Investment Grade Audit

for the Town of Windham

LED Streetlighting Conversion

June 13th, 2019

O-1108 - P-0855

Primary Contact
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REALTERM ENERGY

TABLE OF CONTENTS

June 13, 2019

The Town of Windham
8 School Street
Windham ME 04062

Dear Mr. Plante,

We are pleased to present this Investment Grade Audit of the streetlight network for the Town of Windham.

We have concluded our detailed analysis of your streetlight system to reflect the proposed upgrade to LEDs based on our GIS/GPS mapping. The upgrade of the existing streetlights to LEDs under the scope of work of this IGA will reduce overall operating costs by **77**% in the first year.

The total project cost is $194,456 and includes the allowances for rewiring, fusing, arm replacement and other installation allowances listed in Section 6.2 - Allowances. The estimated available incentives are $1,270 from Efficiency Maine. We have included a project-specific breakdown (Appendix E) that depicts the estimated added cost of including smart controls.

In addition, we have included in Appendix B a listing of recommended spare materials (LED luminaires and photocells) should the Town wish to have these materials included as part of the project scope of work.

We look forward to moving your project to the next phase. We will arrange for a conference call to discuss the contents of this report in the next few days, but until then please feel free to contact us should you have any questions.

Yours truly,

Sean Neely, President
sneely@realtermenergy.com

1. EXECUTIVE SUMMARY

Technical / Environmental Assessment	Title	Town of Windham LED Streetlight Conversion	
	Baseline	Qty HID[(1)] Cobrahead/Dusk-to-Dawn Fixtures:	290
		Qty HID Decorative/Flood Fixtures:	63
		Total Demand (in kW):	47.7 kW
		Annual Operating Hours:	4,260
		Annual Energy Consumption (in kWh):	203,074 kWh
	Technology Employed	Smart ready LED Fixtures	
	Technology Provider(s)	GE Evolve, Acuity Brands	
	Technical Specifications	7-PIN, Smart ready fixtures Color temp: 3,000K Average life ≥ 100,000 hours CRI ≥70, IP ≥ IP 65	
	Fixture Warranty	10 years	
	Annual Operating Cost Savings	$48,683 (77%)	
Financial Assessment	Financing Scheme	Capital Purchase (Windham-financed)	
	LED Upgrade Project Cost[(2)]	**$194,456**	
	Acquisition Cost from Central Maine Power	$63,307	
	Total Project Cost	**$257,763**	
	Incentive from Efficiency Maine	$1,270	
	Net Project Cost	**$256,493**	
	LED Luminaire Life Expectancy	23 Years	
	20 Year Project Savings	$1,067,872	
	Payback Period	4.9 Years	

(1) – High Intensity Discharge

(2) – LED Upgrade Project Cost is inclusive of 5% labor (installation), an adaptor and 5% LED luminaires (material) cost contingency

2. GPS MAPPING

RealTerm Energy conducted a complete GIS inventory of the Town of Windham's streetlights and used the information derived from this review to develop a detailed picture of Windham's current streetlighting network which includes the following:

- Accurate count of all fixtures and fixture types
- Wattage of each existing fixture
- Length of fixture arms, fixture heights, setbacks from roadway, pole spacing, etc.
- Exact GPS coordinates
- Road classifications
- Utility pole ID numbers (when available)

From this data, we established a profile of Windham's streetlight inventory and defined key parameters such as demand and energy consumption. This then allowed us to accurately estimate energy savings potential associated with the LED upgrade.

A detailed breakdown of the revised lighting inventory, obtained from the GIS/GPS audit is presented below:

2.1. GPS Inventory (Actual)

UTILITY	TYPE	WATTAGE	QTY	DEMAND (kW)
COBRAHEAD FIXTURES				
Central Maine Power	Cobrahead - HPS 50W	65	41	2.7
Central Maine Power	Cobrahead - HPS 70W	95	119	11.3
Central Maine Power	Cobrahead - HPS 100W	130	71	9.2
Central Maine Power	Cobrahead - HPS 150W	195	18	3.5
Central Maine Power	Cobrahead - HPS 175W	205	1	0.2
Central Maine Power	Cobrahead - HPS 250W	300	34	10.2
Central Maine Power	Cobrahead - HPS 400W	465	3	1.4
Central Maine Power	Dusk-to-Dawn - HPS 70W	95	1	0.1
Central Maine Power	Cobrahead Type 2 - HPS 250W	300	2	0.6
Subtotal			**290**	**39.2**
DECORATIVE/FLOOD/AREA FIXTURES				
Central Maine Power	Decorative - Victorian Lantern Post Top Type 1 - HPS 100W	130	50	6.5
Central Maine Power	Decorative - Victorian Lantern Post Top Type 1 - HPS 175W	205	6	1.2
Central Maine Power	Decorative - Acorn Post Top Type 1 - HPS 70W	95	5	0.5
Central Maine Power	Decorative - Bell Downlighting Type 1 - HPS 100W	130	2	0.3
Subtotal			**63**	**8.5**
TOTAL			**353**	**47.7**

3. LED REPLACEMENT INVENTORY

The table below illustrates the proposed changes to Windham's inventory, based on our analysis of the GIS data and lighting design results (see next page for more details on our design methodology).

