



CITY OF BURTON

LED COMMITTEE MEETING

FEBRUARY 16, 2016

AGENDA

Council Chambers

LED Committee

5:00 PM

**4303 S. CENTER ROAD
BURTON, MI 48519**

- A. CALL TO ORDER**
- B. STAFF PRESENT**
- C. MINUTES APPROVAL**
- D. AUDIENCE PARTICIPATION**
- E. COMMITTEE DISCUSSION ON THE FOLLOWING ITEMS:**
 - 1. Discussion on street light conversion to LED lights.



LED Committee
4303 S. Center Rd.
Burton, MI 48519

Meeting: 02/16/16 05:00 PM
Department: Clerk's Office
Category: Discussion
Prepared By: Teresa M. Karsney
Department Head: Teresa M. Karsney

E.1

SCHEDULED

AGENDA ITEM (ID # 2123)

DOC ID: 2123

Discussion on street light conversion to LED lights.

ATTACHMENTS:

- LED Information (PDF)
- LED Info 2 (PDF)
- LED Info 3 (PDF)
- LED Info 5 (PDF)
- LED Info 6 (PDF)

From: **John J. Kusnier** JOHN.KUSNIERIII@cmsenergy.com
Subject: FW: Streetlight to LED conceptual costs
Date: Yesterday at 2:54 PM
To: Councilman Dennis O'Keefe okeefe48509@yahoo.com

From: Tami A. Opalek
Sent: Thursday, January 28, 2016 4:11 PM
To: r.slattery@burtonmi.gov
Cc: Kevin J. Keane
Subject: Streetlight to LED conceptual costs

Hi Bob – I did a quick review of the streetlights within Burton Township and came up with the following conceptual costs. I do not have any estimated charges for center suspension or decorative post-top lights. These will need to be designed by a local designer.

Below is an estimated cost based on current information that we have and is based on cobrahead fixtures only.

According to our current records, the conceptual cost to convert the existing mercury vapor cobrahead lights as our records currently indicate to an equivalent LED cobrahead is \$5,022.

The conversion of your high pressure sodium cobrahead streetlights has a conceptual cost of \$960,036. The conversion of these lights will require one of our designers to go to the field to review field conditions and verify if any additional charges may be involved such as traffic control.

Due to the extended time required for design of the high pressure sodium to LED conversions these will not be done in parallel. We will convert your mercury vapor cobrahead fixtures first to expedite the cost savings to you.

At this time we do not have the cost estimates to convert any decorative post top lights or center suspension lights. Please keep in mind that these are conceptual cost estimates for planning purposes only and may vary.

I have created a notification for you and a local designer should be contacting you. For your reference the number is 1033658697.

Please let me know if you would like to have your cobrahead mercury vapor lights

converted over to LED at this time and I can have someone from my team begin working on that for you. I look forward to hearing back from you.

CITY OF BURTON REVIEW OF ESTIMATED COSTS					
COSTS BELOW ARE CONCEPTUAL COSTS					
MV COBRAHEAD FIXTURES			Equivalent		Total
SIZE	TYPE	COUNT	Wattage in LED	Cost per light	conceptual
175W	MV	58	54W LED	\$ 81	\$ 4,698
250W	MV	4	54W LED	\$ 81	\$ 324
Total MV Cobrahead					\$ 5,022
CONCEPTUAL COSTS BELOW - ACTUALS FROM LOCAL DESIGNER					
HPS COBRAHEAD FIXTURES			Equivalent		Total
SIZE	TYPE	COUNT	Wattage in LED	Cost per light	conceptual
100W	HPS	1274	54W LED	\$ 618	\$ 787,332
150W	HPS	38	72W LED	\$ 759	\$ 28,842
250W	HPS	105	110W LED	\$ 813	\$ 85,365
400W	HPS	51	213W LED	\$ 1,147	\$ 58,497
Total HPS Cobrahead					\$ 960,036
Conceptual cost to convert all HPS & MV cobrahead lights to LED					\$ 965,058
COSTS BELOW TO BE DETERMINED BY LOCAL DESIGNER					
Post Top	MV	4	Equivalent Post Top - Avery or Traditional		
Post Top	HPS	496	Equivalent Post Top - Avery or Traditional		
Center Suspension	MV	10	To Bracket Style Equivalent LED Light		
Center Suspension	HPS	582	To Bracket Style Equivalent LED Light		

Projected conceptual cost and payback estimate based on cobrahead fixture replacement only - to equivalent LED	
Total Savings per month	\$ 5,917.16
Total Savings per year	\$ 71,005.97
Payback estimate:	13.6 years

Projected savings based on recommended equivalent LED replacement size	
Total Savings per month	\$ 9,214.65
Total Savings per year	\$ 110,575.86

Thank you -

Tami Opalek
 Statewide Streetlight Team Leader
 Consumers Energy

(517)788-0483 Jackson
 (517)740-4279 Mobile
 Email: Tami.Opalek@cmsenergy.com

Attachment: LED Information (2123 : Discussion on Street Light conversion to LED lights)

Streetlighting Replacement Plan

Developing a Long-term Streetlight Replacement Plan

Because of federal and state policy changes, Consumers Energy is encouraging communities to review their streetlighting and work with the utility to develop a long-term plan for this transition.

Some mercury vapor bulbs still are available, but Consumers Energy can no longer obtain supplies to maintain the light fixtures or supporting equipment. Consumers Energy will continue to replace mercury vapor bulbs and repair failed controls as long as supplies of equipment last. However, other problems will require the replacement of the entire fixture with a different light technology.

Streetlighting Options

High-pressure sodium and metal halide equipment is available. These lighting options are more energy efficient, and may result in lower monthly energy charges for your community. In addition, Consumers Energy also offers light-emitting diode (LED) streetlighting service for unmetered company- and customer-owned lighting.

For any of these light types, the new options may change lighting aesthetics because of pattern shaping or light color (white, yellow or orange) and temperature (cold to warm). It also is important to consider dark sky ordinances and changes in traffic patterns or congestion (previously rural to more urban) when reviewing lighting options.

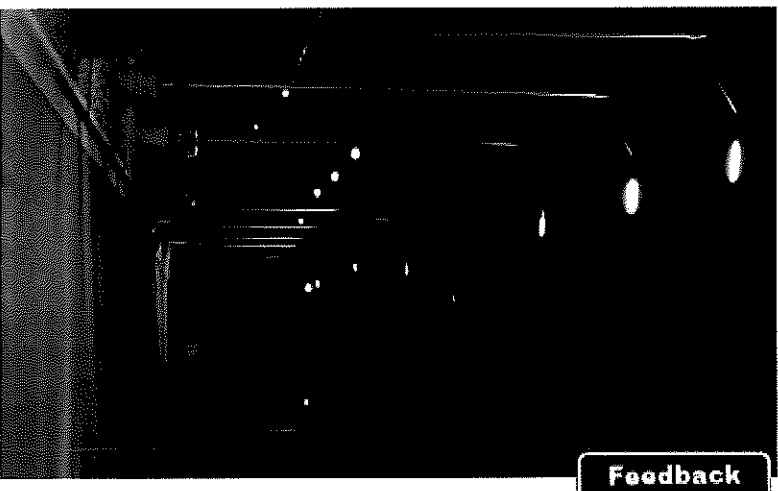
Understanding the Costs and Savings

Under Michigan Public Service Commission (MPSC) rules, Consumers Energy is responsible for a portion of the cost of converting mercury vapor streetlights to a different lighting technology. When mercury vapor bulbs and fixtures burn out or fail, Consumers Energy will replace them at no cost with the nearest comparable high-pressure sodium light, unless alternate plans are developed in advance. Under some conditions, there may be a cost to the customer.

Developing a Long-term Solution

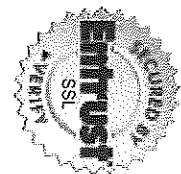
Consumers Energy understands that converting your lighting system is an important decision impacting your budget, community aesthetics and citizen safety.

Consumers Energy representatives will be working with Michigan community leaders in the coming months to review options and then develop a long-term plan that best meets the needs of each community. For more information or to arrange a meeting, please call us toll-free at (800) 805-0490 or [e-mail us](mailto:us).



Feedback

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Feedback

GENERAL SERVICE UNMETERED LIGHTING RATE GUL

Availability:

Subject to any restrictions, this rate is available to any political subdivision or agency of the State of Michigan having jurisdiction over public streets or roadways for (i) unmetered lighting service where the Company has existing distribution lines available for supplying energy for such service or (ii) for any Company-owned system consisting of one or more luminaires. This rate is also available to existing farm or Non-Residential customers previously served under General Service Outdoor Lighting Rate L-4, but closed to new business.

New installations under this rate require approval by the Company of the proposed design and type of any customer equipment. In the event that the Company does not approve the design, the Company may require the customer to be served under a general service metered rate provision.

This rate is not available for resale purposes or for Retail Open Access Service. Only streetlighting types referenced within this rate schedule may receive unmetered service. Other types of streetlighting are excluded from service under this Rate Schedule.

Changes in the federal or state law have limited or eliminated the manufacture or importing of supplies needed to maintain some types of existing lighting offered under this Rate Schedule. To the extent that the Company has the necessary materials, the Company will continue to maintain existing mercury vapor lamp installations in accordance with this Electric Rate Schedule.

Nature of Service:

Customer-Owned

In systems where the Company has existing distribution lines available for supplying energy for unmetered lighting service, control equipment shall be furnished and owned by the Company. The customer shall furnish, install and own the rest of the equipment comprising the unmetered lighting system including, but not limited to, the overhead wires or underground cables between the luminaires and the supply circuits extending to the point of attachment with the Company's lines. All of the customer's equipment shall be subject to the Company's approval. The Company shall connect the customer's equipment to the Company's lines, supply the energy, control the burning hours of the lamps, provide normal replacement of luminaire glassware and lamps, and paint metal parts as needed; all other maintenance and replacement of the customer's equipment shall be paid for by the customer.

Company-Owned

In Company-owned systems consisting of one or more luminaires, the Company shall furnish, install and own all equipment comprising the unmetered lighting system. The Company shall supply the energy, and renew and maintain the entire equipment. In areas where the Company has installed an underground electric distribution system pursuant to the Company's residential underground electric distribution policy as set forth in its Electric Rate Book, the unmetered lighting system shall be served from said underground electric distribution system. In all other areas, the unmetered lighting system shall normally be served from overhead lines or from underground cables installed at customer's request pursuant to special unmetered lighting provisions contained in Monthly Rate clause and Facilities Policy.

Outdoor Lighting

For existing outdoor lighting, luminaires and control equipment shall be furnished, owned, installed and maintained by the Company. Luminaires shall be installed on Company-owned or Company-leased poles and must be accessible to the Company's construction and maintenance equipment.

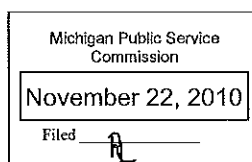
Facilities Policy:

Customer-Owned

At the customer's request, the Company shall install, at its own cost, its distribution facilities under this rate to the extent that the cost of such installation does not exceed the allowance granted under the Company's general service line extension policy. Costs of facilities in excess of the free allowance shall require an advance, nonrefundable, contribution in the amount by which the estimated costs exceed the free allowance.

(Continued on Sheet No. D-50.10)

Issued November 18, 2010 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on
 and after November 5, 2010

Issued under authority of the
 Michigan Public Service Commission
 dated November 4, 2010
 in Case No. U-16191

Attachment: LED Information (2123 : Discussion on Street Light conversion to LED lights)

GENERAL SERVICE UNMETERED LIGHTING RATE GUL
 (Continued From Sheet No. D-50.00)

Facilities Policy: (Contd)

Company-Owned

At the customer's request, the Company shall install new luminaires and associated facilities under this rate, or replace existing luminaires and associated facilities served under this rate with other luminaires and associated facilities for which it has rates available in accordance with the following guidelines:

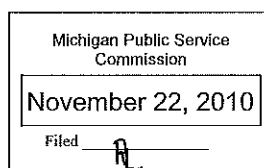
- A. The installation of all new, standard unmetered lights shall require a customer contribution of \$100 per luminaire. This policy includes the extension of up to 350 feet of distribution facilities to serve any individual light. Any extension beyond 350 feet shall require a contribution based on the Company's general service line extension policy.
- B. At the customer's request, the Company shall convert its existing incandescent/fluorescent luminaires to the nearest standard size high-pressure sodium or metal halide luminaire at no cost to the customer. If requirements for installations make it necessary for the Company to convert luminaires or if the customer requests a conversion of luminaires *that the Company can no longer maintain due to federal or state requirements*, the Company shall cover the cost of the bulb and the customer shall be responsible for all other expenses as a contribution. For conversions completed with normal Company maintenance such as replacement of bulbs on a routine schedule or due to failure, then the average cost of that work type shall be deducted from the total work order cost to determine the required customer contribution. If other light upgrading is also involved, the Company expenditure shall be calculated in accordance with the Company's general service line extension policy. Any costs in excess of this amount shall be borne by the customer.

