

# RIVENOAK LAW GROUP PC

Valerie J. M. Brader  
Admitted in Michigan  
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July 26, 2024

*VIA ELECTRONIC CASE FILING*

Ms. Lisa Felice, Executive Secretary  
Michigan Public Service Commission  
7109 W. Saginaw Highway  
Lansing, MI 48917

Re: **MPSC Case No. U-21534**: In the matter of the Application of **DTE ELECTRIC COMPANY** for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority.

Dear Ms. Felice:

Enclosed for filing please find the public version of the ***Exhibits of the Direct Testimony of Richard Bunch on behalf of the Michigan Municipal Association for Utility Issues and Proof of Service*** for the above referenced case.

Should you have any questions or comments regarding this matter, please do not hesitate to contact my office.

Sincerely,



Valerie J.M. Brader  
Counsel to MI-MAUI

cc: w/enclosure: Parties of Record

## RICHARD J. BUNCH

[rbunch@5lakesenergy.com](mailto:rbunch@5lakesenergy.com)

206-595-8293

Executive and organizational innovator with expertise in energy technology, finance, utilities and regulation. Leadership experience in academic, non-profit and public sectors. Broad topical and functional expertise in sustainable and socially responsible business and public policy. Demonstrated ability to recruit top performers and build strong teams.

### EXPERTISE

- ▶ Clean energy project evaluation, development and financing for local governments; utility tariffs and regulatory processes.
- ▶ Broad understanding of sustainability and clean energy issues that impact businesses through markets, technology and public policy.
- ▶ Integration of clean energy and sustainability into organizational strategy, management and culture through education, training and strategic planning.
- ▶ Electric tariff topics including municipal streetlighting, rates and programs affecting low-income customers, service quality and billing rules, infrastructure project coordination with local governments, voluntary green power tariffs, production cost allocation, PSRC reconciliation.

### PROFESSIONAL EXPERIENCE

**5 Lakes Energy, Lansing, MI, Senior Consultant, May 2019-present**

**Michigan Municipal Association for Utility Issues, Ann Arbor, MI**

*Founder and Managing Director, 2017-present*

Providing collective, expert and focused representation for municipal governments in Michigan Public Service Commission proceedings and in dialog with regulated utilities.

**Southeast Michigan Regional Energy Office, Ann Arbor, MI**

*Executive Director, 2014-2017*

Directed coalition of southeast Michigan municipalities cooperating to identify, finance and implement clean energy projects.

**University of Michigan, Erb Institute for Global Sustainable Enterprise**

*Managing Director, 2008-2013*

Led world-leading sustainable enterprise program at top-10 business school.

**Aspen Institute Business and Society Program, New York**

*Senior Fellow, 2006-2008*

Launched new Corporate Social Responsibility business education program in China in partnership with Chinese business schools, accrediting agency and corporations

**Bainbridge Graduate Institute, Bainbridge Island, WA**

*Executive Director, 2003-2005*

Led administration, education, fundraising and communications of fast-growing, startup business school with world-first infusion of sustainability throughout MBA curriculum.

**World Resources Institute, Washington, DC**

*Director of Business Education, 1996-2003*

Developed, fundraised and directed international sustainable business education initiatives engaging universities, companies, governments and non-profit leaders.

**Washington Public Interest Research Group, Seattle, Washington**

*Executive Director, 1989-1992*

## **EDUCATION**

MBA with Environmental Management Certificate, University of Washington, 1995  
BA in Political Science, Yale University, 1985

## **TRAINING**

EUCI Outdoor Street Lighting Conference, June 4-5, 2019, Atlanta.  
EUCI Electric Cost-of-Service – Essential Concepts for a Changing Industry Course, July 15-17, 2019, Chicago.  
MSU-IPU Accounting and Ratemaking course, September 2020  
EUCI Utility Green Tariffs: A to Z course, November 4-5, 2020, online  
MSU-IPU Advanced Regulatory Accounting and Auditing course, October 2021  
NRRI Regulatory Training Institute, Regulating Public Utility Performance course, current

## **REGULATORY PROCEEDINGS**

Expert witness, MPSC case U-21389 (Consumers Energy electric rate case, 2023)  
Expert witness, MPSC case U-21297 (DTE Electric general rate case, 2023)  
Expert witness, MPSC case U-21087 (DTE Electric PrePay, 2021-2022)  
Expert witness, MPSC case U-20836 (DTE Electric general rate case, 2022)  
Expert witness, MPSC case U-20963 (Consumers Energy electric rate case), 2021.  
Expert witness, MPSC case U-20697 (Consumers Energy electric rate case), municipal street lighting tariffs, 2020.  
Expert witness, MPSC case U-20530 (I&M PSCR reconciliation)  
Expert witness, MPSC case U-20561 (DTE Electric general rate case), production allocation, 2019  
Expert witness, Kentucky Public Utilities Commission cases 2020-349 and 2020-350, the combined Kentucky Utilities and Louisville Gas & Electric electric and gas rate cases.  
Submitted comments, MPSC case U-20147, Electric Distribution Planning. Participated in stakeholder meetings.  
Submitted comments, MPSC case U-20629, electric reliability standards. Focused on municipal street lighting reliability standards.  
MPSC case U-20134 (Consumers Energy general electric rate case), organized and managed coalition of municipalities intervening to challenge street lighting tariffs.  
MPSC cases U-18014 and U-17767, DTE Electric general rate cases, organized and coalition of municipalities challenging street lighting tariffs.

## **SELECTED RESEARCH AND PUBLICATIONS**

*“Corporate Responsibility In a Transitioning Industry: An Automotive Supply Chain Perspective”*, Automotive Industry Action Group, 2019. Co-author and researcher.  
*“Expect the Unexpected: Building Business Value in a Changing World”*, KMPG 2012. Erb Institute (University of Michigan) research team leader and contributor.  
*Where Will They Lead? China 2008 MBA Student Attitudes about Business & Society*. The Aspen Institute, 2008.  
*“Beyond Grey Pinstripes: Preparing MBAs for Social and Environmental Stewardship,”* World Resources Institute and The Aspen Institute, 1998, 1999, 2001 and 2003. Creator, co-author.  
Numerous academic, non-profit and public agency conference and meeting presentations and public testimony.

## **SERVICE**

The Stewardship Network Board of Directors and Treasurer, 2022-present.  
Michigan Environmental Council Board of Directors, 2009-present. Treasurer, 2017-2022.  
Soulardarity Board of Directors and Secretary, 2018-present. Highland Park, MI.

Washington Public Interest Research Group and WashPIRG Foundation Board of Directors,  
1994-present  
PIRGIM Education Foundation Board of Directors, 2015-present. Ann Arbor, MI.  
MPSC EAAC Data Analysis and Regulatory Review working group, ongoing.  
MPSC Low Income Energy Policy Board, ongoing.

## Ways to Pay

At DTE Energy, we're all about empowering you to pay your bill — whenever and wherever you want — through a variety of convenient payment methods. Click the sections below to learn more about each.

### Pay Online

You can easily pay your bill online using your checking or savings account. Eligible customers can use Visa<sup>®</sup> Mastercard<sup>®</sup> and Discover<sup>®</sup> debit or credit cards.

### DTE Energy Mobile App

Use your smart phone to view your bill, make a payment and much more using the DTE Energy Mobile App.

### DTE Energy Bill Payment Kiosk

DTE Energy Bill Payment Kiosks are located all across the service territory and offer a safe, secure place to access account information and make payments.

- Pay with cash or personal check. Eligible customers can also pay with a Visa<sup>®</sup>, Mastercard<sup>®</sup> and Discover<sup>®</sup> debit or credit card.
- See your account balance with name and address, no bill or account number required.
- Payments are updated to your account the same day.
- No processing fees.
- Our Bill Payment Kiosks support both English and Spanish-speaking customers.

### Pay by Phone through our Automated System

Call 800.477.4747 to make a payment with your checking or savings account. Eligible customers can pay with a Visa<sup>®</sup>, Mastercard<sup>®</sup> and Discover<sup>®</sup> debit or credit card.

### Pay by Mail

Mail your DTE Energy payment coupon with a check or money order using the return envelope included with your monthly bill.