Following input from the Town, our design team developed photometric design plans utilizing 3000K color temperature. The 3000K fixtures warm color offers pedestrian comfort without compromising the safety and visual acuity required in higher classified roads and areas of high pedestrian activity.

3.1. LED Replacements (Actual, Post-Upgrade)

UTILITY	TYPE	WATTAGE	QTY	DEMAND (kW)	DLC*	COLOUR-TEMP.
COBRAHEAD LUMINAIRES						
Central Maine Power	22W_ERL1 0 03 B3 30 A GRAY I R	22	81	1.8	DLC	3,000K
Central Maine Power	31W_ERL1 0 04 B3 30 A GRAY I R	31	50	1.6	DLC	3,000K
Central Maine Power	39W_ERL1 0 05 B3 30 A GRAY I R	39	109	4.2	DLC	3,000K
Central Maine Power	71W_ERL1 0 08 B3 30 A GRAY I R	71	8	0.6	DLC	3,000K
Central Maine Power	71W_ERL1 0 08 D3 30 A GRAY I R	71	7	0.5	DLC	3,000K
Central Maine Power	98W_ERLH 0 11 C3 30 A GRAY I R	98	28	2.7	DLC	3,000K
Central Maine Power	111W_ERLH 0 13 C3 30 A GRAY I R	111	7	0.8	DLC	3,000K
Subtotal			**290**	**12.2**		
DECORATIVE / FLOOD / AREA LUMINAIRES						
Central Maine Power	24W_247L P20 AS 30K R3 AY P7 TL NL1X1	24	51	1.2	Not Listed	3,000K
Central Maine Power	24W_247L P20 AS 30K R5 AY P7 TL NL1X1	24	5	0.1	Not Listed	3,000K
Central Maine Power	38W_MSPL2 P20 30K AH? P B 7 SS P7 NL1X1	38	2	0.1	Not Listed(1)	3,000K
Central Maine Power	39W_GVD2 P20 30K AS M BK 3 N N U P7 NL1X1	39	5	0.2	DLC	3,000K
Subtotal			**63**	**1.6**		
TOTAL			**353**	**13.8**		

Notes:
1) The voltage of this fixture is pending confirmation, if fixture is deemed to be 120-277V it would qualify as DLC listed.

*DLC-listed products are LED products that have been tested at a DLC-approved laboratory and comply with specified performance and energy efficiency criteria. These products in general are eligible for incentive programs. For further information please visit the DesignLights Consortium website at www.designlights.org. Please note, only DLC-listed LED luminaires mounted on non-utility poles are eligible for Efficiency Maine's Commercial and Industrial (C&I) Prescriptive Incentive Program.

3.2. Site Specific Fixture Replacements

Type	Qty.	Replacement	Before	After
Cobrahead	254	GE Lighting ERL1		
Dusk to Dawn	1	GE Lighting ERL1		
Cobrahead Type 2	2	GE Lighting ERLH		
Cobrahead	33	GE Lighting ERLH		
Lantern	56	Acuity Brands 247L		
Acorn	5	Acuity Brands GVD2		
Bell Downlight	2	Acuity Brands MSPL2		

Note: *The above images are for illustration purposes only.*

4. LED LIGHTING DESIGN

RealTerm Energy's technical evaluation team reviewed the collected geospatial dataset and formulated an approach to completing the roadway designs for Windham. After evaluating the configuration of each light fixture for road classification, pedestrian activity, pole spacing, mounting height, arm length and curb setback, we have concluded that Windham can achieve the same or better lighting levels as those under its current streetlights. We have implemented a design solution of selected LED luminaires that follow the RP-8-2014 recommendations where possible, within the existing infrastructure configuration (RP-8 is a recommended, though not a required practice for roadway illumination).

The reason that a portion of Windham's luminaires do not meet RP-8 may be due to several factors, including:

- Inadequate pole spacing (poles are spaced too far apart), insufficient mounting height, or
- Missing light fixtures (at essential locations to eliminate gaps).

Our analysis concludes that in all instances where RP-8 could not be achieved with a new LED fixture, this was already the case for the existing fixture. In such instances, photometric design has been utilized to select an LED luminaire for which the wattage and distribution pattern combine to meet or exceed the existing lighting levels.