Additional annual revenue is the greater of (1) the difference between the annual revenue from the nearest size high-pressure sodium luminaire and the annual delivery revenue from the upgraded light which would be installed or (2) the difference between the annual delivery revenue from the existing light and the annual delivery revenue from the light which would be installed.

- C. Where upgrading of metal halide, or high-pressure sodium unmetered lights are requested, the customer shall pay the estimated cost of conversion. Where the upgrading results in additional revenues to the Company, the customer shall receive a credit calculated in accordance with the Company's general service line extension policy to be applied against the estimated cost of conversion. If the cost of conversion is overestimated, the Company shall, upon completion of construction, refund that portion of the contribution resulting from the overestimate.
- D. Where Company-approved nonstandard poles are requested, the customer contribution shall be the difference in installed cost between standard wood poles and the requested pole. Where Company-approved nonstandard fixtures are requested, a customer contribution shall be required to cover costs in excess of the equivalent Company standard fixture.
- E. For unmetered lighting systems installed underground (exclusive of subdivisions where the developer's contribution provided for underground unmetered lighting), the customer shall be required to contribute the estimated difference in cost between the equivalent standard overhead construction and required underground construction. No contribution shall be required for that footage of unmetered lighting cable which can be satisfactorily installed in underground conduit furnished by the customer for the Company's use and in accordance with the Company's specification.
- F. For system-wide conversions from one light source to another, the customer may be limited to an annual quota as determined by the Company.
- G. If underground unmetered lighting cable is requested, except that requested in conjunction with the Company's residential underground electric distribution policy, the customer shall contribute to the Company the difference between the Company's estimated installed costs of the underground unmetered lighting cable and the Company's estimated installed costs of standard overhead unmetered lighting conductors.

(Continued on Sheet No. D-51.00)

Issued November 18, 2010 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on
 and after November 5, 2010

Issued under authority of the
 Michigan Public Service Commission
 dated November 4, 2010
 in Case No. U-16191

Attachment: LED Information (2123 : Discussion on Street Light conversion to LED lights)

M.P.S.C. No. 13 - Electric
 Consumers Energy Company
 (To add Power Plant Securitization reference)

Fifth Revised Sheet No. D-52.00
 Cancels Fourth Revised Sheet No. D-52.00

GENERAL SERVICE UNMETERED LIGHTING RATE GUL
 (Continued From Sheet No. D-51.00)

Monthly Rate: (Contd)

Green Generation Program:

Customer contracts for participation in the Green Generation Program shall be available to any eligible customer as described in Rule C10.2, Green Generation Program.

A customer who participates in the Green Generation Program is subject to the provisions contained in Rule C10.2, Green Generation Program.

General Terms, Surcharges, Power Supply Cost Recovery (PSCR) Factor and Securitization Charges:

This rate is subject to all general terms and conditions shown on Sheet No. D-1.00, Surcharges shown on Nos. D-2.00 through D-3.10, PSCR Factor shown on Sheet No. D-4.00 and the Securitization Charges shown on Sheet Nos. D-5.00 and D-5.10.

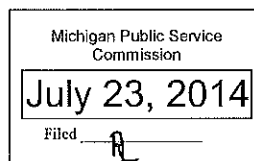
Due Date and Late Payment Charge:

The due date of the customer bill shall be 21 days from the date of mailing. A late payment charge of 2% of the unpaid balance, net of taxes, shall be assessed to any bill which is not paid on or before the due date shown thereon.

Special Terms and Conditions:

The Company reserves the right to make special contractual arrangements as to term or duration of contract, termination charges, contribution in aid of construction, annual charges or other special considerations when the customer requests service, equipment or facilities not normally provided under this rate.

Issued July 22, 2014 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on and after
 the Company's August 2014 Billing Month

Issued under authority of the
 Michigan Public Service Commission
 dated December 6, 2013
 in Case No. U-17473

Attachment: LED Information (2123 : Discussion on Street Light conversion to LED lights)

GENERAL SERVICE UNMETERED LIGHTING RATE GUL
 (Continued From Sheet No. D-50.10)

Monthly Rate:

The charge per luminaire per month shall be:

Type of Luminaire	Nominal Rating of Lamps (One Lamp per Luminaire) (1)			Service Charge per Luminaire (4)	Fixture Charge per Luminaire (4)
	Watts	Watts Including Ballast (2)	Lumens		
Mercury Vapor (3)	100	128	3,500	\$6.29	\$6.00
Mercury Vapor (3)	175	209	7,500	10.27	6.00
Mercury Vapor (3)	250	281	10,000	13.81	6.00
Mercury Vapor (3)	400	458	20,000	19.07	6.00
Mercury Vapor (3)	700	770	35,000	28.99	6.00
Mercury Vapor (3)	1,000	1,080	50,000	39.80	6.00
High-Pressure Sodium (3)	70	83	5,000	4.08	6.00
High-Pressure Sodium	100	117	8,500	5.75	6.00
High-Pressure Sodium	150	171	14,000	8.40	6.00
High-Pressure Sodium (3)	200	247	20,000	12.14	6.00
High-Pressure Sodium	250	318	24,000	15.14	6.00
High-Pressure Sodium	400	480	45,000	22.11	6.00
Fluorescent (3)	380	470	20,000	14.74	6.00
Incandescent (3)	202	202	2,500	7.72	6.00
Incandescent (3)	305	305	4,000	9.09	6.00
Incandescent (3)	405	405	6,000	11.30	6.00
Incandescent (3)	690	690	10,000	15.73	6.00
Metal Halide	150	170	9,750	10.32	6.00
Metal Halide (3)	175	210	10,500	10.32	6.00
Metal Halide	250	290	15,500	14.25	6.00
Metal Halide	400	460	24,000	22.61	6.00

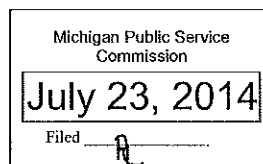
- (1) Ratings for fluorescent lighting apply to all lamps in one luminaire.
- (2) Watts including ballast used for monthly billing of the Power Supply Cost Recovery (PSCR) Factor, Securitization and Securitization Tax Charges, Power Plant Securitization Charges and surcharges.
- (3) Rates apply to existing luminaires only and are not open to new business.
- (4) For customers who own their lighting fixtures and are assessed a Service Charge (but not a Fixture Charge), the charge per luminaire represents a 41.5% Power Supply Charge and a 58.5% Distribution Charge. For customers who do not own their lighting fixtures and are assessed both a Service Charge and a Fixture Charge, the charge per luminaire represents a 26.4% Power Supply Charge and a 73.6% Distribution Charge.

For energy conservation purposes, customers may, at their option, elect to have any or all luminaires served under this rate disconnected for a period of six months or more. The charge per luminaire per month, for each disconnected luminaire, shall be 40% of the monthly rate set forth above. However, should any such disconnected luminaire be reconnected at the customer's request after having been disconnected for less than six months, the monthly rate set forth above shall apply to the period of disconnection. An \$8.00 per luminaire disconnect/reconnect charge shall be made at the time of disconnection except that when the estimated disconnect/reconnect cost is significantly higher than \$8.00, the estimated cost per luminaire shall be charged.

For 24-hour mercury-vapor service, the charge per luminaire shall be 125% of the foregoing rates.

(Continued on Sheet No. D-52.00)

Issued July 22, 2014 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on and after
 the Company's August 2014 Billing Month

Issued under authority of the
 Michigan Public Service Commission
 dated December 6, 2013
 in Case No. U-17473

Attachment: LED Information (2123 : Discussion on Street Light conversion to LED lights)

GENERAL UNMETERED EXPERIMENTAL LIGHTING RATE GU-XL

Availability:

Subject to any restrictions, this rate is available to any political subdivision or agency of the State of Michigan having jurisdiction over public streets or roadways for unmetered streetlighting service where the Company has existing distribution lines available for supplying energy for unmetered experimental lighting technology including light-emitting diode (LED) or for any Company-owned streetlighting system consisting of one or more luminaires. This rate is not available for resale purposes or for Retail Open Access Service. Installations under this rate shall require advanced approval by the Company and a written agreement.

Nature of Service:

Company-Owned Option

In Company-owned systems, the Company shall select, furnish, install and own all equipment for any new unmetered experimental lighting or for any modifications to existing Company-owned equipment. The Company shall supply the energy and maintain all equipment. In areas where the Company's facilities are underground or required to be placed underground or the customer requests underground facilities, the unmetered lighting system shall be served from underground cables pursuant to the provisions contained in this Rate Schedule. In all other areas, the unmetered lighting system shall normally be served from overhead lines pursuant to the provisions contained in this Rate Schedule.

Customer-Owned Option

The capacity requirements of the customer-owned Unmetered Experimental Lighting served under this rate shall be determined by the Company based on verifiable documentation supplied by the customer. The Company shall have the right to test such capacity requirements. In the event that said tests show capacity requirements different from those indicated by the documentation supplied by the customer, the Company's test capacity value shall be used for billing purposes.

In customer-owned systems, control equipment shall be furnished and owned by the Company. The customer shall furnish, install and maintain the equipment comprising the unmetered experimental lighting system including, but not limited to, poles, the overhead wires or underground cables between the luminaires and the supply circuits extending to the point of attachment with the Company's lines. The customer's experimental lighting fixtures and equipment must be approved in advance by the Company before purchase and installation for service under this rate. The Company shall connect the customer's equipment to the Company's lines in a manner consistent with the Company's engineering standards, supply the energy and control the burning hours of the experimental lighting. Maintenance and replacement of the customer-owned equipment shall be the responsibility of the customer.

Existing unmetered installations with customer-owned fixtures on Company-owned distribution equipment must be converted to the customer-owned system described above or the Company-owned system described below to receive service under this Rate Schedule. Such installations may also be converted to a customer-owned metered system and receive service under Rate Schedule GML. Conversion costs shall be the responsibility of the customer.

Facilities Policy:

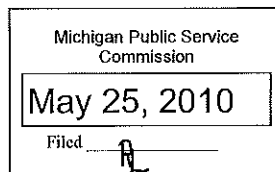
Company-Owned Option

At the customer's request and following execution of a written agreement, the Company shall install experimental lighting and associated facilities it will make available under this rate under the following guidelines:

- A. The installation of all new, standard unmetered lights shall require a customer contribution per luminaire equal to the incremental additional cost to be incurred by the Company. This policy includes the extension of up to 350 feet of distribution facilities to serve any individual light. Any extension beyond this amount shall require a contribution based on the Company's general service line extension policy. For unmetered lighting systems installed underground, the customer shall be required to contribute the estimated difference in cost between the equivalent standard overhead construction and required underground construction.
- B. The conversion of existing unmetered lights shall require a customer contribution per luminaire equal to the incremental additional cost to be incurred by the Company, less a discount of \$200 for the conversion of existing luminaires that are closed to new business if converted to the nearest equivalent fixture size available and approved by the Company.
- C. For light upgrades, such as the replacement of fixtures to a size greater or less than the next equivalent value, Company expenditures for additional facilities beyond those described above shall be calculated in accordance with the Company's general service line extension policy.