### Other Ways to Pay

Pay your bill at any of the many authorized payment agents located across Michigan.

| Count of Contract Acct |               |               |               |
|------------------------|---------------|---------------|---------------|
| Row Labels             | No Cash Only  | Cash Only     | Grand Total   |
| WAYNE                  | 9,567         | 23,176        | 32,743        |
| OAKLAND                | 5,021         | 10,040        | 15,061        |
| MACOMB                 | 3,773         | 8,488         | 12,261        |
| WASHTENAW              | 1,224         | 2,365         | 3,589         |
| SAINT CLAIR            | 624           | 1,211         | 1,835         |
| LIVINGSTON             | 431           | 867           | 1,298         |
| MONROE                 | 377           | 833           | 1,210         |
| LAPEER                 | 325           | 575           | 900           |
| TUSCOLA                | 157           | 272           | 429           |
| SANILAC                | 128           | 262           | 390           |
| HURON                  | 89            | 164           | 253           |
| INGHAM                 | 64            | 109           | 173           |
| #N/A                   | 75            | 30            | 105           |
| LENAWEE                | 6             | 6             | 12            |
| GENESEE                | 1             | 5             | 6             |
| CLARE                  |               | 1             | 1             |
| KALKASKA               |               | 1             | 1             |
| ROSCOMMON              |               | 1             | 1             |
| OTSEGO                 | 1             | 1             | 2             |
| US/MI/Not assigned     | 3             | 1             | 4             |
| SHIAWASSEE             | 1             | 1             | 2             |
| OSCEOLA                |               | 1             | 1             |
| <b>Grand Total</b>     | <b>21,867</b> | <b>48,410</b> | <b>70,277</b> |

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**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-3.14 (S1)

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**Respondent:** J. Sparks

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**Question:** Please provide all portions of the customer payment standards and procedures required by R. 460.148(3)(e) that state the conditions under which customers may be required to pay in cash.

**Answer:** DTE Electric objects for the reason that the request seeks a legal opinion or interpretation. Subject to and without waiving the objection, the Company would respond as follows: There are no specific requirements to communicate when customers may be required to pay cash. The [DTE Energy Resource Guide](#) published on the Company's website does explain all the available payment channels available to customers.

The Company follows and adheres to section C4.6B of its rate book that establishes after one returned payment, the Company can restrict the form of payment. Customers with a returned payment and arrears greater than \$100 are subject to the payment restriction otherwise two returned payments with or without arrears will trigger the same restriction. The Company does not use a customer's geographic location as a basis for determining cash only requirements.

**Attachment:** U-21534 MAUIDE-3.14 (S1) DTE Resource Guide



## DTE – Payment Declined

Hello <%=CustomerName1%>,

**Your recent payment of \$<%=Amount\_1%> was returned from your financial institution.**

Account Number: <%=maskedContractAccount%>  
Service Address: <%=LongServiceAddress%>

Due to the returned payment:

- For the next 12 months, you are required to make your payment using cash at a [kiosk](#) or at an [authorized payment location](#).
- A returned check fee will be applied to your next bill.

Please make your missed payment in cash at a kiosk or authorized location as soon as possible to avoid service interruption.

If you need financial assistance making a payment, visit [dteenergy.com/help](https://dteenergy.com/help).

Thank you for being a valued DTE customer.

Sincerely,

Your DTE Energy Customer Service Team

### **Want to save some time?**

Check out our quick and easy billing and payment options.

<https://dteenergy.com/content/dam/dteenergy/deg/website/nuance-communications-images/Bill%20Payment%20Kiosks%20icon.jpg>

<https://dteenergy.com/content/dam/dteenergy/deg/website/nuance-communications-images/Bill%20Analyzer%20Tool%20icon.jpg>

<https://dteenergy.com/content/dam/dteenergy/deg/website/nuance-communications-images/MIMO%20icon.jpg>

[View Privacy Policy](#)

[Contact Us](#)

[Manage Notifications](#)

This is an automated email, so please don't reply.

Email sent by: DTE Energy, One Energy Plaza, Detroit, MI 48226-1279 USA

## Ways to Pay

At DTE Energy, we're all about empowering you to pay your bill — whenever and wherever you want — through a variety of convenient payment methods. Click the sections below to learn more about each.

### Pay Online

You can easily pay your bill online using your checking or savings account. Eligible customers can use Visa<sup>®</sup> Mastercard<sup>®</sup> and Discover<sup>®</sup> debit or credit cards.

### DTE Energy Mobile App

Use your smart phone to view your bill, make a payment and much more using the DTE Energy Mobile App.

### DTE Energy Bill Payment Kiosk

Easily pay your bill at a DTE Energy Bill Payment Kiosk located all throughout the service area.

### Pay by Phone through our Automated System

Call 800.477.4747 to make a payment with your checking or savings account. Eligible customers can pay with a Visa<sup>®</sup>, Mastercard<sup>®</sup> and Discover<sup>®</sup> debit or credit card.

### Pay by Mail

Mail your DTE Energy payment coupon with a check or money order using the return envelope included with your monthly bill.

## Other Ways to Pay

### Authorized Pay Agents

DTE Energy has many authorized payment agents conveniently located across Michigan. Payments are sent electronically and are updated to your account by end of day. Authorized payment agents accept full or partial payments by cash, check or money order, before or after the due date. Look for the DTE Energy logo at the location.

Note: Some authorized payment agents may charge a nominal processing fee for their service. DTE Energy does not receive any portion of this fee. All payment options offered directly from DTE Energy are free.

To find a payment location near you, enter your ZIP Code.

DTE Payment Locations

**MPSC Case No:** U-21534

**Requester:** MAUI

**Question No.:** MAUIDE-3.15a

**Respondent:** M. Hatsios

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**Question:** Please provide the following information about all DTE Energy Bill Payment Kiosks in operation any time after January 1, 2019.a. Street addresses of kiosks.

**Answer:** DTE Electric objects for the reasons that the request is unduly burdensome, overly broad, seeks excessive detail, seeks irrelevant information, and is not reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving its objection, the Company would respond as follows: The addresses of the kiosk locations are provided below.

| Address                                   |
|-------------------------------------------|
| 1 Energy Plaza Dr Detroit MI 48226        |
| 10620 W McNichols Rd, Detroit, MI 48221   |
| 11250 East Jefferson Ave Detroit MI 48214 |
| 1131 W. Warren Ave Detroit MI 48201       |
| 12048 Grand River Ave Detroit MI 48204    |
| 12278 Gratiot Ave Detroit MI 48205        |
| 12955 Grand River Ave Detroit MI 48227    |
| 13223 Hamilton Highland Park, MI 48203    |
| 1368 Baldwin Ave Pontiac MI 48340         |
| 14350 E 9 Mile Rd Warren MI 48089         |
| 14424 Schaefer Hwy Detroit MI 48227       |
| 14470 Livernois Ave Detroit MI 48238      |
| 16200 W Warren Ave Detroit MI 48228       |
| 1716 Fort Street, Lincoln Park 48146      |
| 17256 W Seven Mile Rd Detroit, MI 48235   |
| 18000 Livernois Ave Detroit MI 48221      |
| 18100 Meyers Rd Detroit MI 48235          |
| 18551 Grand River Ave Detroit MI 48223    |
| 18880 8 Mile Rd Southfield MI 48075       |
| 19230 Harper Ave Harper Woods MI 48225    |
| 1940 E 8 Mile Rd Detroit MI 48234         |

**MPSC Case No:** U-21534

**Requester:** MAUI

**Question No.:** MAUIDE-3.15a

**Respondent:** M. Hatsios

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|                                                     |
|-----------------------------------------------------|
| 19700 Kelly Road Harper Woods MI 48225              |
| 20221 Joy Rd Detroit MI 48228                       |
| 20250 W 7 Mile Rd Detroit MI 48219                  |
| 22800 Van Dyke Ave Warren MI 48089                  |
| 25200 Van Born Rd Dearborn Heights MI 48125         |
| 2645 W Davison Detroit MI 48238                     |
| 29611 Ford Rd, Garden City MI 48135                 |
| 3869 W. Jefferson Ave Ecorse MI 48229               |
| 4703 Conner Ave Detroit MI 48215                    |
| 500 E Warren Ave Detroit MI 48201                   |
| 5555 Conner Street Detroit MI 48213                 |
| 5625 Conner St Detroit MI 48213                     |
| 5800 Caniff St Hamtramck MI 48212                   |
| 5931 Michigan Ave Detroit MI 48210                  |
| 7011 Gratiot Ave Detroit MI 48207                   |
| 7404 East Seven Mile Rd Detroit MI 28234            |
| 9291 Telegraph Rd Redford Charter Township MI 48239 |

**Attachment:** None.

Co-respondent: Legal

**MPSC Case No:** U-21534

**Requester:** MAUI

**Question No.:** MAUIDE-3.15b

**Respondent:** M. Hatsios

**Page:** 1 of 3

**Question:** Please provide the following information about all DTE Energy Bill Payment Kiosks in operation any time after January 1, 2019.  
b. Last date of operation of kiosks (enter N/A if the kiosk is still in operation today).

