number of the full-size refrigerator in Fire Station 62 is GDSC0KCXCRBB which was used to determine actual savings via Energy Star's calculator. The total estimated annual cost savings assume the removal of two refrigerators.

ECM 6: Weather Seal Garage Doors (FS 63)

Existing Condition: The existing garage doors at Fire Station 63 are not well sealed. As a result, there are cracks where unconditioned and unfiltered air is introduced into the building. During the walk-through it was observed that daylight was visible around the sides and bottom of the garage doors, as shown in the pictures below.

Figure 28: Examples of Cracks on Garage Doors

Recommendations: Seal as many cracks and gaps with weather stripping or rubber material as possible.

Benefits: This eliminates drafts and infiltration that would otherwise be coming into the building from outdoors. The flow of air depends on the pressure within the building and the temperature difference between the air streams. If the air inside is cool and outside it is warm, then the warm air will come into the building through unsealed windows and the cracks around doors. The outdoor air is not filtered and has not been conditioned. This introduces dirt and creates unnecessary energy waste to heat or cool the unwanted outdoor air.

Costs: It's estimated that 30 minutes of labor per opening (at $75/hour) will be necessary to install door sweeps and apply rubber gaskets to close at least 10 total cracks. The cost of rubber gasketing material is about $10 per 10 feet of gasket. Door sweeps cost about $15 each. Some cracks will require more materials than others.

Economic Summary:

Weather Seal Garage Doors (FS 63)	FS 63
Total Estimated Cost	**$580**
Estimated Annual Electricity Savings (kWh/year)	1,490
Estimated Annual Gas Savings (therms/year)	330
Total Estimated Cost Savings per Door ($/year)	**$300**
Simple Pay Back (years)	**1.9**

Savings assume the cracks at the bottom of each door equate to 5 x 3 inches each and 3 additional cracks that run along the side of the door that are 4 feet x ½ inch. The total crack area is assumed to be 1.23 square feet. It is assumed that adding weather stripping will reduce the infiltration by 50%.

ECM 7: Install Low-Flow Aerators on All Lavatories

Existing Condition: The lavatories within each Fire Station are equipped with 2 gallon per minute aerators.

Figure 29: Aerator Example at 2.0 gpm

Figure 30: Aerator Example at 2.0 gpm

Recommendations: Replace the existing aerators with 0.5 gallon per minute aerators.

Benefits: Reducing the amount of flow through the faucets will save the energy required for heating water as well as the water itself.

Costs: Each aerator costs approximately $5. Installation would take 30 minutes and may be accomplished by internal staff for an estimate of $40 per lavatory at a labor rate of $75 per hour.

Economic Summary:

Install Low-Flow Aerators On All Lavatories	FS 62	FS 63
Total Estimated Cost	**$120**	**$240**
Estimated Annual Water Savings (ccf/year)	11	21
Estimated Annual Natural Gas Savings (therms/year)	700	1,725
Total Estimated Cost Savings ($/year)	**$40**	**$100**
Simple Pay Back (years)	**3.1 years**	**2.5 years**

Costs assume $40 per sink including labor. Savings assume 6 lavatories in Fire Station 63 and 3 lavatories in Fire Station 62 excluding the kitchen sinks, at 50% hot water savings per lavatory with a temperature rise of 65°F. This further assumes a staff of 3 in Fire Station 62 and 5 in Fire Station 63 for 365 days per year. An average water and sewer rate of $6/ccf is used for water savings.

ECM 8: Exterior LED Lighting Retrofit

Existing Condition: At Fire Station 62, there is 1- 50-watt metal halide flood fixture, 8- 42-watt fluorescent wall packs, and 2- 100-watt HID pole lamps. At Fire station 63, there are 9- 175-watt metal halide fixtures, 4- 70-watt HID fixtures, and 2- 100-watt HID fixtures. These fixtures are all either on a photocell, timer, or switch.

Figure 31: Exterior Light Fixtures for Fire Station 62

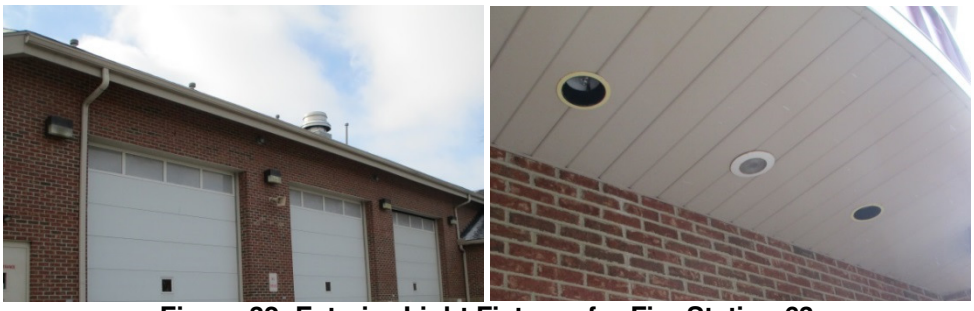


Figure 32: Exterior Light Fixtures for Fire Station 63

Recommendations: Replace all exterior lights with LED lamps. Photocells would allow the fixtures to adjust timing automatically all year according to the outdoor lighting level. But, this can be more costly and may require additional maintenance thereby making the payback longer compared to the current time clock operation.