(Continued on Sheet No. D-54.02)

Issued May 24, 2010 by
J. G. Russell,
President and Chief Executive Officer,
Jackson, Michigan



Effective for service rendered on
and after April 28, 2010

Issued under authority of the
Michigan Public Service Commission
dated April 27, 2010
in Case No. U-16203

Attachment: LED Information (2123 : Discussion on Street Light conversion to LED lights)

GENERAL UNMETERED EXPERIMENTAL LIGHTING RATE GU-XL
 (Continued From Sheet No. D-54.01)

Facilities Policy (contd):

Company-Owned Option (contd)

- D. The Company will determine the type and size of all experimental lighting fixtures to be offered under this rate. The list of approved fixtures is subject to modification at the sole discretion of the Company to accommodate new product development and advances in technology. Upon customer request, the Company shall provide a list of experimental lighting available under this rate.
- E. The Company shall determine all associated equipment necessary to provide service under the Company-Owned Unmetered Experimental Lighting option.
- F. Any charges, deposits or contributions may be required in advance of commencement of construction.

Customer-Owned Option

If it is necessary for the Company to install distribution facilities to serve a customer-owned system, contributions and/or deposits for such additional facilities shall be calculated in accordance with the Company's general service line extension policy. Any charges, deposits or contributions may be required in advance of commencement of construction.

Monthly Rate:

Power Supply Charges:

Energy Charge: \$0.056066 per kWh for all kWh

This rate is subject to the Power Supply Cost Recovery (PSCR) Factor shown on Sheet No. D-4.00.

Delivery Charges Customer-Owned Option:

Distribution Charge: \$0.050228 per kWh for all kWh

Delivery Charges Company-Owned Option:

Distribution Charge: \$0.079004 per kWh for all kWh

Fixture Charge per Luminaire: \$6.00 per month

This rate is subject to the Surcharges shown on Sheet Nos. D-2.00 through D-3.10 and the Securitization Charges shown on Sheet Nos. D-5.00 and D-5.10.

General Terms:

This rate is subject to all general terms and conditions shown on Sheet No. D-1.00.

Due Date and Late Payment Charge:

The due date of the customer bill shall be 21 days from the date of mailing. A late payment charge of 2% of the unpaid balance, net of taxes, shall be assessed to any bill which is not paid on or before the due date shown thereon.

Determination of Monthly Kilowatt-Hours and Burning Hours:

The calculation of monthly kilowatt-hours shall be determined by multiplying the total capacity requirements in kW (including the lamps, ballasts, drivers, and control devices) times the monthly Burning Hours as defined below. The customer shall not change the capacity requirements of the equipment owned by it without first notifying the Company in writing of such changes and the date that they shall be made, and modifying the lighting contract with the Company accordingly.

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
457.8	382.2	369.6	306.6	264.6	226.8	252.0	298.2	336.0	399.0	432.6	474.6	4,200

Hours of Lighting:

Unmetered Experimental Lighting shall be burning at all times when the natural general level of illumination is lower than about 3/4 footcandle, and under normal conditions this is approximately one-half hour after sunset until approximately one-half hour before sunrise. Lighting service will be supplied from dusk to dawn every night and all night on an operating schedule of approximately 4,200 hours per year.

(Continued on Sheet No. D-54.03)

Issued July 22, 2014 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on and after
 the Company's August 2014 Billing Month

Issued under authority of the
 Michigan Public Service Commission
 dated December 6, 2013
 in Case No. U-17473

Attachment: LED Information (2123 : Discussion on Street Light conversion to LED lights)

GENERAL UNMETERED EXPERIMENTAL LIGHTING RATE GU-XL
(Continued From Sheet No. D-54.02)

Maintenance of Lighting:

The Company shall replace or repair, at its own cost, Company-Owned Unmetered Experimental Lighting equipment that is out of service. If, for some reason, the Company is not able to make such restoration within one full billing month from the date the outage is first reported to the Company, the Company shall provide a credit to the customer's bill for unmetered lighting service. The credit shall be applied to the customer's bill beginning with the second full billing month after the outage is reported.

Outages caused by factors beyond the Company's reasonable control as provided for in Rules B10.1, Character of Service, and B12., Emergency Electrical Procedures, of the Company's Electric Rate Schedule are not covered by this policy. Such outages would be handled consistent with the particular circumstances and no credit would be made for such outages.

Green Generation Program:

Customer contracts for participation in the Green Generation Program shall be available to any eligible customer as described in Rule C10.2, Green Generation Program.

A customer who participates in the Green Generation Program is subject to the provisions contained in Rule C 10.2, Green Generation Program.

Term and Form of Contract:

All service under this rate shall require a written contract with an initial term of two years or more.

Attachment: LED Information (2123 : Discussion on Street Light conversion to LED lights)

Issued May 30, 2013 by
J. G. Russell,
President and Chief Executive Officer,
Jackson, Michigan



Effective for service rendered on
and after May 16, 2013

Issued under authority of the
Michigan Public Service Commission
dated May 15, 2013
in Case No. U-17087

Location: W083 41, N43 01

BURTON, MICHIGAN
Eastern Standard Time

Astronomical Applications Dept.
U. S. Naval Observatory
Washington, DC 20392-5420

Duration of Darkness for 2015

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
01	14:56	14:03	12:47	11:16	09:53	08:51	08:42	09:29	10:49	12:15	13:42	14:45
02	14:55	14:01	12:44	11:14	09:51	08:50	08:42	09:31	10:52	12:18	13:44	14:46
03	14:54	13:58	12:42	11:11	09:48	08:49	08:43	09:34	10:55	12:21	13:47	14:48
04	14:53	13:56	12:39	11:08	09:46	08:48	08:44	09:36	10:58	12:24	13:50	14:49
05	14:52	13:53	12:36	11:05	09:43	08:47	08:45	09:38	11:00	12:27	13:52	14:50
06	14:51	13:51	12:33	11:02	09:41	08:46	08:46	09:41	11:03	12:30	13:55	14:51
07	14:50	13:48	12:30	10:59	09:39	08:45	08:47	09:43	11:06	12:33	13:57	14:52
08	14:48	13:45	12:27	10:56	09:36	08:44	08:48	09:45	11:09	12:36	13:59	14:53
09	14:47	13:43	12:24	10:53	09:34	08:43	08:49	09:48	11:12	12:38	14:02	14:54
10	14:46	13:40	12:21	10:50	09:32	08:42	08:50	09:50	11:15	12:41	14:04	14:55
11	14:44	13:38	12:18	10:48	09:29	08:42	08:51	09:53	11:17	12:44	14:07	14:56
12	14:43	13:35	12:15	10:45	09:27	08:41	08:53	09:55	11:20	12:47	14:09	14:57
13	14:41	13:32	12:12	10:42	09:25	08:40	08:54	09:58	11:23	12:50	14:11	14:57
14	14:40	13:30	12:09	10:39	09:23	08:40	08:56	10:00	11:26	12:53	14:13	14:58
15	14:38	13:27	12:06	10:36	09:21	08:39	08:57	10:03	11:29	12:56	14:16	14:58
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28	14:12	12:50	11:28	10:01	08:57	08:40	09:21	10:38	12:07	13:31	14:40	14:58
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31	14:05		11:19		08:53		09:27	10:46		13:39		14:56

[Back to form](#)

Attachment: LED Info 2 (2123 : Discussion on Street Light conversion to LED lights)



NO SCALE

ATTACHMENT 1 HAS BEEN CREATED BY THE CITY OF BURTON AND GENESSE CO. IN AN OVERVIEW OF CONSUMERS ENERGY OWNED STREETLIGHTS WITHIN THEIR POLITICAL BOUNDARY.

ATTACHMENT 1 REPRESENTS THE RESULTS OF A STREETLIGHT SURVEY CONDUCTED IN 2013. THE LOCATIONS OF THE FIXTURES ARE APPROXIMATE AND ONLY REFLECT INFORMATION AVAILABLE THROUGH THE DATE OF THIS SURVEY.

ATTACHMENT 1 IS NOT TO BE DISTRIBUTED OR REPRODUCED WITH THE EXPRESS AUTHORIZATION OF CONSUMERS ENERGY.



BURTON CITY STREET LIGHT SURVEY

Sheet No. 01

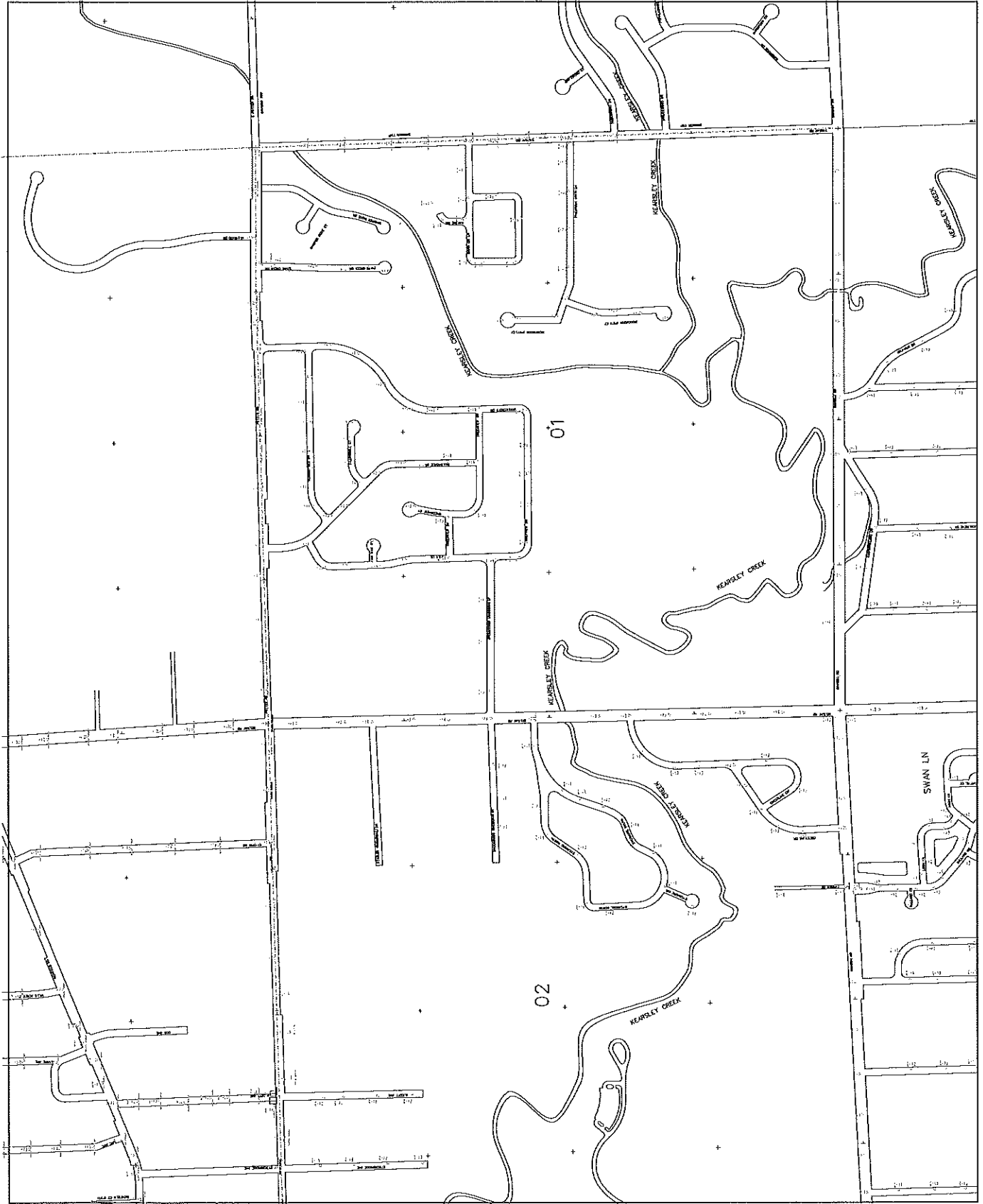
1	2	3	4	5
6	7	8	9	

Sheet Name: 01

E.1.b

KEY PLAN
BURTON CITY, GENESSE

1 of 9



Attachment: LED Info 2 (2123 : Discussion on Street Light conversion to LED lights)



NO SCALE

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ATTACHMENT 1 REPRESENTS THE RESULTS OF A STREETLIGHT SURVEY CONDUCTED IN 2015. THE INFORMATION AND FEATURES ARE APPROXIMATE AND SUBJECT TO CHANGE THROUGH THE DATE OF THIS SURVEY.