**Answer:** DTE Electric objects for the reasons that the request is unduly burdensome, overly broad, seeks excessive detail, seeks irrelevant information, and is not reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving its objection, the Company would respond as follows:

Kiosks' last date of operation is provided below. Not applicable (N/A) means they are still in service.

| Address                                   | Last Date of Operation             |
|-------------------------------------------|------------------------------------|
| 1 Energy Plaza Dr Detroit MI 48226        | N/A                                |
| 10620 W McNichols Rd, Detroit, MI 48221   | 6/15/2023                          |
| 11250 East Jefferson Ave Detroit MI 48214 | N/A                                |
| 1131 W. Warren Ave Detroit MI 48201       | N/A                                |
| 12048 Grand River Ave Detroit MI 48204    | 9/23/2023                          |
| 12278 Gratiot Ave Detroit MI 48205        | 6/10/2023                          |
| 12955 Grand River Ave Detroit MI 48227    | 2023 (exact date not recorded)     |
| 13223 Hamilton Highland Park, MI 48203    | N/A                                |
| 1368 Baldwin Ave Pontiac MI 48340         | May 2024 (exact date not recorded) |

Co-respondent: Legal

**MPSC Case No: U-21534**

**Requester: MAUI**

**Question No.: MAUIDE-3.15b**

**Respondent: M. Hatsios**

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|                                             |                                |
|---------------------------------------------|--------------------------------|
| 14350 E 9 Mile Rd Warren MI 48089           | 2023 (exact date not recorded) |
| 14424 Schaefer Hwy Detroit MI 48227         | N/A                            |
| 14470 Livernois Ave Detroit MI 48238        | 2023 (exact date not recorded) |
| 16200 W Warren Ave Detroit MI 48228         | N/A                            |
| 1716 Fort Street, Lincoln Park 48146        | 11/6/2023                      |
| 17256 W Seven Mile Rd Detroit, MI 48235     | 7/29/2023                      |
| 18000 Livernois Ave Detroit MI 48221        | 6/17/2023                      |
| 18100 Meyers Rd Detroit MI 48235            | 8/25/2023                      |
| 18551 Grand River Ave Detroit MI 48223      | 8/4/2023                       |
| 18880 8 Mile Rd Southfield MI 48075         | 8/22/2023                      |
| 19230 Harper Ave Harper Woods MI 48225      | 5/30/2023                      |
| 1940 E 8 Mile Rd Detroit MI 48234           | N/A                            |
| 19700 Kelly Road Harper Woods MI 48225      | N/A                            |
| 20221 Joy Rd Detroit MI 48228               | N/A                            |
| 20250 W 7 Mile Rd Detroit MI 48219          | 2023 (exact date not recorded) |
| 22800 Van Dyke Ave Warren MI 48089          | 2023 (exact date not recorded) |
| 25200 Van Born Rd Dearborn Heights MI 48125 | 9/3/2023                       |
| 2645 W Davison Detroit MI 48238             | 6/18/2023                      |

Co-respondent: Legal

**MPSC Case No:** U-21534

**Requester:** MAUI

**Question No.:** MAUIDE-3.15b

**Respondent:** M. Hatsios

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|                                                        |                                |
|--------------------------------------------------------|--------------------------------|
| 29611 Ford Rd, Garden City MI 48135                    | 11/27/2023                     |
| 3869 W. Jefferson Ave Ecorse MI 48229                  | N/A                            |
| 4703 Conner Ave Detroit MI 48215                       | 2023 (exact date not recorded) |
| 500 E Warren Ave Detroit MI 48201                      | 10/12/2023                     |
| 5555 Conner Street Detroit MI 48213                    | N/A                            |
| 5625 Conner St Detroit MI 48213                        | 7/30/2023                      |
| 5800 Caniff St Hamtramck MI 48212                      | 2023 (exact date not recorded) |
| 5931 Michigan Ave Detroit MI 48210                     | N/A                            |
| 7011 Gratiot Ave Detroit MI 48207                      | 6/12/2023                      |
| 7404 East Seven Mile Rd Detroit MI 28234               | 5/22/2023                      |
| 9291 Telegraph Rd Redford Charter Township<br>MI 48239 | N/A                            |

**Attachment:** None.

Co-respondent: Legal

**MPSC Case No:** U-21534

**Requester:** MAUI

**Question No.:** MAUIDE-3.15c

**Respondent:** M. Hatsios

**Page:** 1 of 1

**Question:** Please provide the following information about all DTE Energy Bill Payment Kiosks in operation any time after January 1, 2019.  
c. Provide total number of payments made and total revenue collected at kiosks in calendar years 2019 and 2023.

**Answer:** DTE Electric objects for the reasons that the request seeks irrelevant information and is not reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving its objection, the Company would respond as follows: Payment totals collected for 2019 and 2023 from the kiosks are provided below.

| Year | Payment Totals | Payment Volumes |
|------|----------------|-----------------|
| 2019 | \$95,124,191   | 477,819         |
| 2023 | \$69,923,354   | 267,172         |

**Attachment:** None.

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-3.17a (S1)

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**Respondent:** J. Sparks

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**Question:** Please provide the following information for residential electric customers with service addresses in the zip codes shown in the table below, for calendar years 2019 and 2023:

a. The number of residential electric customers with service addresses in each zip code who had payments declined or returned in 2019 or 2023 such that they were potentially subject to the form-of-payment restrictions described in section C4.6B of the Company's rate book.

**Answer:** DTE Electric objects for the reasons that the request is unduly burdensome, overly broad, seeks excessive detail, seeks irrelevant information and is not reasonably calculated to lead to the discovery of admissible evidence, and seeks information that cannot be compiled and is not kept in the ordinary course of business in the format requested. Subject to and without waiving its objection, the Company would respond as follows: This data is not available for 2019 or by zip code.

In 2023, of the 70,277 electric customers subject to payment restrictions, 48,410 resulted in a cash only flag. Please see attachment for the number of electric customers by county in 2023 who were subject to payment restrictions.

**Attachment:** U-21534 MAUIDE-3.17a Cash Only by County All

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-3.16

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**Respondent:** M. Hatsios

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**Question:** Please explain why the Company has taken some kiosks out of operation since 2019.

**Answer:** DTE Electric objects for the reasons that the request seeks irrelevant information and is not reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving its objection, the Company would respond as follows: Kiosk theft activity occurred in 2023. This activity resulted in numerous kiosks being damaged, requiring them to be taken out of service. It also prompted some business owners to request removal of the kiosk at their location as a precaution to protect their business from possible theft activity. A store closure also resulted in a kiosk being taken out of service.

**Attachment:** None.

| City                        | Distance to nearest kiosk (Miles) | Population Demographics |                  |                  |                   |                       | Poverty                          |              |                             |                             |                              |                                  |
|-----------------------------|-----------------------------------|-------------------------|------------------|------------------|-------------------|-----------------------|----------------------------------|--------------|-----------------------------|-----------------------------|------------------------------|----------------------------------|
|                             |                                   | Population              | White Percentage | Black Percentage | Latino Percentage | Mixed Race Percentage | Total Living Below Poverty Level | Poverty Rate | White Percentage of Poverty | Black Percentage of Poverty | Latino Percentage of Poverty | Mixed Race Percentage of Poverty |
| Detroit                     | -                                 | 608,709                 | 10.5%            | 76.9%            | 7.1%              | 5.2%                  | 205,986                          | 33.8%        | 8.1%                        | 79.3%                       | 7.9%                         | 4.6%                             |
| Ecorse                      | -                                 | 9,265                   | 26.0%            | 43.7%            | 19.1%             | 15.7%                 | 2,316                            | 25.0%        | 35.9%                       | 17.4%                       | 14.0%                        | 24.0%                            |
| Harper Woods                | -                                 | 15,144                  | 29.6%            | 64.1%            | 1.3%              | 4.9%                  | 3,036                            | 20.0%        | 18.0%                       | 77.8%                       | 2.0%                         | 3.7%                             |
| Highland Park               | -                                 | 8,777                   | 7.5%             | 88.9%            | 1.0%              | 2.6%                  | 3,298                            | 37.6%        | 6.5%                        | 92.7%                       | 0.4%                         | 0.2%                             |
| Redford Charter Township    | -                                 | 48,791                  | 40.3%            | 50.7%            | 4.9%              | 4.6%                  | 5,671                            | 11.6%        | 38.2%                       | 54.1%                       | 3.9%                         | 5.6%                             |
| Lapeer                      | 50                                | 7,597                   | 86.9%            | 1.1%             | 4.4%              | 9.5%                  | 1,823                            | 24.0%        | 85.5%                       | 1.6%                        | 0.2%                         | 12.7%                            |
| Mt Clemens                  | 15.9                              | 14,380                  | 65.9%            | 23.0%            | 3.4%              | 8.5%                  | 2,410                            | 16.8%        | 42.9%                       | 38.1%                       | 6.6%                         | 14.4%                            |
| Roseville                   | 5.7                               | 47,216                  | 67.8%            | 22.6%            | 3.8%              | 5.0%                  | 6,322                            | 13.4%        | 53.7%                       | 34.2%                       | 3.4%                         | 5.8%                             |
| Hazel Park                  | 2.3                               | 15,000                  | 75.1%            | 9.5%             | 5.5%              | 9.9%                  | 2,324                            | 15.5%        | 62.4%                       | 16.7%                       | 5.1%                         | 13.2%                            |
| Port Huron                  | 52.1                              | 28,420                  | 77.4%            | 8.2%             | 7.4%              | 8.3%                  | 6,320                            | 22.2%        | 73.4%                       | 3.2%                        | 7.5%                         | 9.7%                             |
| Port Huron Charter Township | 49.7                              | 10,316                  | 88.0%            | 4.9%             | 3.4%              | 3.5%                  | 2,032                            | 19.7%        | 79.9%                       | 5.4%                        | 2.3%                         | 13.0%                            |



July 15, 2024

Dear Mr. Bunch,

Upon your request, we have searched through rate books, electric tariffs and utility company websites to identify scenarios in which the utility may require a customer to pay their bill in cash.