Benefits: LED lamps use less energy to produce the same amount of light. They also last longer than either the high pressure sodium or metal halide, potentially saving on re-lamping costs. LEDs operate better in cold weather and are instant start for instant light rather than requiring a warmup period such as metal halide or CFL.

Costs: Costs for replacing the exterior fixtures range from $60 to $150 per LED lamp. The labor cost estimated per fixture is $40 based upon $75 per hour.

Rebates: Dayton Power and Light is currently offering rapid rebates for LED lamps replacing fluorescent and HID fixtures. These rebates vary depending on the fixture being replaced and the wattage of the original fixture being replaced but will be applicable to this upgrade.

Economic Summary:

Exterior LED Lighting Retrofit	FS 62	FS 63
Total Estimated Cost	**$1,000**	**$2,670**
Estimated Annual Electricity Savings (kWh/year)	1,750	6,610
Estimated DP&L Rebate ($)	$150	$750
Estimated Annual Re-lamping Costs ($/year)	**$0**	**$130**
Total Estimated Cost Savings ($/year)	**$160**	**$540**
Simple Pay Back (years)	**5.3**	**2.9**

Savings assume all fixtures listed in the existing conditions are replaced with LED lamps. Each fixture is assumed to be illuminated for half the year. The maintenance savings are based on a rated lamp life of 10,000 hours and varying costs depending on the fixture and 25,000 hours for the new LED lamps.

ECM 9: Install Tinted Window Film (FS 62)

Existing Condition: Current windows in Fire Station 62 are clear and therefore have a poor solar heat gain coefficient, meaning that excess heat is entering the building through the clear windows. The facility experiences a large amount of solar heat gain through each window which negatively impacts occupant comfort inside the building.

Recommendations: Apply tinted, low-e reflective film to the windows, which will reflect some of the sun's radiation and help keep the building cooler. It should also reduce glare.

Benefits: Windows are primarily rated by their insulating value and solar heat gain coefficient. The worse the solar heat gain coefficient, the greater the sun will impact the temperature of the space. If a tinted, reflective film were added and the solar heat gain coefficient increased, then the sun would have less of an impact on the space and so would not interfere with the mechanical conditioning. Window film provides sun control, UV protection, window tinting, and privacy while increasing energy savings. Window films help improve tenant comfort by reducing glare on computer screens and minimizing solar hot spots.

Costs: The cost is estimated to be approximately $20 per square foot per a 3M window film web resource. The cost can range from $13 to $22 per square foot depending upon the product chosen for solar films according to RS Means Costworks. Therefore, the average cost used in the estimated price is $20 per square foot.

Rebates: Dayton Power and Light is currently offering $2 per square foot of window film added with a solar heat gain coefficient of 0.40 or less.

Economic Summary:

Install Tinted Window Film (FS 62)	FS 62
Total Estimated Cost	**$4,720**
DP&L Rebate Amount ($)	$470
Estimated Annual Electricity Savings (kWh/year)	6,410
Estimated Annual Natural Gas Savings (therms/year)	-220
Total Estimated Cost Savings ($/year)	**$520**
Simple Pay Back (years)	**8.2**

Savings assume there are 108 sf of window area on the south facade, 136 sf of window area on the north facade, and 244 sf of window area on the west façade for Fire Station 63. The existing windows were assumed to have a U-factor of 0.476 and SHGC of 0.701, which is standard for double pane clear windows. The SHGC after the film was assumed to be 0.394, which is standard for double pane coated windows.

ECM 10: Install Occupancy Sensors to Control Lighting (FS 62)

Existing Condition: In Fire Station 62, the light fixtures in the hallway outside the dormitories are illuminated all year as opposed to station 63. Station 62 relies on manual light switches to operate the lights. This method of control often leaves lights illuminated during times when the space is unoccupied.

Recommendations: To reduce energy consumption, consider placing occupancy sensors in the hallway to ensure that the lights are turned off when the space is not in use. The occupancy or vacancy sensors would be able to turn the lights off after a set time period of the area being vacant. Those equipped with a manual override would ensure that the occupant maintains the lighting level of preference, but when possible, the lights would be turned off. There are several different types of sensors available, including infrared, ultrasonic and a combination of the two. Consult a professional prior to investing in sensors to ensure the proper technology is selected for the specific application. It is recommended that a ceiling sensor be used in this location.

Benefits: Light operation time will be reduced, resulting in lower energy consumption.

Costs: An occupancy switch would cost about $175 and about 1 hour of labor to install.

