DELHI CHARTER TOWNSHIP
COMMITTEE OF THE WHOLE MEETING HELD ON OCTOBER 4, 2016

The members of the Delhi Charter Township Committee of the Whole met on Tuesday, October 4, 2016 in the Multipurpose Room at the Community Services Center, 2074 Aurelius Road, Holt, MI. Clerk Hope called the meeting to order at 6:30 p.m.

Members Present: Clerk Evan Hope, Treasurer Roy Sweet, Trustees Jon Harmon, John Hayhoe, Megan Ketchum, DiAnne Warfield

Members Absent: Supervisor C.J. Davis

BUSINESS

DEPARTMENT OF PUBLIC SERVICES - SEPTEMBER ACTIVITY REPORT

The Board reviewed the September Department of Public Services Activity Report (ATTACHMENT I).

FISCAL YEAR 2017 BUDGET DISCUSSION

Twp. Mgr. Elsinga referred to several major changes to the 2017 budgeted items. Twp. Mgr. Elsinga stated that several aging sewer components will need to be replaced. The Downtown Development Authority has done some property acquisitions and will be assisting with a trail head park on Cedar Street. Additional staffing will be hired in the Fire Department and Parks Department.

Trustee Harmon stated that he would like to see the Township reinvest in their employees by contributing 25% of their health care deductable to their Health Savings Accounts to help offset the high deductable health care plan that the Township offers its employees. Trustee Harmon proposed this contribution only to employees that take the Township's health insurance.

Treasurer Sweet asked if benefits would be reviewed during the Classification and Compensation Study that the employees are currently working on. Twp. Mgr. Elsinga stated that the study is a compensation and benefits study from which the Board can determine how to implement the findings of the survey.

Trustee Harmon suggested a place holder of $40,000 in the 2017 budget so when the results of the survey are returned, the Board can take action if they so decide. Clerk Hope questioned the reasoning of making this a place holder rather than including the funding of a portion of the employee's Health Savings Account in the 2017 budget. Trustee Harmon stated that he would approve the funding even before seeing the study results. Trustee Harmon further stated that this could be a way to retain current employees and possibly attract new employees. Treasurer Sweet stated that he would prefer to wait until seeing the results of the study.

Trustee Hayhoe stated that some area municipalities have incurred legacy costs and though he appreciates the staff, he is happy that the Township does not have legacy costs. Trustee Harmon stated that this contribution would not create legacy costs as he is only proposing a onetime contribution. Trustee Hayhoe stated that it is difficult to take a contribution away from staff once it's given. Trustee Harmon stated that when the Township first changed to the high deductable health care plan, staff was told their deductable would be funded (up to $2,000) but

SUBJECT TO APPROVAL

that was later rolled back and now is not being funded at all, so the contribution has been taken away from staff already.

Twp. Mgr. Elsinga stated that he feels a place holder would be a neutral position to take until the study comes back.

Trustee Warfield asked the timeline of the study. Wendy Thielen, Assistant Twp. Mgr. of Human Resources, stated that staff is currently working on their job analysis. It is anticipated that these analyses will be forwarded to the consultant at the end of November. The consultant will compile the survey and disseminated the survey to area communities. It is anticipated that the results will not be returned to the Township until after the first part of 2017.

PUBLIC COMMENT – None

ADJOURNMENT

Meeting adjourned at 7:24 p.m.

Date: October 18, 2016

Evan Hope, Township Clerk

Date: October 18, 2016

C.J. Davis, Supervisor

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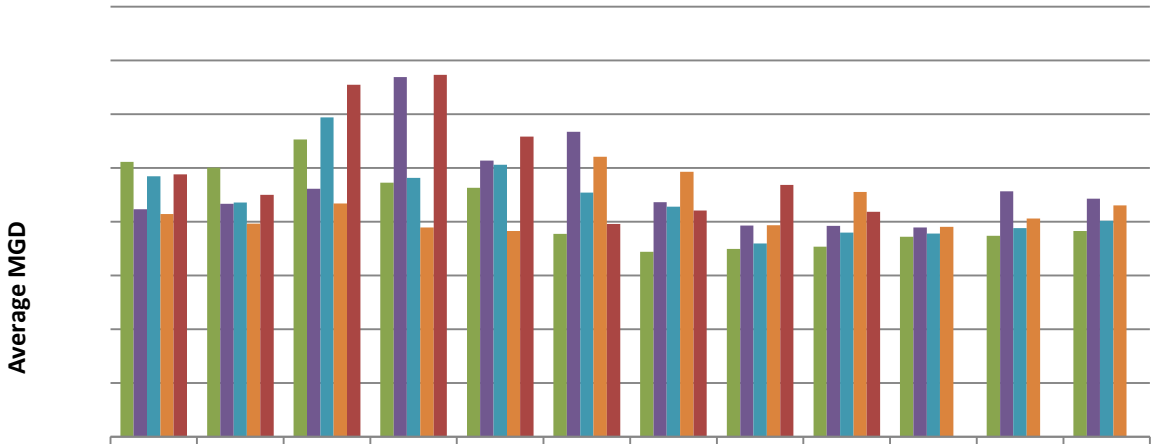
SUBJECT TO APPROVAL

DEPARTMENT OF PUBLIC SERVICES
Monthly Report
September 2016

Flow Data – (Million Gallons per Day of water processed by the plant)



	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
2012	2.56	2.50	2.76	2.36	2.31	1.89	1.72	1.75	1.77	1.86	1.87	1.91
2013	2.12	2.17	2.31	3.34	2.57	2.84	2.18	1.96	1.96	1.94	2.28	2.21
2014	2.42	2.18	2.97	2.41	2.53	2.27	2.14	1.80	1.90	1.89	1.94	2.01
2015	2.07	1.98	2.17	1.95	1.91	2.60	2.46	1.97	2.28	1.95	2.03	2.15
2016	2.44	2.25	3.27	3.37	2.79	1.98	2.10	2.34	2.09			

Laboratory Testing and Quality Control – Quality Assurance Program

Tests Run For	Number of Tests Run	% Passing
Permit Compliance	234	
Process Control	1669	
Quality Control	107	98%
Check Samples	9	100%
DMRQA-Study 36 Proficiency	0	
Miscellaneous Sampling	43	
Totals	**2062**	**99%**

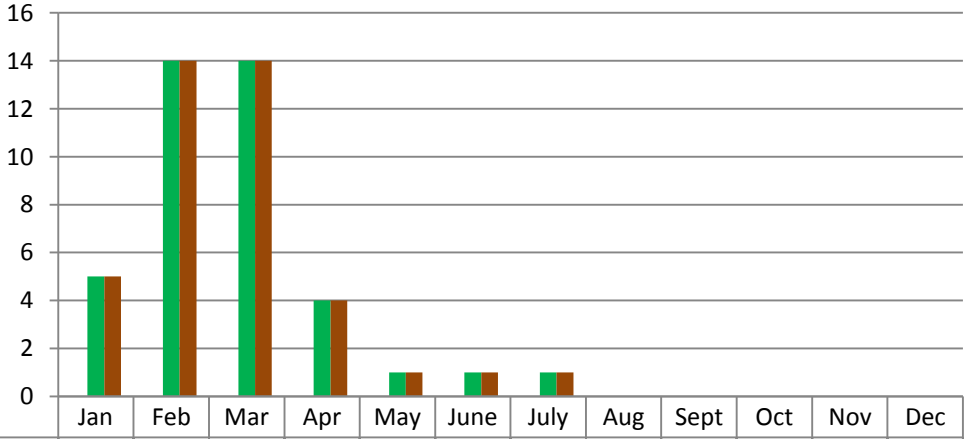
Training

Date	# of Employees Attended	Training Course Description
9/8/2016	1	MWEA Lubricant Maintenance Seminar
9/20/2016	2	MWEA Lubricant Maintenance Seminar
9/23-9/29/16	1	WEFTEC
9/29/2016	1	MISS DIG webinar

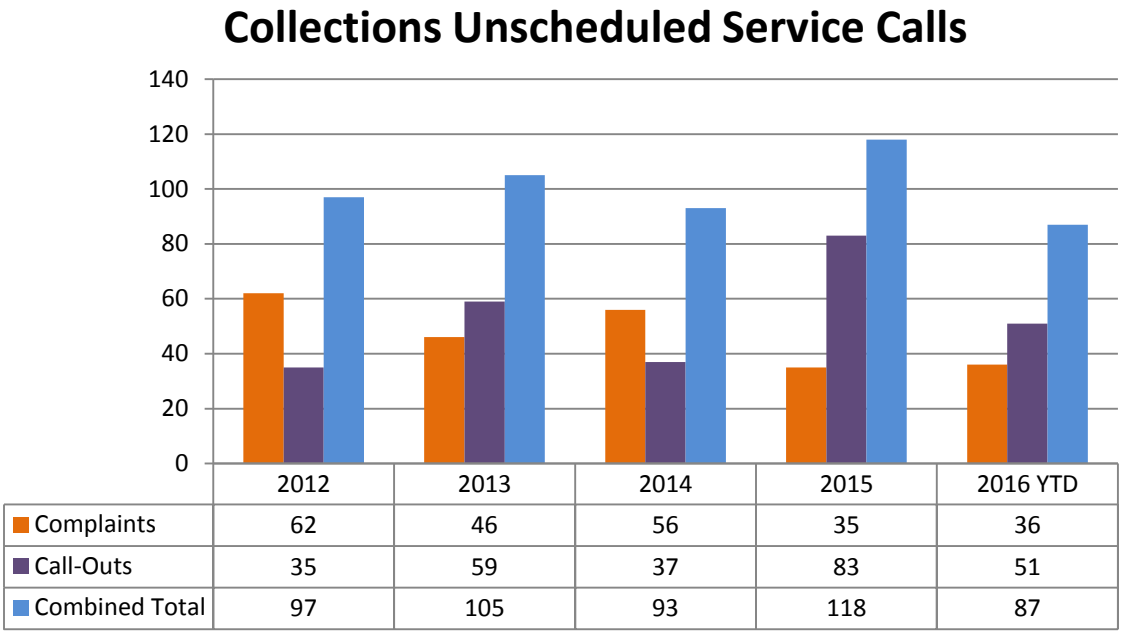
Safety

September Safety Activities	Date	Description
Confined Space Entries		
	9/1/2016	Nitrification Tower (Clean orfices and change oil)

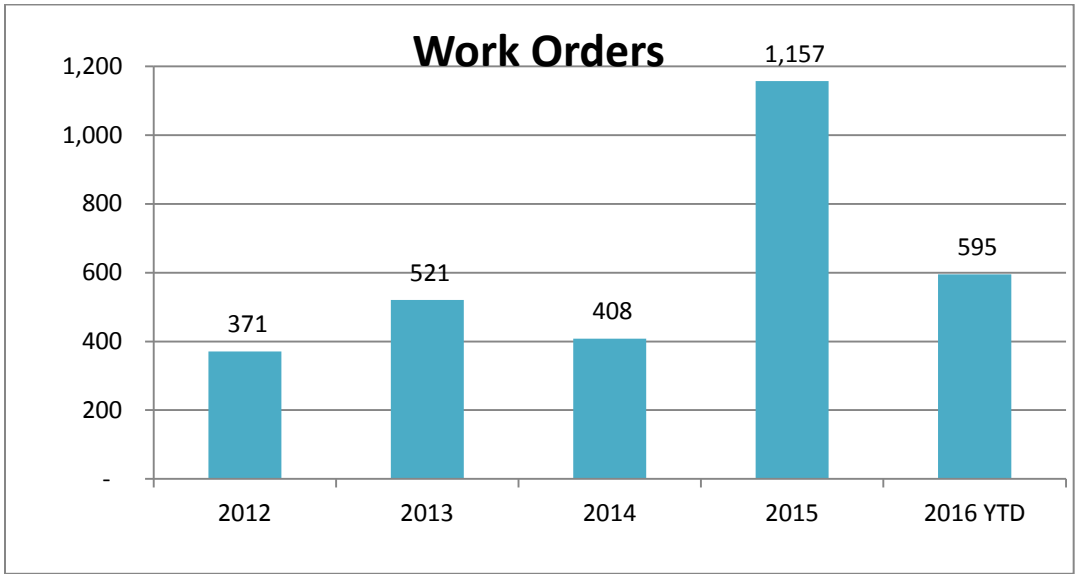
Unscheduled Service Calls



	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Complaints	0	0	0	0	0	0	0	0	0			
Call-Outs	5	14	14	4	1	1	1	0	0			
Combined Total	5	14	14	4	1	1	1	0	0			



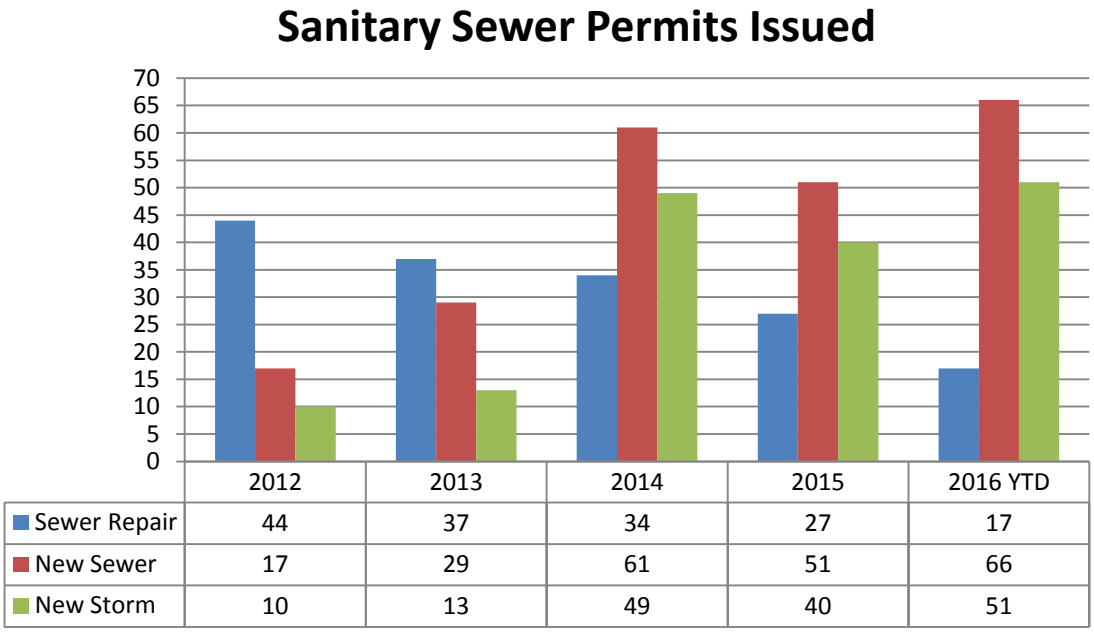
Maintenance



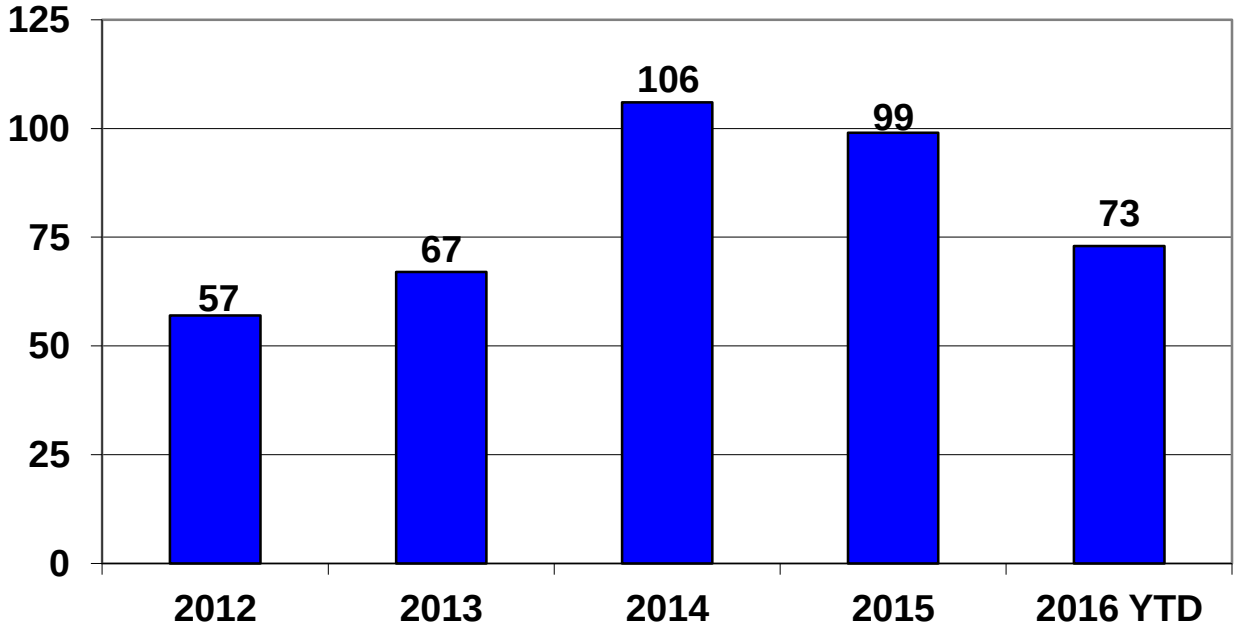
Note: Below are highlights of some of the repairs performed.

- Repaired broken down spout at Waverly Lift Station
- Repaired front door at Maintenance building so it closed properly
- Fabricated chemical tank rack for rear of truck bed
- Cleaned screens and compactors at POTW Screening Bldg.
- Installed new timer switches, ballast, and 4 new light bulbs in Maintenance Bldg
- Painted bypass piping at Dell Road lift station

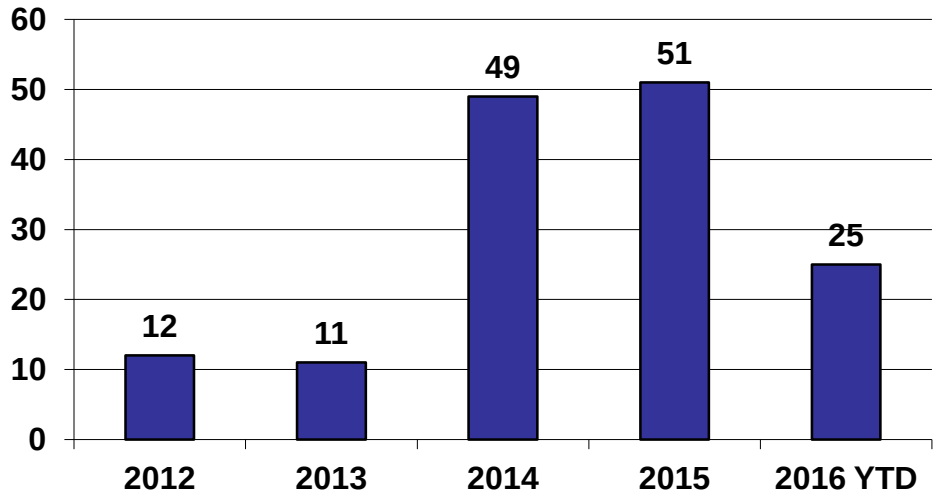
Sanitary Sewer Permits



Sanitary Sewer Inspections Performed



Storm Sewer Inspections Performed



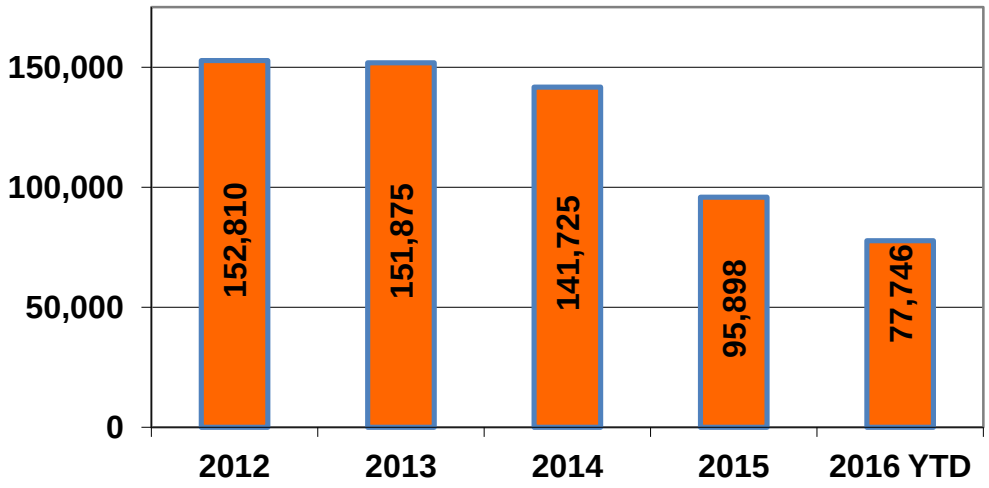
New Construction

The pre-construction meeting was held for the installation of sanitary sewer for Willoughby Estates; Hubbell, Roth & Clark will provide construction observation for this project.

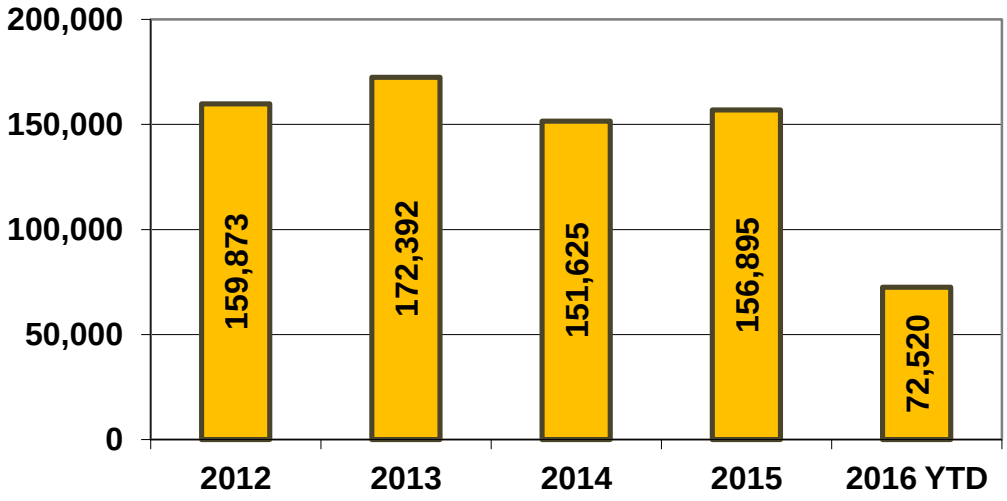
Site restoration was completed by Barnhart & Son for the installation of the Cartago Drive Low Pressure Sewer Service Improvements project.

The sanitary sewer at Prestwick Village was accepted by the township board.

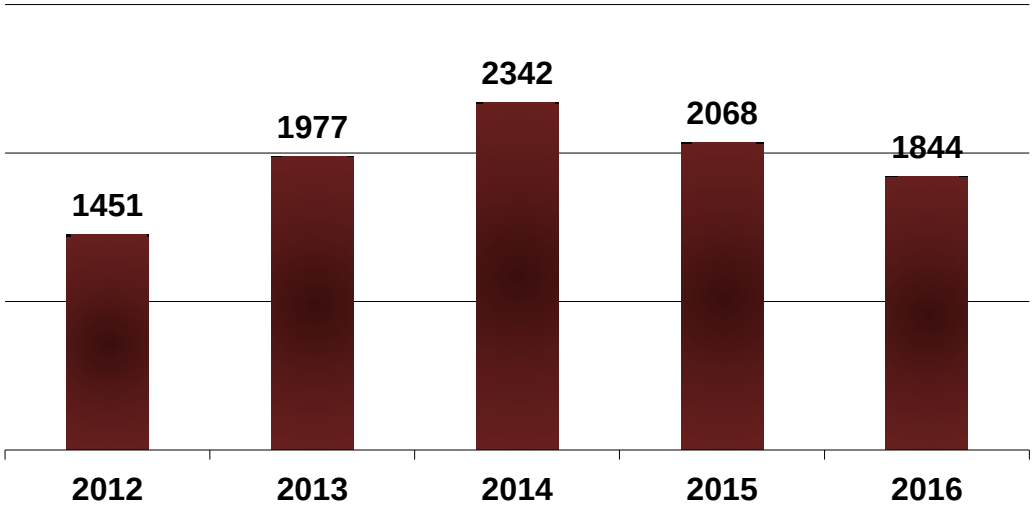
Feet of Sanitary Sewer Cleaned (Vactor Truck Work)



Feet of Sanitary Sewer Televised (Camera Truck Work)



Miss Digs Performed



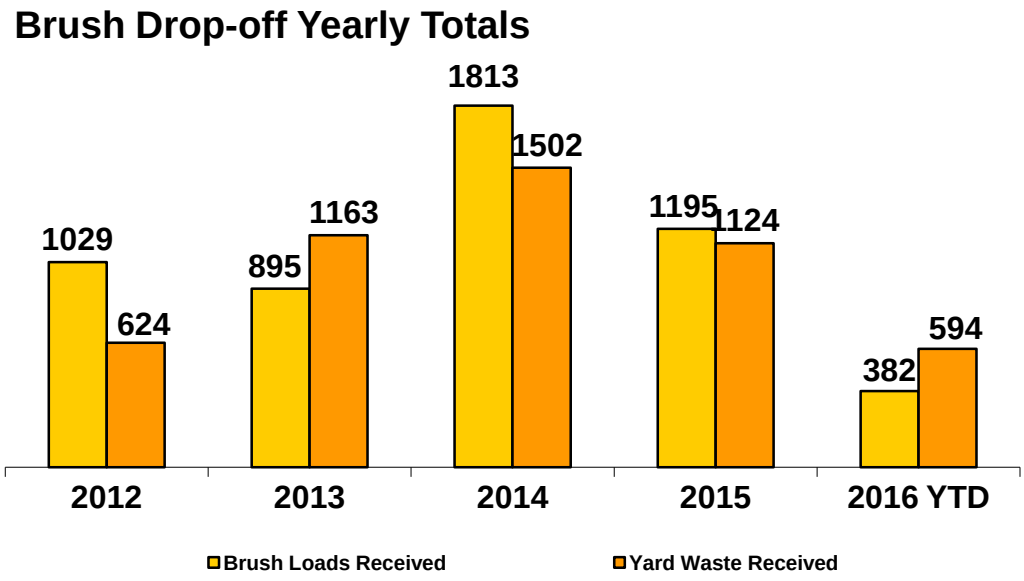
Industrial Pretreatment Program

August IPP Activities		
Review/Approval		
Building Plan Approval	9/19/2016	Tim Horton's/Gas Station/Convenience Store - 2770 Eaton Rapids Road
Building Plan Approval	9/21/2016	Dart Container – 2148 Depot Street
Building Plan Approval	9/27/2016	Zaytoon - 1979 Aurelius
Building Plan Approval	9/27/2016	Holt Traders – 2291 Cedar Street

Community Outreach

The Michigan Department of Environmental Quality (MDEQ) toured the Publicly Owned Treatment Works on Wednesday, September 21. Approximately eighteen (18) MDEQ employees toured the facility to familiarize themselves with the wastewater process.

Two (2) brush drop-off events were hosted at the POTW. Ninety-nine (99) loads of brush and one hundred twenty-eight (128) loads of yard waste were collected. Assistance was provided by the Delhi Lions Club.



DELHI CHARTER TOWNSHIP
MINUTES OF REGULAR MEETING HELD ON OCTOBER 4, 2016

Delhi Charter Township Board of Trustees met in a regular meeting on Tuesday, October 4, 2016 in the Multipurpose Room at the Community Services Center, 2074 Aurelius Road, Holt, Michigan. Clerk Hope called the meeting to order at 7:30 p.m.

PLEDGE OF ALLEGIANCE

ROLL CALL

Members Present: Clerk Evan Hope, Treasurer Roy Sweet, Trustees Jon Harmon, John Hayhoe, Megan Ketchum, DiAnne Warfield

Members Absent: Supervisor C.J. Davis

APPOINT CHAIRPERSON PRO-TEM

Hope moved to appoint Trustee Harmon as Chairperson Pro-Tem.

A Voice Poll was recorded as follows: All Ayes
Absent: Davis
MOTION CARRIED

COMMENTS FROM THE PUBLIC – None

CERTIFICATE OF APPRECIATION – REX SIMONS

Clerk Hope presented Rex Simons with a Certificate of Appreciation upon his retirement.

CONSENT AGENDA

A. Approval of Minutes – Committee Meeting of September 20, 2016

B. Approval of Minutes – Regular Meeting of September 20, 2016

C. Approval of Claims – September 27, 2016 (ATTACHMENT I)

D. Approval of Payroll – September 22, 2016 (ATTACHMENT II)

E. FY 2017 Budgets - Set Public Hearing – General Fund and Special Revenue Funds (ATTACHMENT III)

Warfield moved to approve the Consent Agenda as presented.

A Roll Call Vote was recorded as follows:
Ayes: Warfield, Harmon, Hayhoe, Hope, Ketchum, Sweet
Absent: Davis
MOTION CARRIED

SUBJECT TO APPROVAL

NEW BUSINESS

RESOLUTION NO. 2016-025 – TO POSTPONE THE CONSTRUCTION OF A REQUIRED SIDEWALK – 3440 DUNCKEL ROAD

The Board reviewed memorandums dated September 27, 2016 from Twp. Mgr. Elsinga and September 28, 2016 from Tracy Miller, Director of Community Development (ATTACHMENT IV).

Hayhoe moved to adopt Resolution No. 2016-025 which postpones the construction of a required sidewalk along property owned by Klein Brothers, LLC and located at 3440 Dunckel Road and requires the property owner to execute a Sidewalk Agreement stating the same.

A Roll Call Vote was recorded as follows:
Ayes: Harmon, Hayhoe, Hope, Ketchum, Sweet, Warfield
Absent: Davis
MOTION CARRIED

RESOLUTION NO. 2016-026 – APPROVE AND SUPPORT A GRANT APPLICATION TO THE INGHAM COUNTY TRAILS AND PARKS MILLAGE PROGRAM

The Board reviewed a memorandum dated September 28, 2016 from Tracy Miller, Director of Community Development (ATTACHMENT V).

Hope moved to adopt Resolution No. 2016-026 which approves and supports the Grant Application to the Ingham County Trails and Parks Millage Program for the Ram2Burchfield Trail Project.

A Roll Call Vote was recorded as follows:
Ayes: Hayhoe, Hope, Ketchum, Sweet, Warfield, Harmon
Absent: Davis
MOTION CARRIED

RESOLUTION NO. 2016-027 – ISSUANCE OF AN INSTALLMENT PURCHASE AGREEMENT – DELHI TOWNSHIP/HONEYWELL INTERNATIONAL, INC. ENERGY SAVINGS PROJECT

The Board reviewed a memorandum dated September 29, 2016 from Twp. Mgr. Elsinga (ATTACHMENT VI).

Sweet moved to adopt Resolution No. 2016-027 authorizing the issuance of an Installment Purchase Agreement in the amount not to exceed $4,345,000 for the Delhi Township/Honeywell International, Inc. Energy Savings Project.

A Roll Call Vote was recorded as follows:
Ayes: Hope, Ketchum, Sweet, Warfield, Harmon, Hayhoe
Absent: Davis
MOTION CARRIED

SUBJECT TO APPROVAL

AGREEMENT BETWEEN DELHI CHARTER TOWNSHIP AND HONEYWELL INTERNATIONAL, INC. – ENERGY SAVINGS PROJECT

The Board reviewed a memorandum dated September 29, 2016 from Twp. Mgr. Elsinga (ATTACHMENT VII).

> **Ketchum moved to approve the Agreement between Delhi Charter Township and Honeywell International, Inc. for the Delhi Township Energy Savings Project, subject to legal counsel approval, at a cost not to exceed $4,345,000 to be funded through an Installment Purchase Agreement utilizing a Qualified Energy Conservation Bond grant.**

A Roll Call Vote was recorded as follows:
Ayes: Ketchum, Sweet, Warfield, Harmon, Hayhoe, Hope
Absent: Davis
MOTION CARRIED

REPORTS

CLERK

Clerk Hope reported that Absentee Ballots were mailed on September 30, 2016. The Clerk's Office encourages voters to obtain an Absentee Ballot if they anticipate being out of the Township on Election Day or if they meet any of the other State mandated requirements for obtaining an Absentee Ballot as a large turnout is anticipated for this election.

TOWNSHIP MANAGER

Twp. Mgr. Elsinga stated that in the near future the Board will be asked for their support to participate with the DDA on the purchase of property located at 4410 Holt Road.

LIMITED PUBLIC COMMENTS – None

ADJOURNMENT

Meeting adjourned at 7:52 p.m.

Date: October 18, 2016

Evan Hope, Township Clerk

Date: October 18, 2016

C.J. Davis, Supervisor

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SUBJECT TO APPROVAL

ACCOUNTS PAYABLE APPROVAL

September 27, 2016

I. Certification of Authorized Signatures: The attached Check Register and Invoice Distribution Report encompass checks dated September 27, 2016 numbered 92063 thru 92150 & ACH 4477 thru 4512. Every invoice has a payment authorizing signature(s).

Dated: September 27, 2016

Lora Behnke, Accounting Clerk

II. Certification of Fund Totals:
The attached Invoice Distribution Report and Check Register for checks dated September 27, 2016 show payments made from the following funds:

General Fund	$	80,607.11
Fire Fund		17,231.05
Police Fund		213,942.75
Fire Equip. & Apparatus Fund		3,732.64
Downtown Development Fund		31,932.39
Sewer Fund		70,866.48
Local Site Remediation Fund		1,966.75
Trust & Agency Fund		1,910.58
Current Tax Fund		4,111.54
Grand Total	$	426,301.29

Includes the following to be reimbursed from separate bank accounts:

Current Tax Fund	$	4,111.54
Farmer's Market Account	$	3,757.00

Dated: September 27, 2016

John B. Elsinga, Township Manager

III. Approval for Distribution: I have reviewed the above checks and invoices and all of them should be distributed. All invoices over $10,000.00 have been approved by general policy or previous motions of the board. (None)

Dated: September 27, 2016

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John B. Elsinga, Township Manager

Evan Hope, Township Clerk

Roy W. Sweet, Treasurer

IV Board Audit and Approval: At a regular meeting of the Township Board held on October 4, 2016 a motion was made by _____and passed by ____yes votes and ____no votes (_____absent) that the list of claims dated September 27, 2016, was reviewed, audited and approved

Evan Hope, Township Clerk

U:Accounting Private\Payables\Accounts Payable Approval Form
CC: Central File

INVOICE GL DISTRIBUTION REPORT FOR DELHI CHARTER TOWNSHIP
EXP CHECK RUN DATES 09/27/2016 - 09/27/2016

Vendor	Invoice Line Desc	Amount
Fund 101 GENERAL FUND		
Dept 000.00		
BLUE CROSS BLUE SHIELD	RETIREES HEALTH INSURANCE/OCTOBER 20	138.12
	Total For Dept 000.00	138.12
Dept 101.00 LEGISLATIVE		
HARTFORD LIFE INSURANCE	TRUSTEES LIFE INSURANCE/OCTOBER	25.50
	Total For Dept 101.00 LEGISLATIVE	25.50
Dept 171.00 MANAGER		
BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER 2016	2,110.44
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	295.46
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	96.90
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	144.53
MICHIGAN.COM #1051	1 YEAR SUBSCRIPTION	400.04
VERIZON WIRELESS	SEPTEMBER CELLULAR	114.74
WENDY L THIELEN	MILEAGE/MPELRA CONFERENCE	208.32
	Total For Dept 171.00 MANAGER	3,370.43
Dept 191.00 ACCOUNTING		
BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER 2016	390.81
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	43.07
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	23.80
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	35.33
ABRAHAM & GAFFNEY, P.C.	AUGUST ACCOUNTING SERVICES	1,801.25
GAIL MEREDITH	MEALS & MILEAGE/MGFOA FALL CONF	240.71
	Total For Dept 191.00 ACCOUNTING	2,534.97
Dept 215.00 CLERK		
BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER 2016	3,684.72
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	391.81
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	85.85
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	128.39
VERIZON WIRELESS	SEPTEMBER CELLULAR	50.00
	Total For Dept 215.00 CLERK	4,340.77
Dept 228.00 INFORMATION TECHNOLOGY		
SPICER GROUP, INC.	GIS SERVICES THRU 9/3/16	5,455.50
VERIZON WIRELESS	SEPTEMBER CELLULAR	50.00
APPLICATION SPECIALIST KO	SET UP ELECTION LAPTOPS	150.00
	Total For Dept 228.00 INFORMATION TECHNOLOGY	5,655.50
Dept 253.00 TREASURERS		
BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER 2016	1,172.46
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	214.73
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	45.89
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	68.16
BRINK'S INCORPORATED	BRINKS SERVICES SEPTEMBER	627.69
	Total For Dept 253.00 TREASURERS	2,128.93

Dept 257.00 ASSESSING

DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	348.73
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	65.02
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	96.94
LANSING ICE & FUEL CO	GASOLINE	23.78
KEVIN KONEN	REIMBURSE MILEAGE/MCAO CLASS	51.30
	Total For Dept 257.00 ASSESSING	585.77

Dept 262.00 ELECTIONS

APPLICATION SPECIALIST KO	CABLES FOR NEW VOTER LAPTOPS	102.00
DBI BUSINESS INTERIORS	OFFICE SUPPLIES	159.19
PRINTING SYSTEMS, INC.	5,000 AV OUTER ENVELOPES	575.00
PRINTING SYSTEMS, INC.	COURIER FEES	95.00
PRINTING SYSTEMS, INC.	6,000 AV INSIDE ENVELOPES	616.50
PRINTING SYSTEMS, INC.	COURIER FEES	99.00
EXTEND YOUR REACH	POSTAGE & FEES AUGUST	297.58
APPLICATION SPECIALIST KO	TECH HELP TO SET UP VOTER LAPTOPS	125.00
	Total For Dept 262.00 ELECTIONS	2,069.27

Dept 265.00 BUILDING & GROUNDS

BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER 2016	2,501.25
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	166.87
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	60.34
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	89.80
LANSING ICE & FUEL CO	GASOLINE	179.36
MODEL COVERALL SERVICE	UNIFORM CLEANING	21.69
MODEL COVERALL SERVICE	UNIFORMS	21.69
LOWE'S CREDIT SERVICES	SHOP VAC, UPRIGHT SWEEPER/CSC	251.09
LOWE'S CREDIT SERVICES	CONCRETE/HEADSTONE FOUNDATIONS	170.80
SAM'S CLUB DIRECT	CASE OF TOILET PAPER	159.84
SAM'S CLUB DIRECT	MOP HEAD 2 PK	29.64
SAM'S CLUB DIRECT	CASE OF 12 KLEENEX	132.84
SIEMENS INDUSTRY, INC.	REPAIR HEAT PUMP #2	573.02
GRANGER	MONTHLY DUMPSTER SERVICE	76.00
QUALITY FIRST MAID SERVICE	CLEANING SERVICES/CSC	812.50
SAFETY SYSTEMS, INC	QTRLY ALARM MONITORING/SR CENTER	99.00
VERIZON WIRELESS	SEPTEMBER CELLULAR	50.00
BOARD OF WATER & LIGHT	WATER 2074 AURELIUS	1,116.31
BOARD OF WATER & LIGHT	WATER 2004 AURELIUS	104.72
DELHI TOWNSHIP TREASURER	SEWER 2074 AURELIUS	507.40
CONSUMERS ENERGY	ELECTRIC 2004 AURELIUS	88.95
CONSUMERS ENERGY	ELECTRIC-2074 AURELIUS	7,431.72
CONSUMERS ENERGY	ELECTRIC 4149 WILLOUGHBY	37.90
CONSUMERS ENERGY	GAS-2074 AURELIUS	128.57
BOYNTON FIRE SAFETY SERV	REPAIR SPRINKLER SYSTEM	116.50
BOYNTON FIRE SAFETY SERV	SPRINKLER SYSTEM ANNUAL @ ICSD/DDA	170.00
BOYNTON FIRE SAFETY SERV	SPRINKLER SYSTEM INSPECTION @ SR C	95.00
BOYNTON FIRE SAFETY SERV	SPRINKLER SYSTEM INSPECTION @ CSC	125.00
BOYNTON FIRE SAFETY SERV	CSC GAGE INSPECTION/REPLACEMENT	25.00
BOYNTON FIRE SAFETY SERV	LABOR-5 YEAR FDC VALVE INSPECTION	125.00
BOYNTON FIRE SAFETY SERV	ICSD - LABOR -5 YEAR FDC VALVE INSP	125.00
ACE HARDWARE	WATER LINE REPAIR/MAPLE RIDGE	24.13
ACE HARDWARE	ELECTRICIANS SCREWDRIVER SET	8.49
PURE GREEN LAWN & TREE	FERT/WEED CONTROL @CRYSTAL	25.00
PURE GREEN LAWN & TREE	FERT/WEED CONTROL @ DDA/ICSD	25.00
D & G EQUIPMENT INC	BLADES & BELTS FOR MOWERS	125.60
	Total For Dept 265.00 BUILDING & GROUNDS	15,801.02

Dept 446.00 INFRASTRUCTURE

CONSUMERS ENERGY	LIGHTING 2116 CEDAR	401.46
CONSUMERS ENERGY	LIGHTING 2228 AURELIUS	153.40
CONSUMERS ENERGY	LIGHTING 3970 HOLT	143.48
CONSUMERS ENERGY	LIGHTING 4115 HOLT	286.12
	Total For Dept 446.00 INFRASTRUCTURE	984.46

Dept 721.00 PLANNING/COMMUNITY DEVELOPMENT

BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER 2016	5,236.98
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	606.54
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	120.69
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	179.73
LANSING ICE & FUEL CO	GASOLINE	130.97
ASSOCIATED GOVERNMENT	AGS PAYROLL-JULY 16 THRU AUGUST 16	3,863.00
MC KENNA ASSOCIATES, INC	CEDAR ST CORRIDOR-ADDITIONAL SERV	2,068.00
MC KENNA ASSOCIATES, INC	CEDAR ST CORRIDOR PLAN-AUGUST	2,172.50
VERIZON WIRELESS	SEPTEMBER CELLULAR	278.00
CANON FINANCIAL SERVICES	CANON COPIER LEASE & USAGE	1,129.53
SCHAFER'S INC.	ABATEMENT @2536 KATE ST.	69.00
SCHAFER'S INC.	ABATEMENT @2614 DELRIDGE DR	34.50
SCHAFER'S INC.	ABATEMENT @ N. CEDAR RD	86.25
SCHAFER'S INC.	ABATEMENT @ 2526 SELMA ST	69.00
SCHAFER'S INC.	ABATEMENT @ 4521 GROVE ST.	51.75
SCHAFER'S INC.	ABATEMENT @ LEGACY PKWY	69.00
SCHAFER'S INC.	ABATEMENT @ 3200 PINE TREE RD	51.75
SCHAFER'S INC.	ABATEMENT @ 3200 PINE TREE RD, LOT 2	51.75
SCHAFER'S INC.	MOWING 2223 DELHI NE	51.75
	Total For Dept 721.00 PLANNING/COMMUNITY DEVELOPMENT	16,320.69

Dept 752.00 PARKS ADMINISTRATION

BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER 2016	1,172.43
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	129.21
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	73.10
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	109.17
HOLT PUBLIC SCHOOLS	PRINTING/LINE UP CARDS	74.25
VERIZON WIRELESS	SEPTEMBERCELLULAR	100.00
	Total For Dept 752.00 PARKS ADMINISTRATION	1,658.16

Dept 771.00 PARKS

BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER 2016	1,563.27
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	214.73
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	39.10
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	58.36
LANSING ICE & FUEL CO	GASOLINE	1,083.53
MODEL COVERALL SERVICE	UNIFORM CLEANING	65.56
MODEL COVERALL SERVICE	UNIFORMS	42.56
ACE HARDWARE	1 UTILITY HOSE/1 MISC. MDSE.	27.98
ACE HARDWARE	6 PADLOCKS FOR PARKS GATES/RESTROOM	65.91
ACE HARDWARE	TWINE	2.29
MARK'S LOCK SHOP, INC	6 PARKS GATE PADLOCKS	72.00
SAM'S CLUB DIRECT	3PK OF STAINLESS STEEL CLEANER	11.88
SAM'S CLUB DIRECT	CASE OF 42 GALLON TRASH BAGS	58.10
SAM'S CLUB DIRECT	CASE OF 55 GALLON TRASH BAGS	291.10
AMERICAN RENTALS, INC.	PORTABLE TOILETS	275.00
AMERICAN RENTALS, INC.	PORTABLE TOILETS	235.00
AMERICAN RENTALS, INC.	PORTABLE TOILETS	370.00

AMERICAN RENTALS, INC.	PORTABLE TOILET	140.00
AMERICAN RENTALS, INC.	PORTABLE TOILETS	220.00
GRANGER	MONTHLY DUMPSTER SERVICE	150.00
QUALITY FIRST MAID SERVICE	CLEANING SERVICES/SENIOR CENTER	260.00
BOARD OF WATER & LIGHT	WATER 1750 MAPLE	35.40
BOARD OF WATER & LIGHT	WATER 2287 PINE TREE	51.21
BOARD OF WATER & LIGHT	WATER 2074 AURELIUS #PARK	581.80
BOARD OF WATER & LIGHT	WATER 4050 KELLER	181.26
BOARD OF WATER & LIGHT	WATER 2108 CEDAR	327.91
DELHI TOWNSHIP TREASURER	SEWER 2108 CEDAR	280.20
DELHI TOWNSHIP TREASURER	SEWER 2287 PINE TREE	59.08
DELHI TOWNSHIP TREASURER	SEWER 4030 KELLER	90.88
DELHI TOWNSHIP TREASURER	SEWER 1750 MAPLE	41.65
CONSUMERS ENERGY	ELECTRIC 2108 CEDAR	1,135.08
CONSUMERS ENERGY	ELECTRIC 1750 MAPLE	23.57
CONSUMERS ENERGY	ELECTRIC 2287 PINE TREE 2939	76.57
CONSUMERS ENERGY	ELECTRIC 2287 PINE TREE 3200	197.84
CONSUMERS ENERGY	ELECTRIC 4080 KELLER	130.52
CONSUMERS ENERGY	ELECTRIC 2177 WEST BLVD	22.57
CONSUMERS ENERGY	GAS 2287 PINE TREE 2939	18.84
CONSUMERS ENERGY	GAS 2108 CEDAR	25.06
ACE HARDWARE	6 PAINT BRUSHES	11.94
PURE GREEN LAWN & TREE	FERT/WEED CONTROL @ HOLT/AURELIUS PA	44.00
PURE GREEN LAWN & TREE	FERT/WEED CONTROL@ELLIOTT BALL	145.00
PURE GREEN LAWN & TREE	FERT/WEED CONTROL @ELLIOT BALL	175.00
PURE GREEN LAWN & TREE	FERT/WEED CONTROL@KIWANIS PK	160.00
PURE GREEN LAWN & TREE	FERT/WEED CONTROL @PINETREE	145.00
PURE GREEN LAWN & TREE	FERT/WEED CONTROL@DDA/ICSD	0.00
ACE HARDWARE	FLEX TUBING FOR SPRAYER	12.27
CHRISTIANS GREENHOUSE	PLANTS	123.96
CHRISTIANS GREENHOUSE	FLOWERS	60.11
FASTENAL COMPANY	STAINLESS HARDWARE/SYCAMORE TRAIL	104.79
FASTENAL COMPANY	RETURN SCREWS/WRONG SIZE	(27.59)
FASTENAL COMPANY	SCREWS/SYCAMORE TRAIL	27.28
LOWE'S CREDIT SERVICES	PLANTS	103.31
LOWE'S CREDIT SERVICES	PLANTER & PLANTS	44.63
MENARDS LANSING SOUTH	ALL PURPOSE WASH/CHLORINE TABLETS	28.28
SUPERIOR SAW	REPAIRS	91.91

SUPERIOR SAW	REPAIRS	25.00
COMPLETE BATTERY SOURCE	BATTERY/PARKS PA SYSTEM	16.96
LANSING ICE & FUEL CO	55 GAL DRUM OF MOTOR OIL	494.45
LANSING ICE & FUEL CO	DRUM DEPOSIT	20.00
THE PARTS PLACE	WIRE & CONNECTORS FOR SPRAYER	24.46
FRANKIE D'S AUTO & TRUCK	REPAIR SHIFTER/#41	356.00
LANDSCAPE ARCHITECTS	CONSTRUCTION DRAWINGS/KIWANIS	5,361.46
	Total For Dept 771.00 PARKS	16,074.03
Dept 774.00 RECREATION		
JOHN'S PRO-CLEAN, INC	4 TROPHIES	154.00
ELLIOTT FOOD EQUIPMENT	2 48"ROUND BANQUET TABLES	374.00
ELLIOTT FOOD EQUIPMENT	FREIGHT CHG FOR BANQUET TABLES	150.00
DANIEL A. DUMENEY	ADULT SOFTBALL OFFICIAL	75.00
DAN MEREDITH	ADULT SOFTBALL OFFICIAL	75.00
	Total For Dept 774.00 RECREATION	828.00
Dept 850.00 OTHER FUNCTIONS		
HARTFORD LIFE INSURANCE	RETIREES LIFE INSURANCE/OCTOBER	36.45
BLUE CROSS BLUE SHIELD	RETIREES HEALTH INSURANCE/OCTOBER 20	6,882.45
DBI BUSINESS INTERIORS	OFFICE SUPPLIES	355.90
EXTEND YOUR REACH	POSTAGE & FEES AUGUST	816.69
	Total For Dept 850.00 OTHER FUNCTIONS	8,091.49
	Total For Fund 101 GENERAL FUND	80,607.11
Fund 206 FIRE FUND		
Dept 336.00 FIRE DEPARTMENT		
HARTFORD LIFE INSURANCE	RETIREES LIFE INSURANCE/OCTOBER	4.05
BLUE CROSS BLUE SHIELD	RETIREES HEALTH INSURANCE/OCTOBER 20	943.29
BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER	8,129.07
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	1,561.82
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	275.55
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	555.39
BARYAMES CLEANERS	UNIFORM CLEANING FOR FIREFIGHTERS	198.65
TRI-COUNTY EMERGENCY	AMBULANCE FORMS	11.85
TRI-COUNTY EMERGENCY	DRUG REPLACEMENT FORMS	11.85
LANSING ICE & FUEL CO	GASOLINE	640.77
LANSING UNIFORM CO	UNIFORMS	2,189.35
LANSING UNIFORM CO	UNIFORMS	87.95
BOUND TREE MEDICAL, LLC	MEDICAL SUPPLIES	440.82
BOUND TREE MEDICAL, LLC	MISC MEDICAL SUPPLIES	19.90
LIFEGAS LLC	OXYGEN AND OXYGEN TANK RENTAL	123.69
MICHIGAN STATE UNIVERSITY	MISC MEDICAL SUPPLIES	41.90
MICHIGAN STATE UNIVERSITY	MEDICAL SUPPLIES	309.47
SPARROW OCC HEALTH SERV	PHYSICALS	748.24
VERIZON WIRELESS	SEPTEMBER CELLULAR	750.24
BOARD OF WATER & LIGHT	WATER 6139 BISHOP	37.48
DELHI TOWNSHIP TREASURER	SEWER 6139 BISHOP	37.88
SAM'S CLUB DIRECT	MEMBERS MARK LAUNDRY DETERGENT	111.84
	Total For Dept 336.00 FIRE DEPARTMENT	17,231.05
	Total For Fund 206 FIRE FUND	17,231.05

Fund 207 POLICE FUND
Dept 301.00 POLICE

INGHAM COUNTY TREASURER	POLICE CONTRACT SEPTEMBER	213,942.75
	Total For Dept 301.00 POLICE	213,942.75
	Total For Fund 207 POLICE FUND	213,942.75

Fund 211 FIRE EQUIP. & APPARATUS FUND
Dept 339.00 EQUIPMENT & APPARATUS

FIRE SERVICE MANAGEMENT	TURNOUT GEAR CLEANING & REPAIR	98.00
FIRE SERVICE MANAGEMENT	TURNOUT GEAR CLEANING & REPAIR	135.80
SUPERIOR SAW	SAW REPAIR	48.00
COMMUNICATIONS SERVICES	RADIO REPAIR	138.00
PRO AIR-KOORSEN FIRE	CASCADE CYLINDERS HYDRO TESTING	400.00
PRO AIR-KOORSEN FIRE	SERVICE FEE	85.00
FRANKIE D'S AUTO & TRUCK	LOF	35.00
FRANKIE D'S AUTO & TRUCK	SAFETY INSPECTION	40.00
FRANKIE D'S AUTO & TRUCK	LOWER BALL JOINTS & LABOR	440.00
FRANKIE D'S AUTO & TRUCK	SERPENTINE BELT & LABOR	73.00
FRANKIE D'S AUTO & TRUCK	ROTATE & BALANCE 4 TIRES	50.00
FRANKIE D'S AUTO & TRUCK	4 WHEEL COMPUTER ALIGNMENT	90.00
FRANKIE D'S AUTO & TRUCK	TRANS TUBE GASKET & LABOR	56.00
FRANKIE D'S AUTO & TRUCK	TRANS FLUSH & FILL	211.00
FRANKIE D'S AUTO & TRUCK	SERVICE TRANSFER CASE	52.00
FRANKIE D'S AUTO & TRUCK	SERVICE FRONT DIFFERENTIAL	110.00
FRANKIE D'S AUTO & TRUCK	SERVICE REAR DIFFERENTIAL	133.00
FRANKIE D'S AUTO & TRUCK	FUEL INJECTION CLEANER	28.00
FRANKIE D'S AUTO & TRUCK	RIGHT EXHAUST MANIFOLD	255.00
FRANKIE D'S AUTO & TRUCK	STUD & BELTS	42.00
FRANKIE D'S AUTO & TRUCK	LABOR FOR MANIFOLD, STUD & BELTS	480.00
ROGER'S CLINE TIRE & AUTO	4 TIRES UNIT #211	732.84
	Total For Dept 339.00 EQUIPMENT & APPARATUS	3,732.64
	Total For Fund 211 FIRE EQUIP. & APPARATUS FUND	3,732.64

Fund 248 DOWNTOWN DEVELOPMENT AUTHORITY
Dept 000.00

NEVA AUSTIN	SEPTEMBER VENDOR PAYMENT	85.00
CORTRIGHT FARMS	SEPTEMBER VENDOR PAYMENT	15.00
CRISP COUNTRY ACRES	SEPTEMBER VENDOR PAYMENT	482.00
LYNN CUMMINS	SEPTEMBER VENDOR PAYMENT	35.00
TODD DELO	SEPTEMBER VENDOR PAYMENT	94.00
LONESOME PINES BEEF	SEPTEMBER VENDOR PAYMENT	116.00
SANDRA SIEMON	SEPTEMBER VENDOR PAYMENT	6.00
THE 517 COFFEE COMPANY	SEPTEMBER VENDOR PAYMENT	22.00
WILLOW BLOSSOM FARMS	SEPTEMBER VENDOR PAYMENT	149.00
BEAGLE'S CAFE & BAKERY	SEPTEMBER VENDOR PAYMENT	24.00
OFILIA DIAZ	SEPTEMBER VENDOR PAYMENT	204.00
ELAINE J. ERNST	SEPTEMBER VENDOR PAYMENT	55.00
GREAT HARVEST BREAD CO.	SEPTEMBER VENDOR PAYMENT	38.00
DENNIS C. GREENMAN	SEPTEMBER VENDOR PAYMENT	281.00
BETTE K. KELLY	SEPTEMBER VENDOR PAYMENT	30.00
FRED LONG	SEPTEMBER VENDOR PAYMENT	21.00
MASTERS OF CONFECTION	SEPTEMBER VENDOR PAYMENT	20.00
OTTO'S POULTRY, INC	SEPTEMBER VENDOR PAYMENT	1,296.00
SHAYNA QUILLIN	SEPTEMBER VENDOR PAYMENT	32.00

RUSSELL ROWE	SEPTEMBER VENDOR PAYMENT	146.00
MAI KOU VANG	SEPTEMBER VENDOR PAYMENT	112.00
	Total For Dept 000.00	3,263.00

Dept 728.00 DDA ADMINISTRATION

MICHIGAN ECONOMIC DEVEL	2016 MEDA DUES/HAAS	270.00
	Total For Dept 728.00 DDA ADMINISTRATION	270.00

Dept 729.00 DDA MARKETING & PROMOTION

BLOHM CREATIVE PARTNERS	AUGUST OUR TOWN ACCT. MGMT.	1,000.00
SAM'S CLUB DIRECT	PAPER TOWEL/TOILET CLEANER	36.26
SAM'S CLUB DIRECT	WATER/SODA	15.90
SAM'S CLUB DIRECT	PLATES & CUTLERY	26.90
SPARROW OCC HEALTH SERV	PHYSICALS	82.00
CORTRIGHT FARMS	SEPTEMBER DOUBLE UP BUCKS	8.00
CRISP COUNTRY ACRES	SEPTEMBER DOUBLE UP BUCKS	302.00
DENNIS C. GREENMAN	SEPTEMBER DOUBLE UP BUCKS	134.00
RUSSELL ROWE	SEPTEMBER DOUBLE UP BUCKS	50.00
BLOHM CREATIVE PARTNERS	AUGUST WEB MAINT/HOST	265.00
	Total For Dept 729.00 DDA MARKETING & PROMOTION	1,920.06

Dept 850.00 OTHER FUNCTIONS

GRANGER	MONTHLY DUMPSTER SERVICE	131.30
QUALITY FIRST MAID SERVICE	CLEANING SERVICES/SHERIFF & DDA	355.00
BOARD OF WATER & LIGHT	WATER 4469 KELLER (2230 CEDAR)	45.29
BOARD OF WATER & LIGHT	WATER 2045 CEDAR	129.05
BOARD OF WATER & LIGHT	WATER 2150 CEDAR	78.51
DELHI TOWNSHIP TREASURER	SEWER 2045 CEDAR	62.85
DELHI TOWNSHIP TREASURER	SEWER 2150 CEDAR	112.13
DELHI TOWNSHIP TREASURER	SEWER 2230 CEDAR	167.51
CONSUMERS ENERGY	ELECTRIC 2224 CEDAR	42.62
CONSUMERS ENERGY	ELECTRIC 4469 KELLER	12.38
CONSUMERS ENERGY	ELECTRIC-2150 CEDAR	324.74
CONSUMERS ENERGY	ELECTRIC-2045 CEDAR #A	1,357.09
CONSUMERS ENERGY	ELECTRIC-2045 CEDAR #B	117.80
CONSUMERS ENERGY	GAS-2150 CEDAR	22.23
CONSUMERS ENERGY	GAS-2045 CEDAR	24.14
CONSUMERS ENERGY	GAS 4469 KELLER	11.53
CONSUMERS ENERGY	GAS 2224 CEDAR	11.53
CONSUMERS ENERGY	GAS 2228 CEDAR	16.00
CONSUMERS ENERGY	GAS 2226 1/2 CEDAR	11.53
	Total For Dept 850.00 OTHER FUNCTIONS	3,033.23

Dept 905.00 DEBT SERVICE

DAVID & LINDA ROTHERMEL	FINAL PAY-LAND CONTRACT-2040 CEDAR	22,763.22
DAVID & LINDA ROTHERMEL	FINAL INT PYMT-LAND CONTRACT-2040	682.88
	Total For Dept 905.00 DEBT SERVICE	23,446.10

Total For Fund 248 DOWNTOWN DEVELOPMENT AUTHORITY	31,932.39

Fund 590 SEWAGE DISPOSAL SYSTEM

Dept 000.00

AINSLIE, RACHEL	Sewer Usage	41.65
CHANEY, LEE	Basic Service Charge	31.80
DAVIS, KATHLEEN	Basic Service Charge	16.12
EWALD, DOUGLAS	Sewer Usage	20.45
FIRST HOUSING SERVICES INC	Basic Service Charge	31.80
HILL, MARISSA	Sewer Usage	24.25
HINER, TAMMY	Basic Service Charge	84.85
MAY, MARTIN	Sewer Usage	60.97
MAYBERRY HOMES	Basic Service Charge	5.30
MAYBERRY HOMES	Basic Service Charge	15.90
NELSON, AIMEE	Basic Service Charge	15.90
OATES, HALEY	Basic Service Charge	15.90
OSTERHOUSE, WM J	Sewer Usage	31.05
PEARSON, SCOTT	Basic Service Charge	27.25
PRICCO-SMITH, MEGHAN	Sewer Usage	105.25
ROYSTON, ERIC	Basic Service Charge	21.20
SHARP, LISA	Basic Service Charge	30.30
WANG, LIN-CHI	Basic Service Charge	36.35
BLUE CROSS BLUE SHIELD	RETIREES HEALTH INSURANCE/OCTOBER 20	110.50
	Total For Dept 000.00	726.79

Dept 548.00 ADMINISTRATION & OVERHEAD

HARTFORD LIFE INSURANCE	RETIREES LIFE INSURANCE/OCTOBER	16.20
BLUE CROSS BLUE SHIELD	RETIREES HEALTH INSURANCE/OCTOBER 20	2,490.23
EXTEND YOUR REACH	POSTAGE & FEES AUGUST	18.34
	Total For Dept 548.00 ADMINISTRATION & OVERHEAD	2,524.77

Dept 558.00 DEPT OF PUBLIC SERVICE

BLUE CROSS BLUE SHIELD	HEALTH INSURANCE/OCTOBER 2016	9,926.79
DELTA DENTAL PLAN OF	DENTAL INSURANCE/OCTOBER 2016	1,513.95
HARTFORD LIFE INSURANCE	LIFE INSURANCE/OCTOBER 2016	361.66
UNUM LIFE INSURANCE CO	DISABILITY INSURANCE OCTOBER	539.55
LANSING ICE & FUEL CO	GASOLINE	906.41
MODEL COVERALL SERVICE	STAFF UNIFORMS/POTW	44.83
MODEL COVERALL SERVICE	STAFF UNIFORMS/MTC	52.06
MODEL COVERALL SERVICE	STAFF UNIFORMS/POTW	68.83
MODEL COVERALL SERVICE	STAFF UNIFORMS/MTC	52.06
MODEL COVERALL SERVICE	STAFF UNIFORMS/MTC	52.06
MODEL COVERALL SERVICE	STAFF UNIFORMS/POTW	68.83
BARYAMES CLEANERS	UNIFORM DRY CLEANING	68.90
AD-INK & TONER SUPPLY	TONER CARTRIDGE / HP LASERJET PRO	79.99
AD-INK & TONER SUPPLY	BLACK TONER CARTRIDGE/POTW	38.99
AD-INK & TONER SUPPLY	2 INKJET BLACK CARTRIDGES/LIFT STAT	35.98
AD-INK & TONER SUPPLY	2 INKJET COLOR CARTRIDGES/LIFT STAT	37.98
AIRGAS USA, LLC	CYLINDER RENTAL	153.85
ALEXANDER CHEMICAL CORP	TREATMENT CHEMICALS/SODIUM BISULF	884.50
KEMIRA WATER SOLUTIONS	FERRIC CHLORIDE	4,651.25
ALS LABORATORY GROUP	OFF-SITE LAB TESTING-IPP DART	550.00
SPICER GROUP, INC.	GIS & ASSET MGMT ASSIST THRU 9/3/16	7,348.50
GRANGER	SCREENING DEBRIS	775.00
GRANGER	MONTHLY DUMPSTER SERVICE	202.91
VERIZON WIRELESS	SEPTEMBER CELLULAR	743.49

BOARD OF WATER & LIGHT	WATER 1492 AURELIUS	392.08
BOARD OF WATER & LIGHT	WATER 1492 AURELIUS	78.00
BOARD OF WATER & LIGHT	WATER 3505 HOLT	83.57
BOARD OF WATER & LIGHT	WATER 1988 WAVERLY	146.93
BOARD OF WATER & LIGHT	WATER 5961 MC CUE	763.84
DELHI TOWNSHIP TREASURER	SEWER 1490 AURELIUS	439.20
BOARD OF WATER & LIGHT	ELECTRIC 1870 NIGHTINGALE	94.67
CONSUMERS ENERGY	ELECTRIC-5961 MC CUE #2509	16,117.71
CONSUMERS ENERGY	ELECTRIC-2358 EIFERT	351.84
CONSUMERS ENERGY	ELECTRIC-2870 PINE TREE	625.08
CONSUMERS ENERGY	ELECTRIC-3505 HOLT	114.09
CONSUMERS ENERGY	ELECTRIC-4280 DELL	516.76
CONSUMERS ENERGY	ELECTRIC-4828 HOLT	102.88
CONSUMERS ENERGY	ELECTRIC-5999 HOLT	57.43
CONSUMERS ENERGY	ELECTRIC-6055 MC CUE	576.77
CONSUMERS ENERGY	ELECTRIC-1494 AURELIUS	51.97
CONSUMERS ENERGY	ELECTRIC 1390 WAVERLY	305.36
CONSUMERS ENERGY	ELECTRIC 1490 AURELIUS	2,475.81
CONSUMERS ENERGY	GAS-1490 AURELIUS	4.78
CONSUMERS ENERGY	GAS-1492 AURELIUS	44.87
CONSUMERS ENERGY	GAS 5961 MC CUE #4	167.51
CONSUMERS ENERGY	GAS 1494 AURELIUS	13.17
CONSUMERS ENERGY	GAS-5961 MC CUE #2319	38.21
CONSUMERS ENERGY	GAS-4280 DELL	17.14
CONSUMERS ENERGY	GAS-3505 HOLT	13.17
CONSUMERS ENERGY	GAS-2481 DELHI COMM	14.87
CONSUMERS ENERGY	GAS-5961 MC CUE #2	21.09
CONSUMERS ENERGY	GAS-5961 MC CUE #3	13.17
SUPERIOR SAW	MOWER DECK BELT, SCAG #7	78.30
LOWE'S CREDIT SERVICES	ROPE,WIRE TIES, WD40/POTW	43.99
LOWE'S CREDIT SERVICES	TIMER, TESTER, COVER/MAINT	101.58
LOWE'S CREDIT SERVICES	BOLTS FOR RECYCLE CENTER STAIRS	7.00
SAM'S CLUB DIRECT	JANITORIAL SUPPLIES	11.96
WESCO DISTRIBUTION, INC	T-8 277V LIGHT BALLAST	76.50
PURE GREEN LAWN & TREE	LAWN AND TREE SERVICE/WAVERLY LS	79.00
CATHEY COMPANY	CALCIUM NITRATE PUMP HOSE	58.52
SAM'S CLUB DIRECT	BACK-UP BATTERIES, LS	149.94
BOYNTON FIRE SAFETY SERV	REPLACE BACKFLOW PREVENTOR/	630.00
USA BLUE BOOK	MISS DIG MARKING PAINT	347.41
USA BLUE BOOK	SHIPPING FOR MARKING PAINT	85.11
MATERIALS TESTING CONSULT	FORCEMAIN CONDITIONS ASSESSMENTS	5,058.50
KENDALL ELECTRIC INC	4/4 CABLE 75KW GENSET	176.51
MICHIGAN PETROLEUM TECH	EQUIPMENT OIL/MEROPA ISO 220	651.00
KENNEDY INDUSTRIES, INC	FLYGT 4620 MIXER & REPAIR KITS	1,957.42
KENNEDY INDUSTRIES, INC	FLYGT 4620 MIXER & REPAIR KITS	930.00
BOYNTON FIRE SAFETY SERV	13 BACKFLOW PREVENT CERTIFICATIONS	845.00
PURE GREEN LAWN & TREE	LAWN AND TREE SERVICE-MAINTENANCE	232.00
QUALITY FIRST MAID SERVICE	CLEANING SERVICES/POTW	260.00
QUALITY FIRST MAID SERVICE	CLEANING SERVICES/MAINTENANCE	260.00
HARPER INDUSTRIAL CONST	INSPECT PRIMARY CLARIFIER/POTW	1,467.50
JACK DOHENY SUPPLIES, INC	PANO 2 REPAIR/CAMERA TRUCK	919.00
THE PARTS PLACE	OIL & FILTER FOR VACTOR #5	388.34
	Total For Dept 558.00 DEPT OF PUBLIC SERVICE	67,614.92
	Total For Fund 590 SEWAGE DISPOSAL SYSTEM	70,866.48

Fund 643 LOCAL SITE REMEDIATION REVOLVING FUND
Dept 735.00 LOCAL SITE REMEDIATION

FOSTER, SWIFT, COLLINS	AUGUST ENVIRONMENTAL LEGAL FEES	1,966.75
	Total For Dept 735.00 LOCAL SITE REMEDIATION	1,966.75
	Total For Fund 643 LOCAL SITE REMEDIATION REVOLVING FUND	1,966.75

Fund 701 TRUST & AGENCY FUND
Dept 000.00

AFLAC	WITH DEDUCT-DISABILITY	596.80
AFLAC	WITH DEDUCT-AFLAC LIFE INSUR	7.62
AFLAC	WITH DEDUCT-AFLAC ACCIDENT IND	500.58
AFLAC	WITH DEDUCT-AFLAC SICKNESS IND	324.38
AFLAC	WITH DEDUCT-AFLAC CANCER IND	450.84
AFLAC	WITH DEDUCT-DISABILITY RIDER	18.48
AFLAC	WITH DEDUCT-AFLAC ACCIIDENT RIDER	11.88
	Total For Dept 000.00	1,910.58
	Total For Fund 701 TRUST & AGENCY FUND	1,910.58

Fund 703 CURRENT TAX ACCOUNT
Dept 000.00

DART BANK	REFUNDS DUE TAXPAYERS	12.24
EDWAR ZEINEH & LANA KARAD	REFUNDS DUE TAXPAYERS	4.00
GARDNER, CHARLES W AND	REFUNDS DUE TAXPAYERS	3.66
LERETA	REFUNDS DUE TAXPAYERS	871.51
LERETA	REFUNDS DUE TAXPAYERS	971.24
LERETA	REFUNDS DUE TAXPAYERS	1,045.02
LERETA	REFUNDS DUE TAXPAYERS	1,043.75
RUSSELL BUILDERS, INC	REFUNDS DUE TAXPAYERS	160.12
	Total For Dept 000.00	4,111.54
	Total For Fund 703 CURRENT TAX ACCOUNT	4,111.54
	Total For All Funds:	426,301.29

ATTACHMENT II

DELHI CHARTER TOWNSHIP
FUND TRANSFERS AND PAYROLL APPROVAL
For Payroll Dated September 22, 2016

I. Certification of Preparation and Distribution

The attached check and payroll registers encompass check numbers: 109337 through 109366 & direct deposits numbers: DD23276 through DD23367. The payroll was prepared in accordance with established payroll rates and procedures.
The Treasurer's & Clerk's signatures were printed on the payroll checks using an electronic image signature

_____
Lora Behnke, Accounting Clerk

The attached Check and Payroll Registers were reviewed. The payroll checks were distributed in accordance with established procedures.

Dated: September 22, 2016 _____
Director of Accounting

II. Payroll Report

The September 22, 2016 payroll encompasses the following funds and expenditures:

	Gross Payroll	Payroll Deductions	Net Pay
General Fund	$83,127.88	$24,868.86	$58,259.02
Fire Dept. Fund	49,823.75	16,392.02	$33,431.73
DDA	4,407.33	1,008.08	$3,399.25
Sewer Fund/Receiving	38,284.79	12,518.68	$25,766.11
Total Payroll	$175,643.75	$54,787.64	**$120,856.11**
	Township FICA	**Township RHS & Pension Plan**	**Total Deductions & TWP Liabilities**
General Fund	$6,055.42	$7,637.54	$38,561.82
Fire Dept. Fund	3,727.96	4,272.25	24,392.23
DDA	161.97	84.76	1,254.81
Sewer Fund/Receiving	2,821.84	4,181.26	19,521.78
Total Payroll	$12,767.19	$16,175.81	$83,730.64

_____
Director of Accounting

III. FUND TRANSFERS

Transfers covering the foregoing payroll were made on September 22, 2016 and identified as follows:

9/22 Net Pay Disbursement in Common Savings ($120,856.11)

_____
Roy W. Sweet, Treasurer

IV. Board Audit and Approval:

At a regular meeting of the Township Board held on October 4, 2016, a motion was made by _____and passed by_____yes votes and _____no votes(_____absent) that the payroll dated September 22, 2016 was reviewed, audited, and approved.

Attachment to Payroll Register
cc: Sweet(1)Vander Ploeg(1)

_____
Evan Hope, Clerk

DELHI CHARTER TOWNSHIP

MEMORANDUM

TO: Delhi Township Board Members

FROM: John B. Elsinga, Township Manager

DATE: September 29, 2016

RE: FY 2017 Budgets – Set Public Hearing – General Fund and Special Revenue Funds

---

During the September Budget Workshop we introduced to the Board the proposed 2017 Budget documents (Budget Book). These proposed budgets will be updated prior to the public hearing for any changes made at the budget workshop and subsequent to the October 4th Committee of the Whole meeting. Summaries of these budgets will be available in the Clerk's Office for public viewing.

As required by statute, a public hearing must be held prior to December 15th and the adoption of these budgets by the Township Board no later than December 31st of each year. Therefore, I recommend the Board set a public hearing for October 18, 2016 at 7:45 p.m. to hear comments on the proposed budget.

RECOMMENDED MOTION:

To set a public hearing on the proposed Township budgets for the General Fund and Special Revenue Funds for fiscal year 2017 on Tuesday, October 18, 2016 at 7:45 p.m.

DELHI CHARTER TOWNSHIP

MEMORANDUM

TO: Delhi Township Board Members

FROM: John B. Elsinga, Township Manager

DATE: September 27, 2016

RE: Resolution No. 2016-025 – To Postpone the Construction of a Required Sidewalk – 3440 Dunckel Road

---

Enclosed for your review and approval is Resolution No. 2016-025 which would postpone the construction of a required sidewalk for property owned by Klein Brothers, LLC and located at 3440 Dunckel Road.

The Delhi Charter Township Sidewalk Ordinance No. 91 says "all owners of lots and parcels abutting dedicated public streets shall be required to construct sidewalks at the time of construction of any new principal buildings…" Ordinance No. 91 also provides for the indefinite postponement of required sidewalk construction under certain conditions.

The property owner has formally requested postponement of the installation of sidewalk along this property (approximately 167 feet). The recommended postponement of this sidewalk construction is based on the fact that there is no sidewalk along the west side of Dunckel Road and to install a sidewalk there would require additional work because of the county drain located through that area. Therefore, it would make sense to enter into a Sidewalk Agreement to postpone the construction of this sidewalk until a later date to be determined by the Township.

I, therefore, recommend the Board adopt Resolution No. 2016-025 to allow for the postponement of the installation of sidewalk and require the property owner and Township to execute a Sidewalk Agreement affecting the same.