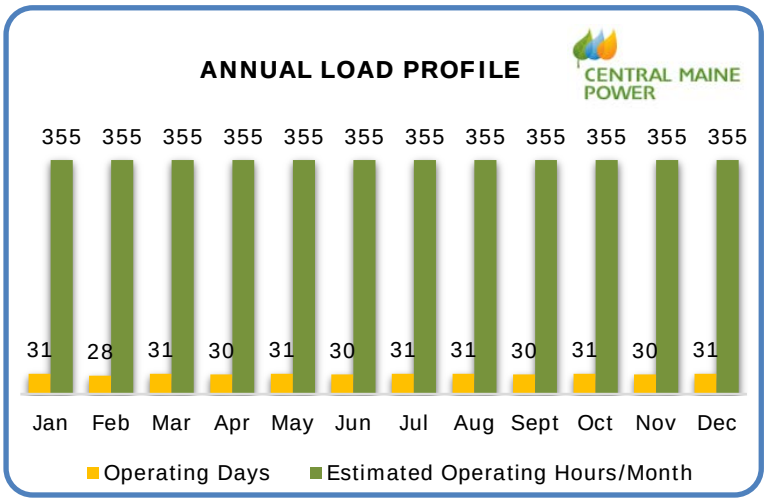
Based on the replacement luminaires detailed in the following pages, we anticipate that the impact on the Town's annual energy consumption will be as follows:

PARAMETER	IGA Results	%
Current Annual Energy Consumption (kWh)	203,074	
Projected LED Annual Energy Consumption (kWh)	58,720	
Annual Savings (kWh)	144,354	71%

5. OPERATING COST SAVINGS ANALYSIS

5.1. Central Maine Power's Load Profile

Streetlights are generally not metered, but rather deemed to be 'on' and are therefore billed based on a load profile, determined by the utility company. The annual load profile is a critical part of the baseline calculation, used to project the actual energy consumption and future energy savings that will be realized after the upgrade. The load profile utilized by Central Maine Power, Windham's utility company, appears on the right.



These hours are applicable to Central Maine Power's tariff structure, SL-Full Service Lighting (baseline) and SL-Delivery-Only Service Lighting (post-upgrade).

5.2. Utility Rate Summary

The electricity cost savings were calculated based on Central Maine Power current rates[1] valid at the date of the preparation of this IGA. The annual energy and cost savings associated with the new LED streetlighting system were calculated taking into consideration both existing and proposed LED inventories. Any modifications in the data outlined in Section 2.1 of this IGA report might impact the energy consumption and cost savings. The table below summarizes the approach used to calculate the baseline and post-upgrade operating costs.

Item	Baseline	Post-Acquisition & LED Upgrade
Number of Fixtures	353	353
Fixture Ownership	Central Maine Power	Town of Windham
Tariff	Rate SL – Full Service Lighting	Rate SL- Delivery – Only Service Lighting
Supply Rate	$0.04750/kWh	$0.04750/kWh
Annual Inflation Rates	Energy (3%), Maintenance (2%)	

[1] Central Maine Power Tariff. Retrieved June 2019, from: https://www.cmpco.com/wps/portal/cmp/home/

5.3. Maintenance

The below table summarizes the baseline and post-upgrade LED maintenance cost that Town can expect:

Yearly Maintenance Cost		
Ownership	**Baseline**	**Post-Acquisition & LED Upgrade**
Utility-Owned	Included in Lighting Equipment Charges	N/A
Town-Owned	N/A	$24.00/LED luminaire/year