In all, we reviewed publicly available information for 48 utilities and found no evidence that any of them ever require their customer to pay their bills in cash. Our review encompassed:

- Rate books, tariffs and websites of two large investor-owned utilities operating in Michigan.
- Websites of 39 Michigan municipal utilities.
- Website and tariffs of seven large investor-owned utilities operating outside of Michigan.

The following is a list of the Michigan-based utilities for whom we researched published tariffs, rate book, and company websites.

Consumers Energy  
Indiana-Michigan Power

The following is a list of the investor-owned utilities with service territories outside of Michigan for whom we researched published tariffs and company websites.

Pacific Gas & Electric (CA)  
Southern California Edison (CA)  
Florida Power and Light (FL)  
Consolidated Edison (NY)  
Georgia Power (GA)  
Dominion Energy (VA)  
Duke Energy Ohio (OH)

The following is a list of the 39 Michigan municipal electric utilities for whom we researched company websites.

Baraga  
Bay City  
Charlevoix  
Chelsea  
Clinton  
Coldwater  
Croswell  
Daggett  
Eaton Rapids  
Escanaba  
Gladstone



Grand Haven  
Harbor Springs  
Hart  
Hillsdale  
Holland  
L'Anse  
Lansing  
Lowell  
Marquette  
Marshall  
Negaunee  
Newberry  
Niles  
Norway  
Paw Paw  
Petoskey  
Portland  
St. Louis  
Sebewaing  
South Haven  
Stephenson  
Sturgis  
Traverse City  
Union City  
Wakefield  
Wyandotte  
Zeeland

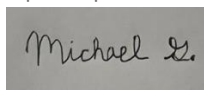
Furthermore, you had requested that we see how reasonably distributed DTE's authorized payment agents are. Per our research, it appears that there are multiple authorized payment agents in the highly populated counties in DTE's service territory. However, less-populated counties such as Sanilac, Huron, and Tuscola have one, one, and two payment agents, respectively. As a result, there may be instances of DTE customers in these counties having to drive over 50 miles round trip to meet the company's cash payment requirement. This data was gathered through [DTE's Payment Location page](#) on their website.

Sincerely yours,



**Pete Schultz**

He | Him | His



**Michael Gasparovic**

He | Him | His

[Home](#)

# Victims of Identity Theft, 2021

October 12, 2023

|                                                |                                                                                    |
|------------------------------------------------|------------------------------------------------------------------------------------|
| <b>FOR IMMEDIATE RELEASE</b>                   | <b>BUREAU OF JUSTICE<br/>STATISTICS</b>                                            |
| <b>THURSDAY, OCTOBER 12, 2023, 10:00 AM ET</b> | Contact: OJP MEDIA<br><a href="mailto:media@ojp.usdoj.gov">media@ojp.usdoj.gov</a> |

## PRESS RELEASE

### In 2021, 1 in 10 persons had been victims of identity theft in the past 12 months

WASHINGTON — In 2021, about 23.9 million U.S. residents age 16 or older (9% of the population) had experienced identity theft in the past 12 months, according to the Bureau of Justice Statistics' new report *Victims of Identity Theft, 2021*. As of 2021, about 1 in 5 persons (22%) had experienced identity theft in their lifetime.

In 2021, almost 4% of people had their credit card misused, while 3% had their bank account misused. Two percent experienced misuse of their email or social media account. Nearly 1% had their personal information misused for fraudulent purposes, such as getting medical care or applying for a job or government benefits. Less than 1% had their personal information misused to open a new account.

Consequences of identity-theft victimization varied by the type of crime victims experienced. A majority of victims (56%) spent 1 day or less resolving financial or credit problems associated with their most recent identity theft. About 7% of identity-theft victims reported the incident to law enforcement, and 67% of victims contacted a credit card company or bank. On average, victims sustained direct financial losses of \$880. Victims of new account misuse (\$3,430) had

higher direct losses on average compared to victims of bank account (\$670) and credit card misuse (\$620).

Case No. U-21534  
Exhibit: MAU-12  
Witness: R. Bunch  
2 of 3

“While about 6 in 10 (59%) victims of identity-theft incidents in 2021 had financial losses of \$1 or more, those losses totaled \$16.4 billion” noted Kevin M. Scott, PhD, Acting Director of BJS. “In addition, 10% of identity-theft victims in 2021 were severely distressed as a result of the crime.”

Findings are from the 2021 Identity Theft Supplement (ITS) to the National Crime Victimization Survey. From July through December 2021, the ITS collected data from persons about their experience with identity theft during the 12 months before the interview. The 2021 ITS featured a redesigned questionnaire, aimed at improving the quality of data collected and modernizing the survey content. These changes include excluding attempted incidents of identity theft, collecting the month and year of the most recent occurrence of each type of identity theft and adding the misuse of an existing email or social media account as a separate type of identity theft.

“These changes resulted in several improvements to the ITS questionnaire,” Dr. Scott explained. “For example, the new questionnaire allows for reducing the number of incidents reported that occurred outside the survey window. It also decreases respondent burden by streamlining the information requested.”

BJS is also releasing the complementary third-party report, *Assessing the Measurement of Identity Theft through the Identity Theft Supplement to the National Crime Victimization Survey*, produced for BJS by RTI International, which describes efforts to assess potential sources of measurement error in the ITS.

[Victims of Identity Theft, 2021](#), written by BJS Statisticians Erika Harrell, PhD, and Alexandra Thompson; the third-party report [Assessing the Measurement of Identity Theft through the Identity Theft Supplement to the National Crime Victimization Survey](#), written by Lynn Langton, PhD, Christopher Krebs, PhD, Patrick Hsieh, PhD, Sarah Cook, Philip Lee, Jeanne Snodgrass, and Herschel Sanders, of RTI International; related documents; and additional information about BJS’s statistical publications and programs are available on the BJS website at [bjs.ojp.gov](https://bjs.ojp.gov).

**About the Bureau of Justice Statistics** [↗](#)

The Bureau of Justice Statistics of the U.S. Department of Justice's Office of Justice Programs is the principal federal agency responsible for collecting, analyzing and disseminating reliable statistics on crime and criminal justice in the United States. Kevin M. Scott, PhD, is the acting director. More information about BJS and criminal justice statistics can be found at [bjs.ojp.gov](https://bjs.ojp.gov).

## About the Office of Justice Programs [↗](#)

The Office of Justice Programs provides federal leadership, grants, training, technical assistance, and other resources to improve the nation's capacity to prevent and reduce crime; advance equity and fairness in the administration of justice; assist victims; and uphold the rule of law. More information about OJP and its components can be found at [www.ojp.gov](https://www.ojp.gov).

**Date Published: October 12, 2023**



U.S. DEPARTMENT OF JUSTICE  
OFFICE OF JUSTICE PROGRAMS

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-4.19a

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**Respondent:** R. Bellini

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**Page:** 1 of 1

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**Question:** Witness Bellini (page 11, lines 8-9) notes the Company will accommodate certain customer requests. Will the Company accommodate customers' requests to convert burned-out HPS fixtures to LED before HPS lamp stocks are depleted?

a. If yes, will the Company assess a customer contribution for those conversions?

**Answer:** Yes. In the event of a failed HPS fixture - upon request, the Company is amenable to replacing with an equivalent LED fixture. In such cases, customer contributions are not required.

**Attachment:** None.

**R. A. BELLINI**

U-21297

Line  
No.

1 A16. Yes. Our account managers regularly work with our municipal customers who  
2 either have high concentrations of HID lights or have directly inquired as to the  
3 potential benefits in transitioning to LEDs. Most recently, we proactively engaged  
4 our HID municipalities and made them aware of (and assisted as needed) the  
5 Southeast Michigan Council of Governments (SEMCOG) grant application process  
6 (December 2022 – February 2023) that made available project grant dollars  
7 earmarked for reduction of carbon emissions and encouragement of energy  
8 efficiency. Several communities were awarded grants specific to HID to LED  
9 conversion projects that will commence between 2024 and 2025.

10

11 **Q17. What else might explain why Mercury Vapor (MV) lights are converting to**  
12 **LEDs at a faster pace than other HID's?**

13 A17. There are two factors. First, as mentioned in my direct testimony on page 7, lines  
14 11-18, MV lights were rendered obsolete pursuant to the Energy Policy Act of  
15 2005. In addition to there not being an option to purchase MVs, the Company  
16 agreed to stop actively maintaining these fixtures and began replacing failed MV  
17 fixtures to LEDs in 2017 as part of the Commission's U-18014 order. Second, in  
18 contrast to MV lights, the other prominent HID lighting type currently in service  
19 are high pressure sodium (HPS) lights. HPS lights are still a viable, tariff approved  
20 offering for which a market still exists that allows for purchase of HPS lights and  
21 related replacement parts. There are communities that simply prefer to keep HPS  
22 lights in favor of LEDs, and as long as this remains a tariff approved option, the  
23 Company will continue to provide support and maintenance for them.