Recommended Motion:

To adopt Resolution No. 2016-025 which postpones the construction of a required sidewalk along property owned by Klein Brothers, LLC and located at 3440 Dunckel Road and requires the property owner to execute a Sidewalk Agreement stating the same.

Delhi Charter Township
Department of Community Development

MEMORANDUM

TO: John B. Elsinga, Township Manager

FROM: Tracy L.C. Miller, Director of Community Development

DATE: Wednesday, September 28, 2016

RE: Sidewalk Postponement Agreement – Request by Klein Brothers, LLC
3440 Dunckel Road, Lansing, MI 48911

The property owner is currently in the process of receiving site plan approval for an addition to the existing building at this location. There is currently sidewalk on this site north of the Dunckel Road driveway and along the entire frontage of Legacy Parkway. However, as a result of the building addition, the sidewalk ordinance requires the remaining sidewalk south of the Dunckel Road driveway to the property line be installed. The property owner has requested postponement of this section of the sidewalk. There are two issues at this time:

1. There is a wide/deep county drain that would probably require the installation of a pedestrian bridge, large culvert or other engineered crossing, and

2. There is no sidewalk along the west side of Dunckel Road going south of this site and it is extremely unlikely that there will be sidewalk at anytime in the near future. The property to the south is owned by Lansing Christian and there is no plan for future development of this area. The Sycamore Trail is, of course, located on the east side Dunckel in this area.

The sidewalk ordinance permits the postponement of sidewalk construction, if approved by the Township Board, in two specific instances, as follows:

> *"…where the nearest existing sidewalk is over one-quarter mile away or where it seems very unlikely that the required sidewalk will be directly linked with a future extension of the sidewalk system within three (3) years."*
>
> *"…where the Board determines that strict application of such requirements would result in practical difficulties, including but not limited to, severe variations in topography, unsuitable soils, or difficulty in providing safe separation between pedestrian and vehicular traffic due to site location, layout or existing building arrangements."*

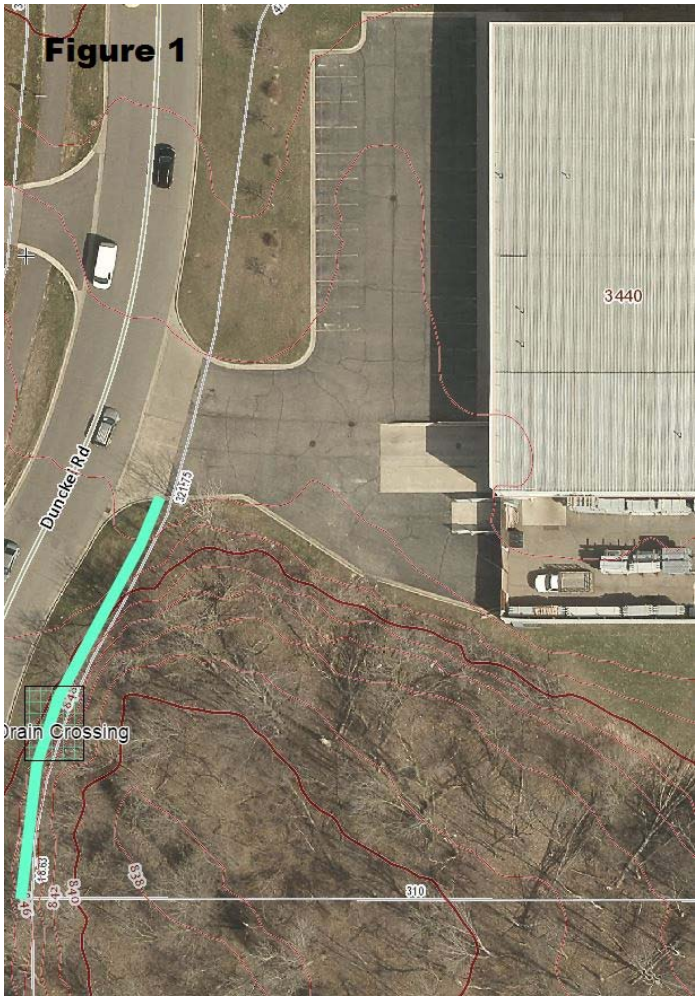
Staff suggests that in this case, #2 above may apply due to the extreme topography associated with the drain at the south end of the subject property.

If a postponement is granted, the Sidewalk Ordinance requires that the property owner enter into a *Sidewalk Postponement Agreement* with the Township. The Agreement stipulates that the property owner (or any future property owner) will be responsible for the entire cost of the sidewalk at such time as the Township determines it is desirable to construct said sidewalk. This Agreement notes the fact that the drain crossing is the responsibility of the property owner too. Of course, if the Property Owner should decide to construct the sidewalk and crossing prior to the Township's demand it would be permissible.

In this case, I would recommend that the Township Board grant the postponement request. I've attached a draft agreement that, if authorized, I will have executed and recorded. Figure 1 below shows the subject property.

I hope that this provides the necessary background information. However, if you have questions or if there is additional information that I can provide, please do not hesitate to ask. Thank you.

<u>Subject Property – Sidewalk Postponement Request</u>



Klein Brothers

1215 Lewis Street • Jackson, Michigan 49203 • Bus (517) 787-6167 • Fax (517) 796-0383 • warehousingservices@yahoo.com

• Surplus Steel Supply • Warehousing Services • Property Management •

RECEIVED
SEP 2 1 2016
Community Development Department

September 21, 2016

Tracy Miller, Community Development Director
Delhi Charter Township
2074 Aurelius Road
Holt, Michigan 48842

RE: 3440 Dunckel Road – Lansing, Michigan 48911

Tracy,

Please consider our request for postponement of sidewalk construction south of the existing driveway along the properties west boundary. Construction in this area is challenging, crossing the Banta Drain at its lowest point. The newly constructed walkway immediately to the west presently provides adequate access for pedestrian traffic. Should a sidewalk be needed in the future Klein Brothers LLC acknowledges responsibility for the cost of construction.

I can be reached directly at (517) 937-8899.

Thank you-

With Regards,

David Klein
Klein Brothers LLC

Secured By
ADT
www.surplussteelsupply.com

DELHI CHARTER TOWNSHIP

RESOLUTION NO. 2016-025

A Resolution to Postpone the Construction of a
Required Sidewalk

At a Regular Meeting of the Township Board of Trustees, of the Charter Township of Delhi, Ingham County, Michigan, held at the Community Services Center, 2074 Aurelius Road, Holt, Michigan on Tuesday, the 4th day of October, 2016, at 7:30 o'clock, p.m.

PRESENT:

ABSENT:

The following Resolution was offered by_____.

WHEREAS, pursuant to Township Ordinance 91, the "Sidewalk Ordinance", all owners of lots and parcels abutting dedicated public streets are required to construct sidewalks at the time of construction of any new principal buildings, or at the time of alteration of existing principal buildings on such lots or parcels; and

WHEREAS, Klein Brothers, LLC, the owner of property located at 3440 Dunckel Road, Lansing, MI 48911 (33-25-05-02-200-018) is required to install sidewalk along the frontage of Dunckel Road for the entire length of his property; and

WHEREAS, the installation of the required sidewalk south of the existing driveway at this time could result in a practical difficultly resulting from the fact that a drain crossing must also be constructed and there is not currently sidewalk to the south and it is unlikely to be constructed in the near future; and

WHEREAS, this condition makes it undesirable to install the subject sidewalk, south of the Dunckel Road driveway at this point in time, but that regardless of any change in the stated conditions at some future time, the Township may, in its sole discretion, determine that it is appropriate to call on the property owner to complete the installation.

NOW, THEREFORE, BE IT RESOLVED; that the Township Board does hereby postpone the requirement for the construction of approximately 167+/- feet of sidewalk adjacent to Dunckel Road south of the existing building to the south property line until such time as it is deemed appropriate by the Township.

BE IT FURTHER RESOLVED, that future installation of the postponed sidewalk shall meet the requirements of the Sidewalk Ordinance in effect at that time and that all costs associated with the installation, including the drain crossing, shall be the responsibility of the property owner, and

BE IT FINALLY RESOLVED, that in order for this postponement to be in effect, the property owner and the Township shall enter into a Sidewalk Agreement that is substantially similar in form to that which is included as Exhibit A of this Resolution and that the Agreement shall be recorded with the Ingham County Register of Deeds and shall run with the land.

AYES:

ABSENT:

The foregoing Resolution declared adopted on the date written above.

_____
Evan Hope, Township Clerk

STATE OF MICHIGAN }
}ss
COUNTY OF INGHAM }

I, the undersigned, the duly qualified Clerk of the Charter Township of Delhi, Ingham County, Michigan, DO HEREBY CERTIFY that the foregoing is a true and complete copy of the proceedings taken by the Township Board at a regular meeting held on the 4th day of October, 2016.

IN WITNESS THEREOF, I have hereunto affixed my official signature this ___ day of October, 2016.

_____
Evan Hope, Township Clerk

Exhibit A:
Proposed Agreement

DELHI CHARTER TOWNSHIP
SIDEWALK AGREEMENT
3440 Dunckel Road
Klein Brothers, LLC
PARCEL NUMBER: 33-25-05-02-200-018

THIS AGREEMENT made this ____ day of _____, A.D., 2016, by and between KLEIN BROTHERS, LLC, a Domestic Limited Liability Company, 1215 LEWIS STREET, JACKSON, MICHIGAN 49203 (the "Property Owner") and DELHI CHARTER TOWNSHIP, a Michigan Municipal Corporation, 2074 N. Aurelius, Holt, MI 48842 (the "Township").

W I T N E S S E T H:

WHEREAS, the Property Owner owns property within the Charter Township of Delhi, legally described as:

LOT 4 LEGACY PARK SUBD. SEC. 2 T3N,R2W

commonly known as: 3440 DUNCKEL ROAD, LANSING, MI, 48911

WHEREAS, the Township has in effect an Ordinance requiring that the property described above have constructed within the public street right-of-way, located adjacent to its boundaries, a sidewalk located and constructed as required by said Ordinance; and,

WHEREAS, pursuant to provisions within said Ordinance, the Property Owner has requested that the Township grant permission to install said sidewalk and required drain crossing for sidewalk at a date subsequent to this agreement; and,

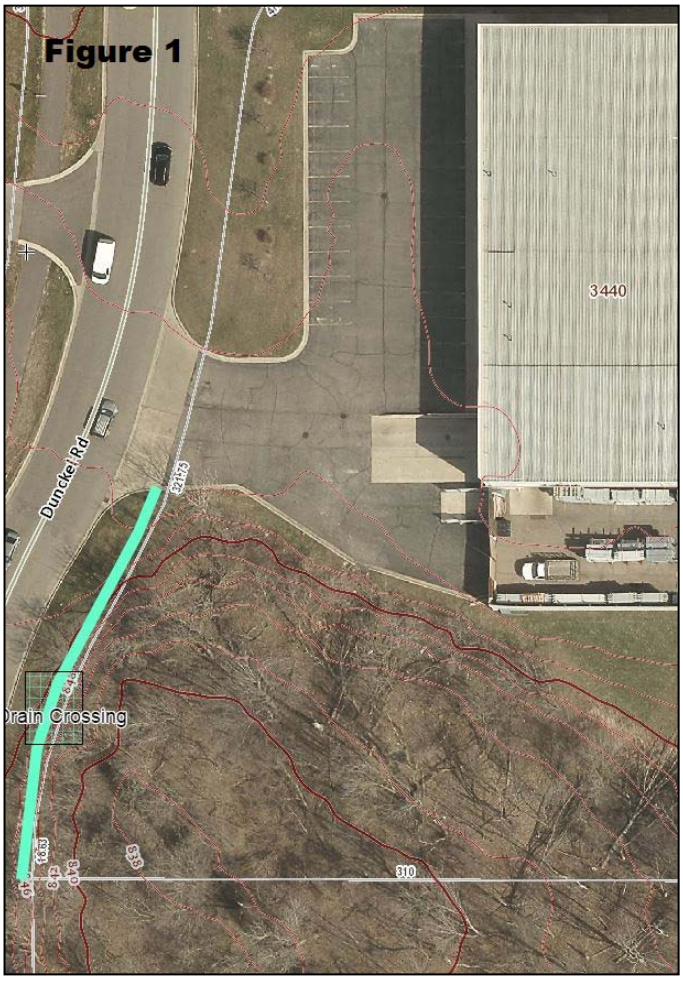
WHEREAS, the Township is agreeable to postpone installation of said sidewalk until such time as the Township shall request such construction, in writing, and

WHEREAS, based on the finding that there are not currently sidewalks located within close proximity of the subject site, going south from the site on the east side of Dunckel Road and sidewalk is unlikely to be constructed in the near-term future.

NOW THEREFORE, it is MUTUALLY AGREED by and between the parties hereto as follows:

1. The Property Owner hereby agrees that in consideration for the extension of time granted it by the Township for the construction of sidewalk and sidewalk drain crossing as required on said property, the Property Owner will construct said sidewalk upon written request of the Township within ninety (90) days of the receipt of such request. Such request shall be deemed received by said Property Owner upon the mailing of same by the Township to

the last known address of said property owner as same appears in the property tax rolls of the Township or posting a copy of said request on the premises described above.



2. That the Property Owner hereby agrees to construct a sidewalk and sidewalk drain crossing along its frontage on Dunckel Road (approximately 167') for the entire length of the property beginning at the south edge of the driveway and continuing south to the property line as of this date, at no cost to the Township, to be located upon and of the type, quality and location as required by the Township's Ordinances in effect at the time such request is made. The location of the required sidewalk improvement is shown in Figure 1.

3. That the obligation incurred herein shall run with, and constitute a lien upon, the property described above and that a copy of this Agreement shall be recorded with the Register of Deeds, the cost of said recording to be paid by the Property Owner, and that the obligation herein shall apply to his heirs, successors and the assigns of the parties hereto.

4. That the Property Owner hereby asserts that it is the owner of the property described above and that there are no other persons holding fee or equitable title to such property except as set forth herein and that it is under no disability to execute this agreement and bind the property to the terms hereof.

5. That there are no other agreements or understandings, written or oral, between the parties except as set forth herein and this agreement shall be construed as having been drafted by the parties jointly.

IN WITNESS WHEREOF the parties have hereunto set their hands and seals the date above first written.

PROPERTY OWNER

_____
David Klein, Resident Agent
Klein Brothers, LLC

STATE OF MICHIGAN)
)ss.
COUNTY OF INGHAM)

Subscribed to and sworn before me this _____ day of _____, A.D. 2016.

_____
Notary Public:
Ingham County, Michigan
My commission expires:_____

DELHI CHARTER TOWNSHIP

_____
Evan Hope
Delhi Charter Township Clerk

STATE OF MICHIGAN)
)ss.
COUNTY OF INGHAM)

Subscribed to and sworn before me this _____ day of _____, A.D. 2016.

_____
Notary Public
Ingham County, Michigan
My commission expires:_____

PREPARED BY:
Delhi Charter Township
Community Development Department
Attn: Tracy Miller, Director
2074 Aurelius Rd., Holt, MI 48842

Upon recording, return to same.

Delhi Charter Township
Department of Community Development

MEMORANDUM

TO: John B. Elsinga, Township Manager

FROM: Tracy L.C. Miller, Director of Community Development

DATE: September 28, 2016

RE: Ram2Burchfield Park Trail – Grant Application

In 2014, Ingham County voters approved a .5 mil/6 year levy for parks and trails. The millage generates approximately $3.4 million annually. The County spent approximately 2 years after the millage approval developing a plan for use of the funds and identifying priority projects. This plan can be viewed at: http://pk.ingham.org/InghamCountyTrailsandParksMillage.

The plan included a process by which the funds would be used and distributed. Ultimately, the County decided to award the funds to communities using a grant system. The first round of grants was awarded this past summer. First awards were limited to projects that maintained existing trails and bridges. The awards were made to a total of four communities, as follows:

Municipality:	**Total Award Amount:**
City of Lansing	$3,644,416
City of East Lansing	$1,088,500
Meridian Township	$663,000
City of Mason	$575,000

Beginning on October 1st, the County will open the second round of grant applications. Communities are encouraged to present new trail construction projects for funding consideration. All applications must be submitted no later than November 28th. The County has stated that this round of funding will be provided to fund trail expansions in identified priority corridors. *The trail connection between the existing Ram Trail and Burchfield Park has been identified as a priority in the County's study*.

In anticipation of the upcoming grant application, we have worked with Hubble, Roth & Clark to develop a preliminary alignment and cost estimates for the "Ram2Burchfield" trail. Both of these documents are attached for your review. The total anticipated cost of the project is $3,497,400 and includes design and construction engineering services.

At this time we intend to submit this cost to the County for 100% grant funding consideration. The Township's "match" will be in the form of easements provided on its' property located at

Grovenburg and McCue Roads and easements provided by the Holt Public School District along Kahres and Krantz roads adjacent to the High School. Further, we will suggest to Ingham County that our out-of-pocket costs associated with the Ram Trail project, which was completed last year, and the upcoming Ram Trail 2 project, which will be completed in 2017, should be considered as match. Without those two projects, and the Township's significant associated expenditure, the Ram2Burchfield Trail would not be possible. Finally, Township staff will spend a significant amount of time working on the implementation of this project, which should also be thought of as our local contribution.

While $3.5M seems like a large amount of money, it is not more than was received by the City of Lansing during the last funding round. Further, it is entirely possible that funding of the project could be spread over two of the County's fiscal years. This would enable the $3.5M cost to be spread, which would result in the County still having approximately $1.65M each year to spend on other projects (e.g. $3.4M/per year generated - $1.75M in year 1 and $1.75M in year 2 = $1.65M left over in year 1 & year 2 for other projects). This may offer a reasonable option given the huge regional impact that the Ram2Burchfield trail will have. Of course, our preference will be to receive the full funding amount during 2017, and this is what we will initially request.

Enclosed is a Board Resolution in support of our grant application. I respectfully request that you forward this to the Board for their consideration and action at the October 4th meeting. If you have any questions, or need additional information, please do not hesitate to ask. Thank you.

Recommended Motion:

To adopt Resolution No. 2016-026 which approves and supports the Grant Application to the Ingham County Trails and Parks Millage Program for the Ram2Burchfield Trail project.

DELHI CHARTER TOWNSHIP

RESOLUTION NO. 2016- 026

A Resolution to Approve and Support a Grant Application to the
Ingham County Trails and Parks Millage Program

At a Regular Meeting of the Township Board of Trustees, of the Charter Township of Delhi, Ingham County, Michigan, held at the Community Services Center, 2074 Aurelius Road, Holt, Michigan on Tuesday, the 4th day of October, 2016, at 7:30 p.m.

PRESENT:

ABSENT:

The following Resolution was offered by_____.

WHEREAS, in November 2014, Ingham county voters approved a 0.5 mill tax millage to support the development of a countywide regional trails and parks system through 2020; and

WHEREAS, the Charter Township of Delhi is eligible to apply for the millage funds; and

WHEREAS, providing non-motorized connectivity to Burchfield County Park is a priority for Ingham County; and

WHEREAS, the project to connect Ram Trail to Burchfield County Park is supported by the Township's adopted Non-motorized Transportation Plan; and

WHEREAS, the Township has already funded, constructed, and maintains 6.5 miles of trails and will shortly begin construction of the 1.3 mile Ram Trail, Phase II; and

WHEREAS, the Township has invest over $2.2 million of its own general funds to construct trails that benefit Township and County residents; and

WHEREAS, the Ram2Burchfield Trail will be a 10 foot wide, 2.75 miles long paved trail; and.

WHEREAS, the Township commits to donating easements for the trail on property owned by the Township and has secured a commitment from Holt Public Schools to donate an easement over their property; and

WHEREAS, the Township commits to maintaining the trail after it is constructed at no cost to Ingham County.

NOW, THEREFORE, BE IT RESOLVED;

1. The Township Board finds and determines that:

    a. The cost to construct the Ram II Burchfield Trail is estimated to be $3,497,400 which includes easements, design, engineering and construction.
    b. Applying for a grant to fund the entire project is desirable.
    c. The Township will donate an easement for the trail on its property.
    d. The Township will maintain the trail after it is constructed.
    e. The grant application will benefit the residents of the Charter Township of Delhi and Ingham County as a whole.

AYES:

ABSENT:

The foregoing Resolution declared adopted on the date written above.

_____
Evan Hope, Township Clerk

STATE OF MICHIGAN }
}ss
COUNTY OF INGHAM }

I, the undersigned, the duly qualified Clerk of the Charter Township of Delhi, Ingham County, Michigan, DO HEREBY CERTIFY that the foregoing is a true and complete copy of the proceedings taken by the Township Board at a regular meeting held on the 4th day of October, 2016.

IN WITNESS THEREOF, I have hereunto affixed my official signature this _____ day of October, 2016.

_____
Evan Hope, Township Clerk

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

RAM II BURCHFIELD TRAIL
DELHI CHARTER TOWNSHIP, MICHIGAN

INGHAM COUNTY TRAILS & PARKS PROGRAM GRANT APPLICATION
ENGINEER'S ESTIMATE

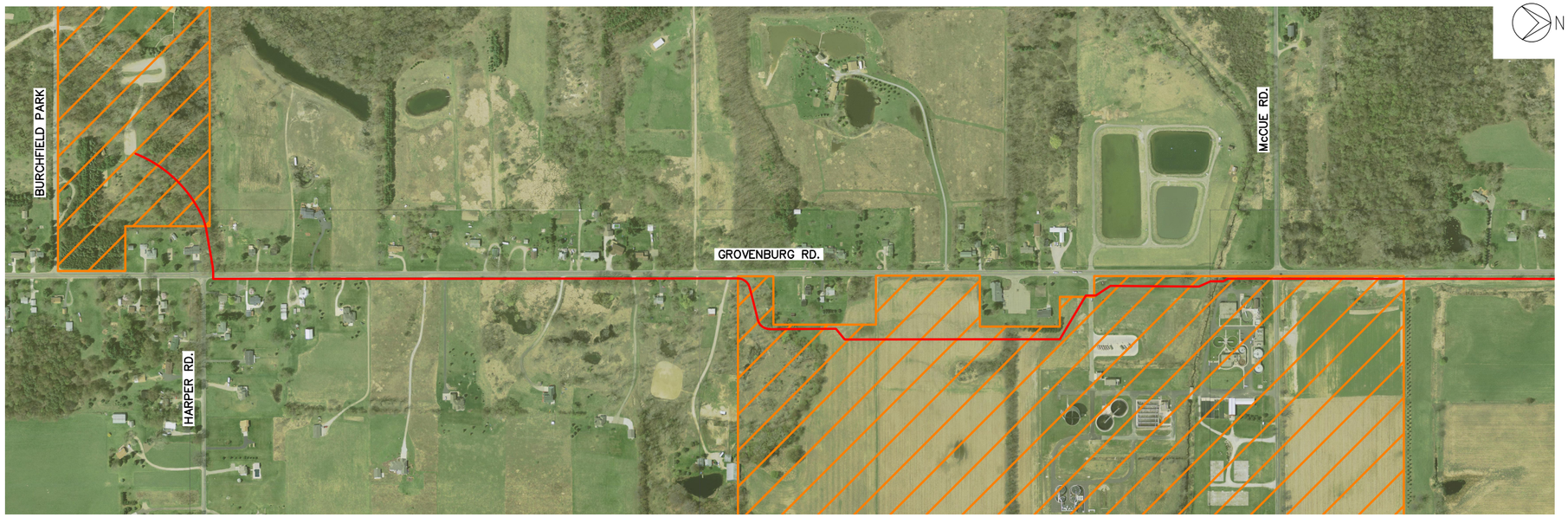
September 27, 2016 HRC JOB NO. 20160358

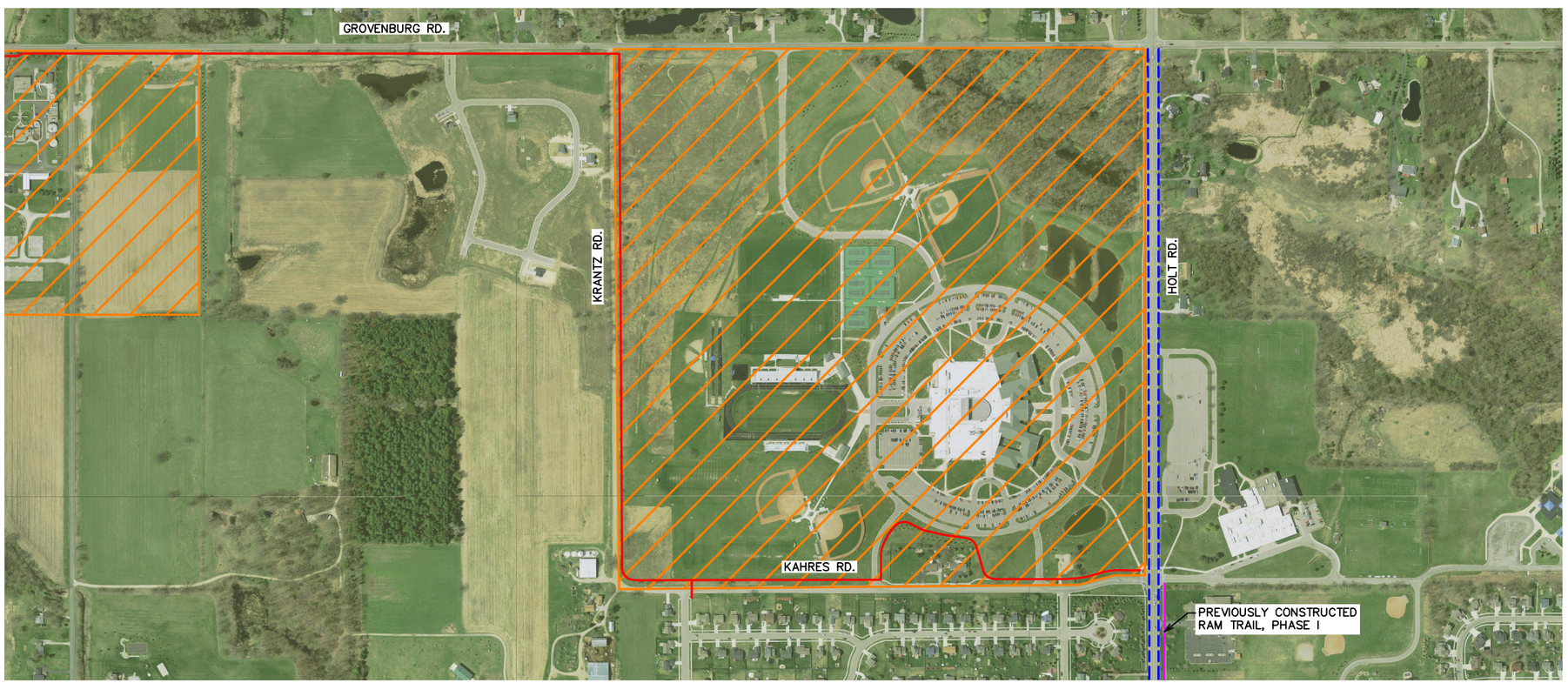
Description of Project:

- Connect to existing Ram Trail at the intersection of Holt Rd & Kahres
- Tree Removals
- Station grading for the proposed Trail
- 2.75 miles of 10' wide HMA Trail
- 3" of Asphalt and 6" of 21AA Limstone base
- 14' pre-fabricated pedestrian bridge to cross Country Drain
- Construct "Burrito Section" and culverts through wetland areas
- Provide ADA compliant ramps & crosswalks at all roadway crossings and intersections

	DESCRIPTION	TOTAL	UNIT	UNIT PRICE	COST
1	Mobilization, Max 10%	1	LS	$ 206,337.00	$206,337.00
2	Tree Removals	100	Ea	$ 750.00	$75,000.00
2	Clearing	1.5	Acre	$ 10,000.00	$15,000.00
3	Remove/ Install Fencing	1	LSUM	$ 20,000.00	$20,000.00
4	Utility Relocates	1	LSUM	$ 40,000.00	$40,000.00
5	Sidewalk, Rem	980	Syd	$ 10.00	$9,800.00
6	Subgrade Improvements	2000	Cyd	$ 50.00	$100,000.00
7	Shared Use Path, Grading, Special	14520	Ft	$ 16.00	$232,320.00
8	Miscellaneous Drainage	1	LSUM	$ 100,000.00	$100,000.00
9	Pedestrian Bridge	1	LSUM	$ 150,000.00	$150,000.00
10	Aggregate Base, 6 inch, 21AA	18000	Syd	$ 18.00	$324,000.00
11	Shared Use Path, HMA	2950	Ton	$ 95.00	$280,250.00
12	Wetland Burrito Section	3500	Syd	$ 80.00	$280,000.00
13	Driveway Repairs	1	LSUM	$ 100,000.00	$100,000.00
13	Dewatering System, Trench	300	Ft	$ 100.00	$30,000.00
14	Erosion Control	1	LSUM	$ 50,000.00	$50,000.00
15	ADA Ramps	1	LSUM	$ 40,000.00	$40,000.00
16	Project Cleanup	1	LSUM	$ 10,000.00	$10,000.00
17	Maintenance of Traffic	1	LSUM	$ 75,000.00	$75,000.00
18	Turf Establishment	17000	Syd	$ 6.00	$102,000.00
19	Pavement Markings (Crosswalks)	1	LSUM	$ 15,000.00	$15,000.00
20	Permanent Signing	1	LUM	$ 15,000.00	$15,000.00

Subtotal	$2,269,800.00
Contingency (12%)	$272,400.00
Total Construction Costs	**$2,542,200.00**
Easements	**$40,000.00**
Preliminary Engineering @ 18%	**$457,600.00**
Construction Administration @ 18%	**$457,600.00**
Ingham County Trail Grant Total	**$3,497,400.00**





LEGEND

PROPOSED RAM TRAIL

BIKE LANE TO BE CONSTRUCTED BY OTHER

PUBLIC LAND (TOWNSHIP, SCHOOL, PARK, ETC.)

PROPOSED RAM II BURCHFIELD TRAIL

DELHI CHARTER TOWNSHIP

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

DELHI CHARTER TOWNSHIP

MEMORANDUM

TO: Delhi Township Board Members

FROM: John B. Elsinga, Township Manager

DATE: September 29, 2016

RE: Resolution No. 2016-027 – Issuance of an Installment Purchase Agreement – Delhi Township/Honeywell International, Inc. Energy Savings Project

---

Enclosed for your review and approval is Resolution No. 2016-027 which authorizes the issuance of an Installment Purchase Agreement (IPA) to finance the Delhi Township/Honeywell International, Inc. Energy Savings Project estimated at $4,345,000.

Since last spring Township staff has been working with Honeywell International, Inc. to study and analyze all of our facility's energy system needs. They have also studied the operational needs of some systems that have either exceeded their useful life or are outdated and in need of replacement with energy efficient systems.

Our current annual energy cost to operate our public buildings and infrastructure is $832,917. The results of their study indicate we can achieve an annual energy savings of $113,456. That, along with additional savings of $168,002 from operational savings achieved through the replacement of old equipment with state of the art equipment and reduced maintenance requirements, will result in an estimated total annual savings of $281,458. Their findings were presented to the Township Board at both the April 5th and 19th Committee of the Whole meetings. In May the Township Board authorized the submittal of a Qualified Energy Conservation Bond (QECB) grant which would significantly reduce our interest expenses (up to 70%) on the funds we borrow for this project. The Township has since been awarded a QECB grant for the maximum amount of $4,712,493 with respect to financing this project of which the Township will utilize $4,345,000.

Therefore, I recommend the Board adopt Resolution No. 2016-027 authorizing the issuance of an Installment Purchase Agreement for the Delhi Township/Honeywell International, Inc. Energy Savings Project. The IPA will utilize the QECB low interest grant for a term not to exceed fifteen (15) years for the financing of the purchase and installation of equipment for the Energy Savings Project. Subsequent to the approval of the Installment Purchase Agreement, the Township Board will be asked to approve the Agreement between Delhi Township and Honeywell for the construction, labor, material and supervision of the project.

Recommended Motion on Next Page.

Recommended Motion:

To adopt Resolution No. 2016-027 authorizing the issuance of an Installment Purchase Agreement in the amount not to exceed $4,345,000 for the Delhi Township/Honeywell International, Inc. Energy Savings Project.

DELHI CHARTER TOWNSHIP
RESOLUTION NO. 2016-027

Charter Township of Delhi, Ingham County, Michigan (the "Issuer")

A regular meeting of the Township Board of Trustees of the Issuer (the "Board") was held in the Multipurpose Room at the Community Services Center, 2074 Aurelius Road, Holt, Michigan, in the Township, on the 4th day of October, 2016, at 7:30 o'clock in the p.m.

The meeting was called to order by _____.

Present:

Absent:

The following preamble and resolution were offered by Trustee _____ and supported by Trustee _____:

WHEREAS:

1. Act No. 99, Public Acts of Michigan, 1933, as amended, authorizes this Board to acquire real or personal property for public purposes through an installment purchase contract; and

2. The Board intends to acquire (A) certain energy conservation and related improvements to the Issuer's buildings/facilities, and (B) new LED street lights and related street lighting improvements, as well as other necessary improvements and equipment (together, the "Property") from Consumers Energy, Honeywell International Inc., and/or such other vendor(s)/contractor(s) as subsequently approved by the Board with respect to the acquisition of the Property (together, the "Vendor"), with a total cost of the Property estimated to be Four Million Seven Hundred Thirty-Eight Thousand Dollars ($4,738,000); and

3. The Board intends to enter into one or more installment purchase agreements (the "Installment Purchase Agreement") to finance all or a portion of the cost of acquiring the Property; and

4. The outstanding balance of all Issuer purchases of lands, property or equipment for public purposes, to be paid for in installments (i.e., installment purchase agreements, land contracts, leases, etc.), including purchases made pursuant to this Resolution, exclusive of interest, is $4,456,345.77; and

5. The taxable value of the real and personal property within the Issuer as of the date hereof is $718,888,120; and

6. The Issuer has received a Qualified Energy Conservation Bond ("QECB") allocation from the State of Michigan in the amount of $4,712,493 with respect to the financing of the acquisition of the Property; and

THRUN LAW FIRM, P.C.

7. The Board desires to solicit bids from financial institutions, or to negotiate an offer from a financial institution, to finance all or a portion of the cost of the Property through the issuance of the Installment Purchase Agreement(s) (the successful bidder herein referred to as the "Bank").

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The Issuer has complied with any and all applicable legal requirements with respect to competitive bidding related to the acquisition of the Property.

2. The Board determines that it is in the best interest of the Issuer to accept the offer from the Bank and to finance all or a portion of the cost of the acquisition of the Property through one or more Installment Purchase Agreements among the Issuer, the Bank and the Vendor in an aggregate principal amount not to exceed Four Million Three Hundred Forty-Five Thousand Dollars ($4,345,000) at an interest rate not to exceed five percent (5.00%) per annum based upon a 360-day year, 30-day month, over a period not to exceed fifteen (15) years with annual principal payments beginning November 1, 2017, and with semi-annual interest payments beginning May 1, 2017.

3. Principal installments of this issue maturing in the years 2017 through 2021, inclusive, shall not be subject to redemption prior to maturity. Principal installments or portions of such installments maturing in the year 2022 and thereafter shall be subject to redemption prior to maturity, at the option of the Issuer, in such order as the Issuer may determine and by lot within any maturity, on any date occurring on or after November 1, 2021, at par and accrued interest to the date fixed for redemption.

4. The Township Supervisor, Township Clerk, Township Treasurer, or Township Manager (each an “Authorized Officer”) shall execute the Installment Purchase Agreement(s) in substantially the form attached hereto as **Exhibit A** on behalf of the Issuer, with such revisions/modifications as approved by an Authorized Officer in consultation with bond counsel, and the executed Installment Purchase Agreement(s) shall be delivered to the Bank.

5. H.J. Umbaugh & Associates, Certified Public Accountants, LLP, financial advisor/consultants to the Issuer, is hereby authorized to distribute a Request for Proposals/Solicitation for Bids to financial institutions. An Authorized Officer is hereby authorized to accept the offer or bid which produces the lowest dollar interest cost to the Issuer, and which is otherwise in the best interests of the Issuer, within the parameters established by the Board in this Resolution.

6. The Issuer hereby irrevocably pledges to make the principal installments and interest payments on the Installment Purchase Agreement(s), beginning with fiscal year 2017, and during each fiscal year for which an operating budget is adopted, the first operating budget obligation within its authorized millage until such time as the principal installments and interest payments have been paid in full.

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7. The Issuer hereby pledges its limited tax full faith and credit for the payment of the principal installments and interest payments on the Installment Purchase Agreement(s), payable from ad valorem taxes which will be levied within the authorized constitutional, statutory and charter operating millage rate available to the Issuer and an irrevocable appropriation of a sufficient amount of taxes will be made each year from said millage rate for the payment of principal installments and interest payments on the Installment Purchase Agreement(s).

The obligation to pay the principal installments and interest payments will be the limited tax general obligation of the Issuer, and if tax collections are insufficient to pay the principal of or interest on the borrowing when due, the Issuer pledges to use any and all other resources available for the payment of principal and interest on the Installment Purchase Agreement(s). As further security, the Issuer may grant the Bank a security interest in the Property, if granting such a security interest is authorized pursuant to Michigan law.

8. Each Authorized Officer is further authorized to execute any documents or certificates necessary to complete the transaction. Any of those officers may designate, in writing, an individual to act in their place with respect to the powers conveyed in this paragraph.

9. The useful life of the Property is hereby determined to be not less than fifteen (15) years.

10. The Issuer hereby designates the Installment Purchase Agreement(s) as qualified energy conservation bonds pursuant to Section 54D of the Internal Revenue Code of 1986, as amended (the "Code"). In connection with such designation, the Issuer hereby represents, covenants and warrants as follows:

(a) The Issuer is a public body corporate and politic duly organized and existing under the constitution and laws of the State of Michigan with full power and authority to issue the Installment Purchase Agreement(s) and enter the transactions contemplated hereby and to perform all of its obligations hereunder.

(b) The Issuer has been duly authorized to execute and deliver the Installment Purchase Agreement(s) and other related agreements by proper action by its governing body, or by other appropriate official approval, and all requirements have been met and procedures have occurred in order to ensure the validity and enforceability of the Installment Purchase Agreement(s) and the related agreement(s) and the Issuer has complied with such public bidding requirements as may be applicable, if any, to the acquisition by Issuer of the Property. Further, the Issuer has met all applicable state and local law requirements governing conflicts of interest as well as any federal conflict of interest rules that may apply to the Installment Purchase Agreement(s) or the Property.

(c) During the term of the Installment Purchase Agreement(s), the Property will perform and will be used by Issuer only for the purpose of performing essential governmental uses and public functions of the Issuer consistent with the permissible scope of the Issuer's authority.

(d) One hundred percent (100%) or more of the available project proceeds of the Installment Purchase Agreement(s) will be used for one or more qualified conservation purposes, as defined in Section 54D of the Code.

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(e) The Board has authorized the execution and delivery of the Installment Purchase Agreement(s) and has designated the Installment Purchase Agreement(s) as Qualified Energy Conservation Bonds by Board resolution on file with the Issuer's Township Clerk.

(f) To the best of our knowledge and belief, the principal amount of the Installment Purchase Agreement(s) issued by the Issuer and approved by the Department of Treasury of the State of Michigan will not cause the State's Qualified Energy Conservation Bond allocation under the Code to be exceeded. Further, except for the approvals by the Issuer's Board and the Department of Treasury, no other governmental or regulatory approvals are required as a condition or execution and delivery of this Resolution and the Installment Purchase Agreement(s).

11. The Issuer hereby covenants to comply with all applicable provisions of the Internal Revenue Code of 1986, as amended, including Section 54D thereof, and the regulations of the Treasury Department thereunder, from time to time proposed or in effect, in order for the Installment Purchase Agreement(s) to qualify as Qualified Energy Conservation Bonds under Section 54D and to maintain the tax credits under Section 54A for an eligible taxpayer.

12. The outstanding balance of all of the Issuer's contractual agreements for the purchase of real or personal property, exclusive of interest, does not exceed 1.25% of the taxable valuation of real and personal property in the Issuer.

13. Bids/offers for the Installment Purchase Agreement(s) shall be conditioned upon the unqualified approving opinion of Thrun Law Firm, P.C., East Lansing, Michigan, bond counsel, the original of such opinion will be furnished without expense to the Bank at the delivery of the Installment Purchase Agreement(s).

14. The financial consulting firm of H.J. Umbaugh & Associates, Certified Public Accountants, LLP, is hereby appointed as financial advisor/consultants to the Issuer with reference to the issuance of the Installment Purchase Agreement(s) herein authorized.

15. All resolutions and parts of resolutions insofar as they conflict with the provisions of this Resolution be and the same are hereby rescinded.

Ayes:

Nays:

Resolution declared adopted.

_____
Evan Hope, Township Clerk
Charter Township of Delhi

The undersigned duly qualified and acting Township Clerk of the Charter Township of Delhi, Ingham County, Michigan, hereby certifies that the foregoing constitutes a true and complete copy of a resolution adopted by the Township Board of Trustees at a regular meeting held on

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October 4, 2016, the original of which is part of the Township Board's minutes. The undersigned further certifies that notice of the meeting was given to the public pursuant to the provisions of the "Open Meetings Act" (Act 267, Public Acts of Michigan, 1976, as amended).

_____
Evan Hope, Township Clerk
Charter Township of Delhi

MDG:

EXHIBIT A

INSTALLMENT PURCHASE AGREEMENT

(FEDERALLY TAXABLE – QUALIFIED ENERGY CONSERVATION BONDS)

PART I

"OBLIGOR" means _____

"VENDOR" means _____

"Property" means _____

_____

_____

"Purchase Price" means $_____

"Contract Amount" and "Principal" mean $_____

"Maturity Date", "Principal Installment", and "Interest Payment" shall have the meanings as described in Attachment A.

"Dated Date" means _____, _____

"Interest Rate" means the interest rates pursuant to Part II of this Installment Purchase Agreement which shall be _____.

The provisions of Part II of this Installment Purchase Agreement are hereby approved and incorporated herein.

PART II

THIS INSTALLMENT PURCHASE AGREEMENT (the "Installment Purchase Agreement") is dated as of the Dated Date by and between the OBLIGOR, a Michigan municipal corporation, the VENDOR, and _____(the "BANK"), as assignee of VENDOR or registered assigns. All capitalized terms not defined in Part II shall have the meaning set forth in Part I.

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1. Purchase Price, Title and Useful Life. The OBLIGOR agrees to purchase and VENDOR agrees to sell and provide the Property to the OBLIGOR for the Purchase Price. The Purchase Price includes all property, equipment, material, labor, tools, freights, service, cabling and installation. The BANK will pay the Contract Amount to the OBLIGOR in federal funds by wire transfer or other agreed upon method and the OBLIGOR will pay the full Purchase Price including the difference, if any, between the Contract Amount and the Purchase Price to the VENDOR immediately upon the receipt of the Contract Amount and the delivery of the Property to and acceptance of the Property by the OBLIGOR. Upon delivery to and acceptance by the OBLIGOR, title to the Property shall vest in the OBLIGOR. The OBLIGOR shall not sell, assign title to, lease, or obtain further financing with respect to the Property except with the permission of the BANK while Principal remains outstanding under this Installment Purchase Agreement. The OBLIGOR agrees that the useful life of the Property is equal to or longer than the date of the final payment hereunder. The BANK may pledge this Installment Purchase Agreement as security for any obligation of the BANK.

2. Repayment Provisions. The OBLIGOR agrees to pay to the BANK the Principal in the Principal Installments on the Maturity Dates and interest payments on the unpaid Principal balance from the Dated Date at the Interest Rate on the Interest Payment Dates. The Interest Rate shall be the rate set forth in Part I. Interest shall accrue on the unpaid balance of the Principal from the date hereof at the Interest Rate computed on the basis of a 360-day year, 30-day month.

Principal Installments maturing in the years 2017 through 2021, inclusive, shall not be subject to redemption prior to maturity. Principal Installments or portions of such Principal Installments maturing in the year 2022 and thereafter shall be subject to redemption prior to maturity, at the option of the OBLIGOR, in such order as the OBLIGOR may determine and by lot within any maturity, on any date occurring on or after November 1, 2021, at par and accrued interest to the date fixed for redemption.

It is expressly agreed between the VENDOR and the OBLIGOR, and the BANK by acceptance of the assignment of this Installment Purchase Agreement, that the OBLIGOR shall make all payments of principal or interest due hereunder directly to the BANK or to a depository as shall be designated in writing by the BANK. The OBLIGOR further agrees that it will deposit with the BANK, or if so directed shall deposit with said depository, all payments of principal or interest due hereunder in immediately available funds at least one business day before the date on which said principal or interest due hereunder is due or in such other manner or such other time as the BANK shall approve.

3. Incorporation by Reference. The VENDOR agrees to all of the instructions, terms and conditions as outlined in the OBLIGOR'S invitation for bids and the acceptance of the VENDOR'S bid by the OBLIGOR or any other agreement between the OBLIGOR and the VENDOR to purchase the Property (the "Purchase Agreement"). In the event of a conflict in terms between this document and the Purchase Agreement the specific terms of this Installment Purchase Agreement shall govern.

4. Assignment by VENDOR to BANK. The VENDOR hereby irrevocably assigns this Installment Purchase Agreement immediately to the BANK in consideration for payment from the BANK of the Contract Amount. The OBLIGOR hereby consents to that assignment,

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except with respect to the warranties and other obligations of the VENDOR set forth in Paragraphs 4, 7 and 9 of this Installment Purchase Agreement, all of which shall remain the sole responsibility of the VENDOR and shall not be assignable and the VENDOR hereby acknowledges that all of said warranties and other obligations shall not be assigned and remain the sole responsibility of the VENDOR. The OBLIGOR'S obligation to the BANK is absolute and unconditional and shall remain in full force and effect until the amounts owed hereunder shall have been paid by the OBLIGOR to the BANK and such obligation shall not be affected, modified or impaired upon the happening from time to time of any event, including without limitation any of the following:

a. Any failure of title with respect to the VENDOR'S interest in the Property or the invalidity, enforceability or termination of this Installment Purchase Agreement;

b. The modification or amendment (whether material or otherwise) of any obligation, covenant or agreement set forth in this Installment Purchase Agreement;

c. The voluntary or involuntary liquidation, dissolution, sale or other disposition of all or substantially all of the assets, marshaling of assets and liabilities, receivership, insolvency, bankruptcy, assignment for the benefit of creditors, reorganization, arrangement, composition with creditors or readjustment or other similar proceedings affecting the VENDOR or any of its assets or any allocation or contest of the validity of this Installment Purchase Agreement, or the disaffirmance of this Installment Purchase Agreement in any such proceedings;

d. To the extent permitted by law, any event or action which would, in the absence of this clause, result in release or discharge by operation of law of the VENDOR from the performance or observation of any obligation, covenant or agreement contained in this Installment Purchase Agreement;

e. The default or failure of the VENDOR fully to perform any of its obligations set forth in this Installment Purchase Agreement or any other agreement; or

f. Any casualty or destruction of the Property.

After payment of the Contract Amount, the BANK shall have no liability for payment of monies to the VENDOR or for the performance of any obligations to the VENDOR. The VENDOR represents and warrants that the assignment of this Installment Purchase Agreement to the BANK does not violate any agreement, contract, or loan agreement to which it is a party and that the Installment Purchase Agreement has been duly executed and delivered by the VENDOR.

5. Limited Tax General Obligation. The obligation of the OBLIGOR to pay Principal Installments and interest payments is a limited tax general obligation subject to applicable constitutional, statutory and charter limitations, if any, on the taxing power of the OBLIGOR. The OBLIGOR shall include in its budget and pay each year, until this Installment Purchase Agreement is paid in full, such sum or sums as may be necessary each year to make payments of the Principal Installments and interest when due.

6. Delivery Date. It is agreed that the VENDOR has delivered or will deliver the Property. If the Property is not delivered simultaneously with the execution of this Installment

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Purchase Agreement, the VENDOR agrees to deliver the Property as provided in the Purchase Agreement.

7. Tax Covenant. The OBLIGOR covenants to comply with all applicable provisions of the Internal Revenue Code of 1986, as amended, including Section 54D thereof, and the regulations of the Treasury Department thereunder, from time to time proposed or in effect, in order for this Installment Purchase Agreement to qualify as Qualified Energy Conservation Bonds under Section 54D and to maintain the tax credits under Section 54A for an eligible taxpayer.

8. Warranty. Warranties, if any, with respect to the Property shall not be assigned but shall remain enforceable by the OBLIGOR.

9. Entire Agreement. Except for closing documents delivered in connection with the Installment Purchase Agreement to the BANK, this Installment Purchase Agreement (including the provisions of the Purchase Agreement incorporated by reference in Paragraph 3 above) constitutes the entire agreement of the parties. All other prior or contemporaneous agreements, understandings, representations and statements, oral or written, are hereby terminated.

10. Amendments. Any attempt to modify the term of this Installment Purchase Agreement or of any supporting document shall be ineffectual unless approved in writing by the BANK.

11. Counterparts. This Installment Purchase Agreement may be executed in any number of counterparts and all of said counterparts taken together shall be deemed to constitute one and the same agreement.

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VENDOR:

_____
_____

By:_____

Its:_____

OBLIGOR:

CHARTER TOWNSHIP OF DELHI
COUNTY OF INGHAM
STATE OF MICHIGAN

By:_____

Its:_____

Approved:

BANK:

_____

By:_____

Its:_____

THRUN
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ATTACHMENT A

MATURITY SCHEDULE

MATURITY DATE	PRINCIPAL INSTALLMENT	INTEREST PAYMENT	TOTAL
Nov. 1, 2017			
Nov. 1, 2018			
Nov. 1, 2019			
Nov. 1, 2020			
Nov. 1, 2021			
Nov. 1, 2022			
Nov. 1, 2023			
Nov. 1, 2024			
Nov. 1, 2025			
Nov. 1, 2026			
Nov. 1, 2027			
Nov. 1, 2028			
Nov. 1, 2029			
Nov. 1, 2030			
Nov. 1, 2031			
TOTAL	$4,345,000.00		

THRUN LAW FIRM, P.C.

DELHI CHARTER TOWNSHIP

MEMORANDUM

TO: Delhi Township Board Members

FROM: John B. Elsinga, Township Manager

DATE: September 29, 2016

RE: Agreement between Delhi Charter Township and Honeywell International, Inc. – Energy Savings Project

---

Enclosed for your review and approval is an Agreement between Delhi Charter Township and Honeywell International, Inc. for the construction supervision, inspection, labor, materials, tools, equipment and subcontracted items necessary to complete the Delhi Township Energy Savings Project.

At the May 4, 2016 Township Board meeting, the Board entered into a Letter of Intent with Honeywell International, Inc. to complete their evaluation of the Township's various facility energy system needs and also apply for a Qualified Energy Conservation Bond grant which reduces our interest expenses up to 70% for funds borrowed to complete this project.

Now that the evaluation is complete, this Agreement will provide for the reduction of energy costs by over 20% through LED light conversions, reduced energy heat tubes in the Fire Department bays along with replacing outdated HVAC systems at both our townhall facility and the POTW, to name a few. The HVAC systems at both facilities are at the end of their useful life (over 20 years old) and have required an abundant amount of maintenance of the past few years. This Agreement allows for their replacement, which is necessary regardless, utilizing the QECB low interest grant.

The proposed Agreement allows for Honeywell to complete the necessary energy conversions as outlined in the Agreement in the total amount of $4,345,000 to be funded through an Installment Purchase Agreement utilizing the QECB interest reduction grant. It also has a guaranteed return (by Honeywell) on our investment within fifteen years. Therefore, I recommend approval of the same.

Recommended Motion:

To approve the Agreement between Delhi Charter Township and Honeywell International, Inc. for the Delhi Township Energy Savings Project, subject to legal counsel approval, at a cost not to exceed $4,345,000 to be funded through an Installment Purchase Agreement utilizing a Qualified Energy Conservation Bond grant.

Performance Contract Project Builder

Honeywell

		Selected Project Summary					
		1=IN	Estimated Cost	Estimated Utility Rebate	Estimated Utility Savings	Estimated Operational Savings	Total Savings
Building(s)	**Category**						
Township Improvements	Interior Lighting Improvements Exterior Lighting Improvements Interior Lighting Controls Decorative Street Light Conversion to LED	1	$826,657	$31,213	$52,097	$5,307	$57,404
Township Improvements	Consumers Energy Owned COBRAHEAD Streetlight Conversion to LED	1	$168,231	$0	$27,294	$0	$27,294
Senior Center	Re-Commission Multi-Purpose RTU Controls	1	$2,000	$0	$150	$200	$350
Community Service Center	HVAC System & Temperature Controls Upgrade	1	$2,001,845	$15,000	$21,619	$98,866	$120,485
POTW	HVAC System & Temperature Controls Upgrade	1	$649,733	$5,000	$6,302	$30,296	$36,597
POTW	Primary Sludge Building Make up Air Unit	1	$85,662	$0	-$1,016	$0	-$1,016
POTW	(2) Neuros Blowers	1	$578,978	$9,000	$7,010	$33,333	$40,344
	TOTALS		**$4,313,106**	**$60,213**	**$113,455**	**$168,002**	**$281,458**

Honeywell

Performance Contract Expanded Cash Flow
15 Year Program

General Fund Investment	$2,566,341
POTW Investment	$1,578,534
Consumers Energy Cobrahead Streetlight Investment	$168,231
TOTAL PROJECT INVESTMENT	$4,313,106
Projected Rebates	$60,213
Net QECB Investment	$4,252,893
Guaranteed Energy Savings	$113,455
Guaranteed Operational Savings	$168,002
Ongoing Support Services	$11,200
Estimated QECB Lease Rate	4.00%
Payments per Year	2
Inflation Rate	4.00%

QUALIFIED ENERGY CONSERVATION BOND									
Year	ANNUAL INVESTMENT			ANNUAL SAVINGS				CASHFLOW	
	QECB Installment Purchase Payment	Support Services	Total Annual Costs	Energy Savings	Operational Savings	Interest Reimbursement	Total Annual Savings	Net Annual Cashflow	Net Cashflow
0							$112,583	$112,583	$112,583
1	($379,783)	($11,200)	($390,983)	$113,455	$168,002	$115,800	$397,258	$6,275	$118,858
2	($379,783)	($11,648)	($391,431)	$117,993	$174,723	$110,017	$402,733	$11,302	$130,160
3	($379,783)	($12,114)	($391,897)	$122,713	$181,711	$104,002	$408,427	$16,530	$146,691
4	($379,783)	($12,598)	($392,381)	$127,622	$188,980	$97,747	$414,349	$21,968	$168,658
5	($379,783)	($13,102)	($392,885)	$132,727	$196,539	$91,242	$420,508	$27,623	$196,281
6	($379,783)	($13,627)	($393,409)	$138,036	$204,401	$84,477	$426,913	$33,504	$229,784
7	($379,783)	($14,172)	($393,954)	$143,557	$212,577	$77,440	$433,574	$39,620	$269,404
8	($379,783)	($14,738)	($394,521)	$149,299	$221,080	$70,123	$440,502	$45,981	$315,385
9	($379,783)	($15,328)	($395,111)	$155,271	$229,923	$62,513	$447,707	$52,596	$367,981
10	($379,783)	($15,941)	($395,724)	$161,482	$239,120	$54,598	$455,200	$59,476	$427,457
11	($379,783)	($16,579)	($396,361)	$167,941	$248,685	$46,367	$462,993	$66,631	$494,088
12	($379,783)	($17,242)	($397,025)	$174,659	$258,632	$37,806	$471,097	$74,073	$568,160
13	($379,783)	($17,932)	($397,714)	$181,645	$268,977	$28,903	$479,526	$81,812	$649,972
14	($379,783)	($18,649)	($398,432)	$188,911	$279,736	$19,644	$488,292	$89,860	$739,832
15	($379,783)	($19,395)	($399,178)	$196,468	$290,926	$10,015	$497,408	$98,231	$838,063
Totals	($5,696,741)	($224,264)	($5,921,005)	$2,271,780	$3,364,011	$1,010,693	$6,759,068	$838,063	$838,063

HONEYWELL
AGREEMENT

CUSTOMER NAME:	Delhi Charter Township
DATE OF SUBMISSION:	September 9, 2016 Revised: September 26, 2016
VALIDITY PERIOD:	Price valid until November 30, 2016

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ARTICLE 1
GENERAL PROVISIONS

1.1 This Agreement, including all attachments, exhibits, and schedules referenced herein (hereinafter the "Agreement") is made by and between Honeywell International Inc. ("HONEYWELL"), a Delaware Corporation, acting through its Automation and Control Solutions business unit, with a principal place of business at 101 Columbia Road, Morristown, New Jersey 07962-1057, and Delhi Charter Township, 2074 Aurelius Road, Holt, MI 48842-6320 ("CUSTOMER," and together with HONEYWELL, the "Parties"). The Agreement is effective as of the date of the later signature of the respective Parties (the "Effective Date").

1.2 As used in this Agreement, the term "Work" means the construction and services required by the Contract Documents (as defined below), whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by HONEYWELL to fulfill HONEYWELL's obligations, as described in Attachment A and otherwise set forth in the Contract Documents. The "Contract Documents" consist of this Agreement, its attachments, exhibits, schedules, and addenda. The Work may constitute the whole or a part of the Project. The "Project" is the total construction of which the Work performed by HONEYWELL under this Agreement may be the whole or a part. The Work specifically excludes certain design and construction relating to the Project, which are the subject of separate agreements between CUSTOMER and parties other than HONEYWELL.

1.3 "Support Services" means those services and obligations to be undertaken by HONEYWELL in support of CUSTOMER as set forth in Attachment D – Guarantee and Support Services Agreement.

ARTICLE 2
HONEYWELL'S RESPONSIBILITIES

2.1 HONEYWELL Work

2.1.1 HONEYWELL shall be responsible for construction of the Work.

2.1.2 HONEYWELL shall perform Work during mutually agreed upon hours that will least disrupt CUSTOMER'S operations.

2.1.3 HONEYWELL will assist CUSTOMER in securing construction permits necessary for the Work.

2.2 Responsibilities with Respect to the Work

2.2.1 HONEYWELL will provide construction supervision, inspection, labor, materials, tools, construction equipment and subcontracted items necessary for the execution and completion of the Work.

2.2.2 HONEYWELL shall keep the premises in an orderly fashion and free from unnecessary accumulation of waste materials or rubbish caused by its operations. If HONEYWELL damages property not needed for the Work, HONEYWELL shall repair the property to its pre-existing condition unless CUSTOMER directs otherwise. At the completion of the Work, HONEYWELL shall remove waste material supplied by HONEYWELL under this Agreement as well as all its tools, construction equipment, machinery and surplus material. Waste shall be disposed of as follows:

(a) Construction Waste and/or Non-hazardous Waste: Construction waste (cardboard, metal, wood crates, plastic, wiring, etc.), and/or non-hazardous waste (non-PCB ballast's, lamps, batteries, etc.), shall be removed offsite by HONEYWELL or its subcontractors for disposal and/or recycling. The CUSTOMER's name and address shall be listed on the shipping documents as the owner/generator of the waste. The transportation of waste materials will meet local regulatory requirements.

(b) Hazardous Waste: If and to the extent HONEYWELL is responsible for removal of hazardous waste pursuant to the express provisions of the Attachment A Scope of Work, HONEYWELL or its subcontractors shall contract with a licensed transporter for the removal of the applicable hazardous waste (PCB's, mercury, asbestos, etc.). The CUSTOMER's name and address shall be listed on the shipping documents as the owner/generator of the waste. The transportation of waste materials will meet local regulatory requirements.

2.2.3 HONEYWELL shall give all notices and comply with all laws and ordinances legally enacted as of the date of execution of the Agreement governing the execution of the Work. Provided, however, that HONEYWELL shall not be responsible nor liable for the violation of any code, law or ordinance caused by CUSTOMER or existing in CUSTOMER's property prior to the commencement of the Work.

2.2.4 HONEYWELL shall comply with all applicable federal, state and municipal laws and regulations that regulate the health and safety of its workers while providing the Work, and shall take such measures as required by those laws and regulations to prevent injury and accidents to other persons on, about or adjacent to any Site (as defined in Section 3.8.4). It is understood and agreed, however, that HONEYWELL shall have no responsibility for elimination or abatement of health or safety hazards created or otherwise resulting from activities at any Site carried on by persons not in a contractual relationship with HONEYWELL, including CUSTOMER, CUSTOMER's contractors or subcontractors, CUSTOMER's tenants or CUSTOMER's visitors. CUSTOMER agrees to cause its contractors, subcontractors and tenants to comply fully with all applicable federal, state and municipal laws and regulations governing health and safety and to comply with all reasonable requests and directions of HONEYWELL for the elimination or abatement of any such health or safety hazards at any Site**.**

2.3 <u>Patent Indemnity</u>

2.3.1 HONEYWELL shall, at its expense, defend or, at its option, settle any suit that may be instituted against CUSTOMER for alleged infringement of any United States patents related to the hardware manufactured and provided by HONEYWELL under this Agreement, provided that: (a) such alleged infringement consists only in the use of such hardware by itself and not as part of, or in combination with, any other devices, parts or software not provided by HONEYWELL hereunder; (b) CUSTOMER gives HONEYWELL immediate notice in writing of any such suit and permits HONEYWELL, through counsel of its choice, to answer the charge of infringement and defend such suit; and (c) CUSTOMER gives HONEYWELL all needed information, assistance and authority, at HONEYWELL's expense, to enable HONEYWELL to defend such suit.

2.3.2 If such a suit has occurred, or in HONEYWELL's opinion is likely to occur, HONEYWELL may, at its election and expense: (a) obtain for CUSTOMER the right to continue using such hardware; (b) replace, correct or modify it so that it is not infringing; or (c) remove such hardware and grant CUSTOMER a credit therefor, as depreciated.

2.3.3 In the case of a final award of damages in any such suit, HONEYWELL will pay such award. HONEYWELL shall not, however, be responsible for any settlement made without its written consent.

2.3.4 THIS ARTICLE STATES HONEYWELL'S TOTAL LIABILITY AND CUSTOMER'S SOLE REMEDY FOR ANY ACTUAL OR ALLEGED INFRINGEMENT OF ANY PATENT OR OTHER INTELLECTUAL PROPERTY RIGHTS BY THE HARDWARE MANUFACTURED AND PROVIDED BY HONEYWELL HEREUNDER. IN NO EVENT SHALL HONEYWELL BE LIABLE FOR ANY INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY SUCH ACTUAL OR ALLEGED INFRINGEMENT, EXCEPT AS SET FORTH IN THIS SECTION 2.3.

2.4 <u>Warranties and Completion</u>

2.4.1 HONEYWELL warrants CUSTOMER good and clear title to all equipment and materials furnished to CUSTOMER pursuant to this Agreement (except licensed software, which shall be governed exclusively by the terms and conditions of the Software License Agreement, attached hereto as Attachment B), free and clear of liens and encumbrances. HONEYWELL hereby warrants that all such equipment and materials shall be of good quality and shall be free from defects in materials and workmanship, including installation and setup, for a period of one (1) year from the earlier of the date of first beneficial use, or substantial completion of the equipment or portion of the Work in question, provided that no repairs, substitutions, modifications, or additions have been made, except by HONEYWELL or with HONEYWELL's written permission, and provided that after delivery such equipment or materials have not been subjected by non-HONEYWELL personnel to accident, neglect, misuse, or use in violation of any instructions supplied by HONEYWELL. HONEYWELL's sole liability hereunder shall be to repair promptly or replace defective equipment or materials, at HONEYWELL's option and at HONEYWELL's expense. The limited warranty contained in this Section 2.4.1 shall constitute the exclusive remedy of CUSTOMER and the exclusive liability of HONEYWELL for any breach of any warranty related to the equipment and materials furnished by HONEYWELL pursuant to this Agreement.

2.4.2 In addition to the warranty set forth in Section 2.4.1 above, HONEYWELL shall, at CUSTOMER's request, assign to CUSTOMER any and all manufacturer's or installer's warranties for equipment or materials not manufactured by HONEYWELL and provided as part of the Work, to the extent that such third-party warranties are assignable and extend beyond the one (1) year limited warranty set forth in Section 2.4.1.

2.4.3 THE WARRANTIES SET FORTH HEREIN ARE EXCLUSIVE, AND HONEYWELL EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, WHETHER WRITTEN OR ORAL, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE EQUIPMENT AND MATERIALS PROVIDED HEREUNDER. HONEYWELL SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM, OR RELATING TO, THIS LIMITED WARRANTY OR ITS BREACH.

ARTICLE 3
CUSTOMER'S RESPONSIBILITIES

3.1 CUSTOMER shall provide HONEYWELL full information regarding the requirements for the Work.

3.2 CUSTOMER shall designate a representative who shall be fully acquainted with the Work, and who has authority to approve changes in the scope of the Work and render decisions promptly.

3.3 CUSTOMER shall furnish to HONEYWELL all information regarding legal limitations, utility locations and other information reasonably pertinent to this Agreement, the Work and the Project.

3.4 CUSTOMER shall secure and pay for all necessary approvals, easements, assessments and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities, including charges for legal and auditing services.

3.5 If CUSTOMER becomes aware of any fault or defect in the Work, it shall give prompt written notice thereof to HONEYWELL.

3.6 The services and information required by the above paragraphs shall be furnished with reasonable promptness at CUSTOMER's expense and HONEYWELL shall be entitled to rely upon the accuracy and the completeness thereof.

3.7 Prior to the commencement of the Work and at such future times as HONEYWELL shall reasonably deem appropriate, CUSTOMER shall furnish evidence in a form satisfactory to HONEYWELL that sufficient funds are available and committed to pay for the Work. Unless such evidence is furnished, HONEYWELL is not required to commence or continue any Work. Further, if CUSTOMER does not provide such evidence, HONEYWELL may stop work upon fifteen (15) days notice to CUSTOMER. The failure of HONEYWELL to insist upon the providing of this evidence at any one time shall not be a waiver of CUSTOMER's obligation to make payments pursuant to this Agreement, nor shall it be a waiver of HONEYWELL's right to request or insist that such evidence be provided at a later date.

3.8 HAZARDOUS SUBSTANCES, MOLD AND UNSAFE WORKING CONDITIONS

3.8.1 "Hazardous Substance" includes, but is not limited to, all of the following, whether naturally occurring or manufactured, in quantities, conditions or concentrations that have, are alleged to have, or are believed to have an adverse effect on human health, habitability of a site, or the environment: (a) any dangerous, hazardous or toxic pollutant, contaminant, chemical, material or substance defined as hazardous or toxic or as a pollutant or contaminant under local, state or federal law; (b) any petroleum product, nuclear fuel or material, carcinogen, asbestos, urea formaldehyde, foamed-in-place insulation, polychlorinated biphenyl (PCBs); or (c) any other chemical or biological material or organism, that has, is alleged to have, or is believed to have an adverse effect on human health, habitability of a site, or the environment. This includes any related conditions or any such conditions caused by third parties.

3.8.2 "Mold" means any type or form of fungus or biological material or agent, including mold, mildew, moisture, yeast and mushrooms, and any mycotoxins, spores, scents, or by-products produced or released by any of the foregoing.

3.8.3 "Supplied Equipment" means the equipment covered by the Work to be performed by HONEYWELL under this Agreement, and is limited to the new equipment included in Attachment A ("Scope of Work").

3.8.4 CUSTOMER has not observed or received notice from any source (formal or informal) of (a) Hazardous Substances or Mold, either airborne or on or within the walls, floors, ceilings, heating, ventilation and air conditioning systems, plumbing systems, structure, and other components of the sites of the Work or the Support Services (each a "Site," and collectively, the "Sites"), or within furniture, fixtures, equipment, containers or pipelines in a Site; or (b)

conditions that, to CUSTOMER'S knowledge, might cause or promote accumulation, concentration, growth or dispersion of Hazardous Substances or Mold on or within such locations.

3.8.5 HONEYWELL is not responsible for determining whether the Supplied Equipment, the Covered Equipment (as defined in Attachment D), or the temperature, humidity and ventilation settings used by CUSTOMER are appropriate for CUSTOMER and the Sites with respect to avoiding or minimizing the potential for accumulation, concentration, growth or dispersion of any Hazardous Substance or Mold.

3.8.6 If any such materials, situations or conditions, whether disclosed or not, are in fact discovered by HONEYWELL or others and provide an unsafe condition for the performance of the Work or Support Services, the discovery of the condition shall constitute a cause beyond HONEYWELL'S reasonable control and HONEYWELL shall have the right to cease the Work or Support Services until the area has been made safe by CUSTOMER or CUSTOMER'S representative, at CUSTOMER'S expense. HONEYWELL shall have the right to terminate this Agreement if CUSTOMER has not fully remediated the unsafe condition within sixty (60) days of discovery.

3.8.7 CUSTOMER represents that CUSTOMER has not retained HONEYWELL to discover, inspect, investigate, identify, prevent or remediate Hazardous Substances or Mold or conditions caused by Hazardous Substances or Mold.

3.8.8 HONEYWELL SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OR COSTS OF ANY NATURE, INCLUDING BUT NOT LIMITED TO, CONSULTANTS' AND ATTORNEYS' FEES, DAMAGES FOR BODILY INJURY AND PROPERTY DAMAGE, FINES, PENALTIES, CLEANUP COSTS AND COSTS ASSOCIATED WITH DELAY OR WORK STOPPAGE, THAT IN ANY WAY RESULTS FROM OR ARISES UNDER THE BREACH OF THE REPRESENTATIONS AND WARRANTIES IN THIS SECTION, THE EXISTENCE OF MOLD OR A HAZARDOUS SUBSTANCE AT A SITE, OR THE OCCURRENCE OR EXISTENCE OF THE SITUATIONS OR CONDITIONS DESCRIBED IN THIS SECTION, WHETHER OR NOT CUSTOMER PROVIDES HONEYWELL ADVANCE NOTICE OF THE EXISTENCE OR OCCURRENCE AND REGARDLESS OF WHEN THE HAZARDOUS SUBSTANCE OR OCCURRENCE IS DISCOVERED OR OCCURS. THIS DISCLAIMER SHALL SURVIVE TERMINATION OR EXPIRATION OF THIS AGREEMENT FOR WHATEVER REASON.

3.9 In addition to the price set forth in Article 6 of this Agreement, CUSTOMER shall pay any present and future taxes or any other governmental charges now or hereafter imposed by existing or future laws with respect to the sale, transfer, use, ownership or possession of the Work or any Support Services provided hereunder, excluding taxes on HONEYWELL's net income.

3.10 CUSTOMER shall execute a software license in the form of the Software License Agreement attached hereto as Attachment B. Failure of CUSTOMER to execute such Software License Agreement shall excuse HONEYWELL from any delivery requirements pursuant to this Agreement and shall be considered a material breach by CUSTOMER.

3.11 Tax-Related Cooperation. CUSTOMER agrees to execute any documents and to provide additional reasonable cooperation to HONEYWELL related to HONEYWELL tax filings under Internal Revenue Code Section 179D. HONEYWELL will be designated the sole Section 179D (or any amendment thereof or replacement legislation) beneficiary.

3.12 Representations and Warranties. CUSTOMER hereby represents and warrants to HONEYWELL that:

3.12.1 CUSTOMER has all requisite power and authority necessary to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder and is not prohibited from entering into this Agreement or discharging and performing all covenants and obligations on its part to be performed under and pursuant to this Agreement. The execution, delivery and performance of this Agreement by CUSTOMER and the selection of, and the award of this Agreement to, HONEYWELL have been duly authorized by all necessary action on the part of CUSTOMER and do not and will not require the consent of any trustee or holder of any indebtedness or other obligation of CUSTOMER, any other party to any other agreement with CUSTOMER or any other person or entity.

3.12.2 The selection of and award of this Agreement to HONEYWELL, execution and delivery of this Agreement, performance of all services, actions and responsibilities contemplated herein, and fulfillment of and compliance by CUSTOMER with the provisions of this Agreement do not and will not conflict with or constitute a breach of or a default under CUSTOMER's charter, as adopted by the laws of the state in which CUSTOMER is located, or any other applicable law, rule, ordinance, code or regulation, including but not limited to government procurement, competitive bidding, public notice, open meetings, or prior appropriation requirements. This Agreement meets the requirements of and complies with the CUSTOMER's charter and all other applicable laws, rules, ordinances, codes,

and regulations. CUSTOMER has properly and validly selected HONEYWELL and awarded this Agreement to HONEYWELL pursuant to and in reliance on such charter, laws, rules, ordinances, codes, and regulations.

3.12.3 This Agreement has been duly executed and delivered by CUSTOMER. This Agreement is a legal, valid and binding obligation of CUSTOMER enforceable against CUSTOMER in accordance with its terms, except as such enforceability is limited by laws of general applicability limiting the enforcement of creditors' rights.

ARTICLE 4
SUBCONTRACTS

4.1 At its exclusive option, HONEYWELL may subcontract some or all of the Work or Support Services.

4.2 A Subcontractor is a person or entity who has a direct contract with HONEYWELL to perform any effort in connection with the Work. The term Subcontractor does NOT include any separate contractors employed by CUSTOMER or such separate contractors' subcontractors.

4.3 For the purposes of this Agreement, no contractual relationship shall exist between CUSTOMER and any Subcontractor. HONEYWELL shall be responsible for the management of its Subcontractors in their performance of their Work.

ARTICLE 5
INSTALLATION AND ACCEPTANCE

5.1 The Work to be performed under this Agreement shall be commenced and substantially completed as set forth in the Installation Schedule attached hereto as Attachment C, which describes the Parties' intentions respecting the times by which the components or aspects of the Work therein set forth shall be installed and/or ready for acceptance or beneficial use by CUSTOMER. The Installation Schedule may be adjusted to reflect the final Effective Date, or as otherwise set forth in this Agreement.

5.2 If HONEYWELL is delayed at any time in the progress of performing its obligations under this Agreement by any act of CUSTOMER or any contractor employed by CUSTOMER; or by changes ordered or requested by CUSTOMER in the Work performed pursuant to this Agreement; or by labor disputes, fire, unusual delay in transportation, adverse weather conditions or other events or occurrences which could not be reasonably anticipated; or unavoidable casualties; or any other problem beyond HONEYWELL's reasonable control (an "Excusable Delay"), then the time for performance of the obligations affected by such Excusable Delay shall be extended by the period of any delay actually incurred as a result thereof. If any delay, or cumulative delays, within CUSTOMER's reasonable control, extends beyond twenty (20) days, CUSTOMER shall reimburse HONEYWELL for all additional reasonable costs resulting therefrom.