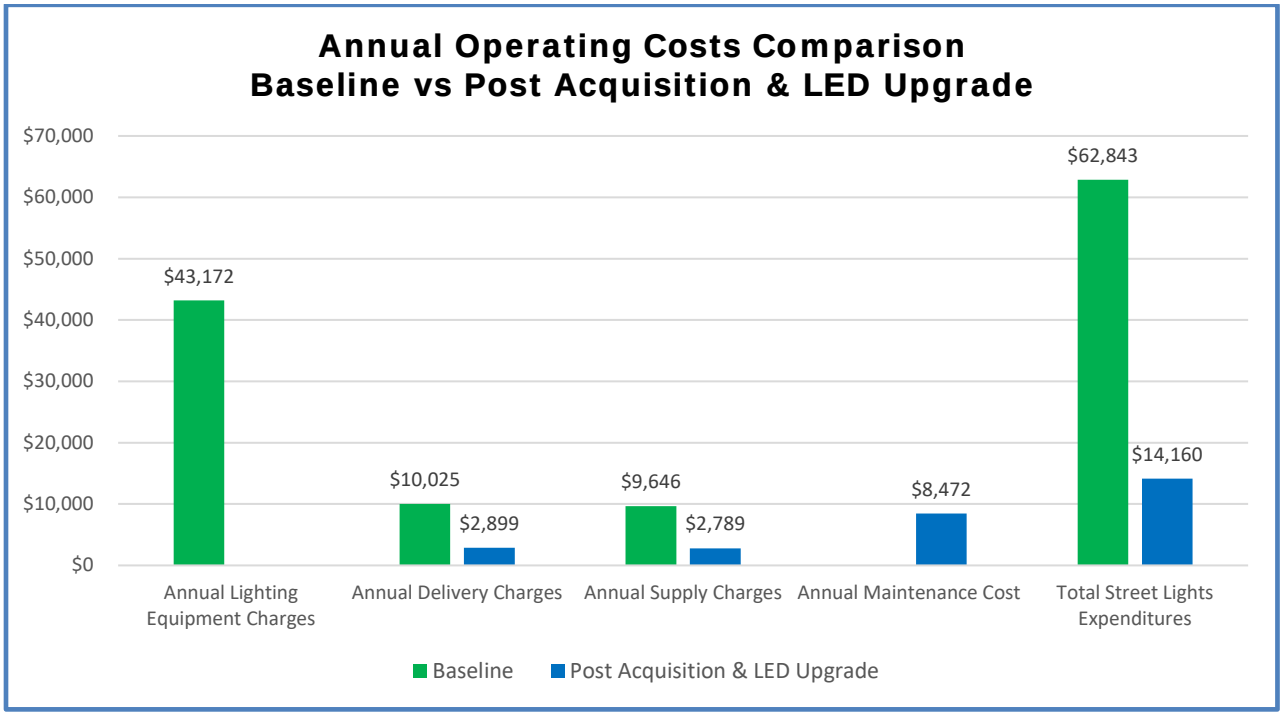
While it is unrealistic to assume that no annual maintenance will be required, the LED luminaires themselves do not contain components that require periodic replacements (such as HPS bulbs and ballasts). We recommend incorporating this estimated figure into municipal budgets to account for eventualities over the life of the fixture that is not covered under the manufacturer's 10-year warranty. Post-upgrade LED maintenance cost is representative of RealTerm Energy's maintenance program and is inclusive of luminaire, photocell (if applicable) and fusing material maintenance. For additional information, a copy of RealTerm Energy's Streetlight Maintenance and Repair Services Agreement can be provided upon request.

5.4. Other Assumptions

1. Acquisition cost amount $63,307 from Central Maine Power was provided by the Town and is included for analysis purpose only.
2. We have assumed that the Efficiency Maine program will continue to be in effect as promised, using the currently published prescriptive rates. While we will do all we can to meet the requirements of these programs and to gain the incentives for the Town, RealTerm Energy cannot take responsibility for those aspects which are outside of its control.
3. The final project inventory and associated energy savings are subject to change based on modifications to the scope of work (i.e. removed/added luminaires, field design changes, etc.) outlined in this IGA report and are to be confirmed in the Final Installation Report (FIR) following the completion of the project close-out. The FIR will then be used to complete the billing change to the Utility/LDCs to reflect the actual installed LED inventory which ultimately will determine the actual energy and cost savings.

5.5. Operating Cost Comparison

PARAMETER (Yr. 1)	BASELINE	POST-ACQUISITION & LED UPGRADE	VARIANCE	PERCENT
Number of Fixtures	**353**	**353**		
Annual Electricity Consumption (kWh)	**203,074**	**58,720**	**144,354**	**71%**
Annual Lighting Equipment Charges	$43,172	$0	$43,172	100%
Annual Delivery Charges	$10,025	$2,899	$7,126	71%
Annual Supply Charges	$9,646	$2,789	$6,857	71%
Annual Maintenance Cost	$0	$8,472	($8,472)	N/A
Total Street Lights Expenditures	**$62,843**	**$14,160**	**$48,683**	**77%**
Average Annual Cost per Fixture	$178	$40	$138	77%



6. PROJECT COSTS: CAPITAL PURCHASE OPTION

In a Capital Purchase financing option, or a "Design, Upgrade and Transfer", the Town arranges the financing of the project.

6.1. Project Costs and Investment Return

ROJECT COSTS	Total
Number of Fixtures	**353**
LED Lighting Upgrade Project Cost	**$194,456**
Acquisition Cost from Utility	$63,307
Total Project Cost	**$257,763**
Incentive from Efficiency Maine	$1,270
Net Project Cost	**$256,493**

The payback period of the project, before including any financing costs is **4.9** years.