Economic Summary:

Install Occupancy Sensors to Control Lighting (FS 62)	FS 62
Total Estimated Cost	**$250**
Total Estimated DP&L Rebate	$10
Estimated Annual Electricity Savings (kWh/year)	330
Estimated Annual Natural Gas Savings (therms/year)	-1
Total Estimated Cost Savings ($/year)	**$30**
Simple Pay Back (years)	**9**

Savings assume the hours of illumination will reduce from 8,760 hours to 3,356 hours, which is typical for a hotel as listed in the Ohio Technical Reference Manual. The occupancy sensor here will control 2- 2-lamp 2-foot, 17-watt T8 fixtures.

V. Capital Improvements (CI)

One of the goals of a building walk-through is to get an understanding of building operations and how they may improve. Possible building improvements are tabulated and investigated, then sorted and summarized.

There are two categories of building improvements. Low-cost or no-cost improvements are classified as energy conservation measures (ECMs). These are detailed in Section IV. This section contains information pertaining to energy saving measures that represent a more significant financial investment than ECMs. Significant financial investment has been defined as $10,000 or more for purposes of this study. An opinion of probable cost of implementation and of the savings that may potentially be realized is included in each section.

The savings associated with each CI is calculated on a per measure basis and is a broad estimate based on industry rules of thumb in addition to the assumptions identified for each CI. The sum of all energy and cost savings does not take into account synergistic effects and will not accurately reflect the total savings possible from implementing all CIs.

All cost estimates contained in this report should be treated as broad estimates. A contractor's estimate should be obtained before proceeding with any of the measures detailed below.

CI 1: Building LED Lighting Retrofit

Existing Condition: The installed lighting within the two Fire Stations is mostly fluorescent fixtures. Fire Station 62 has 2-foot and 4-foot T8 fluorescent fixtures with 17-watt to 32-watt lamps as well as 9-watt to 42-watt compact fluorescent can fixtures. Fire Station 63 has 4-foot T8 fluorescent fixtures with 17-watt, 25-watt, and 32-watt lamps, 2-lamp 8-foot T12 fluorescent fixtures with 110-watt lamps, 2-lamp 4-foot T12 fluorescent fixtures with 40-watt lamps, 13-watt and 26-watt compact fluorescent can fixtures, as well as 50-watt metal halide can fixtures in the tower. There are 100 fixtures at Fire Station 62 and 147 fixtures at Fire Station 63.

Recommendations: It is recommended that all fluorescent lighting at the facility be upgraded to LED lamps. The lay-in T12 fixtures will require an LED retrofit kit such as the Philips EVOKit. These are available in 2x2 and 2x4 kits. The retrofit kits can be installed in approximately 10 minutes. The product leaves the basic fixture but replaces the ballasts and lamps with LED technology. The lay-in T8 fixtures require lamp changes only to LED lamps and will utilize the same electronic ballasts with a normal ballast factor.

Benefits: The LED retrofit lamps produce light at lower wattages. The LED replacement lamps will fit in the same sockets as the original fluorescent T8s and produce a similar, if not more perceptible, whiter light with a higher CRI. They also last approximately twice as long, saving on re-lamping costs. The CFL pin lamps in the can fixtures can be replaced with LED pin lamps.

A two-lamp, single ballast, T8 fixture typically consumes 64 Watts. A comparable retrofit LED fixture uses only 36 Watts when paired with higher lumen output lamps.