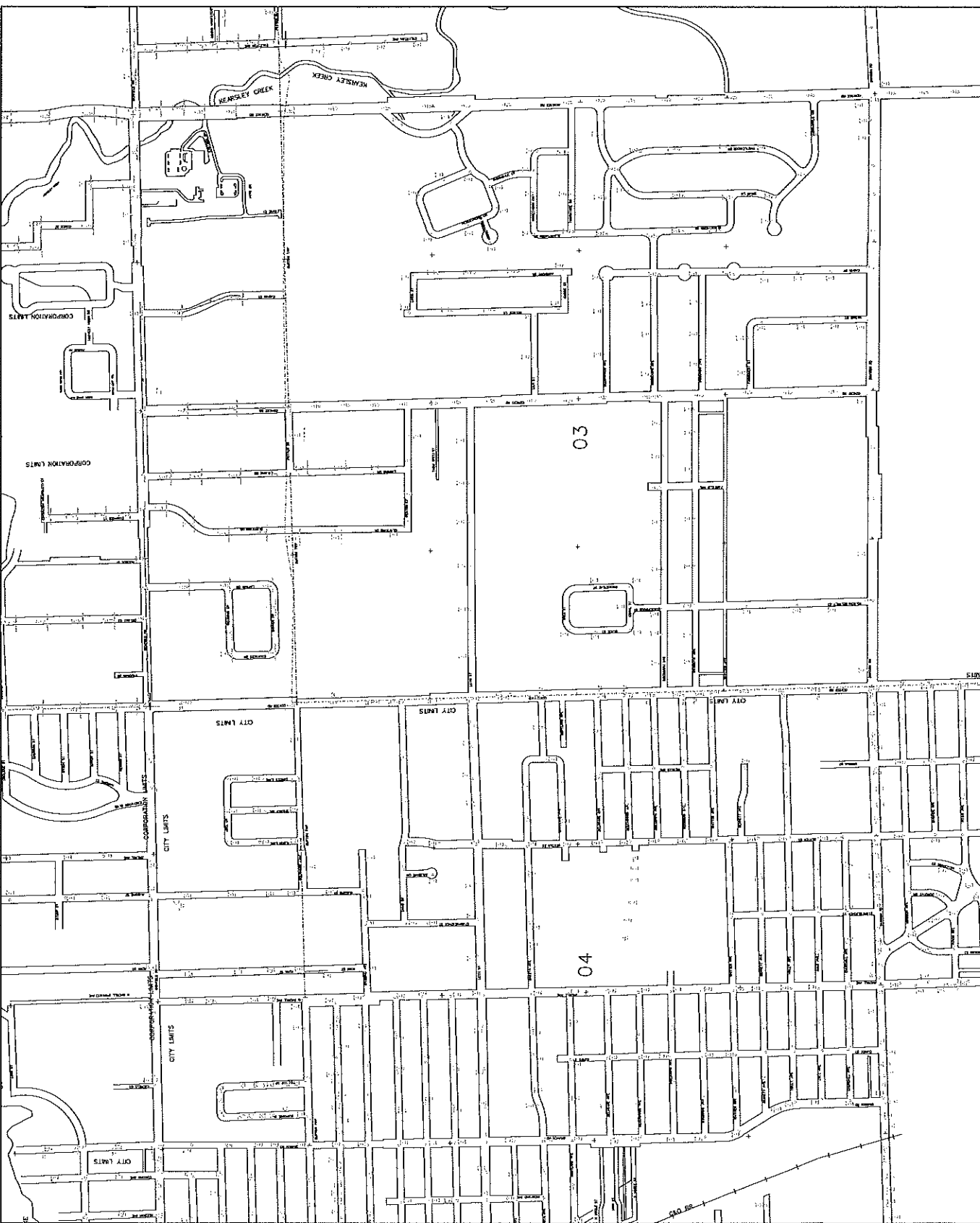
ATTACHMENT 1 IS NOT TO BE INTERPRETED OR USED WITH OUT THE EXPRESS AUTHORIZATION OF CONSUMERS ENERGY.



BURTON CITY STREET LIGHT SURVEY

Sheet No. 001

1	4	5	9
2	3	6	8
Sheet No. 002			
Sheet No. 003			
Sheet No. 004			
Sheet No. 005			
Sheet No. 006			
Sheet No. 007			
Sheet No. 008			
Sheet No. 009			
Sheet No. 010			



Attachment: LED Info 2 (2123 : Discussion on Street Light conversion to LED lights)

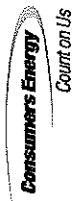


NO SCALE

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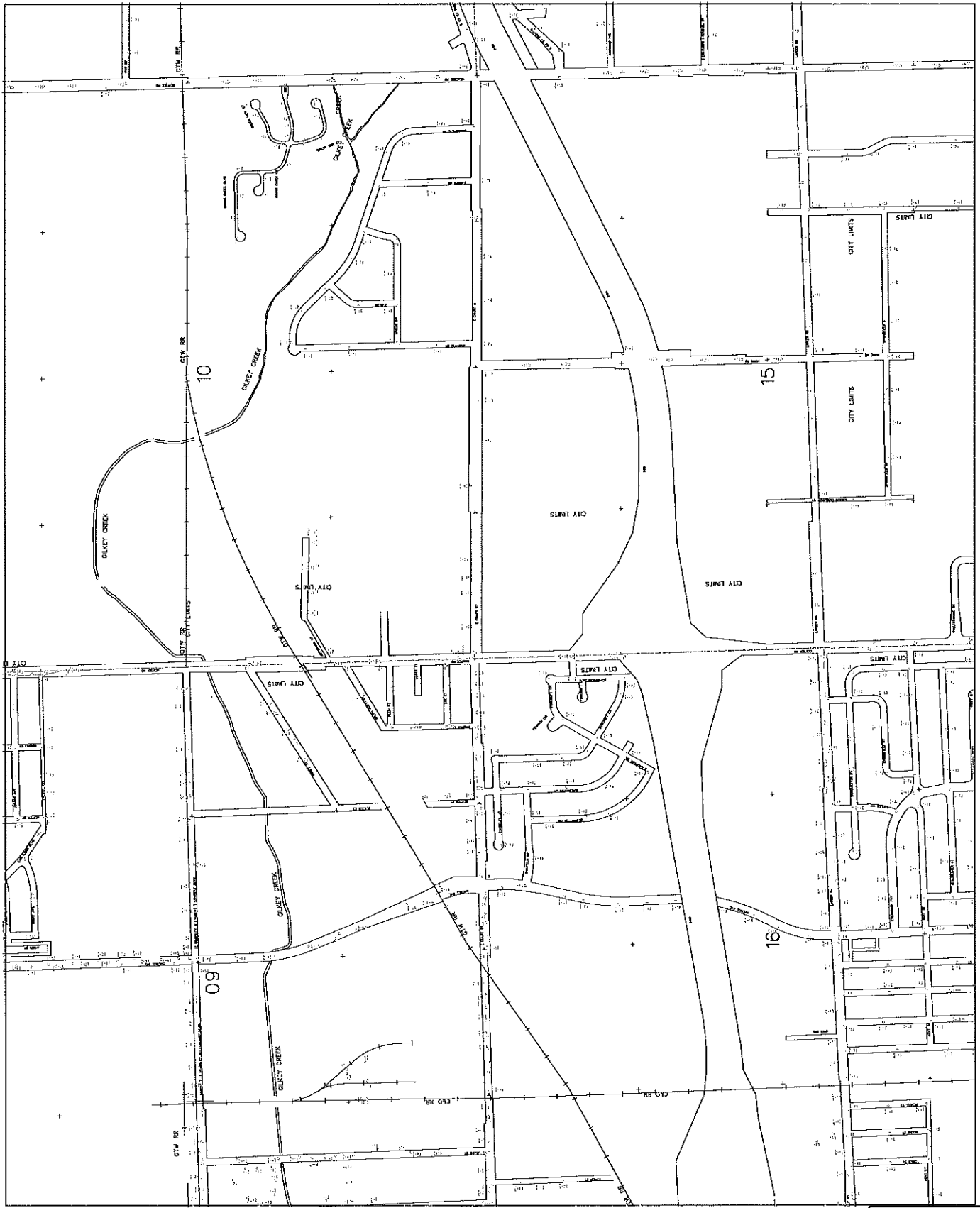


BURTON CITY STREET LIGHT SURVEY

THIRTY-FOUR (34) SHEETS

1	4	5	9
2	3	6	8
7			

City Limits



Attachment: LED Info 2 (2123 : Discussion on Street Light conversion to LED lights)



NO SCALE

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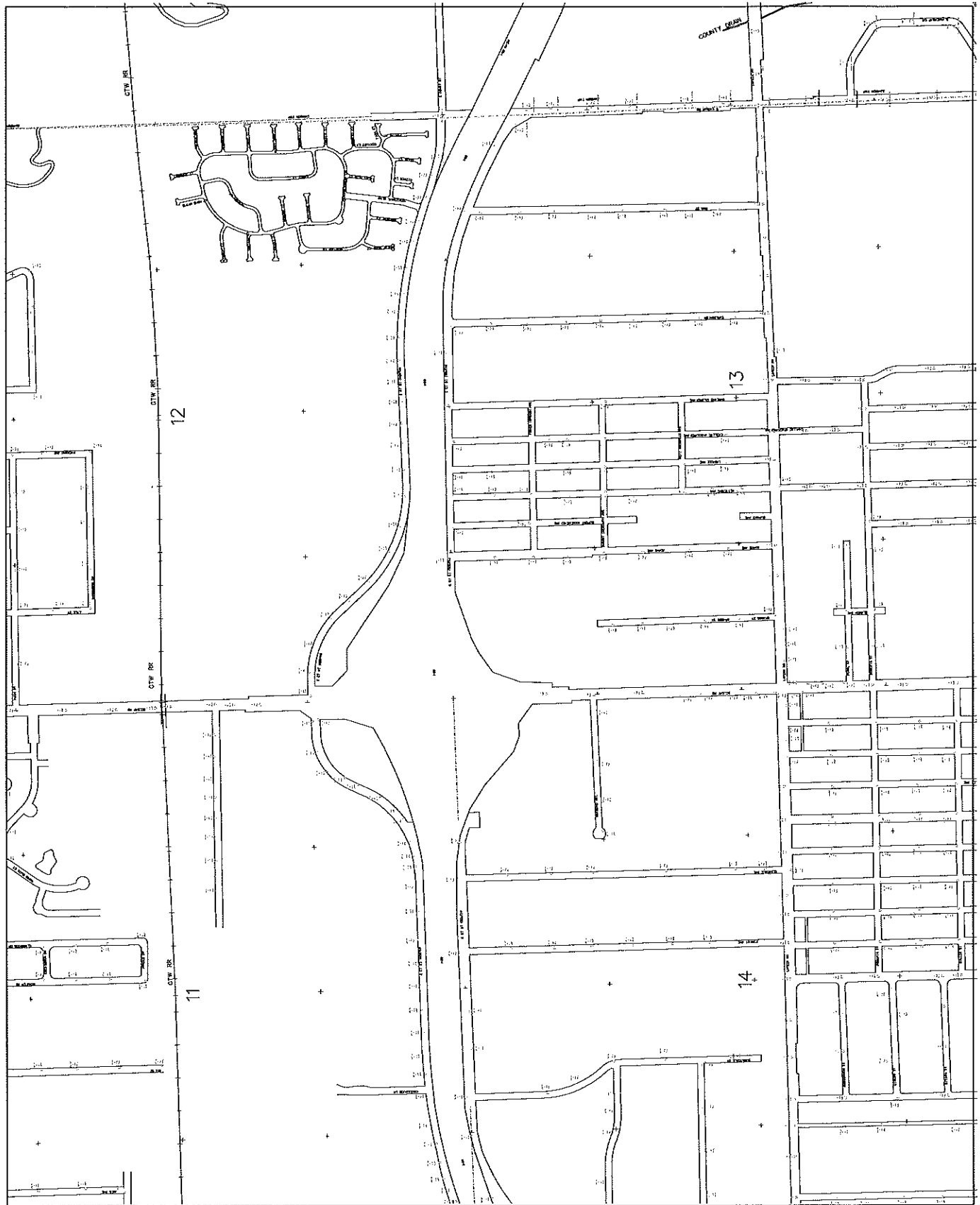
ATTACHMENT 1 IS NOT TO BE CONSIDERED AS A CONTRACT WITH OUT THE EXPRESS AUTHORIZATION OF CONSUMERS ENERGY.