24

Line  
No.

1        CUSTOMER CONTRIBUTION IN AID OF CONSTRUCTION (CIAC) FOR  
2        HID-LED CONVERSIONS

3        **Q18. Do you agree with Witness Bunch in recommending to the Commission on**  
4        **page 20, lines 9-10 of his corrected direct testimony that they "...should order**  
5        **the Company to stop charging CIAC for HID-LED conversions."**

6        A18. No, for two reasons. First, municipalities who proactively decided to convert their  
7        lighting system to LEDs and have paid for the entirety of this conversion, will now  
8        be subsidizing future LED municipal conversions. Witness Bunch seems to suggest  
9        that early adopters of LEDs that have paid for their conversions will not be  
10       impacted because of the accumulated savings they've realized from the conversion.  
11       While municipalities may have realized savings from these conversions, if the  
12       Commission were to adopt this proposal, future conversion costs would be  
13       socialized among all E1 Option 1 streetlight customers, in effect making early  
14       adopters pay twice. This is neither fair nor equitable and penalizes those  
15       municipalities who have already made the conversion to LEDs.

16

17       Second, as Witness Bunch states on page 18, lines 16-17 of his corrected direct  
18       testimony, "The basic reason to assess a CIAC fee for any project is if the customer  
19       is receiving a special service or benefit that other customers don't benefit from..."  
20       Such LED conversions do uniquely benefit municipalities who request them, and  
21       Witness Bunch even states this a few pages later on page 20, lines 19-21 when he  
22       states, "The delay on other communities receiving LEDs will also mean  
23       communities that invested will be benefitted relative to those who did not make such  
24       an investment."

May 20, 2019

City of Ferndale  
300 E. Nine mile Rd,  
Ferndale, Michigan 48220

Re: 2019 Streetlighting Conversion to LED

Based on the completed "AS Built" Field Design & Assessment, I have prepared a cost estimate for the conversion to LEDs of (1744) street lights that consist of the following:

Overhead (OH)-1383

- OH-2-100 watt MV to 58-watt Leotek LEDs
- OH-926-175-watt MV to 58-watt Leotek LEDs
- OH-49-250-watt MV to 136-watt Leotek LEDs
- OH-65-400-watt MV to 136-watt Leotek LEDs
- OH-5-1000-watt MV to 238-watt Leotek LEDs
- OH-195-100-watt HPS to 58-watt Leotek LEDs
- OH-2-150-watt HPS to 58-watt Leotek LEDs
- OH-104-250-watt HPS to 136-watt Leotek LEDs
- OH-3-1000-watt HPS to 238-watt Leotek LEDs
- OH-30-400-watt HPS to 238 watt Leotek LEDs
- OH-2-175-watt MV to 80-watt Leotek LEDs

Underground (UG)-361

- UG-2-175-watt MV to 58-watt Leotek LEDs
- UG-73-400-watt MV to 136-watt Leotek LEDs
- UG-1-1000-watt MV to 238-watt Leotek LEDs
- UG-20-100-watt HPS to 58-watt Leotek LEDs
- UG-241-250-watt HPS to 136-watt Leotek LEDs
- UG-24-400-watt HPS to 238-watt Leotek LEDs

Below please find the estimate breakdown for this project. The costs are based on the Streetlight Option 1-DTE Energy owned and maintained. The rate requires the customer pay a portion of the construction cost. The following information outlines the street lighting installation.

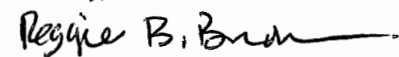
Estimate Breakdown

|                         |                     |
|-------------------------|---------------------|
| Project Cost:           | \$418,240.00        |
| Current Annual Invoice: | \$479,533.01        |
| Future Annual Invoice:  | \$318,454.59        |
| <b>Annual Savings:</b>  | <b>\$161,078.42</b> |
| Less DTE Contribution:  | \$69,750.00         |
| EO Rebate:              | \$61,222.00         |
| Payback:                | 2.22YRS.            |

The price quoted herein shall be in effect for a period of 30 Days from the issue date. After installation, the total cost for additional modification, relocation, or removal will be the responsibility of the requesting party. An authorized signature on the Municipal Street Lighting Master/Purchase Agreement and the payment contribution will be our notification to begin final design and construction scheduling.

Please feel free to call me should you have any questions.

Sincerely,



Reggie B. Brown  
Account Manager  
DTE- Community Lighting  
734-397-4241  
313-300-3693

Consumers Energy Company  
Calculation of Monthly LED Conversion Credit

Case No. U-21389  
WP-AMG-17

| Description                                     | 2018     | 2019      | 2020      | 2021      | 2022      | 2023      | Bridge Period<br>2 mo. end<br>Feb. 2024 | Test Year<br>12 mo. end<br>Feb. 2025 | Input              | Source                                              |
|-------------------------------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------------------------------------|--------------------------------------|--------------------|-----------------------------------------------------|
| <b>Conversions</b>                              |          |           |           |           |           |           |                                         |                                      |                    |                                                     |
| Mercury Vapor to LED                            | 4,259    | 4,308     | 1,325     | -         | -         | -         | -                                       | -                                    |                    | A-12 (DAS-1), page 2, line 3                        |
| Failures to LED                                 | 5,299    | 16,403    | 15,310    | 15,775    | 16,407    | 13,197    | 2,199                                   | 13,197                               |                    | A-12 (DAS-1), page 2, line 9                        |
| Center Suspension to LED                        | -        | -         | -         | 183       | 19        | -         | -                                       | -                                    |                    | A-12 (DAS-1), page 2, line 5                        |
| Vicinity Upgrades to LED                        | -        | -         | -         | -         | 1,788     | 1,603     | 267                                     | 1,603                                |                    | A-12 (DAS-1), page 2, line 7                        |
| Total Lights Converted                          | 9,558    | 20,711    | 16,635    | 15,958    | 18,214    | 14,800    | 2,466                                   | 14,800                               |                    |                                                     |
| <b>Incremental Conversion Costs (\$000)</b>     |          |           |           |           |           |           |                                         |                                      |                    |                                                     |
| Mercury Vapor to LED                            | \$ 3,598 | \$ 3,639  | \$ 1,119  | \$ -      | \$ -      | \$ -      | \$ -                                    | \$ -                                 | Unit Costs: \$ 845 | A-12 (DAS-1), page 2, line 4, col ( d )             |
| Failures to LED                                 | 4,818    | 14,913    | 13,919    | 14,342    | 14,916    | 11,998    | 1,999                                   | 11,998                               | \$ 909             | A-12 (DAS-1), page 2, line 10, col ( j )            |
| Center Suspension to LED                        | -        | -         | -         | 742       | 77        | -         | -                                       | -                                    | \$ 4,053           | A-12 (DAS-1), page 2, line 6, col ( f )             |
| Vicinity Upgrades to LED                        | -        | -         | -         | -         | 855       | 767       | 128                                     | 767                                  | \$ 478             | A-12 (DAS-1), page 2, line 8, col ( j )             |
| Total Lights Converted                          | \$ 8,415 | \$ 18,552 | \$ 15,038 | \$ 15,083 | \$ 15,849 | \$ 12,765 | \$ 2,127                                | \$ 12,765                            |                    |                                                     |
| <b>Capital Expense</b>                          |          |           |           |           |           |           |                                         |                                      |                    |                                                     |
| Beginning Balance                               | \$ -     | \$ 8,415  | \$ 26,967 | \$ 42,005 | \$ 57,088 | \$ 72,937 | \$ 85,702                               | \$ 87,829                            |                    |                                                     |
| Addition                                        | 8,415    | 18,552    | 15,038    | 15,083    | 15,849    | 12,765    | 2,127                                   | 12,765                               |                    |                                                     |
| Ending Balance                                  | \$ 8,415 | \$ 26,967 | \$ 42,005 | \$ 57,088 | \$ 72,937 | \$ 85,702 | \$ 87,829                               | \$ 100,594                           |                    |                                                     |
| Depreciation Expense                            | \$ 125   | \$ 527    | \$ 1,028  | \$ 1,476  | \$ 1,937  | \$ 2,364  | \$ 2,586                                | \$ 2,808                             | 2.98%              | Plant Model in Rev. Req.                            |
| <b>Net Plant</b>                                |          |           |           |           |           |           |                                         |                                      |                    |                                                     |
| Beginning Balance                               | \$ -     | \$ 8,290  | \$ 26,314 | \$ 40,325 | \$ 53,932 | \$ 67,843 | \$ 78,244                               | \$ 77,786                            |                    |                                                     |
| Ending Balance                                  | 8,290    | 26,314    | 40,325    | 53,932    | 67,843    | 78,244    | 77,786                                  | 87,743                               |                    |                                                     |
| Average Balance                                 | \$ 4,145 | \$ 17,302 | \$ 33,319 | \$ 47,128 | \$ 60,887 | \$ 73,044 | \$ 78,015                               | \$ 82,764                            |                    |                                                     |
| <b>Test Year Revenue Requirement</b>            |          |           |           |           |           |           |                                         |                                      |                    |                                                     |
| Return on CapEx                                 |          |           |           |           |           |           |                                         | \$ 6,290                             | 7.60%              | A-14 (MRB-1), line 19, col ( i )                    |
| Depreciation Expense                            |          |           |           |           |           |           |                                         | 2,808                                |                    |                                                     |
| Property Tax                                    |          |           |           |           |           |           |                                         | 1,247                                | 1.24%              | A-161 (BJV-1), line 19, col ( e )                   |
| Total                                           |          |           |           |           |           |           |                                         | \$ 10,345                            |                    |                                                     |
| Test Year Number of LED Lights                  |          |           |           |           |           |           |                                         | 103,286                              |                    | Dan Schmoekel (2022 actual + projected conversions) |
| Annual Revenue Requirement per Light            |          |           |           |           |           |           |                                         | \$ 100.16                            |                    |                                                     |
| Monthly Revenue Requirement per Light           |          |           |           |           |           |           |                                         | \$ 8.35                              |                    |                                                     |
| Number of lights converted before policy change |          |           |           |           |           |           |                                         | 10,820                               |                    | Case No. U-20697                                    |
| Annual Projected Credit                         |          |           |           |           |           |           |                                         | \$ 1,083,681                         |                    |                                                     |