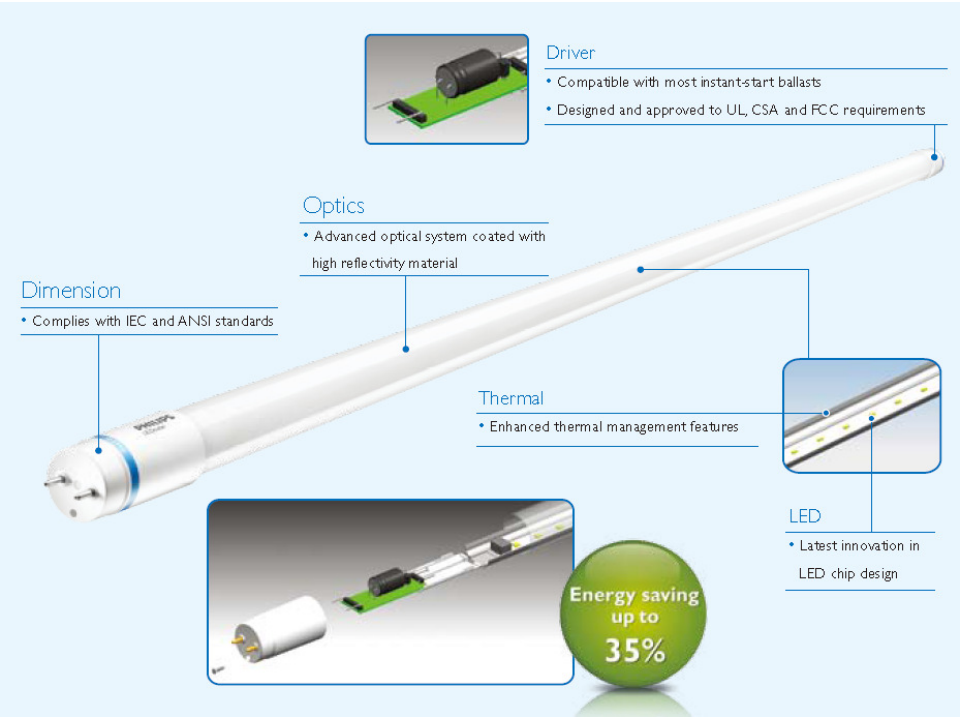


Figure 33: Example of the LED T8 retrofit Lamp

Costs: A cost of $28 per typical 32-watt T8 lamp including the lamp and labor has been used as a general basis in the estimate. The cost below includes the necessary labor and materials to remove the existing fluorescent lamps and replace with new LED lamps. The work is based on the Ohio Technical Reference Manual value for hotels as the hours of operation due to the variation in occupancy throughout any given time.

Rebates: Dayton Power and Light is currently offering rapid rebates for LED lamps replacing fluorescent ones. These rebates vary depending on the fixture being replaced and the wattage of the original but will be applicable to this upgrade, at minimum, for replacement of the T8 and T12 fixtures.

Economic Summary:

Building LED Lighting Retrofit	FS 62	FS 63
Total Estimated Cost	**$7,500**	**$11,050**
Estimated Annual Electricity Savings (kWh/year)	5,140	15,630
Estimated Annual Natural Gas Savings (ccf/year)	-16	-60
Estimated DP&L rebate ($)	$780	$440
Estimated Annual Re-lamping Cost Savings ($/year)	**$50**	**$900**
Total Estimated Cost Savings ($/year)	**$440**	**$1,210**
Simple Payback (years)	**13.7**	**4.8**

Savings for Fire Station 62 are based upon 100 T8 and CFL pin can fixtures being retrofitted with LED lamps. The maintenance savings are based on the rated life per lamp of 10,000 to 24,000 hours. The replacement costs vary for each fixture. Savings for Fire Station 63 are based upon 147 fluorescent fixtures being retrofitted with LED lamps. Similar assumptions were made from Fire Station 62. The heating increase takes into account the heating and cooling degree days, efficiency of the heating equipment, and 15% of heat being added to the space from the lighting.

FIRE DEPARTMENT AGENDA ITEMS

To: **Alex Zaharieff, Township Administrator**
From: **David VandenBos**
Date: **09 April 2015**
Re: **Agenda Items for 13 April 2015 Trustees' Meeting**

Please find documentation for the following Fire Department agenda items for Monday's meeting:

1) Resolution to accept a donation
2) Facility Use Request for the Beavercreek Youth Council
3) Policy Recommendation for False Alarms
4) Bi-weekly department activity report

---

1) Resolution to accept a donation of Girl Scout Cookies [Attachment 01.00]

The fire department is requesting the acceptance of a donation of 361 boxes of Girl Scout cookies from fourth grade Beavercreek Girl Scout Troop #31051, valued at $1,440.

Every year the fourth grade Beavercreek Girl Scout Troop #31051 has boxes of Girl Scout cookies left over from the sale. The troop has donated them to the troops overseas in the past but this year they would like to donate them to the Beavercreek Township Fire Department.

One of the girls in this Girl Scout troop lost her home to a fire last year in Beavercreek. This incident was the reason for them wanting to donate the cookies to the fire department for all their efforts in trying to save her home.

They have 361 boxes of cookies valued at $1444.00 ($4 a box) to donate to the fire department.

2) Facility Use Request for the Beavercreek Youth Council

The fire department is requesting permission to host the Beavercreek Youth Council Spring Middle School Dance on Saturday, 25 April from 1800-2130. As submitted by Felicia Hall:

"Beavercreek Youth Council is requesting the use of Fire Station 61 on Orchard Lane and Dayton Xenia Road as the venue for our annual Spring Middle School Dance. The dance will take place on Saturday, April 25th from 6 p.m. to about 9:30, with the actual dance time of 7 – 9 p.m. The date has been secured and a copy of our insurance coverage is to be forwarded to you by Kim Farrell. COPPs are being arranged to help with drop offs and pick-ups for students' safety. We are also securing several responsible adults as chaperons and have a terrific DJ (Ben Bochenek).

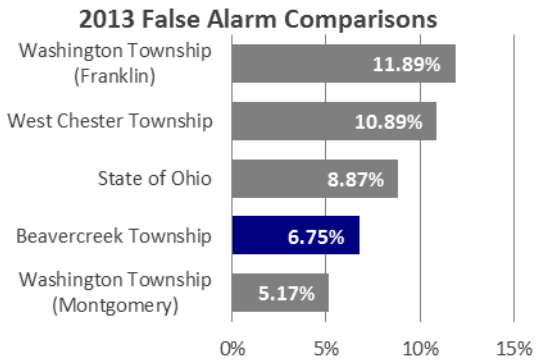
We have had several successful dances with the Fire Department at this station and we're looking forward to another great event. Both students and fire department employees and guests have enjoyed these dances."