6.2. Allowances

The total project cost includes provisional allowances as detailed below:

Provisional Items	Cobrahead		Decorative/Flood/Area	
	%	Quantity	%	Quantity
Rewiring	7%	21	-	-
Refusing	100%	290	100%	63
Fuse Holder Replacement	100%	290	100%	63
Arm Replacement [1]	2%	7	-	-
Re-establishing Connection Between Arm and Pole	5%	15	-	-
Flagging Services [2]	100%	290	100%	63
Third Party Quality Control	1-day of third-party quality control			
Installation (labor contingency)	5%			
LED Luminaire Cost Contingency [3]	5%			
Adaptor Contingency	$50.00 per Decorative/Flood/Area Luminaire			

Notes:

1. One (1) of the brackets (Arm Replacement) listed above are required for HID Dusk-to-Dawn to LED Cobrahead conversions.
2. Flagging services budgeted at 100% of the inventory, to be billed based on actuals.
3. A contingency of 5% has been considered for the cost of LED Luminaires due to the possible risk of tariff increase. Refer to the Terms and Conditions for additional information.

4. Should the Town proceed with the decorative inventory portion of the scope of work, a decorative site survey will need to be conducted by RealTerm Energy to confirm adaptor/bracket requirements. In the unlikely event that the cost of adaptor/brackets required exceeds the contingency above, the Town will be informed and approval from the Town will be required before this material is ordered.

Billing of Provisional Items

The work covered by the allowances listed above are recommended as they will minimize the likelihood of service calls over the life of the fixtures, thereby greatly reducing maintenance costs. During the installation phase, if additional work is required, the Town will be notified first before allowances are exceeded. Any additional work must first be authorized by the Town and will be handled as a change order.

Luminaires near high voltage wires within a restricted zone:

In the case of cobrahead fixtures located near high voltage wires within a restricted zone, we have identified 3 different approaches to address and solve the issue while ensuring safety. The exact quantity of the fixtures located within the restricted zone can only be identified in the installation phase.

1. Safety is always the number one priority, and to that end, we will assess each location with the goal of relocating the affected luminaire to a safe location. This may involve the services of an engineer and additional costs imposed by the Central Maine Power both of which will become pass-through costs to the Town. However, we anticipate a return to the Town through lower maintenance costs (fewer service calls) to the luminaire in the future.
2. Engage the services of high voltage crews to replace the existing luminaires. This option comes at a premium price, and is not recommended, as it does not solve any future access issues.
3. RealTerm Energy supplies the fixtures only (uninstalled), and the Town can work in conjunction with the local utilities to organize the installation.

If, during the installation, we find luminaires near high tension wires within a restricted zone, we will work with your municipal staff to determine which approach the Town prefers.

6.3. Financing Scenario

The following table shows an example of financing based on a representative interest rate.

NET PROJECT COST	TERM (YEARS)	INTEREST RATE	ANNUAL PAYMENT	COST OF BORROWING
$256,493	10	3.50%	**$30,841**	$51,918

6.4. Annual Net Savings Over Loan Period

Year	1	2	3	4	5	6	7	8	9	10
Annual Savings	$48,683	$50,228	$51,822	$53,464	$55,158	$56,905	$58,705	$60,562	$62,476	$64,450
Loan Repayment	**$30,841**	**$30,841**	**$30,841**	**$30,841**	**$30,841**	**$30,841**	**$30,841**	**$30,841**	**$30,841**	**$30,841**
Cash Flow	$17,842	$19,387	$20,981	$22,623	$24,317	$26,064	$27,864	$29,721	$31,635	$33,609
Cumulative Cash Flow	$17,842	$37,229	$58,210	$80,833	$105,150	$131,213	$159,077	$188,798	$220,433	$254,042

As can be seen, there are significant net savings from the outset of the project, net of financing costs.

RealTerm Energy has the possibility of assisting the Town in obtaining financing through a Tax-Exempt Lease-Purchase Agreement (TELP). Please indicate if your Town would be interested in this alternative financing option. RealTerm Energy can then place a request to obtain TELP financing proposal rates for 5, 7 and 10-year duration terms, complete with the terms and conditions of the loan.

7. CONCLUSION AND RECOMMENDATION

We have created a designed solution of selected LED luminaires that conforms to the light levels acceptable to the Town of Windham as stated in Section 4.

If the Town of Windham chooses to move forward with the Design, Upgrade and Transfer option, the total project cost will be $194,456. The Town should expect a payback period of **4.9** years.