5.3 HONEYWELL shall provide Delivery and Acceptance Certificates in a form acceptable to CUSTOMER and HONEYWELL (the "Delivery and Acceptance Certificates") for the Work provided and as set forth in Attachment J. Upon receipt of each Delivery and Acceptance Certificate, CUSTOMER shall promptly inspect the Work performed by HONEYWELL identified therein and execute each such Delivery and Acceptance Certificate as soon as reasonably possible, but in no event later than ten (10) days after delivery of the same by HONEYWELL, unless CUSTOMER provides HONEYWELL with a written statement identifying specific material performance deficiencies that it wishes HONEYWELL to correct. HONEYWELL will use reasonably diligent efforts to correct all such material deficiencies and will give written notice to CUSTOMER when all such items have been corrected. The Parties intend that a final Delivery and Acceptance Certificate will be executed for the Work as soon as all Work is installed and operating. Execution and delivery by CUSTOMER of such final Delivery and Acceptance Certificate with respect to the Work shall constitute "Final Acceptance" of such Work performed by HONEYWELL pursuant to the Installation Schedule.

ARTICLE 6
PRICE AND PAYMENT

6.1 **Price**

6.1.1 The "Price" for the Work is Four Million One Hundred Forty Four Thousand Eight Hundred Seventy Six Dollars ($4,144,876), subject to the adjustments set forth in Articles 5 and 7.

6.1.2 The price for Support Services is set forth in Attachment D hereto, subject to the adjustments described therein.

6.1.3 The Price is based upon laws, codes and regulations in existence as of the Effective Date. Any changes in or to applicable laws, codes and regulations affecting the cost of the Work shall be the responsibility of CUSTOMER and shall entitle HONEYWELL to an equitable adjustment in the price and schedule.

6.1.4 The Price will be modified for delays caused by CUSTOMER and for Changes in the Work, all pursuant to Article 7.

6.1.5 The license fees for all licensed software identified in Attachment B are included in the Price to be paid by CUSTOMER as identified in this Article 6.

6.2 **Payment**

6.2.1 Upon execution of this Agreement, CUSTOMER shall pay or cause to be paid to HONEYWELL the full Price in accordance with the Payment Schedule, Attachment E. CUSTOMER shall make payments for the Support Services in accordance with Attachment D.

6.2.2 Payments for the Work past due more than thirty (30) days shall accrue interest from the due date to the date of payment at the rate of one and one half percent (1.5%) per month, compounded monthly, or the highest legal rate then allowed. CUSTOMER shall pay all attorney and/or collection fees incurred by HONEYWELL in collecting any past due amounts.

ARTICLE 7
CHANGES IN THE PROJECT

7.1 A Change Order is a written order signed by CUSTOMER and HONEYWELL authorizing a change in the Work or adjustment in the Price, or a change to the Installation Schedule described in Attachment C.

7.2 CUSTOMER may request HONEYWELL to submit proposals for changes in the Work.

7.3 **Claims for Concealed or Unknown Conditions:** If conditions are encountered at any Site that are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents, or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than twenty-one (21) days after first observance of the conditions, and, if appropriate, an equitable adjustment to the Price and Installation Schedule shall be made by a Change Order. If agreement cannot be reached by the Parties, the party seeking an adjustment in the Price or Installation Schedule may assert a claim in accordance with Paragraph 7.4**.**

7.4 If HONEYWELL wishes to make a claim for an increase in the Price or an extension in the Installation Schedule it shall give CUSTOMER written notice thereof within a reasonable time after the occurrence of the event giving rise to such claim. This notice shall be given by HONEYWELL before proceeding to execute the Work, except in an emergency endangering life or property, in which case HONEYWELL shall have the authority to act, in its discretion, to prevent threatened damage, injury or loss. Claims arising from delay shall be made within a reasonable time after the delay. Increases based upon design and estimating costs with respect to possible changes requested by CUSTOMER shall be made within a reasonable time after the decision is made not to proceed with the change. No such claim shall be valid unless so made. If CUSTOMER and HONEYWELL cannot agree on the amount of the adjustment in the Price, or the Installation Schedule, it shall be determined pursuant to the provisions of Article 12. Any change in the Price or the Installation Schedule resulting from such claim shall be authorized by Change Order.

7.5 **Emergencies:** In any emergency affecting the safety of persons or property, HONEYWELL shall act, at its discretion, to prevent threatened damage, injury or loss. Any increase in the Price or extension of time claimed by HONEYWELL on account of emergency work shall be determined as provided in Section 7.4.

ARTICLE 8
INSURANCE, INDEMNITY, WAIVER OF SUBROGATION, AND LIMITATION OF LIABILITY

8.1 Indemnity

8.1.1 HONEYWELL, to the fullest extent permitted by law, agrees to indemnify and hold CUSTOMER, and CUSTOMER's elected and appointed officials, consultants, volunteers, agents, employees, and others working on behalf of CUSTOMER harmless from all claims, demands, suits, or loss for bodily injury and property damages, other than the Work itself, to the extent such claims result from or arise under HONEYWELL's negligent actions or willful misconduct in its performance of the Work or the Support Services. **PROVIDED THAT, NOTHING IN THIS ARTICLE SHALL BE CONSTRUED OR UNDERSTOOD TO ALTER THE LIMITATIONS OF LIABILITY CONTAINED IN THIS ARTICLE, ARTICLE 2, OR THE INDEMNIFICATION CONTAINED IN SECTION 3.8.**

8.1.2 RESERVED

8.1.3 CUSTOMER shall require any other contractor who may have a contract on this project with CUSTOMER to perform work in the areas where Work will be performed under this Agreement to agree to indemnify CUSTOMER and HONEYWELL and hold them harmless from all claims for bodily injury and property damage that may arise from that contractor's operations. Such provisions shall be in a form satisfactory to HONEYWELL.

8.2 **Contractor's Liability Insurance:** HONEYWELL shall, at its own expense, carry and maintain in force at all times from the signature date of the Contract through final completion of the work the following insurance. HONEYWELL will not issue coverage on a per project basis. It is agreed, however, that HONEYWELL has the right to insure or self-insure any of the insurance coverages listed below:

(a) Commercial General Liability Insurance to include contractual liability, products/completed operations liability/independent contractor's coverage not less than USD $5,000,000 per occurrence and aggregate not less than USD $6,000,000. Such policy will be written on an occurrence form basis;

(b) If automobiles are used in the execution of the Agreement, Automobile Liability Insurance not less than USD $5,000,000 per occurrence. Coverage will include all owned, leased, non-owned and hired vehicles.

(c) Where applicable, "All Risk" Property Insurance, including Builder's Risk insurance, for physical damage to property which is assumed in the Agreement.

(d) Workers' Compensation Insurance Coverage A - Statutory limits and Coverage B-Employer's Liability Insurance with limits of USD $1,000,000 for bodily injury each accident or disease.

8.2.1 HONEYWELL will furnish evidence of said insurance coverage in the form of a Memorandum of Insurance which is accessible at: http://honeywell.com/sites/moi/. All insurance required in this Article will be written by companies with a rating of no less than "A-, XII" by A.M. Best or equivalent rating agency. HONEYWELL shall provide a thirty (30) day written notice of cancellation, non-renewal or material change to the CUSTOMER. In the event that a self-insured program is implemented, HONEYWELL will provide adequate proof of financial responsibility within thirty (30) days.

8.2.2 It is understood and agreed that the following shall be Additional Insureds for the Commercial General Liability Insurance: CUSTOMER, including all elected and appointed officials, all employees and volunteers, all boards, commissions, and/or authorities and their board members, employees, and volunteers. It is understood and agreed by naming the CUSTOMER as additional insured, coverage afforded is considered to be primary and any other insurance CUSTOMER may have in effect shall be considered secondary and/or excess.

8.3. CUSTOMER's Liability Insurance

8.3.1 CUSTOMER shall be responsible for purchasing and maintaining its own liability insurance and, at its option, may purchase and maintain such insurance as will protect it against claims that may arise from operations under this Agreement.

8.4 RESERVED

8.5 RESERVED

8.6 Limitation of Liability

8.6.1 NOTWITHSTANDING ANY OTHER PROVISION OF THIS AGREEMENT, IN NO EVENT WILL EITHER PARTY BE LIABLE TO THE OTHER PARTY FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH RESULT FROM, ARISE UNDER OR RELATE TO THE WORK, SERVICES OR EQUIPMENT PROVIDED UNDER THIS AGREEMENT.

ARTICLE 9
TERMINATION OF THE AGREEMENT

9.1 If HONEYWELL defaults in, or fails or neglects to carry forward the Work in accordance with this Agreement, CUSTOMER may provide notice in writing of its intention to terminate this Agreement to HONEYWELL. If HONEYWELL has not, within thirty (30) days after receipt of such notice, acted to remedy and make good such deficiencies, CUSTOMER may terminate this Agreement and take possession of the Site together with all materials thereon, and move to complete the Work itself expediently. If the unpaid balance of the Price exceeds the expense of finishing the Work, the excess shall be paid to HONEYWELL, but if the expense exceeds the unpaid balance, HONEYWELL shall pay the difference to CUSTOMER.

9.2 If CUSTOMER fails to make payments as they become due, or otherwise defaults or breaches its obligations under this Agreement, HONEYWELL may give written notice to CUSTOMER of HONEYWELL's intention to terminate this Agreement. If, within thirty (30) days following receipt of such notice, CUSTOMER fails to make the payments then due, or otherwise fails to cure or perform its obligations, HONEYWELL may, by written notice to CUSTOMER, terminate this Agreement and recover from CUSTOMER payment for Work executed and for losses sustained for materials, tools, construction equipment and machinery, including but not limited to, reasonable profit and applicable damages.

ARTICLE 10
ASSIGNMENT AND GOVERNING LAW

10.1 This Agreement shall be governed by the law of the State where the Work is performed.

10.2 Neither party to the Agreement shall assign this Agreement or sublet it as a whole without the written consent of the other party. Such consent shall not be unreasonably withheld, except that HONEYWELL may assign to another party the right to receive payments due under this Agreement. HONEYWELL may enter into subcontracts for the Work without obtaining CUSTOMER's consent.

ARTICLE 11
MISCELLANEOUS PROVISIONS

11.1 The Table of Contents and headings in this Agreement are for information and convenience only and do not modify the obligations of this Agreement.

11.2 Confidentiality. As used herein, the term "Confidential Information" shall mean any information in readable form or in machine-readable form, including software supplied to CUSTOMER by HONEYWELL that has been identified or labeled as "Confidential" and/or "Proprietary" or with words of similar import. Confidential Information shall also mean any information that is disclosed orally and is designated as "Confidential" and/or "Proprietary" or with words of similar import at the time of disclosure and is reduced to writing, marked as "Confidential" and/or "Proprietary" or with words of similar import, and supplied to the receiving party within ten (10) days of disclosure.

All rights in and to Confidential Information and to any proprietary and/or novel features contained in Confidential Information disclosed are reserved by the disclosing party; and the party receiving such disclosure will not use the Confidential Information for any purpose except in the performance of this Agreement and will not disclose any of

the Confidential Information to benefit itself or to damage the disclosing party. This prohibition includes any business information (strategic plans, etc.) that may become known to either party.

Each party shall, upon request of the other party or upon completion or earlier termination of this Agreement, return the other party's Confidential Information and all copies thereof.

Notwithstanding the foregoing provisions, neither party shall be liable for any disclosure or use of information disclosed or communicated by the other party if the information:

(a) is publicly available at the time of disclosure or later becomes publicly available other than through breach of this Agreement; or
(b) is known to the receiving party at the time of disclosure; or
(c) is subsequently rightfully obtained from a third party on an unrestricted basis; or
(d) is approved for release in writing by an authorized representative of the disclosing party.

The obligation of this Article shall survive any expiration, cancellation or termination of this Agreement.

11.3 Risk of loss for all equipment and materials provided by HONEYWELL hereunder shall transfer to CUSTOMER upon delivery to CUSTOMER's Sites from HONEYWELL or its Subcontractor and title shall pass upon final acceptance or final payment by CUSTOMER to HONEYWELL, whichever occurs later.

11.4 Final notice or other communications required or permitted hereunder shall be sufficiently given if personally delivered to the person specified below, or if sent by registered or certified mail, return receipt requested, postage prepaid, addressed as follows:

To HONEYWELL:

HONEYWELL INTERNATIONAL INC.
49116 Wixom Tech Drive, Wixom, MI 48393
Attention: General Manager

To CUSTOMER:
Delhi Charter Township, 2074 Aurelius Road, Holt, MI 48842-6320
Attention: Township Manager

11.5 **Waiver.** HONEYWELL's failure to insist upon the performance or fulfillment of any of CUSTOMER's obligations under this Agreement shall not be deemed or construed as a waiver or relinquishment of the future performance of any such right or obligation hereunder.

11.6 HONEYWELL guarantees CUSTOMER will realize the Guarantee Savings as defined in Attachment D during the term of this Agreement. **NOTWITHSTANDING THE FOREGOING**, **HONEYWELL (A) MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO ANY FINANCIAL PROJECTIONS, CASH FLOW MODELS, PRO FORMA FINANCIAL STATEMENTS OR OTHER DOCUMENTS, DATA OR INFORMATION PROVIDED BY OR ON BEHALF OF HONEYWELL TO CUSTOMER OR ITS REPRESENTATIVES PRIOR TO THE EXECUTION AND DELIVERY OF THIS AGREEMENT THAT ARE NOT INCLUDED IN THIS AGREEMENT, INCLUDING ITS ATTACHMENTS AND EXHIBITS (COLLECTIVELY, THE "PRIOR PROJECTIONS"), AND (B) HEREBY DISCLAIMS ALL IMPLIED WARRANTIES WITH RESPECT TO SUCH PRIOR PROJECTIONS. CUSTOMER HEREBY ACKNOWLEDGES AND AGREES THAT (i) HONEYWELL DOES NOT GUARANTEE THAT ANY RESULTS SET FORTH IN ANY PRIOR PROJECTIONS WILL BE ACHIEVED, (ii) ACTUAL RESULTS MAY VARY MATERIALLY FROM THE PRIOR PROJECTIONS, AND (iii) CUSTOMER HAS NOT RELIED UPON ANY SUCH PRIOR PROJECTIONS IN DETERMINING TO ENTER INTO THIS AGREEMENT AND CONSUMMATE THE TRANSACTIONS CONTEMPLATED HEREBY.**

11.7 **Severability; Blue-Pencil**. The terms of this Agreement will, where possible, be interpreted and enforced so as to sustain their legality and enforceability, read as if they cover only the specific situation to which they are being applied and enforced to the fullest extent permissible under applicable law. If any term of this Agreement is determined to be invalid, illegal or incapable of being enforced, then all other terms of this Agreement will nevertheless remain in full force and effect, and such term automatically will be amended so that it is valid, legal and enforceable to the maximum extent permitted by applicable law, but as close to the parties' original intent as is permissible.

11.8 HONEYWELL IS NOT, NOR IS HONEYWELL COMPENSATED AS, A MUNICIPAL ADVISOR OR FIDUCIARY ACTING ON CUSTOMER'S BEHALF. ANY AND ALL FINANCIAL AND OTHER INFORMATION PROVIDED ABOUT OR RELATING TO MUNICIPAL SECURITIES OR OTHER MUNICIPAL FINANCIAL PRODUCTS IS PROVIDED FOR GENERAL INFORMATIONAL AND EDUCATIONAL PURPOSES ONLY AND SHOULD NOT BE CONSTRUED AS ADVICE, IS PROVIDED "AS-IS" WITHOUT WARRANTY OF ANY KIND (EXPRESS OR IMPLIED) AND WITHOUT ANY REPRESENTATION WITH RESPECT TO ACCURACY OR COMPLETENESS, AND MUST NOT BE RELIED UPON IN CONNECTION WITH ANY SECURITIES, INVESTMENT OR FINANCIAL DECISION OR OTHER ACTION/INACTION. CUSTOMER SHOULD OBTAIN THE ADVICE OF A FINANCIAL ADVISOR, MUNICIPAL ADVISOR OR OTHER THIRD PARTY LICENSED AND QUALIFIED TO ADVISE YOU REGARDING ANY OF THE INFORMATION PROVIDED ABOUT, OR THE POTENTIAL SUITABILITY OF, MUNICIPAL SECURITIES OR MUNICIPAL FINANCIAL PRODUCTS.

11.9 This Agreement represents the entire agreement between CUSTOMER and HONEYWELL relating to the subject matter hereof and supersedes all prior negotiations, representations or agreements, whether oral or written, between the parties related to such subject matter. HONEYWELL's performance is expressly limited to the terms and conditions expressly set forth in this Agreement, notwithstanding receipt of, or acknowledgment by, HONEYWELL of any purchase order, provisions of the documents for construction, or any other specification, document, instrument or understanding issued by CUSTOMER, any and all of which will be deemed to be material alterations and are rejected and not binding upon HONEYWELL and will not be a part of this Agreement or any resulting order. This Agreement may be modified or amended only by a written instrument signed by both parties.

11.10 This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which shall constitute one and the same instrument. The Parties agree that a scanned or electronically reproduced copy or image of this Agreement bearing the signatures of the Parties hereto shall be deemed an original and may be introduced or submitted in any action or proceeding as competent evidence of the execution, terms and existence of this Agreement notwithstanding the failure or inability to produce or tender an original, executed counterpart of this Agreement and without the requirement that the unavailability of such original, executed counterpart of this Agreement first be proven.

ARTICLE 12
ARBITRATION

12.1 With the exception of any controversy or claim arising out of or related to the installation, monitoring, and/or maintenance of fire and/or security systems, the Parties agree that any controversy or claim between HONEYWELL and CUSTOMER arising out of or relating to this Agreement, or the breach thereof, shall be settled and administered by arbitration in a neutral venue, conducted in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association.

Any award rendered by the arbitrator shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof. Any controversy or claim arising out of or related to the installation, monitoring, and/or maintenance of systems associated with security and/or the detection of, and/or reduction of risk of loss associated with fire shall be resolved in a court of competent jurisdiction.

APPROVALS:
The parties hereby execute this Agreement as of the date first set forth herein by the signatures of their duly authorized representatives:

HONEYWELL INTERNATIONAL INC.		**DELHI CHARTER TOWNSHIP**	
By	_____	By	_____
Name	_____	Name	_____
Title	_____	Title	_____
Date	_____	Date	_____

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ATTACHMENT A
SCOPE OF WORK

PART 1 – PRODUCTS & EXECUTION

1) **Lighting Upgrades**
   a. **General Lighting Description for Delhi Township.**
      i. Honeywell will furnish and install a lighting retrofit project including the proper execution and completion of below written scope of work as detailed in Exhibit A-1 attached hereto and incorporated herein by reference. The project consists of interior light fixture replacements with LED, lighting retrofits with LED, occupancy sensor installation, exterior light fixture retrofits and replacements with LED where noted in Exhibit A-1. The general lighting retrofit strategy will be a mixture of de-lamping, re-lamping, and ballast replacements wherever necessary. New lamps to be utilized include 4', 15 Watt Sylvania IPS LED T8 tubes, Sylvania electronic ballasts wherever applicable. Exterior wall packs will be replaced with new Lumecon LED wall packs.
      ii. Township owned decorative street lights will be retrofit with new custom LED light engines as specified in Exhibit A-1.
      iii. Occupancy sensors shall be installed in areas according to Exhibit A-1.
      iv. A vending miser occupancy sensor will be installed on select vending machines.
      v. The lighting retrofit includes all equipment, labor, disposal, check-out, commissioning and warranty on all labor and equipment.

   b. **Lighting Upgrade Specifics**
      i. Lenses will be dry wiped to remove dust and debris at time of installation.
      ii. In compliance with federal regulations, Honeywell will recycle all lamps and PCB laden ballasts. A manifest will be provided to Delhi Township at the end of the job stating the number of lamps and ballasts that were recycled.

   c. **Lighting Materials Warranty**
      i. The electronic ballasts installed on this project have a manufacturer's warranty of **5** years.
      ii. LED lamps will have a manufacturer's warranty of **5** years.
      iii. New Lumecon LED fixtures have a manufacturer's warranty of **10** years.
      iv. All labor provided by Honeywell in this project will be warranted for a period of **1** year. Specific damage to the lighting system caused by lightning, significant changes in power quality, power surges, physical damage to the equipment or abnormal operation are excluded from this warranty. The warranty shall commence upon completion and acceptance by Delhi Township. Delhi Township will be asked to sign off on the installation tracking forms on a regular, ongoing basis. As a result, a portion of the individual facility warranty(s) will commence in advance of the overall project completion.
      v. During the warranty period, Delhi Township's staff shall replace all defective lamps and ballasts under warranty. A 1% supply of fluorescent replacement lamps, and ½% supply of ballasts shall be left on-site, to cover any pre mature failures. Delhi Township shall work directly with the manufacturer on all warranty issues.
      vi. See Exhibit A-1 Energy Calculations attached hereto and incorporated herein by reference - for lighting room by room detail per building.
      vii. See Exhibit A-1 Energy Calculations attached hereto and incorporated herein by reference - for Occupancy Sensor room by room detail per building.

2) **Waste Water Treatment Plant - High Speed Turbo Blower Installation**
   a. (2) 100 HP High speed turbo blower will replace (2) existing centrifugal blowers to provide automated dissolved oxygen response, improved turndown capability and higher mechanical efficiency. The second blower will serve as a back up unit. Scope shall include:
      i. Provide and install (2) ~ 100 HP high speed turbo blowers using Neuros as the basis for design.

ii. Removal of (2) existing 100 HP blowers to be designated by the owner. Demo existing piping and electrical back to most efficient point of reconnection of new blower.
iii. Modify/expand housekeeping pad if required.
iv. Provide and install new blower(s) following manufacturer requirements including all interconnect piping and air inlet apparatus.
v. Repaint piping as required.
vi. Provide and install all electric requirements including inherent VFD.
vii. Provide and install control wiring between blower and control panel
viii. Blower integration into existing SCADA system (amps, % speed, flow, pressure, alarms, on/off status).
ix. Scope should include at least (3) days of onsite service, set-up, and commissioning assistance by qualified manufacturer representative.

EXCLUSIONS:

- *Integration of automation controls for Dissolved Oxygen (DO) and or Ammonia (NH3) feedback to be conducted by others.*
- *SCADA upgrades (if necessary) will be conducted by others.*
- *System balancing to be conducted by others*

3) HVAC System Upgrades

Community Service Center

I. Heat Pump Removal and AHU Installation

a. Remove and legally dispose of heat pumps 1-8.
b. Recover refrigerant in accordance with local codes and requirements.
c. Furnish and install eight (8) new Daikin or equal Air Handling Units with hot water coils, chilled water coils and a filter bank.
d. Provide all duct transitions necessary to accommodate the new AHUs.
e. Replace/modify electrical motor starters, MCC to accommodate the reduced electrical load for operating just the blower motors and to provide protection for the motors. Current power supply will be for the heat pump compressor and blower motor.
f. Furnish and install new Honeywell SmartVFDs with each AHU.
g. Cap bypass duct associated with each heat pump.
h. Provide all electrical wiring, air balance, and water balance.

II. VAV Box/EDH Removal and Installation of VAV with Reheat

a. Remove and legally dispose of forty five (45) existing cooling only variable air volume (VAV) boxes, five (5) fan powered VAV boxes and two (2) electric duct heaters (EDH).
b. Furnish and install fifty (50) VAV boxes with reheat and five (5) fan powered VAV boxes with reheat (See Exhibit A-2).
c. Provide all necessary duct transitions and duct sealing in accordance with Sheet Metal and Air Conditioning National Association (SMACNA) sheet metal standards for the pressure class associated with the system being installed. Insulate ductwork where existing insulation is removed for the replacement of the VAV boxes.

III. Boiler Plant Replacement

a. Remove and legally dispose of two (2) existing gas fired heating hot water boilers, pumps, expansion tank and air separator.
b. Furnish and install two (2) Lochinvar FBN1501 boilers. Extend housekeeping pads as necessary to house new boilers.
c. Provide combustion air intake and exhaust in accordance with the manufacturers recommendations.
d. Re-pipe the system for a primary/secondary configuration.

e. Furnish and install five temperature wells; one for the outlet of each boiler, one for the system temperature and two for the BMS system.
f. Provide and install natural gas piping to each boiler.
g. Provide and install condensate neutralization kits for each boiler and run to a drain line in the mechanical room.
h. Furnish and install two (2) inline B&G pumps, lead/standby for full redundancy, with Honeywell SmartVFD drives, expansion tank, air separator, boiler isolation valves, triple duty valves, strainers, pressure gages and piping insulation.
i. Patch any existing penetrations that will not be used for venting of the new boiler plant.
j. Provide all the necessary electrical connections associated with the boilers, boiler pumps, and secondary pumps. Also, provide and install emergency stop buttons in accordance with current code requirements.
k. Provide water balance of the new boilers and the entire heating hot water piping including reheat coils, existing underfloor radiant heat exchanger.
l. Provide initial water treatment to get the water quality within the recommended parameters of the manufacturer.

IV. Hot Water Piping Installation

a. Furnish and install new heating hot water piping from the boiler room to the new AHUs and reheat coils.
b. Furnish and install isolation valves including isolation of all control valves and equipment.
c. All hot water piping shall be insulated in accordance with ASHRAE Standards. Pipes shall be labeled for type and direction of flow.

V. Remove Existing Cooling Tower and Install Chiller

a. Remove and legally dispose of existing cooling tower, associated pumps, indoor sump, and all other components associated with the cooling tower.
b. Demo electrical wiring back to its source.
c. Furnish and install a new 115 ton Motivair or equal air cooled chiller with water side economizer. Furnish and install all necessary piping associated with the chiller including piping to each of the new AHUs.
d. The existing condenser water piping shall be reused and modified as needed to accommodate the change in flow requirements for the various AHUs. Existing condenser water piping contains a glycol solution and must be handled and disposed of in accordance with local codes.
e. All existing and new chilled water piping shall be insulated in accordance with the Michigan Mechanical code and ASHRAE Standards. Chilled water insulation shall be continuous throughout including through wall penetrations to control condensation. Hangers shall be installed with metal pipe saddles to protect the integrity of the pipe insulation. Vapor retarder mastic will be used where required to control condensation at pipe insulation Ts, and valve coverings. Pipes shall be labeled for type and direction of flow.
f. Furnish and install isolation valves including isolation of all control valves and equipment.
g. Furnish and install two (2) new inline B&G pumps, lead/standby for full redundancy, Honeywell SmartVFD drives, expansion tank and air separator, triple duty valves, pressure gages and strainers.
h. Provide bypass if necessary to ensure minimum flow across the chiller during low load conditions.
i. Furnish and install all necessary electrical associated with the chiller and chilled water pumps.
j. Provide a 30% propylene glycol solution for freeze protection and a manual fill station.

VI. Hot Water and Chilled Water Differential Pressure Sensor Installation

a. Furnish and install four differential pressure sensors; two for the chilled water system and two for the hot water system.
b. These sensors will be used to determine differential pressure settings associated with each system which will be determined once water balance is completed.

VII. Refurbish Existing ERV Units

- **a.** Replace existing fan bearings, fan motors and belts on four (4) existing ERV units. Fan motors to be premium efficiency.

VIII. Replace Single Zone Heat Pumps with Mini Split AC Units

- **a.** Remove and legally dispose of Heat Pumps 2A and 3A. These are wall mounted water source heat pumps that provide heating/cooling to the space they serve. Size to match existing.
- **b.** Furnish and install two (2) new mini split air source heat pumps with low ambient controls for winter operation.
- **c.** Provide a housekeeping pad for the condensing units which will be located on the southeast corner of the building. One condensing unit with two evaporators will be installed for these two spaces.

IX. Replace Radiant Floor Pump Motors and Pump

- **a.** Replace existing radiant floor pump motors and pump with new premium efficiency motors. Include triple duty valve, isolation valves, strainers, pressure gauges.

X. Apparatus Bay IR Tube Heater & Exhaust Fan Installation

- **a.** Furnish and install IR tube heaters in the Apparatus Bay. Total MBH for the space shall be 200 MBH.
- **b.** Provide all gas piping, venting combustion air intake, and electrical connections.
- **c.** Combustion Air must be provided from the outdoors. Room air must not be used for combustion air.
- **d.** Furnish and install two exhaust fans; One sized at 300 CFM and the other at 2,000 CFM. Provide necessary electrical connections and roof/wall penetrations. The 300 CFM fan will run continuously and must be wired accordingly. The 2,000 CFM fan will be controlled by the Honeywell control system.

XI. Replace DHW Heater

- **a.** Remove and legally dispose of existing DHW heater.
- **b.** Furnish and install new high efficiency DHW heater.
- **c.** Provide all electrical, insulation, and piping connections to new heater.

Wastewater Treatment Plant

Administration Building

The Administration is heated by a gas fired McQuay roof top unit. The unit provides air to hot water reheat coils throughout the spaces. Hot water in the coils is provided by a central boiler located in the Digester Building.

I. Replace Roof Top Unit

- a. Remove and legally dispose of existing roof top unit. Recover refrigerant in accordance with local codes and requirements.
- **b.** Furnish and install new Daikin Rebel RTU. The RTU must be equipped with a VFD for the supply fan and have an inverter driven scroll compressors for DX cooling. The RTU shall have a modulating gas burner with a 5:1 turndown. Unit shall be designed to bring the air temperature from 50 degrees to 70 degrees. The RTU shall have packaged controls with a Bacnet card for interface with a BMS system. Unit shall be able to receive a remote discharge air temperature and static pressure set point.
- **c.** RTU's shall be equipped with 100% economizing capability.
- **d.** Furnish and install all fire/smoke detectors and isolation dampers as required by code.

e. Furnish and install all gas piping associated with new RTU.
f. Provide all electrical, mechanical requirements and air balance for a turnkey solution.
g. All systems shall be fully engineered systems with load and ventilation calculations. Systems shall be designed to meet current code required ventilation rates.
h. Provide engineered drawings and owner training for the systems listed above.

II. VAV with Reheat Installation

a. Demo the existing hot water reheat coils.
b. Furnish and install ten (10) new VAV boxes with hot water reheat coils (See Exhibit A-3). This includes all the required duct work from the new RTU to the VAV boxes. Existing ductwork may be reused if determined to be sufficient by Honeywell.
c. Existing diffusers to be reused. Add diffusers as required.
d. Honeywell will provide new control valves for the reheat coils.
e. Provide air and water balance of the new VAV boxes and reheat coils.

III. Boiler Installation

a. Furnish and install two (2) Lochinvar WHN085 boilers.
b. Provide combustion air intake and exhaust in accordance with the manufacturers recommendations.
c. Re-pipe the system to accommodate the new boilers. Cut and cap the piping from the North Digester Building as close to the main header as possible so to prevent pipe freeze up in the dead leg. The existing boiler loop contains Glycol. Glycol will need to be removed and handled in accordance with local codes by the mechanical contractor.
d. Furnish and install five temperature wells; one for the outlet of each boiler, one for the system temperature and two for the BMS system.
e. Provide and install natural gas piping to each boiler.
f. Provide and install condensate neutralization kits for each boiler and run to a drain line in the mechanical room.
g. Furnish and install one (1) B&G pump, expansion tank, air separator, boiler isolation valves, triple duty valve, pressure gages and piping insulation.
h. Patch any existing penetrations that will not be used for venting of the new boiler plant.
i. Provide all the necessary electrical associated with the boilers, boiler pumps, and secondary pumps. Also, provide and install emergency stop buttons in accordance with current code requirements.
j. Provide water balance of the new boilers and the entire heating hot water piping including reheat coils.
k. Provide initial water treatment to get the water quality within the recommended parameters of the manufacturer.

Pole Barns

I. Unit Heater Installation

a. Demo four (4) existing hot water unit heaters located in the pole barns.
b. Cut and cap the piping feeding the unit heaters in the North Digester Building. Locate the pipe as close to the main header as possible so to prevent pipe freeze up in the dead leg. The existing boiler loop contains Glycol. Glycol will need to be removed and handled in accordance with local codes.
c. Furnish and install two (2) new gas fired unit heaters. Unit heaters shall be sized to maintain 70 degrees in the pole barns.
d. Furnish and install all required gas piping from existing meter at North Digester building to the new mechanical equipment, combustion intake and exhaust piping required for the unit heaters.
e. Provide all necessary electrical for operation of the unit heaters.
f. Provide stand alone programmable thermostats for each unit heater.

II. IR Tube Heater Installation

a. Demo of the existing unit heaters is included above.
b. Furnish and install IR tube heaters for the Pole Barn. Tube heater shall be designed to maintain a 70 degree temperature with two stage heat.
c. Provide all gas piping from the gas that will be entering the building, venting combustion air intake, and electrical connections.
d. Combustion Air must be provided from the outdoors. Room air must not be used for combustion air.
e. Provide stand alone programmable thermostats for each unit heater.

Lab Building

The Lab Building has three Make up Air units that serve the lab, offices and old chlorine storage areas. There are also two lab hood exhaust fans with a dedicated unit for ventilation. A fan coil unit serves the office area on the east end of the building. A boiler located in the North Digester building provides hot water to reheat coils. A chiller provides chilled water to MAU-4 serving the Lab and offices and also the fan coil unit serving the east office. There are currently two ovens in the lab that are not contained under a hood to exhaust the smell from the drying process.

I. Lab MAU Replacement

a. Remove and legally dispose of existing MAU-4.
b. Furnish and install a new gas fired make up air unit with a 5:1 turndown ratio. The unit shall match the existing unit size which is a 3,056 CFM unit with a 387.5 MBH gas burner section.
c. Make up air unit shall come equipped with a chilled water coil. Existing chiller will be reused. Provide piping modifications and connections necessary to tie in the new chilled water coil to the existing chiller. Reinsulate all exposed chilled water piping per ASHRAE Standards
d. Replace chilled water pumps associated with MAU and Fan Coil Unit in the mezzanine. Include triple duty valve, isolation valves, strainers, pressure gauges etc.
e. Honeywell will provide a chilled water control valve which will be installed by the mechanical contractor.
f. Provide gas piping, electrical, roof patch, and curb adaptors.
g. Unit shall come with DDC ready controls.

II. Fan Coil Unit Replacement

a. Remove and legally dispose of existing fan coil unit in east office.
b. Furnish and install a new fan coil unit with a hot water and chilled water coil.
c. Provide the necessary piping modifications for both the hot water and chilled water systems to reconnect to the new fan coil unit.
d. The unit shall come without controls. Honeywell will be installing new field controls.
e. Honeywell will provide a hot water and chilled water control valve which will be installed by the mechanical contractor.
f. Provide electrical to the fan coil unit.

Chemical Feed, Chemical Room and Chlorine Storage

These areas are no longer being used for chemical storage and will be converted to offices by the Customer.

III. RTU Installation

a. Remove and legally dispose of existing MAU-2 and MAU-3and associated ductwork. One unit is located on the roof while the other is ceiling mounted in the Chemical Feed building.
b. Demo shall include removing all electrical back to the main source.
c. Demo existing unit heaters in Chemical feed and chlorine storage

d. Demo existing exhaust fans EF-6 and EF-7. Seal all roof voids from the removal of the exhaust fans.
e. Cover all exterior penetrations with rigid foam insulation and sheet metal painted to match brick color.
f. Furnish and install new RTU. The RTU will be a single zone unit and have an inverter driven scroll compressors for DX cooling. The RTU shall have a modulating gas burner with a 5:1 turndown. The RTU shall have packaged controls with a Bacnet card for interface with a BMS system.
g. RTU's shall be equipped with 100% economizing capability.
h. Furnish and install all fire/smoke detectors and isolation dampers as required by code.
i. Furnish and install all gas piping associated with new RTU.
j. Provide all electrical, mechanical requirements and air balance.
k. All systems shall be fully engineered systems with load and ventilation calculations. Systems shall be designed to meet current code required ventilation rates. The space will be used as open office space.
l. Contractor shall evaluate the structural integrity of the existing roof to and make modifications necessary to support the new RTU.
m. Provide engineered drawings and owner training for the systems listed above.

IV. Canopy Hood Installation

a. Furnish and install a new canopy hood exhaust system for the drying ovens located on the table tops in the lab.
b. Canopy hood shall be constructed of 316 stainless steel for corrosion resistance.
c. Furnish and install exhaust fan with an on off switch located next to the canopy hood. Exhaust fan shall be constructed of a material suitable for lab hood exhaust.
d. Provide electrical required to operate the hood, roof patch.
e. Exhaust should be designed for a face velocity of 100 fpm.

V. Fume Hood Exhaust Fan/Supply Fan Replacement

a. Remove and legally dispose of two (2) fume hood exhaust fans and two (2) fume hood supply fans.
b. Furnish and install two (2) new fume hood exhaust fans and two (2) new fume hood supply fans. Exhaust fans shall be constructed of a material suitable for lab hood exhaust.
c. Furnish and install Phoenix air control valves for the fume hood exhaust, general exhaust and canopy hood exhaust fans.
d. Provide necessary electrical to power the new exhaust and supply fans. The size of these fans shall match existing.

VI. Boiler Installation

a. There is one existing Knight boiler in the North Digester building that serves the Lab, Primary Sludge Building and Pole Barns.
b. Furnish and install a second Knight boiler KB 286 in this building. Provide the necessary piping to tie the two boilers together.
c. Provide a boiler controller if necessary to be able to stage these boilers.
d. Furnish and install boiler pump for new boiler.
e. Furnish and install control valves for the five (5) existing reheat coils. Reheat coils are to remain.

VII. Misc Hot Water Improvements:

a. Replace system pumps located in the boiler room with new system pumps. Pumps are piped in parallel and a triple duty valve will need to be installed to prevent back flowing through the standby pump. The pump sizing will need to be reevaluated as a large amount of the load from

the boilers will be removed with these renovations. Include pump strainer with new pumps replacement.

b. Rework the piping in the mezzanine to eliminate the branch pumps and furnish and install one system pump in lieu of the branch pumps. Furnish and install circuit setters to balance the flow to each branch as required. Provide and install pipe insulation per ASHRAE Standards.

VIII. Break Room Mini Split

a. The break room is heated by a hot water unit heater and cooled by a wall AC unit.
b. Demo and remove existing unit heater and AC unit. Demo hot water piping at the source in the North Digester Building.
c. Furnish and install an air source heat pump to heat and cool the room.
d. Provide electrical connections and wall penetration patching. Unit shall come with packaged stand alone controls.

Primary Sludge Building

I. Install Make Up Air Unit

a. Remove and legally dispose of existing hot water unit heaters. Cut and cap piping which is fed from the North Digester Building. Locate the pipe as close to the main header as possible so to prevent pipe freeze up in the dead leg.
b. The existing boiler loop contains Glycol. Glycol will need to be removed and handled in accordance with local codes.
c. Furnish and install a new Make up Air unit designed for 1,250 CFM.
d. Unit shall have a 5:1 turndown ratio.
e. Install ductwork to provide air to both floors. Ductwork shall be coated with a phenolic coating for corrosion resistance.
f. Furnish and install the necessary gas piping for the new make up air unit.
g. Unit shall come DDC ready. Honeywell will provide controls to operate the unit. Unit shall come with internal safeties etc.

II. Replace Exhaust Fan

a. Remove and legally dispose of existing exhaust fan.
b. Furnish and install new exhaust fan. Exhaust fan sizing shall be based on the MAU sizing. Replace existing ductwork which must be coated internally and externally with a phenolic coating for corrosion protection.
c. Exhaust fan shall be interlocked with the make up air unit.
d. Provide all necessary electrical for operation of the exhaust fan.

4) Temperature Controls Upgrade

Community Center

i. This building has existing Siemens controls. Demo all of the existing controls in the facility.
ii. **Boiler Room Scope of Work** – There shall be a new ComfortPoint Open (BACnet) panel installed in this room to provide control for the hot water plant, hot water radiation, and Chilled Water Plant. Honeywell shall mount new control panel in the Boiler Room. Honeywell shall build control panel (I/O modules, BACnet Router/Controller and power supply), mount panel, re-use existing 120VAC power circuit, and provide MS/TP Bus communication cabling to the next closest controller. (1) additional BACnet router required to network VAV Controllers will be installed in this enclosure.
    1. Notes:
        a. (2) Network drops shall be provided by the customer.
        b. Existing low voltage wiring and/or conduit may be used if feasible.

- Furnish and install the following devices:

- Outside Air Temperature Sensor
- HW System Enable/Disable
- HW System BACnet Communication Bus.
- HW System Set point
- Boiler 1 Supply Temperature Sensor
- Boiler 2 Supply Temperature Sensor
- HWS Primary Loop Supply Temperature Sensor
- HWS Primary Loop Return Temperature Sensor
- HWS Loop1 Differential Pressure Sensor
- HWS Loop2 Differential Pressure Sensor
- HW Secondary Pump P-1 VFD Start/Stop
- HW Secondary Pump P-1 VFD Status
- HW Secondary Pump P-1 VFD Speed
- HW Secondary Pump P-1 VFD BACnet Communication
- HW Secondary Pump P-2 VFD Start/Stop
- HW Secondary Pump P-2 VFD Status
- HW Secondary Pump P-2 VFD Speed
- HW Secondary Pump P-2 VFD BACnet Communication
- HWS Radiation Loop Supply Temperature Sensor
- HW Radiation Loop Pump P-3 Start/Stop
- HW Radiation Loop Pump P-3 Status
- HW Radiation Loop Pump P-4 Start/Stop
- HW Radiation Loop Pump P-4 Status
- Chilled Water System Enable
- Chiller BACnet Communication
- Chilled Water Setpoint
- Chiller Status
- Chiller Fault Alarm
- Chilled Water Supply Temperature Sensor
- Chilled Water Return Temperature Sensor
- Chilled Water Loop1 Differential Pressure Sensor
- Chilled Water Loop2 Differential Pressure Sensor
- Chilled Water Pump P-5 VFD Start/Stop
- Chilled Water Pump P-5 VFD Status
- Chilled Water Pump P-5 VFD Speed
- Chilled Water Pump P-5 VFD BACnet Communication
- Chilled Water Pump P-6 VFD Start/Stop
- Chilled Water Pump P-6 VFD Status
- Chilled Water Pump P-6 VFD Speed
- Chilled Water Pump P-6 VFD BACnet Communication

iii. **VAV Boxes Scope of Work –** Honeywell shall mount the new CPO VAV controller on each VAV box. (28) VAV with HW Reheat, (5) Fan Powered VAV with Reheat, (22) VAV with HW Reheat and HW Radiation. There shall be a 120VAC-24VAC power transformer provided for the CPO VAV box controllers. Honeywell shall mount power transformer, provide 120VAC power circuit (or reuse existing), and provide power cabling to CPO VAV box controllers (or reuse existing). Honeywell electrician shall provide BACnet MS/TP Bus communication cabling.

- Furnish and install the following devices:
    - VAV Box Controller – Typical for (55)
    - 120-24VAC Power Transformer – Typical for (16)

- VAV Box Airflow Pickups – Typical for (55)
- VAV Box Damper Actuator – Typical for (55)
- VAV Box Space Temperature with Setpoint – Typical for (55)
- VAV Box Discharge Air Temperature – Typical for (55)
- VAV Box Reheat Coil Valve/Actuator – Typical for (55) (3/4" 2-Way,)
- VAV Box Radiation Valve/Actuator – Typical for (22) (3/4" 2-Way)
- VAV Box Occupancy Sensor – Typical for (30)
- BACnet communication bus daisy chained from the Router(s)

iv. **Energy Recovery Ventilator (ERV) Scope of Work (Qty 4) –** ERV's provide tempered air to the (8) Air Handling Units (AHU). There shall be a new ComfortPoint Open (BACnet) panel installed for each ERV. Honeywell shall build control panel (BACnet Controller and power supply), mount panel, re-use existing 120VAC power circuit, and provide MS/TP Bus communication cabling to the next closest controller.

- Furnish and install the following devices:
  - ERV Fan Start/Stop Relay
  - ERV Fan Status Current Sensor
  - ERV Discharge Air Temperature Sensor
  - ERV Freeze-Stat Status
  - ERV Hot Water Valve/Actuator
  - ERV Exhaust Damper Actuator
  - ERV Outside Air Damper Actuator

v. **Variable Air Volume Air Handling Unit (VAV-AHU) Scope of Work (Qty 8) –** VAV Air Handling Units (VAVAHU). There shall be a new ComfortPoint Open (BACnet) panel installed for each VAVAHU. Honeywell shall build control panel (BACnet Controller and power supply), mount panel, re-use existing 120VAC power circuit, and provide MS/TP Bus communication cabling to the next closest controller.

- Furnish and install the following devices:
  - VAVAHU Fan VFD Enable Relay
  - VAVAHU Fan VFD Status Current Sensor
  - VAVAHU Fan VFD BACnet Communication
  - VAVAHU Fan VFD Speed Control
  - VAVAHU Discharge Air Temperature Sensor
  - VAVAHU Freeze-Stat Status
  - VAVAHU Hot Water Valve/Actuator
  - VAVAHU Return Air/ERV Air Damper Actuators
  - VAVAHU Chilled Water Valve/Actuator

vi. **Infra-Red Tube Heater –** There shall be a new BACnet Communicating Thermostat installed for each zone. Honeywell shall provide the thermostat and provide MS/TP Bus communication cabling to the next closest controller.
Furnish and install the following devices:
- BACnet Communicating Thermostat
- Infra-Red Tube Heater Enable Relay

a. Waste Water Treatment Plant (WWTP) Admin

i. This building has existing local controls. Demo all of the existing controls in the facility.
ii. **Scope of Work** – There shall be a new ComfortPoint Open (BACnet) panel installed to provide control for the new BACnet Packaged Controls Variable Volume Rooftop Unit and (10) new VAV with reheat boxes. Honeywell shall install a new enclosure, BACnet Router

and power supply, mount panel, re-use existing 120VAC power circuit, and provide MS/TP Bus communication cabling to the next closest controller to network VAV Controllers.

1. Notes:
    a. (1) Network drop shall be provided by the customer.

vii. **VAV Boxes Scope of Work –** Honeywell shall mount the new CPO VAV controller on each VAV box. (10) VAV with HW Reheat. There shall be a 120VAC-24VAC power transformer provided for the CPO VAV box controllers. Honeywell shall mount power transformer, provide 120VAC power circuit (or reuse existing), and provide power cabling to CPO VAV box controllers. Honeywell electrician shall provide BACnet MS/TP Bus communication cabling.

- Furnish and install the following devices:
    - VAV Box Controller – Typical for (10)
    - 120-24VAC Power Transformer – Typical for (3)
    - VAV Box Airflow Pickups – Typical for (10)
    - VAV Box Damper Actuator – Typical for (10)
    - VAV Box Space Temperature with Setpoint – Typical for (10)
    - VAV Box Discharge Air Temperature – Typical for (10)
    - VAV Box Reheat Coil Valve/Actuator – Typical for (10) (3/4" 2-Way,)
    - BACnet communication bus daisy chained from the Router(s)

Waste Water Treatment Plant (WWTP) Generator Building

i. This building has existing local controls. Demo the existing controls.

ii. **Boiler Room Scope of Work** – There shall be a new ComfortPoint Open (BACnet) panel installed in this room to provide control for the hot water plant. Honeywell shall mount new control panel in the Boiler Room. Honeywell shall build control panel (I/O modules, BACnet Router/Controller and power supply), mount panel, and install 120VAC power circuit or reuse existing circuit.

1. Notes:
    a. (1) Network drop shall be provided by the customer.
    b. This plant serves the Admin Building.

- Furnish and install the following devices:
    - Outside Air Temperature Sensor
    - HW System Enable/Disable
    - HW System Set point
    - Boiler 1 Supply Temperature Sensor
    - Boiler 2 Supply Temperature Sensor
    - HWS Primary Loop Supply Temperature Sensor
    - HWS Primary Loop Return Temperature Sensor
    - HW Secondary Pump P-1 Start/Stop
    - HW Secondary Pump P-1 Status
    - HWS Loop Supply Temperature Sensor
    - Boiler1 Status
    - Boiler2 Status

Waste Water Treatment Plant (WWTP) Lab Building

i. This building has existing Siemens controls. Demo the existing controls.

ii. **Scope of Work** – There shall be a new ComfortPoint Open (BACnet) panel installed to provide control for the building. Honeywell shall mount new control panel. Honeywell shall build control panel (BACnet Router and power supply), mount panel, and install 120VAC power circuit or reuse existing circuit.

1. Notes:

a. (2) Network drops shall be provided by the customer.

iii. **Rooftop Unit with Packaged Controls**

- Furnish and install the following devices:
    - BACnet Communication Bus
    - Manufacture provided thermostat
    - Honeywell shall discover (15) BACnet communication points provided with the unit and display them on a graphic, including Discharge Air Temperature Setpoint and operating schedule.

iv. **Lab Make Up Air Handling Unit (MAU) Scope of Work –** There shall be a new ComfortPoint Open (BACnet) panel installed. Honeywell shall build control panel (BACnet Controller and power supply), mount panel, re-use existing 120VAC power circuit, and provide MS/TP Bus communication cabling to the next closest controller.

- Furnish and install the following devices:
    - MAU Fan Start/Stop Relay
    - MAU Fan Status Current Sensor
    - MAU Discharge Air Temperature Sensor
    - MAU Modulating Gas Heat Signal
    - MAU Outside Air Damper Actuator
    - MAU Chilled Water Valve/Actuator
    - Exhaust Fan Start/Stop Relay
    - Exhaust Fan Status Current Sensor

v. **Lab Office Fan Coil Unit (FCU) Scope of Work –** There shall be a new ComfortPoint Open (BACnet) panel installed. Honeywell shall build control panel (BACnet Controller and power supply), mount panel, re-use existing 120VAC power circuit, and provide MS/TP Bus communication cabling to the next closest controller.

- Furnish and install the following devices:
    - FCU Fan Start/Stop Relay
    - FCU Space Temperature Sensor
    - FCU Fan Status Current Sensor
    - FCU Freeze-Stat Status
    - FCU Discharge Air Temperature Sensor
    - FCU Return Air Temperature Sensor
    - FCU HW Valve/Actuator
    - FCU Outside Air Damper Actuator
    - FCU Chilled Water Valve/Actuator

vi. **Lab Reheat Coils (RHC) Scope of Work (Qty 10) –** There will be a BACnet Controller/Router installed in the building and the Inputs and Outputs (I/O) required to control these RHC's will be connected to that Router. There shall be a 120VAC-24VAC power transformer provided for the remote I/O. Honeywell shall mount power transformer, provide 120VAC power circuit, and provide power cabling to CPO-Field Bus Adapters. Honeywell electrician shall provide MS/TP Bus communication cabling.

- Furnish and install the following devices:
    - RHC Field Bus Adapter – Typical for (10)
    - 120-24VAC Power Transformer – Typical for (3)
    - RHC Box Space Temperature with Setpoint – Typical for (10)
    - RHC Box Reheat Coil Valve/Actuator – Typical for (10) (3/4" 2-Way,)

vii. **Lab Fume Hoods Scope of Work (Qty 2) and (1) Canopy Hood –** There will be a Phoenix Controls BACnet Router installed in the building and the Phoenix Fume Hood controls shall be connected to that Router. There shall be a 120VAC-24VAC power transformer provided for the Fume Hood Controls. Honeywell shall mount power transformer, provide 120VAC power circuit, and provide power cabling to Fume Hood Controllers. Honeywell electrician shall provide BACnet Bus communication cabling.

- Furnish and install the following devices:
    - Fume Hood Supply Air Valves – Typical for (2)
    - Fume Hood Air Valves – Typical for (2)
    - Canopy Hood Air Valve – Typical for (1)
    - Room Pressure Monitor – Typical for (1)
    - Fume Hood Monitor and Related Controls – Typical for (2)
    - 120-24VAC Power Transformer – Typical for (3)

Waste Water Treatment Plant (WWTP) Digester Building

i. This building has existing local controls. Demo the existing controls.
ii. **Boiler Room Scope of Work** – There shall be a new ComfortPoint Open (BACnet) panel installed in this room to provide control for the hot water plant. Honeywell shall mount new control panel in the Boiler Room. Honeywell shall build control panel (I/O modules, BACnet Router/Controller and power supply), mount panel, and install 120VAC power circuit or reuse existing circuit.
    1. Notes:
        a. (1) Network drop shall be provided by the customer.
        b. This plant serves the Admin Building.

- Furnish and install the following devices:
    - Outside Air Temperature Sensor
    - HW System Enable/Disable
    - HW System Set point
    - Boiler 1 Supply Temperature Sensor
    - Boiler 2 Supply Temperature Sensor
    - HWS Primary Loop Supply Temperature Sensor
    - HWS Primary Loop Return Temperature Sensor
    - HW Secondary Pump P-1 Start/Stop
    - HW Secondary Pump P-1 Status
    - HW Secondary Pump P-2 Start/Stop
    - HW Secondary Pump P-2 Status
    - Boiler1 Status
    - Boiler2 Status

Primary Sludge Make Up Air Unit

i. **Primary Sludge Make Up Air Handling Unit (MAU) Scope of Work –** There shall be a new ComfortPoint Open (BACnet) panel installed. Honeywell shall build control panel (BACnet Controller and power supply), mount panel, re-use existing 120VAC power circuit, and provide MS/TP Bus communication cabling to the next closest controller.

- Furnish and install the following devices:
    - MAU Fan Start/Stop Relay
    - MAU Fan Status Current Sensor
    - MAU Discharge Air Temperature Sensor
    - MAU Modulating Gas Heat Signal
    - MAU Outside Air Damper Actuator
    - Exhaust Fan Start/Stop Relay

- Exhaust Fan Status Current Sensor

Delhi Township New Enterprise Building Integrator (EBI)

i. There is an existing Siemens Graphical User Interface (GUI). Demo the existing GUI.
ii. **EBI Scope of Work** – There shall be a new ComfortPoint Open (BACnet) EBI installed to provide control for Graphical User Interface to the system. Honeywell shall provide and install EBI 500 Software License on a Windows Server 2012 Computer. Honeywell shall build the EBI Database and graphics and install them on the new computer.
   1. Notes:
      a. (1) Network drop shall be provided by the customer.

- Furnish and install the following labor:
  - Includes necessary hardware engineering, submittals, technician checkout, supervision and (8) hours of training on the new EBI.

PART 2 – GENERAL

A. GENERAL CONDITIONS

1. Honeywell is not responsible for bringing existing lighting/electrical systems up to code.

2. If Honeywell encounters any materials or substances classified as toxic or hazardous in performance of the Work, including asbestos, Honeywell will notify Customer and will stop work in that area until such area has been made safe by the Customer, or Customer's Representative, at Customer's expense. In the event such conditions cause a delay in Honeywell's performance, Honeywell shall be entitled to recovery of all costs associated with such delay, as well as an extension of time of performance.

3. Where demolition of certain areas of a building are required for removal and installation of equipment and that demolition is included in the scope of work defined herein, Honeywell will make every effort to replace such areas with similar materials as available. If such materials are not available, materials of similar quality will be supplied and installed.

4. Electrical: Honeywell will only be responsible for repairing existing electrical wiring problems that occur within three feet (36 inches) of the device being installed or the nearest wall or ceiling penetration, whichever is smaller.

5. Piping: Honeywell will only be responsible for repairing existing piping problems that occur within two feet (24 inches) of the device being installed or the nearest wall or ceiling penetration, whichever is smaller. Piping includes, but is not limited to, domestic hot and cold water, cooling cold water, heating hot water, condensate, fuel oil, and cooling tower condensing water.

6. Routine Maintenance: Routine maintenance up such as vacuuming, coil cleaning and filter change of air handling devices, etc. is the responsibility of the Customer, or as included in Attachment D.

7. Utility Meter: If new utility meters are required, provision and coordination of utility meters is the responsibility of the customer.

8. Remote Access: CUSTOMER is responsible for implementation and costs for remote Honeywell access through CUSTOMER's firewall(s) to the controllers and front-end computer(s) by one (1) America's Measurement and Verification Services Employee, (or as assigned Honeywell Employee) using one or more of the following processes:

TCP/IP Remote Access: A dedicated static IP address, installation and on-going maintenance and subscription and licensing fees for access hardware and software and one (1) station license dedicated to the remote user, OR
Phone Lines: To be provided by customer for off-site monitoring as needed, up to two (2) lines for each front end, as needed, one (1) line for each separate remote bus, as well as on-going maintenance of the lines.

At any time during the contract period, if remote access is interrupted, Honeywell reserves the right to suspend any reporting requirements until such time that remote access can be restored

9. Efficiency Values: Honeywell will install equipment and lighting components (hereto referred as "equipment") under the scope described herein with specific energy and water efficiency values. The customer is required to replace any failed "equipment" no longer warranted by Honeywell or a Honeywell subcontractor, with "equipment" of equal or greater efficiency for the full contract guarantee term.

10. Limitation of Liability – Security Systems, Fire Alarm Systems and/or Components - Honeywell's total liability for damages of any kind or nature arising out of or relating to any aspect or component of the security or fire alarm systems and/or components provided under this Agreement is limited to $50,000.

11. Honeywell will provide information necessary to apply for utility incentives. Actual dollar amount of incentive will be determined by the Utility and is not guaranteed by Honeywell.

12. The following areas are specifically excluded from this scope of work. Correction of problems in these areas, if required by Federal, State or local law or ordinance, will be considered additional work and will be chargeable (with approval) to the Customer.
    a. Any work not specifically stated and outlined in this scope of work.
    b. Painting and patching of areas beyond those areas directly related to work.
    c. Existing non-code conditions (examples: existing electrical wiring which requires correction or approval by appropriate inspectors, existing penetrations in need of fire stopping, etc).

B. RELATED WORK SPECIFIED ELSEWHERE

1. Provision of equipment, material, and labor to provide functional measurement and verification systems coordinated under Attachment D – Energy Guarantee Support Services Agreement.

ATTACHMENT B
SOFTWARE LICENSE AGREEMENT

Honeywell Software License Agreement
for Honeywell Enterprise Buildings Integrator and/or Digital Video Manager

* **Date:**	September 20, 2016		
Customer Name:	Delhi Township	**Honeywell Branch Name:**	Detroit
Customer Address:	2074 Arelius Road Holt, Michigan 48842 - 6320 usa	**Honeywell Branch Address:**	49116 Wixom tech Drive Wixom, MI 48393
Telephone:	(517) 694-1549	**Telephone:**	(248) 926-5002
New **SFDC Account Number:**	Opp-1788792		
New **SFDC Account Name:**	Delhi Township		

Re: Honeywell Software License Agreement

Designated Installation	
Job Number	

* Require manual entry

Dear Customer:

Your new Enterprise Buildings Integrator and/or Digital Video Manager system requires the use of software listed on Exhibit 1 of this form (Software).

Honeywell grants to you a limited, non-exclusive, perpetual license for the internal use of the Software with compatible equipment at the designated installation. You may make up to two (2) copies of the Software in non-printed, machine-readable form, to be used solely for archival or backup purposes.

The Software is proprietary to, and the title to the Software remains with, Honeywell and its vendor(s). You agree (1) not to violate Honeywell's and its vendors' rights in the Software; (2) not to sell, transfer, publish, display, disclose, or make the Software or data it generates, including copies available to others; and (3) not to decompile, disassemble, or otherwise reverse engineer the Software. Absent Honeywell's written consent, which will not be unreasonably withheld, any attempt to transfer, assign, or sublicense this software license agreement ("Agreement") or the Software is null and void. Honeywell may terminate this Agreement upon any material breach if you do not remedy such breach within thirty (30) days after receiving notice from Honeywell; material breach to include, without limitation, the failure of Honeywell to receive full payment for the Software or any associated products and services by you or your representatives, agents, affiliates, subcontractors, vendors, suppliers, or consultants. Upon termination of this Agreement, you will immediately return the Software to Honeywell. Termination will not cancel your obligations under this Agreement.

If, for a period of one (1) year, the Software does not meet Honeywell's specifications, then Honeywell, at its option, shall repair or replace the Software. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL HONEYWELL OR ITS VENDORS BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, PUNITIVE, STATUTORY, OR INDIRECT DAMAGES, LOSS OF PROFITS, REVENUES, OR USE, OR THE LOSS OR CORRUPTION OF DATA, EVEN IF INFORMED OF THE POSSIBILITY OF THESE DAMAGES. THE AGGREGATE LIABILITY OF HONEYWELL FOR ANY CLAIMS ARISING OUT OF OR RELATED TO THIS AGREEMENT WILL IN NO CASE EXCEED THE AMOUNT OF LICENSE FEES PAID BY YOU HEREUNDER. TO THE EXTENT PERMITTED BY APPLICABLE LAW, THESE LIMITATIONS AND EXCLUSIONS WILL APPLY WHETHER LIABILITY ARISES FROM BREACH OF CONTRACT, INDEMNITY, WARRANTY, TORT, OPERATION OF LAW, OR OTHERWISE.

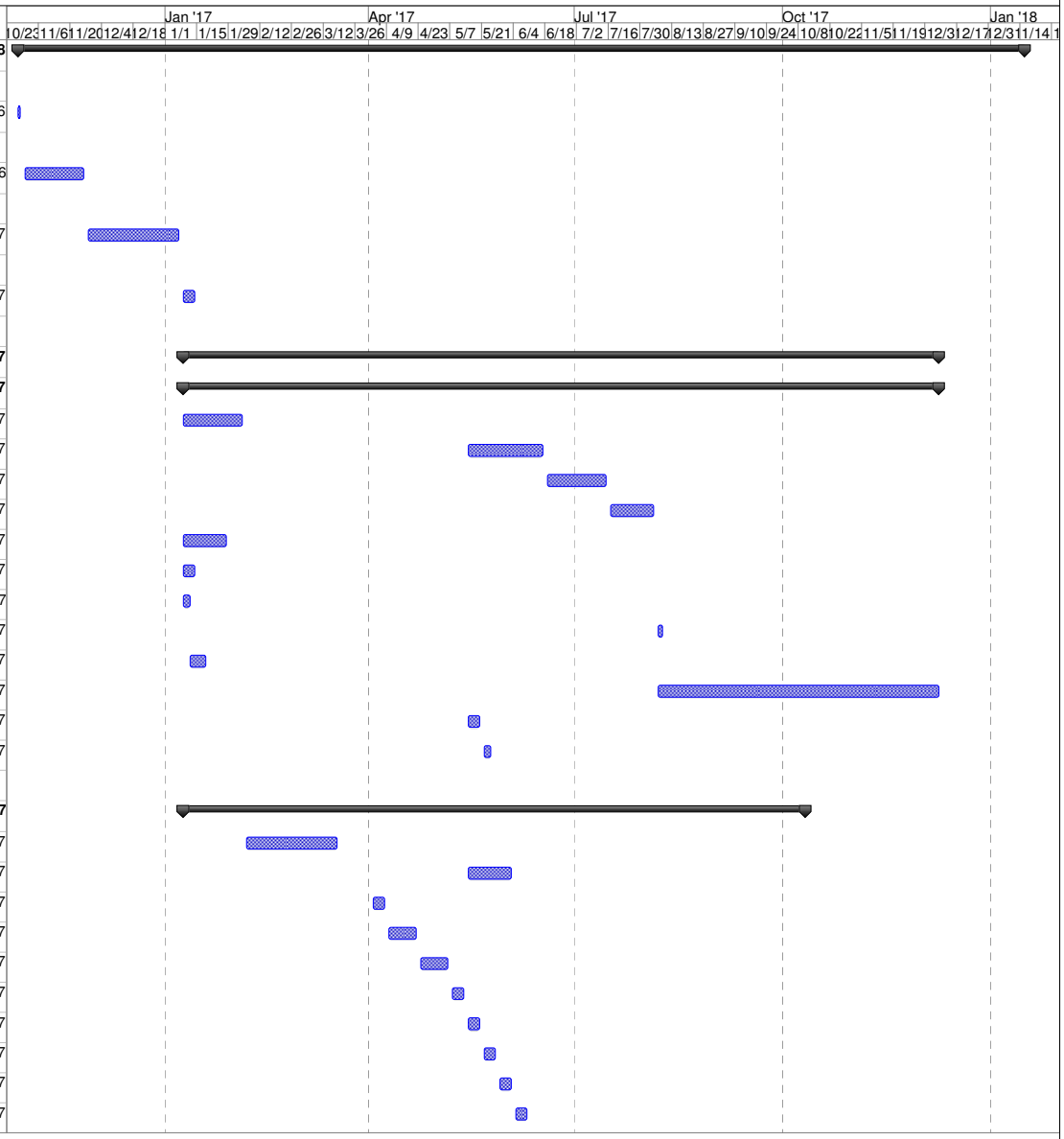
Please indicate your acceptance by signing this Agreement and attached Order Form. You can order expansions, upgrades, and new Software for the designated location by completing and signing a new Order Form.

Sincerely,

Authorized and Accepted by:	Authorized and Accepted by:
_____	_____
Authorized Honeywell Signature	Authorized Customer Signature
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____

Delhi Township
Attachment C
Energy Project Preliminary Installation Schedule

ID	Task Name	Duration	Start	Finish
1	**Delhi Township**	**317 days**	**Fri 10/28/16**	**Mon 1/15/18**
2				
3	**Contract Execution**	1 day	Fri 10/28/16	Fri 10/28/16
4				
5	**Submittal Approvals**	20 days	Mon 10/31/16	Fri 11/25/16
6				
7	**Material Acquisitions**	30 days	Mon 11/28/16	Fri 1/6/17
8				
9	**Pre-Measurement & Verification**	5 days	Mon 1/9/17	Fri 1/13/17
10				
11	**Installation**	**240 days**	**Mon 1/9/17**	**Fri 12/8/17**
12	**Community Serviec Center**	**240 days**	**Mon 1/9/17**	**Fri 12/8/17**
13	Lighting	20 days	Mon 1/9/17	Fri 2/3/17
14	Heat Pump Removal/AHU Installation	25 days	Mon 5/15/17	Fri 6/16/17
15	VAV Box and Re-Heat Installation	20 days	Mon 6/19/17	Fri 7/14/17
16	Replace Boilers	15 days	Mon 7/17/17	Fri 8/4/17
17	Chiller Installation	15 days	Mon 1/9/17	Fri 1/27/17
18	Mini Split A/C Installations	5 days	Mon 1/9/17	Fri 1/13/17
19	Replace Domestic Hot Water Heater	3 days	Mon 1/9/17	Wed 1/11/17
20	Radiant Floor Pump Replacement	2 days	Mon 8/7/17	Tue 8/8/17
21	Refurbish ERV Units	5 days	Thu 1/12/17	Wed 1/18/17
22	Temperature Controls	90 days	Mon 8/7/17	Fri 12/8/17
23	Apparatus Bay Tube Heater Installation	5 days	Mon 5/15/17	Fri 5/19/17
24	Apparatus Bay Exhaust Fan Installation	3 days	Mon 5/22/17	Wed 5/24/17
25				
26	**WWTP**	**197 days**	**Mon 1/9/17**	**Tue 10/10/17**
27	Lighting	30 days	Mon 2/6/17	Fri 3/17/17
28	Process Blower Replacements	15 days	Mon 5/15/17	Fri 6/2/17
29	Administration Roof top Unit Replacement	5 days	Mon 4/3/17	Fri 4/7/17
30	Administration VAV Box and Re-Heat Installation	10 days	Mon 4/10/17	Fri 4/21/17
31	Adminstration Boiler Installation	10 days	Mon 4/24/17	Fri 5/5/17
32	Pole Barn Unit Heater Installations	5 days	Mon 5/8/17	Fri 5/12/17
33	Pole Barn Tube Heater Installations	5 days	Mon 5/15/17	Fri 5/19/17
34	Lab Building MUA Replacement	5 days	Mon 5/22/17	Fri 5/26/17
35	Primary Sludge MUA/Exhaust Fan Replacement	5 days	Mon 5/29/17	Fri 6/2/17
36	Lab Building Fan Coil Replacement	5 days	Mon 6/5/17	Fri 6/9/17

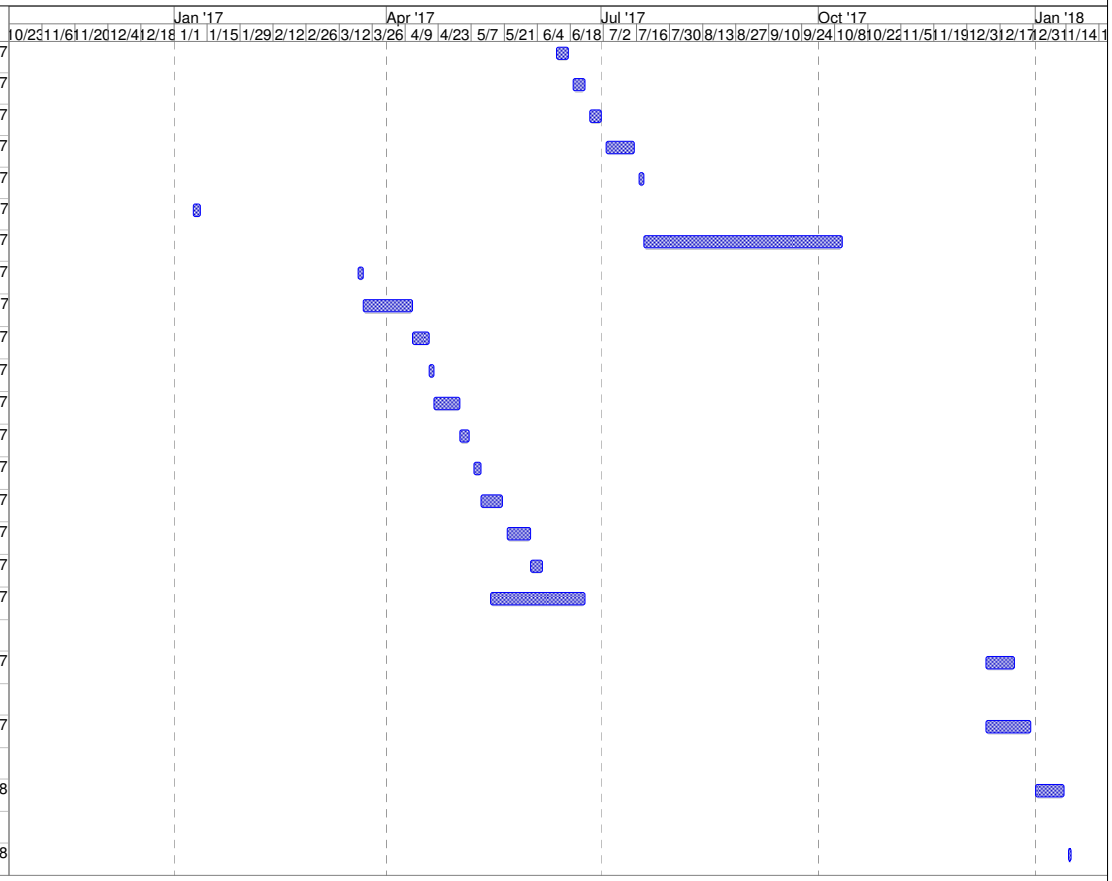


Date: 8/29/2016

Task		Rolled Up Progress		Inactive Task		Duration-only		Progress	
Milestone		Split		Inactive Task		Manual Summary Rollup		Deadline	
Summary		External Tasks		Inactive Milestone		Manual Summary			
Rolled Up Task		Project Summary		Inactive Summary		Start-only			
Rolled Up Milestone		Group By Summary		Manual Task		Finish-only			

Delhi Township
Attachment C
Energy Project Preliminary Installation Schedule

ID	Task Name	Duration	Start	Finish
37	Chemical Feed Room RTU Installation	5 days	Mon 6/12/17	Fri 6/16/17
38	Chemical Feed Room Canopy Hood Installation	5 days	Mon 6/19/17	Fri 6/23/17
39	Lab Fume Hood Supply/Exhaust Fan Replacement	5 days	Mon 6/26/17	Fri 6/30/17
40	Lab Building Boiler Installation	10 days	Mon 7/3/17	Fri 7/14/17
41	Lab Building Pump Replacement	2 days	Mon 7/17/17	Tue 7/18/17
42	Break Room Mini Split A/C	3 days	Mon 1/9/17	Wed 1/11/17
43	Temperature Controls	60 days	Wed 7/19/17	Tue 10/10/17
44	**DDA Office Lighting**	2 days	Mon 3/20/17	Tue 3/21/17
45	**DPS**	15 days	Wed 3/22/17	Tue 4/11/17
46	**Farmer's Market Lighting**	5 days	Wed 4/12/17	Tue 4/18/17
47	**Fire Station #2 Lighting**	2 days	Wed 4/19/17	Thu 4/20/17
48	**Memorial Park Lighting**	7 days	Fri 4/21/17	Mon 5/1/17
49	**Parks and Recreation Lighting**	4 days	Tue 5/2/17	Fri 5/5/17
50	**Recycling Center Lighting**	3 days	Mon 5/8/17	Wed 5/10/17
51	**Senior Center Lighting**	7 days	Thu 5/11/17	Fri 5/19/17
52	**Sheriff's Office Lighting**	8 days	Mon 5/22/17	Wed 5/31/17
53	**Valhalla Park Lighting**	3 days	Thu 6/1/17	Mon 6/5/17
54	**DTE Street Lighting**	30 days	Mon 5/15/17	Fri 6/23/17
55				
56	**Post Measurement & Verification**	10 days	Mon 12/11/17	Fri 12/22/17
57				
58	**Punch List Completion**	15 days	Mon 12/11/17	Fri 12/29/17
59				
60	**Final Approvals**	10 days	Mon 1/1/18	Fri 1/12/18
61				
62	**Project Acceptance**	1 day	Mon 1/15/18	Mon 1/15/18



Date: 8/29/2016

Task		Rolled Up Progress		Inactive Task		Duration-only		Progress	
Milestone		Split		Inactive Task		Manual Summary Rollup		Deadline	
Summary		External Tasks		Inactive Milestone		Manual Summary			
Rolled Up Task		Project Summary		Inactive Summary		Start-only			
Rolled Up Milestone		Group By Summary		Manual Task		Finish-only			

ATTACHMENT D
GUARANTEE AND SUPPORT SERVICES AGREEMENT
(INCLUDING M&V SERVICES, GUARANTEE TERMS, AND SCHEDULE OF GUARANTEED SAVINGS)

Project Name: Delhi Township
Agreement Number:

("Honeywell")

Honeywell International Inc.
49116 Wixom Tech Drive
Wixom, MI 48393

("Customer")

Delhi Charter Township
2074 Aurelius Rd

Holt, MI 48842

Service Location Name(s): Various facilities

Summary - The following summary is for informational purposes only. The specific terms, conditions and other specifications set forth in the details of this Guarantee and Support Services Agreement shall take precedence over this summary.