I make a motion to approve the following:
the fire department may host the Beavercreek Youth Council's 2015 Spring Middle School Dance at Station 61 on April 25th 2015, upon receipt of the necessary insurance policy information, and to authorize the Township Administrator to sign for the Board.

3) Policy Recommendation for False Alarms [Attachment 03.00]

The fire department is requesting approval of an updated false alarm policy, in accordance with the Township Personnel Policy Manual, I.4. This policy addresses the Township's 2014 Performance Audit, *Recommendation #31: Implement a false alarm reduction program, including alarm registration and false alarm fees*. The attachment is an outline of the proposed policy language. The policy uses several methods to reduce the number of false alarm incidents, including registration, education, verification of maintenance and penalties.

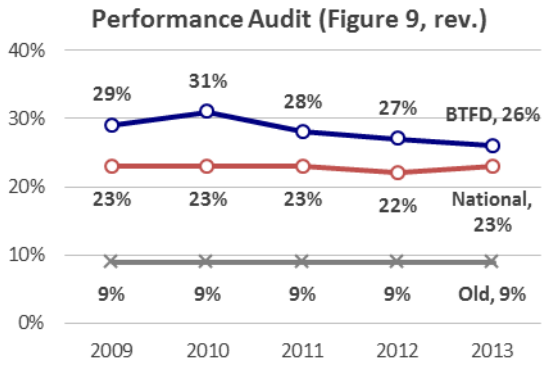
Figure 3.1



In reviewing the performance audit recommendations, the fire prevention staff compared Beavercreek's false alarm numbers with other similarly sized fire departments. This comparison (figure 3.1) showed that Beavercreek's 2013 false alarms (the latest year for which each compared organization had information), were in-line with other similar agencies and below the State's average. Additional information was also provided by the Novak Group during this review process with revised numbers on the national averages, resulting in modified chart from the 2014 Performance Audit (Figure 9, page 54). The modified chart is presented here (figure 3.2).

The first component of the recommended policy is alarm registration. This will provide detailed and accurate information regarding the types and locations of fire alarm systems in the community, as well as contact information for the property owner and system installer. Owner information, including alternate contact info, is important for incident mitigation-whether the fire alarm is real or false. Installer information will help the fire prevention staff work with system owners to facilitate any repairs or maintenance the systems may require to prevent false alarms. Registration fees will be waived as an incentive for system owners who voluntarily register their systems. Registration will be done electronically (via web form or email) to the extent possible, with paper available for owners who don't have electronic access.

Figure 3.2



In the event of a false alarm, the provisions of the Unified Fire Code, Standard 1.14 [Attachment 03.01] will apply. Once notified of a false alarm, the fire prevention staff will work with the system owner to educate them regarding the system and help facilitate any repairs, modifications, or maintenance necessary to prevent additional false alarms. Excessive false alarms could result in the re-imposition of the registration fee, or other fines for repeated occurrences within a 6-month time period.

BI-WEEKLY DEPARTMENT ACTIVITY REPORT

4) Bi-weekly department activity report

Provided is a summary of fire department business, challenges, accomplishments, needs and concerns for the previous two weeks:

a) Open Staff Meeting: Senior staff met with all department members to discuss items of common necessity, including: fire station alarm monitoring, inventory updating, cross-staffing permissions in CAD, drug usage forms, EMS supply process streamlining, behavioral problem as a medical emergency, headset usage in apparatus, inventory procurement and bill processing, Popcorn Festival planning, new construction and road modifications.

b) Time and Attendance Software: Supervisor and Employee training has been completed for all fire department members. Effective with the pay period ending on 8 April 2015, OSL is being used in tandem with the legacy processes to begin the new system validation.

c) Annual Report: The fire department 2014 annual report has been completed. It is being prepared for community wide distribution.

d) False Alarm Policy: Fire Prevention staff has completed a policy for fire alarm registration and charging for excessive false alarms. The policy description and outline is attached in this document and final language will be available, pending Board recommended changes, for Monday's meeting.

e) Major Trainings The fire department completed its OSL training. Soin also provided monthly EMS training on Neonates and Childbirth.

f) Public Education Events: The fire department had no scheduled public education events during the previous two weeks.

g) Community Room Usage: The Station 61 Meeting Room was use by the following groups during the past two weeks:

i) Tangled Threads Quilting Group
ii) Heartsaver CPR
iii) GCARES License Class
iv) Decoy Art Studio CPR
v) HAM Radio Operators
vi) Greene County Tea Party
vii) Sheriff Special Meeting

h) Activity Summary(previous 2 weeks)

Fire Department Activity Ending: 2015-04-09

Biweekly Incident Responses (by NFIRS Category)