BURTON CITY STREET LIGHT SURVEY

10000 South Blvd. 2013

1	2	3	4	5	6	7	8	9
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Attachment: LED Info 2 (2123 : Discussion on Street Light conversion to LED lights)



NO SCALE

ATTACHMENT 1 HAS BEEN CREATED FOR THE CITY OF BURTON, GEORGE COUNTY, GA. AN OVERVIEW OF CONSUMERS ENERGY OWNED STREETLIGHTS WITHIN THEIR POLITICAL BOUNDARY. ATTACHMENT 1 REPRESENTS THE RESULTS OF A STREETLIGHT SURVEY CONDUCTED IN 2013. THE LOCATIONS OF THE PICTURES ARE APPROXIMATE AND ONLY REFLECT INFORMATION THROUGH THE DATE OF THIS SURVEY. ATTACHMENT 1 IS NOT TO BE DISTRIBUTED OR REPRODUCED WITHOUT THE EXPRESS AUTHORIZATION OF CONSUMERS ENERGY.



BURTON CITY STREET LIGHT SURVEY

PROJECT NUMBER: 1000-0000-0000
DATE: 10/1/13

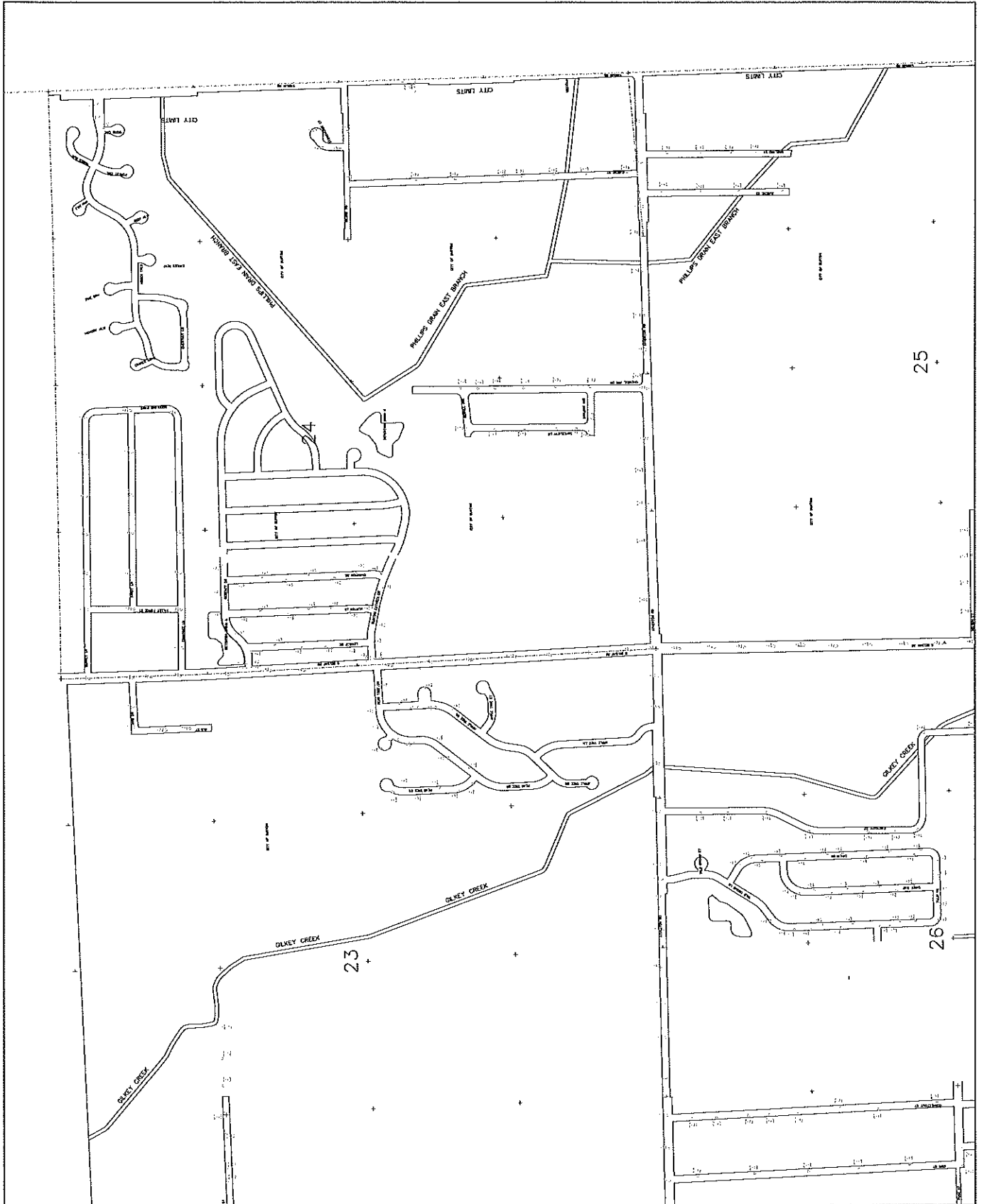
1	2	3	4	5	6	7	8	9

KEY PLAN

BURTON CITY, GEORGE COUNTY, GA

5 of 9

E.1.b



Attachment: LED Info 2 (2123 : Discussion on Street Light conversion to LED lights)



NO SCALE

ATTACHMENT 1 HAS BEEN CREATED TO OFFER THE CITY OF BURTON, GENESSE CO. MI, AN OVERVIEW OF CONSUMERS ENERGY OWNED STREETLIGHTS WITHIN THEIR POLITICAL BOUNDARY.

ATTACHMENT 1 REPRESENTS THE RESULTS OF A STREETLIGHT SURVEY CONDUCTED IN 2013. THE LOCATIONS OF THE STREETLIGHTS APPROXIMATE AND ONLY REPRESENT INFORMATION THROUGH THE DATE OF THIS SURVEY.

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BURTON CITY STREET LIGHT SURVEY

Sheet Name: Key Plan
 Date: 08/05/2014
 Project No: 14000000000000000000

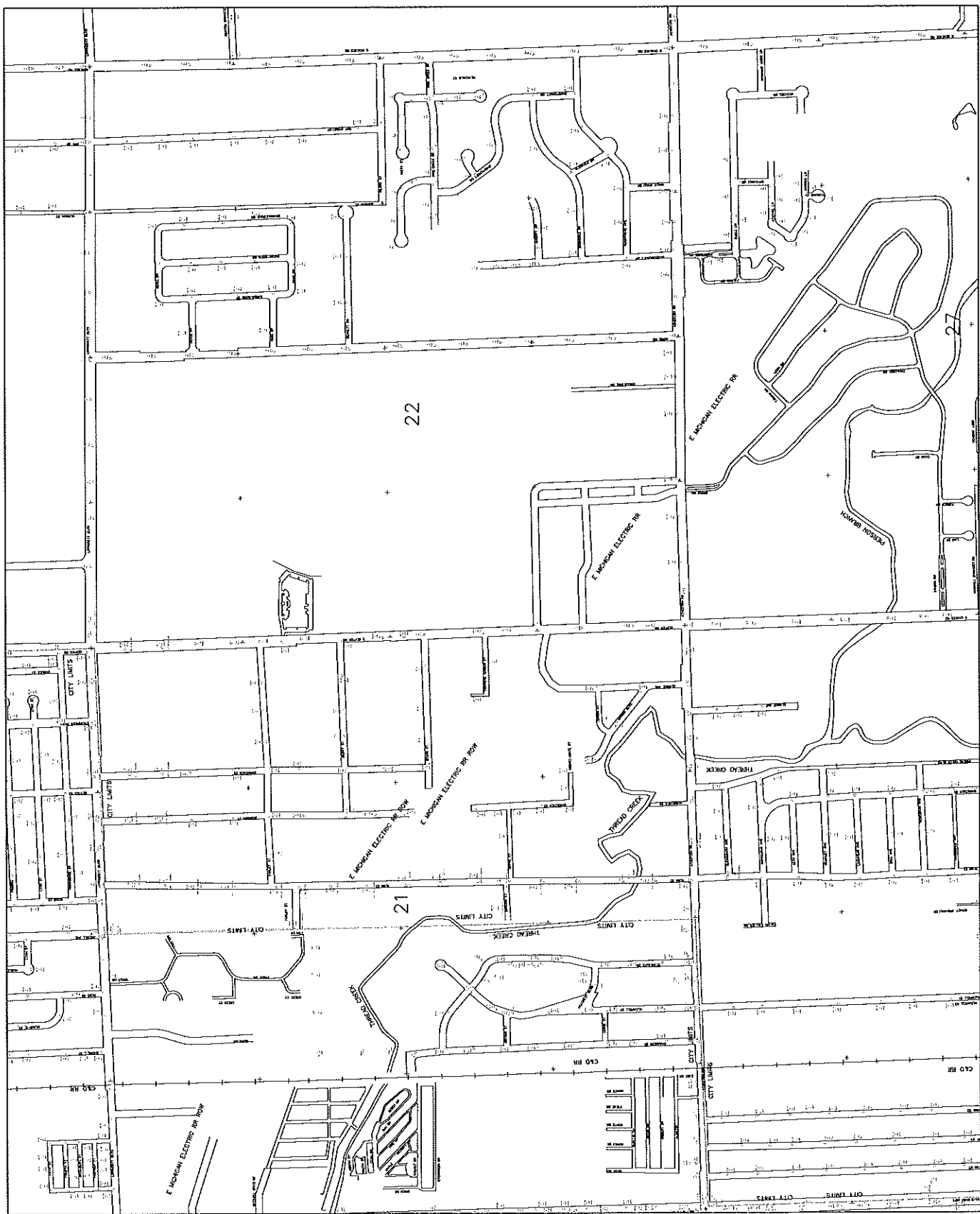
1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18

Sheet No: 6

E.1.b

KEY PLAN
 BURTON CITY, GENESSE

6 of 9



Attachment: LED Info 2 (2123 : Discussion on Street Light conversion to LED lights)



NO SCALE

ATTACHMENT 1 HAS BEEN CREATED TO OFFER THE CITY OF BURTON, GENESSEE CO. MI, AN OVERVIEW OF CONSUMERS ENERGY OWNED UTILITIES WITHIN THEIR POLITICAL BOUNDARY.

ATTACHMENT 1 REPRESENTS THE RESULTS OF A STREETLIGHT SURVEY CONDUCTED IN AREAS SURROUNDING THE CITY OF BURTON. THE INFORMATION AND ONLY REFLECT APPROXIMATE THROUGH THE DATE OF THIS SURVEY.

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BURTON CITY STREET LIGHT SURVEY

Sheet No. 1 of 9

2	1	4
3	3	5
6	6	9
7	8	9

Sheet No. 1 of 9

KEY PLAN
BURTON CITY, GENESSEE



Attachment: LED Info 2 (2123 : Discussion on Street Light conversion to LED lights)



NO SCALE

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ATTACHMENT 1 REPRESENTS THE RESULTS OF A STREETLIGHT SURVEY CONDUCTED IN 2013. THE SURVEY OF THE NUMBER AND APPROXIMATE LOCATION OF STREETLIGHTS IS BASED ON INFORMATION THROUGH THE DATE OF THIS SURVEY.

ATTACHMENT 1 IS NOT TO BE USED FOR ANY PURPOSES WITHOUT THE EXPRESS AUTHORIZATION OF CONSUMERS ENERGY.