- ☐ **Preferred Temperature Control Services**
- ☐ **Flex Temperature Control Services**
- ☐ **Preferred Automation Maintenance Services**
- ☐ **Flex Automation Services**
- ☐ **Preferred Fire Alarm Maintenance Services**
- ☐ **Fire Alarm Test and Inspect Services**
- ☐ **Preferred Security System Inspect Services**
- ☐ **Flex Security System Services**
- ☐ **Preferred Mechanical Maintenance Services**
- ☐ **Flex Mechanical Maintenance Services**
- ☐ **ServiceNet™ Remote Monitoring and Control Services**
- ☐ **EBI Services**
- ☒ **M&V Services**
- ☐ **Online Services**
- ☐ **Advanced Support**
- ☐ **Site Services**
- ☐ **Honeywell Energy Analysis Reporting**
- ☐ **Air Filter Services**
- ☐ **Water Treatment Services**
- ☐ **Critical Parts Stocking**
- ☐ **Thermography Services**
- ☐ **Emergency Generator Services**
- ☐ **In Suite Services**
- ☐ **Remote Monitoring/Radionics**
- ☐ **Indoor Air Quality Auditing Services**
- ☐ **Service Management Software**
- ☐ **FM Worksite**
- ☒ **Guarantee Special Provisions**
- ☐ **Other/Special Provisions_____**
- ☐ **Honeywell Users Group**
- ☐ **Attune™ Advisory Services - Operations**
- ☐ **Attune™ Advisory Services - Energy Optimization**
- ☐ **Attune™ Advisory Services – Energy Awareness**
- ☐ **Attune™ Advisory Services – Lobby Digital Signage**

Support Services Agreement Term ("Support Services Term"): (15) years from the Support Services Effective Date.

Support Services Agreement Effective Date ("Support Services Effective Date"): First (1st) day of the month following the date of Final Project Acceptance of the Work (see Attachment J).

Price for Year 1: Eleven Thousand Two Hundred Dollars, ($11,200), (plus applicable taxes). See Section A.6.2 for price in subsequent years.

Payment Terms: Annual in Advance

☐ Sales/Use Tax will be Invoiced Separately ☐ Sales/Use Tax is Included in the Price ☒ This Sale is Tax Exempt

Honeywell International Inc., through its Honeywell Building Solutions strategic business unit ("Honeywell"), will provide, or cause to be provided, to Customer the services (the "Support Services") set forth in the attached work scope documents in Part B of this Attachment D ("Support Services Scope") with respect to the Service Location(s) in accordance with the Support Services Scope, and the terms and conditions set forth in Part A of this Attachment D, which together with the guarantee terms and Schedule of Guaranteed Savings set forth in Part C and Part D, respectively, of this Attachment D, constitute this Guarantee and Support Services Agreement (the "Support Services Agreement"). This Support Services Agreement is entered into as Attachment D to, and by execution of, the accompanying Honeywell Agreement between Honeywell and Customer (the "Main Agreement"). Together, the Main Agreement and Support Services Agreements are the "Agreement."

Part A – Support Services Terms & Conditions

Part B – Support Services Scope Description, including M&V Services

Part C – Guarantee Terms

Part D – Schedule of Guaranteed Savings

Exhibits - The following Exhibits are attached hereto and are made a part of the Agreements:

Exhibit D-1	Baseline Operating Parameters
Exhibit D-2	Guarantee Period Operating Parameters
Exhibit D-3	Contractual Baseline Conditions, Utility Use, Utility Unit Costs Meter Regression Analysis
Exhibit D-4	Engineered Cost Avoidance Calculations
Exhibit D-5	M&V Plan
Exhibit D-6	Operational Savings

PART A. STANDARD TERMS AND CONDITIONS FOR SUPPORT SERVICES

The following terms and conditions, in Sections A.1 to A.8, apply to all Support Services, including M&V Services.

A.1 Terms Incorporated from Main Agreement

The following provisions set forth in the Main Agreement shall apply to the Support Services:

A.1.1 The Patent Indemnity provision in Section 2.3**.**
A.1.2 The Hazardous Substances provision in Section 3.8.
A.1.3 The Taxes provision in Section 3.9.
A.1.4 The Software License provision in Section 3.10.
A.1.5 The Force Majeure provision in Section 5.2.
A.1.6 The Price Adjustment provision in Section 6.1.3.
A.1.7 The Insurance provision in Section 8.2 shall apply through the final completion of the Support Services.
A.1.8 The Indemnity provisions in Article 8.
A.1.9 The Assignment, Governing Law and Miscellaneous provisions in Article 10 and Article 11.
A.1.10 Disputes related to the Support Services shall be resolved in accordance with Article 12 of the Main Agreement.

A.2 Working Hours

A.2.1 Unless otherwise stated, all Support Services will be performed during the hours of 8:00am - 4:30pm local time Monday through Friday, excluding federal or state holidays. If for any reason Customer requests Honeywell to perform Support Services outside such hours, any overtime or additional expenses incurred by Honeywell will be billed to and paid by Customer. Honeywell shall notify Customer of such overtime or additional expenses prior to performing the services.

A.3 Proprietary Information

A.3.1 All proprietary information (as defined herein) obtained by Customer from Honeywell in connection with this Support Services Agreement will remain the property of Honeywell, and Customer will not divulge such information to any third party or use such information (except as necessary to comply with its obligations under this Agreement) without prior written consent of Honeywell. The term "proprietary information" means confidential or non-public information, including but not limited to, software supplied to Customer, disclosed or made available to Customer by Honeywell. The provisions set forth in Section 11.2 of the Main Agreement shall apply to the "proprietary information."

A.3.2 Customer agrees that Honeywell may use non-proprietary information pertaining to the Agreements, and the work or services performed under the Agreements, for press releases, case studies, data analysis, promotional purposes, and other similar documents or statements to be publicly released, as long as Honeywell submits any such document or statement to Customer for its approval, which approval will not be unreasonably withheld. Honeywell may, during and after the term of the Agreements, compile and use, and disseminate in anonymous and aggregated form, all data and information related to building optimization and energy usage obtained in connection with the Agreements. The rights and obligations in this Section A.4 shall survive termination or expiration of the Agreements.

A.4 Limitation of Liability

A.4.1 NOTWITHSTANDING ANY OTHER PROVISION OF THIS AGREEMENT, THE LIMITATIONS OF LIABILITY AND APPLICATION THEREOF, AS SET FORTH IN ARTICLE 2 AND ARTICLE 8 OF THE MAIN AGREEMENT, SHALL APPLY TO THE PROVISION OF THE SUPPORT SERVICES. RESERVED

A.5 Coverage of Support Services

A.5.1 Customer agrees to provide Honeywell access to all equipment and software necessary to Honeywell's performance of the Support Services. Honeywell will be free to start and stop all equipment incidental to the operation of the mechanical, control, automation, and life safety system(s) as arranged with Customer's representative.

A.5.2 Honeywell has no obligation to repair or replace non-maintainable parts of any systems, including, but not limited to, ductwork, piping, shell and tube (for boilers, evaporators, condensers, and chillers), unit cabinets, boiler refractory material, heat exchangers, insulating material, electrical wiring, hydronic and pneumatic piping, structural

supports and other non-moving parts. Costs to repair or replace such non-maintainable parts will be the sole responsibility of Customer.

A.5.3 Honeywell will not reload software, or make repairs or replacements necessitated by reason of negligence or misuse of any equipment by persons other than Honeywell or its employees, or necessitated by lightning, electrical storm, or other violent weather or by any other cause beyond Honeywell's control. Honeywell will provide such services at Customer's request and at an additional charge.

A.5.4 Honeywell is not responsible for maintaining a supply of, furnishing and/or replacing lost or needed chlorofluorocarbon (CFC) based refrigerants not expressly required to be provided by Honeywell under this Agreement. Customer is solely responsible for the cost of material and labor relating to any such refrigerant.

A.5.5 Honeywell is not obligated to provide replacement software, equipment, components and/or parts that represent a significant betterment or capital improvement to Customer's system(s) hereunder.

A.5.6 Unless otherwise expressly provided in this Support Services Agreement, Customer retains all responsibility for maintaining LANs, WANs, leased lines and/or other communication mediums incidental or essential to the operation of the system(s) or Covered Equipment.

A.6 Terms of Payment

A.6.1 Customer will pay or cause to be paid to Honeywell the full price for the Support Services, as specified on the first year line of the Support Services Pricing Table (Section A.6.2) and such price may be adjusted in accordance with this Support Services Pricing Table. Honeywell will submit invoices to Customer in advance for Support Services to be performed during the subsequent billing period, and payment shall be due after Customer's receipt of each such invoice, as set forth in the "Payment Terms" provisions at the beginning of this Attachment D. Payments for Support Services past due more than thirty (30) days shall accrue interest from the due date to the date of payment at the rate of one and one-half percent (1.5%) per month, compounded monthly, or the highest legal rate, whichever is lower. Customer will pay all attorney and/or collection fees incurred by Honeywell in collecting any past due amounts.

A.6.2 HONEYWELL will annually adjust the amounts charged for the Services provided indicated in the table below:

Guarantee Year	Agreement Price (see front page of this Attachment)
2	$11,648
3	$12,114
4	$12,598
5	$13,102
6	$13,627
7	$14,172
8	$14,738
9	$15,328
10	$15,941
11	$16,579
12	$17,242
13	$17,932
14	$18,649
15	$19,395

A.7 Termination

A.7.1 Customer may terminate this Support Services Agreement for cause if Honeywell defaults in the performance of any material term of this Support Services Agreement, or fails or neglects to carry forward the Support Services in accordance with this Support Services Agreement, after giving Honeywell written notice of its intent to terminate. If, within thirty (30) days following receipt of such notice, Honeywell fails to cure such default, Customer may, by written notice to Honeywell, terminate this Support Services Agreement.

A.7.2 Honeywell may terminate this Agreement for cause (including, but not limited to, Customer's failure to make payments as agreed herein) if Customer breaches this Agreement. If, within thirty (30) days following Honeywell's notice of breach, Customer fails to make the payments then due, or otherwise fails to cure such breach, Honeywell

may, by written notice to Customer, terminate this Agreement and recover from Customer payment for Work performed and applicable damages.

A.7.3 Honeywell may terminate this Support Services Agreement in the event Honeywell equipment on Customer's premises is destroyed or substantially damaged. Likewise, Customer may terminate this Support Services Agreement in the event Customer's premises are destroyed. In the event of such termination under this Section A.9.4, neither party shall be liable for damages or subject to any penalty, except that Customer will remain liable for Support Services performed to the date of termination.

A.8 Appropriations and Essential Use

A.8.1 Customer reasonably believes that sufficient funds can be obtained to make all payments for the initial term, as described in the summary at the beginning of this Support Services Agreement. Customer hereby covenants that it shall do all things lawfully within its power to obtain funds from which such payments may be made, including making provisions for such payments, to the extent necessary, in each budget submitted for the purpose of obtaining funding, using its bona fide best efforts to have such portion of the budget approved and exhausting all available administrative reviews and appeals in the event such portion of the budget is not approved. It is Customer's intent to make the payments for the initial term if funds are legally available therefore and in that regard Customer represents that (a) the use of the Covered Equipment and Support Services is essential to its proper, efficient and economic functioning or to the services that is provided to its citizens; (b) Customer has an immediate need for and expects to make immediate use of substantially all the Covered Equipment and Support Services, which need is not temporary or expected to diminish in the foreseeable future; and (c) the Covered Equipment and Support Services shall be used by Customer only for the purpose of performing one or more of its governmental or proprietary functions consistent with the permissible scope of its authority.

A.8.2 In the event no funds or insufficient funds are appropriated and budgeted for the acquisition, retention or operation of the Covered Equipment and Support Services under the Support Services Agreement, then Customer shall, not less than sixty (60) days prior to the end of such applicable fiscal period, in writing, notify Honeywell (and its assignee, if any) of such occurrence. The Support Services Agreement shall thereafter terminate and be rendered null and void on the last day of the fiscal period for which appropriations were made without penalty, liability or expense to Customer of any kind, except as to (i) the portions of the payments herein agreed upon for which funds have been appropriated and budgeted or are otherwise available, and (ii) Customer's other obligations and liabilities under the Agreement relating to, accruing or arising prior to such termination. In the event of such termination, Customer agrees to peaceably surrender to Honeywell (or its assignee, if any) possession of any equipment that is provided by Honeywell under the Support Services Agreement, on the date of such termination, packed for shipment in accordance with manufacturer's specifications and eligible for manufacturer's maintenance, and freight prepaid and insured to any location in the continental United States designated by Honeywell, all at Customer's expense. Honeywell (or its assignee, if any) may exercise all available legal and equitable rights and remedies in retaking possession of any equipment provided by Honeywell under this Support Services Agreement.

The following terms and conditions, in Sections A.9 to A.12, apply to all Support Services, except for the M&V Services.

A.9 Warranty

Any equipment provided as part of the Support Services shall be covered by the warranties set forth in Section 2.4 of the Main Agreement. The warranty term for such equipment shall commence upon installation.

A.10 Refrigerant

A.10.1 Customer is responsible for the containment of any and all refrigerant stored on or about the premises. Customer accepts all responsibility for any and all claims, damages, or causes of action that arise out of the storage, consumption, loss and/or disposal of refrigerant, except to the extent Honeywell has brought refrigerant onsite and is directly and solely negligent for its mishandling.

A.11 Coverage of Support Services (other than M&V Services)

A.11.1 It is understood that the repair, replacement, and emergency service provisions of this Support Services Agreement, if any, apply only to the Covered Equipment. "Covered Equipment" means the equipment covered by the Support Services other than M&V Services, if any, to be performed by Honeywell under this Support Services Agreement, and is limited to the equipment expressly identified as such in the Scope of Support Services.

A.11.2 Customer agrees to use Covered Equipment and software covered by the Support Services in accordance with the manufacturer's specifications.

A.11.3 Honeywell may install diagnostic devices and/or software at Honeywell's expense to enhance system operation and support. Upon termination or expiration of this Support Services Agreement, Honeywell may remove these devices and return the applicable system(s) to their original operation. Customer agrees to provide, at its sole expense, connection to the switched telephone network for the diagnostic devices and/or software.

A.11.4 This Support Services Agreement assumes that the applicable systems and/or Covered Equipment and applicable software are in maintainable condition. If repairs are necessary upon initial inspection or initial seasonal start-up, repair charges will be submitted for approval. Should these charges be declined, those non-maintainable items will be eliminated from coverage under this Support Services Agreement and the Support Services Price adjusted accordingly.

A.11.5 In the event that any applicable system or any equipment component thereof is altered, modified, changed or moved, this Support Services Agreement may be immediately adjusted or terminated, at Honeywell's sole option. Honeywell is not responsible for any damages resulting from such alterations, modifications, changes or movement.

A.11.6 Maintenance, repairs, and replacement of equipment parts and components are limited to restoring to proper working condition.

A.11.7 Customer will promptly notify Honeywell of any malfunction in the system(s) or Covered Equipment that comes to Customer's attention**.**

PART B. SUPPORT SERVICES SCOPE DESCRIPTION

B.1 Guarantee Analysis Services

B.1.1 Scope – Honeywell will implement the guarantee analysis services outlined in Section B.1.3 (the **"M&V Services"**) for the following ECMs. The M&V Services are to be performed consistent with the terms of the guarantee set forth in Part C, and the Schedule of Guaranteed Savings and related provisions set forth in Part D, in each case of this Attachment D. Certain defined terms are set forth in Part C.

List of Covered Facilities, Meters, Energy Conservation Measures ("ECMs) by Service Offering:

(a)	(b)	(c)	(d)
Facility	**LDC-Meter # / Utility Type**	**ECMs** (list only ECMs associated with meter listed in Column (b))	**Related M&V Methodology**
Delhi Township Community Center	Electricity	ECM 1 Lighting Upgrades, ECM 3 HVAC System Upgrades,	Option C – as described below
Delhi Township Community Center	Natural Gas	ECM 3 HVAC System Upgrades,	No Measured Savings
Delhi Township DDA Office	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Ingham County Sherriff Office	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township DPS Office	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township DPS Pole Barn	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township Farmers Market	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township Fire Station #2	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township Memorial Park	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township Parks and Recreation	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township Senior Center	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township POTW	Electricity	ECM 1 Lighting Upgrades, ECM 2 High Speed Turbo Blowers	Option A – as described below
Delhi Township POTW – Administration, Lab, Pole Barn	Electricity	ECM 1 Lighting Upgrades, ECM 3 HVAC System Upgrades	Option A – as described below
Delhi Township POTW – Administration, Lab, Pole Barn	Natural Gas	ECM 3 HVAC System Upgrades	Option A – as described below
Delhi Township POTW - Digester	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township POTW - RBC	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township POTW – Tertiary	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township POTW – Ponds	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township Valhalla Park	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township DDA - Streetlights	Electricity	ECM 1 Lighting Upgrades	Option A – as described below
Delhi Township Lansing Board Street Lights	Electricity	ECM 1 Lighting Upgrades	Option A – as described below

B.1.1.1 General Descriptions – The following are general descriptions of one or more approaches to providing guarantee analysis services. The specific details of the M&V Services relating to the Retrofit as set forth in this Support Services Agreement take precedence over these descriptions.

Option A—Retrofit Isolation with Key Parameter Measurement
This option is based on a combination of measured and estimated factors when variations in factors are not expected. Measurements are spot or short-term and are taken at the component or system level, both in the baseline and post-installation cases. Measurements should include the key performance parameter(s) which define the energy use of the ECM. Estimated factors are supported by historical or manufacturer's data. Savings are determined by means of engineering calculations of baseline and post-installation energy use based on measured and estimated values. Savings are calculated using direct measurements and estimated values, engineering calculations and/or component or system models often developed through regression analysis. Adjustments to models are not typically required.

HONEYWELL will provide Retrofit Isolation with Pre and Post Measurements also known as *Option A* energy guarantee auditing services as detailed herein and in the Exhibits for specific ECMs for Measurement and Verification. RIM with Pre/Post Option A methods will be applied on an ECM specific basis (i.e., isolated to the retrofit) and Energy Cost Avoidance for a Guarantee Year will be quantified and summarized on an ECM basis. After the ECM's potential-to-save has been verified (section 1.3) HONEYWELL shall either stipulate the quantity of cost avoidance or determine the cost avoidance from engineering calculations and measurement of specific variables. Utility bill auditing (Option C) and reconciliation of Option A results to electric or water utility meter bill data is not included. The retrofit isolation method was selected by the CUSTOMER to provide an economical reconciliation method and to minimize the interactive effects on the determination of cost avoidance due changes to the site or facilities from the baseline conditions.

HONEYWELL will provide a single (1) reporting submission of the determination of energy avoidance for the First Guarantee Year. The Energy Avoidance quantified in the First Guarantee Year will be stipulated as the annual Energy Avoidance for each Guarantee Year of the remaining contract term. The subsequent annual Guarantee Reconciliation Reports will be delivered within 90 days of the guarantee period end date.

HONEYWELL will conduct a walk-through inspection and data collection using the BAS and available service records to verify the ongoing potential to perform for the ECM's as noted in Table B.1.1 above. During the walk through, Honeywell will:

1. Verify through visual observation that each ECM is still installed.
2. Verify to the limits of visual observation that each ECM is still functional. Additional verification will be performed via service records provided.
3. Record current manual set points and manual settings. Record changes in the operation, control sequences and control set points of the ECMs from original installed conditions.
4. Record observations about the current status of the building (i.e. occupancy, use), compare to CUSTOMER records, and compare against the contractual baseline and required post-retrofit operating conditions.
5. Record observed addition or deletion of site equipment, which may impact the ECMs or the building energy consumption and compare to CUSTOMER records.
6. Record observations regarding other changes on site that may impact the ECMs or the building energy consumption

Work Coverage: As listed in Table B.1.1 above

Term Coverage: Years 1 to term

Option A Audit Report and Guarantee Reconciliation section will be submitted annually

Option B—Retrofit Isolation with All Parameter Measurement
This option is based on periodic or continuous measurements of energy use taken at the component or system level when variations in factors are expected. Energy or proxies of energy use are measured continuously. Periodic spot or short-term measurements may suffice when variations in factors are not expected. Savings are determined from analysis of baseline and reporting period energy use or proxies of energy use. Savings are calculated using direct measurements, engineering calculations, and/or component or system models often developed through regression analysis. Adjustments to models may be required.
Option B Methodologies are NOT included for this project.

Option C – Utility Data Analysis
This option is based on long-term, continuous, whole-building utility meter, facility level, or sub-meter energy (or water) data. Savings are determined from analysis of baseline and reporting period energy data. Typically, regression analysis is conducted to correlate with and adjust energy use to independent variables such as weather, but simple comparisons may also be used. Savings calculations use regression analysis of utility meter data to account for factors that drive energy use. Adjustments to models are typically required.

HONEYWELL will provide Whole Building Utility Bill Analysis (also known as *Option C*) energy guarantee auditing services as detailed herein and in the Exhibits to this agreement. Under *Option C* services, HONEYWELL will analyze CUSTOMER'S energy use and costs against an "established baseline" described herein and in the Exhibits to this agreement, the walk through described in the Option A methodology above may provide visual inspection and data collection information relative to whole building energy consumption. Observations and collected data will be used to verify operation and performance to project specifications, and may also be used as appropriate to quantify baseline adjustments for the determination of energy and cost avoidance. HONEYWELL will use energy auditing software to track monthly facility costs, energy consumption, and Energy Cost Avoidance and to quantify and report on changes in energy usage due to changes in billing periods and weather. HONEYWELL will adjust the baseline for changes in energy usage due to changes in variables including, but not limited to billing periods, weather, production, occupancy, building load, conditioned building area, equipment operation, and scheduling methodologies etc. as defined herein. These routine and non-routine baseline adjustments will be calculated using industry-standard engineering calculations. As applicable, HONEYWELL will adjust the energy cost baseline for changes in the unit cost of energy.

Work Coverage: Gas and Electric Meter for Community Center Facility only

Term Coverage: <u>Years 1 to term</u>

Option C Audit Report and Guarantee Reconciliation section will be submitted annually

Option D—Calibrated Computer Simulation
Computer simulation software is used to model energy performance of a whole-facility (or sub-facility). Models must be calibrated with actual hourly or monthly billing data from the facility. Implementation of simulation modeling requires engineering expertise. Inputs to the model include facility characteristics; performance specifications of new and existing equipment or systems; engineering estimates, spot-, short-term, or long-term measurements of system components; and long-term whole-building utility meter data. After the model has been calibrated, savings are determined by comparing a simulation of the baseline with either a simulation of the performance period or actual utility data. Savings calculations are done based on computer simulation model (such as eQUEST) calibrated with whole-building or end-use metered data or both. Adjustments to models are required.
Option D Methodologies are NOT included for this project.

B.1.2 Coverage – The M&V Services includes all labor, travel, and expenses to perform the services and frequency described in Section B.1.3. In general, and subject to details of the M&V Plan, Honeywell will provide a single (1) reporting submission of the determination of the amount of Cost Avoidance for each Guarantee Year. Services not explicitly described in Section B.1.3, including Customer Guarantee Responsibilities, are not included.

B.1.3 <u>M&V Plan</u>: In general, the M&V Services:

(a) are required to be performed for the entire Guarantee Term;
(b) may employ one or more of Options A, B, C or D; and
(c) include delivering a report on an annual basis, for either the entire Guarantee Term, or for a shorter M&V reporting term.

The details of the M&V Services are set forth in the M&V Plan, as described in detail in Exhibit D-5, which takes precedence over the general description in this Section B.1.3.

B.2. <u>Additional Support Services NOT Applicable</u>

PART C. GUARANTEE TERMS

C.1. Definitions

When used in this Agreement, the following capitalized words shall have the meanings ascribed to them below:

"Annual Scheduled Savings" means for any applicable Guarantee Year, the amount set forth in the Schedule of Guaranteed Savings in Section D.1.

"Baseline" or **"Base Year"** is the description that defines the Baseline Usage unit costs and facilities, systems, or equipment operations and characteristics, and environmental conditions that are to be used as the benchmark for determining Cost Avoidance. It may not always be one contiguous element of time and may be different from a 365-day annual period.

"Baseline Period" is the period of time (specified in Part D) coordinated with the Baseline Usage, including for the purpose of utility bill analysis, to allow the comparison of a Guarantee Year against a Baseline. The Baseline Period may not always be one contiguous element of time and may be different from a 365-day annual period. Baseline information from non-contiguous elements of time may be normalized and assigned to a specified Baseline Period.

"Baseline," "Baseline Usage" or "Baseline Demand" is the calculated or measured Energy usage (demand) by a piece of equipment or a site prior to the implementation of the ECMs. Baseline physical conditions, such as equipment counts, nameplate data, and control strategies, will typically be determined through surveys, inspections, and/or metering at the site.

"Construction Period" is the time period between the start of the project installation and the date of Final Project Acceptance.

"Cost Avoidance" means the difference between the actual cost incurred during a selected time period versus what the cost *would have been* had the ECM not been implemented, including without limitation avoided, defrayed, or reallocated costs.

"Customer Guarantee Practices" are those practices identified herein, intended to achieve Cost Avoidance or necessary to the analysis thereof, as set forth in Section C.4.

"Energy" means utilities and may include electricity and fuels to operate HVAC equipment, facility mechanical and lighting systems, and energy management systems, and water and sewer usage, and secondary utilities such as district steam or compressed air as applicable.

"Energy Costs" means the cost of Energy.

"ECM" means an energy conservation measure, which is the installation of equipment or systems, or modification of equipment or systems as described in Attachment A, for the purpose of avoiding utility (energy, water, etc.) consumption and demand and costs and/or non-utility (O&M, operational) costs.

"Excess Savings" means for any Guarantee Year, the amount, if any, by which the Cost Avoidance applicable to that Guarantee Year exceeds the Annual Scheduled Savings.

"Facilities" shall mean those buildings, or any other facility, location or infrastructure, where Savings will be realized.

"Financing Document" refers to that document, if any, executed between Customer and a third-party financing entity providing for payments from Customer to third-party financing entity.

"Final Project Acceptance" refers to Customer acceptance of the installation of the ECMs (see Attachment J).

"First Guarantee Year" is defined as the period beginning on the first (1st) day of the month following the date of Final Project Acceptance of the Work installed and ending on the day prior to the first (1st) anniversary thereof.

"Guarantee Period" is defined as the period beginning on the first (1st) day of the First Guarantee Year and ending on the last day of the final Guarantee Year, also known as the **"Measurement and Verification Phase", "Measurement and Verification Period", "Performance Period", or "Performance Phase"**.

"Guarantee Year" is defined as the First Guarantee Year and each of the successive twelve (12) month periods commencing on the anniversary of the commencement of the First Guarantee Year throughout the Guarantee Term.

"Guaranteed Savings" is defined as the total scheduled amount of Cost Avoidance that Honeywell is guaranteeing, as set forth in Section D.1 of Part D.

"Guarantee Term" shall have the meaning as defined in Section C.2.1 hereof, also referred to as "Term."

"M&V" means measurement and verification.

"M&V Systems and Equipment" as used in this Guarantee means the systems and equipment identified in Honeywell's Scope of Work and M&V Services, including as set forth in Section C.4.1.

"**Material Change**" is defined as any change in the following which reasonably could be expected to increase or decrease Energy or Operational Costs at a Facility by a value more than five percent (5%) of the Annual Scheduled Savings per utility meter or submeter, as applicable:

(1) manner of use of the Facility by Client;
(2) hours of operation of any equipment, building or energy system contained in the Facility;
(3) occupancy of the Facility;
(4) structure of the Facility;
(5) types of equipment used in the Facility; or
(6) conditions affecting energy use in the Facility.

"Measurement and Verification Plan" or "M&V Plan" is defined as the plan providing details on how the Guaranteed Savings will be verified.

"Operational Costs" commonly referred to as O&M costs, shall include the cost of operating and maintaining the Facilities, such as, but not limited to, the cost of inside and outside labor to repair and maintain affected systems and equipment, the cost of custodial supplies, the cost of replacement parts, the cost of deferred maintenance, the cost of lamp and ballast disposal, and the cost of new capital equipment.

"Potential-to-Save" or "Potential-to-Perform" by an ECM is satisfied when a measure is properly installed and has the potential to generate predicted levels of Cost Avoidance. Verification of an ECM's "potential-to-save" is satisfied upon Customer's signing of a Deliver and Acceptance Certificate, as set forth in Attachment J, or its equivalent.

"Retrofit" is the work provided by Honeywell as defined by the "ECMs."

"Retrofit Costs" are the sum of (i) the price for the Work; (ii) interest and other direct fees for financing required to be made by Customer pursuant to the Financing Document; and (iii) the payments required to be made by Customer for the M&V Services.

"Retrofit Isolation Method", **"RIM"**, **"RIM Approach"** or **"Retrofit Isolation Method Approach"** is an M&V approach that verifies the Guaranteed Savings using techniques that isolate the Energy use of the ECM and affected systems separate from the Energy use of the rest of the Facility. This method is used to mitigate the interactive Energy effects of changes made to the Facility outside of Honeywell's control.

"Savings" is another term for Cost Avoidance.

"Total Guarantee Year Savings" is defined as the summation of Cost Avoidance realized by Facilities in each Guarantee Year as a result of the Retrofit, and Support Services provided by Honeywell, as well as Excess Savings, if any, carried forward from previous years.

C.2. Term and Termination

C.2.1 Guarantee Term. The Guarantee Term shall commence on the first (1st) day of the month following the date of Final Project Acceptance of the Work installed pursuant to this Agreement, and shall terminate at the end of the Support Services Term (as defined at the beginning of this Attachment D), unless terminated earlier as provided for herein.

C.2.2 Guarantee Termination. Customer shall continue to contract with Honeywell for the M&V Services set forth in this Support Services Agreement for the entire Guarantee Term. Should this Support Services Agreement, or other existing agreements for the M&V Systems and Equipment not covered in this Support Services Agreement, be terminated in whole or in part for any reason, the Guarantee Term shall also terminate on the same date. The Guaranteed Savings for a Guarantee Year in which such termination becomes effective shall be prorated as of the effective date of such termination, with a reasonable adjustment for seasonal fluctuations in Energy Costs and Operational Costs, and the Guaranteed Savings for all subsequent Guarantee Years shall be null and void.

C.3. Savings Guarantee

Guaranteed Savings Calculations Details

C.3.1 Guarantee of Savings. Honeywell guarantees to Customer that the identified Facilities will realize the total Guaranteed Savings through the combined value of all ECMs over the Guarantee Term, as defined herein.

C.3.1.1 Additional Savings Before Final Project Acceptance. All Cost Avoidance realized by Customer that result from activities undertaken by Honeywell prior to Final Project Acceptance, including any utility rebates or other incentives earned as a direct result of the installed ECMs or Support Services provided by Honeywell, will be applied toward the Guaranteed Savings for the First Guarantee Year.

C.3.1.2 Additional Savings After Final Project Acceptance. Additional Cost Avoidance, including any utility rebates or other incentives, that can be demonstrated, or earned, as a result of Honeywell's efforts that result in no additional costs to Customer beyond the costs identified in this Agreement will be included in the M&V Report (as defined in Section C.3.2 below) for the applicable Guarantee Year(s).

C.3.1.3 Satisfaction of Guarantee. The Guaranteed Savings in each Guarantee Year are considered satisfied if the Total Guarantee Year Savings for such Guarantee Year equals or exceeds the Annual Scheduled Savings.

C.3.1.4 Excess Savings. Excess Savings shall be carried forward and applied to any future Guarantee Year(s). In the event Honeywell has previously paid Customer for a Guaranteed Savings shortfall in a past Guarantee Year, pursuant to Section C.3.1.5, then Excess Savings in current Guarantee Year shall be billed to Customer (but only up to any amounts previously paid by Honeywell for a shortfall) and Customer shall pay Honeywell within thirty (30) days after receipt of such bill, and any remaining Excess Savings shall be carried forward and applied against Guaranteed Savings shortfalls in any future Guarantee Year.

C.3.1.5 Savings Shortfalls. In the event that the Total Guarantee Year Savings in any Guarantee Year is less than the Annual Scheduled Savings, after giving credit for any Excess Savings carried forward from previous Guarantee Years pursuant to Section C.3.1.4, Honeywell shall, upon receipt of written demand from Customer, compensate Customer the amount of any such shortfall, in such form as agreed to by the parties, limited by the total value of the Guaranteed Savings, within sixty (60) days. Resulting compensation shall be Honeywell's sole liability for any shortfall in the Guaranteed Savings. In case of a shortfall, Honeywell reserves the right, subject to Customer approval, which shall not be unreasonably withheld, to implement additional operational improvements or conservation measures, at no cost to Customer, that will generate additional savings in future years of the Guarantee Term, and Honeywell has the option of extending its M&V Services to verify successful performance.

C.3.1.6 Aggregation of Savings. The parties mutually agree that the Guaranteed Savings for this Agreement and the Guaranteed Savings for all previous active projects with guaranteed savings for this Customer shall be combined each year until the end of the original guarantee term for each project. Throughout the duration of the term for the each specific phase the total savings will be utilized as an aggregate in satisfying the sum of the respective guarantees.

Guaranteed Savings Reconciliation Process

C.3.2 Guaranteed Savings Reconciliation Documentation. As part of the M&V Services, and as set forth in the M&V Plan, Honeywell will provide Customer with a Guaranteed Savings reconciliation report ("**M&V Report**") within ninety (90) days after receipt of the information Customer is to provide as part of the Customer Guarantee Practices that is reasonably necessary to the preparation of the M&V Report. Data and calculations utilized by Honeywell in the preparation of its M&V Report will be made available to Customer, along with such explanations and clarifications as Customer may reasonably request.

C.3.2.1 Acceptance of M&V Report. Customer will have forty-five (45) days to review the M&V Report and provide written notice to Honeywell of non-acceptance of the Guaranteed Savings for that Guarantee Year. Failure to provide written notice within forty-five (45) days of the receipt of the M&V Report will deem it accepted by Customer.

C.3.2.2 Guaranteed Savings Reconciliation. Guaranteed Savings will be determined in accordance with the methodology(s), operating parameters, formulas, and constants as described in Part C and Part D, using the M&V Services, and/or additional methodologies defined by Honeywell that may be negotiated with Customer at any time.

C.3.2.3 Base Year Adjustments. The Baseline shall be adjusted to reflect:

(a) changes in occupied square footage;
(b) changes in energy-consuming equipment, including any repairs or improvements made to the equipment as part of this Agreement;
(c) changes in the Facilities;
(d) changes in Customer Guarantee Practices adversely affecting energy consumption and/or demonstrated operational changes;
(e) changes in weather between the Baseline Period and the Guarantee Year; and
(f) documented or otherwise conclusively established metering errors for the Baseline Period and/or any Guarantee Year adversely affecting Energy usage measurement.

C.3.2.4 Other Potential Guarantee Adjustments. Honeywell's Guaranteed Savings obligations under this Agreement are contingent upon:

(a) Customer following each of the Customer Guarantee Practices set forth herein;
(b) no alterations or additions being made by Customer to any of the M&V Systems and Equipment without prior notice to and agreement by Honeywell;
(c) The absence of any event Customer is to report under Section C.4.5; and
(d) Honeywell's ability to render services not being impaired by circumstances beyond its control.

To the extent Customer defaults in or fails to perform fully any of its obligations under the Agreement, including without limitation any of the Customer Guarantee Practices, or the occurrence of any event Customer is to report under Section C.4.5, Honeywell may, in its sole discretion, adjust its Guaranteed Savings obligation or deem it met; provided, however, that no adjustment hereunder shall be effective unless Honeywell has first provided Customer with written notice of Customer's default(s) or failure(s) to perform and Customer has failed to cure its default(s) or failure(s) to perform within thirty (30) days after the date of such notice.

In addition, if for any reason any Facility and/or utility meter covered under this Agreement is materially unoccupied, closed, or discontinued, the Savings will be deemed realized for such Facility or meter, and the Guaranteed Savings will be adjusted accordingly. Honeywell will provide written notice of such adjustment to the Customer.

C.3.2.5 Adjustments for Material Changes. In the event of any increase or decrease in energy consumption and demand for any month resulting from a reported Material Change (see Section C.4.5.1) or unreported Material Change (see Section C.3.2.6), the amount of that increase shall be subtracted from, or that decrease shall be added to, the total energy consumption and demand for that month prior to the calculation of energy savings. If a reported or unreported Material Change affected energy consumption and demand in the same calendar month in the preceding year, the *next preceding* contract year where a Material Change has not occurred will be used to compute the value of the Material Change and the energy savings for the current month.

C.3.2.6 Unreported Material Changes. In the absence of any Material Change in the Facilities or in their operations reported by Customer under Section C.4.5.1 below, energy consumption and demand should not change from year to year. Therefore, if energy consumption and demand per utility meter or submeter for any month increases by five percent (5%) or more of the Annual Scheduled Savings per meter from the Energy consumption and demand for the same month of the *preceding* year, after adjustment for changes to climactic conditions, then such increase shall be deemed to have resulted from a Material Change, except where such increase is due to equipment malfunction, faulty repair or other acts of negligence by Honeywell.

C.3.2.7 Guarantee Based on Agreement Only. Customer's request for proposal or qualifications, Honeywell's proposal and any other documents submitted by Honeywell to the Customer prior to negotiation of this Agreement are expressly excluded from and are not a part of this Agreement. The parties agree that although the Honeywell proposal may have contained scope items, guaranteed savings and M&V options other than those stated in the Agreement, the final scope of work, Schedule of Guaranteed Savings, and M&V Plan were developed jointly by the

parties through negotiation. The Customer has chosen to purchase the scope of work set forth in Attachment A. The Customer accepts the Guaranteed Savings and agrees to the M&V Plan set forth herein.

C.4 Customer Guarantee Practices

C.4.1 Equipment Subject to these Provisions. M&V Systems and Equipment affecting the Guaranteed Savings include:

(a) equipment provided as per Attachment A – Scope of Work;
(b) modifications made to existing equipment as outlined in Attachment A – Scope of Work;
(c) existing or new equipment not provided or modified under this Agreement, but materially affected by the work provided per Attachment A – Scope of Work and consuming energy or water via utility meters covered by the Agreement.

C.4.2 Hours and Practices. To achieve the Savings, Honeywell and Customer agree upon the Guaranteed Period operating parameters described in Exhibit(s) [D-2]. The Customer agrees to operate, or cause to effect the operation of, the M&V Systems and Equipment in such manner that is in accordance with these Guaranteed Period operating parameters.

C.4.3 Customer Maintenance and Replacement Responsibilities. During the term of this Support Services Agreement, for all equipment affecting the Guaranteed Savings, the Customer shall perform on-going maintenance and accomplish component replacement and equipment repairs in accordance with manufacturer's standards and practices and take all reasonable measures to insure the equipment is operating at full efficiency. Component replacement and equipment repairs must be accomplished in a timely fashion. Additionally, Customer shall insure such equipment is operated at all times in accordance with applicable manufacturer's specifications, Honeywell specifications, and the requirements contained herein. For all non-Honeywell maintenance actions, Customer shall document and make available to Honeywell maintenance dates and tasks accomplished, the start date and duration of all deficient equipment operation and the subsequent corrective action and/or repair dates. Customer shall replace any vandalized or any failed equipment or component no longer warranted by Honeywell or the manufacturer, with equipment or components of equal or greater efficiency value than installed by Honeywell, for the full Guarantee Term. Customer shall be responsible to investigate and correct any reported deficiencies not covered under this Support Services Agreement.

C.4.4 Facility Operational Changes. Except in the case of emergencies, Customer agrees it will not, without the consent of an authorized representative of Honeywell:

(a) make any significant deviations from the applicable Customer Guarantee Practices;
(b) put any system or item of equipment in a permanent "on" position, if the same would constitute a deviation from the applicable Customer Guarantee Practices; or
(c) assume manual control of any energy management system or item of equipment, if the same would constitute a deviation from the applicable Customer Guarantee Practices.

C.4.5 Customer Reporting Responsibilities. Customer shall report to Honeywell in writing within fifteen (15) days of the following changes or events:

(a) any additional energy source or change in existing energy source or supplier that the Customer may negotiate during the term of this Guarantee and/or,
(b) any material change in system or equipment status, including replacement of, addition to, or modification of existing energy and/or water consuming systems or equipment and/or,
(c) any long term temporary (equal to or greater than 10 days) or permanent changes in operating schedules and/or,
(d) any material change in the payment schedule, such as due to refinancing or variable interest rate and/or,
(e) for any reason any Facility and/or utility meter covered under this Agreement is materially unoccupied, closed, or discontinued

Customer shall promptly notify Honeywell of any other activities known to Customer which could adversely impact the ability to realize the Guaranteed Savings.

C.4.5.1 Reported Material Changes. Customer shall deliver to Honeywell a written notice describing and explaining all actual or proposed Material Changes (as defined below) in a Facility or in the operations in a Facility and their anticipated effect on Energy or Operational Costs. Said notice must be delivered to Honeywell no less than seven (7) days before any actual or proposed Material Change occurs.

C.4.6 Customer Granted Access for Remote Diagnostics. Customer shall allow Honeywell to perform remote diagnostics on all equipment associated with the Guaranteed Savings for operational compliance with the manufacturer's specifications, and the requirements contained herein. Customer is responsible for implementation and costs for remote Honeywell TCP/IP remote access through Customer's firewall(s) to the controllers and front-end computer(s) for one (1) remote user designated by Honeywell, including but not limited to a dedicated static IP address, installation and on-going maintenance and subscription and licensing fees for access hardware and software and one (1) station license dedicated to the remote user.

C.4.7 Customer Provided Documentation. It will be the responsibility of the Customer to provide to an individual designated by Honeywell on a minimum monthly basis (unless noted otherwise):

(a) Verification that equipment installed to perform the ECMs has been properly maintained, including but limited to provision of maintenance records.
(b) Current status of the buildings (i.e., occupancy level and use, hours of operation, etc.).
(c) Records of customer initiated changes in equipment setpoints, start/stop conditions, usage patterns.
(d) Records of customer initiated changes in operation of mechanical systems, which may impact the ECMs.
(e) Records regarding addition or deletion of equipment or building structure, which may impact the ECMs or the building energy consumption.
(f) Copies of monthly utility bills and utility summary data on a *monthly* basis, and fuel storage tank levels, including without limitation fuel oil and biomass levels, in each case within two (2) weeks following the Customer's receipt thereof, and access to utility accounts through an authorization by the Customer to the Utility to allow the release of data to a Honeywell representative, together with access to relevant records relating to such utility costs.
(g) Access to any maintenance records, drawings, control system trend data, or other data reasonably deemed necessary by Honeywell to perform the M&V Services.

C.4.8 Customer Governmental Unit Reporting Responsibilities. Customer is solely responsible for reports to be submitted to the Department of Commerce, Public Utilities/Services Commission, or any other governmental agency or governmental unit.

C.4.9 Customer Rebate and Ratchet Reset Responsibilities. It is understood that all energy rebates and/or refunds are the result of an agreement between Customer and the utility company and Honeywell assumes no responsibility for obtaining said rebates and/or refunds. It is understood that said rebates and/or refunds are not included in the Guaranteed Savings. The Customer is responsible for procuring a ratchet reset from the local utility company, as applicable.

PART D. SCHEDULE OF GUARANTEED SAVINGS

D.1. Schedule of Guaranteed Savings

The Guaranteed Savings over the Guaranteed Term is equal to or greater than $4,221,855. The Guaranteed Savings and the Annual Scheduled Savings are set forth in the table below (such table, the "**Schedule of Guaranteed Savings**"):

YEAR	ENERGY	OPERATIONAL	TOTAL
1	$113,455	$168,002	**$281,457**
2	$113,455	$168,002	**$281,457**
3	$113,455	$168,002	**$281,457**
4	$113,455	$168,002	**$281,457**
5	$113,455	$168,002	**$281,457**
6	$113,455	$168,002	**$281,457**
7	$113,455	$168,002	**$281,457**
8	$113,455	$168,002	**$281,457**
9	$113,455	$168,002	**$281,457**
10	$113,455	$168,002	**$281,457**
11	$113,455	$168,002	**$281,457**
12	$113,455	$168,002	**$281,457**
13	$113,455	$168,002	**$281,457**
14	$113,455	$168,002	**$281,457**
15	$113,455	$168,002	**$281,457**
TOTALS	**$1,701,825**	**$2,520,030**	**$4,221,855**

Provided however, that, notwithstanding the above, in no event shall the Guaranteed Savings exceed the total Retrofit Costs over the Guaranteed Term. For sake of clarity, actual or pro forma budget neutral or positive cash flows are not guaranteed.

D.1.1 Energy Savings. The first year amount of Savings for Energy Costs is the sum of the below listed ECMs. Actual Savings may be lower than as set forth in the Schedule of Guaranteed Savings because of an absolute increase in Energy use due to the implementation of measures to increase environmental comfort as directed by the Customer, and other baseline adjustments (see Section D.2). The Guaranteed Savings are less than the projected Savings, represented in Exhibit D-4. Cost Avoidance is based on the Customer Guarantee Practices set forth in Section C.4.

Att A ECM No. [a]	ECM Description	Electric Year 1	Nat Gas Year 1	Total Year 1
1	Lighting Upgrades	$70,391	$0	**$70,391***
1	Lighting Upgrades – Community Center Only	$9,000	$0	**$9,000**
2	WWTP High Speed Turbo Blower Installation	$7,010	$0	**$7,010**
3	HVAC System Upgrades – Community Center Only	$29,577	$0	**$29,577**
3	HVAC System Upgrades – Wastewater Treatment Plant	$451	$4,834	**$5,282**
4	Temperature Controls Upgrades (BAS) – Community Center Only	-$7,808	$0	**-$7,808**
	Totals	**$108,621**	**$4,834**	**$113,455**

[a] Att A: Attachment A – Scope of Work.

** $27,294 of lighting savings is dependent on Consumers Energy retrofitting Consumers Energy Owned Cobrahead street lights and is based on savings provided by Consumers Energy on 9/19/2016. The Customer shall contract direct with Consumers Energy for the street lights and Honeywell is not responsible for the work performed by Consumers Energy. In event the Consumers Energy work is not completed prior to the Final Project Acceptance for Honeywell's project the savings associated with the Consumers Energy work shall be deemed satisfied.*

Customer agrees that the baseline for the unit cost of Energy will be adjusted each year of the Guarantee Term. This annually adjusted value of Energy unit cost is stipulated as the new baseline in each succeeding year. Customer agrees that Baseline adjustment is stipulated to be an escalation of 0% per year for the unit cost of electric utilities and 0% per year for gas utilities, used in the determination of Cost Avoidance each year.

In calculating the Cost Avoidance:

(a) The calculation of Cost Avoidance is based upon the utility rate paid during the Guarantee Year, or the Baseline Period utility rate represented in Exhibit D-.3, whichever produces the highest Cost Avoidance and/or as defined heretofore.
(b) Cost Avoidance may also include, but is not limited to, savings from demand charges, power factor correction, taxes, ratchet charges, rate changes and other utility tariff charges that are reduced as a result of the Honeywell involvement. In case the Customer does not procure any ratchet reset, rate change or other utility tariff charge reduction, or in the event that such ratchet, rate or tariff changes before the Guarantee Period ends, Cost Avoidance nonetheless will be calculated as if the ratchet, rate or tariff has been reset at the end of the installation of demand-reducing ECMs, or continues, as applicable.
(c) The constants and/or stipulated values defined in the Exhibits, or as defined herein, are mutually agreed to by the Customer to be reasonable and may be used in the determination of Cost Avoidance.

D.1.2 **Operational Cost Savings.** The first year amount of Savings for Operational Costs is the sum of the below listed ECMs. The Savings are based on the Customer Guarantee Practices set forth in Section C.4. The Operational Costs Savings described below and identified in Section D.1 are deemed satisfied upon execution of the Main Agreement. The Customer acknowledges and agrees that, if it did not enter into this Agreement, it would have to take future steps to achieve the same ends as does the Work included in Attachment A, and that, in doing so, it would incur Operational Costs of at least the amount per year over the Guarantee Term as presented below and in the Schedule of Guaranteed Savings. The Customer agrees that, by entering into this Agreement, it will avoid future Operational Costs in at least these amounts.

Further, the Customer acknowledges that Operational Costs Savings categorized as capital cost avoidance are part of, or are causally connected to the Work specified in Attachment A (i.e., the ECMs being implemented), and are documented by industry standard engineering methodologies acceptable to the Customer.

Customer agrees that the Baseline for the unit cost of Operational Costs will be adjusted each year of the Guarantee Term. This annually adjusted value of operational unit costs is stipulated as the new baseline in each succeeding year. Customer agrees that the Baseline adjustment is stipulated to be an escalation of 0% per year for Operational Costs used in the determination of Operational Costs Savings each year.

The Operational Costs Savings were identified, reviewed, and agreed to by a team of Customer's representatives including John Elsinga, Township Manager – Sandra Diorka – Director of Public Services.

OSD #	Operational Savings Description (OSD)	Cost Avoidance Category (O&M, Capital,)	1st Year Cost Avoidance
1	ECM 1 Lighting Upgrades – Avoided Electrical and Lighting Supplies	O&M	$5,507
2	ECM 3 HVAC System Upgrades – Deferred Maintenance System Replacement, Building Repairs and Maintenance	O&M	$83,976
3	ECM 3 HVAC System Upgrades – Building Repairs and Maintenance	O&M	$10,540
4	ECM 3 HVAC System – Community Services Center Only – Service Contract Costs	O&M	$23,357
5	ECM 2 POTW Blower Upgrade – Replacement Cost	O&M	$33,333
6	ECM 3 HVAC System Upgrades – WWTP , Avoided Repair Related Labor and Materials	O&M	$11,290
		Total	$168,002

[a] O&M: operations and maintenance.

D.2 **Baseline Operations and Adjustments**

D.2.1 **"Baseline Operating Parameters"** are the Facility(ies) and system(s) operations measured and/or observed before commencement of the Work. Baseline Operating Parameters are stipulated in, and incorporated herein, as Exhibit D-1. See Energy Savings Calculations, attached hereto and incorporated herein as Exhibit D-4 for further information regarding stipulated Baseline Operating Parameters.

The data summarized will be used in the calculation of the Baseline energy consumption and/or demand and for calculating Baseline adjustments for changes in Facility operation that occur during the Guarantee Term. Honeywell and Customer agree that the Baseline Operating Parameters specified in this section are representative of equipment operating characteristics during the Baseline Period specified in this Agreement. The following data was collected with the assistance of Sandra Diorka

The Baseline Period is defined as August 2014 to July 2015. *Honeywell reserves the right to reevaluate the Regression Analysis data for the Community Center during the year 1 performance period. If appropriate, Honeywell and Customer would establish a revised regression analysis baseline at that time.*

The Baseline consists of the Baseline conditions and Baseline Operating Parameters collected from the Baseline Period and modified by Baseline adjustments, as necessary, as defined herein and by the Exhibits.

D.2.2 **Pre-Retrofit Baseline Adjustments**: The following describes the adjustments that have been made during the determination of the Baseline, prior to the determination of the projected Cost Avoidance and the Guaranteed Savings. The adjustments are due to those projects included in Attachment A, or other known events, which increase

Energy use prior to the application of the ECMs.

There are no Pre-Retrofit Baseline Adjustments at this time, Controls and the installation of the Make Up Air Unit will result in increased electric energy use.

D.2.3 **Post-Retrofit Baseline Adjustments**: The following describes known future events, events not captured in pre-retrofit Baseline adjustments in Section D.2.2, which generally increase Energy use compared to the Baseline Period. This Energy use is added to the Baseline to determine an adjusted Baseline against which the Energy Costs Savings will be determined. Energy increases are variable and dependent on the actual use of equipment.

There are no Post-Retrofit Baseline Adjustments at this time, Controls and the installation of the Make Up Air Unit will result in increased electric energy use. Those increases are referenced as negative savings in the calculations. Option C routine and non routine baseline adjustments will be applied as appropriate.

D.3 Guarantee Term Operations

D.3.1 **"Guarantee Term Operating Parameters"** are the Facility(ies) and system(s) operations as measured and/or observed after completion of Work. The data summarized will be used in the calculation of the post-retrofit Energy consumption and/or demand. Honeywell and Customer agree that the Guarantee Term Operating Parameters specified in this section are representative of equipment operating characteristics during the Guarantee Term specified in this Agreement. And, further, that they are agreed to be reasonable and may be used in the calculation of the Cost Avoidance, as if the site is actually operating per the Guarantee Term Operating Parameters outlined in this section.

Guarantee Term Operating Parameters are stipulated in Guarantee Period Operating Parameters attached hereto and incorporated herein as Exhibit D-2.

D.3.2 **Operational Cost Avoidance**: The following parameters, methodologies, and/or calculations were used in determining the Operational Costs and/or Cost Avoidance due to the Retrofit and Support Services implementation and are agreed to be reasonable and may be used in the calculation of Savings.

Operational Costs Savings methodology and/or calculation details are attached hereto and are incorporated herein as the exhibits outlined in the following table.

OSD#	Operational Savings Description	Cost Avoidance Methodology	Exhibit
1	ECM 1 Lighting Upgrades	Value of O&M Savings Identified and discussed and agreed to with Customer Representative(s), Project Acceptance is only Verification Method used	D-6
2	ECM 3 HVAC System Upgrades	Value of O&M Savings Identified and discussed and agreed to with Customer Representative(s), Project Acceptance is only Verification Method used	D-6
3	ECM 4 Temperature Controls Upgrades	Value of O&M Savings Identified and discussed and agreed to with Customer Representative(s), Project Acceptance is only Verification Method used	D-6
4	ECM 3 HVAC System Upgrades	Value of O&M Savings Identified and discussed and agreed to with Customer Representative(s), Project Acceptance is only Verification Method used	D-6
The operational savings measures and which budget line items or invoice categories that are affected, are cross-referenced in each Operational Costs Savings Detail in the Exhibits.			

[a] O&M: operations and maintenance.

D.4 Other Energy and Operational Savings Measures NOT Applicable

The following measures *were* not included in the Guaranteed Savings but may be used during the Guarantee Term in the determination of realized Cost Avoidance, or calculation of performance versus the Guaranteed Savings, or to show value-add to the Customer:

Att A No.	Description of Attachment A Tasks not included in Sections D.1.1 or D.1.2 above

ATTACHMENT E
PAYMENT SCHEDULE

1. The following payment schedule has been established for the Work:

1. 1 The payment schedule reflected below has been established for the Work. Payment shall be made net thirty (30) days of invoice date. If issues surrounding lack of payment are not remedied within ten (10) business days, HONEYWELL may suspend all Work until payment is made.

Total payments are: $ 4,144,876

I. Progress Payments:	**Percentage Due**	**Amount Due**
Upon contract execution:	33 %	$1,367,809
Progress Payments	67 %	$2,777,067

2. The following payment schedule has been established for Support Services:

2.1 The first invoice will be issued upon completion of the Work and prior to commencement of Support Services and CUSTOMER shall pay or cause to be paid to HONEYWELL the full price for the Services as specified in Attachment D.

Honeywell

Attachment J - Project Acceptance Procedure:

As portions of the Project near completion, the Honeywell Project Manager will start the project close-out process. The Honeywell Project Manager shall use the Scope-of-Work (SOW) listed in Attachment A as the basis for the close-out process and shall demonstrate to the Customer's Representative that each separate item of the SOW is substantially complete. The sign off process will be by portion of the Scope of Work, by building/site/Equipment Unit or by individual Energy Conservation Measure (ECM) as listed in Table A below. After each portion of the Scope of Work has been demonstrated and a "Punch List" detailing minor deficiencies, if any, is generated, the Customer's Representative shall execute the Delivery and Acceptance Certificate to acknowledge substantial completion and Honeywell will complete the "Punch List" within two weeks. Warranty shall start in accordance with the terms of the Agreement.

Schedule of Acceptance: The acceptance process will be performed according to the following acceptance Schedule:

Work Acceptance - Table A.	
Scope of Work	**Acceptance By:**

Support Services: Honeywell will start the support services of the Facility in accordance with the Service Agreement per Attachment D when the Final Delivery and Acceptance Certificate is signed.

Honeywell

DELIVERY AND ACCEPTANCE CERTIFICATE

Project Name _____

Agreement Effective Date: _____

Building/Site/Equipment Unit or individual Energy Conservation Measure (ECM):_____

To: Honeywell International Inc.

Reference is made to the above listed Agreement between the undersigned and Honeywell International Inc. and to the Scope of Work as defined in Attachment A herein. In connection therewith, we confirm to you the following:

1. The building/site/Equipment Unit or individual Energy Conservation Measure (ECM) referenced above and also listed in Attachment A of the Agreement has been demonstrated to the satisfaction of the Customer's Representative as being substantially complete.
2. The Punch List [circle which applies]:
   a) has been developed by the parties and delivered to Honeywell and the deficiencies noted therein will be corrected within 2 weeks of the date hereon; or
   b) has not been developed by the parties and delivered to Honeywell but will be developed and delivered on or before _____, 201_ after which the deficiencies noted therein will be corrected within 2 weeks of the date thereon.
3. All of the Work has been delivered to and received by the undersigned and that said Work has been examined and /or tested and is in good operating order and condition and is in all respects satisfactory to the undersigned and as represented, and that said Work has been accepted by the undersigned and complies with all terms of the Agreement. Consequently, you are hereby authorized to invoice for payment, as defined in Attachment E, Payment Schedule.

Customer Name: _____

By: _____
(Authorized Signature) (Authorized Signature)

_____
(Printed Name and Title) (Printed Name and Title)

_____
(Date)

FINAL PROJECT ACCEPTANCE CERTIFICATE

Project Name _____

Agreement Effective Date: _____

Scope-of-Work (SOW): _____

To: Honeywell International Inc.

Reference is made to the above listed Agreement between the undersigned and Honeywell International Inc. and to the Scope of Work as defined in Attachment A herein. In connection therewith, we confirm to you the following:

1. The entirety of the Scope of Work (SOW) referenced above and set forth in Attachment A of the Agreement has been demonstrated to the satisfaction of the Customer's Representative as being accepted as is evidenced by Customer's signature on Delivery and Acceptance Certificates for the entirety of the Work.
2. The Punch List(s) has been completed.
3. You are hereby authorized to invoice for Final Payment, as defined in Attachment E, Payment Schedule.

Customer Name:_____

By: _____
(Authorized Signature)

_____
(Printed Name and Title)

_____
(Date)

Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	1	1	115	OPEN OFFICE (CLERK)	2,883	T5RP	11	89	2,822	LT3L	11	45	1,427	1,395		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	2	1	115	OPEN OFFICE (CLERK)	2,883	T6RP	2	80	461	LT5L	2	36	208	254		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, LOUVER LENS, WHITE METAL REFLECTOR, (2) TWIN TUBE 2' 40 WATT BIAX LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 17 WATT 2' LED BIAX LAMPS AND (1) INSTANT START ELECTRONIC BALLAST	LEAVE ALONE
CS	3	1	115	OPEN OFFICE (CLERK)	2,883	F6M	2	56	323	LED2	2	18	104	219		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	4	1	116	OFFICE (CLERK)	2,000	T1RP	2	112	448	LT4L	2	60	240	208	O1	1	1,600	192	48	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	5	1	117	WORK ROOM	2,000	T1R	9	112	2,016	LT2M	9	42	756	1,260	O2	1	1,000	378	378	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
CS	6	1	117	WORK ROOM	2,000	T4R	2	59	236	LT6L	2	30	120	116	O2	0	1,000	60	60	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 U-BEND LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 15 WATT 4' U-BEND LED T8 LAMPS AND (1) LOW POWER INSTANT START ELECTRONIC BALLAST	CONTROLLED BY MAP 5.0
CS	7	1	117	WORK ROOM	1,500	F6M	1	56	84	LED2	1	18	27	57		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	8	1	118	MECHANICAL	500	F3	1	23	12	LD3.1	1	10	5	7		0	0	0	0	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
CS	9	1	110	OPEN OFFICE (TREASURER)	2,883	T5RP	9	89	2,309	LT3L	9	45	1,168	1,142		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	10	1	110	OPEN OFFICE (TREASURER)	2,883	T6RP	3	80	692	LT5L	3	36	311	381		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, LOUVER LENS, WHITE METAL REFLECTOR, (2) TWIN TUBE 2' 40 WATT BIAX LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 17 WATT 2' LED BIAX LAMPS AND (1) INSTANT START ELECTRONIC BALLAST	LEAVE ALONE
CS	11	1	110	OPEN OFFICE (TREASURER)	2,883	F6M	2	56	323	LED2	2	18	104	219		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	12	1		OFFICE (TREASURER)	2,000	T5RP	1	89	178	LT3L	1	45	90	88		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	13	1		OFFICE (TREASURER)	2,000	T5RP	3	89	534	LT3L	3	45	270	264	O1	1	1,600	216	54	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	14	1	113	OFFICE (TREASURER)	2,000	T5RP	2	89	356	LT3L	2	45	180	176	O1	1	1,600	144	36	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	15	1	114	STORAGE (TREASURER)	500	W7R	1	89	45	LR3.1	1	53	26	18		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	16	1		OPEN OFFICE	2,883	T5RP	6	89	1,540	LT3L	6	45	778	761		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	17	1		OPEN OFFICE	2,883	T6RP	1	80	231	LT5L	1	36	104	127		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, LOUVER LENS, WHITE METAL REFLECTOR, (2) TWIN TUBE 2' 40 WATT BIAX LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 17 WATT 2' LED BIAX LAMPS AND (1) INSTANT START ELECTRONIC BALLAST	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	18	1		OPEN OFFICE	2,883	F6M	1	56	161	LED2	1	18	52	110		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	19	1	120	OFFICE	1,600	T5RP	2	89	285	LT3L	2	45	144	141		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	20	1	120A	FILE ROOM	1,500	T5R	1	89	134	LT2	1	36	54	80		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	21	1	121	OFFICE	1,600	T5RP	2	89	285	LT3L	2	45	144	141		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	22	1	123	COMPUTER ROOM	1,600	T5RP	4	89	570	LT3L	4	45	288	282		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	23	1	123	COMPUTER ROOM	1,500	F6M	1	56	84	LED2	1	18	27	57		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	24	1	122	MECHANICAL	500	F3	1	23	12	LD3.1	1	10	5	7		0	0	0	0	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
CS	25	1	128	MAIL ROOM	1,250	T1R	4	112	560	LT2M	4	42	210	350		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	26	1	130	OPEN OFFICE (ASSESING)	2,883	T5RP	8	89	2,053	LT3L	8	45	1,038	1,015		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	27	1	130	OPEN OFFICE (ASSESING)	2,883	F6M	2	56	323	LED2	2	18	104	219		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	28	1	126	OFFICE	1,600	T5RP	2	89	285	LT3L	2	45	144	141		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	29	1	125	OFFICE	1,600	T5RP	2	89	285	LT3L	2	45	144	141		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	30	1	124	BREAK ROOM / STORAGE	2,000	T5RP	1	89	178	LT3L	1	45	90	88		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	31	1		ENTRY (NL)	8,760	F6M	1	56	491	LED2	1	18	158	333		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	32	1		HALLWAY	3,120	F6M	3	56	524	LED2	3	18	168	356		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	33	1		HALLWAY (NL)	8,760	LED6	1	18	158	LED2	1	18	158	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	34	1		HALLWAY	3,120	LED6	2	18	112	LED2	2	18	112	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	35	1	127	OPEN OFFICE (SUPERVISOR MGR)	2,883	T5RP	11	89	2,822	LT3L	11	45	1,427	1,395		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	36	1		WORK ROOM	1,250	T5RP	4	89	445	LT3L	4	45	225	220		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	37	1		CONFERENCE	1,000	T5RP	2	89	178	LT3L	2	45	90	88		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	38	1		CONFERENCE	1,000	F6M	5	56	280	LED2	5	18	90	190		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	39	1	132	OFFICE	1,600	T5RP	2	89	285	LT3L	2	45	144	141		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	40	1		OFFICE	2,000	T5RP	2	89	356	LT3L	2	45	180	176	O1	1	1,600	144	36	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	41	1		OFFICE	1,600	T5RP	2	89	285	LT3L	2	45	144	141		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	42	1	138	MECHANICAL	500	F4	1	26	13	LD3.1	1	10	5	8		0	0	0	0	26 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
CS	43	1		CLOSET (NA)	500	F2	1	18	9	LD2.1	1	9	5	5		0	0	0	0	18 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9 WATT A19 LED LAMP	LEAVE ALONE
CS	44	1		HALLWAY	3,120	F6M	3	56	524	LED2	3	18	168	356		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	45	1		HALLWAY (NL)	8,760	LED6	1	18	158	LED2	1	18	158	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	46	1		BREAK ROOM	1,250	T5R	4	89	445	LT2	4	36	180	265		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	47	1		BREAK ROOM	1,250	F6M	2	56	140	LED2	2	18	45	95		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	48	1		STAFF REST	1,500	T5R	1	89	134	LT2	1	36	54	80		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	49	1	143	OPEN OFFICE (COM. DEVELOPMENT)	2,162	T5RP	18	89	3,464	LT3L	18	45	1,751	1,712		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	50	1		CONFERENCE (COM. DEVELOPMENT)	1,500	T5RP	2	89	267	LT3L	2	45	135	132	O1	1	750	68	68	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	51	1		OFFICE (COM. DEVELOPMENT)	2,000	T5RP	2	89	356	LT3L	2	45	180	176	O1	1	1,600	144	36	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY

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Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	52	1		COPY / BREAK ROOM (COM. DEV.)	2,600	T2R	2	59	307	LT2L	2	30	156	151	O1	1	1,300	78	78	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	53	1		OFFICE (COM. DEVELOPMENT)	2,000	T5RP	1	89	178	LT3L	1	45	90	88	O1	1	1,600	72	18	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	54	1		CLOSET (COM. DEVELOPMENT)	1,000	F6M	1	56	56	LED2	1	18	18	38		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	55	1		STORAGE (COM. DEVELOPMENT)	500	T5R	1	89	45	LR2	1	36	18	27		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	56	1		CONFERENCE (COM. DEVELOPMENT)	1,500	T5RP	2	89	267	LT3L	2	45	135	132	O1	1	750	68	68	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	57	1		MENS RESTROOM	4,000	S2R	4	59	944	LT4LT	2	60	480	464	O3	1	1,600	192	288	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	TANDEM RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, DUAL TECHNOLOGY
CS	58	1		MENS RESTROOM	4,000	S2R	2	59	472	LT2L	2	30	240	232	O3	0	1,600	96	144	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	CONTROLLED BY MAP 57.0
CS	59	1		WOMENS RESTROOM	4,000	S2R	4	59	944	LT4LT	2	60	480	464	O3	1	1,600	192	288	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	TANDEM RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, DUAL TECHNOLOGY
CS	60	1		WOMENS RESTROOM	4,000	S2R	2	59	472	LT2L	2	30	240	232	O3	0	1,600	96	144	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	CONTROLLED BY MAP 59.0
CS	61	1		OPEN OFFICE (PARKS & REC.)	2,883	T5RP	4	89	1,026	LT3L	4	45	519	507		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	62	1		OPEN OFFICE (PARKS & REC.)	2,883	T1RP	5	112	1,614	LT4L	5	60	865	750		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	63	1	162	OFFICE	2,000	T1RP	2	112	448	LT4L	2	60	240	208	O1	1	1,600	192	48	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	64	1	160	RECEIVING	2,000	T5R	7	89	1,246	LT2	7	36	504	742		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	65	1		RECEIVING (NL)	8,760	T5R	1	89	780	LT2	1	36	315	464		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	66	1	159	MECHANICAL	500	F4	1	26	13	LD3.1	1	10	5	8		0	0	0	0	26 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
CS	67	1	102A	MULTIPURPOSE ROOM	1,000	IS3R	24	89	2,136	LT4MT	12	78	936	1,200		0	0	0	0	INDIRECT STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, WHITE METAL BELLY PAN, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	TANDEM RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	68	1	102A	MULTIPURPOSE ROOM	1,000	T1RP	6	112	672	LT4L	6	60	360	312		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	69	1	102A	MULTIPURPOSE ROOM (NL)	8,760	T1RP	2	112	1,962	LT4L	2	60	1,051	911		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	70	1	102A	MULTIPURPOSE ROOM	1,000	T6RP	2	80	160	LT5L	2	36	72	88		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, LOUVER LENS, WHITE METAL REFLECTOR, (2) TWIN TUBE 2' 40 WATT BIAX LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 17 WATT 2' LED BIAX LAMPS AND (1) INSTANT START ELECTRONIC BALLAST	LEAVE ALONE
CS	71	1	103	STORAGE	500	T5R	3	89	134	LR2	3	36	54	80		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	72	1	104	AUDIO (NA)	500	T5R	3	89	134	LR2	3	36	54	80		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	73	1		STORAGE	500	T5R	1	89	45	LR2	1	36	18	27		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	74	1		ATRIUM	3,120	F6M	5	56	874	LED2	5	18	281	593		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	75	1		ATRIUM	3,120	LED6	2	18	112	LED2	2	18	112	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	76	1		ATRIUM	3,120	F18M	1	240	749	LED6	1	50	156	593		0	0	0	0	BOWL: PENDANT MOUNTED WITH (8) 26 WATTS COMPACT FLUORESCENT PLUG-IN LAMPS AND (4) MAGNETIC BALLASTS	RETROFIT WITH (1) 50 WATT LED BOARD AND DRIVER KIT	LEAVE ALONE
CS	77	1		HALLWAY	3,120	F6M	12	56	2,097	LED2	12	18	674	1,423		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	78	1		HALLWAY (NL)	8,760	LED6	4	18	631	LED2	4	18	631	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	79	1		HALLWAY	3,120	F6M	7	56	1,223	LED2	7	18	393	830		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	80	1		HALLWAY (NL)	8,760	LED6	5	18	788	LED2	5	18	788	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	81	1		HALLWAY	3,120	LED6	4	18	225	LED2	4	18	225	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	82	1		HALLWAY	3,120	F6M	6	56	1,048	LED2	6	18	337	711		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	83	1		HALLWAY (NL)	8,760	LED6	1	18	158	LED2	1	18	158	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	84	1		HALLWAY	3,120	LED6	1	18	56	LED2	1	18	56	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	85	1		HALLWAY	3,120	F6M	1	56	175	LED2	1	18	56	119		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	86	1		HALLWAY	3,120	LED6	2	18	112	LED2	2	18	112	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	87	1		HALLWAY (FIRE)	3,120	T5RP	1	89	278	LT3L	1	45	140	137		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	88	1		HALLWAY (NL) (FIRE)	8,760	T2RP	1	59	517	LT2L	1	30	263	254		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	89	1		HALLWAY (FIRE)	3,120	T2RP	4	59	736	LT2L	4	30	374	362		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	90	1	190	STORAGE (FIRE)	500	T5R	1	89	45	LR2.1	1	36	18	27		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	91	1		OFFICE (FIRE)	1,600	T5RP	2	89	285	LT3L	2	45	144	141		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	92	1	167	FILE ROOM (FIRE)	1,250	T5R	2	89	223	LT2	2	36	90	133		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	93	1		WOMENS RESTROOM (FIRE)	2,000	T5RP	1	89	178	LT3L	1	45	90	88		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	94	1		MENS RESTROOM (FIRE)	2,000	T5RP	1	89	178	LT3L	1	45	90	88		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	95	1	180	OFFICE (FIRE)	1,600	T5RP	3	89	427	LT3L	3	45	216	211		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	96	1		OFFICE (FIRE)	1,600	T5RP	3	89	427	LT3L	3	45	216	211		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	97	1		OFFICE (FIRE)	1,600	T5RP	2	89	285	LT3L	2	45	144	141		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	98	1		OPEN OFFICE (FIRE)	2,162	T1RP	8	112	1,937	LT4L	8	60	1,038	899		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	99	1		OPEN OFFICE (FIRE)	2,162	F6M	1	56	121	LED2	1	18	39	82		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	100			STAIRWAY (FIRE)	8,760	W1R	3	59	1,551	LT2L	3	30	788	762		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	101			STAIRWAY (FIRE)	8,760	W7R	1	89	780	LT3L.2	1	0	0	780		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	102	1		APPARATUS ROOM (FIRE)	1,000	H1	12	295	3,540	HB3	12	90	1,080	2,460		0	0	0	0	HIGHBAY: WITH (1) 250 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	HIGH BAY: NEW REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (3) LINEAR 4' 27 WATT LED T5HO LAMPS, (1) ELECTRONIC DRIVER AND (1) WIRE CAGE	LEAVE ALONE