NFIRS Category		
3: Medical	168	79%
7: False Alarm	20	9%
3: Crash	8	4%
6: Good Intent	6	3%
5: Service	6	3%
4: Hazard	3	1%
1: Fire	3	1%
9: Special	0	0%
2: Explosion	0	0%
8: Severe Weather	0	0%
Biweekly Total	**214**	100%

Biweekly Training Hours (by BTFD Category)

BTFD Category		
EMS Training	52	18%
Rescue Training	33	11%
Firefighting Training	34	12%
Driver/Operator Training	14	5%
BTFD Daily Drills	42	15%
Officers Training	38	13%
Hazardous Materials Training	0	0%
Fire Service Instructors	0	0%
Fire Prevention Programs	6	2%
NIMS/ICS	57	20%
Dispatch Training	9	3%
Biweekly Total	**285**	100%

RESOLUTION TO ACCEPT A DONATION OF GIRL SCOUT COOKIES
[ATTACHMENT 01.00]

WHEREAS, the Board of Trustees of Beavercreek Township, Greene County, State of Ohio, moved for approval of the following:

WHEREAS, Beavercreek Girl Scout Troop #31051 of Beavercreek, Ohio wishes to make a donation of 361 boxes of girl scout cookies valued at $1444.00, and

WHEREAS, according to section 505.10 of the Ohio Revised Code the Trustees of Beavercreek Township may accept a donation of any real or personal property for any township use, and

WHEREAS, the Trustees of Beavercreek Township do graciously accept said donation.

NOW THEREFORE BE IT RESOLVED THAT, the Board of Trustees of Beavercreek Township, Greene County, Ohio favorably passed the above Resolution.

POLICY RECOMMENDATION FOR FALSE ALARMS
[ATTACHMENT 03.00]

1. Define Fire Alarms – Impact vs. Public Relations (residential vs. commercial)
2. Alarm Registration
    a. Fire Alarm registration will be established on the BTFD web-site.
    b. Registration will consist of basic system info and contact information.
    c. The registration information will be structured to allow input into Firehouse Software.
    d. No fee will be assessed for the initial registration or annual registration renewals prior to multiple false alarm calls.
3. Implementation – False Alarms over a 6 month period:
    a. 1st Alarm -- Automatic Letter – T.B.D.
        i. A friendly letter to the property owner and/or occupant to inform them of the Code and its Excessive False Alarm section. In addition, a request to register the fire alarm on-line is indicated if the fire alarm is not already registered.
    b. 2nd Alarm -- Automatic Letter – T.B.D.
        i. A letter to the property owner and/or occupant to inform them of the Code and its Excessive False Alarm section. In addition, a requirement to register the fire alarm system with a $150.00 fee if the alarm is not already registered.
    c. 3rd Alarm -- Pre-Action Letter & Follow-up – T.B.D.
        i. A letter, based upon the current FPB action letter, will be sent indicating that the next false alarm will cause penalty phase.
        ii. A possible follow-up, depending on the call type, with the property owner and/or occupant on next actions.
    d. 4th Alarm -- Penalty Phase per UFC
        i. Fee per the UFC Section for Excessive False Alarms.
        ii. A letter and invoice will be sent.
    e. 5th Alarm -- Penalty Phase per UFC
        i. Fee per the UFC Section for Excessive False Alarms.
        ii. A letter and invoice will be sent.
    f. 6th Alarm -- Penalty Phase per UFC
        i. Fee per the UFC Section for Excessive False Alarms.
        ii. A letter indicating that the issue will be taken to the Prosecuting Attorney and invoice will be sent.
4. Development and implementation of Fire Alarm Reduction Strategy:
    a. Education of facilities personnel
        i. Priority per occupancy type
    b. Addressing past duct/smoke detector (D/S) installations where D/S activates the F.A. system as an "Alarm" signal.
        i. Change D/S activations to "Supervisory" signals ("Supervisory" signals do not contact the FD). – Note: Possible communication with GCBR.
        ii. Implement a D/S cleaning program with facilities.
    c. Alarm Education and Awareness – Residential & Commercial:
        i. Dry-system letters – T.B.D.
        ii. Channel 5 ads
        iii. E-mails to businesses (Chamber of Commerce)
        iv. Alarm system information on FD web page.
    d. Review UFC excessive alarm fee for increased fees by using a sliding fee schedule.

SOUTHWEST OHIO FIRE SAFETY COUNCIL

STANDARD 1.14

EMERGENCY ALARM SYSTEMS

SECTION UFC-1.14.01.00 GENERAL

UFC-1.14.01.1 Purpose: The purpose of this ordinance is to protect the emergency services of the Fire Department of the adopting jurisdiction from misuse by responding to defective alarm systems and excessive false alarms and to provide monitoring controls to ensure reliability of fire or medical alarm systems installed within the adopting jurisdiction.

UFC-1.14.01.2 Scope: This ordinance governs and regulates alarm systems, alarms users and alarm businesses. It requires State of Ohio certifications for alarm businesses and provides for penalties for violations and penalties for excessive false alarms.