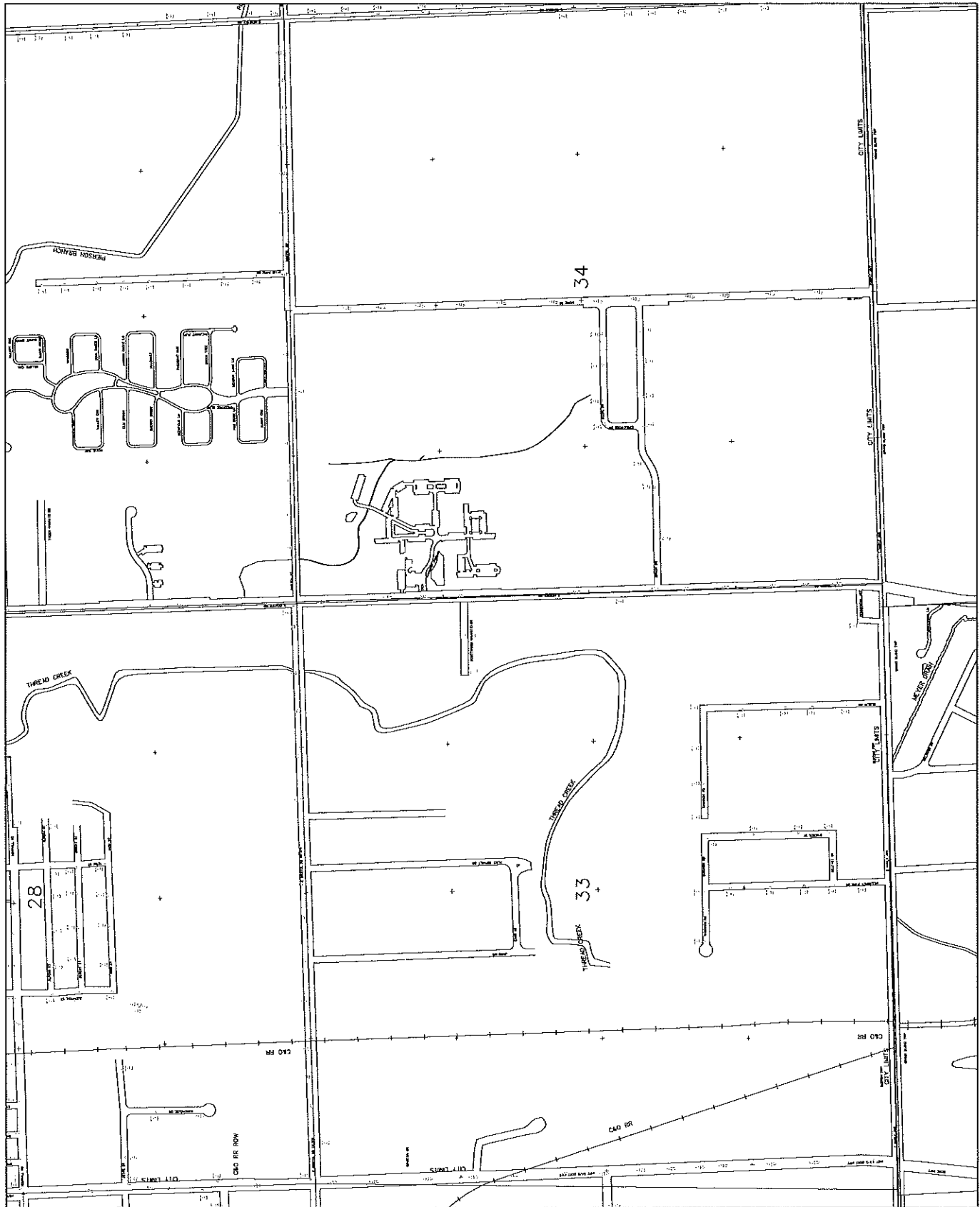
BURTON CITY STREET LIGHT SURVEY

UTILITY SERVICE AREA: BURTON CITY, GENESEE COUNTY, MICHIGAN

1	4	5	9
2	3	6	8
7			

DATE SURVEY: 10/2013

KEY PLAN
BURTON CITY, GENESEE





NO SCALE

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ATTACHMENT 1 REPRESENTS THE RESULTS OF A STREETLIGHT SURVEY CONDUCTED IN 2013. THE SURVEY IDENTIFIED THE LOCATION, APPROXIMATE AND ONLY REFLECT INFORMATION THROUGH THE DATE OF THE SURVEY.

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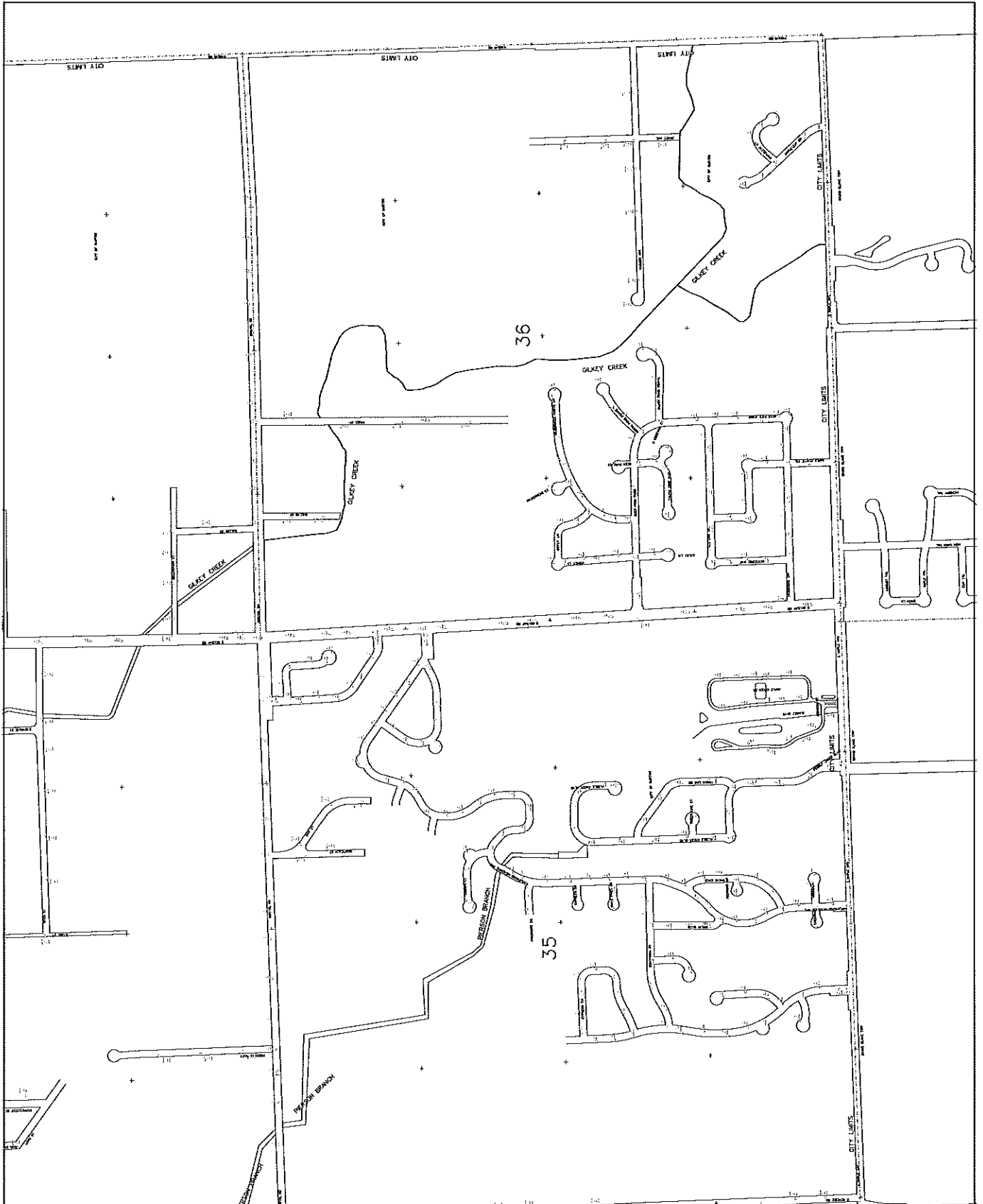
BURTON CITY STREETLIGHT SURVEY

THIRTY SEVEN (37) TOTAL

1	4	5
2	3	6
7	8	9

Sheet No. 1 of 3

Original Plans for
KEY PLAN
 BURTON CITY, GEORGIA



The logo for Consumers Energy, featuring the company name in a bold, italicized sans-serif font. The text is contained within a dark, swooping shape that resembles a stylized 'C' or a protective shield, with a thin white line following the top curve of the swoosh.

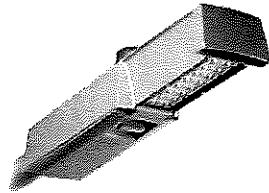
Consumers Energy

Count on Us

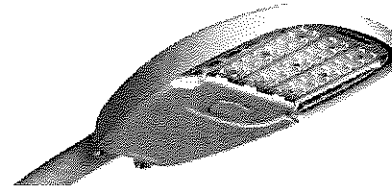
**Streetlight Overview
City of Burton
September 2015**

LED Options

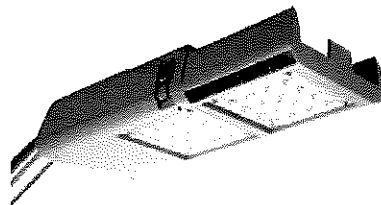
GUL Company Owned Lights



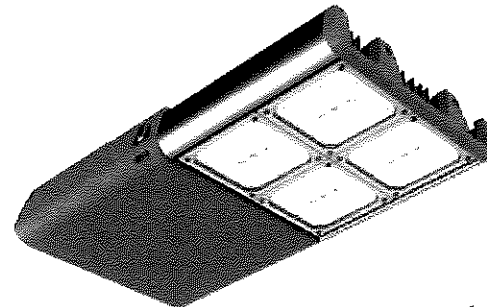
54W LED - 5,550 lumens
(Equal to: 100W HPS, 175W MV, 250W MV,
150W MH, 175W MH)



72W LED - 8,140 lumens
(Equal to: 150W HPS, 250W MH)



110W LED - 10,308 lumens
(Equal to: 250W HPS, 400W MV, 400W MH)



213W LED - 22,040 lumens
(Equal to: 400W HPS)

Attachment: LED Info 3 (2123 : Discussion on Street Light conversion to LED lights)

LED Cost Comparison

GUL Company Owned Lights

Average Monthly Cost		
54W LED	\$8.55	
Equivalent Monthly cost:		Savings
100W HPS	\$11.75	\$3.20
175W MV	\$12.29	\$3.74
250W MV	\$19.81	\$11.26

Average Monthly Cost		
72W LED	\$9.40	
Equivalent Monthly cost:		Savings
150W HPS	\$14.40	\$5.00

Average Monthly Cost		
110W LED	\$11.20	
Equivalent Monthly cost:		Savings
250W HPS	\$21.40	\$10.20
400W MV	\$25.07	\$13.87

Average Monthly Cost		
212W LED	\$16.07	
Equivalent Monthly cost:		Savings
400W HPS	\$28.11	\$12.04

Attachment: LED Info 3 (2123 : Discussion on Street Light conversion to LED lights)

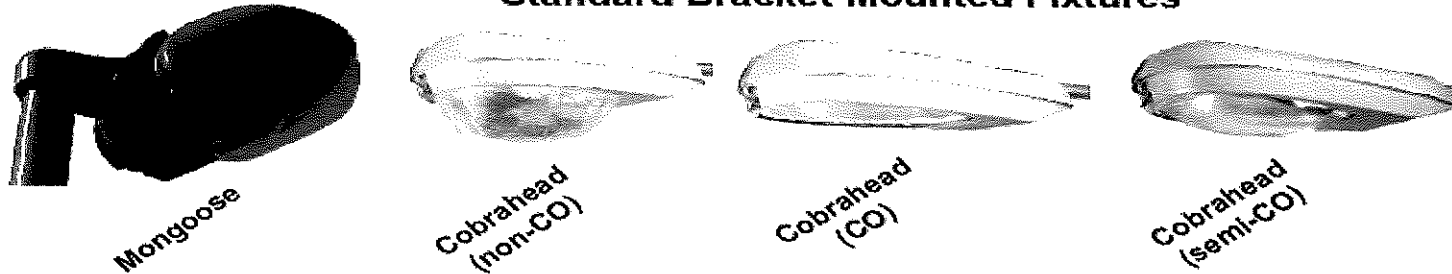
Standard Lighting Fixtures

Consumers Energy – Roadway Lighting

Standard Post Top Fixtures



Standard Bracket-Mounted Fixtures



Note: CO = cutoff style, all others non-CO unless indicated.