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Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	103	1		APPARATUS ROOM (FIRE)	3,000	S2R	1	59	177	LT2.2	1	36	108	69		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	104			LIFT (FIRE)	500	QT1	1	500	250	LED24.3	1	56	28	222		0	0	0	0	FLOOD: WITH (1) 500 WATT QUARTZ INCANDESCENT LAMP	ROUND BACK FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 56 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
CS	105	1	170	WORK ROOM (FIRE)	1,250	W4R	2	112	280	LT2M	2	42	105	175		0	0	0	0	WRAP: SURFACE MOUNTED WITH WIDE 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	106	1	169	CUSTODIAL	500	F4	1	26	13	LD3.1	1	10	5	8		0	0	0	0	26 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
CS	107	1		ENTRY	3,120	W1R	1	59	184	LT2L	1	30	94	90		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	108	1		OFFICE	2,000	T5R	1	89	178	LT2	1	36	72	106		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	109	1	183	LIBRARY	3,380	LED6	12	18	730	LED2	12	18	730	0		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 9 WATT PLUG-IN LED LAMPS	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	110	1	183	LIBRARY	3,380	F6M	44	56	8,328	LED2	44	18	2,677	5,651		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	111	1	183	LIBRARY	3,380	IS3R	90	89	27,074	LT4MT	45	78	11,864	15,210		0	0	0	0	INDIRECT STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, WHITE METAL BELLY PAN, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	TANDEM RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	112	1		WOMENS RESTROOM	2,500	T5R	1	89	223	LT2	1	36	90	133		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	113	1		MENS RESTROOM	2,500	T5R	1	89	223	LT2	1	36	90	133		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	114	1		MECHANICAL	500	W4R	1	112	56	LR4.1	1	70	35	21		0	0	0	0	WRAP: SURFACE MOUNTED WITH WIDE 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	115	1		OPEN OFFICE (LIBRARY)	2,883	T5R	7	89	1,796	LT2	7	36	727	1,070		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	116	1		OFFICE (LIBRARY)	2,000	T5RP	2	89	356	LT3L	2	45	180	176	O1	1	1,600	144	36	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
CS	117	1		BREAK ROOM (LIBRARY)	1,500	T5R	2	89	267	LT2	2	36	108	159		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	118	1		STAFF RESTROOM (LIBRARY)	1,500	T6RP	1	80	120	LT5L	1	36	54	66		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, LOUVER LENS, WHITE METAL REFLECTOR, (2) TWIN TUBE 2' 40 WATT BIAX LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 17 WATT 2' LED BIAX LAMPS AND (1) INSTANT START ELECTRONIC BALLAST	LEAVE ALONE
CS	119			STAIRWAY	8,760	CIRC1	3	42	1,104	LED27	3	22	578	526		0	0	0	0	FIXTURE: SURFACE MOUNTED WITH (1) 32 WATT CIRCLINE T8 LAMP AND (1) ELECTRONIC BALLAST	DRUM: NEW REPLACEMENT FIXTURE WITH (1) 22 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	120	B		ELEVATOR LOBBY	3,120	F6M	3	56	524	LED2	3	18	168	356		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	121	B		ELEVATOR LOBBY (NL)	8,760	F6M	1	56	491	LED2	1	18	158	333		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS AND (1) ELECTRONIC BALLAST	LEAVE ALONE
CS	122	B	001	ELEVATOR MECHANICAL	500	F4	1	26	13	LD3.1	1	10	5	8		0	0	0	0	26 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
CS	123	B	002	CUSTODIAL	500	C9	1	300	150	LD4.1	1	15	8	143		0	0	0	0	300 WATT INCANDESCENT LAMP	RELAMP WITH (1) 15 WATT A21 LED LAMP	LEAVE ALONE
CS	124	B	003	STORAGE	500	C9	1	300	150	LD4.1	1	15	8	143		0	0	0	0	300 WATT INCANDESCENT LAMP	RELAMP WITH (1) 15 WATT A21 LED LAMP	LEAVE ALONE
CS	125	B		VAULT ROOM / RECORDS	1,000	S2R	14	59	826	LR2.1	14	36	504	322		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	126	B		RECORDS	1,000	S3E	14	123	1,722	E4L	14	60	840	882		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	STRIP: UNIVERSAL NARROW 8' BODY RETROFIT KIT WITH WHITE METAL BELLY PAN, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	127	B		WEIGHT ROOM	2,500	S3R	7	109	1,908	E4L	7	60	1,050	858	O2.1	2	1,250	525	525	STRIP: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 8' 59 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	STRIP: UNIVERSAL NARROW 8' BODY RETROFIT KIT WITH WHITE METAL BELLY PAN, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (2) POWER PACKS, PASSIVE INFRA-RED TECHNOLOGY
CS	128	B		GEAR STORAGE	500	S2R	2	59	59	LR2.1	2	36	36	23		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	129	B		STORAGE (NA)	500	S2R	2	59	59	LR2.1	2	36	36	23		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	130	B		STORAGE	500	S2R	4	59	118	LR2	4	36	72	46		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	131	B	019	BOOK STORAGE	500	S3R	4	109	218	E4L	4	60	120	98		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 8' 59 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	STRIP: UNIVERSAL NARROW 8' BODY RETROFIT KIT WITH WHITE METAL BELLY PAN, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	132	B		MECHANICAL	500	C9	2	300	300	LD4.1	2	15	15	285		0	0	0	0	300 WATT INCANDESCENT LAMP	RELAMP WITH (1) 15 WATT A21 LED LAMP	LEAVE ALONE
CS	133	B		MECHANICAL	500	C9	2	300	300	LD4.1	2	15	15	285		0	0	0	0	300 WATT INCANDESCENT LAMP	RELAMP WITH (1) 15 WATT A21 LED LAMP	LEAVE ALONE
CS	134	B		ELECTRICAL	500	C9	2	300	300	LD4.1	2	15	15	285		0	0	0	0	300 WATT INCANDESCENT LAMP	RELAMP WITH (1) 15 WATT A21 LED LAMP	LEAVE ALONE
CS	135	B		HALLWAY	1,000	T6RP	3	80	240	LT5L	3	36	108	132		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, LOUVER LENS, WHITE METAL REFLECTOR, (2) TWIN TUBE 2' 40 WATT BIAX LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 17 WATT 2' LED BIAX LAMPS AND (1) INSTANT START ELECTRONIC BALLAST	LEAVE ALONE
CS	136	B		HALLWAY (NL)	8,760	T6RP	1	80	701	LT5L	1	36	315	385		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, LOUVER LENS, WHITE METAL REFLECTOR, (2) TWIN TUBE 2' 40 WATT BIAX LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 17 WATT 2' LED BIAX LAMPS AND (1) INSTANT START ELECTRONIC BALLAST	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	137	B		HALLWAY	1,000	T2R	4	59	236	LT2L	4	30	120	116		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	138	B		HALLWAY (NL)	8,760	T2R	1	59	517	LT2L	1	30	263	254		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	139	B		HALLWAY	1,000	T2R	3	59	177	LT2L	3	30	90	87		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	140	B		HALLWAY (NL)	8,760	T2R	1	59	517	LT2L	1	30	263	254		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	141	B		DORMS	1,000	F3	10	23	230	LD2	10	9	90	140		0	0	0	0	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9 WATT A19 LED LAMP	LEAVE ALONE
CS	142	B	014	TRAINING ROOM	1,500	T1R	10	112	1,680	LT2H	10	48	713	968	O2	2	750	356	356	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START HIGH POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
CS	143	B		MECHANICAL	500	F4	1	26	13	LD3.1	1	10	5	8		0	0	0	0	26 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
CS	144	B		MENS LOCKER	3,000	T5RP	3	89	801	LT3L	3	45	405	396	O3	1	1,200	162	243	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, DUAL TECHNOLOGY
CS	145	B		MENS LOCKER	3,000	F2	1	18	54	LD2	1	9	27	27	O3	0	1,200	11	16	18 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9 WATT A19 LED LAMP	CONTROLLED BY MAP 144.0
CS	146	B		WOMENS LOCKER	3,000	T5RP	2	89	534	LT3L	2	45	270	264	O3	1	1,200	108	162	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, DUAL TECHNOLOGY
CS	147	B		WOMENS LOCKER	3,000	F2	1	18	54	LD2	1	9	27	27	O3	0	1,200	11	16	18 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9 WATT A19 LED LAMP	CONTROLLED BY MAP 146.0
CS	148	B	009	CREW DAY ROOM	3,000	T5RP	3	89	801	LT3L	3	45	405	396		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
CS	149	B	009	OPEN OFFICE	2,500	C10	4	25	250	LD12	4	6	60	190		0	0	0	0	25 WATT B13 INCANDESCENT LAMP	RELAMP WITH (1) 6 WATT B13 INCANDESCENT LAMP	LEAVE ALONE
CS	150	B		STORAGE	500	F4	2	26	26	LD3.1	2	10	10	17		0	0	0	0	26 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
CS	151	B	009A	QUARTERMASTER	1,000	T5RP	2	89	178	LR3	2	53	105	73		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	152	B		CLOSET	500	T5RP	1	89	45	LR2.1	1	36	18	27		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
CS	153	B		KITCHEN	3,000	T5RP	2	89	534	LT3L	2	45	270	264	O1.1	1	1,500	135	135	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE AREA LENS, DOUBLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY

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Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
CS	154			EXTERIOR	4,380	H37	1	128	561	LED33PCSF	1	14	61	499		0	0	0	0	FLAG FLOOD: WITH (1) 100 WATT METAL HALIDE LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL (SLIP FITTER)	FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 14 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
CS	155			EXTERIOR	4,380	H38	10	95	4,161	LED10	10	15	657	3,504		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 70 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	RETROFIT WITH (1) 15 WATT A21 LED LAMP, BY-PASS EXISTING MAGNETIC BALLAST	LEAVE ALONE
CS	156			EXTERIOR	4,380	H39	2	295	2,584	LED25	2	56	491	2,094		0	0	0	0	FORWARD THROW WALLPACK: WITH (1) 250 WATT METAL HALIDE LAMP, (1) ELECTRONIC BALLAST AND (1) INTEGRAL PHOTOCELL	FULL CUTOFF WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 56 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
CS	157			EXTERIOR	4,380	LED14	28	30	3,679	LA	28	30	3,679	0		0	0	0	0	WALLPACK: WITH (1) 30 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
CS	158			EXTERIOR	1,000	H40	24	128	3,072	LA	24	128	3,072	0		0	0	0	0	WELL LIGHT: RECESS MOUNTED WITH (1) 100 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	LEAVE ALONE	LEAVE ALONE
DDA	1			RECEPTION	1,800	T5R	2	89	320	LT2	2	36	130	191		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
DDA	2			RECEPTION	1,800	F10	2	42	151	LD15	2	16	58	94		0	0	0	0	6 INCH CAN: RECESS MOUNTED WITH (1) COMPACT FLURESCENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 15 WATT PLUG-IN LED LAMP	LEAVE ALONE
DDA	3			HALLWAY	1,800	F11	6	42	454	LD15	6	16	173	281		0	0	0	0	SCONCE: WALL MOUNTED WITH (1) 42 WATT COMPACT FLUORESCENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 15 WATT PLUG-IN LED LAMP	LEAVE ALONE
DDA	4			CONFERENCE	1,000	T5R	4	89	356	LT2	4	36	144	212		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
DDA	5			CONFERENCE	1,000	F4	8	26	208	LD3	8	10	76	132		0	0	0	0	26 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
DDA	6			CONFERENCE	1,000	F9	2	32	64	LD14	2	11	22	42		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
DDA	7			OFFICE	1,500	T5R	2	89	267	LT2	2	36	108	159		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
DDA	8			KITCHENETTE	1,500	T5R	2	89	267	LT2	2	36	108	159		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
DDA	9			FILE ROOM	1,500	T5R	3	89	401	LT2	3	36	162	239		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
DDA	10			RESTROOM	1,500	C11	4	40	240	LD13	4	7	42	198		0	0	0	0	40 WATT G25 INCANDESCENT LAMP	RELAMP WITH (1) 7 WATT G25 LED LAMP	LEAVE ALONE
DPS	1			ENTRY	2,668	T2R	2	59	315	LT2L	2	30	160	155		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	2			RECEPTION / OPEN OFFICE	2,668	T5RP	6	89	1,425	LT3L	6	45	720	704		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
DPS	3			RECEPTION / OPEN OFFICE	2,668	T5R	3	89	712	LT2	3	36	288	424		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	4			RESTROOM	2,000	W1R	1	59	118	LT2L	1	30	60	58		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	5			RESTROOM	800	W1R	1	59	47	LR2	1	36	29	18		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
DPS	6			RESTROOM	800	F8	1	42	34	LD15.2	1	16	13	21		0	0	0	0	CANOPY: SURFACE MOUNTED WITH (1) 42 WATT COMPACT FLUORESENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 15 WATT PLUG-IN LED LAMP	LEAVE ALONE
DPS	7			WOMENS LOCKER ROOM	2,600	W1R	4	59	614	LT2L	4	30	312	302	O3.2	1	1,040	125	187	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, DUAL TECHNOLOGY
DPS	8			WOMENS LOCKER REST	2,000	F8	2	42	168	LD15.2	2	16	64	104		0	0	0	0	CANOPY: SURFACE MOUNTED WITH (1) 42 WATT COMPACT FLUORESENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 15 WATT PLUG-IN LED LAMP	LEAVE ALONE
DPS	9			CUSTODIAL (NA)	500	W1R	1	59	30	LR2.1	1	36	18	12		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
DPS	10			OFFICE	2,000	W1R	3	59	354	LT2L	3	30	180	174	O1	1	1,600	144	36	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
DPS	11		128	TOOL CRIB	2,611	W1R	8	59	1,232	LT2L	8	30	627	606		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	12		127	LAUNDRY	2,600	W1R	2	59	307	LT2L	2	30	156	151		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	13			MENS LOCKER ROOM	2,600	W1R	9	59	1,381	LT2L	9	30	702	679	O3.2	1	1,040	281	421	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, DUAL TECHNOLOGY
DPS	13			4FT MEDIUM WRAP LENS	0		0		0	LENS1	1	0	0	0		0	0	0	0		4' MEDIUM BODY WRAP LENS REPLACEMENT	LEAVE ALONE
DPS	14			MENS LOCKER REST	2,000	F8	8	42	672	LD15.2	8	16	256	416		0	0	0	0	CANOPY: SURFACE MOUNTED WITH (1) 42 WATT COMPACT FLUORESENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 15 WATT PLUG-IN LED LAMP	LEAVE ALONE
DPS	15			HALLWAY	2,611	W1R	2	59	308	LT2L	2	30	157	151		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	16			GARAGE MEZZ	1,000	W1R	13	59	767	LR2.1	13	36	468	299		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
DPS	17			GARAGE MEZZ	1,000	W1R	1	59	59	LR2.1	1	36	36	23		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
DPS	17			4FT MEDIUM WRAP LENS	0		0		0	LENS1	1	0	0	0		0	0	0	0		4' MEDIUM BODY WRAP LENS REPLACEMENT	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
DPS	18			GARAGE	2,611	H2	12	460	14,413	HB1	12	120	3,760	10,653		0	0	0	0	HIGHBAY: WITH (1) 400 WATT METAL HALIDE LAMP AND (1) MAGENTIC BALLAST	HIGH BAY: NEW REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 27 WATT LED T5HO LAMPS, (1) ELECTRONIC DRIVER AND (1) WIRE CAGE	LEAVE ALONE
DPS	18			VEHICLE BAY	1,500	H2	6	460	4,140	HB1	6	120	1,080	3,060		0	0	0	0	HIGHBAY: WITH (1) 400 WATT METAL HALIDE LAMP AND (1) MAGENTIC BALLAST	HIGH BAY: NEW REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 27 WATT LED T5HO LAMPS, (1) ELECTRONIC DRIVER AND (1) WIRE CAGE	LEAVE ALONE
DPS	19		111	LUNCH ROOM	1,300	T5R	9	89	1,041	LT2	9	36	421	620		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	20			CLOSET	250	T5R	2	89	45	LR2	2	36	18	27		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
DPS	21		108	MECHANICAL	500	W1R	1	59	30	LR2.1	1	36	18	12		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
DPS	22		106	OFFICE	1,600	T5RP	4	89	570	LT3L	4	45	288	282		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	23		105	OFFICE	1,600	T5RP	4	89	570	LT3L	4	45	288	282		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	24		104	STORAGE (NA)	500	W1R	2	59	59	LR2.1	2	36	36	23		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
DPS	25		103	WORK ROOM	1,300	T5RP	4	89	463	LT3L	4	45	234	229		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	26			HALLWAY	2,668	F9	6	32	512	LD14	6	11	176	336		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
DPS	27			HALLWAY	2,668	T2R	3	59	472	LT2L	3	30	240	232		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	28			LIFT STATION	4,380	W4E	6	144	3,784	LT2H.1	6	48	1,248	2,536		0	0	0	0	WRAP: SURFACE MOUNTED WITH WIDE 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START HIGH POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	29			LIFT STATION	4,380	I4E	2	212	1,857	D4H.1	2	91	797	1,060		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 95 WATT T12HO LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: UNIVERSAL NARROW 8' BODY RETROFIT KIT WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START HIGH POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	30			ELECTRICAL	500	I3E	2	123	123	D4L.1	2	60	60	63		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: UNIVERSAL NARROW 8' BODY RETROFIT KIT WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	31			ENGINE ROOM	500	I4E	2	212	212	D4H.1	2	91	91	121		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 95 WATT T12HO LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: UNIVERSAL NARROW 8' BODY RETROFIT KIT WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START HIGH POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	32			RESTROOM	500	W1E	1	72	36	LT2L.1	1	30	15	21		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	33			LIFT STATION LOWER	500	F3	4	23	46	LD3.1	4	10	19	27		0	0	0	0	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE

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Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
DPS	34			LIFT STATION LOWER	500	V1R	3	59	89	LR2.1	3	36	54	35		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
DPS	35			LIFT STATION LOWER	8,760	H50	6	295	15,505	LED32.2	6	57	2,996	12,509		0	0	0	0	FORWARD THROW WALLPACK: WITH (1) 250 WATT HIGH PRESSURE SODIUM LAMP AND (1) MAGNETIC BALLAST	FORWARD THROW WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 57 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
DPS	36			LIFT STATION STAIRS	500	S1E	1	43	22	LT1L.1	1	15	8	14		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (1) LINEAR 4' 34 WATT T12 LAMP, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	37			LIFT STATION EXTERIOR	4,380	LED15	3	10	131	LA	3	10	131	0		0	0	0	0	WALLPACK: WITH (1) 10 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
DPS	38			LIFT STATION EXTERIOR	4,380	LED12	2	60	526	LA	2	60	526	0		0	0	0	0	60 WATT LED WALL PACK	LEAVE ALONE	LEAVE ALONE
DPS	39			STORAGE GARAGE	1,000	H3	6	215	1,290	HB2	6	60	360	930		0	0	0	0	HIGH BAY: WITH (1) 175 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	HIGH BAY: NEW REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (2) LINEAR 4' 27 WATT LED T5HO LAMPS, (1) ELECTRONIC DRIVER AND (1) WIRE CAGE	LEAVE ALONE
DPS	39			STORAGE GARAGE	1,000	W1E	3	72	216	LT2L.1	3	30	90	126		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
DPS	39			STORAGE GARAGE	1,000	H51	4	188	752	LED33	4	14	56	696		0	0	0	0	FLOOD: WITH (1) 150 WATT HIGH PRESSURE SODIUM LAMP AND (1) MAGNETIC BALLAST	FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 14 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
DPS	39			EXIT SIGN	8,760	X4	2	2	35	X2	2	2	35	0		0	0	0	0	EXIT SIGN WITH (1) 2 WATT LED LIGHT ENGINE	EXIT SIGN: NEW REPLACEMENT FIXTURE WITH (1) 2 WATT LED LIGHT ENGINE, EMERGENCY BATTERY BACKUP, AND EMERGENCY FLOOD HEADS	LEAVE ALONE
DPS	40			DPS EXTERIOR	8,760	F3	9	23	1,813	LD7.1	9	14	1,104	710	PC	1	4,380	552	552	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 14 WATT PAR38 LED LAMP (WET LOCATION RATED), REMOVE EXISTING LENS	INSTALL INTEGRAL PHOTOCELL
DPS	41			DPS EXTERIOR	4,380	LED13	9	20	788	LA	9	20	788	0		0	0	0	0	WALLPACK: WITH (1) 20 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
DPS	42			SITE LIGHTING	8,760	H13	1	295	2,584	LED29PC	1	87	762	1,822	PC	1	4,380	381	381	SHOEBOX: POLE MOUNTED WITH (1) 250 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHTOCELL	AREA LIGHT: NEW POLE MOUNTED REPLACEMENT FIXTURE WITH (1) 87 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	INSTALL INTEGRAL PHOTOCELL
DPS	43			STORAGE GARAGE FLDS	1,000	C7	2	65	130	LD5	2	13	26	104		0	0	0	0	65 WATT BR30 INCANDESCENT LAMP	RELAMP WITH (1) 13 WATT PAR30 LED LAMP	LEAVE ALONE
DPS	44			STORAGE GARAGE FLDS	1,000	F4	2	26	52	LD5	2	13	26	26		0	0	0	0	26 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 13 WATT PAR30 LED LAMP	LEAVE ALONE
DPS	45			STORAGE GARAGE EXTERIOR	4,380	LED13	1	20	88	LA	1	20	88	0		0	0	0	0	WALLPACK: WITH (1) 20 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
FM	1	1		FARMERS MARKET	750	I6E	8	246	1,476	I6H	8	91	546	930		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (4) LINEAR 8' 60 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLASTS	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START HIGH POWER ELECTRONIC BALLAST	LEAVE ALONE
FM	2	1		FARMERS MARKET	750	T1E	1	144	108	LT2	1	36	27	81		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
FM	3	1		FARMERS MARKET CONCESSIONS	750	C6	2	75	113	LD5	2	13	20	93		0	0	0	0	75 WATT PAR30 INCANDESCENT LAMP	RELAMP WITH (1) 13 WATT PAR30 LED LAMP	LEAVE ALONE
FM	4	1		SINK ROOM	750	F3	4	23	69	LD3	4	10	29	41		0	0	0	0	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
FM	5	1		HALLWAY	750	C4	1	100	75	LD3.1	1	10	7	68		0	0	0	0	100 WATT INCANDESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
FM	6	1		BACK AREA	750	C7	6	65	293	LD16	6	9	41	252		0	0	0	0	65 WATT BR30 INCANDESCENT LAMP	RELAMP WITH (1) 9 WATT BR30 LED LAMP	LEAVE ALONE
FM	7	1		BACK AREA	750	F3	6	23	104	LD16	6	9	41	63		0	0	0	0	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9 WATT BR30 LED LAMP	LEAVE ALONE
FM	8	1		BACK AREA	750	C3	1	75	56	LD16	1	9	7	50		0	0	0	0	75 WATT INCANDESCENT LAMP	RELAMP WITH (1) 9 WATT BR30 LED LAMP	LEAVE ALONE
FM	9	1		BACK AREA	750	C4	2	100	150	LD16	2	9	14	137		0	0	0	0	100 WATT INCANDESCENT LAMP	RELAMP WITH (1) 9 WATT BR30 LED LAMP	LEAVE ALONE
FM	10	1		BACK AREA	750	C2	1	60	45	LD16	1	9	7	38		0	0	0	0	60 WATT INCANDESCENT LAMP	RELAMP WITH (1) 9 WATT BR30 LED LAMP	LEAVE ALONE
FM	11	1		RESTROOM	500	F3	3	23	35	LD1	3	6	9	26		0	0	0	0	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 6 WATT A19 LED LAMP	LEAVE ALONE
FM	12	1		CLOSET	500	C2	1	60	30	LD2.1	1	9	5	26		0	0	0	0	60 WATT INCANDESCENT LAMP	RELAMP WITH (1) 9 WATT A19 LED LAMP	LEAVE ALONE
FM	13	1		KITCHEN	750	T1E	2	144	216	LT2M	2	42	63	153		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	LEAVE ALONE
FM	13	1		2X4 TROFFER LENS	0		0		0	LENS2	2	0	0	0		0	0	0	0		2'X4' LUMIEO LENS REPLACEMENT	LEAVE ALONE
FM	14			STAIRWAY	500	C6	2	75	75	LD16.1	2	9	9	66		0	0	0	0	75 WATT PAR30 INCANDESCENT LAMP	RELAMP WITH (1) 9 WATT BR30 LED LAMP	LEAVE ALONE
FM	15			STAIRWAY	500	C2	2	60	60	LD2.1	2	9	9	51		0	0	0	0	60 WATT INCANDESCENT LAMP	RELAMP WITH (1) 9 WATT A19 LED LAMP	LEAVE ALONE
FM	16	B		BASEMENT	100	C2	12	60	72	LD2.1	12	9	11	61		0	0	0	0	60 WATT INCANDESCENT LAMP	RELAMP WITH (1) 9 WATT A19 LED LAMP	LEAVE ALONE
FM	18	1		FARMERS MARKET	750	I6E	4	246	738	I6H	4	91	273	465		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (4) LINEAR 8' 60 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLASTS	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START HIGH POWER ELECTRONIC BALLAST	LEAVE ALONE
FM	19	1		RESTROOM	500	W1R	1	59	30	LR2	1	36	18	12		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
FM	20	1		RESTROOM	500	W1R	1	59	30	LR2	1	36	18	12		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
FM	21	1		EXTERIOR	4,380	H24	2	188	1,647	LED34	2	50	438	1,209		0	0	0	0	BARNLIGHT: WITH (1) 150 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	BARN LIGHT: NEW REPLACEMENT FIXTURE WITH (1) 50 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
FM	22	1		EXTERIOR	8,760	H24	1	188	1,647	LED34	1	50	438	1,209	PC	1	4,380	219	219	BARNLIGHT: WITH (1) 150 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	BARN LIGHT: NEW REPLACEMENT FIXTURE WITH (1) 50 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	INSTALL INTEGRAL PHOTOCELL
FM	23	1		EXTERIOR	4,380	LED5	3	10	131	LA	3	10	131	0		0	0	0	0	10 WATT LED WALL PACK	LEAVE ALONE	LEAVE ALONE
FM	24	1		EXTERIOR	4,380	Q1	7	150	4,599	LED26PCSF	7	24	736	3,863		0	0	0	0	FLOOD: WITH (1) 150 WATT QUARTZ INCANDESCENT LAMP AND (1) INTEGRAL PHOTOCELL	ROUND BACK FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 24 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
FS	1			APPARATUS ROOM	500	T5E	9	115	518	LT3.2	9	53	236	281		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
FS	1			2X4 TROFFER LENS	0		0		0	LENS2	2	0	0	0		0	0	0	0		2'X4' LUMIEO LENS REPLACEMENT	LEAVE ALONE
FS	2			STORAGE	500	S2E	2	72	72	LT2L.1	2	30	30	42		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
FS	3			BREAK ROOM	500	S3E	4	123	246	E4L	4	60	120	126		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	STRIP: UNIVERSAL NARROW 8' BODY RETROFIT KIT WITH WHITE METAL BELLY PAN, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
FS	4			OFFICE	500	T3E	2	72	72	LT2L.1	2	30	30	42		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
FS	5			RESTROOM	500	C1	2	40	40	LD1.1	2	6	6	34		0	0	0	0	40 WATT INCANDESCENT LAMP	RELAMP WITH (1) 6 WATT A19 LED LAMP	LEAVE ALONE
FS	6			EXTERIOR	4,380	LED15	3	10	131	LA	3	10	131	0		0	0	0	0	WALLPACK: WITH (1) 10 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
MP	1			EXTERIOR	4,380	DECO1	34	128	19,062	LED1	34	25	3,723	15,339		0	0	0	0	DECORATIVE ACORN: ALUMINUM POLE MOUNTED WITH (1) 100 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	RETROFIT: CUSTOM HARD-WIRED 25 WATT LED LIGHT ENGINE AND ELECTRONIC DRIVER	LEAVE ALONE
MP	2			RESTROOM	2,000	F17M	10	28	560	LD21	10	8	160	400		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 13 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT: WITH 8 WATT LED TRIM KIT	LEAVE ALONE
MP	3			EXTERIOR	4,380	H45	12	128	6,728	LED10	12	15	788	5,939		0	0	0	0	SQUARE: RECESS MOUNTED WITH (1) 100 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	RETROFIT WITH (1) 15 WATT A21 LED LAMP, BY-PASS EXISTING MAGNETIC BALLAST	LEAVE ALONE
MP	4			RESTROOM	2,000	F17M	10	28	560	LD21	10	8	160	400		0	0	0	0	CAN: RECESS MOUNTED WITH (2) 13 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) MAGNETIC BALLAST	RETROFIT: WITH 8 WATT LED TRIM KIT	LEAVE ALONE
MP	5			MAINTENANCE	1,000	W4R	3	112	336	LR4.1	3	70	209	128		0	0	0	0	WRAP: SURFACE MOUNTED WITH WIDE 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
PR	1			GARAGE	1,150	I3R	4	109	501	I6	4	60	276	225		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 59 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
PR	2			GARAGE	1,150	I3	11	130	1,645	I6	11	60	759	886		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) STANDARD MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
PR	3			VENDING MACHINE	8,760	U1	1	427	3,741	LA	1	427	3,741	0	U1	1	4,380	1,870	1,870	COLD VENDING MACHINE	LEAVE ALONE	OCCUPANCY SENSOR: (1) LOW VOLTAGE VENDING MACHINE SENSOR WITH 180 DEGREE LENS, (1) POWERPACK, PASSIVE INFRA-RED TECHNOLOGY
PR	4			BREAK ROOM	1,150	W7R	1	89	102	LT2	1	36	41	61		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
PR	5			BREAK ROOM	1,150	W4R	1	112	129	LT2M	1	42	48	81		0	0	0	0	WRAP: SURFACE MOUNTED WITH WIDE 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	LEAVE ALONE
PR	6			RESTROOM	1,150	F1	5	15	86	LD1	5	6	35	52		0	0	0	0	15 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 6 WATT A19 LED LAMP	LEAVE ALONE
PR	7			OFFICE	1,150	W7R	3	89	307	LT2	3	36	124	183		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
PR	8			EXTERIOR	4,380	H24	2	188	1,647	LED34	2	50	438	1,209		0	0	0	0	BARNLIGHT: WITH (1) 150 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	BARN LIGHT: NEW REPLACEMENT FIXTURE WITH (1) 50 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
PR	9			EXTERIOR	4,380	H25	2	295	2,584	LED32PC	2	57	499	2,085		0	0	0	0	FORWARD THROW WALLPACK: WITH (1) 250 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	FORWARD THROW WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 57 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
PR	10			EXTERIOR	4,380	H26	2	95	832	LED35	2	10	88	745		0	0	0	0	MINI WALLPACK: WITH (1) 70 WATT METAL HIALIDE LAMP, (1) MAGENTIC BALLAST AND (1) INTEGRAL PHOTOCELL	MINI WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 10 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
RC	59		REC CEN	EXTERIOR	4,380	H47	5	460	10,074	LED36PC	5	120	2,628	7,446		0	0	0	0	SHOEBOX: TALL SQUARE POLE MOUNTED WITH (1) 400 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	AREA LIGHT: NEW POLE MOUNTED REPLACEMENT FIXTURE WITH (1) 120 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
RC	60		REC CEN	EXTERIOR	4,380	H40	2	128	1,121	LA	2	128	1,121	0		0	0	0	0	WELL LIGHT: RECESS MOUNTED WITH (1) 100 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	LEAVE ALONE	LEAVE ALONE
SC	1			OFFICE	1,660	T8R	1	56	93	LR6	1	28	46	46		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (2) LINEAR 4' 28 WATT T5 LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 14 WATT LED T5 LAMPS	LEAVE ALONE
SC	2			COAT CHECK	1,660	T8R	1	56	93	LR6	1	28	46	46		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (2) LINEAR 4' 28 WATT T5 LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 14 WATT LED T5 LAMPS	LEAVE ALONE
SC	3			MEETING ROOM	1,500	T8R	8	56	672	LR6	8	28	336	336		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (2) LINEAR 4' 28 WATT T5 LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 14 WATT LED T5 LAMPS	LEAVE ALONE
SC	4			MEETING ROOM	1,500	T5R	4	89	534	LT2	4	36	216	318		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
SC	5			CUSTODIAL	500	F7	3	32	48	LD14.3	3	11	17	32		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT PLUG-IN COMPACT FLUORESCENT LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
SC	6			MECHANICAL	1,000	S2R	4	59	236	LR2.1	4	36	144	92		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
SC	7			STORAGE	500	T9R	1	28	14	LR5	1	14	7	7		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (1) LINEAR 4' 28 WATT T5 LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) LINEAR 4' 14 WATT LED T5 LAMP	LEAVE ALONE
SC	8			STORAGE	500	T9R	1	28	14	LR5	1	14	7	7		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (1) LINEAR 4' 28 WATT T5 LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) LINEAR 4' 14 WATT LED T5 LAMP	LEAVE ALONE
SC	9			CUSTODIAL	500	T9R	1	28	14	LR5	1	14	7	7		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (1) LINEAR 4' 28 WATT T5 LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) LINEAR 4' 14 WATT LED T5 LAMP	LEAVE ALONE
SC	10			STORAGE (NA)	500	T9R	1	28	14	LR5	1	14	7	7		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (1) LINEAR 4' 28 WATT T5 LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) LINEAR 4' 14 WATT LED T5 LAMP	LEAVE ALONE
SC	11			OFFICE (NA)	2,080	T9R	3	28	175	LR5	3	14	87	87		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (1) LINEAR 4' 28 WATT T5 LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) LINEAR 4' 14 WATT LED T5 LAMP	LEAVE ALONE
SC	12			HALLWAY	2,513	F7	7	32	563	LD14	7	11	194	369		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT PLUG-IN COMPACT FLUORESCENT LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
SC	13			KITCHEN	1,800	T5R	8	89	1,282	LT2	8	36	518	763		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
SC	14			KITCHEN HOOD	1,800	C4	3	100	540	LD3.1	3	10	51	489		0	0	0	0	100 WATT INCANDESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
SC	15			MENS RESTROOM	1,000	T8R	2	56	112	LR6	2	28	56	56		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (2) LINEAR 4' 28 WATT T5 LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 14 WATT LED T5 LAMPS	LEAVE ALONE
SC	16			MENS RESTROOM	1,000	F7	1	32	32	LD14	1	11	11	21		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT PLUG-IN COMPACT FLUORESCENT LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
SC	17			WOMENS RESTROOM	1,000	T8R	2	56	112	LR6	2	28	56	56		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (2) LINEAR 4' 28 WATT T5 LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 14 WATT LED T5 LAMPS	LEAVE ALONE
SC	18			WOMENS RESTROOM	1,000	F7	1	32	32	LD14	1	11	11	21		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT PLUG-IN COMPACT FLUORESCENT LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
SC	19			ATRIUM	2,513	F19	1	260	653	LD18	1	110	276	377		0	0	0	0	BOWL: PENDANT MOUNTED WITH (10) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (5) ELECTRONIC BALLASTS	RETROFIT WITH (10) 10.5 WATT PLUG-IN LED LAMPS	LEAVE ALONE
SC	20			ATRIUM	1,760	F7	6	32	338	LD14	6	11	116	222		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT PLUG-IN COMPACT FLUORESCENT LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
SC	21			MEETING ROOM	2,513	T8R	15	56	2,111	LR6	15	28	1,055	1,055		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (2) LINEAR 4' 28 WATT T5 LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 14 WATT LED T5 LAMPS	LEAVE ALONE
SC	22			MEETING ROOM	2,513	T9R	1	28	70	LR5	1	14	35	35		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, VOLUMETRIC LENS, (1) LINEAR 4' 28 WATT T5 LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) LINEAR 4' 14 WATT LED T5 LAMP	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
SC	23			MEETING ROOM	2,513	F7	73	32	5,870	LD14	73	11	2,018	3,852		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT PLUG-IN COMPACT FLUORESCENT LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
SC	24			MEETING ROOM	2,513	F19	2	260	1,307	LD18	2	110	553	754		0	0	0	0	BOWL: PENDANT MOUNTED WITH (10) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (5) ELECTRONIC BALLASTS	RETROFIT WITH (10) 10.5 WATT PLUG-IN LED LAMPS	LEAVE ALONE
SC	25			CLOSET (NA)	500	T5R	1	89	45	LR3	1	53	26	18		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
SC	26			STORAGE	500	T5R	1	89	45	LR3	1	53	26	18		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
SC	27			STORAGE	500	T5R	1	89	45	LR3	1	53	26	18		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
SC	28			BATTERY BACKUP BALLASTS	0		0		0	EM1	10	0	0	0		0	0	0	0		1400 LUMEN EMERGENCY BATTERY BACK-UP ELECTRONIC BALLAST	LEAVE ALONE
SC	29			EXTERIOR	4,383	F14	9	26	1,026	LD14.3	9	11	434	592		0	0	0	0	FULL CUTOFF WALLPACK: WITH (1) 26 WATT COMPACT FLUORESCENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
SC	30			EXTERIOR	4,383	LED15	1	10	44	LA	1	10	44	0		0	0	0	0	WALLPACK: WITH (1) 10 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
SC	31			EXTERIOR	4,383	F15	2	32	281	LED33PCSF	2	14	123	158		0	0	0	0	SIGN FLOOD: WITH (1) 32 WATT COMPACT FLUORESCENT PLUG-IN LAMP, (1) ELECTRONIC BALLAST AND (1) INTEGRAL PHOTOCELL	FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 14 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
SC	32			EXTERIOR	4,383	LED20	7	60	1,841	LA	7	60	1,841	0		0	0	0	0	AREA LIGHT: POLE MOUNTED WITH (1) 60 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
SH	11			RECEPTION	3,324	T2R	2	59	392	LT2L	2	30	199	193	O2	1	2,493	150	50	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
SH	12			OPEN OFFICE	8,760	T2R	2	59	1,034	LT2L	2	30	526	508	O2	1	6,570	394	131	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
SH	13			COPY ROOM	3,324	T5R	2	89	592	LT2	2	36	239	352	O1	1	1,662	120	120	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
SH	14			CONFERENCE	1,514	T5RP	6	89	808	LT3L	6	45	409	400	O2	1	757	204	204	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
SH	15			KITCHENETTE	8,760	T5R	2	89	1,559	LT2	2	36	631	929	O1	1	4,380	315	315	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
SH	16			INTERVIEW ROOM	2,000	T1R	1	112	224	LT2H	1	48	95	129		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START HIGH POWER ELECTRONIC BALLAST	LEAVE ALONE
SH	17			LOCKER ROOM	3,000	T5R	2	89	534	LT2	2	36	216	318	O1	1	1,200	86	130	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY

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Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
SH	18			OPEN OFFICE	3,324	T5R	6	89	1,775	LT2M	6	42	838	937	O2	1	2,493	628	209	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
SH	19			SQUAD ROOM	2,600	T5R	7	89	1,620	LT2M	7	42	764	855	O2	1	1,300	382	382	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
SH	20			CUSTODIAL	500	F12	1	42	21	LED27	1	22	11	10		0	0	0	0	DOME: SURFACE MOUNTED WITH (1) 42 WATT COMPACT FLUORESCENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	DRUM: NEW REPLACEMENT FIXTURE WITH (1) 22 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
SH	21			WOMENS LOCKER ROMM	3,000	T5R	2	89	534	LT2	2	36	216	318	O1P	1	1,200	86	130	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS, SINGLE POLE SWITCH, DUAL TECHNOLOGY
SH	22			WOMENS LOCKER ROMM	3,000	T4R	3	59	531	LT6L	3	30	270	261	O1P	1	1,200	108	162	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 U-BEND LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 15 WATT 4' U-BEND LED T8 LAMPS AND (1) LOW POWER INSTANT START ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS, SINGLE POLE SWITCH, DUAL TECHNOLOGY
SH	23			MENS LOCKER ROMM	3,000	T5R	3	89	801	LT2	3	36	324	477	O1P	1	1,200	130	194	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS, SINGLE POLE SWITCH, DUAL TECHNOLOGY
SH	24			MENS LOCKER ROMM	3,000	T4R	3	59	531	LT6L	3	30	270	261	O1P	1	1,200	108	162	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 U-BEND LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 15 WATT 4' U-BEND LED T8 LAMPS AND (1) LOW POWER INSTANT START ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS, SINGLE POLE SWITCH, DUAL TECHNOLOGY
SH	25			OFFICE (DETECTIVE) (NA)	2,000	T5R	6	89	1,068	LT2M	6	42	504	564	O2	1	1,600	403	101	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START MEDIUM POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
SH	26			PARAMEDIC SUPPLIES (NA)	500	T5R	1	89	45	LR2.1	1	36	18	27		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
SH	27			OFFICE (DETECTIVE) (NA)	2,000	T5R	2	89	356	LT2	2	36	144	212	O1	1	1,600	115	29	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
SH	28			OFFICE (SERGENT) (NA)	2,000	T5R	4	89	712	LT2	4	36	288	424	O1	1	1,600	230	58	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (3) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
SH	29			HALLWAY	3,324	T4R	1	59	196	LT6L	1	30	100	96		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 U-BEND LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 15 WATT 4' U-BEND LED T8 LAMPS AND (1) LOW POWER INSTANT START ELECTRONIC BALLAST	LEAVE ALONE
SH	30			HALLWAY	3,324	F11	10	42	1,396	LD15	10	16	532	864		0	0	0	0	SCONCE: WALL MOUNTED WITH (1) 42 WATT COMPACT FLUORESCENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 15 WATT PLUG-IN LED LAMP	LEAVE ALONE
SH	30			HALLWAY	8,760	F11	10	42	3,679	LD15	10	16	1,402	2,278		0	0	0	0	SCONCE: WALL MOUNTED WITH (1) 42 WATT COMPACT FLUORESCENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 15 WATT PLUG-IN LED LAMP	LEAVE ALONE
SH	31			STAIRWAY	1,000	T4R	1	59	59	LT6L	1	30	30	29		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X2' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 32 WATT T8 U-BEND LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 15 WATT 4' U-BEND LED T8 LAMPS AND (1) LOW POWER INSTANT START ELECTRONIC BALLAST	LEAVE ALONE
SH	32			BASEMENT	500	S5R	5	112	280	LR4.1	5	70	174	106		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL BELLY PAN, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
SH	33			ENTRY	3,324	F10	2	42	279	LD15	2	16	106	173		0	0	0	0	6 INCH CAN: RECESS MOUNTED WITH (1) COMPACT FLURESCENT PLUG-IN LAMP AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 15 WATT PLUG-IN LED LAMP	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
SH	34			EXTERIOR (CANOPY)	4,380	H42	7	95	2,913	LED28	7	22	675	2,238		0	0	0	0	CANOPY: SURFACE MOUNTED WITH (1) 70 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	CANOPY: NEW SURFACE MOUNTED REPLACEMENT FIXTURE WITH (1) 22 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
SH	35			EXTERIOR (POLE)	4,380	H41	5	295	6,461	LED29PC	5	87	1,905	4,555		0	0	0	0	SHOEBOX: POLE MOUNTED WITH (1) 250 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	AREA LIGHT: NEW POLE MOUNTED REPLACEMENT FIXTURE WITH (1) 87 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
SH	36			EXTERIOR (WP)	4,380	F13	2	84	736	LED31	2	23	201	534		0	0	0	0	FULL COUTOFF WALLPACK: WITH (2) 42 WATT COMPACT FLUORESCENT PLUG-IN LAMPS, (1) ELECTRONIC BALLAST AND (1) INTEGRAL PHOTOCELL	FULL CUTOFF WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 23 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
SH	37			EXTERIOR (WP)	4,380	H43	6	95	2,497	LED31	6	23	604	1,892		0	0	0	0	FULL CUTOFF WALLPACK: WITH (1) 70 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	FULL CUTOFF WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 23 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
SH	38			EXTERIOR (FLAG FLOOD)	4,380	H44	1	215	942	LED26	1	24	105	837		0	0	0	0	FLAG FLOOD: WITH (1) 175 WATT METAL HALIDE LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	ROUND BACK FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 24 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
SH	39			EXTERIOR (RECESS CANS)	4,380	F9	1	32	140	LD14	1	11	48	92		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
SL	2			(1) POLE (1) HEAD	4,380	DECO3	97	128	54,382	LED1	97	25	10,622	43,761		0	0	0	0	STANDARD ACORN: CONCRETE POLE MOUNTED WITH (1) 100 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	RETROFIT: CUSTOM HARD-WIRED 25 WATT LED LIGHT ENGINE AND ELECTRONIC DRIVER	LEAVE ALONE
SL	3			(1) POLE (2) HEAD	4,380	DECO3	6	128	3,364	LED1	6	25	657	2,707		0	0	0	0	STANDARD ACORN: CONCRETE POLE MOUNTED WITH (1) 100 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	RETROFIT: CUSTOM HARD-WIRED 25 WATT LED LIGHT ENGINE AND ELECTRONIC DRIVER	LEAVE ALONE
SL	4			(1) POLE (1) HEAD	4,380	DECO4	96	128	53,821	LED1	96	25	10,512	43,309		0	0	0	0	STANDARD ACORN: CAST IRON POLE MOUNTED WITH (1) 100 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	RETROFIT: CUSTOM HARD-WIRED 25 WATT LED LIGHT ENGINE AND ELECTRONIC DRIVER	LEAVE ALONE
SL	5			(1) POLE (2) HEAD	4,380	DECO4	20	128	11,213	LED1	20	25	2,190	9,023		0	0	0	0	STANDARD ACORN: CAST IRON POLE MOUNTED WITH (1) 100 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	RETROFIT: CUSTOM HARD-WIRED 25 WATT LED LIGHT ENGINE AND ELECTRONIC DRIVER	LEAVE ALONE
SL	6			(1) POLE (1) HEAD	4,380	DECO5	6	30	788	LED1	6	25	657	131		0	0	0	0	STANDARD ACORN: CAST IRON POLE MOUNTED WITH (1) 30 WATT SELF BALLASTED LED LAMP	RETROFIT: CUSTOM HARD-WIRED 25 WATT LED LIGHT ENGINE AND ELECTRONIC DRIVER	LEAVE ALONE
VP	1			EXTERIOR CANOPY	4,380	H45	16	128	8,970	LED10	16	15	1,051	7,919		0	0	0	0	SQUARE: RECESS MOUNTED WITH (1) 100 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	RETROFIT WITH (1) 15 WATT A21 LED LAMP, BY-PASS EXISTING MAGNETIC BALLAST	LEAVE ALONE
VP	2			MENS RESTROOM	8,760	F16	10	36	3,154	LD19.2	10	18	1,577	1,577	O3	1	3,504	631	946	8 INCH CAN: RECESS MOUNTED WITH (2) 18 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS	OCCUPANCY SENSOR: (1) LINE VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, DUAL TECHNOLOGY
VP	3			CUSTODIAL / STORAGE	500	W4R	4	112	224	LR4.1	4	70	139	85		0	0	0	0	WRAP: SURFACE MOUNTED WITH WIDE 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
VP	4			WOMENS RESTROOM	8,760	F16	10	36	3,154	LD19.2	10	18	1,577	1,577	O3	1	3,504	631	946	8 INCH CAN: RECESS MOUNTED WITH (2) 18 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS	OCCUPANCY SENSOR: (1) LINE VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, DUAL TECHNOLOGY
VP	5			EXTERIOR	4,380	F9	2	32	280	LD14	2	11	96	184		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
VP	6			FAMILY RESTROOM	750	F16	2	36	54	LD19.2	2	18	27	27		0	0	0	0	8 INCH CAN: RECESS MOUNTED WITH (2) 18 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
VP	7			FAMILY RESTROOM	750	F16	2	36	54	LD19.2	2	18	27	27		0	0	0	0	8 INCH CAN: RECESS MOUNTED WITH (2) 18 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) 8.5 WATT PLUG-IN LED LAMPS	LEAVE ALONE
VP	8			EXTERIOR	4,380	F9	7	32	981	LD14	7	11	337	644		0	0	0	0	CAN: RECESS MOUNTED WITH (1) 32 WATT COMPACT FLUORESCENT PLUG-IN LAMPS AND (1) ELECTRONIC BALLAST	RETROFIT WITH (1) 10.5 WATT LED PLUG-IN LAMP	LEAVE ALONE
VP	9			SITE LIGHTING	4,380	H24	2	188	1,647	LED34	2	50	438	1,209		0	0	0	0	BARNLIGHT: WITH (1) 150 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	BARN LIGHT: NEW REPLACEMENT FIXTURE WITH (1) 50 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
VP	10			SITE LIGHTING	8,760	H46	1	295	2,584	LED29PC	1	87	762	1,822		0	0	0	0	FLOOD: POLE MOUNTED WITH (1) 250 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	AREA LIGHT: NEW POLE MOUNTED REPLACEMENT FIXTURE WITH (1) 87 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	1		BLDG 240	GARAGE	2,849	F4	4	26	296	LD4.1	4	15	171	125		0	0	0	0	26 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 15 WATT A21 LED LAMP	LEAVE ALONE
WW	2		BLDG 240	GARAGE	2,849	I3E	3	123	1,051	I6	3	60	513	538		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	3		BLDG 240	GARAGE ENTRY	2,849	F3	1	23	66	LD3	1	10	27	38		0	0	0	0	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
WW	4		BLDG 240	GARAGE TASK	2,849	I1	5	80	1,140	I1	5	18	256	883		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) STANDARD MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	5		BLDG 240	GARAGE	2,849	I3	5	130	1,852	I6	5	60	855	997		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) STANDARD MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	6		BLDG 240	GARAGE	2,849	F3	1	23	66	LD3.1	1	10	27	38		0	0	0	0	23 WATT COMPACT FLUORESCENT LAMP	RELAMP WITH (1) 9.5 WATT A19 LED LAMP	LEAVE ALONE
WW	7		BLDG 240	STORAGE	2,000	I3	1	130	260	I6	1	60	120	140		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) STANDARD MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	8		BLDG 240	OFFICE	2,000	S3	1	138	276	S6	1	36	72	204		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) STANDARD MAGNETIC BALLAST	STRIP: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL BELLY PAN, (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	9		BLDG 240	GARAGE	2,849	W1	10	80	2,279	W1.1	10	18	513	1,766		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) STANDARD MAGNETIC BALLAST	WRAP: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH ACRYLIC LENS, WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	10		BLDG 240	EXTERIOR	8,760	H27	1	188	1,647	LED37PC	1	24	210	1,437	PC	1	4,380	105	105	FORWARD THROW WALLPACK: WITH (1) 150 WATT HIGH PRESSURE SODIUM LAMP, (1) ELECTRONIC BALLAST AND (1) INTEGRAL PHOTOCELL	FORWARD THROW WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 24 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	INSTALL INTEGRAL PHOTOCELL
WW	11		BLDG 240	EXTERIOR	4,380	H28	1	95	416	LED33PC	1	14	61	355		0	0	0	0	FLOOD: WITH (1) 70 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 14 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	12		BLDG 240	EXTERIOR	4,380	H29	1	460	2,015	LED38PC	1	120	526	1,489		0	0	0	0	SHOEBOX: POLE MOUNTED WITH (1) 400 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	FLOOD: NEW WALL MOUNTED REPLACEMENT FIXTURE WITH (1) 120 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	13		DIGESTOR	GAS ROOM	2,720	H30	8	215	4,678	LED39C1D1	8	21	457	4,221		0	0	0	0	CLASS 1 DIV 1 FIXTURE: SURFACE MOUNTED WITH (1) 175 WATT METAL HALIDE LAMP AND (1) MAGNETIC BALLAST	CLASS 1 DIV 1: NEW REPLACEMENT FIXTURE WITH (1) 21 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE

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Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
WW	14		DIGESTOR	PUMP ROOM ELECTRICAL	1,000	V1R	8	59	472	LR2.1	8	36	288	184		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
WW	15		DIGESTOR	PUMP ROOM	2,720	V1R	25	59	4,012	LT2L.1	25	30	2,040	1,972		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	16		DIGESTOR	STAIRWELL	2,720	V1R	3	59	481	LT2L.1	3	30	245	237		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	17		DIGESTOR	BASEMENT	1,000	V1R	42	59	2,478	LR2.1	42	36	1,512	966		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
WW	18		DIGESTOR	EXTERIOR	4,380	WP1	5	43	942	LED37PC	5	24	526	416		0	0	0	0	WALLPACK: WITH (1) LINEAR 3' 39 WATT T5HO LAMP AND (1) ELECTRONIC BALLAST	FORWARD THROW WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 24 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	20		BLDG 120	NITRIFICATION EXTERIOR	4,380	C8	6	300	7,884	LED40C1D2.1	6	38	999	6,885		0	0	0	0	CLASS 1 DIV 2 FIXTURE: WITH (1) 300 WATT INCANDESCENT LAMP	CLASS 1 DIV 2: NEW REPLACEMENT FIXTURE WITH (1) 38 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
WW	21		BLDG 120	NITRIFICATION EXTERIOR	4,380	H31	1	460	2,015	LED38PCSF.1	1	120	526	1,489		0	0	0	0	FLOOD: WITH (1) 400 WATT METAL HALIDE LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL (SLIP FITTER)	FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 120 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	22			CHLORINATION	1,000	V1R	7	59	413	LR2.1	7	36	252	161		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS	LEAVE ALONE
WW	23		BLDG 110	TERTIARY PUMP STATION	2,000	I4E	11	212	4,664	I6	11	60	1,320	3,344		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 95 WATT T12HO LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	24		BLDG 110	RESTROOM	2,000	I4E	1	212	424	I6	1	60	120	304		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 95 WATT T12HO LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	25		BLDG 110	EXTERIOR	4,380	H32	2	215	1,883	LED37PC	2	24	210	1,673		0	0	0	0	FORWARD THROW WALLPACK: WITH (1) 175 WATT METAL HALIDE LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	FORWARD THROW WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 24 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	26		BLDG 110	EXTERIOR	4,380	C8	2	300	2,628	LED40C1D2.1	2	38	333	2,295		0	0	0	0	CLASS 1 DIV 2 FIXTURE: WITH (1) 300 WATT INCANDESCENT LAMP	CLASS 1 DIV 2: NEW REPLACEMENT FIXTURE WITH (1) 38 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
WW	27			LAGOON EXTERIOR	4,380	H33	2	66	578	LED33PCSF	2	14	123	456		0	0	0	0	FLOOD: WITH (1) 50 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL (SLIP FITTER)	FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 14 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	28			LAGOON EXTERIOR	8,760	H33	1	66	578	LED33PCSF	1	14	123	456	PC	1	4,380	61	61	FLOOD: WITH (1) 50 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL (SLIP FITTER)	FLOOD: NEW REPLACEMENT FIXTURE WITH (1) 14 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	INSTALL INTEGRAL PHOTOCELL
WW	29			LAGOON EXTERIOR	4,383	H34	1	460	2,016	LED38PCSB	1	120	526	1,490		0	0	0	0	SHOEBOX: ROUND POLE, TENON MOUNT, 90 DEGREE ADJUSTABLE WITH (1) 400 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	FLOOD: NEW POLE MOUNTED REPLACEMENT FIXTURE WITH (1) 120 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL (SWIVEL BRACKET)	LEAVE ALONE
WW	31		BLDG 270	AERATION	2,720	I4E	11	212	6,343	I6	11	60	1,795	4,548		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 8' 95 WATT T12HO LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	32		BLDG 270	EXTERIOR	4,380	H32	1	215	942	LED37PC	1	24	105	837		0	0	0	0	FORWARD THROW WALLPACK: WITH (1) 175 WATT METAL HALIDE LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	FORWARD THROW WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 24 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
WW	33		BLDG 270	EXTERIOR	4,380	LED14	1	30	131	LA	1	30	131	0		0	0	0	0	WALLPACK: WITH (1) 30 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
WW	34		BLDG 270	EXTERIOR	4,380	H35	35	188	28,820	LED41PC	35	25	3,833	24,988		0	0	0	0	SHOEBOX: POLE MOUNTED WITH (1) 150 HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	ADJUSTABLE WALLPACK: NEW POLE MOUNTED REPLACEMENT FIXTURE WITH (1) 25 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	35		RAW PUMP	GARAGE	8,760	W1E	2	72	1,261	W1.1	2	18	315	946		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	WRAP: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH ACRYLIC LENS, WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	36		RAW PUMP	GARAGE	2,000	I1E	1	72	144	I1	1	18	36	108		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	37		RAW PUMP	RAW PUMP	8,760	S2	2	80	1,402	S1	2	18	315	1,086		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) STANDARD MAGNETIC BALLAST	STRIP: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL BELLY PAN, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	38		RAW PUMP	RAW PUMP	8,760	V6E	1	72	631	LED43C1D2	1	21	184	447		0	0	0	0	CLASS 1 DIV 2 FIXTURE: SURFACE MOUNTED WITH (2) LINEAR 4' 34 WATT T12 LAMPS AND (1) ENERGY SAVING MAGNETIC BALLAST	CLASS 1 DIV 2: NEW REPLACEMENT FIXTURE WITH (1) 21 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
WW	39		RAW PUMP	BASEMENT	8,760	S2E	3	72	1,892	S1	3	18	473	1,419		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	STRIP: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL BELLY PAN, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	40		RAW PUMP	EXTERIOR	4,380	H36	1	128	561	LED42	1	15	66	495		0	0	0	0	WALLPACK: WITH (1) 100 WATT MERCURY VAPOR LAMP AND (1) MAGNETIC BALLAST	FULL CUTOFF MINI WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 15 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
WW	41		RAW PUMP	EXTERIOR	4,380	LED15	3	10	131	LA	3	10	131	0		0	0	0	0	WALLPACK: WITH (1) 10 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
WW	42		BLDG 20	RAW SEWAGE	2,720	V1	6	80	1,306	V1	6	18	294	1,012		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) STANDARD MAGNETIC BALLAST	VAPOR TIGHT: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH ACRYLIC LENS, WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	43		BLDG 20	ENGINE ROOM	2,720	V1	4	80	870	V1	4	18	196	675		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) STANDARD MAGNETIC BALLAST	VAPOR TIGHT: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH ACRYLIC LENS, WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	44		BLDG 20	EXTERIOR	4,380	LED14	3	30	394	LA	3	30	394	0		0	0	0	0	WALLPACK: WITH (1) 30 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
WW	45		BLDG 20	CLARIFIER	8,760	LED16	15	80	10,512	LA	15	80	10,512	0		0	0	0	0	CLASS 1 DIV 2 FIXTURE: WITH (1) 80 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
WW	46		BLDG 20	EXTERIOR	8,760	LED17	3	50	1,314	LA	3	50	1,314	0		0	0	0	0	WALLPACK: WITH (1) 50 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
WW	47		BLDG 20	EXTERIOR	4,380	H32	1	215	942	LED37PC	1	24	105	837		0	0	0	0	FORWARD THROW WALLPACK: WITH (1) 175 WATT METAL HALIDE LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	FORWARD THROW WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 24 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	48		BLDG 20	EXTERIOR	4,380	LED18	2	120	1,051	LA	2	120	1,051	0		0	0	0	0	AREA LIGHT: POLE MOUNTED WITH (1) 120 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
WW	49		BLDG 200	OPEN OFFICE	5,621	T1E	6	144	4,857	LT2	6	36	1,214	3,642	O2	2	3,935	850	364	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
WW	50		BLDG 200	OFFICE	2,000	T1E	2	144	576	LT2	2	36	144	432	O1	1	1,600	115	29	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
WW	51		BLDG 200	CLOSET	500	V1E	1	72	36	LT2L.1	1	30	15	21		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	52		BLDG 200	HALLWAY	5,621	T3E	2	72	809	LT2L	2	30	337	472		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	53		BLDG 200	LAB	5,333	T1E	2	144	1,536	LT2	2	36	384	1,152		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	54		BLDG 200	BALANCE ROOM	5,333	T1E	2	144	1,536	LT2	2	36	384	1,152	O1	1	3,733	269	115	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
WW	55		BLDG 200	LAB	5,333	T3E	20	72	7,680	LT4LT	10	60	3,200	4,480		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	TANDEM RETROFIT WITH (4) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	55			1X4 TROFFER LENS	0		0		0	LENS3	1	0	0	0		0	0	0	0		2'X4' LUMIEO LENS REPLACEMENT	LEAVE ALONE
WW	56		BLDG 200	LAB	5,333	T3E	3	72	1,152	LT2L	3	30	480	672		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	57		BLDG 200	HALLWAY	5,333	T3E	2	72	768	LT2L	2	30	320	448		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	58		BLDG 200	RESTROOM	5,000	T3E	2	72	720	LT2L	2	30	300	420	O1P	1	2,000	120	180	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS, SINGLE POLE SWITCH, DUAL TECHNOLOGY
WW	61		BLDG 200	OFFICE	2,000	T1E	2	144	576	LT2	2	36	144	432	O1	1	1,600	115	29	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
WW	62		BLDG 200	HALLWAY	5,621	S2E	2	72	809	W1	2	18	202	607		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	WRAP: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH ACRYLIC LENS, SPECULAR REFLECTOR, (1) LINEAR 4' 28 WATT T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	63		BLDG 200	STORAGE / ELECTRICAL	1,500	V3E	1	123	185	I1.1	1	18	27	158		0	0	0	0	SURFACE MOUNTED WITH NARROW 8' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	64		BLDG 200	STORAGE / ELECTRICAL	1,500	S2E	4	72	432	I1.1	4	18	108	324		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	65		BLDG 200	STORAGE / ELECTRICAL	1,500	W1E	2	72	216	I1.1	2	18	54	162		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	66		BLDG 200	STORAGE / ELECTRICAL	1,500	W1E	3	72	324	I1.1	3	18	81	243		0	0	0	0	WRAP: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	67		BLDG 200	STORAGE / ELECTRICAL	1,500	V6E	4	72	432	I1.1	4	18	108	324		0	0	0	0	CLASS 1 DIV 2 FIXTURE: SURFACE MOUNTED WITH (2) LINEAR 4' 34 WATT T12 LAMPS AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE

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Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
WW	68		BLDG 200	EXTERIOR	8,760	H36	2	128	2,243	LED42	2	15	263	1,980	PC	2	4,380	131	131	WALLPACK: WITH (1) 100 WATT MERCURY VAPOR LAMP AND (1) MAGNETIC BALLAST	FULL CUTOFF MINI WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 15 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	INSTALL INTEGRAL PHOTOCELL
WW	69		BLDG 200	EXTERIOR	4,380	LED15	1	10	44	LA	1	10	44	0		0	0	0	0	WALLPACK: WITH (1) 10 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
WW	70		BLDG 220	NORTH DIGESTOR	2,720	S2E	2	72	392	S1.1	2	18	98	294		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	STRIP: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL BELLY PAN, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	71		BLDG 220	NORTH DIGESTOR	2,720	V6E	2	72	392	LED43C1D2	2	21	114	277		0	0	0	0	CLASS 1 DIV 2 FIXTURE: SURFACE MOUNTED WITH (2) LINEAR 4' 34 WATT T12 LAMPS AND (1) ENERGY SAVING MAGNETIC BALLAST	CLASS 1 DIV 2: NEW REPLACEMENT FIXTURE WITH (1) 21 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
WW	72		BLDG 220	NORTH DIGESTOR	2,720	V6E	2	72	392	LED43C1D2	2	21	114	277		0	0	0	0	CLASS 1 DIV 2 FIXTURE: SURFACE MOUNTED WITH (2) LINEAR 4' 34 WATT T12 LAMPS AND (1) ENERGY SAVING MAGNETIC BALLAST	CLASS 1 DIV 2: NEW REPLACEMENT FIXTURE WITH (1) 21 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
WW	73		BLDG 220	BASEMENT	1,500	V6E	8	72	864	LED43C1D2	8	21	252	612		0	0	0	0	CLASS 1 DIV 2 FIXTURE: SURFACE MOUNTED WITH (2) LINEAR 4' 34 WATT T12 LAMPS AND (1) ENERGY SAVING MAGNETIC BALLAST	CLASS 1 DIV 2: NEW REPLACEMENT FIXTURE WITH (1) 21 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
WW	74		BLDG 220	EXTERIOR	4,380	LED15	1	10	44	LA	1	10	44	0		0	0	0	0	WALLPACK: WITH (1) 10 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
WW	75		BLDG 230	BASEMENT	8,760	V6E	4	72	2,523	LED43C1D2	4	21	736	1,787		0	0	0	0	CLASS 1 DIV 2 FIXTURE: SURFACE MOUNTED WITH (2) LINEAR 4' 34 WATT T12 LAMPS AND (1) ENERGY SAVING MAGNETIC BALLAST	CLASS 1 DIV 2: NEW REPLACEMENT FIXTURE WITH (1) 21 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
WW	76		BLDG 230	BASEMENT	8,760	I1E	6	72	3,784	I1.1	6	18	946	2,838		0	0	0	0	INDUSTRIAL: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	INDUSTRIAL: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL REFLECTOR, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	77		BLDG 230	GENERATOR	1,000	S2E	6	72	432	S1.1	6	18	108	324		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 4' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	STRIP: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH WHITE METAL BELLY PAN, (1) LINEAR 4' 15.5 WATT LED T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	78		BLDG 210	CLOSET (NA)	500	T2E	1	72	36	LT2L.1	1	30	15	21		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	79		BLDG 210	ENTRY	8,760	T2E	2	72	1,261	LT2L	2	30	526	736	O2	1	6,132	368	158	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
WW	79			ENTRY	0		0		0	EM1	1	0	0	0		0	0	0	0		1400 LUMEN EMERGENCY BATTERY BACK-UP ELECTRONIC BALLAST	LEAVE ALONE
WW	80		BLDG 210	CONFERENCE	8,760	LED19	6	40	2,102	LA	6	40	2,102	0	O2	1	4,380	1,051	1,051	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 20 WATT LED BOARDS AND (1) ELECTRONIC DRIVER	LEAVE ALONE	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
WW	81		BLDG 210	CONFERENCE	8,760	T1E	10	144	12,614	LT2	10	36	3,154	9,461	O2	1	4,380	1,577	1,577	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
WW	82		BLDG 210	HALLWAY	8,760	T2E	7	72	4,415	LT2L	7	30	1,840	2,575		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	82			HALLWAY	0		0		0	EM1	3	0	0	0		0	0	0	0		1400 LUMEN EMERGENCY BATTERY BACK-UP ELECTRONIC BALLAST	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
WW	83		BLDG 210	OFFICE	2,000	T1E	4	144	1,152	LT2	4	36	288	864	O1	1	1,600	230	58	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
WW	84		BLDG 210	OFFICE	2,000	T2E	2	72	288	LT2L	2	30	120	168	O1	1	1,600	96	24	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
WW	85		BLDG 210	OFFICE	2,000	T1E	6	144	1,728	LT2	6	36	432	1,296	O2	1	1,600	346	86	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
WW	86		BLDG 210	OFFICE	2,000	T1E	8	144	2,304	LT2	8	36	576	1,728	O2	1	1,600	461	115	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
WW	87		BLDG 210	STORAGE	1,000	T2E	2	72	144	LT2L	2	30	60	84		0	0	0	0	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	88		BLDG 210	OFFICE	2,000	LED19	1	40	80	LA	1	40	80	0	O2	1	1,600	64	16	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 20 WATT LED BOARDS AND (1) ELECTRONIC DRIVER	LEAVE ALONE	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
WW	89		BLDG 210	OFFICE	2,000	T1E	5	144	1,440	LT2	5	36	360	1,080	O2	0	1,600	288	72	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	CONTROLLED BY MAP 88.0
WW	90		BLDG 210	OFFICE	2,000	T5EP	2	115	460	LT3L	2	45	180	280	O1	1	1,600	144	36	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, PARABOLIC LOUVER, WHITE METAL REFLECTOR, (3) LINEAR 4' 34 WATT T12 LAMPS, AND (2) ENERGY SAVING MAGNETIC BALLASTS	RETROFIT WITH (3) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
WW	91		BLDG 210	CUSTODIAL	500	V1E	1	72	36	LT2L	1	30	15	21		0	0	0	0	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	92		BLDG 210	KITCHEN	4,380	T1R	3	112	1,472	LT2	3	36	473	999	O1	1	3,066	331	142	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (4) LINEAR 4' 32 WATT T8 LAMPS, AND (1) ELECTRONIC BALLAST	RELAMP REBALLAST WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LINE VOLTAGE WALL MOUNTED SENSOR WITH 180 DEGREE LENS,SINGLE POLE SWITCH, PASSIVE INFRA-RED TECHNOLOGY
WW	93		BLDG 210	RESTROOM	4,380	T2E	2	72	631	LT2L	2	30	263	368	O2	1	1,752	105	158	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
WW	94		BLDG 210	LOCKER ROOM	4,380	V1E	2	72	631	LT2L	2	30	263	368	O2	1	1,752	105	158	VAPOR TIGHT: SURFACE MOUNTED WITH NARROW 4' BODY, ACRYLIC LENS, WHITE METAL BELLY PAN, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
WW	95		BLDG 210	RESTROOM	4,380	T2E	1	72	315	LT2L	1	30	131	184	O2	1	1,752	53	79	TROFFER: RECESS MOUNTED WITH 2'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	OCCUPANCY SENSOR: (1) LOW VOLTAGE CEILING MOUNTED SENSOR WITH 360 DEGREE LENS, (1) POWER PACK, PASSIVE INFRA-RED TECHNOLOGY
WW	96		BLDG 210	EXIT SIGN	8,760	X4	4	2	70	X2	4	2	70	0		0	0	0	0	EXIT SIGN WITH (1) 2 WATT LED LIGHT ENGINE	EXIT SIGN: NEW REPLACEMENT FIXTURE WITH (1) 2 WATT LED LIGHT ENGINE, EMERGENCY BATTERY BACKUP, AND EMERGENCY FLOOD HEADS	LEAVE ALONE
WW	97		BLDG 210/230	EXTERIOR	4,380	H32	1	215	942	LED37PC	1	24	105	837		0	0	0	0	FORWARD THROW WALLPACK: WITH (1) 175 WATT METAL HALIDE LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	FORWARD THROW WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 24 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	98		BLDG 210/230	EXTERIOR	4,380	LED15	1	10	44	LA	1	10	44	0		0	0	0	0	WALLPACK: WITH (1) 10 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE	LEAVE ALONE
WW	99		BLDG 210/230	EXTERIOR	4,380	H36	1	128	561	LED42	1	15	66	495		0	0	0	0	WALLPACK: WITH (1) 100 WATT MERCURY VAPOR LAMP AND (1) MAGNETIC BALLAST	FULL CUTOFF MINI WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 15 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE

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Exhibit A-1 Lighting Room by Room Details

Project Room by Room Report

Area Information						Lighting														Description		
						Existing Fixture				Proposed Fixture					Occupancy Sensors							
Bld	Map	Flr	Rm #	Description	Burn	Type	Qty	Watts	KWH Use	Type	Qty	Watts	KWH Use	KWH Savings	Type	Qty	Burn	KWH Use	KWH Savings	Existing Fixture	Proposed Fixture	Proposed Sensor
WW	100		BLDG 210/230	EXTERIOR	8,760	H36	2	128	2,243	LED42	2	15	263	1,980	PC	2	4,380	131	131	WALLPACK: WITH (1) 100 WATT MERCURY VAPOR LAMP AND (1) MAGNETIC BALLAST	FULL CUTOFF MINI WALLPACK: NEW REPLACEMENT FIXTURE WITH (1) 15 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	INSTALL INTEGRAL PHOTOCELL
WW	101		BLDG 230	SOUTH DIGESTOR	2,720	V6E	1	72	196	LED43C1D2	1	21	57	139		0	0	0	0	CLASS 1 DIV 2 FIXTURE: SURFACE MOUNTED WITH (2) LINEAR 4' 34 WATT T12 LAMPS AND (1) ENERGY SAVING MAGNETIC BALLAST	CLASS 1 DIV 2: NEW REPLACEMENT FIXTURE WITH (1) 21 WATT LED LIGHT ENGINE AND (1) ELECTRONIC DRIVER	LEAVE ALONE
WW	102		BLDG 230	SOUTH DIGESTOR	2,720	T3E	3	72	588	LT2L	3	30	245	343		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	RETROFIT WITH (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START LOW POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	103		BLDG 230	SOUTH DIGESTOR	2,720	S3E	1	123	335	S6H	1	64	174	160		0	0	0	0	STRIP: SURFACE MOUNTED WITH NARROW 8' BODY, NO LENS, WHITE METAL BELLY PAN, (2) LINEAR 8' 60 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	STRIP: NEW NARROW 8' BODY REPLACEMENT FIXTURE WITH WHITE METAL BELLY PAN, (2) LINEAR 4' 15.5 WATT LED T8 LAMPS AND (1) INSTANT START HIGH POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	104		BLDG 230	BREAK ROOM	2,720	T3E	3	72	588	W1	3	18	147	441		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	WRAP: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH ACRYLIC LENS, SPECULAR REFLECTOR, (1) LINEAR 4' 28 WATT T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	105		BLDG 230	RESTROOM	2,000	T3E	2	72	288	W1	2	18	72	216		0	0	0	0	TROFFER: RECESS MOUNTED WITH 1'X4' BODY, ACRYLIC LENS, WHITE METAL REFLECTOR, (2) LINEAR 4' 34 WATT T12 LAMPS, AND (1) ENERGY SAVING MAGNETIC BALLAST	WRAP: NEW NARROW 4' BODY REPLACEMENT FIXTURE WITH ACRYLIC LENS, SPECULAR REFLECTOR, (1) LINEAR 4' 28 WATT T8 LAMP AND (1) INSTANT START NORMAL POWER ELECTRONIC BALLAST	LEAVE ALONE
WW	106			SITE LIGHTING	4,380	H47	21	460	42,311	LED36PC	21	120	11,038	31,273		0	0	0	0	SHOEBOX: TALL SQUARE POLE MOUNTED WITH (1) 400 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	AREA LIGHT: NEW POLE MOUNTED REPLACEMENT FIXTURE WITH (1) 120 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	107			SITE LIGHTING	4,380	H48	14	295	18,089	LED29PC	14	87	5,335	12,755		0	0	0	0	SHOEBOX: SHORT SQUARE POLE MOUNTED WITH (1) 250 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	AREA LIGHT: NEW POLE MOUNTED REPLACEMENT FIXTURE WITH (1) 87 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE
WW	108			SITE LIGHTING	4,380	H49	3	295	3,876	LED29PCR	3	87	1,143	2,733		0	0	0	0	SHOEBOX: SHORT ROUND POLE MOUNTED WITH (1) 250 WATT HIGH PRESSURE SODIUM LAMP, (1) MAGNETIC BALLAST AND (1) INTEGRAL PHOTOCELL	AREA LIGHT: NEW POLE MOUNTED REPLACEMENT FIXTURE WITH (1) 87 WATT LED LIGHT ENGINE, (1) ELECTRONIC DRIVER AND (1) INTEGRAL PHOTOCELL	LEAVE ALONE

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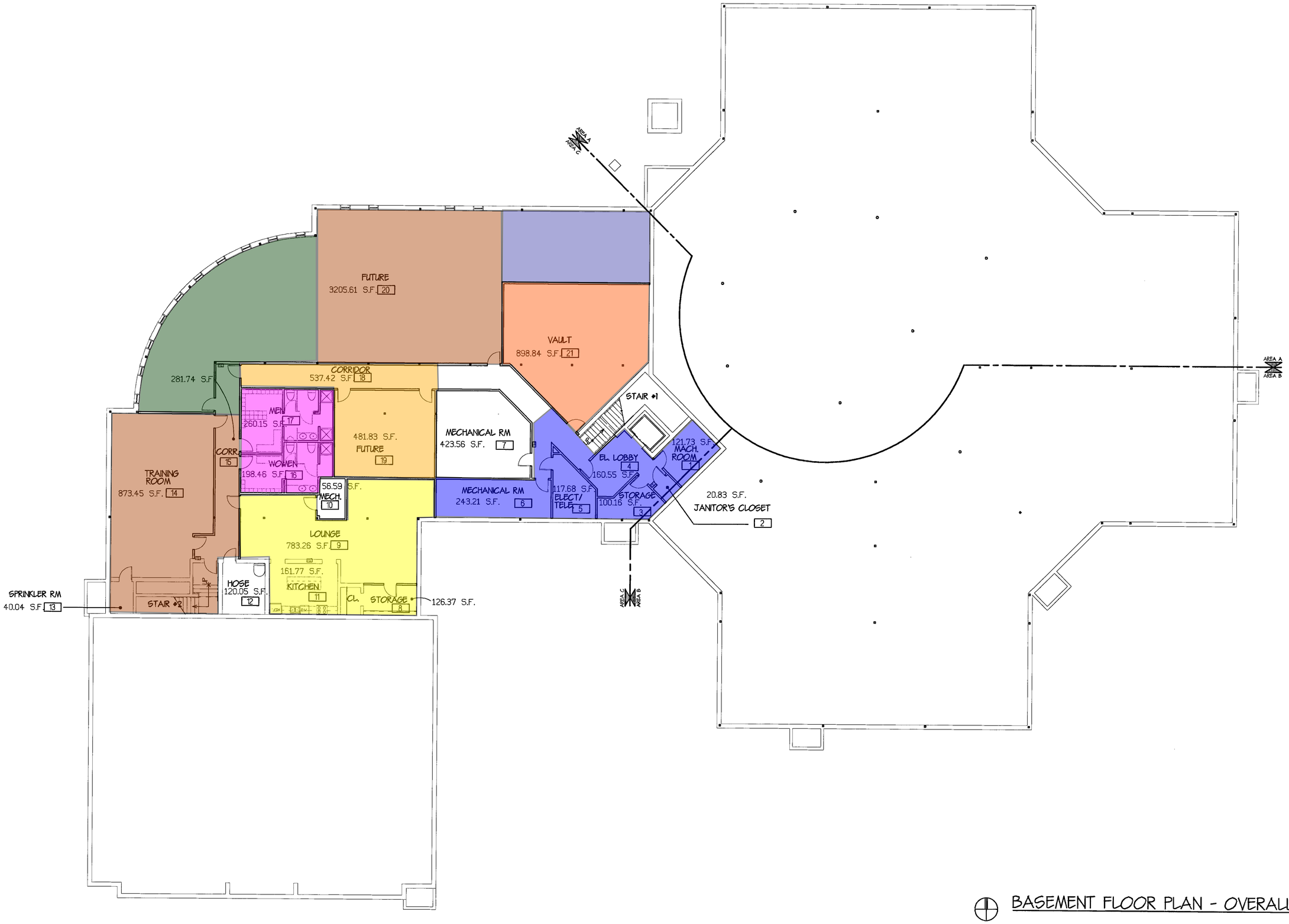
Exhibit A-2



BASEMENT FLOOR PLAN - OVERALL BUILDING

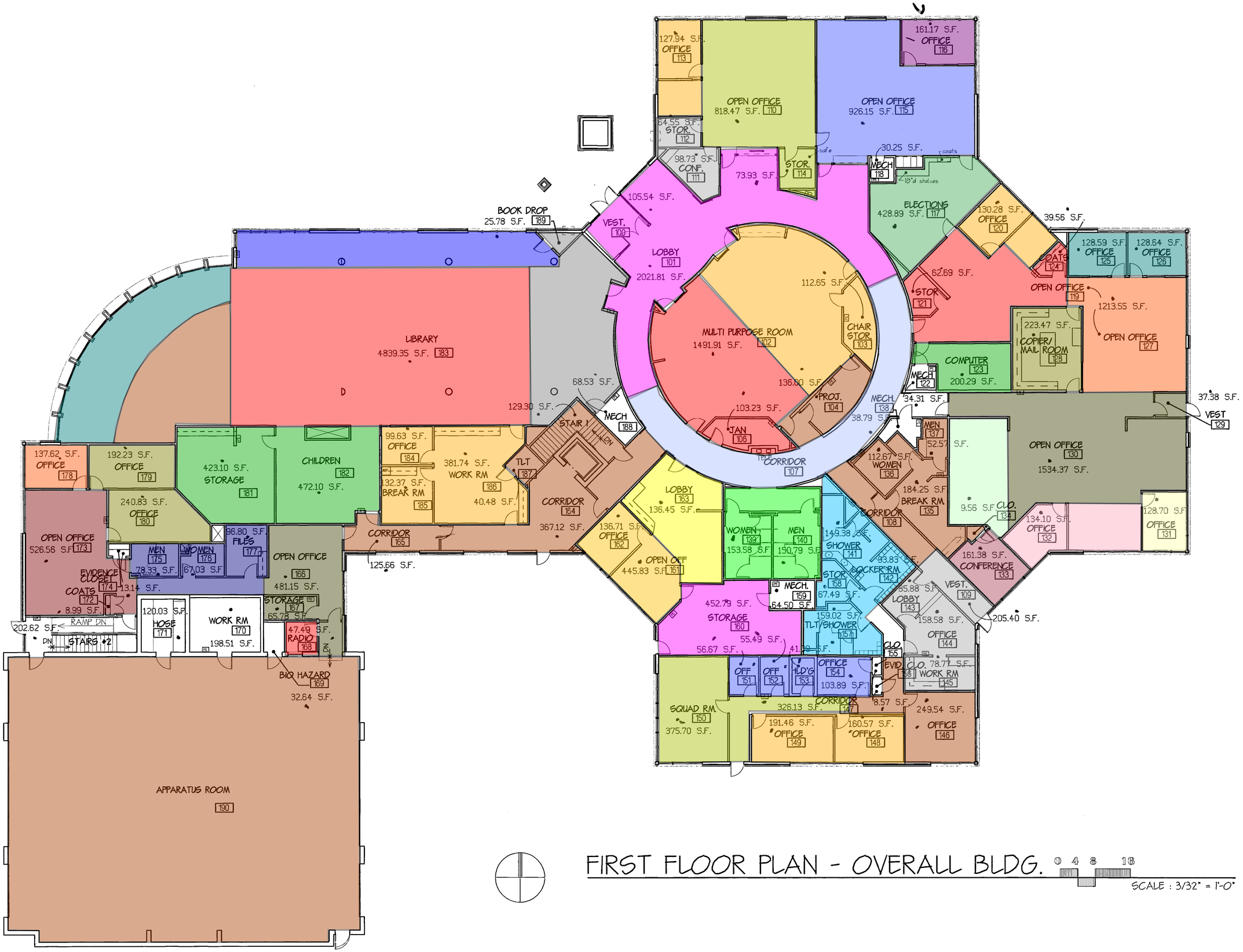
SCALE : 3/32" = 1'-0"

drawn : JIA
revised :
check :
date : 11/13/95
comm # 93048995

DELHI CHARTER TOWNSHIP
COMMUNITY SERVICE CENTER
AURELIUS TOWNSHIP, MICHIGAN

Keystone Design Group
ARCHITECTURE ■ INTERIOR DESIGN
7120 KEYSTONE AVE. ■ LANSING, MI 48917-4032 ■ 517-374-3800 ■ FAX 517-374-5650

SHEET
6
BID PKG. #3



FIRST FLOOR PLAN - OVERALL BLDG.