SECTION UFC-1.14.02 DEFINITIONS

UFC-1.14.02.1 General: The following words and terms shall, for the purposes of this standard and as stated elsewhere in this code, have the meanings shown herein.

Alarm: Any audible or visible signal or intelligence indicating existence of a supposed fire, medical, or other emergency requiring response and emergency action on the part of the Fire Department. Also, the alarm devices or device by which fire, medical or other emergency signals are received.

Alarm business: The business by any individual, partnership, corporations, or other entity of maintaining, servicing repairing, or installing any alarm system in or on any building, structure, facility or equipment.

Alarm system: Any assembly of equipment, mechanical or electrical, arranged to signal the occurrence of a fire condition, or emergency, or any other activity requiring urgent attention and to which the Fire Department is expected to respond.

Exception: Single station smoke detectors or other stand-alone devices.

Alarm system, automatic: A manual fire alarm system containing automatic fire detection device(s) which activate a fire alarm signal.

Alarm system, manual: An interior alarm system composed of sending stations and signaling devices in a building operated on an electrical circuit, so arranged that the operation of any one station will ring all signals throughout the building and at one or more approved locations.

Alarm system, sprinkler: A visual and/or audible alarm activated by a water flow from a sprinkler system.

Alarm user: Any person, firm, partnership, association, corporation, company or organization of any kind in control of any building, structure, or facility wherein an alarm system is installed and/or maintained.

Automatic: As applied to fire protection devices, automatic refers to a device or system providing an emergency function without necessity of human intervention and activated as a result of a predetermined temperature rise, rate of rise of temperature, or increase in the level of combustion products; or a device used to detect a liquid or gas flow in fire protection system.

Automatic dialing device: A device which is interconnected to a telephone line and is programmed to select a predetermined telephone number and transmit by a voice message or code signal a fire or medical emergency message indicating the need for an emergency response.

Detecting device, automatic: A device which automatically detects heat, smoke, or other products of combustion.

Detector, smoke: An approved, listed detector for sensing visible or invisible particles of combustion.

False alarm: The activation of an alarm system through mechanical failure, electrical failure, malfunction, improper installation or the negligence of the owner or lessee of an alarm system or of his employees or agents.

Interconnect: The connection of an alarm system, including an automatic dialing device to a telephone either directly or through a mechanical or electrical device that utilizes the telephone, for the purpose of using the telephone line to transmit an emergency message upon activation of the alarm system.

Local alarms: Those alarms which activate an audible signal within the proximity of the premises only.

Medical alarm: A manual emergency alarm system containing a switch, button, pad or similar device which causes the transmission of a medical emergency device.

SECTION UFC-1.14.03.00 INSTALLATION REQUIREMENTS

UFC-1.14.03.1 Certification: No person shall sell, offer for sale, or use any fire protection or fire fighting equipment which does not meet the minimum standards for such equipment as specified in the building code, law, or this code. Except for public and private mobile fire trucks, no person shall engage in the business of servicing, testing, repairing, or installing fire protection equipment for profit, without being first certified by the Ohio State Fire Marshal's office, as required by ORC 3737.65., for the applicable fire protection equipment.

The code official may allow modifications to the above requirements when the ORC permits such and the person can document training and experience to substantiate that the individual is qualified to install, service, test, or repair such fire protection equipment.

UFC-1.14.03.2 Permits: Any person, firm or corporation prior to installing any fire alarm system except a medical alarm in a building or structure regulated by the Ohio Basic Building Code shall first secure a permit from the adopting jurisdiction.

UFC-1.14.03.3 Approvals: Prior to the installation of any fire alarm system in a building or structure regulated by the Ohio Basic Building Code, two sets of detailed fire alarm system plans and specifications shall be submitted to the code official for plan approval. One set of plans shall be returned to the Building Department and one set retained for the Fire Department.

UFC-1.14.03.4 Registration: All Alarm Systems, as defined herein, shall be registered with the adopting jurisdiction. A registration fee, as determined by the Fire Department, shall accompany the registration application.

SECTION UFC-1.14.04.00 FALSE ALARMS

UFC-1.14.04.01 Excessive false alarms: If any fire or medical alarm system produces three (3) false alarms in any twelve consecutive month period, written notice of that fact shall be given by regular mail or delivery to the alarm user.

Exception: New alarm installations shall have an exemption period, as determined by the code official, but shall not exceed ninety (90) days.

SECTION UFC-1.14.05.00 EMERGENCY ALARM PROVISION

UFC-1.14.05.1 Automatic Dial or Calling Devices: Fire alarm systems that automatically dial or call the Fire Department must be called on a special telephone line or communications circuit designated by the Fire Department and shall comply with the following:

(1) Total length of the recorded message being transmitted to the Fire Department Communication Center (including repetition of message) shall not exceed forty-five (45) second duration.