DANIEL A. SCHMOEKEL  
U-21585 DIRECT TESTIMONY

1 integration with existing software (SAP, SOAR, etc.), coordination with manufacturer and  
2 municipalities, and maintenance of the new rate and tariff). The Company has decided to  
3 pause implementation of advanced lighting controls based on the cost of the technology,  
4 lack of customer interest, and minimal O&M savings.

5 **Q. Does the Company recommend other activities which are expected to improve outage**  
6 **restoration performance and/or reduce streetlight failures?**

7 A. Yes. The Company's current practice of proactively converting HID cobrahead lights, via  
8 vicinity conversion, to LED luminaires has proven financially beneficial to street lighting  
9 customers. Approximately \$253,000 in customer savings has been realized since 2022  
10 through vicinity conversions by reducing non-premise time of field personnel. The  
11 Company will continue to perform vicinity conversions as part of its expected work plan.  
12 As discussed further in this direct testimony, the Company recommends HID to LED post  
13 top conversions, implementation of vicinity conversion of HID post top lights and further  
14 enhancing the SOAR application to address reporting of streetlight issues.

15 **Q. Why does the Company recommend converting HID post top streetlights to LED?**

16 A. Post top streetlights represent the second largest quantity of HID streetlights the Company  
17 operates and maintains (approximately 43,000). Post top streetlights are typically unique,  
18 meaning other manufacturers do not produce the same exact streetlight. The Company's  
19 HPS luminaire suppliers have indicated HPS post top streetlights are discontinued mainly  
20 due to low demand amidst a higher demand for LED luminaires. Failed HID post top  
21 fixtures will be upgraded to LED technology.

22 Implementing a post top reactive conversion program, similar to that already in  
23 place for cobrahead luminaires, would result in similar customer benefits (reduced energy

U-21534 Exhibit MAU-17, Community Lighting Sales Forecast adjustment for known outages  
WP U-21534 MAUI sales forecast and lum plant balances  
data source U-21534 Bellini WP-Lighting Rate Model

| LookUp              | Description  | UG/OH | Lamp Type | LAMP WATTAGE | BillingProduct   | Hours | SystemWattage | Light Count as of ME Nov 2022 | Load as of ME Nov 2022 | Light Count as of 2024 | Load as of 2024 | Total Lamp Energy Cost | Ballast watts | Ballast energy use/year/ fixture (kWh) | Total Option 1 ballast energy use/year (kWh) | Total ballast energy cost/year (\$) |
|---------------------|--------------|-------|-----------|--------------|------------------|-------|---------------|-------------------------------|------------------------|------------------------|-----------------|------------------------|---------------|----------------------------------------|----------------------------------------------|-------------------------------------|
| E1 SL - Option I-UG | De-Energizer | UG    | HPS       | 250          | E1 SL - Option I | 4200  | 305           | 17                            | 0                      | 17                     | 0               | \$ -                   | 55            | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | HPS       | 70           | E1 SL - Option I | 4200  | 95            | 73                            | 29.127                 | 73                     | 29.127          | \$ -                   | 25            | 105                                    | 7,665.00                                     | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | HPS       | 100          | E1 SL - Option I | 4200  | 135           | 19759                         | 11203.353              | 17584                  | 9970.128        | \$ -                   | 35            | 147                                    | 2,584,848.00                                 | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | HPS       | 150          | E1 SL - Option I | 4200  | 200           | 565                           | 474.6                  | 445                    | 373.8           | \$ -                   | 50            | 210                                    | 93,450.00                                    | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | HPS       | 250          | E1 SL - Option I | 4200  | 305           | 6221                          | 7969.101               | 2931                   | 3754.611        | \$ -                   | 55            | 231                                    | 677,061.00                                   | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | HPS       | 400          | E1 SL - Option I | 4200  | 465           | 1816                          | 3546.648               | 961                    | 1876.833        | \$ -                   | 65            | 273                                    | 262,353.00                                   | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | HPS       | 1,000        | E1 SL - Option I | 4200  | 1100          | 2                             | 9.24                   | 2                      | 9.24            | \$ -                   | 100           | 420                                    | 840.00                                       | \$ -                                |
| E1 SL - Option I-UG | De-Energizer | UG    | LED       | 65           | E1 SL - Option I | 0     | 65            | 27                            | 0                      | 27                     | 0               | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | Dusk-Midnig  | UG    | LED       | 135          | E1 SL - Option I | 2100  | 135           | 21                            | 5.9535                 | 21                     | 5.9535          | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 35           | E1 SL - Option I | 4200  | 35            | 1735                          | 255.045                | 3345                   | 491.715         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 45           | E1 SL - Option I | 4200  | 45            | 26                            | 4.914                  | 1                      | 0.189           | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 55           | E1 SL - Option I | 4200  | 55            | 5141                          | 1187.571               | 9207                   | 2126.817        | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 65           | E1 SL - Option I | 4200  | 65            | 9025                          | 2463.825               | 9746                   | 2660.658        | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 75           | E1 SL - Option I | 4200  | 75            | 1471                          | 463.365                | 1781                   | 561.015         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 85           | E1 SL - Option I | 4200  | 85            | 1319                          | 470.883                | 2315                   | 826.455         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 95           | E1 SL - Option I | 4200  | 95            | 119                           | 47.481                 | 119                    | 47.481          | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 105          | E1 SL - Option I | 4200  | 105           | 509                           | 224.469                | 508                    | 224.028         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 115          | E1 SL - Option I | 4200  | 115           | 63                            | 30.429                 | 367                    | 177.261         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 125          | E1 SL - Option I | 4200  | 125           | 4                             | 2.1                    | 4                      | 2.1             | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 135          | E1 SL - Option I | 4200  | 135           | 14801                         | 8392.167               | 21534                  | 12209.778       | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 145          | E1 SL - Option I | 4200  | 145           | 204                           | 124.236                | 216                    | 131.544         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 155          | E1 SL - Option I | 4200  | 155           | 934                           | 608.034                | 1016                   | 661.416         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 165          | E1 SL - Option I | 4200  | 165           | 23                            | 15.939                 | 23                     | 15.939          | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 175          | E1 SL - Option I | 4200  | 175           | 711                           | 522.585                | 639                    | 469.665         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 185          | E1 SL - Option I | 4200  | 185           | 39                            | 30.303                 | 39                     | 30.303          | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 205          | E1 SL - Option I | 4200  | 205           | 592                           | 509.712                | 604                    | 520.044         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 215          | E1 SL - Option I | 4200  | 215           | 8                             | 7.224                  | 9                      | 8.127           | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 235          | E1 SL - Option I | 4200  | 235           | 560                           | 552.72                 | 939                    | 926.793         | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 245          | E1 SL - Option I | 4200  | 245           | 88                            | 90.552                 | 88                     | 90.552          | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 255          | E1 SL - Option I | 4200  | 255           | 28                            | 29.988                 | 28                     | 29.988          | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 265          | E1 SL - Option I | 4200  | 265           | 18                            | 20.034                 | 18                     | 20.034          | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 285          | E1 SL - Option I | 4200  | 285           | 1125                          | 1346.625               | 1099                   | 1315.503        | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | LED       | 295          | E1 SL - Option I | 4200  | 295           | 15                            | 18.585                 | 15                     | 18.585          | \$ -                   | 0             | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MH        | 70           | E1 SL - Option I | 4200  | 85            | 195                           | 69.615                 | 195                    | 69.615          | \$ -                   | 15            | 63                                     | 12,285.00                                    | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MH        | 100          | E1 SL - Option I | 4200  | 120           | 90                            | 45.36                  | 83                     | 41.832          | \$ -                   | 20            | 84                                     | 6,972.00                                     | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MH        | 150          | E1 SL - Option I | 4200  | 180           | 14                            | 10.584                 | 14                     | 10.584          | \$ -                   | 30            | 126                                    | 1,764.00                                     | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MH        | 175          | E1 SL - Option I | 4200  | 210           | 463                           | 408.366                | 217                    | 191.394         | \$ -                   | 35            | 147                                    | 31,899.00                                    | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MH        | 250          | E1 SL - Option I | 4200  | 300           | 263                           | 331.38                 | 264                    | 332.64          | \$ -                   | 50            | 210                                    | 55,440.00                                    | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MH        | 400          | E1 SL - Option I | 4200  | 460           | 329                           | 635.628                | 228                    | 440.496         | \$ -                   | 60            | 252                                    | 57,456.00                                    | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MV        | 100          | E1 SL - Option I | 4200  | 120           | 16                            | 8.064                  | 10                     | 5.04            | \$ -                   | 20            | 84                                     | 840.00                                       | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MV        | 175          | E1 SL - Option I | 4200  | 210           | 1670                          | 1472.94                | 830                    | 732.06          | \$ -                   | 35            | 147                                    | 122,010.00                                   | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MV        | 250          | E1 SL - Option I | 4200  | 300           | 3                             | 3.78                   | 1                      | 1.26            | \$ -                   | 50            | 210                                    | 210.00                                       | \$ -                                |
| E1 SL - Option I-UG | NULL         | UG    | MV        | 400          | E1 SL - Option I | 4200  | 450           | 786                           | 1485.54                | 418                    | 790.02          | \$ -                   | 50            | 210                                    | 87,780.00                                    | \$ -                                |
| E1 SL - Option I-OH | De-Energizer | OH    | HPS       | 100          | E1 SL - Option I | 0     | 135           | 4                             | 0                      | 4                      | 0               | \$ -                   | 35            | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-OH | De-Energizer | OH    | HPS       | 250          | E1 SL - Option I | 0     | 305           | 1                             | 0                      | 1                      | 0               | \$ -                   | 55            | 0                                      | -                                            | \$ -                                |
| E1 SL - Option I-OH | Dusk-Midnig  | OH    | HPS       | 250          | E1 SL - Option I | 2100  | 305           | 2                             | 1.281                  | 2                      | 1.281           | \$ -                   | 55            | 115.5                                  | 231.00                                       | \$ -                                |
| E1 SL - Option I-OH | Dusk-Midnig  | OH    | HPS       | 400          | E1 SL - Option I | 2100  | 465           | 4                             | 3.906                  | 4                      | 3.906           | \$ -                   | 65            | 136.5                                  | 546.00                                       | \$ -                                |
| E1 SL - Option I-OH | NULL         | OH    | HPS       | 70           | E1 SL - Option I | 4200  | 95            | 1104                          | 440.496                | 948                    | 378.252         | \$ -                   | 25            | 105                                    | 99,540.00                                    | \$ -                                |