0 4 8 16

SCALE : 3/32" = 1'-0"

drawn : JIA
check :
date : 11/13/95
comm # 93048995
revised :

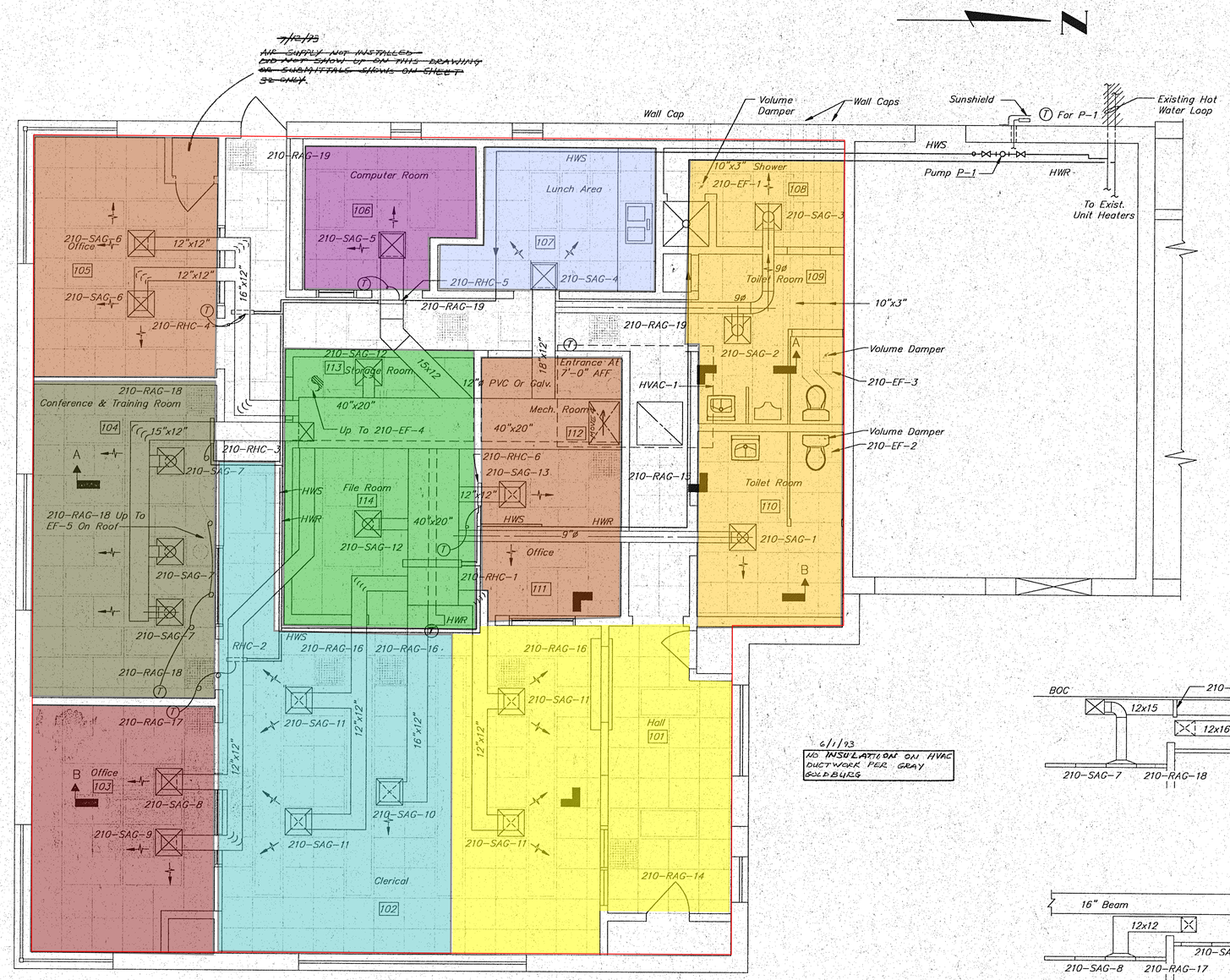
DELHI CHARTER TOWNSHIP
COMMUNITY SERVICE CENTER
HOLT, MICHIGAN

Keystone Design Group
ARCHITECTURE ■ INTERIOR DESIGN
1120 KEYSTONE AVE. ■ LANSING, MI 48912-4292 ■ 517-374-3600 ■ FAX 517-374-3610

SHEET

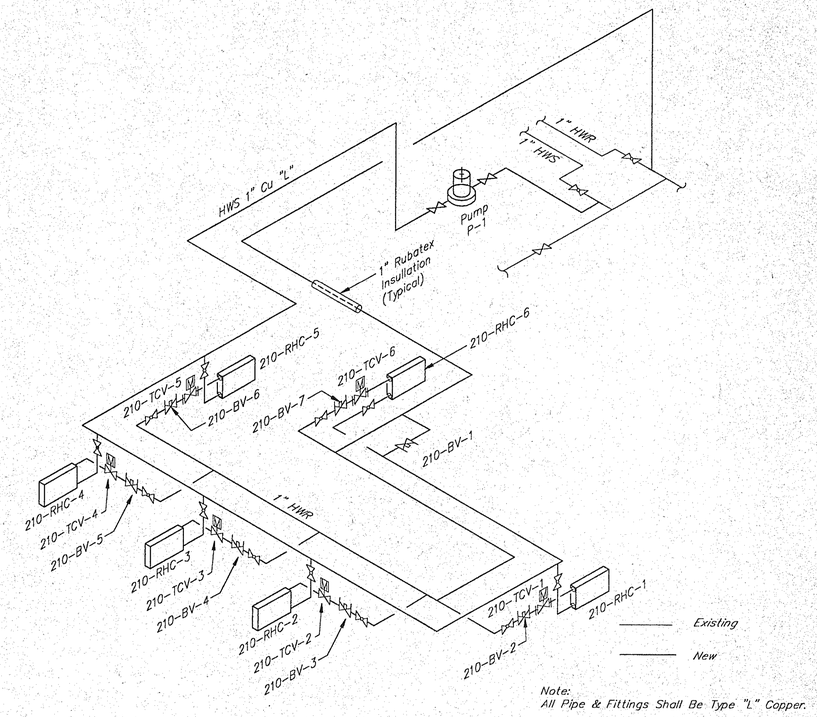
BID PKG. #3

Exhibit A-3



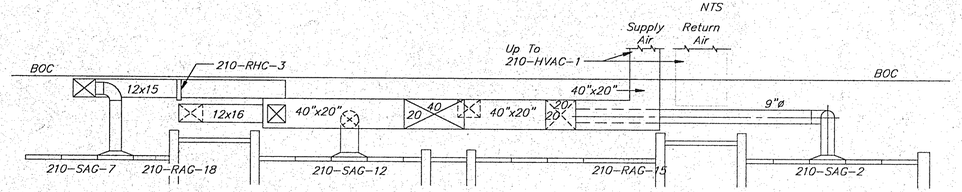
6/1/93
NO INSULATION ON HVAC DUCTWORK PER GRAY GOLDBURG

PLAN
¼"=1'-0"

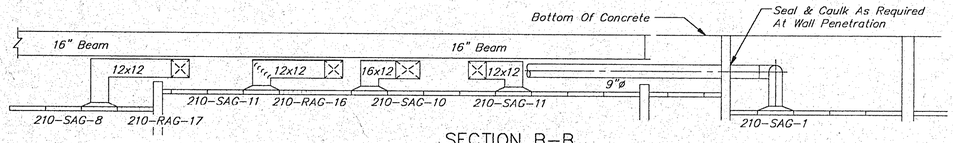


Note:
All Pipe & Fittings Shall Be Type "L" Copper.

HOT WATER ISOMETRIC
NTS



SECTION A-A
¼"=1'-0"



SECTION B-B
¼"=1'-0"

NOTES:
1) Provide Transitions As Required For All Reheat Coils & Grills
2) Cover Rooms 103, 104, 105 & 111 With 4" Batt Insulation For Noise Attenuation

RECORD DRAWING FEBRUARY 1996

GENERAL CONTRACTOR:	MECHANICAL CONTRACTOR:	ELECTRICAL CONTRACTOR:	CONSTRUCTION OBSERVER:
DESIGN & BUILD INC. OKEMOS, MI	JOHN E. GREEN CO. SAGINAW, MI	SUPERIOR ELECTRIC LANSING, MI	JOHN AMMARMAN 9-1992 THRU 12-1994

STATE OF MICHIGAN
STEVEN L. WORDELMAN
ENGINEER No. 28323
LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS	BY
1	1/96	AS BUILTS	FNF

JOB NO. 900105
DATE Mar. 1992
SCALE As Noted
DESIGN/LAYOUT CW
DRAWN TE
CHECKED

INGHAM COUNTY
SANITARY SEWER PROJECT No. 4

PROJECT
IMPROVEMENTS TO DELHI TWP.
PUBLICLY OWNED TREATMENT WORKS

SHEET TITLE
ADMINISTRATION BUILDING No.210
HVAC
PLAN, SECTIONS & ISOMETRIC

REC. DWG. REL. 1996

Wolverine Engineers & Surveyors, Inc. / Jones & Henry Engineers, Inc.

SHEET NO. 43
210-H-02 Drawing No.

3208H07
03/19/92 02

Exhibit D-1: Baseline Operating Parameters

Note: Holidays follow the Weekend or Sunday Schedule

			Existing Schedule								Existing Space Temperatures			
			Fall to Spring				Summer				Heating		Cooling	
					Weekly Hours				Weekly Hours					
Facility	Area Served	Equipment Name	Weekdays	Weekend	Occ	Unocc	Weekdays	Weekend	Occ	Unocc	Occ.	Unocc.	Occ.	Unocc.
Community Service Center	Parks & Rec	Heat Pump 1	6:00 AM-9:30 PM	Off	78	0	6:00 AM-9:30 PM	Off	78	0	70	60	72	85
Community Service Center	SE Offices	Heat Pump 2	5:00 AM-9:30 PM	Off	83	0	5:00 AM-9:30 PM	Off	83	0	70	60	72	85
Community Service Center	NE Offices	Heat Pump 3	7:00 AM-9:30 PM	Off	73	0	7:00 AM-9:30 PM	Off	73	0	70	60	72	85
Community Service Center	Treasurer/Clerk	Heat Pump 4	7:00 AM-9:30 PM	Off	73	0	7:00 AM-9:30 PM	Off	73	0	70	60	72	85
Community Service Center	Board Room	Heat Pump 5	6:00 AM-10:00 PM	Off	80	0	6:00 AM-10:00 PM	Off	80	0	70	60	72	85
Community Service Center	Library	Heat Pump 6	7:00 AM-10:00 PM	9:00 AM-6:00 PM Sat,	94	0	7:00 AM-10:00 PM	9:00 AM-6:00 PM Sat,	94	0	70	60	72	85
Community Service Center	Fire Department	Heat Pump 7	Runs continuously	Runs continuously	168	0	Runs continuously	Runs continuously	168	0	70	60	72	85
Community Service Center	Basement	Heat Pump 8	Runs continuously	Runs continuously	168	0	Runs continuously	Runs continuously	168	0	70	60	72	85
Community Service Center	AHU-1	ERV-1	6:00 AM-9:30 PM	Off	78	0	6:00 AM-9:30 PM	Off	78	0				
Community Service Center	AHU-3	ERV-2	7:00 AM-9:30 PM	Off	73	0	7:00 AM-9:30 PM	Off	73	0				
Community Service Center	AHU-6	ERV-3	7:00 AM-10:00 PM	9:00 AM-6:00 PM Sat,	94	0	7:00 AM-10:00 PM	9:00 AM-6:00 PM Sat,	94	0				
Community Service Center	AHU-7	ERV-4	Runs continuously	Runs continuously	168	0	Runs continuously	Runs continuously	168	0				
Delhi POTW	Administration	Admin RTU	10:00 AM-2:00 PM	10:00 AM-2:00 PM	28	0	10:00 AM-2:00 PM	10:00 AM-2:00 PM	28	0	70	68	72	75
POTW Admin Lab Pole Barn	Area 1	MAU-2	Runs below 50°F	Runs below 50°F	N/A	N/A	Runs below 50°F	Runs below 50°F	N/A	N/A	70	68		
POTW Admin Lab Pole Barn	Area 2	MAU-3	Runs below 50°F	Runs below 50°F	N/A	N/A	Runs below 50°F	Runs below 50°F	N/A	N/A	70	68		
POTW Admin Lab Pole Barn	Area 4	MAU-4	Runs continuously	Runs continuously	168	0	Runs continuously	Runs continuously	168	0	70	68	72	75
Delhi POTW RBC	Primary Sludge	Primary Sludge	Off	Off	0	0	Off	Off	0	0	55	55		

Exhibit D-2: Guarantee Period Operating Parameters

Note: Holidays follow the Weekend or Sunday Schedule

			Proposed Schedule/Occupancy Schedule								Proposed Space Temperatures			
			Fall to Spring				Summer				Heating		Cooling	
					Weekly Hours				Weekly Hours					
Facility	Area Served	Equipment Name	Weekdays	Weekend	Occ	Unocc	Weekdays	Weekend	Occ	Unocc	Occ.	Unocc.	Occ.	Unocc.
Community Service Center	Parks & Rec	AHU-1	6:00 AM-9:30 PM	Off	78	0	6:00 AM-9:30 PM	Off	78	0	70	60	72	85
Community Service Center	SE Offices	AHU-2	5:00 AM-9:30 PM	Off	83	0	5:00 AM-9:30 PM	Off	83	0	70	60	72	85
Community Service Center	NE Offices	AHU-3	7:00 AM-9:30 PM	Off	73	0	7:00 AM-9:30 PM	Off	73	0	70	60	72	85
Community Service Center	Treasurer/Clerk	AHU-4	7:00 AM-9:30 PM	Off	73	0	7:00 AM-9:30 PM	Off	73	0	70	60	72	85
Community Service Center	Board Room	AHU-5	6:00 AM-10:00 PM	Off	80	0	6:00 AM-10:00 PM	Off	80	0	70	60	72	85
Community Service Center	Library	AHU-6	7:00 AM-10:00 PM	9:00 AM-6:00 PM Sat,	94	0	7:00 AM-10:00 PM	9:00 AM-6:00 PM Sat,	94	0	70	60	72	85
Community Service Center	Fire Department	AHU-7	Runs continuously	Runs continuously	168	0	Runs continuously	Runs continuously	168	0	70	60	72	85
Community Service Center	Basement	AHU-8	Runs continuously	Runs continuously	168	0	Runs continuously	Runs continuously	168	0	70	60	72	85
Community Service Center	AHU-1	ERV-1	8:00 AM-9:30 PM	Off	68	0	8:00 AM-9:30 PM	Off	68	0				
Community Service Center	AHU-3	ERV-2	8:00 AM-9:30 PM	Off	68	0	8:00 AM-9:30 PM	Off	68	0				
Community Service Center	AHU-6	ERV-3	9:00 AM-10:00 PM	9:00 AM-6:00 PM Sat,	84	0	9:00 AM-10:00 PM	9:00 AM-6:00 PM Sat,	84	0				
Community Service Center	AHU-7	ERV-4	Runs continuously	Runs continuously	168	0	Runs continuously	Runs continuously	168	0				
Delhi POTW	Administration	Admin RTU	6:00 AM-5:00 PM	Off	55	0	6:00 AM-5:00 PM	Off	55	0	70	60	72	85
POTW Admin Lab Pole Barn	Area 1	MAU-2	Off	Off	0	0	Off	Off	0	0	70	68		
POTW Admin Lab Pole Barn	Area 2	MAU-3	Off	Off	0	0	Off	Off	0	0	70	68		
POTW Admin Lab Pole Barn	Area 4	MAU-4	Runs continuously	Runs continuously	168	0	Runs continuously	Runs continuously	168	0	70	68	72	72
Delhi POTW RBC	Primary Sludge	Primary Sludge	Runs below 50°F	Runs below 50°F	N/A	N/A	Runs below 50°F	Runs below 50°F	N/A	N/A	55	55	N/A	N/A

Exhibit D-3: Utility Unit Costs

Throughout the term of this Agreement, the utility rates in the table below will be used for the purposes of calculating cost avoidance and are considered floor rates. These floor rates will not be escalated. The electric consumption rate includes any Fuel Cost Adjustment (FCA) charges. The summer electric demand period is from June to September. The electric utility rates are based on the average annual data from August 2014 through July 2015.

The heating utility rates are based on the average annual data from August 2014 through July 2015.

Electric Utility: Consumers Energy Natural Gas Utility: Consumers Energy

Facility	Winter Demand	Summer Demand	Electric Use	Natural Gas
	$/kW	$/kW	$/kWh	$/MMBtu
Community Service Center	$9.15	$11.15	$0.092	$6.95
DDA Office	$0.00	$0.00	$0.133	$0.00
Ingham County Sheriff	$0.00	$0.00	$0.133	$6.83
DPS	$0.00	$0.00	$0.107	$7.16
DPS Pole Barn	$0.00	$0.00	$0.134	$6.67
Farmers Market	$0.00	$0.00	$0.131	$6.94
Fire Station #2	$0.00	$0.00	$0.132	$6.64
Memorial Park	$0.00	$0.00	$0.135	$0.00
Parks and Recreation	$0.00	$0.00	$0.135	$5.68
Senior Center	$0.00	$0.00	$0.134	$4.68
Delhi POTW	$22.47	$25.10	$0.053	$0.00
POTW Admin_Lab_Pole	$0.00	$0.00	$0.000	$6.91
Delhi POTW Digester	$0.00	$0.00	$0.000	$7.86
Delhi POTW RBC	$0.00	$0.00	$0.000	$8.67
Delhi POTW Tertiary	$0.00	$0.00	$0.000	$5.23
Delhi POTW Ponds	$0.00	$0.00	$0.131	$0.00
Valhalla Park	$0.00	$0.00	$0.136	$0.00
DDA Streetlights	$0.00	$0.00	$0.134	$0.00

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Community Service Center
Address: 2074 Aurelius
Meter # : **Gas:** 6212788
Account # : 0
Bldg. Area: 43,125 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Township Hall **% Cooled:** 0%

Water: 0
0

Electric: 8207973
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14			22-Jul	20-Aug	46880							Actual	160,001	$6,141.14
Sep-14			21-Aug	19-Sep	49600							Actual	169,285	$7,101.61
Oct-14			20-Sep	20-Oct	44160							Actual	150,718	$5,463.58
Nov-14			21-Oct	19-Nov	48640							Actual	166,008	$5,993.14
Dec-14			20-Nov	17-Dec	44160							Estimate	150,718	$5,539.37
Jan-15			18-Dec	21-Jan	56480							Actual	192,766	$6,482.45
Feb-15			22-Jan	19-Feb	47520							Estimate	162,186	$5,549.07
Mar-15			20-Feb	20-Mar	52800							Actual	180,206	$6,224.14
Apr-15			21-Mar	21-Apr	52800							Actual	180,206	$6,231.53
May-15			22-Apr	21-May	50720							Actual	173,107	$5,995.48
Jun-15			22-May	19-Jun	47840							Estimate	163,278	$6,603.67
Jul-15			20-Jun	22-Jul	58240							Actual	198,773	$7,940.04
Yearly Total	**0**	**0**			**599,840**			**0**					**2,047,254**	**$75,265**
Rate					$ / KWH	**$0.125**		**0**						
								Base Year				**KBTU/ ft2**		**47**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14	23-Jul	20-Aug	10.4					Actual	10,712	$ 95.84
Sep-14	21-Aug	19-Sep	18.5					Actual	19,055	$ 149.90
Oct-14	20-Sep	20-Oct	63.8					Actual	65,714	$ 471.15
Nov-14	21-Oct	19-Nov	274					Actual	282,220	$ 2,017.83
Dec-14	20-Nov	17-Dec	320.3					Estimate	329,909	$ 2,610.51
Jan-15	18-Dec	21-Jan	462.4					Actual	476,272	$ 3,225.45
Feb-15	22-Jan	19-Feb	430.6					Estimate	443,518	$ 3,025.05
Mar-15	20-Feb	20-Mar	340.1					Actual	350,303	$ 2,393.37
Apr-15	21-Mar	21-Apr	219.2					Actual	225,776	$ 1,549.49
May-15	22-Apr	21-May	109					Actual	112,270	$ 780.31
Jun-15	22-May	19-Jun	10.9					Estimate	11,227	$ 95.42
Jul-15	20-Jun	22-Jul	32.6					Actual	33,578	$ 247.05
Yearly Total			**2,292**						**2,360,554**	**$16,661**
Rate			$ / MCF	**$7.270**						
				Base Year			**KBTU/ ft2**		**55**	

Month	TOTALS: KBTU/ Month	Total Energy Cost
Aug-14	**170,713**	**$6,237**
Sep-14	**188,340**	**$7,252**
Oct-14	**216,432**	**$5,935**
Nov-14	**448,228**	**$8,011**
Dec-14	**480,627**	**$8,150**
Jan-15	**669,038**	**$9,708**
Feb-15	**605,704**	**$8,574**
Mar-15	**530,509**	**$8,618**
Apr-15	**405,982**	**$7,781**
May-15	**285,377**	**$6,776**
Jun-15	**174,505**	**$6,699**
Jul-15	**232,351**	**$8,187**
	4,407,808	**$91,927**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**102.2100387**	**$2.13**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: DDA Office
Address: 2045 Cedar B
Meter # : **Gas:** 0
Account # : 0
Bldg. Area: 2,698 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Office **%Cooled:** 0%

Water: 0
0

Electric: 3018678
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0	24-Jul	20-Aug	633	633						Actual	2,160	$ 112.98
Sep-14	0	0	21-Aug	19-Sep	679	679						Actual	2,317	$ 119.53
Oct-14	0	0	20-Sep	20-Oct	418	418						Actual	1,427	$ 78.47
Nov-14	0	0	21-Oct	19-Nov	775	775						Actual	2,645	$ 126.26
Dec-14	0	0	20-Nov	17-Dec	1108	1,108						Estimate	3,782	$ 170.31
Jan-15	0	0	18-Dec	21-Jan	972	972						Actual	3,317	$ 148.15
Feb-15	0	0	22-Jan	19-Feb	1392	1,392						Estimate	4,751	$ 199.47
Mar-15	0	0	20-Feb	20-Mar	925	925						Actual	3,157	$ 139.78
Apr-15	0	0	21-Mar	20-Apr	617	617						Actual	2,106	$ 100.85
May-15	0	0	21-Apr	21-May	471	471						Actual	1,608	$ 82.13
Jun-15	0	0	22-May	19-Jun	477	477						Actual	1,628	$ 88.77
Jul-15	0	0	20-Jun	22-Jul	665	665						Actual	2,270	$ 117.60
Yearly Total	**0**	**0**			**9,132**			**0**					**31,168**	**$1,484**
Rate					$ / KWH	**$0.163**		**0**						
								Base Year				**KBTU/ ft2**		**12**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14									-	$0
Sep-14									-	$0
Oct-14									-	$0
Nov-14									-	$0
Dec-14									-	$0
Jan-15									-	$0
Feb-15									-	$0
Mar-15									-	$0
Apr-15									-	$0
May-15									-	$0
Jun-15									-	$0
Jul-15									-	$0
Yearly Total			**0**						**-**	**$0**
Rate			$ / MCF	**$0.000**						
				Base Year				**KBTU/ ft2**	**0**	

TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	**2,160**	**$113**
Sep-14	**2,317**	**$120**
Oct-14	**1,427**	**$78**
Nov-14	**2,645**	**$126**
Dec-14	**3,782**	**$170**
Jan-15	**3,317**	**$148**
Feb-15	**4,751**	**$199**
Mar-15	**3,157**	**$140**
Apr-15	**2,106**	**$101**
May-15	**1,608**	**$82**
Jun-15	**1,628**	**$89**
Jul-15	**2,270**	**$118**
	31,168	**$1,484**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**11.55293795**	**$0.55**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Ingham County Sheriff
Address: 2045 Cedar A
Meter # : **Gas:** 40159301
Account # : 0
Bldg. Area: 5,010 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Police Statior **% Cooled:** 0%

Water: 0
0

Electric: 3018537
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0	24-Jul	20-Aug	7603	7,603						Actual	25,949	$ 1,160.04
Sep-14	0	0	21-Aug	19-Sep	8002	8,002						Actual	27,311	$ 1,216.97
Oct-14	0	0	20-Sep	20-Oct	7113	7,113						Actual	24,277	$ 1,025.50
Nov-14	0	0	21-Oct	19-Nov	7370	7,370						Actual	25,154	$ 1,060.40
Dec-14	0	0	20-Nov	17-Dec	8506	8,506						Estimate	29,031	$ 1,208.94
Jan-15	0	0	18-Dec	21-Jan	9834	9,834						Actual	33,563	$ 1,345.32
Feb-15	0	0	22-Jan	19-Feb	10527	10,527						Estimate	35,929	$ 1,412.41
Mar-15	0	0	20-Feb	20-Mar	8417	8,417						Actual	28,727	$ 1,141.15
Apr-15	0	0	21-Mar	20-Apr	9126	9,126						Actual	31,147	$ 1,232.22
May-15	0	0	21-Apr	21-May	9411	9,411						Actual	32,120	$ 1,264.50
Jun-15	0	0	22-May	19-Jun	9059	9,059						Actual	30,918	$ 1,331.57
Jul-15	0	0	20-Jun	22-Jul	9790	9,790						Actual	33,413	$ 1,473.28
Yearly Total	**0**	**0**			**104,758**			**0**					**357,539**	**$14,872**
Rate					$ / KWH	**$0.142**		**0**						
								Base Year				**KBTU/ ft2**		**71**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14	24-Jul	20-Aug	0					Actual	-	$ 18.59
Sep-14	21-Aug	19-Sep	0.9					Actual	927	$ 25.08
Oct-14	20-Sep	20-Oct	8.1					Actual	8,343	$ 76.15
Nov-14	21-Oct	19-Nov	31.6					Actual	32,548	$ 249.25
Dec-14	20-Nov	17-Dec	37.2					Estimate	38,316	$ 319.71
Jan-15	18-Dec	21-Jan	87.6					Actual	90,228	$ 626.36
Feb-15	22-Jan	19-Feb	81.8					Estimate	84,254	$ 590.46
Mar-15	20-Feb	20-Mar	47.6					Actual	49,028	$ 351.74
Apr-15	21-Mar	20-Apr	22.4					Actual	23,072	$ 175.85
May-15	21-Apr	21-May	7.8					Actual	8,034	$ 73.96
Jun-15	22-May	19-Jun	0.8					Actual	824	$ 24.93
Jul-15	20-Jun	22-Jul	0					Actual	-	$ 19.50
Yearly Total			**326**						**335,574**	**$2,552**
Rate			$ / MCF	**$7.832**						
				Base Year			**KBTU/ ft2**		**44**	

Month	KBTU/ Month	Total Energy Cost
Aug-14	**25,949**	**$1,179**
Sep-14	**28,238**	**$1,242**
Oct-14	**32,620**	**$1,102**
Nov-14	**57,702**	**$1,310**
Dec-14	**67,347**	**$1,529**
Jan-15	**123,791**	**$1,972**
Feb-15	**120,183**	**$2,003**
Mar-15	**77,755**	**$1,493**
Apr-15	**54,219**	**$1,408**
May-15	**40,154**	**$1,338**
Jun-15	**31,742**	**$1,357**
Jul-15	**33,413**	**$1,493**
	693,113	**$17,424**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**115**	**$3.48**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township **Year Built:** 0 **# of Floors:** 0
Building: DPS **Bldg Type:** DPW **%Cooled:** 0%
Address: 1490 Aurelius
Meter # : **Gas:** 29015072/22436736 **Water:** 0 **Electric:** 98294585
Account # : 0 0 0
Bldg. Area: 12,330 **S.F.**

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0	23-Jul	21-Aug	22598	22,598						Actual	77,127	$ 2,747.28
Sep-14	0	0	22-Aug	22-Sep	23340	23,340						Actual	79,659	$ 2,833.75
Oct-14	0	0	23-Sep	20-Oct	19446	19,446						Estimate	66,369	$ 2,203.22
Nov-14	0	0	21-Oct	19-Nov	23731	23,731						Actual	80,994	$ 2,665.50
Dec-14	0	0	20-Nov	18-Dec	21465	21,465						Actual	73,260	$ 2,410.66
Jan-15	0	0	19-Dec	22-Jan	26327	26,327						Actual	89,854	$ 2,820.74
Feb-15	0	0	23-Jan	19-Feb	21651	21,651						Actual	73,895	$ 2,293.51
Mar-15	0	0	20-Feb	20-Mar	22444	22,444						Actual	76,601	$ 2,364.88
Apr-15	0	0	21-Mar	22-Apr	23330	23,330						Actual	79,625	$ 2,454.31
May-15	0	0	23-Apr	20-May	19189	19,189						Actual	65,492	$ 2,032.97
Jun-15	0	0	21-May	22-Jun	22815	22,815						Actual	77,868	$ 2,665.29
Jul-15	0	0	23-Jun	22-Jul	22073	22,073						Actual	75,335	$ 2,657.15
Yearly Total	**0**	**0**			**268,409**			**0**					**916,080**	**$30,149**
Rate					$ / KWH	**$0.112**		**0**						
								Base Year				**KBTU/ ft2**		**74**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14	23-Jul	21-Aug	7					Actual	6,695	$ 72.79
Sep-14	22-Aug	22-Sep	7					Actual	6,695	$ 70.83
Oct-14	23-Sep	20-Oct	8					Estimate	8,137	$ 81.06
Nov-14	21-Oct	19-Nov	62					Actual	63,654	$ 491.37
Dec-14	20-Nov	18-Dec	155					Actual	159,547	$ 1,310.70
Jan-15	19-Dec	22-Jan	241					Actual	248,642	$ 1,754.74
Feb-15	23-Jan	19-Feb	233					Actual	239,681	$ 1,699.91
Mar-15	20-Feb	20-Mar	214					Actual	220,523	$ 1,566.03
Apr-15	21-Mar	22-Apr	139					Actual	143,376	$ 1,026.92
May-15	23-Apr	20-May	65					Actual	66,641	$ 490.09
Jun-15	21-May	22-Jun	38					Actual	39,037	$ 284.91
Jul-15	23-Jun	22-Jul	20					Actual	20,497	$ 168.24
Yearly Total			**1,188**						**1,223,125**	**$9,018**
Rate			$ / MCF	**$7.594**						
				Base Year			**KBTU/ ft2**		**99**	

TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	**83,822**	**$2,820**
Sep-14	**86,354**	**$2,905**
Oct-14	**74,506**	**$2,284**
Nov-14	**144,648**	**$3,157**
Dec-14	**232,807**	**$3,721**
Jan-15	**338,496**	**$4,575**
Feb-15	**313,576**	**$3,993**
Mar-15	**297,124**	**$3,931**
Apr-15	**223,001**	**$3,481**
May-15	**132,133**	**$2,523**
Jun-15	**116,905**	**$2,950**
Jul-15	**95,832**	**$2,825**
	2,139,205	**$39,167**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**173.5015667**	**$3.18**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: DPS Pole Barn
Address: 1494 Aurelius
Meter # : **Gas:** 25191212
Account # : 0
Bldg. Area: 5,228 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: DPW **% Cooled:** 0%

Water: 0
0

Electric: 80165954
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

	Climate Data		ELECTRICITY												NATURAL GAS										TOTALS		
Month	Heating Deg Days	Cooling Deg Days	Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost	Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	Month	KBTU/ Month	Total Energy Cost
Aug-14	0	0	23-Jul	21-Aug	272	272						Actual	928	$ 61.44	23-Jul	21-Aug	0					Actual	-	$ 11.65	**Aug-14**	**928**	**$73**
Sep-14	0	0	22-Aug	22-Sep	669	669						Actual	2,283	$ 118.09	22-Aug	22-Sep	0					Actual	-	$ 11.65	**Sep-14**	**2,283**	**$130**
Oct-14	0	0	23-Sep	20-Oct	246	246						Estimate	840	$ 55.47	23-Sep	20-Oct	0					Estimate	-	$ 11.65	**Oct-14**	**840**	**$67**
Nov-14	0	0	21-Oct	19-Nov	1159	1,159						Actual	3,956	$ 177.62	21-Oct	19-Nov	17.9					Actual	18,437	$ 147.23	**Nov-14**	**22,393**	**$325**
Dec-14	0	0	20-Nov	18-Dec	1253	1,253						Actual	4,276	$ 189.66	20-Nov	18-Dec	29.8					Actual	30,694	$ 259.33	**Dec-14**	**34,970**	**$449**
Jan-15	0	0	19-Dec	22-Jan	444	444						Actual	1,515	$ 79.97	19-Dec	22-Jan	63.8					Actual	65,714	$ 469.36	**Jan-15**	**67,229**	**$549**
Feb-15	0	0	23-Jan	19-Feb	438	438						Actual	1,495	$ 78.25	23-Jan	20-Feb	57.2					Actual	58,916	$ 424.20	**Feb-15**	**60,411**	**$502**
Mar-15	0	0	20-Feb	20-Mar	371	371						Actual	1,266	$ 69.61	20-Feb	20-Mar	43.2					Actual	44,496	$ 323.43	**Mar-15**	**45,762**	**$393**
Apr-15	0	0	21-Mar	22-Apr	874	874						Actual	2,983	$ 133.45	21-Mar	22-Apr	17					Actual	17,510	$ 134.86	**Apr-15**	**20,493**	**$268**
May-15	0	0	23-Apr	20-May	310	310						Actual	1,058	$ 61.80	23-Apr	20-May	3.8					Actual	3,914	$ 39.86	**May-15**	**4,972**	**$102**
Jun-15	0	0	21-May	22-Jun	305	305						Actual	1,041	$ 64.92	21-May	22-Jun	0					Actual	-	$ 12.50	**Jun-15**	**1,041**	**$77**
Jul-15	0	0	23-Jun	22-Jul	664	664						Actual	2,266	$ 117.44	23-Jun	22-Jul	0					Actual	-	$ 12.50	**Jul-15**	**2,266**	**$130**
Yearly Total	**0**	**0**			**7,005**			**0**					**23,908**	**$1,208**			**233**						**239,681**	**$1,858**		**263,589**	**$3,066**
Rate					$ / KWH	**$0.172**		**0**									$ / MCF	**$7.985**								**KBTU / Sq Ft**	**$/Sq Ft**
								Base Year				**KBTU/ ft2**		**5**				**Base Year**			**KBTU/ ft2**		**46**		**Base Year**	**50.42332061**	**$0.59**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Farmers Market
Address: 2150 Cedar
Meter # : **Gas:** 35025249
Account # : 0
Bldg. Area: 5,636 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Warehouse **%Cooled:** 0%

Water: 0
0

Electric: 7009068
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	0	0	24-Jul	20-Aug	1236	1,236						Actual	4,218	$ 199.04	24-Jul	20-Aug	3.1					Actual	3,193	$ 35.25	**Aug-14**	**7,411**	**$234**
Sep-14	0	0	21-Aug	19-Sep	1200	1,200						Actual	4,096	$ 234.75	21-Aug	19-Sep	4.0					Actual	4,120	$ 40.89	**Sep-14**	**8,216**	**$276**
Oct-14	0	0	20-Sep	20-Oct	1449	1,449						Actual	4,945	$ 216.26	20-Sep	20-Oct	8.7					Actual	8,961	$ 75.25	**Oct-14**	**13,906**	**$292**
Nov-14	0	0	21-Oct	19-Nov	1335	1,335						Actual	4,556	$ 201.15	21-Oct	19-Nov	19.6					Actual	20,188	$ 160.10	**Nov-14**	**24,744**	**$361**
Dec-14	0	0	20-Nov	17-Dec	1194	1,194						Estimate	4,075	$ 181.78	20-Nov	17-Dec	22.3					Estimate	22,969	$ 197.00	**Dec-14**	**27,044**	**$379**
Jan-15	0	0	18-Dec	21-Jan	1649	1,649						Actual	5,628	$ 235.63	18-Dec	21-Jan	53.7					Actual	55,311	$ 507.86	**Jan-15**	**60,939**	**$743**
Feb-15	0	0	22-Jan	19-Feb	1193	1,193						Actual	4,072	$ 174.17	22-Jan	19-Feb	53.2					Actual	54,796	$ 381.74	**Feb-15**	**58,868**	**$556**
Mar-15	0	0	20-Feb	20-Mar	1430	1,430						Actual	4,881	$ 203.75	20-Feb	20-Mar	47.7					Actual	49,131	$ 430.69	**Mar-15**	**54,012**	**$634**
Apr-15	0	0	21-Mar	20-Apr	1423	1,423						Actual	4,857	$ 203.05	21-Mar	20-Apr	30.4					Actual	31,312	$ 176.61	**Apr-15**	**36,169**	**$380**
May-15	0	0	21-Apr	21-May	1430	1,430						Actual	4,881	$ 203.37	21-Apr	21-May	13.7					Actual	14,111	$ 75.84	**May-15**	**18,992**	**$279**
Jun-15	0	0	22-May	19-Jun	1409	1,409						Actual	4,809	$ 218.06	22-May	19-Jun	3.2					Actual	3,296	$ 22.10	**Jun-15**	**8,105**	**$240**
Jul-15	0	0	20-Jun	22-Jul	1814	1,814						Actual	6,191	$ 281.70	20-Jun	22-Jul	1.6					Actual	1,648	$ 24.01	**Jul-15**	**7,839**	**$306**
Yearly Total	**0**	**0**			**16,762**			**0**					**57,209**	**$2,553**			**261**						**269,036**	**$2,127**		**326,245**	**$4,680**
Rate					$ / KWH	**$0.152**		**0**									$ / MCF	**$8.144**								**KBTU / Sq Ft**	**$/Sq Ft**
								Base Year				**KBTU/ ft2**		**10**				**Base Year**			**KBTU/ ft2**		**48**		**Base Year**	**57.88585983**	**$0.83**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Fire Station #2
Address: 6139 Bishop
Meter # : **Gas:** 22702715
Account # : 0
Bldg. Area: 2,200 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Fire Station **% Cooled:** 0%

Water: 0
0

Electric: 53085926
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

	Climate Data		ELECTRICITY												NATURAL GAS										TOTALS		
Month	Heating Deg Days	Cooling Deg Days	Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost	Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	Month	KBTU/ Month	Total Energy Cost
Aug-14	0	0	30-Jul	28-Aug	286	286						Actual	976	$ 63.43	30-Jul	28-Aug	1.4					Actual	1,442	$ 21.89	**Aug-14**	**2,418**	**$85**
Sep-14	0	0	29-Aug	26-Sep	284	284						Actual	969	$ 60.56	29-Aug	26-Sep	1.4					Actual	1,442	$ 21.89	**Sep-14**	**2,411**	**$82**
Oct-14	0	0	27-Sep	28-Oct	309	309						Actual	1,055	$ 63.97	27-Sep	28-Oct	1.8					Actual	1,854	$ 25.27	**Oct-14**	**2,909**	**$89**
Nov-14	0	0	29-Oct	24-Nov	298	298						Actual	1,017	$ 62.33	29-Oct	24-Nov	21.4					Actual	22,042	$ 189.51	**Nov-14**	**23,059**	**$252**
Dec-14	0	0	25-Nov	26-Dec	480	480						Estimate	1,638	$ 84.63	25-Nov	26-Dec	27.7					Estimate	28,531	$ 207.96	**Dec-14**	**30,169**	**$293**
Jan-15	0	0	27-Dec	28-Jan	386	386						Actual	1,317	$ 71.66	27-Dec	28-Jan	73.5					Actual	75,705	$ 540.95	**Jan-15**	**77,022**	**$613**
Feb-15	0	0	29-Jan	27-Feb	535	535						Actual	1,826	$ 90.37	29-Jan	27-Feb	65.7					Actual	67,671	$ 485.39	**Feb-15**	**69,497**	**$576**
Mar-15	0	0	28-Feb	30-Mar	315	315						Actual	1,075	$ 62.56	28-Feb	30-Mar	39.6					Actual	40,788	$ 297.52	**Mar-15**	**41,863**	**$360**
Apr-15	0	0	31-Mar	29-Apr	270	270						Actual	922	$ 56.73	31-Mar	29-Apr	20.8					Actual	21,424	$ 162.21	**Apr-15**	**22,346**	**$219**
May-15	0	0	30-Apr	28-May	207	207						Actual	706	$ 50.62	30-Apr	28-May	5.5					Actual	5,665	$ 50.23	**May-15**	**6,371**	**$101**
Jun-15	0	0	29-May	29-Jun	154	154						Actual	526	$ 44.42	29-May	29-Jun	2.4					Actual	2,472	$ 29.77	**Jun-15**	**2,998**	**$74**
Jul-15	0	0	30-Jun	28-Jul	181	181						Actual	618	$ 48.33	30-Jun	28-Jul	2.1					Actual	2,163	$ 27.62	**Jul-15**	**2,781**	**$76**
Yearly Total	**0**	**0**			**3,705**			**0**					**12,645**	**$760**			**263**						**271,199**	**$2,060**		**283,844**	**$2,820**
Rate					$ / KWH	**$0.205**		**0**									$ / MCF	**$7.825**								**KBTU / Sq Ft**	**$/Sq Ft**
								Base Year				**KBTU/ ft2**		**6**				**Base Year**			**KBTU/ ft2**		**123**		**Base Year**	**129.020075**	**$1.28**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Memorial Park
Address: 2074 Aurelius
Meter # : **Gas:** 0
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Select Type **% Cooled:** 0%

Water: 0
0

Electric: 80222348
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

	Climate Data		ELECTRICITY												NATURAL GAS										TOTALS		
Month	Heating Deg Days	Cooling Deg Days	Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost	Beginning Read Date	End Read Date	Select Unit	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	Month	KBTU/ Month	Total Energy Cost
Aug-14	0	0	23-Jul	20-Aug	12080	12,080						Actual	41,229	$1,799.05									-	$0	**Aug-14**	**41,229**	**$1,799**
Sep-14	0	0	21-Aug	19-Sep	12040	12,040						Actual	41,093	$1,793.32									-	$0	**Sep-14**	**41,093**	**$1,793**
Oct-14	0	0	20-Sep	20-Oct	12160	12,160						Actual	41,502	$1,699.99									-	$0	**Oct-14**	**41,502**	**$1,700**
Nov-14	0	0	21-Oct	19-Nov	8320	8,320						Actual	28,396	$1,187.42									-	$0	**Nov-14**	**28,396**	**$1,187**
Dec-14	0	0	20-Nov	17-Dec	7720	7,720						Estimate	26,348	$1,104.14									-	$0	**Dec-14**	**26,348**	**$1,104**
Jan-15	0	0	18-Dec	21-Jan	10360	10,360						Actual	35,359	$1,413.26									-	$0	**Jan-15**	**35,359**	**$1,413**
Feb-15	0	0	22-Jan	19-Feb	8840	8,840						Estimate	30,171	$1,197.80									-	$0	**Feb-15**	**30,171**	**$1,198**
Mar-15	0	0	20-Feb	20-Mar	7880	7,880						Actual	26,894	$1,073.13									-	$0	**Mar-15**	**26,894**	**$1,073**
Apr-15	0	0	21-Mar	20-Apr	6960	6,960						Actual	23,754	$957.57									-	$0	**Apr-15**	**23,754**	**$958**
May-15	0	0	21-Apr	21-May	5360	5,360						Actual	18,294	$752.49									-	$0	**May-15**	**18,294**	**$752**
Jun-15	0	0	22-May	19-Jun	10640	10,640						Estimate	36,314	$1,550.93									-	$0	**Jun-15**	**36,314**	**$1,551**
Jul-15	0	0	20-Jun	22-Jul	10200	10,200						Actual	34,813	$1,531.83									-	$0	**Jul-15**	**34,813**	**$1,532**
Yearly Total	**0**	**0**			**112,560**			**0**					**384,167**	**$16,061**			**0**						**-**	**$0**		**384,167**	**$16,061**
Rate					$ / KWH	**$0.143**		**0**									$ / Select Unit	**$0.000**								**KBTU / Sq Ft**	**$/Sq Ft**
								Base Year				**KBTU/ ft2**		**#DIV/0!**			**Base Year**					**KBTU/ ft2**		**#DIV/0!**	**Base Year**	**#DIV/0!**	**#DIV/0!**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Parks and Recreation
Address: 2287 Pine Tree
Meter # : **Gas:** 23348625
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Maintenance **% Cooled:** 0%

Water: 0
0

Electric: 73220816
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

	Climate Data		ELECTRICITY												NATURAL GAS										TOTALS		
Month	Heating Deg Days	Cooling Deg Days	Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost	Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	Month	KBTU/ Month	Total Energy Cost
Aug-14	0	0	22-Aug	19-Sep	722	722						Actual	2,464	$ 125.65	24-Jul	21-Aug	1					Actual	1,030	$ 19.19	**Aug-14**	**3,494**	**$145**
Sep-14	0	0	20-Sep	20-Oct	638	638						Actual	2,177	$ 107.86	22-Aug	20-Sep	2.5					Actual	2,575	$ 29.93	**Sep-14**	**4,752**	**$138**
Oct-14	0	0	21-Oct	20-Nov	444	444						Actual	1,515	$ 82.01	21-Sep	21-Oct	7.2					Actual	7,416	$ 64.29	**Oct-14**	**8,931**	**$146**
Nov-14	0	0	21-Nov	17-Dec	335	335						Actual	1,143	$ 67.27	22-Oct	20-Nov	21					Actual	21,630	$ 170.71	**Nov-14**	**22,773**	**$238**
Dec-14	0	0	18-Dec	20-Jan	408	408						Actual	1,393	$ 75.32	21-Nov	18-Dec	24.5					Actual	25,235	$ 215.28	**Dec-14**	**26,628**	**$291**
Jan-15	0	0	21-Jan	19-Feb	377	377						Actual	1,287	$ 70.51	19-Dec	21-Jan	37.2					Estimate	38,316	$ 278.57	**Jan-15**	**39,603**	**$349**
Feb-15	0	0	20-Feb	23-Mar	397	397						Actual	1,355	$ 72.90	22-Jan	20-Feb	53.5					Actual	55,105	$ 397.58	**Feb-15**	**56,460**	**$470**
Mar-15	0	0	24-Mar	22-Apr	505	505						Actual	1,724	$ 86.65	21-Feb	23-Mar	36.3					Actual	37,389	$ 273.78	**Mar-15**	**39,113**	**$360**
Apr-15	0	0	23-Apr	20-May	1210	1,210						Actual	4,130	$ 175.55	24-Mar	21-Apr	17.1					Estimate	17,613	$ 135.58	**Apr-15**	**21,743**	**$311**
May-15	0	0	21-May	19-Jun	873	873						Actual	2,980	$ 143.61	22-Apr	20-May	38					Actual	39,140	$ 39.86	**May-15**	**42,120**	**$183**
Jun-15	0	0	20-Jun	22-Jul	1013	1,013						Actual	3,457	$ 167.28	21-May	19-Jun	1.3					Estimate	1,339	$ 21.42	**Jun-15**	**4,796**	**$189**
Jul-15	0	0	23-Jul	19-Aug	901	901						Actual	3,075	$ 150.61	20-Jun	21-Jul	1.5					Actual	1,545	$ 23.30	**Jul-15**	**4,620**	**$174**
Yearly Total	**0**	**0**			**7,823**			**0**					**26,700**	**$1,325**			**241**						**248,333**	**$1,669**		**275,033**	**$2,995**
Rate					$ / KWH	**$0.169**		**0**									$ / MCF	**$6.924**								**KBTU / Sq Ft**	**$/Sq Ft**
								Base Year				**KBTU/ ft2**		**#DIV/0!**				**Base Year**			**KBTU/ ft2**		**#DIV/0!**		**Base Year**	**#DIV/0!**	**#DIV/0!**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Senior Center
Address: 2108 Cedar
Meter # : **Gas:** 35100750
Account # : 0
Bldg. Area: 7,850 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Community C **% Cooled:** 0%

Water: 0
0

Electric: 3027888
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0	24-Jul	20-Aug	6453	6,453						Actual	22,024	$ 995.92
Sep-14	0	0	21-Aug	19-Sep	6901	6,901						Actual	23,553	$ 1,059.83
Oct-14	0	0	20-Sep	20-Oct	6379	6,379						Actual	21,772	$ 927.40
Nov-14	0	0	21-Oct	19-Nov	6232	6,232						Actual	21,270	$ 951.68
Dec-14	0	0	20-Nov	17-Dec	8112	8,112						Estimate	27,686	$ 1,156.39
Jan-15	0	0	18-Dec	21-Jan	7217	7,217						Actual	24,632	$ 1,071.45
Feb-15	0	0	22-Jan	19-Feb	7699	7,699						Actual	26,277	$ 1,053.14
Mar-15	0	0	20-Feb	20-Mar	7947	7,947						Actual	27,123	$ 1,081.63
Apr-15	0	0	21-Mar	20-Apr	7179	7,179						Actual	24,502	$ 985.34
May-15	0	0	21-Apr	21-May	7157	7,157						Actual	24,427	$ 979.63
Jun-15	0	0	22-May	19-Jun	6465	6,465						Actual	22,065	$ 971.76
Jul-15	0	0	20-Jun	22-Jul	7237	7,237						Actual	24,700	$ 1,108.64
Yearly Total	**0**	**0**			**84,978**			**0**					**290,030**	**$12,343**
Rate					$ / KWH	**$0.145**		**0**						
								Base Year				**KBTU/ ft2**		**37**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14	24-Jul	20-Aug	1.9					Actual	1,957	$ 26.09
Sep-14	21-Aug	19-Sep	2.1					Actual	2,163	$ 27.00
Oct-14	20-Sep	20-Oct	2.5					Actual	2,575	$ 29.93
Nov-14	21-Oct	19-Nov	4.2					Actual	4,326	$ 43.46
Dec-14	20-Nov	17-Dec	4.4					Estimate	4,532	$ 48.22
Jan-15	18-Dec	21-Jan	7.3					Actual	7,519	$ 64.17
Feb-15	22-Jan	19-Feb	6.1					Actual	6,283	$ 56.40
Mar-15	20-Feb	20-Mar	4.8					Actual	4,944	$ 47.06
Apr-15	21-Mar	20-Apr	3.9					Actual	4,017	$ 40.57
May-15	21-Apr	21-May	3.7					Actual	3,811	$ 39.13
Jun-15	22-May	19-Jun	2.2					Actual	2,266	$ 27.59
Jul-15	20-Jun	22-Jul	2.2					Actual	2,266	$ 28.34
Yearly Total			**45**						**46,659**	**$478**
Rate			$ / MCF	**$10.551**						
				Base Year			**KBTU/ ft2**		**6**	

TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	**23,981**	**$1,022**
Sep-14	**25,716**	**$1,087**
Oct-14	**24,347**	**$957**
Nov-14	**25,596**	**$995**
Dec-14	**32,218**	**$1,205**
Jan-15	**32,151**	**$1,136**
Feb-15	**32,560**	**$1,110**
Mar-15	**32,067**	**$1,129**
Apr-15	**28,519**	**$1,026**
May-15	**28,238**	**$1,019**
Jun-15	**24,331**	**$999**
Jul-15	**26,966**	**$1,137**
	336,689	**$12,821**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**42.89030752**	**$1.63**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Delhi POTW
Address: 5961 McCue
Meter # : **Gas:** 0
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Waste Water **% Cooled:** 0%

Water: 0
0

Electric: 3632704
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0	22-Jul	19-Aug	185539			311.0	367.0		0.9		633,245	$ 20,743.92
Sep-14	0	0	20-Aug	18-Sep	197382			318.0	366.0		0.90		673,665	$ 21,773.20
Oct-14	0	0	19-Sep	17-Oct	191788			302.0	367.0		0.91		654,572	$ 17,709.32
Nov-14	0	0	18-Oct	18-Nov	219136			390.0	390.0		0.91		747,911	$ 20,538.53
Dec-14	0	0	19-Nov	16-Dec	205295			336.0	390.0		0.92		700,672	$ 18,897.39
Jan-15	0	0	17-Dec	20-Jan	258913			376.0	383.0		0.92		883,670	$ 21,897.39
Feb-15	0	0	21-Jan	18-Feb	215832			340.0	393.0		0.92		736,635	$ 18,321.34
Mar-15	0	0	19-Feb	19-Mar	210277			337.0	399.0		0.92		717,675	$ 17,861.90
Apr-15	0	0	20-Mar	20-Apr	213484			335.0	350.0		0.90		728,621	$ 17,959.27
May-15	0	0	21-Apr	19-May	184130			298.0	331.0		0.90		628,436	$ 15,783.79
Jun-15	0	0	20-May	18-Jun	183565			315.0	369.0		0.92		626,507	$ 19,747.72
Jul-15	0	0	19-Jun	20-Jul	209520			327.0	423.0		0.89		715,092	$ 22,652.46
Yearly Total	**0**	**0**			**2,474,861**			**3985**					**8,446,701**	**$233,886**
Rate					$ / KWH	**$0.095**		**1271**						
								Base Year				**KBTU/ ft2**		**#DIV/0!**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14									-	$0
Sep-14									-	$0
Oct-14									-	$0
Nov-14									-	$0
Dec-14									-	$0
Jan-15									-	$0
Feb-15									-	$0
Mar-15									-	$0
Apr-15									-	$0
May-15									-	$0
Jun-15									-	$0
Jul-15									-	$0
Yearly Total			**0**						**-**	**$0**
Rate			$ / MCF	**$0.000**						
				Base Year				**KBTU/ ft2**		**#DIV/0!**

TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	**633,245**	**$20,744**
Sep-14	**673,665**	**$21,773**
Oct-14	**654,572**	**$17,709**
Nov-14	**747,911**	**$20,539**
Dec-14	**700,672**	**$18,897**
Jan-15	**883,670**	**$21,897**
Feb-15	**736,635**	**$18,321**
Mar-15	**717,675**	**$17,862**
Apr-15	**728,621**	**$17,959**
May-15	**628,436**	**$15,784**
Jun-15	**626,507**	**$19,748**
Jul-15	**715,092**	**$22,652**
	8,446,701	**$233,886**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**#DIV/0!**	**#DIV/0!**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: POTW Admin_Lab_Pole Barn
Address: 5961 McCue
Meter # : **Gas:** 56130677
Account # : 0
Bldg. Area: 12,973 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Waste Water **%Cooled:** 0%

Water: 0
0

Electric: 73236567
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0				0							-	
Sep-14	0	0				0							-	
Oct-14	0	0				0							-	
Nov-14	0	0				0							-	
Dec-14	0	0				0							-	
Jan-15	0	0				0							-	
Feb-15	0	0				0							-	
Mar-15	0	0				0							-	
Apr-15	0	0				0							-	
May-15	0	0				0							-	
Jun-15	0	0				0							-	
Jul-15	0	0				0							-	
Yearly Total	**0**	**0**			**0**			**0**					**-**	**$0**
Rate					$ / KWH	**$0.000**		**0**						
								Base Year				**KBTU/ ft2**		**0**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14	25-Jul	22-Aug	5.2					Actual	5,356	$57.22
Sep-14	23-Aug	22-Sep	30.8					Actual	31,724	$237.13
Oct-14	23-Sep	21-Oct	105.4					Actual	108,562	$766.18
Nov-14	22-Oct	21-Nov	354.4					Actual	365,032	$2,604.44
Dec-14	22-Nov	18-Dec	357.1					Estimate	367,813	$2,908.28
Jan-15	19-Dec	22-Jan	730.1					Actual	752,003	$5,084.19
Feb-15	23-Jan	20-Feb	694.2					Estimate	715,026	$4,864.95
Mar-15	21-Feb	24-Mar	530.7					Actual	546,621	$3,723.74
Apr-15	25-Mar	23-Apr	277.6					Actual	285,928	$1,957.12
May-15	24-Apr	21-May	131					Estimate	134,930	$933.87
Jun-15	22-May	23-Jun	191.2					Actual	196,936	$1,353.89
Jul-15	24-Jun	22-Jul	1.2					Actual	1,236	$27.88
Yearly Total			**3,409**						**3,511,167**	**$24,519**
Rate			$ / MCF	**$7.193**						
				Base Year			**KBTU/ ft2**		**271**	

TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	**5,356**	**$57**
Sep-14	**31,724**	**$237**
Oct-14	**108,562**	**$766**
Nov-14	**365,032**	**$2,604**
Dec-14	**367,813**	**$2,908**
Jan-15	**752,003**	**$5,084**
Feb-15	**715,026**	**$4,865**
Mar-15	**546,621**	**$3,724**
Apr-15	**285,928**	**$1,957**
May-15	**134,930**	**$934**
Jun-15	**196,936**	**$1,354**
Jul-15	**1,236**	**$28**
	3,511,167	**$24,519**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**270.6518924**	**$1.89**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Delhi POTW Digester
Address: 5961 McCue
Meter # : **Gas:** 56004474
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Waste Water **% Cooled:** 0%

Water: 0 **Electric:** 0
0 0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0				0							-	
Sep-14	0	0				0							-	
Oct-14	0	0				0							-	
Nov-14	0	0				0							-	
Dec-14	0	0				0							-	
Jan-15	0	0				0							-	
Feb-15	0	0				0							-	
Mar-15	0	0				0							-	
Apr-15	0	0				0							-	
May-15	0	0				0							-	
Jun-15	0	0				0							-	
Jul-15	0	0				0							-	
Yearly Total	**0**	**0**			**0**			**0**					**-**	**$0**
Rate					$ / KWH	**$0.000**		**0**						
								Base Year				**KBTU/ ft2**		**#DIV/0!**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14	23-Nov	21-Dec	291.9						300,657	$1,980.54
Sep-14	22-Dec	24-Jan	351.8						362,354	$2,381.96
Oct-14	25-Jan	21-Feb	306.3						315,489	$3,021.40
Nov-14	22-Feb	24-Mar	135.8						139,874	$1,933.15
Dec-14	25-Mar	24-Apr	188.1						193,743	$1,540.77
Jan-15	25-Apr	23-May	81.6						84,048	$678.98
Feb-15	24-May	20-Jun	38.8						39,964	$313.26
Mar-15	21-Jun	24-Jul	42						43,260	$340.45
Apr-15	25-Jul	22-Aug	36.5						37,595	$289.75
May-15	23-Aug	22-Sep	43.4						44,702	$326.48
Jun-15	23-Sep	21-Oct	169.3						174,379	$1,219.35
Jul-15	22-Oct	21-Nov	176.7						182,001	$1,307.93
Yearly Total			**1,862**						**1,918,066**	**$15,334**
Rate			$ / MCF	**$8.234**						
				Base Year				**KBTU/ ft2**	**#DIV/0!**	

TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	**300,657**	**$1,981**
Sep-14	**362,354**	**$2,382**
Oct-14	**315,489**	**$3,021**
Nov-14	**139,874**	**$1,933**
Dec-14	**193,743**	**$1,541**
Jan-15	**84,048**	**$679**
Feb-15	**39,964**	**$313**
Mar-15	**43,260**	**$340**
Apr-15	**37,595**	**$290**
May-15	**44,702**	**$326**
Jun-15	**174,379**	**$1,219**
Jul-15	**182,001**	**$1,308**
	1,918,066	**$15,334**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**#DIV/0!**	**#DIV/0!**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Delhi POTW RBC
Address: 5961 McCue
Meter # : **Gas:** 22382246
Account # : 0
Bldg. Area: 6,456 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Select Type **% Cooled:** 0%

Water: 0 **Electric:** 0
0 0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0				0							-	
Sep-14	0	0				0							-	
Oct-14	0	0				0							-	
Nov-14	0	0				0							-	
Dec-14	0	0				0							-	
Jan-15	0	0				0							-	
Feb-15	0	0				0							-	
Mar-15	0	0				0							-	
Apr-15	0	0				0							-	
May-15	0	0				0							-	
Jun-15	0	0				0							-	
Jul-15	0	0				0							-	
Yearly Total	**0**	**0**			**0**			**0**					**-**	**$0**
Rate					$ / KWH	**$0.000**		**0**						
								Base Year				**KBTU/ ft2**		**0**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14	23-Nov	21-Dec	2.8					Estimate	2,884	$ 31.09
Sep-14	22-Dec	24-Jan	33.6					Estimate	34,608	$ 244.73
Oct-14	25-Jan	21-Feb	64.7					Actual	66,641	$ 660.24
Nov-14	22-Feb	24-Mar	34.5					Actual	35,535	$ 505.58
Dec-14	25-Mar	24-Apr	13.8					Actual	14,214	$ 126.34
Jan-15	25-Apr	23-May	1.9					Actual	1,957	$ 27.45
Feb-15	24-May	20-Jun	0					Actual	-	$ 11.65
Mar-15	21-Jun	24-Jul	0					Actual	-	$ 11.65
Apr-15	25-Jul	22-Aug	0					Actual	-	$ 11.54
May-15	23-Aug	22-Sep	0.7					Actual	721	$ 16.76
Jun-15	23-Sep	21-Oct	8.9					Actual	9,167	$ 76.72
Jul-15	22-Oct	21-Nov	27.9					Actual	28,737	$ 222.97
Yearly Total			**189**						**194,464**	**$1,947**
Rate			$ / MCF	**$10.311**						
				Base Year			**KBTU/ ft2**		**30**	

TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	**2,884**	**$31**
Sep-14	**34,608**	**$245**
Oct-14	**66,641**	**$660**
Nov-14	**35,535**	**$506**
Dec-14	**14,214**	**$126**
Jan-15	**1,957**	**$27**
Feb-15	**-**	**$12**
Mar-15	**-**	**$12**
Apr-15	**-**	**$12**
May-15	**721**	**$17**
Jun-15	**9,167**	**$77**
Jul-15	**28,737**	**$223**
	194,464	**$1,947**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**30.12143742**	**$0.30**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Delhi POTW Tertiary
Address: 5961 McCue
Meter # : **Gas:** 23194013
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Select Type **% Cooled:** 0%

Water: 0 **Electric:** 0
0 0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0				0							-	
Sep-14	0	0				0							-	
Oct-14	0	0				0							-	
Nov-14	0	0				0							-	
Dec-14	0	0				0							-	
Jan-15	0	0				0							-	
Feb-15	0	0				0							-	
Mar-15	0	0				0							-	
Apr-15	0	0				0							-	
May-15	0	0				0							-	
Jun-15	0	0				0							-	
Jul-15	0	0				0							-	
Yearly Total	**0**	**0**			**0**			**0**					**-**	**$0**
Rate					$ / KWH	**$0.000**		**0**						
								Base Year				**KBTU/ ft2**		**#DIV/0!**

Month	NATURAL GAS: Beginning Read Date	End Read Date	MCF	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost
Aug-14	23-Nov	21-Dec	1.5					Estimate	1,545	$ 22.07
Sep-14	22-Dec	24-Jan	3.4					Estimate	3,502	$ 35.24
Oct-14	25-Jan	21-Feb	10					Actual	10,300	$ 112.02
Nov-14	22-Feb	24-Mar	4.2					Actual	4,326	$ 71.78
Dec-14	25-Mar	24-Apr	1.6					Actual	1,648	$ 24.95
Jan-15	25-Apr	23-May	1.4					Actual	1,442	$ 23.29
Feb-15	24-May	20-Jun	1.4					Actual	1,442	$ 22.59
Mar-15	21-Jun	24-Jul	1.6					Actual	1,648	$ 24.25
Apr-15	25-Jul	22-Aug	1.4					Actual	1,442	$ 22.25
May-15	23-Aug	22-Sep	1.5					Actual	1,545	$ 22.62
Jun-15	23-Sep	21-Oct	1.5					Actual	1,545	$ 22.62
Jul-15	22-Oct	21-Nov	1.5					Actual	1,545	$ 23.01
Yearly Total			**31**						**31,930**	**$427**
Rate			$ / MCF	**$13.764**						
				Base Year				**KBTU/ ft2**	**#DIV/0!**	

TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	**1,545**	**$22**
Sep-14	**3,502**	**$35**
Oct-14	**10,300**	**$112**
Nov-14	**4,326**	**$72**
Dec-14	**1,648**	**$25**
Jan-15	**1,442**	**$23**
Feb-15	**1,442**	**$23**
Mar-15	**1,648**	**$24**
Apr-15	**1,442**	**$22**
May-15	**1,545**	**$23**
Jun-15	**1,545**	**$23**
Jul-15	**1,545**	**$23**
	31,930	**$427**
	KBTU / Sq Ft	**$/Sq Ft**
Base Year	**#DIV/0!**	**#DIV/0!**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Delhi POTW Ponds
Address: 6055 McCue
Meter # : **Gas:** 0
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Select Type **% Cooled:** 0%

Water: 0
0

Electric: 15004038
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

	Climate Data		ELECTRICITY												NATURAL GAS										TOTALS		
Month	Heating Deg Days	Cooling Deg Days	Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost	Beginning Read Date	End Read Date	Select Unit	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	Month	KBTU/ Month	Total Energy Cost
Aug-14	0	0	25-Jul	22-Aug	2320	2,320						Actual	7,918	$ 361.01									-	$0	Aug-14	7,918	$361
Sep-14	0	0	23-Aug	22-Sep	2000	2,000						Actual	6,826	$ 315.32									-	$0	Sep-14	6,826	$315
Oct-14	0	0	23-Sep	21-Oct	2400	2,400						Actual	8,191	$ 350.62									-	$0	Oct-14	8,191	$351
Nov-14	0	0	22-Oct	21-Nov	3760	3,760						Actual	12,833	$ 532.67									-	$0	Nov-14	12,833	$533
Dec-14	0	0	22-Nov	18-Dec	720	720						Estimate	2,457	$ 125.85									-	$0	Dec-14	2,457	$126
Jan-15	0	0	19-Dec	22-Jan	960	960						Estimate	3,276	$ 153.88									-	$0	Jan-15	3,276	$154
Feb-15	0	0	23-Jan	20-Feb	25760	25,760						Estimate	87,919	$ 3,302.54									-	$0	Feb-15	87,919	$3,303
Mar-15	0	0	21-Feb	24-Mar	10000	10,000						Actual	34,130	$ 1,296.52									-	$0	Mar-15	34,130	$1,297
Apr-15	0	0	25-Mar	23-Apr	3840	3,840						Actual	13,106	$ 516.79									-	$0	Apr-15	13,106	$517
May-15	0	0	24-Apr	21-May	2720	2,720						Estimate	9,283	$ 373.68									-	$0	May-15	9,283	$374
Jun-15	0	0	22-May	23-Jun	7520	7,520						Actual	25,666	$ 1,075.47									-	$0	Jun-15	25,666	$1,075
Jul-15	0	0	24-Jun	22-Jul	3440	3,440						Actual	11,741	$ 521.21									-	$0	Jul-15	11,741	$521
Yearly Total	**0**	**0**			**65,440**			**0**					**223,347**	**$8,926**			**0**						**-**	**$0**		**223,347**	**$8,926**
Rate					$ / KWH	**$0.136**		**0**									$ / Select Unit	**$0.000**								**KBTU / Sq Ft**	**$/Sq Ft**
								Base Year				**KBTU/ ft2**		**#DIV/0!**			**Base Year**				**KBTU/ ft2**		**#DIV/0!**		**Base Year**	**#DIV/0!**	**#DIV/0!**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Valhalla Park
Address: 4080 Keller
Meter # : **Gas:** 0
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Select Type **% Cooled:** 0%

Water: 0
0

Electric: 19577678
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

	Climate Data		ELECTRICITY												NATURAL GAS										TOTALS		
Month	Heating Deg Days	Cooling Deg Days	Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost	Beginning Read Date	End Read Date	Select Unit	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	Month	KBTU/ Month	Total Energy Cost
Aug-14	0	0	24-Jul	21-Aug	754	754						Actual	2,573	$ 137.50									-	$0	Aug-14	2,573	$138
Sep-14	0	0	22-Aug	20-Sep	652	652						Actual	2,225	$ 122.90									-	$0	Sep-14	2,225	$123
Oct-14	0	0	21-Sep	21-Oct	733	733						Actual	2,502	$ 127.83									-	$0	Oct-14	2,502	$128
Nov-14	0	0	22-Oct	20-Nov	1121	1,121						Actual	3,826	$ 179.79									-	$0	Nov-14	3,826	$180
Dec-14	0	0	21-Nov	18-Dec	1237	1,237						Actual	4,222	$ 194.79									-	$0	Dec-14	4,222	$195
Jan-15	0	0	19-Dec	21-Jan	2564	2,564						Estimate	8,751	$ 361.08									-	$0	Jan-15	8,751	$361
Feb-15	0	0	22-Jan	20-Feb	779	779						Actual	2,659	$ 128.85									-	$0	Feb-15	2,659	$129
Mar-15	0	0	21-Feb	23-Mar	1431	1,431						Actual	4,884	$ 211.14									-	$0	Mar-15	4,884	$211
Apr-15	0	0	24-Mar	21-Apr	1600	1,600						Estimate	5,461	$ 232.77									-	$0	Apr-15	5,461	$233
May-15	0	0	22-Apr	20-May	389	389						Actual	1,328	$ 79.04									-	$0	May-15	1,328	$79
Jun-15	0	0	21-May	19-Jun	871	871						Estimate	2,973	$ 150.61									-	$0	Jun-15	2,973	$151
Jul-15	0	0	20-Jun	21-Jul	455	455						Actual	1,553	$ 94.87									-	$0	Jul-15	1,553	$95
Yearly Total	**0**	**0**			**12,586**			**0**					**42,956**	**$2,021**			**0**						**-**	**$0**		**42,956**	**$2,021**
Rate					$ / KWH	**$0.161**		**0**									$ / Select Unit	**$0.000**								**KBTU / Sq Ft**	**$/Sq Ft**
								Base Year				**KBTU/ ft2**		**#DIV/0!**			**Base Year**				**KBTU/ ft2**		**#DIV/0!**		**Base Year**	**#DIV/0!**	**#DIV/0!**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: DDA Streetlights
Address: 0
Meter # : **Gas:** 0
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Select Type **% Cooled:** 0%
Water: 0
0

Electric: 0
0
73246585 ,43070020 ,73280537 ,94825834 ,1000256

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

	Climate Data		ELECTRICITY												NATURAL GAS										TOTALS		
Month	Heating Deg Days	Cooling Deg Days	Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost	Beginning Read Date	End Read Date	Select Unit	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	Month	KBTU/ Month	Total Energy Cost
Aug-14	0	0			5,118	5,118							17,468	$ 858.11									-	$0	Aug-14	17,468	$858
Sep-14	0	0			6,846	6,846							23,365	$ 1,104.62									-	$0	Sep-14	23,365	$1,105
Oct-14	0	0			7,597	7,597							25,929	$ 1,142.84									-	$0	Oct-14	25,929	$1,143
Nov-14	0	0			8,377	8,377							28,591	$ 1,247.87									-	$0	Nov-14	28,591	$1,248
Dec-14	0	0			7,676	7,676							26,198	$ 1,150.93									-	$0	Dec-14	26,198	$1,151
Jan-15	0	0			9,433	9,433							32,195	$ 1,346.07									-	$0	Jan-15	32,195	$1,346
Feb-15	0	0			7,836	7,836							26,744	$ 1,123.08									-	$0	Feb-15	26,744	$1,123
Mar-15	0	0			7,233	7,233							24,686	$ 1,043.75									-	$0	Mar-15	24,686	$1,044
Apr-15	0	0			6,988	6,988							23,850	$ 1,013.71									-	$0	Apr-15	23,850	$1,014
May-15	0	0			5,550	5,550							18,942	$ 829.11									-	$0	May-15	18,942	$829
Jun-15	0	0			5,734	5,734							19,570	$ 922.92									-	$0	Jun-15	19,570	$923
Jul-15	0	0			5,288	5,288							18,048	$ 882.84									-	$0	Jul-15	18,048	$883
Yearly Total	**0**	**0**			**83,676**			**0**					**285,586**	**$12,666**			**0**						**-**	**$0**		**285,586**	**$12,666**
Rate					$ / KWH	**$0.151**		**0**									$ / Select Unit	**$0.000**								**KBTU / Sq Ft**	**$/Sq Ft**
								Base Year				**KBTU/ ft2**		**#DIV/0!**			**Base Year**					**KBTU/ ft2**		**#DIV/0!**	**Base Year**	**#DIV/0!**	**#DIV/0!**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Streetlights
Address: 0
Meter # : **Gas:** 0
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Select Type **% Cooled:** 0%

Water: 0
0

Electric: 0
0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost
Aug-14	0	0	1-Aug	31-Aug	70016	70,016							238,965	$ 20,851.86
Sep-14	0	0	1-Sep	30-Sep	78890	78,890							269,252	$ 20,908.98
Oct-14	0	0	1-Oct	31-Oct	93681	93,681							319,733	$ 20,997.62
Nov-14	0	0	1-Nov	30-Nov	101575	101,575							346,675	$ 21,054.98
Dec-14	0	0	1-Dec	31-Dec	111442	111,442							380,352	$ 21,048.16
Jan-15	0	0	1-Jan	31-Jan	107489	107,489							366,860	$ 20,579.14
Feb-15	0	0	1-Feb	28-Feb	89736	89,736							306,269	$ 20,358.60
Mar-15	0	0	1-Mar	31-Mar	86781	86,781							296,184	$ 20,327.05
Apr-15	0	0	1-Apr	30-Apr	71989	71,989							245,698	$ 20,349.78
May-15	0	0	1-May	31-May	62129	62,129							212,046	$ 20,331.34
Jun-15	0	0	1-Jun	30-Jun	53234	53,234							181,688	$ 20,710.14
Jul-15	0	0	1-Jul	31-Jul	59162	59,162							201,920	$ 20,870.49
Yearly Total	**0**	**0**			**986,124**			**0**					**3,365,641**	**$248,388**
Rate					$ / KWH	**$0.252**		**0**						
								Base Year				**KBTU/ ft2**		**#DIV/0!**

Month	NATURAL GAS: Beginning Read Date	End Read Date	Select Unit	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14									-	$0	**Aug-14**	**238,965**	**$20,852**
Sep-14									-	$0	**Sep-14**	**269,252**	**$20,909**
Oct-14									-	$0	**Oct-14**	**319,733**	**$20,998**
Nov-14									-	$0	**Nov-14**	**346,675**	**$21,055**
Dec-14									-	$0	**Dec-14**	**380,352**	**$21,048**
Jan-15									-	$0	**Jan-15**	**366,860**	**$20,579**
Feb-15									-	$0	**Feb-15**	**306,269**	**$20,359**
Mar-15									-	$0	**Mar-15**	**296,184**	**$20,327**
Apr-15									-	$0	**Apr-15**	**245,698**	**$20,350**
May-15									-	$0	**May-15**	**212,046**	**$20,331**
Jun-15									-	$0	**Jun-15**	**181,688**	**$20,710**
Jul-15									-	$0	**Jul-15**	**201,920**	**$20,870**
Yearly Total			**0**						**-**	**$0**		**3,365,641**	**$248,388**
Rate			$ / Select Unit	**$0.000**								**KBTU / Sq Ft**	**$/Sq Ft**
				Base Year				**KBTU/ ft2**	**#DIV/0!**		**Base Year**	**#DIV/0!**	**#DIV/0!**

EXHIBIT D-3

EXISTING ENERGY UTILIZATION INDEX

Project Name: Delhi Township
Building: Lansing Board Streetlights
Address: 0
Meter # : **Gas:** 0
Account # : 0
Bldg. Area: 0 **S.F.**

Year Built: 0 **# of Floors:** 0
Bldg Type: Select Type **% Cooled:** 0%

Water: 0 **Electric:** 0
0 0

Utility Provider:	Electricity			Gas	Water
Energy Provider	0			0	0
Rate Schedule	0			0	0
Purchase Prog?					