The next steps to start the implementation of this new technology and start seeing energy and maintenance savings are as follows:

- Meeting to review the IGA with the Town's staff and RealTerm Energy
- Approval of the IGA
- Submit incentive application to Efficiency Maine
- Proceed with the project installation phase
- Procurement of products and labor

8. TERMS AND CONDITIONS

The total project cost includes the following scope of work:

1. Data collection including GIS/GPS mapping of the existing and proposed luminaires.
2. Photometric lighting designs.
3. Remove existing HID fixtures and supply and install new LED luminaires with photocell controllers as per sections 2.1 in page 5 and 3.1 in page 6.
4. All provisions and allowances detailed on Section 6.2 – Allowances.
5. Electrical permits and inspection of work.
6. Recycling of the removed HID luminaires.
7. Project management.
8. The Town's GIS database will be updated once installation is complete to include final LED inventory installed, date, type, location, etc.
9. Commissioning.
10. Completing billing change(s) on your behalf based on the new LED lighting system installed by RealTerm Energy and based on the information provided by the Town and Utility regarding the metered and unmetered lights. RealTerm Energy assumes that the information provided by both parties are accurate and reflects the current state of the actual inventory.
11. Third party quality control. Based upon this, should further action be required to correct any deficiencies observed in the installation, remedial work and any associated costs shall be borne by the installer.
12. Applying on your behalf for the available Efficiency Maine incentive. The final incentive amount will be determined by Efficiency Maine and is not guaranteed by RealTerm Energy.
13. RealTerm Energy and our Installation Contractor warrant all workmanship completed within the work area for a period of one (1) year following the completion date of the installation.
14. The luminaire and photocell are covered by their manufacturer's warranties for 10 years.
15. If material/equipment ordered is removed from the installation scope of work after being ordered, the ordered material/equipment that was not installed will remain in possession of the Municipality after the installation is complete and RealTerm Energy will not provide credit for the uninstalled material/equipment.
16. Given the dynamics of today's international markets, there's risk that addition tariffs may be levied on roadway lighting products during the review period of this IGA. Should this happen, RealTerm Energy will work with its distributors, suppliers, & manufacturers to retain existing prices for as long as possible. However, any new or increased tariffs may result in price increases which are beyond RealTerm Energy's control. If this does happen, RealTerm Energy will communicate any cost impacts to the municipality. Note that, as a result of the tariff risk, we have included a material cost contingency as part of the project cost.
17. This IGA is valid until August 13, 2019.

18. The total project cost is in US dollars and does not include any applicable taxes.
19. Realterm Energy Limited Workmanship Warranty only covers installation services such as incorrect equipment mounting or wiring of the fixture and related equipment. This warranty does not cover issues unrelated to the installation, such as fuse failure, pole knockdowns, wire shorting, disconnection of the pole or arm from owner source (unless improperly mounted), weather-related damage, natural disasters, vandalism, or unrelated capital work impacting the pole or fixture. The warranty period for installation services shall be one (1) year from the Installation End Date, defined as the date when the final luminaire is installed. The Town shall be responsible to serve as first-responder to any and all outages, shall identify locations where warranty-related work is necessary, and shall notify Realterm Energy of the warranty-related locations so that a remedy can be implemented. Realterm Energy shall be reimbursed for all outlays incurred in responding to items which are determined not to be warranty related
20. Realterm Energy Limited Workmanship Warranty does not cover any cost related to fixture, photocell and related products and parts failure. Such costs are covered by their individual manufacturers' warranty as applicable. Realterm Energy shall ensure that Town is provided with all manufacturers' warranties for equipment and materials installed and/or used in the Scope of Work and that such documents are in conformity with the agreed upon warranty terms and conditions. Any installation cost related to failed fixtures or photocells is not covered under this warranty. Please note that Realterm Energy will not be replacing your existing maintenance service provider

The scope of work set forth herein shall constitute the sole and entire scope of work for the Project and supersedes all prior and contemporaneous understandings, agreements, representations and warranties, both written and oral, with respect to the scope of work. For greater clarity, this IGA amends and supplements in its entity that the Agreement effective as of March 16th, 2018 by and between the Town of Windham and Realterm Energy US, L.P. (the "Agreement") solely with respect to the scope of work. In the event of any conflict between this IGA and the Agreement, the terms of this IGA shall prevail.

The Parties have not relied on any statement, representation, warranty or agreement of the other Party or of any other person acting on such Party's behalf, including any representations, warranties, or agreements arising from statute or otherwise in law, except for the representations, warranties, or agreements expressly contained in this IGA. Without limitation of the foregoing, the parties acknowledge and agree that the following items are not included in the scope of work, nor the total project cost:

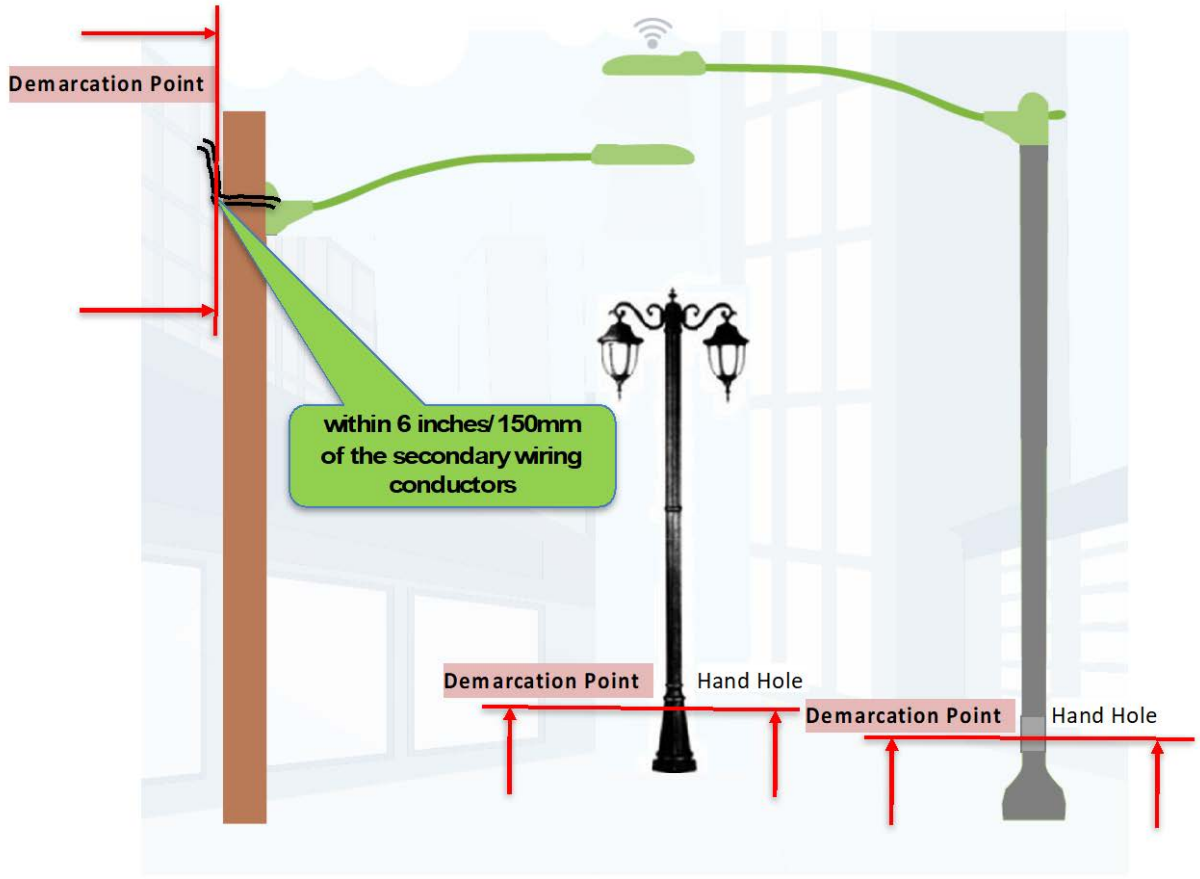
1. Any cost related to upgrading your existing lighting/electrical systems to provincial and/or federal standards.
2. Any cost related to the replacement of the existing relays for the group-controlled streetlights (controller box).
3. Any fees related to the connections to the secondary bus in the unlikely case that the Utility insists on charging a fee.
4. Any other fees which may be charged by a third party.
5. Any costs related to works beyond the Demarcation Point, described as follows:

    - Work performed on the electrical system by RealTerm Energy will be confined to the Luminaire and an area between the agreed upon "Demarcation Point" (in the majority of

cases, a point within 6 inches/150mm of the secondary wiring conductors) on what is referred to as the “Tail”. This is the location at which a fuse and fuse holder should exist and acts as a disconnect to allow easy service, protect the new luminaire and wiring from voltage surges and provide a safe working environment. In the event that a fuse and fuse holder do not exist, they will be installed.

- For decorative poles and stand-alone underground fed units, the “Demarcation Point” is located at the base of the pole in the “Hand Hole”. Where overhead feeds are in use, the “Demarcation Point” is located at the base of the arm holding the fixture, where the connection is made to the secondary wires.
- If RealTerm Energy dispatches a maintenance contractor and the required repairs are outside of the work areas, we will recommend a solution and communicate this information to the Client for approval before proceeding.

9. SCOPE OF WORK DIAGRAM



The foregoing excluded items and any other items not included within the scope of work may be provided by RealTerm Energy at an additional cost pursuant to a separate written agreement or amendment between the Parties only. The above list of exclusions is not meant to be exhaustive, as network site conditions vary, and shall not operate in any way to limit the exclusions of this paragraph or imply any obligation or duty on the party of RealTerm Energy to complete any work other than the specifically defined scope of work set forth herein.