|                                               |              |    |     |       |                  |      |      |        |           |        |           |    |   |     |     |            |    |   |
|-----------------------------------------------|--------------|----|-----|-------|------------------|------|------|--------|-----------|--------|-----------|----|---|-----|-----|------------|----|---|
| E1 SL - Option I-OH                           | NULL         | OH | HPS | 100   | E1 SL - Option I | 4200 | 135  | 8566   | 4856.922  | 5337   | 3026.079  | \$ | - | 35  | 147 | 784,539.00 | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | HPS | 150   | E1 SL - Option I | 4200 | 200  | 7      | 5.88      | 0      | 0         | \$ | - | 50  | 210 | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | HPS | 250   | E1 SL - Option I | 4200 | 305  | 5085   | 6513.885  | 2049   | 2624.769  | \$ | - | 55  | 231 | 473,319.00 | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | HPS | 400   | E1 SL - Option I | 4200 | 465  | 598    | 1167.894  | 0      | 0         | \$ | - | 65  | 273 | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | HPS | 1,000 | E1 SL - Option I | 4200 | 1100 | 15     | 69.3      | 0      | 0         | \$ | - | 100 | 420 | -          | \$ | - |
| E1 SL - Option I-OH                           | Dusk-Midnig  | OH | LED | 135   | E1 SL - Option I | 2100 | 135  | 5      | 1.4175    | 5      | 1.4175    | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | Dusk-Midnig  | OH | LED | 285   | E1 SL - Option I | 2100 | 285  | 2      | 1.197     | 2      | 1.197     | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 35    | E1 SL - Option I | 4200 | 35   |        |           | 3      | 0.441     | \$ | - |     |     | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 45    | E1 SL - Option I | 4200 | 45   | 73     | 13.797    | 73     | 13.797    | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 55    | E1 SL - Option I | 4200 | 55   | 11437  | 2641.947  | 22280  | 5146.68   | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 65    | E1 SL - Option I | 4200 | 65   | 35879  | 9794.967  | 36373  | 9929.829  | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 75    | E1 SL - Option I | 4200 | 75   | 604    | 190.26    | 607    | 191.205   | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 85    | E1 SL - Option I | 4200 | 85   | 1033   | 368.781   | 1685   | 601.545   | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 95    | E1 SL - Option I | 4200 | 95   | 1511   | 602.889   | 1509   | 602.091   | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 105   | E1 SL - Option I | 4200 | 105  | 86     | 37.926    | 90     | 39.69     | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 115   | E1 SL - Option I | 4200 | 115  | 1      | 0.483     | 3      | 1.449     | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 125   | E1 SL - Option I | 4200 | 125  | 58     | 30.45     | 58     | 30.45     | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 135   | E1 SL - Option I | 4200 | 135  | 15387  | 8724.429  | 21218  | 12030.606 | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 145   | E1 SL - Option I | 4200 | 145  | 43     | 26.187    | 165    | 100.485   | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 155   | E1 SL - Option I | 4200 | 155  | 401    | 261.051   | 400    | 260.4     | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 165   | E1 SL - Option I | 4200 | 165  | 108    | 74.844    | 108    | 74.844    | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 175   | E1 SL - Option I | 4200 | 175  | 51     | 37.485    | 53     | 38.955    | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 185   | E1 SL - Option I | 4200 | 185  | 9      | 6.993     | 9      | 6.993     | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 205   | E1 SL - Option I | 4200 | 205  | 76     | 65.436    | 150    | 129.15    | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 215   | E1 SL - Option I | 4200 | 215  | 22     | 19.866    | 35     | 31.605    | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 235   | E1 SL - Option I | 4200 | 235  | 181    | 178.647   | 699    | 689.913   | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 245   | E1 SL - Option I | 4200 | 245  | 5      | 5.145     | 5      | 5.145     | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 255   | E1 SL - Option I | 4200 | 255  | 11     | 11.781    | 11     | 11.781    | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 285   | E1 SL - Option I | 4200 | 285  | 621    | 743.337   | 771    | 922.887   | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 295   | E1 SL - Option I | 4200 | 295  | 14     | 17.346    | 14     | 17.346    | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 305   | E1 SL - Option I | 4200 | 305  | 15     | 19.215    | 15     | 19.215    | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | LED | 325   | E1 SL - Option I | 4200 | 325  | 4      | 5.46      | 4      | 5.46      | \$ | - | 0   | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MH  | 70    | E1 SL - Option I | 4200 | 85   | 1      | 0.357     | 1      | 0.357     | \$ | - | 15  | 63  | 63.00      | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MH  | 175   | E1 SL - Option I | 4200 | 210  | 45     | 39.69     | 10     | 8.82      | \$ | - | 35  | 147 | 1,470.00   | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MH  | 250   | E1 SL - Option I | 4200 | 300  | 1      | 1.26      | 1      | 1.26      | \$ | - | 50  | 210 | 210.00     | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MH  | 400   | E1 SL - Option I | 4200 | 460  | 5      | 9.66      | 6      | 11.592    | \$ | - | 60  | 252 | 1,512.00   | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MH  | 1,000 | E1 SL - Option I | 4200 | 1050 | 1      | 4.41      | 1      | 4.41      | \$ | - | 50  | 210 | 210.00     | \$ | - |
| E1 SL - Option I-OH                           | De-Energizec | OH | MV  | 175   | E1 SL - Option I | 0    | 210  | 1      | 0         | 1      | 0         | \$ | - | 35  | 0   | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MV  | 100   | E1 SL - Option I | 4200 | 120  | 127    | 64.008    | 97     | 48.888    | \$ | - | 20  | 84  | 8,148.00   | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MV  | 175   | E1 SL - Option I | 4200 | 210  | 10395  | 9168.39   | 1644   | 1450.008  | \$ | - | 35  | 147 | 241,668.00 | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MV  | 250   | E1 SL - Option I | 4200 | 300  | 217    | 273.42    | 0      | 0         | \$ | - | 50  | 210 | -          | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MV  | 400   | E1 SL - Option I | 4200 | 450  | 1350   | 2551.5    | 386    | 729.54    | \$ | - | 50  | 210 | 81,060.00  | \$ | - |
| E1 SL - Option I-OH                           | NULL         | OH | MV  | 1,000 | E1 SL - Option I | 4200 | 1060 | 10     | 44.52     | 0      | 0         | \$ | - | 60  | 252 | -          | \$ | - |
| <b>E1 Electric sales forecast adjustments</b> |              |    |     |       |                  |      |      | 248580 | 138588.91 | 174818 | 81394.362 | \$ | - |     |     | 5,695,389  | \$ | - |