RCF 9/20/06

Attachment: LED Info 3 (2123 : Discussion on Street Light conversion to LED lights)

Streetlighting Replacement Plan

Developing a Long-term Streetlight Replacement Plan

Because of federal and state policy changes, Consumers Energy is encouraging communities to review their streetlighting and work with the utility to develop a long-term plan for this transition.

Some mercury vapor bulbs still are available, but Consumers Energy can no longer obtain supplies to maintain the light fixtures or supporting equipment. Consumers Energy will continue to replace mercury vapor bulbs and repair failed controls as long as supplies of equipment last. However, other problems will require the replacement of the entire fixture with a different light technology.

Streetlighting Options

High-pressure sodium and metal halide equipment is available. These lighting options are more energy efficient, and may result in lower monthly energy charges for your community. In addition, Consumers Energy also offers light-emitting diode (LED) streetlighting service for unmetered company- and customer-owned lighting.

For any of these light types, the new options may change lighting aesthetics because of pattern shaping or light color (white, yellow or orange) and temperature (cold to warm). It also is important to consider dark sky ordinances and changes in traffic patterns or congestion (previously rural to more urban) when reviewing lighting options.

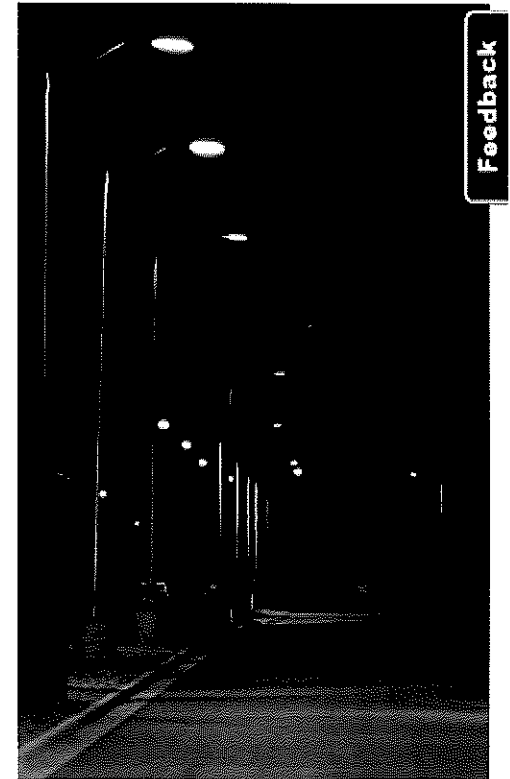
Understanding the Costs and Savings

Under Michigan Public Service Commission (MPSC) rules, Consumers Energy is responsible for a portion of the cost of converting mercury vapor streetlights to a different lighting technology. When mercury vapor bulbs and fixtures burn out or fail, Consumers Energy will replace them at no cost with the nearest comparable high-pressure sodium light, unless alternate plans are developed in advance. Under some conditions, there may be a cost to the customer.

Developing a Long-term Solution

Consumers Energy understands that converting your lighting system is an important decision impacting your budget, community aesthetics and citizen safety.

Consumers Energy representatives will be working with Michigan community leaders in the coming months to review options and then develop a long-term plan that best meets the needs of each community. For more information or to arrange a meeting, please call us toll-free at (800) 805-0490 or [e-mail us](mailto:ce@consumersenergy.com).



Attachment: LED Info 5 (2123 : Discussion on Street Light conversion to LED lights)

GENERAL SERVICE UNMETERED LIGHTING RATE GUL

Availability:

Subject to any restrictions, this rate is available to any political subdivision or agency of the State of Michigan having jurisdiction over public streets or roadways for (i) unmetered lighting service where the Company has existing distribution lines available for supplying energy for such service or (ii) for any Company-owned system consisting of one or more luminaires. This rate is also available to existing farm or Non-Residential customers previously served under General Service Outdoor Lighting Rate L-4, but closed to new business.

New installations under this rate require approval by the Company of the proposed design and type of any customer equipment. In the event that the Company does not approve the design, the Company may require the customer to be served under a general service metered rate provision.

This rate is not available for resale purposes or for Retail Open Access Service. Only streetlighting types referenced within this rate schedule may receive unmetered service. Other types of streetlighting are excluded from service under this Rate Schedule.

Changes in the federal or state law have limited or eliminated the manufacture or importing of supplies needed to maintain some types of existing lighting offered under this Rate Schedule. To the extent that the Company has the necessary materials, the Company will continue to maintain existing mercury vapor lamp installations in accordance with this Electric Rate Schedule.

Nature of Service:

Customer-Owned

In systems where the Company has existing distribution lines available for supplying energy for unmetered lighting service, control equipment shall be furnished and owned by the Company. The customer shall furnish, install and own the rest of the equipment comprising the unmetered lighting system including, but not limited to, the overhead wires or underground cables between the luminaires and the supply circuits extending to the point of attachment with the Company's lines. All of the customer's equipment shall be subject to the Company's approval. The Company shall connect the customer's equipment to the Company's lines, supply the energy, control the burning hours of the lamps, provide normal replacement of luminaire glassware and lamps, and paint metal parts as needed; all other maintenance and replacement of the customer's equipment shall be paid for by the customer.

Company-Owned

In Company-owned systems consisting of one or more luminaires, the Company shall furnish, install and own all equipment comprising the unmetered lighting system. The Company shall supply the energy, and renew and maintain the entire equipment. In areas where the Company has installed an underground electric distribution system pursuant to the Company's residential underground electric distribution policy as set forth in its Electric Rate Book, the unmetered lighting system shall be served from said underground electric distribution system. In all other areas, the unmetered lighting system shall normally be served from overhead lines or from underground cables installed at customer's request pursuant to special unmetered lighting provisions contained in Monthly Rate clause and Facilities Policy.

Outdoor Lighting

For existing outdoor lighting, luminaires and control equipment shall be furnished, owned, installed and maintained by the Company. Luminaires shall be installed on Company-owned or Company-leased poles and must be accessible to the Company's construction and maintenance equipment.

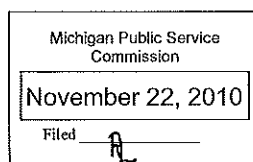
Facilities Policy:

Customer-Owned

At the customer's request, the Company shall install, at its own cost, its distribution facilities under this rate to the extent that the cost of such installation does not exceed the allowance granted under the Company's general service line extension policy. Costs of facilities in excess of the free allowance shall require an advance, nonrefundable, contribution in the amount by which the estimated costs exceed the free allowance.

(Continued on Sheet No. D-50.10)

Issued November 18, 2010 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on
 and after November 5, 2010

Issued under authority of the
 Michigan Public Service Commission
 dated November 4, 2010
 in Case No. U-16191

Attachment: LED Info 6 (2123 : Discussion on Street Light conversion to LED lights)

GENERAL SERVICE UNMETERED LIGHTING RATE GUL
 (Continued From Sheet No. D-50.00)

Facilities Policy: (Contd)

Company-Owned

At the customer's request, the Company shall install new luminaires and associated facilities under this rate, or replace existing luminaires and associated facilities served under this rate with other luminaires and associated facilities for which it has rates available in accordance with the following guidelines:

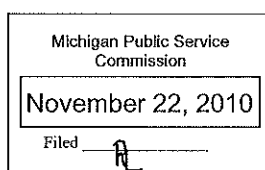
- A. The installation of all new, standard unmetered lights shall require a customer contribution of \$100 per luminaire. This policy includes the extension of up to 350 feet of distribution facilities to serve any individual light. Any extension beyond 350 feet shall require a contribution based on the Company's general service line extension policy.
- B. At the customer's request, the Company shall convert its existing incandescent/fluorescent luminaires to the nearest standard size high-pressure sodium or metal halide luminaire at no cost to the customer. If requirements for installations make it necessary for the Company to convert luminaires or if the customer requests a conversion of luminaires *that the Company can no longer maintain due to federal or state requirements*, the Company shall cover the cost of the bulb and the customer shall be responsible for all other expenses as a contribution. For conversions completed with normal Company maintenance such as replacement of bulbs on a routine schedule or due to failure, then the average cost of that work type shall be deducted from the total work order cost to determine the required customer contribution. If other light upgrading is also involved, the Company expenditure shall be calculated in accordance with the Company's general service line extension policy. Any costs in excess of this amount shall be borne by the customer.

Additional annual revenue is the greater of (1) the difference between the annual revenue from the nearest size high-pressure sodium luminaire and the annual delivery revenue from the upgraded light which would be installed or (2) the difference between the annual delivery revenue from the existing light and the annual delivery revenue from the light which would be installed.

- C. Where upgrading of metal halide, or high-pressure sodium unmetered lights are requested, the customer shall pay the estimated cost of conversion. Where the upgrading results in additional revenues to the Company, the customer shall receive a credit calculated in accordance with the Company's general service line extension policy to be applied against the estimated cost of conversion. If the cost of conversion is overestimated, the Company shall, upon completion of construction, refund that portion of the contribution resulting from the overestimate.
- D. Where Company-approved nonstandard poles are requested, the customer contribution shall be the difference in installed cost between standard wood poles and the requested pole. Where Company-approved nonstandard fixtures are requested, a customer contribution shall be required to cover costs in excess of the equivalent Company standard fixture.
- E. For unmetered lighting systems installed underground (exclusive of subdivisions where the developer's contribution provided for underground unmetered lighting), the customer shall be required to contribute the estimated difference in cost between the equivalent standard overhead construction and required underground construction. No contribution shall be required for that footage of unmetered lighting cable which can be satisfactorily installed in underground conduit furnished by the customer for the Company's use and in accordance with the Company's specification.
- F. For system-wide conversions from one light source to another, the customer may be limited to an annual quota as determined by the Company.
- G. If underground unmetered lighting cable is requested, except that requested in conjunction with the Company's residential underground electric distribution policy, the customer shall contribute to the Company the difference between the Company's estimated installed costs of the underground unmetered lighting cable and the Company's estimated installed costs of standard overhead unmetered lighting conductors.

(Continued on Sheet No. D-51.00)

Issued November 18, 2010 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on
 and after November 5, 2010

Issued under authority of the
 Michigan Public Service Commission
 dated November 4, 2010
 in Case No. U-16191

Attachment: LED Info 6 (2123 : Discussion on Street Light conversion to LED lights)

M.P.S.C. No. 13 - Electric
 Consumers Energy Company
 (To add Power Plant Securitization reference)

Fifth Revised Sheet No. D-52.00
 Cancels Fourth Revised Sheet No. D-52.00

GENERAL SERVICE UNMETERED LIGHTING RATE GUL
 (Continued From Sheet No. D-51.00)

Monthly Rate: (Contd)

Green Generation Program:

Customer contracts for participation in the Green Generation Program shall be available to any eligible customer as described in Rule C10.2, Green Generation Program.

A customer who participates in the Green Generation Program is subject to the provisions contained in Rule C 10.2, Green Generation Program.

General Terms, Surcharges, Power Supply Cost Recovery (PSCR) Factor and Securitization Charges:

This rate is subject to all general terms and conditions shown on Sheet No. D-1.00, Surcharges shown on Nos. D-2.00 through D-3.10, PSCR Factor shown on Sheet No. D-4.00 and the Securitization Charges shown on Sheet Nos. D-5.00 and D-5.10.

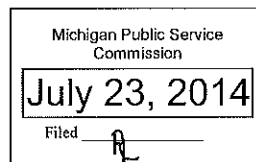
Due Date and Late Payment Charge:

The due date of the customer bill shall be 21 days from the date of mailing. A late payment charge of 2% of the unpaid balance, net of taxes, shall be assessed to any bill which is not paid on or before the due date shown thereon.

Special Terms and Conditions:

The Company reserves the right to make special contractual arrangements as to term or duration of contract, termination charges, contribution in aid of construction, annual charges or other special considerations when the customer requests service, equipment or facilities not normally provided under this rate.