Mr.Tony Plante
The Town of Windham
8 School Street
Windham ME 04062

The information contained herein will form part of the installation contract documents as well as the scope of work for the LED Streetlighting Conversion Project. The undersigned is authorized to sign on behalf of the Town and accepts the entirety of this Investment Grade Audit IGA_Template-2018-0613.

Please initialize which option you would like to proceed with.

Option	Document Section	Initial	Total Cost
Photocells	Main body of report		$194,456
Smart Controls Option	Appendix A		$223,236

Recommended spares option below may be selected with either of the above options. If you wish to have spares included, please circle “Yes” in the table below.

Option	Document Section	Initial	Total Cost
Recommended Spare Inventory (Photocell Option)	Appendix B	Do you wish to have spares included (circle one)? YES / NO	$1,713

_____

Authorized Signature

_____

Name (please print)

_____

Title (please print)

_____

Date

APPENDIX A: SMART CONTROLS OPTION

Smart Controls Option

Adding adaptive controls can help municipalities make the most of their LED streetlight conversion. By including adaptive controls from the outset, you open yourself up to more energy and maintenance savings, less light pollution, and increased safety on Town streets. You also "future-proof" your streetlight network and open up the possibility of adding a myriad of additional Smart City applications later on without having to spend the time and money going back to streetlights that have already been installed.

The table below presents the estimated additional costs associated with the implementation of a smart control system for the Town of Windham's Cobrahead inventory.

PROJECT COSTS	Total
Number of Fixtures with Smart Controls	**290**
Estimated Smart Control Cost (*)	$33,731
Photocell Credit	$4,951
Estimated Net Adder for Controls	$28,780
Estimated LED Project Cost (with Controls)	**$223,236**
Acquisition Cost from Utility	$63,307
Estimated Total Project Cost with Smart Controls	**$286,543**
Incentive from Efficiency Maine	$1,270
Estimated Net Project Cost with Smart Controls	**$285,273**
Payback Period, Years	**5.5**

(*) Includes Hardware and installation (Smart Nodes and Gateways, if applicable), Training, and Central Management Software & Licensing for the first year.

The total cost for the Smart Controls presented in this IGA includes:

- Smart nodes for the fixtures
- Communication Gateways (if applicable under system option)
- Central Management Software (CMS) for the first year
    - The ongoing cost of the Software-as-a-service (Saas) after the first year which grants access to the CMS is not included. This ongoing fee varies by manufacturer but is typically in the range of $1.50-$2.00/pole/year.

APPENDIX B: RECOMMENDED SPARE INVENTORY

Spare Material Inventory

A summary list of the recommended inventory spares (Luminaires and Photocells) is presented below and is based on the material specified in the IGA Report. Should the Town wish to have this spare material included, please indicate so by initializing the signature page above.

Summary of Spare Material		
Part Number	**QTY**	**Material Type**
22W_ERL1 0 03 B3 30 A GRAY I R	2	LED Cobrahead
31W_ERL1 0 04 B3 30 A GRAY I R	1	LED Cobrahead
39W_ERL1 0 05 B3 30 A GRAY I R	3	LED Cobrahead
98W_ERLH 0 11 C3 30 A GRAY I R	1	LED Cobrahead
24W_247L P20 AS 30K R3 AY P7 TL NL1X1	1	LED Lantern Post Top
DLL127F 1.5 JU	10	Photocell

Notes:

- Spare material will be sent directly to the Town and additional freight charges may apply.
- Should the Town wish to include an alternative breakdown (type and quantity) of spare material, the list above can be adjusted accordingly.
- Should the Town proceed with the Smart Control Option, the cost of spares control nodes (if desired) will be based on selected controls option.

Cost of Spare Material	
Number of Luminaire (Spares)	8
Cost of Spare Material	**$1,713**
Total Project Cost	$194,456
Net Project Cost with Spare Material	**$196,169**

APPENDIX C: PRODUCT SPEC SHEETS

- The luminaire and product spec sheets are attached in a separate electronic zip file.

APPENDIX D: LUMINAIRE PRODUCT WARRANTY

- The luminaire warranty documents are attached in a separate electronic zip file.

APPENDIX E: PROJECT COST BREAKDOWN

- The Project Cost Breakdown excel spreadsheet is attached in a separate electronic zip file.

APPENDIX F: LIGHTING DESIGN LAYOUTS

- The designs of the proposed LED luminaires are attached in a separate electronic zip file.

APPENDIX G: STREETLIGHT INVENTORY

- The streetlight inventory Excel file is attached in the electronic zip file.
- The Webmap version of the inventory can be accessed by clicking on the below link using the username and password provided below:
  - https://arcg.is/10m5aq
  - Username: Guest012
  - Password: guest2018