Month	Climate Data: Heating Deg Days	Climate Data: Cooling Deg Days	ELECTRICITY: Beginning Read Date	End Read Date	KWH	On-Peak Usage	Off-Peak Usage	On-Peak Billing Demand	Primary Voltage Max Demand	Fixed Charges	Power Factor	Read Type	KBTUs	Total Cost	NATURAL GAS: Beginning Read Date	End Read Date	Select Unit	Natural Gas Cost	Distribution Charge	Interim Charge	Customer Charge	Read Type	KBTUs	Total Cost	TOTALS: Month	KBTU/ Month	Total Energy Cost
Aug-14	0	0	1-Aug	1-Sep	16173	16,173							55,198	$ 7,270.35									-	$0	Aug-14	55,198	$7,270
Sep-14	0	0	1-Sep	1-Oct	18425	18,425							62,885	$ 7,037.55									-	$0	Sep-14	62,885	$7,038
Oct-14	0	0	1-Oct	1-Nov	21774	21,774							74,315	$ 7,270.35									-	$0	Oct-14	74,315	$7,270
Nov-14	0	0	1-Nov	1-Dec	23641	23,641							80,687	$ 7,796.03									-	$0	Nov-14	80,687	$7,796
Dec-14	0	0	1-Dec	1-Jan	25754	25,754							87,898	$ 8,053.88									-	$0	Dec-14	87,898	$8,054
Jan-15	0	0	1-Jan	1-Feb	24962	24,962							85,195	$ 8,053.88									-	$0	Jan-15	85,195	$8,054
Feb-15	0	0	1-Feb	1-Mar	20733	20,733							70,762	$ 7,272.86									-	$0	Feb-15	70,762	$7,273
Mar-15	0	0	1-Mar	1-Apr	20047	20,047							68,420	$ 8,053.88									-	$0	Mar-15	68,420	$8,054
Apr-15	0	0	1-Apr	1-May	16664	16,664							56,874	$ 7,796.03									-	$0	Apr-15	56,874	$7,796
May-15	0	0	1-May	1-Jun	14306	14,306							48,826	$ 8,053.88									-	$0	May-15	48,826	$8,054
Jun-15	0	0	1-Jun	1-Jul	12259	12,259							41,840	$ 7,778.47									-	$0	Jun-15	41,840	$7,778
Jul-15	0	0	1-Jul	1-Aug	13599	13,599							46,413	$ 8,035.75									-	$0	Jul-15	46,413	$8,036
Yearly Total	**0**	**0**			**228,337**			**0**					**779,314**	**$92,473**			**0**						**-**	**$0**		**779,314**	**$92,473**
Rate					$ / KWH	**$0.405**		**0**									$ / Select Unit	**$0.000**								**KBTU / Sq Ft**	**$/Sq Ft**
								Base Year					**KBTU/ ft2**	**#DIV/0!**			**Base Year**						**KBTU/ ft2**	**#DIV/0!**	**Base Year**	**#DIV/0!**	**#DIV/0!**

Exhibit D-4

SAVINGS GRID FOR M&V REVIEW

Rev 1.2

Project Name: Delhi Township

ECM Name			Energy Management	Lighting	VSD/DCV	Other Mechanical	Other Electrical				% Savings/
ECM Abbr. used on ECM Summary			EMS	Ltg	VSD	Mech	Elec				
			Energy Management System and Controls	Lighting System Improvements	Variable Speed Drives	Other Mechanical Improvments	Other Electrical Improvements	TOTAL SAVINGS			
Building		**Meter**	**ECM 1**	**ECM 6**	**ECM 14**	**ECM 17**	**ECM 18**	**Totals**	**Base Year Info**		**Base Yr**
Community Service Center	Electric Units	kWh	(85,332)	71,137	130,430	137,963	0	**254,198**	Base Year kWh Used	599,840	42%
	Electric $	$0.0915	($7,808)	$6,509	$11,935	$12,624	$0	**$23,260**	Base Year $ Spent	$54,886	42%
	Demand Units	kW	0	256	0	548	0	**805**	Base Year kW Used	1,950	41%
	Demand $	$9.82	$0	$2,491	$0	$5,018	$0	**$7,509**	Base Year $ Spent	$19,343	39%
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	2,361	0%
	Natural Gas $	$6.95	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$16,402	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**($7,808)**	**$9,000**	**$11,935**	**$17,642**	**$0**	**$30,769**			**27%**
DDA Office	Electric Units	kWh	0	1,620	0	0	0	**1,620**	Base Year kWh Used	9,132	18%
	Electric $	$0.1329	$0	$215	$0	$0	$0	**$215**	Base Year $ Spent	$1,213	18%
	Demand Units	kW	0	10	0	0	0	**10**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Natural Gas $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$215**	**$0**	**$0**	**$0**	**$215**			**0%**
Ingham County Sheriff	Electric Units	kWh	0	22,084	0	0	0	**22,084**	Base Year kWh Used	104,758	21%
	Electric $	$0.1332	$0	$2,942	$0	$0	$0	**$2,942**	Base Year $ Spent	$13,956	21%
	Demand Units	kW	0	48	0	0	0	**48**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**($0)**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	336	0%
	Natural Gas $	$6.83	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$2,292	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$2,942**	**$0**	**$0**	**$0**	**$2,942**			**3%**
DPS	Electric Units	kWh	0	40,306	0	0	0	**40,306**	Base Year kWh Used	268,409	15%
	Electric $	$0.1070	$0	$4,312	$0	$0	$0	**$4,312**	Base Year $ Spent	$28,717	15%
	Demand Units	kW	0	124	0	0	0	**124**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	1,223	0%
	Natural Gas $	$7.16	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$8,758	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$4,312**	**$0**	**$0**	**$0**	**$4,312**			**4%**
DPS Pole Barn	Electric Units	kWh	0	0	0	0	0	**0**	Base Year kWh Used	7,005	0%
	Electric $	$0.1337	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$937	0%
	Demand Units	kW	0	0	0	0	0	**0**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	240	0%
	Natural Gas $	$6.67	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$1,598	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**			**0%**

Exhibit D-4

SAVINGS GRID FOR M&V REVIEW

Rev 1.2

Project Name: Delhi Township

ECM Name			Energy Management	Lighting	VSD/DCV	Other Mechanical	Other Electrical				% Savings/
ECM Abbr. used on ECM Summary			EMS	Ltg	VSD	Mech	Elec				
			Energy Management System and Controls	Lighting System Improvements	Variable Speed Drives	Other Mechanical Improvments	Other Electrical Improvements	TOTAL SAVINGS			
Building		Meter	ECM 1	ECM 6	ECM 14	ECM 17	ECM 18	Totals	Base Year Info		Base Yr
Farmers Market	Electric Units	kWh	0	8,666	0	0	0	**8,666**	Base Year kWh Used	16,762	52%
	Electric $	$0.1307	$0	$1,133	$0	$0	$0	**$1,133**	Base Year $ Spent	$2,192	52%
	Demand Units	kW	0	47	0	0	0	**47**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	269	0%
	Natural Gas $	$6.94	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$1,868	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$1,133**	**$0**	**$0**	**$0**	**$1,133**			**1%**
Fire Station #2	Electric Units	kWh	0	499	0	0	0	**499**	Base Year kWh Used	3,705	13%
	Electric $	$0.1319	$0	$66	$0	$0	$0	**$66**	Base Year $ Spent	$489	13%
	Demand Units	kW	0	9	0	0	0	**9**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	271	0%
	Natural Gas $	$6.64	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$1,800	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$66**	**$0**	**$0**	**$0**	**$66**			**0%**
Memorial Park	Electric Units	kWh	0	0	0	0	0	**0**	Base Year kWh Used	112,560	0%
	Electric $	$0.1345	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$15,145	0%
	Demand Units	kW	0	0	0	0	0	**0**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Natural Gas $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**			**0%**
Parks and Recreation	Electric Units	kWh	0	5,249	0	0	0	**5,249**	Base Year kWh Used	7,823	67%
	Electric $	$0.1347	$0	$707	$0	$0	$0	**$707**	Base Year $ Spent	$1,054	67%
	Demand Units	kW	0	19	0	0	0	**19**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	248	0%
	Natural Gas $	$5.68	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$1,410	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$707**	**$0**	**$0**	**$0**	**$707**			**1%**
Senior Center	Electric Units	kWh	0	9,368	0	0	0	**9,368**	Base Year kWh Used	84,978	11%
	Electric $	$0.1345	$0	$1,260	$0	$0	$0	**$1,260**	Base Year $ Spent	$11,426	11%
	Demand Units	kW	0	39	0	0	0	**39**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	47	0%
	Natural Gas $	$4.68	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$218	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$1,260**	**$0**	**$0**	**$0**	**$1,260**			**1%**
Delhi POTW	Electric Units	kWh	(6,491)	163,368	8,468	97,775	0	**263,120**	Base Year kWh Used	2,474,861	11%
	Electric $	$0.0532	($346)	$8,696	$451	$0	$0	**$8,801**	Base Year $ Spent	$131,730	7%
	Demand Units	kW	0	268	0	134	0	**402**	Base Year kW Used	3,985	10%
	Demand $	$23.35	($0)	$5,239	$0	$7,010	$0	**$12,250**	Base Year $ Spent	$92,886	13%
	Natural Gas Units	MMBtu	-12	0	0	0	0	**-12**	Base Yr MMBtu Used	0	#DIV/0!
	Natural Gas $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**($346)**	**$13,935**	**$451**	**$7,010**	**$0**	**$21,050**			**19%**

Exhibit D-4

SAVINGS GRID FOR M&V REVIEW

Rev 1.2

Project Name: Delhi Township

ECM Name			Energy Management	Lighting	VSD/DCV	Other Mechanical	Other Electrical				% Savings/
ECM Abbr. used on ECM Summary			EMS	Ltg	VSD	Mech	Elec				
			Energy Management System and Controls	Lighting System Improvements	Variable Speed Drives	Other Mechanical Improvments	Other Electrical Improvements	TOTAL SAVINGS			
Building		Meter	ECM 1	ECM 6	ECM 14	ECM 17	ECM 18	Totals	Base Year Info		Base Yr
POTW Admin_Lab_Pole Barn	Electric Units	kWh	5,903	0	0	0	0	**11,627**	Base Year kWh Used	0	#DIV/0!
	Electric $	$0.0000	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Demand Units	kW	0	0	0	0	0	**9**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	657	0	0	240	0	**897**	Base Yr MMBtu Used	3,511	26%
	Natural Gas $	$6.91	$4,536	$0	$0	$1,660	$0	**$6,196**	Base Yr MMBtu Spent	$24,259	26%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$4,536**	**$0**	**$0**	**$1,660**	**$0**	**$6,196**			**5%**
Delhi POTW Digester	Electric Units	kWh	0	0	0	0	0	**0**	Base Year kWh Used	0	#DIV/0!
	Electric $	$0.0000	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Demand Units	kW	0	0	0	0	0	**0**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	1,918	0%
	Natural Gas $	$7.86	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$15,074	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**			**0%**
Delhi POTW RBC	Electric Units	kWh	2,660	0	0	0	0	**2,660**	Base Year kWh Used	0	#DIV/0!
	Electric $	$0.0000	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Demand Units	kW	0	0	0	0	0	**0**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	-117	0	0	0	0	**-117**	Base Yr MMBtu Used	194	-60%
	Natural Gas $	$8.67	($1,016)	$0	$0	$0	$0	**($1,016)**	Base Yr MMBtu Spent	$1,687	-60%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**($1,016)**	**$0**	**$0**	**$0**	**$0**	**($1,016)**			**-1%**
Delhi POTW Tertiary	Electric Units	kWh	0	0	0	0	0	**0**	Base Year kWh Used	0	#DIV/0!
	Electric $	$0.0000	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Demand Units	kW	0	0	0	0	0	**0**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	32	0%
	Natural Gas $	$5.23	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$167	0%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**			**0%**
Delhi POTW Ponds	Electric Units	kWh	0	7,074	0	0	0	**7,074**	Base Year kWh Used	65,440	11%
	Electric $	$0.1309	$0	$926	$0	$0	$0	**$926**	Base Year $ Spent	$8,564	11%
	Demand Units	kW	0	15	0	0	0	**15**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**($0)**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Natural Gas $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$926**	**$0**	**$0**	**$0**	**$926**			**1%**
Valhalla Park	Electric Units	kWh	0	16,114	0	0	0	**16,114**	Base Year kWh Used	37,758	43%
	Electric $	$0.1360	$0	$2,192	$0	$0	$0	**$2,192**	Base Year $ Spent	$5,135	43%
	Demand Units	kW	0	26	0	0	0	**26**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$657	0%
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Natural Gas $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$2,192**	**$0**	**$0**	**$0**	**$2,192**			**2%**

Exhibit D-4

SAVINGS GRID FOR M&V REVIEW

Rev 1.2

Project Name: Delhi Township

ECM Name			Energy Management	Lighting	VSD/DCV	Other Mechanical	Other Electrical				% Savings/
ECM Abbr. used on ECM Summary			EMS	Ltg	VSD	Mech	Elec				
			Energy Management System and Controls	Lighting System Improvements	Variable Speed Drives	Other Mechanical Improvments	Other Electrical Improvements	TOTAL SAVINGS			
Building		Meter	ECM 1	ECM 6	ECM 14	ECM 17	ECM 18	Totals	Base Year Info		Base Yr
DDA Streetlights & Memorial Park	Electric Units	kWh	0	115,080	0	0	0	**115,080**	Base Year kWh Used	196,236	59%
	Electric $	$0.1339	$0	$15,409	$0	$0	$0	**$15,409**	Base Year $ Spent	$26,275	59%
	Demand Units	kW	0	239	0	0	0	**239**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Natural Gas $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$15,409**	**$0**	**$0**	**$0**	**$15,409**			**14%**
Streetlights	Electric Units	kWh	0	0	0	0	0	**0**	Base Year kWh Used	986,124	0%
	Electric $	$0.2494	$0	$27,294	$0	$0	$0	**$27,294**	Base Year $ Spent	$245,936	11%
	Demand Units	kW	0	0	0	0	0	**0**	Base Year kW Used	0	#DIV/0!
	Demand $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Year $ Spent	$0	#DIV/0!
	Natural Gas Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Natural Gas $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $	$0.00	$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF				0		**0**	Base Yr CF Used	0	#DIV/0!
	Water $	$0.00				$0		**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**$0**	**$27,294**	**$0**	**$0**	**$0**	**$27,294**			**24%**
District Wide Campus Wide	Electric Units	kWh	(83,260)	460,565	138,897	235,739	0	**757,664**	Base Year kWh Used	12,053,838	6%
	Electric $		($8,154)	$71,660	$12,385	$12,624	$0	**$88,516**	Base Year $ Spent	$564,126	16%
	Demand Units	kW	0	1,100	0	682	0	**1,792**	Base Year kW Used	5,935	30%
	Demand $		$0	$7,731	$0	$12,029	$0	**$19,759**	Base Year $ Spent	$112,886	18%
	Natural Gas Units	MMBtu	527	0	0	240	0	**767**	Base Yr MMBtu Used	10,650	7%
	Natural Gas $		$3,520	$0	$0	$1,660	$0	**$5,180**	Base Yr MMBtu Spent	$75,532	7%
	Fuel Oil Units	MMBtu	0	0	0	0	0	**0**	Base Yr MMBtu Used	0	#DIV/0!
	Fuel Oil $		$0	$0	$0	$0	$0	**$0**	Base Yr MMBtu Spent	$0	#DIV/0!
	Water Units	CCF	0	0	0	0	0	**0**	Base Yr CF Used	0	#DIV/0!
	Water $		$0	$0	$0	$0	$0	**$0**	Base Yr $ Spent	$0	#DIV/0!
	Total Utility $		**($4,634)**	**$79,391**	**$12,385**	**$26,313**	**$0**	**$113,455**			**100%**
	% of Total Savings		**-4%**	**70%**	**11%**	**23%**	**0%**	**100%**			
	Total Ops $		**$0**	**$0**	**$0**	**$0**	**$0**	**$0**			
	Total Projected $		**($4,661)**	**$82,133**	**$13,462**	**$28,601**	**$0**	**$119,535**			

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI
Energy Management System and Controls – Savings Calculations

Safety Factor 92%

						Guaranteed Savings			
Facility	**kWh Savings**	**Natural Gas Savings**	**Fuel Oil Savings**	**Cost Savings**	**Safety Factor**	**kWh Savings**	**Natural Gas Savings**	**Fuel Oil Savings**	**Cost Savings**
Community Service	-92,752	0.0	0.0	-$8,487	92%	-85,332	0	0	-$7,808
Delhi POTW	-7,056	-13.6	0.0	-$376	92%	-6,491	-12	0	-$346
POTW Admin_Lab	6,417	713.6	0.0	$4,930	92%	5,903	657	0	$4,536
Total	**-90,500**	**572.7**	**0.0**	**-$5,037**		**-83,260**	**527**	**0**	**-$4,634**

Engineering Formulas

Motor kWh Savings = (Actual kW) x (Existing Annual Hours - Proposed Annual Hours) Actual kW = Qty x HP x Motor Loading / Efficiency x (0.746 kW/HP)

Heating Ventilation Savings

Average Heat Load (Btu/hr) = 1.08 x Adjusted Airflow (CFM) x (Delivered temperature - Average Heating Temperature)

Input Energy Required = Average Heat Load x [Fall-Spg Operation (Hours/wk)] x (Heating weeks/year) * (1 - Heat recovery effectiveness) / (1,000,000 Btu/MMBtu) x Efficiency

Input Heating Savings = (Existing Input Energy - Proposed Input Energy)

Cooling Ventilation Savings

Average Summer Cooling Load (Btu/hr) = 4.5 x Adjusted Airflow (CFM) x (Average summer outdoor enthalpy - Delivered enthalpy)

Input Energy Required = Average Summer Cooling Load x (Summer Hours/wk) x (Summer weeks/year) * (1 - Heat recovery eff) x (Cooling kW/ton) / (12,000 Btu/hr/ton)

Average Shoulder Period Cooling Load (Btu/hr) = 4.5 x Adjusted Airflow (CFM) x (Average shoulder period outdoor enthalpy - Delivered enthalpy)

Input Energy Required = Average Shoulder Cooling Load x (Fall-Spg Hours/wk) x (Cooling -summer weeks/year) * (1 - Heat recovery eff) x (Cooling kW/ton) / (12,000 Btu/hr/ton)

Input Electric Savings = (Existing Input Energy - Proposed Input Energy)

Setback savings calculations are defined in their respective sections.

Summary by ECM

						Guaranteed Savings			
ECM	**kWh Savings**	**Savings**	**Fuel Oil Savings**	**Cost Savings**	**Safety Factor**	**Savings**	**Gas**	**Savings**	**Cost Savings**
C.1a	-90,500	572.7	0.0	-$5,037	92%	-83,260	527	0	-$4,634
Total	**-181,000**	**1,145.4**	**0.0**	**-$10,073**		**-166,520**	**1,054**	**0**	**-$9,268**

Exhibit D-4

Energy Management System and Controls – Savings Calculations

Facility	Item	Serves	Qty	HP	Existing Effic.	Motor Loading	Actual kW	Existing Hours	Proposed Hours	kWh Savings	Natural Gas Savings	Fuel Oil Savings	Cost Savings
Community Service	Heat Pump 1	Parks & Rec	1	3	77%	40%	1.16	4,041	0	4,698			$430
Community Service	Heat Pump 2	SE Offices	1	1.5	76%	50%	0.74	4,302	0	3,167			$290
Community Service	Heat Pump 3	NE Offices	1	1.5	76%	50%	0.74	3,780	0	2,783			$255
Community Service	Heat Pump 4	Treasurer/Clerk	1	1.5	76%	50%	0.74	3,780	0	2,783			$255
Community Service	Heat Pump 5	Board Room	1	3	77%	40%	1.16	4,171	0	4,850			$444
Community Service	Heat Pump 6	Library	2	2	77%	40%	1.55	4,901	0	7,598			$695
Community Service	Heat Pump 7	Fire Department	1	3	77%	40%	1.16	8,760	0	10,184			$932
Community Service	Heat Pump 8	Basement	1	2	77%	45%	0.87	8,760	0	7,638			$699
Community Service	AHU-1	Parks & Rec	1	5	77%	70%	3.39	0	4,041	-13,703			-$1,254
Community Service	AHU-2	SE Offices	1	5	77%	70%	3.39	0	4,302	-14,587			-$1,335
Community Service	AHU-3	NE Offices	1	5	77%	70%	3.39	0	3,780	-12,819			-$1,173
Community Service	AHU-4	Treasurer/Clerk	1	5	77%	70%	3.39	0	3,780	-12,819			-$1,173
Community Service	AHU-5	Board Room	1	5	77%	70%	3.39	0	4,171	-14,145			-$1,294
Community Service	AHU-6	Library	1	10	83%	70%	6.29	0	4,901	-30,838			-$2,822
Community Service	AHU-7	Fire Department	1	5	77%	70%	3.39	0	8,760	-29,704			-$2,718
Community Service	AHU-8	Basement	1	5	77%	70%	3.39	0	8,760	-29,704			-$2,718
Community Service	ERV-1	AHU-1	2	3	77%	50%	2.91	4,041	3,520	1,516			$139
Community Service	ERV-2	AHU-3	2	0.5	60%	50%	0.62	3,780	3,520	162			$15
Community Service	ERV-3	AHU-6	2	3	77%	50%	2.91	4,901	4,380	1,516			$139
Community Service	ERV-4	AHU-7	2	0.75	72%	50%	0.78	8,760	8,760	0			$0
Community Service	Condenser Water Pump	Heat Pump Loop	2	7.5	83%	70%	9.44	8,760	0	82,671			$7,565
Community Service	Radiant Floor Pump	Radiant Floor	2	3	77%	50%	2.91	5,504	5,504	0			$0
Community Service	Cooling Tower Fan	Cooling Tower	1	20	83%	52%	9.35	3,013	3,013	0			$0
Community Service	Cooling Tower Pump	Area 5	1	5	77%	70%	3.39	3,013	0	10,217			$935
Community Service	Chilled Water Pump	Chiller	1	10	83%	70%	6.29	0	6,292	-39,587			-$3,622
Community Service	Hot Water Pump	HW System	1	10	83%	70%	6.29	0	5,504	-34,629			-$3,169
Community Service	Pump 1		0	1	75%	70%	-	8,760	8,760	0			$0
Community Service	Pump 2		0	1	75%	70%	-	8,760	8,760	0			$0
Community Service	Pump 3		0	1	75%	70%	-	8,760	8,760	0			$0
Community Service	Occupancy Control	Use CO2 or occupancy sensors to reduce ventilation during occ								0	0.0	0.0	$0
Community Service	Ventilation Load Saving	Reduction in unoccupied operation								0	0.0	0.0	$0
Community Service	DDC Setback Savings	Reset room temperatures during unoccupied periods								0	0.0	0.0	$0
Community Service	DDC Setback Savings	Reset hot water temperature based on outside air temperature									0.0	0.0	$0
Community Servic	**Subtotal**									**-92,752**	**0.0**	**0.0**	**-$8,487**
Senior Center	**Subtotal**									**0**	**0.0**	**0.0**	**$0**
Delhi POTW	Admin RTU	Administration	1	7.5	83%	70%	4.72	1,460	2,868	-6,643			-$354
Delhi POTW	Ventilation Load Saving	Reduction in unoccupied operation								-412	-13.6	0.0	-$22
Delhi POTW	**Subtotal**									**-7,056**	**-13.6**	**0.0**	**-$376**
POTW Admin_Lab	MAU-2	Area 1	1	1	75%	70%	0.70	4,608	0	3,208			$0

Energy Management System and Controls – Savings Calculations

Facility	Item	Serves	Qty	HP	Existing Effic.	Motor Loading	Actual kW	Existing Hours	Proposed Hours	kWh Savings	Natural Gas Savings	Fuel Oil Savings	Cost Savings
POTW Admin_Lab	MAU-3	Area 2	1	1	75%	70%	0.70	4,608	0	3,208			$0
POTW Admin_Lab	MAU-4	Area 4	1	5	77%	70%	3.39	8,760	8,760	0			$0
POTW Admin_Lab	Ventilation Load Saving	Reduction in unoccupied operation								0	713.6	0.0	$4,930
POTW Admin_La	**Subtotal**									**6,417**	**713.6**	**0.0**	**$4,930**
Delhi POTW RBC	Primary Sludge MAU	Primary Sludge	1	1	75%	70%	0.70	8,760	4,608	2,891			$0
Delhi POTW RBC	Ventilation Load Saving	Reduction in unoccupied operation								0	-127.3	0.0	-$1,105
Delhi POTW RBC	**Subtotal**									**2,891**	**-127.3**	**0.0**	**-$1,105**

Exhibit D-4: Energy Calculations Delhi Township - Delhi Township, MI Heat Pump Heating Savings

Percent kWh used for Heating	25%	This was established by looking at the difference between modeled kWh and actual kWh
kWh associated with Heating	149,960.00	Total kWh x % kWh used for heating
Peak kW Load from Heat Pumps	99.36	
$ Saved associated with kWh Savings	$13,721.60	
$ Saved associated with kW Savings	$ 5,454.86	6 months of heating with heat pumps x peak kW * winter $/kW Rate
Total Projected Savings	$19,176.46	
Safety Factor	92%	
Guaranteed Savings	$17,642.35	

Notes:

We are converting the HVAC system from a heat pump system with cooling only VAV boxes to a traditional hot water/chilled water system with VAV reheats. The mechanical rooms do not have the space for adding air side economizers so water side economizer is included as part of our solution. The lighting loads, plug loads, cooling loads etc were modeled and the difference was taken as the amount energy used by the heat pumps for heating purposes.

In the calculations above, the electric usage associated with the Heat pumps for heating was determined to be 25% of the total electric consumption. The electric demand was determined by the spec sheet for the units. The calculation for this is in the "Community Service Center Power" tab under cell G43. The demand savings were taken for 6 months at the off peak demand rate. The utility has a summer demand rate from June-September.

Exhibit D-4

Ventilation Energy Savings Summary Table (for reference only)
Savings are already included in C.1 EMS

	Cooling kWh Savings	Heating rate	Supply heating	Exhaust heating	Natural Gas Savings	Fuel Oil Savings	Cost Savings	Average Heating temperature	Heating weeks	Existing heating use	Cooling supply savings	Cooling Exhaust Savings	Existing Cooling energy use	Cooling weeks	Cooling efficiency	Average Cooling enthalpy
POTW Admin_Lab	0	Natural Gas	713.6	0.0	713.6	0.0	$4,930	34.6	32.8	1,461.8	0	0	20,531	17.9	1.00	28.91
Delhi POTW RBC	0	Natural Gas	-127.3	0.0	-127.3	0.0	-$1,105	34.6	32.8	0.0	0	0	0	17.9	1.00	28.91
Total	**-412**		**572.7**	**0.0**	**572.7**	**0.0**	**$3,804**	**34.6**	**32.8**	**1,475.9**	**-412**	**0**	**20,958.6**	**17.9**	**1.00**	**28.91**

Heating Ventilation Savings
Average Heat Load (Btu/hr) = 1.08 x Adjusted Airflow (CFM) x (Delivered temperature - Average Heating Temperature)
Input Energy Required = Average Heat Load x [Fall-Spg Operation (Hours/wk)] x (Heating weeks/year) * (1 - Heat recovery effectiveness)
(1,000,000 Btu/MMBtu) x Efficiency

Input Heating Savings = (Existing Input Energy - Proposed Input Energy)

Cooling Ventilation Savings
Average Summer Cooling Load (Btu/hr) = 4.5 x Adjusted Airflow (CFM) x (Average summer outdoor enthalpy - Delivered enthalpy)
Input Energy Required = Average Summer Cooling Load x (Summer Hours/wk) x (Summer weeks/year) * (1 - Heat recovery eff) x (Cooling kW/ton)
(12,000 Btu/hr/ton)

Average Shoulder Period Cooling Load (Btu/hr) = 4.5 x Adjusted Airflow (CFM) x (Average shoulder period outdoor enthalpy - Delivered enthalpy)
Input Energy Required = Average Shoulder Cooling Load x (Fall-Spg Hours/wk) x (Cooling -summer weeks/year) * (1 - Heat recovery eff) x (Cooling kW/ton)
(12,000 Btu/hr/ton)

Input Electric Savings = (Existing Input Energy - Proposed Input Energy)

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

POTW Admin_Lab_Pole Barn

				Existing Conditions				Proposed Conditions		
System	**Supply/**	**Cooling**	**Total**	**% OA**	**Current**	**Current**	**Total**	**% OA**	**Proposed**	**Proposed**
MAU-2	Supply	No	2,200	100%	121	0	2,200	100%	0	0
MAU-3	Supply	No	2,500	100%	121	0	2,500	100%	0	0
Admin RTU	Supply	No	4,000	10%	144	0	4,000	10%	144	0
MAU-4	Supply	Yes	3,200	100%	168	168	3,200	100%	168	168

	Heating		Cooling				
	Existing	**Proposed**	**Existing**	**Proposed**			
Total Local Exhaust (CFM)	0	0	0	0	Weather Location	MI-Lansing	
Total Supply Outside Air (CFM)	8,300	8,300	3,200	3,200	Boiler enable temperature	55	°F
Excessive Exhaust (CFM)	0	0	0	0	Cooling enable temperature	60	°F

	Winter				Summer		Shoulder period		
Supply - Heating	**Existing**	**Proposed**	Natural Gas	**Supply - Cooling**	**Existing**	**Proposed**	**Existing**	**Proposed**	
Ventilation heating energy				Ventilation cooling energy					
Proposed ventilation flow	8,300	8,300	CFM	Proposed OA flow	3,200	3,200	3,200	3,200	CFM
Fan Loading	90%	90%		Fan Loading	90%	90%	90%	90%	
Adjusted airflow	7,470	7,470	CFM	Adjusted airflow	2,880	2,880	2,880	2,880	CFM
Constant	1.08	1.08		Constant	4.5	4.5	4.5	4.5	
Delivered temperature	65	65	°F	Delivered enthalpy (55°F)	23.3	23.3	23.3	23.3	Btu/Lb
Average Heating temp	34.6	34.6	°F	Average outdoor enthalpy	29.8	29.8	28.9	28.9	Btu/Lb
Ave delta temp	30.4	30.4	°F	Ave delta enthalpy	6.5	6.5	5.6	5.6	Btu/Lb
Average heat load	245,165	245,165	Btu/Hr	Average cooling load	84,313	84,313	72,717	72,717	Btu/Hr

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

# weeks per heating season	32.8	32.8	Wks/yr	# of weeks per clg season	14.0	14.0	3.9	3.9	Wks/yr
Operating Hours	140	72	Hrs/Wk	Current Operation	168	168	168	168	Hrs/Wk
Constant	1,000,000	1,000,000	Btu/MMBtu	Constant	12,000	12,000	12,000	12,000	Btu/hr/ton
Annual Heating Load	1,126	576	MMBtu	Annual Cooling Load	16,525	16,525	4,005	4,005	Ton Hrs
Heating System Efficiency	77%	77%		Cooling System Efficiency	1.00	1.00	1.00	1.00	kW/Ton
Heat Recovery Efficiency	0%	0%	0% if none	Heat Recovery Efficiency	0%	0%	0%	0%	0% if none
Input Energy Required	1,461.8	748.2	MMBtu/yr	Input Electric Required	16,525	16,525	4,005	4,005	kWh/yr
Input Heating Savings	**713.6**		MMBtu/yr	Input Electric Savings	**0**		**0**		kWh/yr

Exhaust - Heating	**Winter**			**Exhaust - Cooling**	**Summer**		**Shoulder period**		
Local exhaust heating energy	**Existing**	**Proposed**		Local exhaust cooling energy	**Existing**	**Proposed**	**Existing**	**Proposed**	
Proposed OA/exc EA flow	0	0	CFM	Proposed OA flow	0	0	0	0	CFM
Fan Loading	90%	90%		Fan Loading	90%	90%	90%	90%	
Adjusted airflow	0	0	CFM	Adjusted airflow	0	0	0	0	CFM
Constant	1.08	1.08		Constant	4.5	4.5	4.5	4.5	
Space temperature	65	65	°F	Space enthalpy (74°F 50%)	27.6	27.6	27.6	27.6	Btu/Lb
Average Heating temp	34.6	34.6	°F	Average outdoor enthalpy	29.8	29.8	28.9	28.9	Btu/Lb
Ave delta temp	30.4	30.4	°F	Ave delta enthalpy	2.2	2.2	1.3	1.3	Btu/Lb
Average heat load	0	0	Btu/Hr	Average cooling load	0	0	0	0	Btu/Hr
# weeks per heating season	32.8	32.8	Wks/yr	# of weeks per clg season	14.0	14.0	3.9	3.9	Wks/yr
Current Operation	0	0	Hrs/Wk	Current Operation	0	0	0	0	Hrs/Wk
Constant	1,000,000	1,000,000	Btu/MMBtu	Constant	12,000	12,000	12,000	12,000	Btu/hr/ton
Annual Heating Load	0	0	MMBtu	Annual Cooling Load	0	0	0	0	Ton Hrs
Heating System Efficiency	77%	77%		Cooling System Efficiency	1.00	1.00	1.00	1.00	kW/Ton
Heat Recovery Efficiency	0%	0%	0% if none	Heat Recovery Efficiency	0%	0%	0%	0%	0% if none
Input Energy Required	0.0	0.0	MMBtu	Input Electric Required	0	0	0	0	kWh/yr
Input Heating Savings	**0.0**		MMBtu	Input Electric Savings	**0**		**0**		kWh/yr

Delhi POTW RBC

				Existing Conditions				**Proposed Conditions**		
System	**Supply/**	**Cooling**	**Total**	**% OA**	**Current**	**Current**	**Total**	**% OA**	**Proposed**	**Proposed**
Primary Sludge MA	Supply	No	0	0%	168	168	1,250	100%	121	0

	Heating		**Cooling**				
	Existing	**Proposed**	**Existing**	**Proposed**			
Total Local Exhaust (CFM)	0	0	0	0	Weather Location	MI-Lansing	
Total Supply Outside Air (CFM)	0	1,250	0	0	Boiler enable temperature	55	°F
Excessive Exhaust (CFM)	0	0	0	0	Cooling enable temperature	60	°F

Supply - Heating	**Winter**		Natural Gas	**Supply - Cooling**	**Summer**		**Shoulder period**		
Ventilation heating energy	**Existing**	**Proposed**		Ventilation cooling energy	**Existing**	**Proposed**	**Existing**	**Proposed**	
Proposed ventilation flow	0	1,250	CFM	Proposed OA flow	0	0	0	0	CFM
Fan Loading	90%	90%		Fan Loading	90%	90%	90%	90%	
Adjusted airflow	0	1,125	CFM	Adjusted airflow	0	0	0	0	CFM
Constant	1.08	1.08		Constant	4.5	4.5	4.5	4.5	
Delivered temperature	55	55	°F	Delivered enthalpy (55°F)	23.3	23.3	23.3	23.3	Btu/Lb
Average Heating temp	34.6	34.6	°F	Average outdoor enthalpy	29.8	29.8	28.9	28.9	Btu/Lb
Ave delta temp	20.4	20.4	°F	Ave delta enthalpy	6.5	6.5	5.6	5.6	Btu/Lb
Average heat load	0	24,772	Btu/Hr	Average cooling load	0	0	0	0	Btu/Hr
# weeks per heating season	32.8	32.8	Wks/yr	# of weeks per clg season	14.0	14.0	3.9	3.9	Wks/yr
Operating Hours	0	121	Hrs/Wk	Current Operation	0	0	0	0	Hrs/Wk
Constant	1,000,000	1,000,000	Btu/MMBtu	Constant	12,000	12,000	12,000	12,000	Btu/hr/ton
Annual Heating Load	0	98	MMBtu	Annual Cooling Load	0	0	0	0	Ton Hrs

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

Heating System Efficiency	77%	77%	
Heat Recovery Efficiency	0%	0%	0% if none
Input Energy Required	0.0	127.3	MMBtu/yr
Input Heating Savings	**-127.3**		MMBtu/yr

Cooling System Efficiency	1.00	1.00	1.00	1.00	kW/Ton
Heat Recovery Efficiency	0%	0%	0%	0%	0% if none
Input Electric Required	0	0	0	0	kWh/yr
Input Electric Savings	**0**		**0**		kWh/yr

Exhaust - Heating	**Winter**		
Local exhaust heating energy	**Existing**	**Proposed**	
Proposed OA/exc EA flow	0	0	CFM
Fan Loading	90%	90%	
Adjusted airflow	0	0	CFM
Constant	1.08	1.08	
Space temperature	55	55	°F
Average Heating temp	34.6	34.6	°F
Ave delta temp	20.4	20.4	°F
Average heat load	0	0	Btu/Hr
# weeks per heating season	32.8	32.8	Wks/yr
Current Operation	0	0	Hrs/Wk
Constant	1,000,000	1,000,000	Btu/MMBtu
Annual Heating Load	0	0	MMBtu
Heating System Efficiency	77%	77%	
Heat Recovery Efficiency	0%	0%	0% if none
Input Energy Required	0.0	0.0	MMBtu
Input Heating Savings	**0.0**		MMBtu

Exhaust - Cooling	**Summer**		**Shoulder period**		
Local exhaust cooling energy	**Existing**	**Proposed**	**Existing**	**Proposed**	
Proposed OA flow	0	0	0	0	CFM
Fan Loading	90%	90%	90%	90%	
Adjusted airflow	0	0	0	0	CFM
Constant	4.5	4.5	4.5	4.5	
Space enthalpy (74°F 50%)	27.6	27.6	27.6	27.6	Btu/Lb
Average outdoor enthalpy	29.8	29.8	28.9	28.9	Btu/Lb
Ave delta enthalpy	2.2	2.2	1.3	1.3	Btu/Lb
Average cooling load	0	0	0	0	Btu/Hr
# of weeks per clg season	14.0	14.0	3.9	3.9	Wks/yr
Current Operation	0	0	0	0	Hrs/Wk
Constant	12,000	12,000	12,000	12,000	Btu/hr/ton
Annual Cooling Load	0	0	0	0	Ton Hrs
Cooling System Efficiency	1.00	1.00	1.00	1.00	kW/Ton
Heat Recovery Efficiency	0%	0%	0%	0%	0% if none
Input Electric Required	0	0	0	0	kWh/yr
Input Electric Savings	**0**		**0**		kWh/yr

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI
Lighting System Improvements – Savings Calculations

Savings Calculation

kWh Savings = Existing kWh - Proposed kWh

Peak kW Savings = (Existing Watts - Proposed Watts) * (1 kW/1000 W)

Annual kW Savings = Peak kW Savings x (Winter Diversity x # of months + Summer Diversity x # of months)

See lighting survey sheets for details.

	Demand Diversity	Number of
Winter	0.8	8
Summer	0.65	4

Lighting Retrofit — Safety Factor 95%

Facility	Existing Watts	Existing kWh	Proposed Watts	Proposed kWh	Peak kW Savings	Annual kW Savings	kWh Savings	Cost Savings	Guaranteed Savings: Annual kW Savings	Guaranteed Savings: kWh Savings	Guaranteed Savings: Cost Savings
Community Service Center	52,362	119,156	22,413	53,653	29.9495	269.5455	65,503	$8,616	256.068225	62,228	$8,185
DDA Office	1,925	2,728	722	1,022	1.203	10.827	1,706	$227	10.28565	1,620	$215
Ingham County Sheriff	6,173	19,026	2,845	8,305	3.328	29.952	10,721	$1,428	28.4544	10,185	$1,357
DPS	21,465	55,004	7,284	16,686	14.181	127.629	38,318	$4,100	121.24755	36,402	$3,895
DPS Pole Barn	0	0	0	0	0	0	0	$0	0	0	$0
Farmers Market	5,826	3,772	1,673	1,150	4.1535	37.3815	2,622	$343	35.512425	2,491	$326
Fire Station #2	1,895	948	845	422	1.0505	9.4545	525	$69	8.981775	499	$66
Parks and Recreation	2,409	2,770	1,116	1,283	1.293	11.637	1,487	$200	11.05515	1,413	$190
Senior Center	7,411	15,062	3,017	5,951	4.394	39.546	9,112	$1,225	37.5687	8,656	$1,164
Delhi POTW	32,268	113,864	11,729	44,421	20.539	184.851	69,443	$7,990	175.60845	65,970	$7,591
Valhalla Park	1,312	6,639	710	3,347	0.602	5.418	3,293	$448	5.1471	3,128	$425
Total	**133,046**	**338,969**	**52,353**	**136,240**	**80.6935**	**726.2415**	**202,729**	**$24,646**	**689.929425**	**192,592**	**$23,414**

Exterior Lighting — Safety Factor 95%

Facility	Existing Watts	Existing kWh	Proposed Watts	Proposed kWh	Peak kW Savings	Annual kW Savings	kWh Savings	Cost Savings	Guaranteed Savings: Annual kW Savings	Guaranteed Savings: kWh Savings	Guaranteed Savings: Cost Savings
Community Service Center	5,580	14,057	4,188	7,960	0	0	6,097	$558	0	5,792	$530
Ingham County Sheriff	3,125	13,688	808	3,539	2.317	20.853	10,148	$1,352	19.81035	9,641	$1,284
DPS	852	5,931	563	3,399	0.289	2.601	2,532	$271	2.47095	2,405	$257
Farmers Market	1,644	8,024	348	1,743	1.296	11.664	6,281	$821	11.0808	5,967	$780
Parks and Recreation	1,156	5,063	234	1,025	0.922	8.298	4,038	$544	7.8831	3,836	$517
Senior Center	728	3,191	557	2,441	0.171	1.539	749	$101	1.46205	712	$96
Delhi POTW	28,144	127,284	6,518	29,635	10.813	97.317	97,649	$6,419	92.45115	92,766	$6,098
Delhi POTW Ponds	2,556	11,195	856	3,749	1.7	15.3	7,446	$974	14.535	7,074	$926
Valhalla Park	3,007	14,463	526	2,685	2.481	22.329	11,778	$1,602	21.21255	11,189	$1,522
DDA Streetlights & Memorial Park	34,996	150,814	7,024	29,677	27.9725	251.7525	121,137	$16,220	239.164875	115,080	$15,409
Total	**81,788**	**353,710**	**21,622**	**85,855**	**47.9615**	**431.6535**	**267,855**	**$28,862**	**410.070825**	**254,462**	**$27,418**

Lighting Controls — Safety Factor 95%

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI
Lighting System Improvements – Savings Calculations

Facility	Existing Watts	Existing kWh	Proposed Watts	Proposed kWh	Peak kW Savings	Annual kW Savings	kWh Savings	Cost Savings	Annual kW Savings	kWh Savings	Cost Savings
Community Service Center	0	3,281	0	0	0	0	3,281	$300	0	3,117	$285
Ingham County Sheriff	0	2,377	0	0	0	0	2,377	$317	0	2,258	$301
DPS	0	1,577	0	0	0	0	1,577	$169	0	1,498	$160
Farmers Market	0	219	0	0	0	0	219	$29	0	208	$27
Delhi POTW	0	4,875	0	0	0	0	4,875	$259	0	4,631	$247
Valhalla Park	0	1,892	0	0	0	0	1,892	$257	0	1,797	$244
Total	**0**	**14,221**	**0**	**0**	**0**	**0**	**14,221**	**$1,331**	**0**	**13,510**	**$1,264**

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI
Variable Speed Drives/Ventilation Control – Savings Calculations

						Guaranteed Savings			
Facility	kWh Savings	Natural Gas Savings	Fuel Oil Savings	Cost Savings	Safety Factor	kWh Savings	Natural Gas Savings	Fuel Oil Savings	Cost Savings
Community Service Ce	141,771	0.0	0.0	$12,972	92%	130,430	0.0	0.0	$11,935
Delhi POTW	9,204	0.0	0.0	$490	92%	8,468	0.0	0.0	$451
Total	**150,975**	**0.0**	**0.0**	**$13,462**		138,897	**0.0**	**0.0**	**$12,385**

							Guaranteed Savings			
Facility	Item	kWh Savings	Gas Savings	Fuel Oil Savings	Cost Savings	Safety Factor	kWh Savings	Gas Savings	Fuel Oil Savings	Cost Savings
Community Service Ce	AHU-1	8,554	0	0	$783	92%	7,870	0.0	0.0	$720
Community Service Ce	AHU-2	9,106	0	0	$833	92%	8,377	0.0	0.0	$767
Community Service Ce	AHU-3	6,927	0	0	$634	92%	6,373	0.0	0.0	$583
Community Service Ce	AHU-4	8,002	0	0	$732	92%	7,362	0.0	0.0	$674
Community Service Ce	AHU-5	8,830	0	0	$808	92%	8,123	0.0	0.0	$743
Community Service Ce	AHU-6	19,250	0	0	$1,761	92%	17,710	0.0	0.0	$1,621
Community Service Ce	AHU-7	20,203	0	0	$1,849	92%	18,587	0.0	0.0	$1,701
Community Service Ce	AHU-8	20,203	0	0	$1,849	92%	18,587	0.0	0.0	$1,701
Community Service Ce	Chilled Water Pump	23,817	0	0	$2,179	92%	21,912	0.0	0.0	$2,005
Community Service Ce	Hot Water Pump	16,880	0	0	$1,545	92%	15,529	0.0	0.0	$1,421
Delhi POTW	Admin RTU	9,204	0	0	$490	92%	8,468	0.0	0.0	$451
		150,975	**0**	**0**	**$13,462**		**138,897**	**0.0**	**0.0**	**$12,385**

Engineering Formulas

Outside Air Temperature Load Profile

Fraction of year is the percentage of hours in that temperature BIN

Existing flow rate (not shown) is 100% for constant speed modulation or the same as the proposed flow rate.

Proposed flow rate is the higher of the minimum speed (flow) and the cooling load and the heating load times the maximum heating airflow %.

Existing and proposed kW Load % is a function of percentage of flow rate and the unloading curve for the equipment.

Fan or pump energy savings = $\sum$(Actual kW) x (Proposed runtime hours) x (Fraction of year %) x (Existing kW Load - Proposed kW Load)

The following applies to supply fans only for the Outside Air Temperature Load Profile

Existing heating ventilation load is prorated on outside air temperature: 0% at or above balance temperature and 100% at winter design temperature

Proposed heating ventilation load = (existing heating load) x (1 - ventilation control factor)

Ventilation control factor (CO_2 control) = 1 - (Time occupied) x (Average occupancy when occupied)

Ventilation control factor (Occupancy control) = (1 - Time occupied) x (Areas with occupancy sensors)

Peak heating ventilation load = 1.08 x (Total Airflow) x (Outside air percent) x (Room temperature - design winter temperature)

Heating ventilation savings = $\sum$(Peak heating vent load) x (Winter hours on%) x (Fraction of year%) x (8760 hours) x (Existing - Proposed Load)

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

(Heating Efficiency) x (1,000,000 Btu/MMBtu)

Existing gross cooling ventilation load is prorated on outside air temperature: 0% at or below balance temperature and 100% at summer design temp
Existing net cooling ventilation load is reduced from the gross cooling load during the economizer mode by the amount of free cooling.
Proposed net cooling ventilation load = (existing net cooling load) x (1 - ventilation control factor)
Peak cooling ventilation load = 4.5 x (Total Airflow) x (Outside air percent) x (Summer design enthalpy - discharge air enthalpy) / (12,000 Btu/ton)
Peak cooling kW = (Peak Cooling Load) x (Cooling efficiency)
Cooling Ventilation savings = $\sum$(Peak cooling kW) x (Summer hours on%) x (Fraction of year%) x (8760 hours) x (Existing - Proposed Load)

Bell Curve Load Profile

Fraction of year is the percentage of hours in that load profile.
Existing flow rate (not shown) is 100% for constant speed modulation or the same as the proposed flow rate.
Proposed flow rate is the higher of the minimum speed (flow) and load profile.
Existing and proposed kW Load % is a function of percentage of flow rate and the unloading curve for the equipment.
Fan or pump energy savings = $\sum$(Actual kW) x (Proposed runtime hours) x (Fraction of year %) x (Existing kW Load - Proposed kW Load)

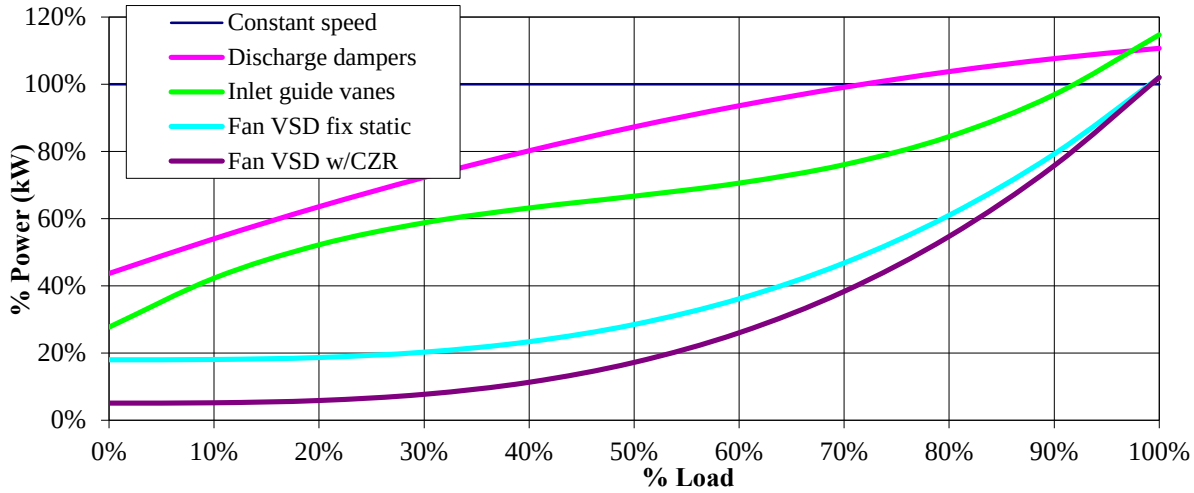
The following applies to supply fans only for the Bell Curve Load Profile.

Existing heating ventilation load is 100%
Proposed heating ventilation load = (existing heating load) x (1 - ventilation control factor)
Ventilation control factor (CO_2 control) = 1 - (Time occupied) x (Average occupancy when occupied)
Ventilation control factor (occupancy control) = (1 - Time occupied) x (Areas with occupancy sensors)
Average heating ventilation load = 1.08 x (Total Airflow) x (Outside air percent) x (Room temperature - average winter temperature)

$$\text{Heating vent savings} = \sum \frac{\text{(Average heating vent load) x (Winter hours on\%) x (Fraction of year\%) x (Annual heating hours) x (Existing - Proposed Load)}}{\text{(Heating Efficiency) x (1,000,000 Btu/MMBtu)}}$$

Existing gross and net cooling ventilation load is 100%
Proposed net cooling ventilation load = (existing net cooling load) x (1 - ventilation control factor)
Average cooling vent load = 4.5 x (Total Airflow) x (Outside air %) x (Average summer enthalpy - discharge air enthalpy) / (12,000 Btu/ton)
Average cooling kW = (Average Cooling Load) x (Cooling efficiency)
Cooling vent savings = $\sum$(Average cooling kW) x (Summer hours on%) x (Fraction of year%) x (Annual cooling hours) x (Existing - Proposed Load)

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI



Facility	Community Service Center	
Item	AHU-1	
Area Served	Parks & Rec	
Equipment type	Supply Fan	
Qty	1	
Motor HP	5	HP
Actual kW	3.39	kW
Proposed runtime	4,041	hrs/yr
Winter hrs on	46.1%	
Summer hrs on	46.1%	
Load profile basis	Outside Air Temperature	
Weather profile	MI-Lansing	
Existing modulation	Constant speed	
Proposed modulation	Fan VSD fix static	
Minimum speed	55%	
	0.40	
Electric Savings	8,554	kWh
Heating Savings	0.00	MMBtu
Cost Savings	$783	

Proposed ventilation control	Constant CFM (no savings)			
	60%			
	100%			
Total Airflow	5,010	CFM		
Outside air percent	0%			
Room temperature	72	°F	50%	rh
Balance (no load) point	57.5	°F		
Economizer temperature	67	°F		
Design winter temperature	-3.0	°F		
Maximum heating airflow	100%			
Peak ventilation heating load	0	Btu/hr		
Heating efficiency	77%			
Average summer enthalpy	28.9	Btu/lb		
Summer design temperature	86	°F db	74	°F wb
Cooling discharge air temperature	55	°F		
Peak ventilation cooling load	0.00	tons		
Cooling efficiency	1.00	kW/ton		
Peak cooling kW	0.0	kW		

Supply Fan	Heating Ventilation	Cooling Ventilation

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

Outside Air Temp	Fraction of year	Existing kW Load	Proposed Flow Rate	Proposed kW Load	Energy Savings (kWh)	Existing Load	Proposed Load	Heating Savings (MMBtu)	Gross Existing Load	Net Existing Load	Net Proposed Load	Cooling Savings (kWh)
8760	1	0		0					0%			
107.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	100%	0
102.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	100%	0
97.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	100%	0
92.5	0.1%	100%	100%	102%	0	0%	0%	0.0	100%	100%	100%	0
87.5	0.4%	100%	100%	102%	-1	0%	0%	0.0	100%	100%	100%	0
82.5	4.0%	100%	88%	75%	140	0%	0%	0.0	88%	88%	88%	0
77.5	5.6%	100%	70%	47%	409	0%	0%	0.0	70%	70%	70%	0
72.5	7.0%	100%	55%	32%	649	0%	0%	0.0	53%	53%	53%	0
67.5	6.7%	100%	55%	32%	622	0%	0%	0.0	35%	35%	35%	0
62.5	8.8%	100%	55%	32%	821	0%	0%	0.0	18%	0%	0%	0
57.5	7.2%	100%	55%	32%	667	0%	0%	0.0	0%	0%	0%	0
52.5	7.6%	100%	55%	32%	708	8%	8%	0.0	0%	0%	0%	0
47.5	6.7%	100%	55%	32%	624	17%	17%	0.0	0%	0%	0%	0
42.5	6.5%	100%	55%	32%	603	25%	25%	0.0	0%	0%	0%	0
37.5	9.7%	100%	55%	32%	901	33%	33%	0.0	0%	0%	0%	0
32.5	8.5%	100%	55%	32%	790	41%	41%	0.0	0%	0%	0%	0
27.5	6.0%	100%	55%	32%	560	50%	50%	0.0	0%	0%	0%	0
22.5	4.9%	100%	58%	34%	442	58%	58%	0.0	0%	0%	0%	0
17.5	4.3%	100%	66%	42%	340	66%	66%	0.0	0%	0%	0%	0
12.5	2.8%	100%	74%	53%	180	74%	74%	0.0	0%	0%	0%	0
7.5	1.6%	100%	83%	65%	74	83%	83%	0.0	0%	0%	0%	0
2.5	1.1%	100%	91%	81%	27	91%	91%	0.0	0%	0%	0%	0
-2.5	0.4%	100%	99%	100%	0	99%	99%	0.0	0%	0%	0%	0
-7.5	0.3%	100%	100%	102%	-1	100%	100%	0.0	0%	0%	0%	0
-12.5	0.1%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-17.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-22.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-27.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-32.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-37.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
Total	**100.0%**	13,703		5,149	**8,554**	0.0	0.0	**0.0**		0	0	**0**

Facility	Community Service Center	Proposed ventilation control	Occupancy control
Item	AHU-2	Time occupied	60%
Area Served	SE Offices	Areas with occupancy sensors	100%
Equipment type	Supply Fan		
Qty	1	Total Airflow	3,300 CFM
Motor HP	5 HP	Outside air percent	0%

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

Actual kW	3.39	kW	Room temperature	72	°F	50%	rh
Proposed runtime	4,302	hrs/yr	Balance (no load) point	57.5	°F		
Winter hrs on	49.1%		Economizer temperature	67	°F		
Summer hrs on	49.1%						
			Design winter temperature	-3.0	°F		
			Maximum heating airflow	100%			
Load profile basis	Outside Air Temperature		Peak ventilation heating load	0	Btu/hr		
Weather profile	MI-Lansing		Heating efficiency	77%			
Existing modulation	Constant speed						
Proposed modulation	Fan VSD fix static		Average summer enthalpy	28.9	Btu/lb		
Minimum speed	55%		Summer design temperature	86	°F db	74	°F wb
	0.40		Cooling discharge air temperature	55	°F		
Electric Savings	9,106	kWh	Peak ventilation cooling load	0.00	tons		
Heating Savings	0.00	MMBtu	Cooling efficiency	1.00	kW/ton		
Cost Savings	$833		Peak cooling kW	0.0	kW		

		Supply Fan				Heating Ventilation			Cooling Ventilation			
Outside Air Temp	Fraction of year	Existing kW Load	Proposed Flow Rate	Proposed kW Load	Energy Savings (kWh)	Existing Load	Proposed Load	Heating Savings (MMBtu)	Gross Existing Load	Net Existing Load	Net Proposed Load	Cooling Savings (kWh)
107.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
102.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
97.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
92.5	0.1%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
87.5	0.4%	100%	100%	102%	-1	0%	0%	0.0	100%	100%	60%	0
82.5	4.0%	100%	88%	75%	149	0%	0%	0.0	88%	88%	53%	0
77.5	5.6%	100%	70%	47%	435	0%	0%	0.0	70%	70%	42%	0
72.5	7.0%	100%	55%	32%	691	0%	0%	0.0	53%	53%	32%	0
67.5	6.7%	100%	55%	32%	663	0%	0%	0.0	35%	35%	21%	0
62.5	8.8%	100%	55%	32%	874	0%	0%	0.0	18%	0%	0%	0
57.5	7.2%	100%	55%	32%	710	0%	0%	0.0	0%	0%	0%	0
52.5	7.6%	100%	55%	32%	753	8%	5%	0.0	0%	0%	0%	0
47.5	6.7%	100%	55%	32%	664	17%	10%	0.0	0%	0%	0%	0
42.5	6.5%	100%	55%	32%	642	25%	15%	0.0	0%	0%	0%	0
37.5	9.7%	100%	55%	32%	959	33%	20%	0.0	0%	0%	0%	0
32.5	8.5%	100%	55%	32%	840	41%	25%	0.0	0%	0%	0%	0
27.5	6.0%	100%	55%	32%	596	50%	30%	0.0	0%	0%	0%	0
22.5	4.9%	100%	58%	34%	471	58%	35%	0.0	0%	0%	0%	0
17.5	4.3%	100%	66%	42%	361	66%	40%	0.0	0%	0%	0%	0
12.5	2.8%	100%	74%	53%	192	74%	45%	0.0	0%	0%	0%	0
7.5	1.6%	100%	83%	65%	78	83%	50%	0.0	0%	0%	0%	0

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

2.5	1.1%	100%	91%	81%	29	91%	55%	0.0	0%	0%	0%	0
-2.5	0.4%	100%	99%	100%	0	99%	60%	0.0	0%	0%	0%	0
-7.5	0.3%	100%	100%	102%	-1	100%	60%	0.0	0%	0%	0%	0
-12.5	0.1%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-17.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-22.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-27.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-32.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-37.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
Total	**100.0%**	14,587		5,481	**9,106**	0.0	0.0	**0.0**		0	0	**0**

Facility	Community Service Center		Proposed ventilation control	Occupancy control			
Item	AHU-3		Time occupied	60%			
Area Served	NE Offices		Areas with occupancy sensors	100%			
Equipment type	Supply Fan						
Qty	1		Total Airflow	2,900	CFM		
Motor HP	5	HP	Outside air percent	0%			
Actual kW	3.39	kW	Room temperature	72	°F	50%	rh
Proposed runtime	3,780	hrs/yr	Balance (no load) point	57.5	°F		
Winter hrs on	43.2%		Economizer temperature	67	°F		
Summer hrs on	43.2%						
			Average winter temperature	34.6	°F		
			Maximum heating airflow	100%			
Load profile basis	Bell curve 1		Average ventilation heating load	0	Btu/hr		
Weather profile	MI-Lansing		Heating efficiency	77%			
Existing modulation	Constant speed						
Proposed modulation	Fan VSD fix static		Average summer enthalpy	28.9	Btu/lb		
Minimum speed	30%		Summer design temperature	86	°F db	74	°F wb
	0.40		Cooling discharge air temperature	55	°F		
Electric Savings	6,927	kWh	Average ventilation cooling load	0.00	tons		
Heating Savings	0.00	MMBtu	Cooling efficiency	1.00	kW/ton		
Cost Savings	$634		Average cooling kW	0.0	kW		

		Supply Fan				Heating Ventilation			Cooling Ventilation			
Load profile	**Fraction of year**	**Existing kW Load**	**Proposed Flow Rate**	**Proposed kW Load**	**Energy Savings (kWh)**	**Existing Load**	**Proposed Load**	**Heating Savings (MMBtu)**	**Gross Existing Load**	**Net Existing Load**	**Net Proposed Load**	**Cooling Savings (kWh)**
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0.05	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0.1	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0.15	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0.2	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

0.25	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0.3	1.9%	100%	30%	20%	196	100%	60%	0.0	100%	100%	60%	0
0.35	3.8%	100%	35%	22%	379	100%	60%	0.0	100%	100%	60%	0
0.4	5.5%	100%	40%	23%	537	100%	60%	0.0	100%	100%	60%	0
0.45	7.0%	100%	45%	26%	664	100%	60%	0.0	100%	100%	60%	0
0.5	8.2%	100%	50%	29%	751	100%	60%	0.0	100%	100%	60%	0
0.55	9.1%	100%	55%	32%	793	100%	60%	0.0	100%	100%	60%	0
0.6	9.7%	100%	60%	36%	791	100%	60%	0.0	100%	100%	60%	0
0.65	9.8%	100%	65%	41%	744	100%	60%	0.0	100%	100%	60%	0
0.7	9.7%	100%	70%	47%	659	100%	60%	0.0	100%	100%	60%	0
0.75	9.1%	100%	75%	53%	543	100%	60%	0.0	100%	100%	60%	0
0.8	8.2%	100%	80%	61%	409	100%	60%	0.0	100%	100%	60%	0
0.85	7.0%	100%	85%	70%	272	100%	60%	0.0	100%	100%	60%	0
0.9	5.5%	100%	90%	79%	146	100%	60%	0.0	100%	100%	60%	0
0.95	3.8%	100%	95%	90%	48	100%	60%	0.0	100%	100%	60%	0
1	1.9%	100%	100%	102%	-5	100%	60%	0.0	100%	100%	60%	0
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
0	0.0%	100%	30%	20%	0	100%	60%	0.0	100%	100%	60%	0
Total	**100.0%**	12,819		5,892	**6,927**	0.0	0.0	**0.0**		0	0	**0**

Facility	Community Service Center		Proposed ventilation control	Occupancy control			
Item	AHU-4		Time occupied	60%			
Area Served	Treasurer/Clerk		Areas with occupancy sensors	100%			
Equipment type	Supply Fan						
Qty	1		Total Airflow	3,800	CFM		
Motor HP	5	HP	Outside air percent	0%			
Actual kW	3.39	kW	Room temperature	72	°F	50%	rh
Proposed runtime	3,780	hrs/yr	Balance (no load) point	57.5	°F		
Winter hrs on	43.2%		Economizer temperature	67	°F		
Summer hrs on	43.2%						
			Design winter temperature	-3.0	°F		
			Maximum heating airflow	100%			
Load profile basis	Outside Air Temperature		Peak ventilation heating load	0	Btu/hr		
Weather profile	MI-Lansing		Heating efficiency	77%			
Existing modulation	Constant speed						

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

Proposed modulation	Fan VSD fix static		Average summer enthalpy	28.9	Btu/lb		
Minimum speed	55%		Summer design temperature	86	°F db	74	°F wb
	0.40		Cooling discharge air temperature	55	°F		
Electric Savings	8,002	kWh	Peak ventilation cooling load	0.00	tons		
Heating Savings	0.00	MMBtu	Cooling efficiency	1.00	kW/ton		
Cost Savings	$732		Peak cooling kW	0.0	kW		

		Supply Fan				Heating Ventilation			Cooling Ventilation			
Outside Air Temp	Fraction of year	Existing kW Load	Proposed Flow Rate	Proposed kW Load	Energy Savings (kWh)	Existing Load	Proposed Load	Heating Savings (MMBtu)	Gross Existing Load	Net Existing Load	Net Proposed Load	Cooling Savings (kWh)
107.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
102.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
97.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
92.5	0.1%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
87.5	0.4%	100%	100%	102%	-1	0%	0%	0.0	100%	100%	60%	0
82.5	4.0%	100%	88%	75%	131	0%	0%	0.0	88%	88%	53%	0
77.5	5.6%	100%	70%	47%	382	0%	0%	0.0	70%	70%	42%	0
72.5	7.0%	100%	55%	32%	607	0%	0%	0.0	53%	53%	32%	0
67.5	6.7%	100%	55%	32%	582	0%	0%	0.0	35%	35%	21%	0
62.5	8.8%	100%	55%	32%	768	0%	0%	0.0	18%	0%	0%	0
57.5	7.2%	100%	55%	32%	624	0%	0%	0.0	0%	0%	0%	0
52.5	7.6%	100%	55%	32%	662	8%	5%	0.0	0%	0%	0%	0
47.5	6.7%	100%	55%	32%	583	17%	10%	0.0	0%	0%	0%	0
42.5	6.5%	100%	55%	32%	564	25%	15%	0.0	0%	0%	0%	0
37.5	9.7%	100%	55%	32%	843	33%	20%	0.0	0%	0%	0%	0
32.5	8.5%	100%	55%	32%	739	41%	25%	0.0	0%	0%	0%	0
27.5	6.0%	100%	55%	32%	524	50%	30%	0.0	0%	0%	0%	0
22.5	4.9%	100%	58%	34%	414	58%	35%	0.0	0%	0%	0%	0
17.5	4.3%	100%	66%	42%	318	66%	40%	0.0	0%	0%	0%	0
12.5	2.8%	100%	74%	53%	169	74%	45%	0.0	0%	0%	0%	0
7.5	1.6%	100%	83%	65%	69	83%	50%	0.0	0%	0%	0%	0
2.5	1.1%	100%	91%	81%	25	91%	55%	0.0	0%	0%	0%	0
-2.5	0.4%	100%	99%	100%	0	99%	60%	0.0	0%	0%	0%	0
-7.5	0.3%	100%	100%	102%	-1	100%	60%	0.0	0%	0%	0%	0
-12.5	0.1%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-17.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-22.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-27.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-32.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-37.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

Total	**100.0%**	12,819		4,817	**8,002**	0.0	0.0	**0.0**		0	0	**0**

Facility	Community Service Center		Proposed ventilation control	Occupancy control			
Item	AHU-5		Time occupied	60%			
Area Served	Board Room		Areas with occupancy sensors	100%			
Equipment type	Supply Fan						
Qty	1		Total Airflow	5,800	CFM		
Motor HP	5	HP	Outside air percent	0%			
Actual kW	3.39	kW	Room temperature	72	°F	50%	rh
Proposed runtime	4,171	hrs/yr	Balance (no load) point	57.5	°F		
Winter hrs on	47.6%		Economizer temperature	67	°F		
Summer hrs on	47.6%						
			Design winter temperature	-3.0	°F		
			Maximum heating airflow	100%			
Load profile basis	Outside Air Temperature		Peak ventilation heating load	0	Btu/hr		
Weather profile	MI-Lansing		Heating efficiency	77%			
Existing modulation	Constant speed						
Proposed modulation	Fan VSD fix static		Average summer enthalpy	28.9	Btu/lb		
Minimum speed	55%		Summer design temperature	86	°F db	74	°F wb
	0.40		Cooling discharge air temperature	55	°F		
Electric Savings	8,830	kWh	Peak ventilation cooling load	0.00	tons		
Heating Savings	0.00	MMBtu	Cooling efficiency	1.00	kW/ton		
Cost Savings	$808		Peak cooling kW	0.0	kW		

		Supply Fan				Heating Ventilation			Cooling Ventilation			
Outside Air Temp	**Fraction of year**	**Existing kW Load**	**Proposed Flow Rate**	**Proposed kW Load**	**Energy Savings (kWh)**	**Existing Load**	**Proposed Load**	**Heating Savings (MMBtu)**	**Gross Existing Load**	**Net Existing Load**	**Net Proposed Load**	**Cooling Savings (kWh)**
107.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
102.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
97.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
92.5	0.1%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
87.5	0.4%	100%	100%	102%	-1	0%	0%	0.0	100%	100%	60%	0
82.5	4.0%	100%	88%	75%	144	0%	0%	0.0	88%	88%	53%	0
77.5	5.6%	100%	70%	47%	422	0%	0%	0.0	70%	70%	42%	0
72.5	7.0%	100%	55%	32%	670	0%	0%	0.0	53%	53%	32%	0
67.5	6.7%	100%	55%	32%	643	0%	0%	0.0	35%	35%	21%	0
62.5	8.8%	100%	55%	32%	848	0%	0%	0.0	18%	0%	0%	0
57.5	7.2%	100%	55%	32%	689	0%	0%	0.0	0%	0%	0%	0
52.5	7.6%	100%	55%	32%	730	8%	5%	0.0	0%	0%	0%	0
47.5	6.7%	100%	55%	32%	644	17%	10%	0.0	0%	0%	0%	0
42.5	6.5%	100%	55%	32%	623	25%	15%	0.0	0%	0%	0%	0