(2) The recorded message transmitted shall be repeated not less than three (3) nor more than four (4) times and shall have an automatic abort feature to ensure this requirement.

(3) The recorded message being transmitted shall incorporate language specifically identifying the message as a "recording" with the balance of the message identifying by street number and street name the location of the emergency and the nature of the event which caused the alarm system to activate. If the location of the event/condition signaled by the alarm system is a multi-tenant, multi-family or a commercial building containing multiple floors, the message shall identify the location of the activated device or location of the system annunciator.

(4) All alarm systems having automatic dialing or calling devices that are not connected to an approved central station monitoring service shall transmit the alarm message directly to the Fire Department communications center. If the automatic dialing or calling device has multiple notification capability, the first notification of a fire or medical emergency shall be transmitted to the Fire Department communications center.

(5) The recorded message being transmitted to the Fire Department shall be appropriate for the purpose for which the alarm system was installed, and the message in its entirety shall be intelligible and spoken in the English language.

UFC-1.14.05.2 Combination Burglar/Fire Alarm Systems: Combination burglar (security, robbery, intrusion) alarm systems and fire alarm systems shall meet the provisions of this code for that portion of the system that is designed for fire or medical conditions. The use of an alarm circuit for both fire and burglar detection devices shall be prohibited.

UFC-1.14.05.3 Listed/Approved Fire Alarm Systems: All fire alarm systems shall be listed for the use intended by a nationally recognized test laboratory. The use of non-commercial fire alarm systems in commercial buildings shall be prohibited.

UFC-1.14.05.4 Resetting: All fire and medical alarms shall have the ability to reset themselves within 15 minutes, once the fire or medical condition has been eliminated.

UFC-1.14.05.5 Outside Audible Alarms: All outside audible devices that are connected to a fire alarm system other than a

combination burglar fire alarm system shall have a sign in one (1) inch letters stating:

"Fire Alarm System"
"Contact the Fire Department"
"911"

UFC-1.14.05.6 Instructions: Every alarm business selling, leasing, installing, or furnishing to any user a fire or medical alarm system which is installed on premises located within the adopting jurisdiction, shall furnish the user with a complete set of instructions that provide information that will enable the use to operate and reset the alarm system property and provide detailed information on how to obtain service for the alarm system at any time.

UFC-1.14.05.7 Right to conduct investigation: The alarm user of any building or structure containing a fire or medical system shall permit the Fire Department the right to conduct any investigation necessary to investigate and verify the authenticity of an alarm. This requirement shall apply to automatic and local alarm systems irrespective of the notification method either by an automatic dialing, calling device or an outside audible alarm device.

UFC-1.14.05.8 Application of standards to existing and future alarm systems:

(1) Every new system installed after the effective date of this ordinance shall comply with the above standards.
(2) Every alarm system existing before the effective date of this ordinance shall be placed in compliance with the above standard no later than one (1) year after such effective date.

UFC-1.14.05.9 Limitations of liability: The adopting jurisdiction shall not be liable for any failure or neglect to respond appropriately upon receipt of an alarm from such a device; nor for the failure of any person with a certification required pursuant to this ordinance or with a franchise, in connection with the installation and operation of equipment; nor the failure of the transmission of alarm signals and pre-recorded alarm messages, or the relaying of such signals and prerecorded alarm message, or the relaying of such signals and messages. In the event that the Fire Department finds it necessary to disconnect a defective automatic dialing system or signaling device, the adopting jurisdiction shall incur no liability by such action.

SECTION UFC-1.14.06.00
ENFORCEMENT AND PENALTY

UFC-1.14.06.1 Means of enforcement: Enforcement of any of the provisions of the code may be by civil action and/or criminal prosecution.

UFC-1.14.06.2 Violations: Failure or omission to comply with any section of this code shall be deemed a violation.

UFC-1.14.06.3 Penalty: Unless otherwise stated, the penalty for violation of any section or provision within this code is a 4th degree misdemeanor.

UFC-1.14.06.4 Excessive false alarms: Any fire or medical alarm system creating an excessive alarm condition as defined in Section 1.14.5 shall be subject to the following conditions:

(1) If more than three (3) false alarms are produced by any alarm system in a 12-month period, a fee of $100 shall be assessed the alarm user for the fourth false alarm, and $200 shall be assessed for each successive false alarm thereafter.
   (a) Such charges shall continue for each excessive false alarm until six consecutive months have elapsed during which time no false alarms have been received by the Fire Department.
(2) The alarm user of an alarm system, other than an alarm system required per the Ohio Basic Building Code may be required by the Fire Department to disconnect the alarm system immediately in such fashion that signals are not transmitted so as to notify the Fire Department either directly or indirectly.
   (a) Any alarm user who fails to disconnect as required above shall be deemed to be in violation of this code.
   (b) An alarms system may be reconnected only if satisfactory evidence is provided to the Bureau of Fire Prevention that the alarm system has been repaired so that it does not emit further false alarms and upon payment of all delinquent charges assessed for false alarms.