Issued July 22, 2014 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on and after
 the Company's August 2014 Billing Month

Issued under authority of the
 Michigan Public Service Commission
 dated December 6, 2013
 in Case No. U-17473

Attachment: LED Info 6 (2123 : Discussion on Street Light conversion to LED lights)

GENERAL SERVICE UNMETERED LIGHTING RATE GUL
 (Continued From Sheet No. D-50.10)

Monthly Rate:

The charge per luminaire per month shall be:

<u>Type of Luminaire</u>	<u>Watts</u>	<u>Nominal Rating of Lamps (One Lamp per Luminaire) (1)</u>		<u>Service Charge per Luminaire (4)</u>	<u>Fixture Charge per Luminaire (4)</u>
		<u>Watts Including Ballast (2)</u>	<u>Lumens</u>		
Mercury Vapor (3)	100	128	3,500	\$6.29	\$6.00
Mercury Vapor (3)	175	209	7,500	10.27	6.00
Mercury Vapor (3)	250	281	10,000	13.81	6.00
Mercury Vapor (3)	400	458	20,000	19.07	6.00
Mercury Vapor (3)	700	770	35,000	28.99	6.00
Mercury Vapor (3)	1,000	1,080	50,000	39.80	6.00
High-Pressure Sodium (3)	70	83	5,000	4.08	6.00
High-Pressure Sodium	100	117	8,500	5.75	6.00
High-Pressure Sodium	150	171	14,000	8.40	6.00
High-Pressure Sodium (3)	200	247	20,000	12.14	6.00
High-Pressure Sodium	250	318	24,000	15.14	6.00
High-Pressure Sodium	400	480	45,000	22.11	6.00
Fluorescent (3)	380	470	20,000	14.74	6.00
Incandescent (3)	202	202	2,500	7.72	6.00
Incandescent (3)	305	305	4,000	9.09	6.00
Incandescent (3)	405	405	6,000	11.30	6.00
Incandescent (3)	690	690	10,000	15.73	6.00
Metal Halide	150	170	9,750	10.32	6.00
Metal Halide (3)	175	210	10,500	10.32	6.00
Metal Halide	250	290	15,500	14.25	6.00
Metal Halide	400	460	24,000	22.61	6.00

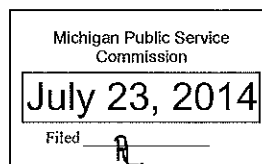
- (1) Ratings for fluorescent lighting apply to all lamps in one luminaire.
- (2) Watts including ballast used for monthly billing of the Power Supply Cost Recovery (PSCR) Factor, Securitization and Securitization Tax Charges, Power Plant Securitization Charges and surcharges.
- (3) Rates apply to existing luminaires only and are not open to new business.
- (4) For customers who own their lighting fixtures and are assessed a Service Charge (but not a Fixture Charge), the charge per luminaire represents a 41.5% Power Supply Charge and a 58.5% Distribution Charge. For customers who do not own their lighting fixtures and are assessed both a Service Charge and a Fixture Charge, the charge per luminaire represents a 26.4% Power Supply Charge and a 73.6% Distribution Charge.

For energy conservation purposes, customers may, at their option, elect to have any or all luminaires served under this rate disconnected for a period of six months or more. The charge per luminaire per month, for each disconnected luminaire, shall be 40% of the monthly rate set forth above. However, should any such disconnected luminaire be reconnected at the customer's request after having been disconnected for less than six months, the monthly rate set forth above shall apply to the period of disconnection. An \$8.00 per luminaire disconnect/reconnect charge shall be made at the time of disconnection except that when the estimated disconnect/reconnect cost is significantly higher than \$8.00, the estimated cost per luminaire shall be charged.

For 24-hour mercury-vapor service, the charge per luminaire shall be 125% of the foregoing rates.

(Continued on Sheet No. D-52.00)

Issued July 22, 2014 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on and after
 the Company's August 2014 Billing Month

Issued under authority of the
 Michigan Public Service Commission
 dated December 6, 2013
 in Case No. U-17473

Attachment: LED Info 6 (2123 : Discussion on Street Light conversion to LED lights)

GENERAL UNMETERED EXPERIMENTAL LIGHTING RATE GU-XL

Availability:

Subject to any restrictions, this rate is available to any political subdivision or agency of the State of Michigan having jurisdiction over public streets or roadways for unmetered streetlighting service where the Company has existing distribution lines available for supplying energy for unmetered experimental lighting technology including light-emitting diode (LED) or for any Company-owned streetlighting system consisting of one or more luminaires. This rate is not available for resale purposes or for Retail Open Access Service. Installations under this rate shall require advanced approval by the Company and a written agreement.

Nature of Service:

Company-Owned Option

In Company-owned systems, the Company shall select, furnish, install and own all equipment for any new unmetered experimental lighting or for any modifications to existing Company-owned equipment. The Company shall supply the energy and maintain all equipment. In areas where the Company's facilities are underground or required to be placed underground or the customer requests underground facilities, the unmetered lighting system shall be served from underground cables pursuant to the provisions contained in this Rate Schedule. In all other areas, the unmetered lighting system shall normally be served from overhead lines pursuant to the provisions contained in this Rate Schedule.

Customer-Owned Option

The capacity requirements of the customer-owned Unmetered Experimental Lighting served under this rate shall be determined by the Company based on verifiable documentation supplied by the customer. The Company shall have the right to test such capacity requirements. In the event that said tests show capacity requirements different from those indicated by the documentation supplied by the customer, the Company's test capacity value shall be used for billing purposes.

In customer-owned systems, control equipment shall be furnished and owned by the Company. The customer shall furnish, install and maintain the equipment comprising the unmetered experimental lighting system including, but not limited to, poles, the overhead wires or underground cables between the luminaires and the supply circuits extending to the point of attachment with the Company's lines. The customer's experimental lighting fixtures and equipment must be approved in advance by the Company before purchase and installation for service under this rate. The Company shall connect the customer's equipment to the Company's lines in a manner consistent with the Company's engineering standards, supply the energy and control the burning hours of the experimental lighting. Maintenance and replacement of the customer-owned equipment shall be the responsibility of the customer.

Existing unmetered installations with customer-owned fixtures on Company-owned distribution equipment must be converted to the customer-owned system described above or the Company-owned system described below to receive service under this Rate Schedule. Such installations may also be converted to a customer-owned metered system and receive service under Rate Schedule GML. Conversion costs shall be the responsibility of the customer.

Facilities Policy:

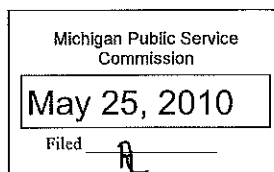
Company-Owned Option

At the customer's request and following execution of a written agreement, the Company shall install experimental lighting and associated facilities it will make available under this rate under the following guidelines:

- A. The installation of all new, standard unmetered lights shall require a customer contribution per luminaire equal to the incremental additional cost to be incurred by the Company. This policy includes the extension of up to 350 feet of distribution facilities to serve any individual light. Any extension beyond this amount shall require a contribution based on the Company's general service line extension policy. For unmetered lighting systems installed underground, the customer shall be required to contribute the estimated difference in cost between the equivalent standard overhead construction and required underground construction.
- B. The conversion of existing unmetered lights shall require a customer contribution per luminaire equal to the incremental additional cost to be incurred by the Company, less a discount of \$200 for the conversion of existing luminaires that are closed to new business if converted to the nearest equivalent fixture size available and approved by the Company.
- C. For light upgrades, such as the replacement of fixtures to a size greater or less than the next equivalent value, Company expenditures for additional facilities beyond those described above shall be calculated in accordance with the Company's general service line extension policy.

(Continued on Sheet No. D-54.02)

Issued May 24, 2010 by
J. G. Russell,
President and Chief Executive Officer,
Jackson, Michigan



Effective for service rendered on
and after April 28, 2010

Issued under authority of the
Michigan Public Service Commission
dated April 27, 2010
in Case No. U-16203

Attachment: LED Info 6 (2123 : Discussion on Street Light conversion to LED lights)

GENERAL UNMETERED EXPERIMENTAL LIGHTING RATE GU-XL
 (Continued From Sheet No. D-54.01)

Facilities Policy (contd):

Company-Owned Option (contd)

- D. The Company will determine the type and size of all experimental lighting fixtures to be offered under this rate. The list of approved fixtures is subject to modification at the sole discretion of the Company to accommodate new product development and advances in technology. Upon customer request, the Company shall provide a list of experimental lighting available under this rate.
- E. The Company shall determine all associated equipment necessary to provide service under the Company -Owned Unmetered Experimental Lighting option.
- F. Any charges, deposits or contributions may be required in advance of commencement of construction.

Customer-Owned Option

If it is necessary for the Company to install distribution facilities to serve a customer -owned system, contributions and/or deposits for such additional facilities shall be calculated in accordance with the Company's general service line extension policy. Any charges, deposits or contributions may be required in advance of commencement of construction.

Monthly Rate:

Power Supply Charges:

Energy Charge: \$0.056066 per kWh for all kWh

This rate is subject to the Power Supply Cost Recovery (PSCR) Factor shown on Sheet No. D-4.00.

Delivery Charges Customer-Owned Option:

Distribution Charge: \$0.050228 per kWh for all kWh

Delivery Charges Company-Owned Option:

Distribution Charge: \$0.079004 per kWh for all kWh

Fixture Charge per Luminaire: \$6.00 per month

This rate is subject to the Surcharges shown on Sheet Nos. D-2.00 through D-3.10 and the Securitization Charges shown on Sheet Nos. D-5.00 and D-5.10.

General Terms:

This rate is subject to all general terms and conditions shown on Sheet No. D-1.00.

Due Date and Late Payment Charge:

The due date of the customer bill shall be 21 days from the date of mailing. A late payment charge of 2% of the unpaid balance, net of taxes, shall be assessed to any bill which is not paid on or before the due date shown thereon.

Determination of Monthly Kilowatt-Hours and Burning Hours:

The calculation of monthly kilowatt-hours shall be determined by multiplying the total capacity requirements in kW (including the lamps, ballasts, drivers, and control devices) times the monthly Burning Hours as defined below. The customer shall not change the capacity requirements of the equipment owned by it without first notifying the Company in writing of such changes and the date that they shall be made, and modifying the lighting contract with the Company accordingly.

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
457.8	382.2	369.6	306.6	264.6	226.8	252.0	298.2	336.0	399.0	432.6	474.6	4,200

Hours of Lighting:

Unmetered Experimental Lighting shall be burning at all times when the natural general level of illumination is lower than about 3/4 footcandle, and under normal conditions this is approximately one-half hour after sunset until approximately one-half hour before sunrise. Lighting service will be supplied from dusk to dawn every night and all night on an operating schedule of approximately 4,200 hours per year.

(Continued on Sheet No. D-54.03)

Issued July 22, 2014 by
 J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on and after
 the Company's August 2014 Billing Month

Issued under authority of the
 Michigan Public Service Commission
 dated December 6, 2013
 in Case No. U-17473

Attachment: LED Info 6 (2123 : Discussion on Street Light conversion to LED lights)

GENERAL UNMETERED EXPERIMENTAL LIGHTING RATE GU-XL
 (Continued From Sheet No. D-54.02)

Maintenance of Lighting:

The Company shall replace or repair, at its own cost, Company-Owned Unmetered Experimental Lighting equipment that is out of service. If, for some reason, the Company is not able to make such restoration within one full billing month from the date the outage is first reported to the Company, the Company shall provide a credit to the customer's bill for unmetered lighting service. The credit shall be applied to the customer's bill beginning with the second full billing month after the outage is reported.

Outages caused by factors beyond the Company's reasonable control as provided for in Rules B10.1, Character of Service, and B12., Emergency Electrical Procedures, of the Company's Electric Rate Schedule are not covered by this policy. Such outages would be handled consistent with the particular circumstances and no credit would be made for such outages.

Green Generation Program:

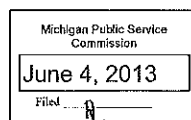
Customer contracts for participation in the Green Generation Program shall be available to any eligible customer as described in Rule C10.2, Green Generation Program.

A customer who participates in the Green Generation Program is subject to the provisions contained in Rule C10.2, Green Generation Program.

Term and Form of Contract:

All service under this rate shall require a written contract with an initial term of two years or more.

Issued May 30, 2013 by
J. G. Russell,
 President and Chief Executive Officer,
 Jackson, Michigan



Effective for service rendered on
 and after May 16, 2013

Issued under authority of the
 Michigan Public Service Commission
 dated May 15, 2013
 in Case No. U-17087