Exhibit D-4: Energy Calculations
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37.5	9.7%	100%	55%	32%	930	33%	20%	0.0	0%	0%	0%	0
32.5	8.5%	100%	55%	32%	815	41%	25%	0.0	0%	0%	0%	0
27.5	6.0%	100%	55%	32%	578	50%	30%	0.0	0%	0%	0%	0
22.5	4.9%	100%	58%	34%	456	58%	35%	0.0	0%	0%	0%	0
17.5	4.3%	100%	66%	42%	350	66%	40%	0.0	0%	0%	0%	0
12.5	2.8%	100%	74%	53%	186	74%	45%	0.0	0%	0%	0%	0
7.5	1.6%	100%	83%	65%	76	83%	50%	0.0	0%	0%	0%	0
2.5	1.1%	100%	91%	81%	28	91%	55%	0.0	0%	0%	0%	0
-2.5	0.4%	100%	99%	100%	0	99%	60%	0.0	0%	0%	0%	0
-7.5	0.3%	100%	100%	102%	-1	100%	60%	0.0	0%	0%	0%	0
-12.5	0.1%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-17.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-22.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-27.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-32.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-37.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
Total	**100.0%**	14,145		5,315	**8,830**	0.0	0.0	**0.0**		0	0	**0**

Facility	Community Service Center		Proposed ventilation control	Occupancy control			
Item	AHU-6		Time occupied	60%			
Area Served	Library		Areas with occupancy sensors	100%			
Equipment type	Supply Fan						
Qty	1		Total Airflow	7,815	CFM		
Motor HP	10	HP	Outside air percent	0%			
Actual kW	6.29	kW	Room temperature	72	°F	50%	rh
Proposed runtime	4,901	hrs/yr	Balance (no load) point	57.5	°F		
Winter hrs on	56.0%		Economizer temperature	67	°F		
Summer hrs on	56.0%						
			Design winter temperature	-3.0	°F		
			Maximum heating airflow	100%			
Load profile basis	Outside Air Temperature		Peak ventilation heating load	0	Btu/hr		
Weather profile	MI-Lansing		Heating efficiency	77%			
Existing modulation	Constant speed						
Proposed modulation	Fan VSD fix static		Average summer enthalpy	28.9	Btu/lb		
Minimum speed	55%		Summer design temperature	86	°F db	74	°F wb
	0.40		Cooling discharge air temperature	55	°F		
Electric Savings	19,250	kWh	Peak ventilation cooling load	0.00	tons		
Heating Savings	0.00	MMBtu	Cooling efficiency	1.00	kW/ton		
Cost Savings	$1,761		Peak cooling kW	0.0	kW		

Supply Fan	Heating Ventilation	Cooling Ventilation

Exhibit D-4: Energy Calculations
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Outside Air Temp	Fraction of year	Existing kW Load	Proposed Flow Rate	Proposed kW Load	Energy Savings (kWh)	Existing Load	Proposed Load	Heating Savings (MMBtu)	Gross Existing Load	Net Existing Load	Net Proposed Load	Cooling Savings (kWh)
107.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
102.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
97.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
92.5	0.1%	100%	100%	102%	-1	0%	0%	0.0	100%	100%	60%	0
87.5	0.4%	100%	100%	102%	-3	0%	0%	0.0	100%	100%	60%	0
82.5	4.0%	100%	88%	75%	314	0%	0%	0.0	88%	88%	53%	0
77.5	5.6%	100%	70%	47%	919	0%	0%	0.0	70%	70%	42%	0
72.5	7.0%	100%	55%	32%	1,461	0%	0%	0.0	53%	53%	32%	0
67.5	6.7%	100%	55%	32%	1,401	0%	0%	0.0	35%	35%	21%	0
62.5	8.8%	100%	55%	32%	1,849	0%	0%	0.0	18%	0%	0%	0
57.5	7.2%	100%	55%	32%	1,501	0%	0%	0.0	0%	0%	0%	0
52.5	7.6%	100%	55%	32%	1,592	8%	5%	0.0	0%	0%	0%	0
47.5	6.7%	100%	55%	32%	1,403	17%	10%	0.0	0%	0%	0%	0
42.5	6.5%	100%	55%	32%	1,358	25%	15%	0.0	0%	0%	0%	0
37.5	9.7%	100%	55%	32%	2,028	33%	20%	0.0	0%	0%	0%	0
32.5	8.5%	100%	55%	32%	1,777	41%	25%	0.0	0%	0%	0%	0
27.5	6.0%	100%	55%	32%	1,260	50%	30%	0.0	0%	0%	0%	0
22.5	4.9%	100%	58%	34%	995	58%	35%	0.0	0%	0%	0%	0
17.5	4.3%	100%	66%	42%	764	66%	40%	0.0	0%	0%	0%	0
12.5	2.8%	100%	74%	53%	406	74%	45%	0.0	0%	0%	0%	0
7.5	1.6%	100%	83%	65%	166	83%	50%	0.0	0%	0%	0%	0
2.5	1.1%	100%	91%	81%	61	91%	55%	0.0	0%	0%	0%	0
-2.5	0.4%	100%	99%	100%	0	99%	60%	0.0	0%	0%	0%	0
-7.5	0.3%	100%	100%	102%	-2	100%	60%	0.0	0%	0%	0%	0
-12.5	0.1%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-17.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-22.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-27.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-32.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-37.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
Total	**100.0%**	30,838		11,588	**19,250**	0.0	0.0	**0.0**		0	0	**0**

Facility	Community Service Center		Proposed ventilation control	Occupancy control	
Item	AHU-7		Time occupied	60%	
Area Served	Fire Department		Areas with occupancy sensors	100%	
Equipment type	Supply Fan				
Qty	1		Total Airflow	4,910	CFM
Motor HP	5	HP	Outside air percent	0%	
Actual kW	3.39	kW	Room temperature	72	°F 50% rh

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Proposed runtime	8,760	hrs/yr
Winter hrs on	100.0%	
Summer hrs on	100.0%	
Load profile basis	Outside Air Temperature	
Weather profile	MI-Lansing	
Existing modulation	Constant speed	
Proposed modulation	Fan VSD fix static	
Minimum speed	40%	
	0.40	
Electric Savings	20,203	kWh
Heating Savings	0.00	MMBtu
Cost Savings	$1,849	

Balance (no load) point	57.5	°F		
Economizer temperature	67	°F		
Design winter temperature	-3.0	°F		
Maximum heating airflow	100%			
Peak ventilation heating load	0	Btu/hr		
Heating efficiency	77%			
Average summer enthalpy	28.9	Btu/lb		
Summer design temperature	86	°F db	74	°F wb
Cooling discharge air temperature	55	°F		
Peak ventilation cooling load	0.00	tons		
Cooling efficiency	1.00	kW/ton		
Peak cooling kW	0.0	kW		

		Supply Fan				Heating Ventilation			Cooling Ventilation			
Outside Air Temp	Fraction of year	Existing kW Load	Proposed Flow Rate	Proposed kW Load	Energy Savings (kWh)	Existing Load	Proposed Load	Heating Savings (MMBtu)	Gross Existing Load	Net Existing Load	Net Proposed Load	Cooling Savings (kWh)
107.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
102.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
97.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
92.5	0.1%	100%	100%	102%	-1	0%	0%	0.0	100%	100%	60%	0
87.5	0.4%	100%	100%	102%	-3	0%	0%	0.0	100%	100%	60%	0
82.5	4.0%	100%	88%	75%	303	0%	0%	0.0	88%	88%	53%	0
77.5	5.6%	100%	70%	47%	886	0%	0%	0.0	70%	70%	42%	0
72.5	7.0%	100%	53%	30%	1,443	0%	0%	0.0	53%	53%	32%	0
67.5	6.7%	100%	40%	23%	1,520	0%	0%	0.0	35%	35%	21%	0
62.5	8.8%	100%	40%	23%	2,006	0%	0%	0.0	18%	0%	0%	0
57.5	7.2%	100%	40%	23%	1,629	0%	0%	0.0	0%	0%	0%	0
52.5	7.6%	100%	40%	23%	1,728	8%	5%	0.0	0%	0%	0%	0
47.5	6.7%	100%	40%	23%	1,523	17%	10%	0.0	0%	0%	0%	0
42.5	6.5%	100%	40%	23%	1,473	25%	15%	0.0	0%	0%	0%	0
37.5	9.7%	100%	40%	23%	2,201	33%	20%	0.0	0%	0%	0%	0
32.5	8.5%	100%	41%	24%	1,914	41%	25%	0.0	0%	0%	0%	0
27.5	6.0%	100%	50%	28%	1,280	50%	30%	0.0	0%	0%	0%	0
22.5	4.9%	100%	58%	34%	958	58%	35%	0.0	0%	0%	0%	0
17.5	4.3%	100%	66%	42%	736	66%	40%	0.0	0%	0%	0%	0
12.5	2.8%	100%	74%	53%	391	74%	45%	0.0	0%	0%	0%	0
7.5	1.6%	100%	83%	65%	159	83%	50%	0.0	0%	0%	0%	0
2.5	1.1%	100%	91%	81%	59	91%	55%	0.0	0%	0%	0%	0

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-2.5	0.4%	100%	99%	100%	0	99%	60%	0.0	0%	0%	0%	0
-7.5	0.3%	100%	100%	102%	-1	100%	60%	0.0	0%	0%	0%	0
-12.5	0.1%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-17.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-22.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-27.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-32.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-37.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
Total	**100.0%**	29,704		9,501	**20,203**	0.0	0.0	**0.0**		0	0	**0**

Facility	Community Service Center		Proposed ventilation control	Occupancy control			
Item	AHU-8		Time occupied	60%			
Area Served	Basement		Areas with occupancy sensors	100%			
Equipment type	Supply Fan						
Qty	1		Total Airflow	4,240	CFM		
Motor HP	5	HP	Outside air percent	0%			
Actual kW	3.39	kW	Room temperature	72	°F	50%	rh
Proposed runtime	8,760	hrs/yr	Balance (no load) point	57.5	°F		
Winter hrs on	100.0%		Economizer temperature	60	°F		
Summer hrs on	100.0%						
			Design winter temperature	-3.0	°F		
			Maximum heating airflow	100%			
Load profile basis	Outside Air Temperature		Peak ventilation heating load	0	Btu/hr		
Weather profile	MI-Lansing		Heating efficiency	77%			
Existing modulation	Constant speed						
Proposed modulation	Fan VSD fix static		Average summer enthalpy	28.9	Btu/lb		
Minimum speed	40%		Summer design temperature	86	°F db	74	°F wb
	0.40		Cooling discharge air temperature	55	°F		
Electric Savings	20,203	kWh	Peak ventilation cooling load	0.00	tons		
Heating Savings	0.00	MMBtu	Cooling efficiency	1.00	kW/ton		
Cost Savings	$1,849		Peak cooling kW	0.0	kW		

		Supply Fan				Heating Ventilation			Cooling Ventilation			
Outside Air Temp	**Fraction of year**	**Existing kW Load**	**Proposed Flow Rate**	**Proposed kW Load**	**Energy Savings (kWh)**	**Existing Load**	**Proposed Load**	**Heating Savings (MMBtu)**	**Gross Existing Load**	**Net Existing Load**	**Net Proposed Load**	**Cooling Savings (kWh)**
107.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
102.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
97.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
92.5	0.1%	100%	100%	102%	-1	0%	0%	0.0	100%	100%	60%	0
87.5	0.4%	100%	100%	102%	-3	0%	0%	0.0	100%	100%	60%	0
82.5	4.0%	100%	88%	75%	303	0%	0%	0.0	88%	88%	53%	0

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

77.5	5.6%	100%	70%	47%	886	0%	0%	0.0	70%	70%	42%	0
72.5	7.0%	100%	53%	30%	1,443	0%	0%	0.0	53%	53%	32%	0
67.5	6.7%	100%	40%	23%	1,520	0%	0%	0.0	35%	35%	21%	0
62.5	8.8%	100%	40%	23%	2,006	0%	0%	0.0	18%	18%	11%	0
57.5	7.2%	100%	40%	23%	1,629	0%	0%	0.0	0%	0%	0%	0
52.5	7.6%	100%	40%	23%	1,728	8%	5%	0.0	0%	0%	0%	0
47.5	6.7%	100%	40%	23%	1,523	17%	10%	0.0	0%	0%	0%	0
42.5	6.5%	100%	40%	23%	1,473	25%	15%	0.0	0%	0%	0%	0
37.5	9.7%	100%	40%	23%	2,201	33%	20%	0.0	0%	0%	0%	0
32.5	8.5%	100%	41%	24%	1,914	41%	25%	0.0	0%	0%	0%	0
27.5	6.0%	100%	50%	28%	1,280	50%	30%	0.0	0%	0%	0%	0
22.5	4.9%	100%	58%	34%	958	58%	35%	0.0	0%	0%	0%	0
17.5	4.3%	100%	66%	42%	736	66%	40%	0.0	0%	0%	0%	0
12.5	2.8%	100%	74%	53%	391	74%	45%	0.0	0%	0%	0%	0
7.5	1.6%	100%	83%	65%	159	83%	50%	0.0	0%	0%	0%	0
2.5	1.1%	100%	91%	81%	59	91%	55%	0.0	0%	0%	0%	0
-2.5	0.4%	100%	99%	100%	0	99%	60%	0.0	0%	0%	0%	0
-7.5	0.3%	100%	100%	102%	-1	100%	60%	0.0	0%	0%	0%	0
-12.5	0.1%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-17.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-22.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-27.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-32.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
-37.5	0.0%	100%	100%	102%	0	100%	60%	0.0	0%	0%	0%	0
Total	**100.0%**	29,704		9,501	**20,203**	0.0	0.0	**0.0**		0	0	**0**

Facility	Community Service Center		Proposed ventilation control	Occupancy control		
Item	Cooling Tower Fan		Time occupied	60%		
Area Served	Cooling Tower		Areas with occupancy sensors	100%		
Equipment type	Other Fan					
Qty	1		Total Airflow	0	CFM	
Motor HP	20	HP	Outside air percent	100%		
Actual kW	9.35	kW	Room temperature	72	°F	50% rh
Proposed runtime	3,013	hrs/yr	Balance (no load) point	57.5	°F	
Winter hrs on	0.0%		Economizer temperature	67	°F	
Summer hrs on	128.1%					
Enable temperature	60	°F	Design winter temperature	-3.0	°F	
			Maximum heating airflow	100%		
Load profile basis	Outside Air Temperature		Peak ventilation heating load	0	Btu/hr	
Weather profile	MI-Lansing		Heating efficiency	77%		
Existing modulation	Fan VSD fix static					
Proposed modulation	Fan VSD fix static		Average summer enthalpy	28.9	Btu/lb	

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

Minimum speed	45%	
	0.40	
Electric Savings	0	kWh
Heating Savings	0.00	MMBtu
Cost Savings	$0	

Summer design temperature	86	°F db	74	°F wb
Cooling discharge air temperature	55	°F		
Peak ventilation cooling load	0.00	tons		
Cooling efficiency	1.00	kW/ton		
Peak cooling kW	0.0	kW		

		Other Fan				Heating Ventilation			Cooling Ventilation			
Outside Air Temp	**Fraction of year**	**Existing kW Load**	**Proposed Flow Rate**	**Proposed kW Load**	**Energy Savings (kWh)**	**Existing Load**	**Proposed Load**	**Heating Savings (MMBtu)**	**Gross Existing Load**	**Net Existing Load**	**Net Proposed Load**	**Cooling Savings (kWh)**
107.5	0.0%	102%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
102.5	0.0%	102%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
97.5	0.0%	102%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
92.5	0.3%	102%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
87.5	1.3%	102%	100%	102%	0	0%	0%	0.0	100%	100%	60%	0
82.5	11.7%	75%	88%	75%	0	0%	0%	0.0	88%	88%	53%	0
77.5	16.4%	47%	70%	47%	0	0%	0%	0.0	70%	70%	42%	0
72.5	20.2%	30%	53%	30%	0	0%	0%	0.0	53%	53%	32%	0
67.5	19.4%	26%	45%	26%	0	0%	0%	0.0	35%	35%	21%	0
62.5	25.6%	26%	45%	26%	0	0%	0%	0.0	18%	0%	0%	0
57.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
52.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
47.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
42.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
37.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
32.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
27.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
22.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
17.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
12.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
7.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
2.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-2.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-7.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-12.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-17.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-22.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-27.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-32.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-37.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
Total	**94.9%**	10,059		10,059	**0**	0.0	0.0	**0.0**		0	0	**0**

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

Facility	Community Service Center		Proposed ventilation control	Occupancy control				
Item	Chilled Water Pump		Time occupied	60%				
Area Served	Chiller		Areas with occupancy sensors	100%				
Equipment type	Pump							
Qty	1		Total Airflow	0	CFM			
Motor HP	10	HP	Outside air percent	100%				
Actual kW	6.29	kW	Room temperature	72	°F	50%	rh	
Proposed runtime	6,292	hrs/yr	Balance (no load) point	57.5	°F			
Winter hrs on	0.0%		Economizer temperature	67	°F			
Summer hrs on	267.5%							
Enable temperature	35	°F	Design winter temperature	-3.0	°F			
			Maximum heating airflow	100%				
Load profile basis	Outside Air Temperature		Peak ventilation heating load	0	Btu/hr			
Weather profile	MI-Lansing		Heating efficiency	77%				
Existing modulation	Constant speed							
Proposed modulation	Pump VSD		Average summer enthalpy	28.9	Btu/lb			
Minimum speed	35%		Summer design temperature	86	°F db	74	°F wb	
Fixed pump head	0.30		Cooling discharge air temperature	55	°F			
Electric Savings	23,817	kWh	Peak ventilation cooling load	0.00	tons			
Heating Savings	0.00	MMBtu	Cooling efficiency	1.00	kW/ton			
Cost Savings	$2,179		Peak cooling kW	0.0	kW			

		Pump				Heating Ventilation			Cooling Ventilation			
Outside Air Temp	Fraction of year	Existing kW Load	Proposed Flow Rate	Proposed kW Load	Energy Savings (kWh)	Existing Load	Proposed Load	Heating Savings (MMBtu)	Gross Existing Load	Net Existing Load	Net Proposed Load	Cooling Savings (kWh)
107.5	0.0%	100%	100%	100%	0	0%	0%	0.0	100%	100%	60%	0
102.5	0.0%	100%	100%	100%	0	0%	0%	0.0	100%	100%	60%	0
97.5	0.0%	100%	100%	100%	0	0%	0%	0.0	100%	100%	60%	0
92.5	0.1%	100%	100%	100%	0	0%	0%	0.0	100%	100%	60%	0
87.5	0.6%	100%	100%	100%	0	0%	0%	0.0	100%	100%	60%	0
82.5	5.6%	100%	88%	77%	505	0%	0%	0.0	88%	88%	53%	0
77.5	7.8%	100%	70%	54%	1,421	0%	0%	0.0	70%	70%	42%	0
72.5	9.7%	100%	53%	40%	2,295	0%	0%	0.0	53%	53%	32%	0
67.5	9.3%	100%	35%	33%	2,465	0%	0%	0.0	35%	35%	21%	0
62.5	12.3%	100%	35%	33%	3,254	0%	0%	0.0	18%	0%	0%	0
57.5	10.0%	100%	35%	33%	2,643	0%	0%	0.0	0%	0%	0%	0
52.5	10.6%	100%	35%	33%	2,803	8%	5%	0.0	0%	0%	0%	0
47.5	9.3%	100%	35%	33%	2,470	17%	10%	0.0	0%	0%	0%	0
42.5	9.0%	100%	35%	33%	2,390	25%	15%	0.0	0%	0%	0%	0
37.5	13.5%	100%	35%	33%	3,570	33%	20%	0.0	0%	0%	0%	0

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

32.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
27.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
22.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
17.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
12.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
7.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
2.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-2.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-7.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-12.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-17.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-22.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-27.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-32.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
-37.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
Total	**97.8%**	38,706		14,889	**23,817**	0.0	0.0	**0.0**		0	0	**0**

Facility	Community Service Center		Proposed ventilation control	Occupancy control			
Item	Hot Water Pump		Time occupied	60%			
Area Served	HW System		Areas with occupancy sensors	100%			
Equipment type	Pump						
Qty	1		Total Airflow	0	CFM		
Motor HP	10	HP	Outside air percent	100%			
Actual kW	6.29	kW	Room temperature	72	°F	50%	rh
Proposed runtime	5,504	hrs/yr	Balance (no load) point	57.5	°F		
Winter hrs on	85.9%		Economizer temperature	67	°F		
Summer hrs on	0.0%						
Enable temperature	55	°F	Design winter temperature	-3.0	°F		
			Maximum heating airflow	100%			
Load profile basis	Outside Air Temperature		Peak ventilation heating load	0	Btu/hr		
Weather profile	MI-Lansing		Heating efficiency	77%			
Existing modulation	Constant speed						
Proposed modulation	Pump VSD		Average summer enthalpy	28.9	Btu/lb		
Minimum speed	41%		Summer design temperature	86	°F db	74	°F wb
Fixed pump head	0.40		Cooling discharge air temperature	55	°F		
Electric Savings	16,880	kWh	Peak ventilation cooling load	0.00	tons		
Heating Savings	0.00	MMBtu	Cooling efficiency	1.00	kW/ton		
Cost Savings	$1,545		Peak cooling kW	0.0	kW		

Pump	Heating Ventilation	Cooling Ventilation

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

Outside Air Temp	Fraction of year	Existing kW Load	Proposed Flow Rate	Proposed kW Load	Energy Savings (kWh)	Existing Load	Proposed Load	Heating Savings (MMBtu)	Gross Existing Load	Net Existing Load	Net Proposed Load	Cooling Savings (kWh)
107.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
102.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
97.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
92.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
87.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
82.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
77.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
72.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
67.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
62.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
57.5	0.0%	0%	0%	0%	0	0%	0%	0.0	0%	0%	0%	0
52.5	12.1%	100%	41%	44%	2,336	8%	5%	0.0	0%	0%	0%	0
47.5	10.6%	100%	41%	44%	2,059	17%	10%	0.0	0%	0%	0%	0
42.5	10.3%	100%	41%	44%	1,992	25%	15%	0.0	0%	0%	0%	0
37.5	15.4%	100%	41%	44%	2,975	33%	20%	0.0	0%	0%	0%	0
32.5	13.5%	100%	41%	44%	2,603	41%	25%	0.0	0%	0%	0%	0
27.5	9.6%	100%	50%	47%	1,744	50%	30%	0.0	0%	0%	0%	0
22.5	7.8%	100%	58%	52%	1,309	58%	35%	0.0	0%	0%	0%	0
17.5	6.8%	100%	66%	57%	1,009	66%	40%	0.0	0%	0%	0%	0
12.5	4.4%	100%	74%	65%	540	74%	45%	0.0	0%	0%	0%	0
7.5	2.5%	100%	83%	74%	224	83%	50%	0.0	0%	0%	0%	0
2.5	1.7%	100%	91%	85%	86	91%	55%	0.0	0%	0%	0%	0
-2.5	0.6%	100%	99%	99%	3	99%	60%	0.0	0%	0%	0%	0
-7.5	0.4%	100%	100%	100%	0	100%	60%	0.0	0%	0%	0%	0
-12.5	0.1%	100%	100%	100%	0	100%	60%	0.0	0%	0%	0%	0
-17.5	0.0%	100%	100%	100%	0	100%	60%	0.0	0%	0%	0%	0
-22.5	0.0%	100%	100%	100%	0	100%	60%	0.0	0%	0%	0%	0
-27.5	0.0%	100%	100%	100%	0	100%	60%	0.0	0%	0%	0%	0
-32.5	0.0%	100%	100%	100%	0	100%	60%	0.0	0%	0%	0%	0
-37.5	0.0%	100%	100%	100%	0	100%	60%	0.0	0%	0%	0%	0
Total	**95.8%**	33,175		16,296	**16,880**	0.0	0.0	**0.0**		0	0	**0**

Facility	Delhi POTW		Proposed ventilation control	Constant CFM (no savings)	
Item	Admin RTU			60%	
Area Served	Administration			100%	
Equipment type	Supply Fan				
Qty	1		Total Airflow	4,000	CFM
Motor HP	7.5	HP	Outside air percent	10%	
Actual kW	4.72	kW	Room temperature	72 °F	50% rh

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

Proposed runtime	2,868	hrs/yr
Winter hrs on	32.7%	
Summer hrs on	32.7%	
Load profile basis	Outside Air Temperature	
Weather profile	MI-Lansing	
Existing modulation	Constant speed	
Proposed modulation	Fan VSD fix static	
Minimum speed	40%	
	0.40	
Electric Savings	9,204	kWh
Heating Savings	0.00	MMBtu
Cost Savings	$490	

Balance (no load) point	57.5	°F		
Economizer temperature	67	°F		
Design winter temperature	-3.0	°F		
Maximum heating airflow	100%			
Peak ventilation heating load	32,400	Btu/hr		
Heating efficiency	77%			
Average summer enthalpy	28.9	Btu/lb		
Summer design temperature	86	°F db	74	°F wb
Cooling discharge air temperature	55	°F		
Peak ventilation cooling load	2.16	tons		
Cooling efficiency	1.00	kW/ton		
Peak cooling kW	2.2	kW		

		Supply Fan				Heating Ventilation			Cooling Ventilation			
Outside	**Fraction**	**Existing**	**Proposed**	**Proposed**	**Energy**	**Existing**	**Proposed**	**Heating**	**Gross**	**Net**	**Net**	**Cooling**
8760	1	0		0					0%			
107.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	100%	0
102.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	100%	0
97.5	0.0%	100%	100%	102%	0	0%	0%	0.0	100%	100%	100%	0
92.5	0.1%	100%	100%	102%	0	0%	0%	0.0	100%	100%	100%	0
87.5	0.4%	100%	100%	102%	-1	0%	0%	0.0	100%	100%	100%	0
82.5	4.0%	100%	88%	75%	138	0%	0%	0.0	88%	88%	88%	0
77.5	5.6%	100%	70%	47%	403	0%	0%	0.0	70%	70%	70%	0
72.5	7.0%	100%	53%	30%	657	0%	0%	0.0	53%	53%	53%	0
67.5	6.7%	100%	40%	23%	692	0%	0%	0.0	35%	35%	35%	0
62.5	8.8%	100%	40%	23%	914	0%	0%	0.0	18%	0%	0%	0
57.5	7.2%	100%	40%	23%	742	0%	0%	0.0	0%	0%	0%	0
52.5	7.6%	100%	40%	23%	787	8%	8%	0.0	0%	0%	0%	0
47.5	6.7%	100%	40%	23%	694	17%	17%	0.0	0%	0%	0%	0
42.5	6.5%	100%	40%	23%	671	25%	25%	0.0	0%	0%	0%	0
37.5	9.7%	100%	40%	23%	1,003	33%	33%	0.0	0%	0%	0%	0
32.5	8.5%	100%	41%	24%	872	41%	41%	0.0	0%	0%	0%	0
27.5	6.0%	100%	50%	28%	583	50%	50%	0.0	0%	0%	0%	0
22.5	4.9%	100%	58%	34%	437	58%	58%	0.0	0%	0%	0%	0
17.5	4.3%	100%	66%	42%	335	66%	66%	0.0	0%	0%	0%	0
12.5	2.8%	100%	74%	53%	178	74%	74%	0.0	0%	0%	0%	0
7.5	1.6%	100%	83%	65%	73	83%	83%	0.0	0%	0%	0%	0
2.5	1.1%	100%	91%	81%	27	91%	91%	0.0	0%	0%	0%	0
-2.5	0.4%	100%	99%	100%	0	99%	99%	0.0	0%	0%	0%	0

Exhibit D-4: Energy Calculations
Delhi Township - Delhi Township, MI

-7.5	0.3%	100%	100%	102%	-1	100%	100%	0.0	0%	0%	0%	0
-12.5	0.1%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-17.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-22.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-27.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-32.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
-37.5	0.0%	100%	100%	102%	0	100%	100%	0.0	0%	0%	0%	0
Total	**100.0%**	13,532		4,329	**9,204**	28.6	28.6	**0.0**		869	869	**0**

FIM # 7.2

Title **Infrared Heating System Retrofit Savings**

Project **Delhi Township**
Site **POTW Pole Barns**

Description Calculate savings of infrared heating system vs. conventional heating system.

Given

Mounted height of infrared system	=	20	feet
Existing Unit Capacity	=	100	MBtu/hr
Energy Heating Value	=	100	Mbh/Therm
Fuel Cost	=	$0.69	$/Therm (Nat'l Gas)
Operating hours per year	=	####	hours

Assumption

Radiant adjustment to heat loss	=	80%
Part Load Percentage	=	55%
Existing Heating Efficiency	=	65%

Formula

Height adjustment to heat loss = ((Mounted ht - 20 ft) x (1%)) + (1)
Existing Bldg Energy Use = (Existing unit capacity) x (Part Load Percentage) x (Operating hrs) / (efficiency) / (energy heating value)
New Bldg Energy Use = (Ex.unit capacity) x (Part Load %) x (radiant adjustment) x (height adj.) x (operating hrs) / (energy heating valu
Existing Cost = (Existing bldg energy use) x (gas rate)
New Cost = (new bldg energy use) x (gas rate)
Radiant Cost Savings = (existing cost - new cost)

Calculation

		Mounted ht.				% / ft									
Height adj to heat loss	= (	20	-	20) x (	0.01	) +	1.0	=	**1.00**						
		Ex. Capacity		Part Load %	Op. hrs		eff.		heat val						
Existing Bldg Energy Use	= (	100) x (		55%	) x (4,000	) / (	65%	) / (	100	) =	**3,385**	**Therm**			
		Ex. Capacity		Part Load %	radiant adj		ht. Adj		op. hrs		heat val				
New Bldg Energy Use	= (	100) x (		55%	) x (80%	) x (	1.00	) x (	4,000	) / (	100	) =	**1,760**	**Therm**	
		Energy use		fuel rate											
Existing Cost	= (	3,385	)*(	$0.69	) =	**$2,338**									
New Cost	= (	1,760	)*(	$0.69	) =	**$1,216**									

Result

Annual Existing Heating Use		**3,385**	**Therm**	**=>**	**$2,338**	
Annual Proposed Heating Use		**1,760**	**Therm**	**=>**	**$1,216**	
Annual Proposed Heating Savings at	**100%**	**1,625**	**Therm**	**=>**	**$1,122**	**48% of existing**
Annual Proposed Heating Savings at	**92%**	**1,495**	**Therm**	**=>**	**$1,033**	**44% of existing**

Comment

Exhibit D-4 - Energy Calculations
Pole Barn Unit Heater Replacement

Existing Pole Barn Energy Usag	526.7	MMBtu
Existing Efficiency	65%	
Proposed Efficiency	80%	
Projected Savings		
Gas Savings	98.8	MMBtu
Gas Cost Savings	$ 682	$ Savings
Safety Factor	92%	
Guaranteed Savings		
Gas Savings	90.9	MMBtu
Gas Cost Savings	$ 628	$ Savings

Exhibit D-4

Aeration Adiabatic Compression Calculation Model: Delhi Michigan : Existing Conditions

Analysis based on daily mean operating data May 2013 through June 2016

	Calculations
	Site Specific Input Variables
	Constants

This spreadsheet calculates the necessary HP, kW, and SCFM requirements for the Aeration system provided the necessary variables

Units	INPUT DATA AND CONSTANTS	Input Data
α	Ratio of oxygen transfer efficiency (OTE) in wastewater to OTE in tap water	0.6
β	Cs(wastewater)/Cs(tap water); corrects for particles that effect solubility	0.95
θ	Arrhenius constant- used to correct for the effects of temperature	1.024
BODin	Biochemical oxygen demand Influent (mg/l)	104
BODout	Biochemical oxygen demand Efflunet (mg/l)	2.0
Q	Wastewater flow in (MGD)	2.58
O2 req	Pounds of oxygen required per pound of BOD removed (1-1.5 dep on SRT/temp)	1.2
conN	Pounds of oxygen required per pound of TKN oxidized to nitrate	4.57
TKNin	Nitrogen load % to BOD	22%
T	Wastewater Temperature in C	25
Altitude	Elevation	892
Cs,T	Oxygen saturation concentration for tap water corrected for temp and altitude	
Cs,20	Oxygen saturation concentration for tap water at 20°C	8.91
Cw	Operating dissolved oxygen concentration	2.75
	lb O2 per cubic foot of air	0.0175
	Diffuser transfer efficiency (%/ft)	1.90%
	Depth of Diffusers, (ft) aka sidewall water depth of basin -1	14

	CALCULATIONS	Calculations
BODin	Biochemical oxygen demand influent (mg/l)	104.00
BODout	Biochemical oxygen demand efflunet (mg/l)	0.00
Flow	WW flow in (MGD)	2.58
Basin Temp	(C)	25.00
BOD	lbs/day of BOD removed	2237.79
TKN	lbs/day of TKN removed	492.31
BOD oxygen	Oxygen required to remove BOD	2685.35
TKN oxygen	Oxygen required to remmove TKN	2249.87
OTR lbs/day	Oxygen Transfer Rate required/day	4935.22
OTR lbs/hr	Oxygen Transfer Rate required/hr	205.63
Cs,t		8.09
SOTR, lbs/hr	Standard Oxygen Transfer Rate (lbs/hr)	549.02
Air Temp, F	Used in ICFM Caculation	77
scfm air needed		1965.71
ICFM	CFM needed at site conditions to provide o2 requ	1936.65

BLOWER INPUTS	
Air Pressure at 892feet (psi) in Delhi Twp	14.29
Standard Air Pressure	14.70
Standard temperature (°R) (=460 + 70 Degrees F)	530
Wire to Air Efficiency (manufacturers data, ~70% for high speed turbo)	65%
Piping losses, psi (manufacture proposals do not include line losses or diffuser age.	2

RESULTS	
HP Required	**88.32**
kW	**65.89**

$$P_W = \frac{WRT_1}{550 \otimes n \otimes e}\left[\left(\frac{p_2}{p_1}\right)^{0.283} - 1\right]$$

where

P_W = power requirement of each blower (hp)
W = mass flowrate of air (lb/s)
R = engineering gas constant for air 53.3 (ft-lb/(lb air)⊗°R
T_1 = absolute inlet temperature (°R = 460 + °F)
p_1 = absolute inlet pressure (lb_f/in^2)
p_2 = absolute outlet pressure (lb_f/in^2)
n = 0.283 for air
550= ft-lb/s-hp
e = efficiency

Exhibit D-4

Aeration Adiabatic Compression Calculation Model: Delhi Michigan: Post Dissolved Oxygen Control

Analysis based on daily mean operating data May 2013 through June 2016

	Calculations
	Site Specific Input Variables
	Constants

This spreadsheet calculates the necessary HP, kW, and SCFM requirements for the Aeration system provided the necessary variables

Units	INPUT DATA AND CONSTANTS	Input Data
α	Ratio of oxygen transfer efficiency (OTE) in wastewater to OTE in tap water	0.6
β	Cs(wastewater)/Cs(tap water); corrects for particles that effect solubility	0.95
θ	Arrhenius constant- used to correct for the effects of temperature	1.024
BODin	Biochemical oxygen demand Influent (mg/l)	104
BODout	Biochemical oxygen demand Efflunet (mg/l)	2.0
Q	Wastewater flow in (MGD)	2.58
O2 req	Pounds of oxygen required per pound of BOD removed (1-1.5 dep on SRT/temp)	1.2
conN	Pounds of oxygen required per pound of TKN oxidized to nitrate	4.57
TKNin	Nitrogen load % to BOD	22%
T	WastwatermTemperature in C	25
Altitude	Elevation	892
Cs,T	Oxygen saturation concentration for tap water corrected for temp and altitude	
Cs,20	Oxygen saturation concentration for tap water at 20°C	8.91
Cw	Operating dissolved oxygen concentration	2.0
	lb O2 per cubic foot of air	0.0175
	Diffuser transfer efficiency (%/ft)	2.00%
	Depth of Diffusers, (ft) aka sidewall water depth of basin -1	14

CALCULATIONS		Calculations
BODin	Biochemical oxygen demand influent (mg/l)	104.00
BODout	Biochemical oxygen demand efflunet (mg/l)	0.00
Flow	WW flow in (MGD)	2.58
Basin Temp	(C)	25.00
BOD	lbs/day of BOD removed	2237.79
TKN	lbs/day of TKN removed	492.31
BOD oxygen	Oxygen required to remove BOD	2685.35
TKN oxygen	Oxygen required to remmove TKN	2249.87
AOTR lbs/day	Oxygen Transfer Rate required/day	4935.22
AOTR lbs/hr	Oxygen Transfer Rate required/hr	205.63
Cs,t		8.09
SOTR, lbs/hr	Standard Oxygen Transfer Rate (lbs/hr)	476.66
Air Temp, F		77
scfm air needed		1621.28
ICFM		1597.31

BLOWER INPUTS	
Air Pressure at 892 feet (psi) iin Delhi TWP	14.29
Standard Air Pressure	14.70
standard temperature (°R) (=460 + 70 Degrees F)	530
Wire to Air Efficiency (manufacturers data, ~70% for high speed turbo)	70%
Piping losses, psi (manufacture proposals do not include line losses or diffuser age.	2

RESULTS	
HP Required	**67.6**
kW	**50.5**

$$P_W = \frac{WRT_1}{550 \otimes n \otimes e}\left[\left(\frac{p_2}{p_1}\right)^{0.283} - 1\right]$$

where

P_W = power requirement of each blower (hp)
W = mass flowrate of air (lb/s)
R = engineering gas constant for air 53.3 (ft-lb/(lb air)⊗°R
T_1 = absolute inlet temperature (°R = 460 + °F)
p_1 = absolute inlet pressure (lb_f/in^2)
p_2 = absolute outlet pressure (lb_f/in^2)
n = 0.283 for air
550= ft-lb/s-hp
e = efficiency

Projected Savings

Existing Condition		62.6
Proposed Condition		50.5
Reduced kW		12.1
Operation Time (365 x 24)		8760.0
Annula kWh Reduced		106,278
Annual Cost Savings@	**$**	**7,620**

Mixing limited condtions may may be a constraint.

On Peak kWh Rate (58% of time)	$	0.0535
Off Peak kWh Rate (42% of time)	$	0.0380
Demand	$	18.05

Electric Primary Rate GPD CLV 3

Exhibit D-4

	Primary Inf		Primary Effluent					Secondary Effluent				Final Effluent			
	Flow (MGD)		BOD (mg/l)		SS (mg/l)	NH4 (mg/l)	Total P (mg/l)	BOD (mg.l)	SS (mg/l)	NH4 (mg/l)	Total P (mg/l)	BOD (mg/l)	SS (mg/l)	NH4 (mg/l)	Total P (mg/l)
	Mean	Max	Mean	Max											
May-13	2.7	4.8	95	132	61	21.9	3.9	4	7	0.1	1.1	2	6	0.1	0.9
Jun-13	3.3	6.27	95	152	64	19.5	3.6	3	4	0.1	1	2	5	0.1	0.9
Jul-13	2.4	4.16	97	125	72	21.9	4.2	3	6	0.1	1	3	11	0.1	1
Aug-13	2.3	6.78	106	134	83	24.5	4.6	4	8	0.2	1.1	2	6	0.1	1
Sep-13	2.31	4.5	114	152	73	24.5	4.8	4	6	0.1	1.1	2	6	0.1	1
Oct-13	2.3	4.51	121	136	82	25.2	4.8	5	10	0.2	1	2	3	0.1	2
Nov-13	2.73	4.96	109	137	74	20.7	4.3	4	6	0.2	0.9	2	2	0.2	0.9
Dec-13	2.71	4.97	119	152	82	20.2	4.7	5	7	0.3	1.1	2	3	0.2	1
Jan-14	2.8	4.6	106	120	78	22.7	4.3	8	6	1.6	1	2	3	0.8	0.7
Feb-14	2.5	4.41	118		91	24.2	4.5	5	5	0.7	0.9	2	4	0.2	0.8
Mar-14	3.3	6.33	94	134	67	18.8	3.5	4	5	0.4	0.7	2	4	0.2	0.06
Apr-14	3.69	4.88	79	125	48	14	3	7	5	1	1	1	1	0.1	0.8
May-14	2.7	6.5	84		59	21	3.8	3	5	0.2	1	2	3	0.1	0.8
Jun-14	3.03	6.27	95		64	19.5	3.6	2	6	0.1	1	2	5	0.1	0.9
Jul-14	2.33	4.05	117	161	72	21.8	4.2	4	6	0.1	1.1	2	2	0.1	0.9
Aug-14	2.01	2.97	102	156	70	23.6	4.5	4	6	0.1	1	2	3	0.1	0.8
Sep-14	2.13	40.8	105	123	71	25.7	4.8	4	8	0.1	1	2	2	0.1	0.8
Oct-14	2.12	3.13	114	160	81	27.8	5	4	10	0.1	1	2	2	0.1	0.7
Nov-14	2.18	4.73	123	174	78	28.2	4.9	4	8	0.1	0.9	2	2	0.1	1
Dec-14	2.2	4.24	118		82	26.9	4.9	4	6	0.2	0.9	2	2	0.1	0.7
Jan-15	2.21	4.57	119	141	81	28.7	5	4	8	0.2	1	2	4	0.2	0.7
Feb-15	2.31	4.1	136	181	93	29.9	5.4	4	8	0.4	1	2	6	0.2	0.8
Mar-15	2.41	4.35	129	178	89	27.6	5.2	5	8	0.4	1.1	2	4	0.2	0.8
Apr-15	2.11	3.56	112	144	77	28.4	5.5	4	7	0.2	1.1	2	2	0.1	0.8
May-15	2.06	4.19	137	317	114	24.7	6.1	3	5	0.1	0.9	2	6	0.1	0.8
Jun-15	2.8	4.31	97	150	74	20.3	4.3	3	5	0.1	0.8	2	3	0.1	0.7
Jul-15	2.72	6.21	77	121	59	19.9	4	5	11	0.1	1.1	3	4	0.1	0.8
Aug-15	2.17	3.49	102	135	70	29.6	4.9	4	7	0.1	101	2	2	0.1	0.9
Sep-15	2.65	6.53	99		74	20.7	4.1	4	9	0.1	1	2	2	0.1	0.7
Oct-15	2.14	3	117	146	79	26.6	4.9	5	8	0.1	0.9	2	3	0.1	0.7
Nov-15	2.23	3.45	108		64	26.7	5	6	7	0.8	1.1	2	2	0.3	0.8
Dec-15	2.39	3.85	111		72	25	4.7	4	7	0.2	1	2	2	0.1	0.7
Jan-15	2.8	4.2	101	136	64	20.4	4.3	4	5	0.3	0.4	1	2	0.1	0.8
Feb-16	2.5	3.79	72	105	82	22.7	4.7	10	7	5	1.1	2	2	1.4	0.8
Mar-16	3.58	4.91	80	122	70	16	3.5	12	6	9.5	0.8	2	1	2.5	0.6
Apr-16	3.69	4.88	79	90	49	14	3	7	5	1	1	1	1	0.1	0.8
May-16	3.07	4.38	100	129	67	19.4	3.6	11	6	2.2	1	1	3	0.2	0.8
Jun-16	2.4	3.5	100		71	26.2	4.4	11	6	1.9	1	2	8	0.3	0.8
3 Yr AVG	**2.58**	**5.56**	**104.92**	**145.60**	**73.71**	**23.14**	**4.43**	**5.03**	**6.71**	**0.76**	**3.61**	**1.95**	**3.47**	**0.25**	**0.83**
Adjusted 3 YR Avg.	**2.58**	**5.56**	**104.92**	**145.60**	**73.71**	**23.14**	**4.43**	**5.03**	**6.71**	**0.38**	**3.61**	**1.95**	**3.47**	**0.15**	**0.83**

February and March 2016 values arer impacted by upset condiction caused by over chlorination. The ammonia values are not indictive of typical operational results and should not be include in the design analysis.

Exhibit D-4

Consumers Energy Street Light Cost and Savings Summary

DELHI CHARTER TOWNSHIP - REVIEW OF ESTIMATED COSTS									
COSTS BELOW ARE CONCEPTUAL COSTS									
MERCURY VAPOR COBRAHEAD FIXTURES					EQUIVALENT			COST PER	TOTAL
Size		LUMENS	TYPE	COUNT	WATTAGE IN LED		LUMENS	LIGHT	CONCEPTUAL
100	W	3500	MV	0	54	W LED	5,550	$ 82.22	$ -
175	W	7500	MV	163	54	W LED	5,550	$ 82.22	$ 13,401.86
250	W	10000	MV	8	54	W LED	5,550	$ 82.22	$ 657.76
175	W	7500	MV	0	72	W LED	8,140	$ 223.22	$ -
250	W	10000	MV	0	72	W LED	8,140	$ 223.22	$ -
400	W	20000	MV	6	110	W LED	10,308	$ 211.22	$ 1,267.32
TOTAL MV COBRAHEAD				**177**			**TOTAL COST**		**$ 15,326.94**
ESTIMATED MONTHLY SAVINGS				**$ 1,277.02**			**PAYBACK ESTIMATE**		**1.00**
COSTS BELOW ARE CONCEPTUAL COSTS									
HIGH PRESSURE SODIUM COBRAHEAD FIXTURES					EQUIVALENT			COST PER	TOTAL
Size		LUMENS	TYPE	COUNT	WATTAGE IN LED		LUMENS	LIGHT	CONCEPTUAL
100	W	8500	HPS	93	54	W LED	5,550	$ 619.22	$ 57,587.46
150	W	14000	HPS	58	54	W LED	5,550	$ 826.31	$ 47,925.98
200	W	10000	HPS	0	54	W LED	5,550		$ -
250	W	24000	HPS	22	72	W LED	8,140	$ 822.93	$ 18,104.46
400	W	45000	HPS	22	72	W LED	8,140	$ 1,331.18	$ 29,285.96
TOTAL HPS COBRAHEAD				**195**			**TOTAL COST**		**$ 152,903.86**
ESTIMATED MONTHLY SAVINGS				**$ 997.50**			**PAYBACK ESTIMATE**		**12.77**
CONCEPTUAL COST TO CONVERT ALL HPS & MV COBRAHEADS TO LED									**$ 168,230.80**
ESTIMATED ANNUAL SAVINGS									**$ 27,294.24**
PAYBACK									**6.2**

EXHIBIT D-5 M&V Plan

LIGHTING RETROFIT OPTION C (ELECTRIC)
Att A ECM 1) Lighting Upgrades
Description & MV-Option Definition and Rationale:

Option: C applies to the Community Service Center Only. See Exhibit A–1, *Lighting Details*, and in Exhibit D-4, *Energy Savings Calculations,* attached hereto and incorporated herein. Option C utility bill analysis will be used to determine cost and usage avoidance.

1. Boundary of Energy Use and Cost Avoidance Determination:
The energy cost avoidance determination for this ECM include electric consumption in units displayed in annual utility billings. Option C was selected to determine the energy and cost avoidance. This method was selected for a cost effective approach providing an acceptable balance between the costs of doing M&V versus the quantity of projected Cost Avoidance. This method analyzes energy use within the building as a whole at the utility meter. This whole building approach thus requires the time and expense necessary to track on-site changes that effect electric energy consumption as seen at the utility meter.

2. Baseline: Conditions & Energy Data AND Planned & Unplanned Baseline Adjustment Conditions
Option C Baseline: The energy performance baseline was determined from utility bill analysis. The energy use baselines are included in Exhibit D-3. The baseline period dates are listed in Attachment D. The baseline unit cost energy is based on stipulated rates and will be considered to be the value of unit cost avoidance. Operational performance baseline parameters are included and presented in Exhibit D-2.

This ECM will blend M&V methodologies so HONEYWELL will analyze CUSTOMER'S energy use and costs against an "established baseline" described in Attachment D and Exhibits to Attachment D. HONEYWELL will use energy auditing software to track monthly facility costs, energy consumption, and Energy Cost Avoidance and to quantify and report on changes in energy usage due to changes in billing periods and weather. Honeywell will also confirm specific variable data and measure specific variables for specific control strategies and sequences. HONEYWELL will adjust the baseline for changes in energy usage due to changes in variables including, but not limited to billing periods, weather, production, occupancy, building load, conditioned building area, equipment operation, and scheduling methodologies etc. as defined in Attachment D. These routine and non-routine baseline adjustments will be calculated using industry-standard engineering calculations. As applicable per Attachment D, HONEYWELL will adjust the energy cost baseline for changes in the unit cost of energy.

3. Potential-to-Save Verification Plan
The verification of potential-to-save for Option C avoidance will be based on review of installation documents and data collection and analysis of selected operational parameters to verify that the systems have been installed and are operating to contract specifications. Verification parameters observed may include but will not be limited to Hours of operation. During years 2-term, walk through analysis, trend and totalization data collection, and observation may be required to confirm that the operation of the ECM's are still within project specifications or to identify baseline adjustments. Delhi Township is responsible to maintain system operation to contract specifications.

4. Parameters to be Monitored & Sampling Plan
General: The measured parameters for Option C methodologies will be operational parameters such as hours of operation, and visual inspection of lighting systems. HONEYWELL will use energy auditing software to track energy use and to quantify and report on changes in usage. HONEYWELL will adjust the baseline for changes in energy usage due to changes including, but not limited to billing periods, weather, production, occupancy, building load, conditioned building area, equipment operation, and scheduling methodologies etc. as defined in Exhibit D1. These routine and non-routine baseline adjustments will be calculated using industry-standard engineering calculations. As applicable per Attachment D, HONEYWELL will adjust the energy cost baseline for changes in the unit cost of energy.

Installation & Acceptance Period: Utility bills will be updated with energy auditing software. Potential to save verification will be used to identify and quantify any baseline adjustments.

Performance Period (On-Going): Utility bills will be updated with energy auditing software to determine ongoing performance period of electrical energy savings. Monthly data will be analyzed on an annual basis.

5. Determination of Energy & Cost Avoidance
Energy cost avoidance for this measure is achieved through reductions in energy consumption.

The determination of Cost Avoidance will utilize the following baseline – actual formula:

Pre retrofit energy consumption * unit cost
Minus

Post retrofit energy consumption* unit cost.

The monitoring and sampling plan results will indicate energy and cost avoidance.

6. Determination of Non-Energy Operational Cost Impact

Invoice and Internal Work Order records provided by Delhi Township were used to identify the pre-retrofit operational costs associated with this ECM. Post-retrofit avoided costs are projected based on the inclusion of reductions in lighting related labor activities required to maintain ageing equipment, and reduction in lighting related material purchases required to maintain ageing equipment. Operational savings are based on the following agreed upon concepts;

The operational cost savings are deemed satisfied upon contract execution. The Customer acknowledges and agrees that, if it did not enter into this agreement, it would have to take future steps to achieve the same ends as does the work included in Attachment A of this contract, and that, in doing so, it would incur operational costs of at least the amount per year over the life of the performance period as presented in the Schedule of Savings. The Customer agrees that, by entering into this agreement, it will avoid future operational costs in at least these amounts.

7. Customer Responsibilities and Honeywell-Customer Risk Allocation

Customer Responsibilities: The guarantee is contingent on the Customer successfully fulfilling the following tasks:

- Maintain post retrofit status of building components relative to this ECM (i.e., occupancy level and use, hours of operation, maintenance, etc.)
- Provide copies of utility bills.

Honeywell Risk Allocation: Successful guarantee performance is determined by meeting the avoidance presented in Attachment D and Exhibits to Attachment D and this M&V plan. Honeywell will measure to confirm that the capacity to perform has been achieved. Monthly utility bill analysis and trend and totalization data analysis will be used to quantify energy and cost avoidance. Customer is responsible to provide Honeywell with notification of changes that would impact the baseline of this ECM. Honeywell is allowed to make baseline appropriate modifications to reflect observed changes in usage that impact the energy baseline.

8. Performance Period Definition and On-Going Activities

Performance Period Definition: The performance period term overall is 15 Years.

On-Going Activities: Annual measurement and verification as indicated.

9. Reports & Documentation

There will be a single (1) annual report of the determination of energy avoidance each year.

LIGHTING RETROFIT OPTION A (ELECTRIC)
Att A ECM 1) Lighting Upgrades
General Description & MV-Option Definition and Rationale:

Option: A applies to the following buildings:
1. DDA Office
2. Ingham County Sheriff
3. DPS
4. Farmers Market
5. Fire Station#2
6. Parks & Recreation
7. Senior Center
8. Delhi POTW
9. Valhalla Park

Also included are the DDA street lights. The purpose of this ECM is to increase the efficiency of the lighting systems. See Attachment A for details. Established by replacing selected existing lighting fixtures with new energy efficient lighting systems. Retrofitting existing lighting to the most current technologies available will provide significant reductions in both the electrical demand and consumption at the facility.

Capacities and performance indices of the Lighting Retrofit ECM are presented below in this M&V plan and in *Engineered Cost Avoidance Calculations,* attached hereto and incorporated herein.

1. Boundary of Energy Use and Cost Avoidance Determination:
The energy cost avoidance determination for this ECM is isolated to the lighting system retrofit. A *retrofit isolation approach* (option A) was selected to determine the energy unit displacement and cost avoidance. This method was selected for the lighting retrofits in all buildings. This is a cost effective approach providing an acceptable balance between the costs of doing M&V versus the quantity of projected Cost Avoidance. This method analyzes energy use within the *isolated* boundary of this particular ECM *retrofit* and not the building as a whole at the utility meter. This retrofit isolation approach, thus avoids the time and expense necessary to track on-site changes that effect electrical use as seen at the electric utility meter that are not related to this ECM. Honeywell will provide verification that the lighting systems installed are operating to the specifications of the manufacturer and to the specifications projected in this Agreement through the documentation records provided by the installer.

2. Baseline: Conditions & Energy/Water Data AND Planned & Unplanned Baseline Adjustment Conditions
Baseline: The energy performance baseline was determined from existing systems manufacturer's performance specifications, Delhi Township Staff interviews, and utility bill analysis. The energy use baselines are included in Exhibit D-4. The baseline period dates are listed in Attachment D. The baseline unit cost energy is stipulated and will be considered to be the value of unit cost avoidance. Operational performance baseline parameters are included and presented in Exhibit D-2.

Planned and Unplanned (Routine and Non-Routine) Baseline Adjustments:
There are no projected baseline adjustments for this ECM. The Customer and Honeywell have stipulated to and agreed upon operational and energy baseline parameters.

3. Potential-to-Save Verification Plan
The verification of potential-to-save will be based on completion of the following;
Measurement and verification for this ECM will be accomplished with Pre and Post installation measurements of the power draw for a representative sample of each type of fixture. The annual operating hours for each fixture will be stipulated to the hours presented in Exhibit A-1.

4. Parameters to be Monitored & Sampling Plan
General: The measured parameter is limited to fixture amperage for a sample population of fixtures. Fixture quantity and types will be confirmed through contractor documentation. All other operating parameters including run time hours are stipulated and agreed upon.

Installation & Acceptance Period: The sampling methodology will utilize measurements taken on switches or breakers. These measurements include 5% of fixtures per technology type (lamp and ballast combinations) that comprise 80% of the lighting energy conservation measures (ECM) kW reduction. Due to minimal quantities and

accepted energy usage, exit signs, and incandescent lamps will not be measured. Operational parameters (hours) will be stipulated in order to calculate savings.

Performance Period (On-Going): There will be no ongoing measurements of fixture amperage for Option A facilities. The ongoing measurement will be limited to review of lamp and ballast failure conditions as presented by customer representatives during routine site visits by Honeywell M&V personnel

5. Determination of Energy & Cost Avoidance

Energy cost savings for this measure are achieved through improvement of the lighting fixture efficiency.

The determination of Cost Avoidance will utilize the following baseline – actual formula:

Pre retrofit fixture kW * hours * unit cost
Minus

Post retrofit fixture kW* hours* unit cost.

Utility unit costs will be evaluated based on a stipulated rate see Exhibit D-3. All other operating parameters (including hours) used in avoidance calculations are agreed upon and stipulated for the duration of the performance period.

6. Determination of Non-Energy Operational Cost Impact

Invoice and Internal Work Order records provided by Delhi Township were used to identify the pre-retrofit operational costs associated with this ECM. Post-retrofit avoided costs are projected based on the inclusion of reductions in lighting related labor activities required to maintain ageing equipment, and reduction in lighting related material purchases required to maintain ageing equipment. Operational savings are based on the following agreed upon concepts;
The operational cost savings are deemed satisfied upon contract execution. The Customer acknowledges and agrees that, if it did not enter into this agreement, it would have to take future steps to achieve the same ends as does the work included in Attachment A of this contract, and that, in doing so, it would incur operational costs of at least the amount per year over the life of the performance period as presented in the Schedule of Savings. The Customer agrees that, by entering into this agreement, it will avoid future operational costs in at least these amounts.

7. Customer Responsibilities and Honeywell-Customer Risk Allocation

Customer Responsibilities: The guarantee is contingent on the Customer successfully fulfilling the following tasks:

Maintain post retrofit status of building components relative to this ECM (i.e., occupancy level and use, hours of operation, etc.)

Responsibilities as delineated herein in the Energy Guarantee Special Provisions outlined in Attachment D.

Honeywell Risk Allocation: Successful guarantee performance is determined by meeting the avoidance presented in Attachment D, Exhibits to Attachments D and this M&V plan. Honeywell will measure to confirm that the capacity to perform (fixture kW, etc.) has been achieved. Honeywell will confirm through contractor records that the quantity of retrofit fixtures proposed has been installed. Honeywell and customer agree that the ongoing performance and operation (hours of use, maintenance, etc.) are stipulated and agreed upon and are the responsibility of and under the control of the customer.

8. Performance Period Definition and On-Going Activities

Performance Period Definition: The performance period term overall is15 Years.

On-Going Activities: Annual measurement and verification as define in section 5 above.

9. Reports & Documentation

There will be a single (1) annual report of the determination of energy avoidance each year.

MECHANICAL&OTHER RETROFITS OPTION: A (GAS&ELECTRIC)
Includes Att A ECM 2) High Speed Blower Installation, and ECM 3) HVAC System Upgrades
General Description & M&V-Option Definition and Rationale:

The purpose of this ECM is to improve energy efficiency in various mechanical systems. Energy avoidance will be measured through the use of Option A. The mechanical retrofits include:

1 Wastewater Treatment Plant – Replace Rooftop Unit, VAV With Reheat, New Boiler.
2 Pole Barns – Unit Heater Installation, IR Tube Heaters.
3. Lab Building – Lab MAU Replacement, Fan Coil Unit Replacement.
4.*Chemical Feed, Chemical Room & Chlorine Storage – RTU Installation, Canopy Hood Installation, Fume Hood Exhaust Fan/Supply Replacement, Misc. Hot Water Improvements, Break Room Mini Split.

*Note: These areas are no longer being used for chemical storage and will be converted to offices.

1. Boundary of Energy Use and Cost Avoidance Determination:
Option A, was selected to determine the energy and cost avoidance for Mechanical and Other Gas and Electrical retrofit activities as a cost effective approach providing an acceptable balance between the cost of doing M&V versus the quantity of projected Cost Avoidance. This method analyzes energy use within the building based on standard engineering practices and principals. This approach does not require the time and expense necessary to track on-site changes that effect heating energy consumption as seen at the utility meters. Potential to perform is verified by review of installation documentation and observed conditions, that all improvements have been completed to project specifications.

2. Baseline: Conditions & Energy/Water Data AND Planned & Unplanned Baseline Adjustment Conditions
Option A Baseline: The energy performance baseline was determined from observance and engineering calculations. The energy use baselines are included in the calculations in Exhibit D-4. The baseline period dates are listed in Attachment D. The baseline unit cost energy is based on stipulated rates in Exhibit D-3. Operational performance baseline parameters are included and presented in Exhibits D-1.

Under *Option A* services, HONEYWELL will confirm that the improvements have been installed to project and manufacturers specifications, and that the quantity of improvement activities aligns with project specifications. The value of energy and cost avoidance is stipulated and agreed upon based on engineering calculations and customer acceptance.

3. Potential-to-Save Verification Plan
The verification of potential-to-save will be based on review of installation documents, to verify that the mechanical retrofit systems have been installed within contract specifications. Verification documentation will include but not be limited to contractor start up documentation, and review of name plate and manufacturer specifications data.

4. Parameters to be Monitored & Sampling Plan
General Option A: The verification of potential-to-save will be based on review of installation documents, to verify that the quantity and type of mechanical retrofits have been installed within contract specifications. No ongoing verification will be provided, avoided energy and costs will be stipulated and agreed upon based on customer acceptance.

5. Determination of Energy & Cost Avoidance
Energy cost avoidance for this measure is achieved through reductions in electric, natural gas, fuel oil, or water consumption.

The determination of Cost Avoidance will utilize the following baseline – actual formula:

Pre retrofit energy (electricity, gas, oil, or water) * unit cost
Minus

Post retrofit energy (electricity, gas, oil, or water) * unit cost.

The monitoring and sampling plan results will indicate energy and cost avoidance.

6. Determination of Non-Energy Operational Cost Impact

There are no associated avoided Operational Costs from this ECM

7. Customer Responsibilities and Honeywell-Customer Risk Allocation

Customer Responsibilities: The guarantee is contingent on the Customer successfully fulfilling the following tasks:

- Maintain post retrofit status of building components relative to this ECM (i.e., occupancy level and use, hours of operation, maintenance, etc.)

Honeywell Risk Allocation: Successful guarantee performance is determined by meeting the avoidance presented in Attachment D, Exhibits to Attachment D, and this M&V plan. Honeywell will measure to confirm that the capacity to perform has been achieved during the installation period only. Option A buildings will quantify energy and cost avoidance as stipulated and agreed upon based on year 1 verification activities plus the identified unit cost escalation. Customer is responsible to provide Honeywell with notification of changes that would impact the baseline of this ECM. Honeywell is allowed to make baseline appropriate modifications to reflect observed changes in usage that impact the heating energy baseline.

8. Performance Period Definition and On-Going Activities

Performance Period Definition: The performance period term overall is15 Years.

On-Going Activities: Annual measurement and verification as indicated.

9. Reports & Documentation

There will be a single (1) annual report of the determination of energy avoidance each year.

MECHANICAL&OTHER RETROFITS OPTION: C (GAS&ELECTRIC)
Includes Att A ECM 3) HVAC System Upgrades
General Description & MV-Option Definition and Rationale:

Option: C applies to the Community Service Center Only. See Exhibit D-4, *Energy Savings Calculations,* attached hereto and incorporated herein. Option C utility bill analysis will be used to determine cost and usage avoidance.

1. Boundary of Energy Use and Cost Avoidance Determination:
The energy cost avoidance determination for these ECM's include electric and gas consumption in units displayed in annual utility billings. Option C, was selected to determine the energy and cost avoidance. This method was selected for a cost effective approach providing an acceptable balance between the costs of doing M&V versus the quantity of projected Cost Avoidance. This method analyzes energy use within the building as a whole at the utility meter. This whole building approach thus requires the time and expense necessary to track on-site changes that effect electric and gas energy consumption as seen at the utility meter.

2. Baseline: Conditions & Energy Data AND Planned & Unplanned Baseline Adjustment Conditions
Option C Baseline: The energy performance baseline was determined from utility bill analysis. The energy use baselines are included in Exhibit D-3. The baseline period dates are listed in Attachment D. The baseline unit cost energy is based on stipulated rates and will be considered to be the value of unit cost avoidance. Operational performance baseline parameters are included and presented in Exhibit D-1.

This ECM will blend M&V methodologies so HONEYWELL will analyze CUSTOMER'S energy use and costs against an "established baseline" described in Attachment D and Exhibits to Attachment D. HONEYWELL will use energy auditing software to track monthly facility costs, energy consumption, and Energy Cost Avoidance and to quantify and report on changes in energy usage due to changes in billing periods and weather. Honeywell will also confirm specific variable data and measure specific variables for specific control strategies and sequences. HONEYWELL will adjust the baseline for changes in energy usage due to changes in variables including, but not limited to billing periods, weather, production, occupancy, building load, conditioned building area, equipment operation, and scheduling methodologies etc. as defined in Attachment D. These routine and non-routine baseline adjustments will be calculated using industry-standard engineering calculations. As applicable per Attachment D, HONEYWELL will adjust the energy cost baseline for changes in the unit cost of energy.

3. Potential-to-Save Verification Plan
The verification of potential-to-save for Option C avoidance will be based on review of installation documents and data collection and analysis of selected operational parameters to verify that the systems have been installed and are operating to contract specifications. Verification parameters observed may include but will not be limited to Hours of operation, temperature set point, zone temperature, etc. as they apply to electric and natural gas energy. During years 2-term, walk through analysis, trend and totalization data collection, and observation may be required to confirm that the operation of the ECM's are still within project specifications or to identify baseline adjustments. Delhi Township is responsible to maintain system operation to contract specifications.

4. Parameters to be Monitored & Sampling Plan
General: The measured parameters for Option C methodologies will be operational parameters such as hours of operation, discharge air and zone temperature set-points for ECM's, operating parameters, and visual inspection of the mechanical systems. HONEYWELL will use energy auditing software to track energy use and to quantify and report on changes in usage. HONEYWELL will adjust the baseline for changes in energy usage due to changes including, but not limited to billing periods, weather, production, occupancy, building load, conditioned building area, equipment operation, and scheduling methodologies etc. as defined in Exhibit D-1. These routine and non-routine baseline adjustments will be calculated using industry-standard engineering calculations. As applicable per Attachment D, HONEYWELL will adjust the energy cost baseline for changes in the unit cost of energy.

Installation & Acceptance Period: Utility bills will be updated with energy auditing software. Potential to save verification will be used to identify and quantify any baseline adjustments.

Performance Period (On-Going): Utility bills will be updated with energy auditing software to determine ongoing performance period natural gas energy savings. Monthly data will be analyzed on an annual basis.

5. Determination of Energy & Cost Avoidance

Energy cost avoidance for this measure is achieved through reductions in energy consumption.

The determination of Cost Avoidance will utilize the following baseline – actual formula:

Pre retrofit energy consumption * unit cost
Minus

Post retrofit energy consumption* unit cost.

The monitoring and sampling plan results will indicate energy and cost avoidance.

6. Determination of Non-Energy Operational Cost Impact

There are no associated avoided Operational Costs.

7. Customer Responsibilities and Honeywell-Customer Risk Allocation

Customer Responsibilities: The guarantee is contingent on the Customer successfully fulfilling the following tasks:

- Maintain post retrofit status of building components relative to this ECM (i.e., occupancy level and use, hours of operation, maintenance, etc.)
- Provide copies of utility bills.

Honeywell Risk Allocation: Successful guarantee performance is determined by meeting the avoidance presented in Attachment D, Exhibits to Attachment D, and this M&V plan. Honeywell will measure to confirm that the capacity to perform has been achieved. Monthly utility bill analysis and trend and totalization data analysis will be used to quantify energy and cost avoidance. Customer is responsible to provide Honeywell with notification of changes that would impact the baseline of this ECM. Honeywell is allowed to make baseline appropriate modifications to reflect observed changes in usage that impact the energy baseline.

8. Performance Period Definition and On-Going Activities

Performance Period Definition: The performance period term overall is 15 Years.

On-Going Activities: Annual measurement and verification as indicated.

9. Reports & Documentation

There will be a single (1) annual report of the determination of energy avoidance each year.

ENERGY MANAGEMENT SYSTEM / CONTROLS OPTION C (ELECTRIC & GAS)
Energy Management Systems
General Description & MV-Option Definition and Rationale:

Option: C applies to the Community Service Center Only. See Exhibit D-4, *Energy Savings Calculations*, attached hereto and incorporated herein. Option C utility bill analysis will be used to determine cost and usage avoidance.

1. Boundary of Energy Use and Cost Avoidance Determination:
The energy cost avoidance determination for these ECM's include electric and gas consumption in units displayed in annual utility billings. Option C, was selected to determine the energy and cost avoidance. This method was selected for a cost effective approach providing an acceptable balance between the costs of doing M&V versus the quantity of projected Cost Avoidance. This method analyzes energy use within the building as a whole at the utility meter. This whole building approach thus requires the time and expense necessary to track on-site changes that effect electric and gas energy consumption as seen at the utility meter.

2. Baseline: Conditions & Energy Data AND Planned & Unplanned Baseline Adjustment Conditions
Option C Baseline: The energy performance baseline was determined from utility bill analysis. The energy use baselines are included in Exhibit D-3. The baseline period dates are listed in Attachment D. The baseline unit cost energy is based on stipulated rates and will be considered to be the value of unit cost avoidance. Operational performance baseline parameters are included and presented in Exhibit D-1.
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This ECM will blend M&V methodologies so HONEYWELL will analyze CUSTOMER'S energy use and costs against an "established baseline" described in Attachment D and Exhibits to Attachment D. HONEYWELL will use energy auditing software to track monthly facility costs, energy consumption, and Energy Cost Avoidance and to quantify and report on changes in energy usage due to changes in billing periods and weather. Honeywell will also confirm specific variable data and measure specific variables for specific control strategies and sequences. HONEYWELL will adjust the baseline for changes in energy usage due to changes in variables including, but not limited to billing periods, weather, production, occupancy, building load, conditioned building area, equipment operation, and scheduling methodologies etc. as defined in Attachment D. These routine and non-routine baseline adjustments will be calculated using industry-standard engineering calculations. As applicable per Attachment D, HONEYWELL will adjust the energy cost baseline for changes in the unit cost of energy.

3. Potential-to-Save Verification Plan
The verification of potential-to-save for Option C avoidance will be based on review of installation documents and data collection and analysis of selected operational parameters to verify that the systems have been installed and are operating to contract specifications. Verification parameters observed may include but will not be limited to Hours of operation, temperature set point, zone temperature, etc. as they apply to electric and natural gas energy. During years 2-term, walk through analysis, trend and totalization data collection, and observation may be required to confirm that the operation of the ECM's are still within project specifications or to identify baseline adjustments. Delhi Township is responsible to maintain system operation to contract specifications.

4. Parameters to be Monitored & Sampling Plan
General: The measured parameters for Option C methodologies will be operational parameters such as hours of operation, discharge air and zone temperature set-points for ECM's, operating parameters, and visual inspection of the control systems. HONEYWELL will use energy auditing software to track energy use and to quantify and report on changes in usage. HONEYWELL will adjust the baseline for changes in energy usage due to changes including, but not limited to billing periods, weather, production, occupancy, building load, conditioned building area, equipment operation, and scheduling methodologies etc. as defined in Exhibit D-2. These routine and non-routine baseline adjustments will be calculated using industry-standard engineering calculations. As applicable per Attachment D, HONEYWELL will adjust the energy cost baseline for changes in the unit cost of energy.

Installation & Acceptance Period: Utility bills will be updated with energy auditing software. Potential to save verification will be used to identify and quantify any baseline adjustments.

Performance Period (On-Going): Utility bills will be updated with energy auditing software to determine ongoing performance period natural gas energy savings. Monthly data will be analyzed on an annual basis.

5. Determination of Energy & Cost Avoidance
Energy cost avoidance for this measure is achieved through reductions in energy consumption.

The determination of Cost Avoidance will utilize the following baseline – actual formula:

Pre retrofit energy consumption * unit cost
Minus

Post retrofit energy consumption* unit cost.

The monitoring and sampling plan results will indicate energy and cost avoidance.

6. Determination of Non-Energy Operational Cost Impact
There are no associated avoided Operational Costs.

7. Customer Responsibilities and Honeywell-Customer Risk Allocation
Customer Responsibilities: The guarantee is contingent on the Customer successfully fulfilling the following tasks:

- Maintain post retrofit status of building components relative to this ECM (i.e., occupancy level and use, hours of operation, maintenance, etc.)
- Provide copies of utility bills.

Honeywell Risk Allocation: Successful guarantee performance is determined by meeting the avoidance presented in Attachment D, Exhibits to Attachment D, and this M&V plan. Honeywell will measure to confirm that the capacity to perform has been achieved. Monthly utility bill analysis and trend and totalization data analysis will be used to quantify energy and cost avoidance. Customer is responsible to provide Honeywell with notification of changes that would impact the baseline of this ECM. Honeywell is allowed to make baseline appropriate modifications to reflect observed changes in usage that impact the energy baseline.

8. Performance Period Definition and On-Going Activities
Performance Period Definition: The performance period term overall is 15 Years.

On-Going Activities: Annual measurement and verification as indicated.

9. Reports & Documentation
There will be a single (1) annual report of the determination of energy avoidance each year.

GENERAL FUND BUDGET ITEMS	CURRENT EXPENDITURES	WITH HONEYWELL PROGRAM	FUNDING STREAM
Deferred Maintenance System Replacement A) Cost avoided for future expenditures on HVAC Life Cycle costs of existing Mechanical & Electrical systems for annualized funding of replacement of systems per the 2009 RSMeans Square Foot Cost Data: Cost of replacement = $1,940,625 Total Systems Value / 20 years = $97,031	$97,031	$29,109	$67,922
Building Repairs and Maintenance B) Estimated cost and savings due to a reduced need for heating & cooling and electrical, repairs by assorted contractors.	$10,268	$2,680	$7,588
Electrical & Lighting Supplies C) Estimated Cost savings due to a reduced need for inventoried maintenance materials.	$8,948	$4,474	$4,474
Contractual Savings D) Estimated savings associated with cancelling the service contract for the HVAC and controls at the Community Service Center	**$33,367**	$10,010	$23,357
Totals	**$149,614**	**$46,274**	**$103,340**

Available Operational Funds	**$103,340**

POTW FUND BUDGET ITEMS	CURRENT EXPENDITURES	WITH HONEYWELL PROGRAM	FUNDING STREAM
Deferred Maintenance System Replacement A) Cost avoided for future expenditures on HVAC Life Cycle costs of existing Mechanical & Electrical systems for annualized funding of replacement of systems per the 2009 RSMeans Square Foot Cost Data: Cost of replacement = $356,758 Total Systems Value / 20 years = $17,838	$17,838	$1,784	$16,054
Building Repairs and Maintenance B) Estimated cost and savings due to a reduced need for heating & cooling and electrical, repairs by assorted contractors.	$7,380	$4,428	$2,952
Electrical & Lighting Supplies C) Estimated Cost savings due to a reduced need for inventoried maintenance materials.	$2,066	$1,033	$1,033
POTW Operational Savings D) Annual Cost avoidance of blower replacement over a 15 year period	**$33,333**	$0	$33,333
Contractual Savings E) Estimated savings associated with reducing the service contract for the HVAC and controls at the POTW	**$28,224**	$16,934	$11,290
Totals	**$88,841**	**$24,179**	**$64,662**

Available Operational Funds	**$64,662**