**Inputs**

|                                                    |            |
|----------------------------------------------------|------------|
| (1)Total Opt I lamp usage including outage time    | 75,698,973 |
| (2)Total Opt I fixture usage including outage time | 81,394,362 |
| (3)Total Opt I ballast usage                       | 5,695,389  |
| (4)Night patrol outage time                        | 4.37%      |

**Outputs**

|                                                                          |           |
|--------------------------------------------------------------------------|-----------|
| (5)Reduction for Opt I fixture outage time                               |           |
| = (2)*(4)                                                                | 3,556,934 |
| (6)Ballast usage during outages                                          |           |
| = (3)*(4)                                                                | 248,888   |
| (7)Net kWh reduction in Opt I sales forecast for outage time = (5) - (6) | 3,308,045 |

|                                                         |
|---------------------------------------------------------|
| (8) % reduction in Opt I sales forecast for outage time |
| = (7)/(2) 4.06%                                         |

**MPSC Case No:** U-21534

**Requester:** MAUI

**Question No.:** MAUIDE-4.28b

**Respondent:** R. Bellini

**Page:** 1 of 1

**Question:** Refer to the table titled “O&M 2024 Rate Case Test Period” in witness Bellini’s Lighting Rate Model workpaper, Assumptions worksheet, rows 21-33.

b. Please provide O&M actual cost data for calendar years 2019-2023 inclusive, in the same format as the referenced table.

**Answer:** Please see below table for actual cost data in the format requested:

| O&M Category                 | Year                |                     |                     |                     |                     |
|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                              | 2019                | 2020                | 2021                | 2022                | 2023                |
| Group Relamping              | \$ -                | \$ 384,929          | \$ 175,601          | \$ 48,551           | \$ -                |
| Streetlight Inspection       | \$ 108,068          | \$ 123,004          | \$ 121,192          | \$ 93,694           | \$ 30,160           |
| Streetlight Painting         | \$ 238,674          | \$ 76,027           | \$ 139,845          | \$ 124,311          | \$ 72,726           |
| LED Washing                  | \$ 248,946          | \$ 165,412          | \$ 132,839          | \$ 136,691          | \$ -                |
| Night Patrols                | \$ -                | \$ 287,224          | \$ 392,909          | \$ 322,608          | \$ 139,483          |
| Supervisory & Administration | \$ 1,211,979        | \$ 1,184,387        | \$ 1,450,714        | \$ 1,317,958        | \$ 1,159,891        |
| Cancelled Projects/Other     | \$ 66,304           | \$ 7,048            | \$ 4,580            | \$ 3,444            | \$ 21,778           |
| Outage Restoration           | \$ 6,519,039        | \$ 4,972,381        | \$ 5,300,190        | \$ 5,322,901        | \$ 6,667,615        |
| OPL Outage Restoration       | \$ 813,078          | \$ 606,053          | \$ 568,260          | \$ 665,636          | \$ 778,858          |
| Capitalization Credit        | \$(5,941,230)       | \$(4,519,892)       | \$(3,666,926)       | \$(4,045,128)       | \$(5,452,658)       |
| Damage Claims                | \$ 457,577          | \$ 501,653          | \$ 587,062          | \$ -                | \$ (12,996)         |
| <b>Total</b>                 | <b>\$ 3,722,435</b> | <b>\$ 3,788,226</b> | <b>\$ 5,206,266</b> | <b>\$ 3,990,666</b> | <b>\$ 3,404,857</b> |

**Attachment:** None.

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-6.52

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**Respondent:** R. Bellini

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**Page:** 1 of 1

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**Question:** In case no. U-21279, the revenue requirement included \$334,383 for streetlight inspections. The current filing proposes to spend \$130,000 for streetlight inspections. Why does the Company expect to see expenses in this category drop so sharply?

**Answer:** Assuming the question meant to refer to MPSC Case No. U-21297, please refer to page 15, line 5 through line 11 of my direct testimony. In 2023, Community Lighting began replacing streetlight only wood poles that were previously identified as condemned or near end-of-life through Distribution Operations (DO) pole top maintenance (PTM) program, in addition to replacing its decorative street light poles. Prior to 2023, DO replaced street light only wood poles in similar fashion to replacing a DO pole. Community Lighting is now provided a list of streetlight only wood poles on an ongoing basis as they are identified through the PTM program. As a result, the Company is able to replace the same number of poles (both wood and decorative) within our approved spend. The Company is currently evaluating our contractors capacity to replace a greater number of poles collectively, at which point the program projected expenditure to replace more poles (both wood and decorative) may change in the future.

**Attachment:** None.

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-6.53

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**Respondent:** R. Bellini

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**Page:** 1 of 1

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**Question:** In case no. U-21279 the revenue requirement assumed the Company would spend \$384,427 on streetlight painting. The current filing proposes to spend \$130,000 on painting. Why does the Company expect to see expenses in this category drop by approximately two-thirds?

**Answer:** Assuming the question meant to refer to MPSC Case No. U-21297, previous to 2024, the Company utilized two separate industrial painting contractors. The Company decided not to renew its contract with one of these contractors, therefore reducing total bandwidth. As a result, The Company anticipated fewer posts to be painted in the projected test year.

**Attachment:** None.



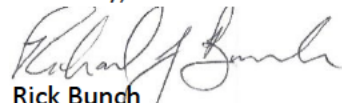
Lisa Felice  
Executive Secretary  
Michigan Public Service Commission  
7109 W. Saginaw Highway  
Lansing, MI 48917  
*Submitted electronically*

March 15, 2024

Dear Ms. Felice:

Attached please find comments from MI-MAUI for electronic filing in the docket for case no. U-20147.

Sincerely,



Rick Bunch  
Executive Director

Attachment

**Comments of Michigan Municipal Association for Utility Issues  
on 2023 DTE Electric Distribution Grid Plan, case no. U-20147**

Michigan Municipal Association for Utility Issues (MI-MAUI) is a membership organization of local governments that have policy and fiscal objectives affected by utility tariffs and practices. Comments provided here represent the views of MI-MAUI rather than of its members individually.

Local governments have various interests in distribution system planning:

1. They are the stewards for the public benefit of easements occupied by electric distribution system equipment. They are responsible for seeing that easements are used for public benefit and that various uses are coordinated and compatible with each other and local regulations, goals, and policies.
2. They are electric franchisors, responsible for ensuring that conditions of the grant of franchise are observed.
3. They are elected representatives of their communities, responsible for ensuring that electric power is available, reliable, safe, and affordable for residents and for economic development purposes.
4. They deliver various program services to their communities, which may be enabled, interrupted or necessitated by utility issues. For example, they deliver various social services to vulnerable residents, who may be deeply affected by cost or reliability or electric service. They provide emergency services when electric service is interrupted and are interested in minimizing both public and private costs and the consequences of those events. They also need timely and specific information about service interruptions so they can target services where and when they are needed.

As such, the entire scope of DTE's EDIIP is within the sphere of interest of local governments within its service territory. However, MI-MAUI does not wish to provide comprehensive and exhaustive comments on the full scope of DTE's EDIIP. Rather, we wish to focus on topics about which local governments have distinctive standing to comment and/or distinctive perspectives. The omission of other topics from these comments does not signify MI-MAUI's, or its members', disinterest in them or acceptance of DTE's plans.

**Costly Investments in Reliability May Erode Energy Security**

Local governments are concerned about the energy security of the households and businesses they serve. Reliability is an important component of energy security, but so is affordability. Large investments in the distribution system may reduce the number of people who lose power owing to bad weather or equipment failures and how long their power stays out, but by driving rates up may – paradoxically - cause many people to lose power because they cannot afford to pay their electric bills. While DTE provides an analysis of SAIFI, SAIDI, and CAIDI using the standard definitions of those metrics, as local governments we are interested in a more holistic discussion of energy security.

If the objective is to keep people's power on, then we need a better understanding of this tradeoff between reliability investments and affordability. An EDIIP should not merely assert that there are social benefits to investing in reliability to reduce outages, without also acknowledging and examining the social costs of those investments, including increased risk of disconnection for nonpayment. It is not acceptable simply to assume that assistance will step in to help customers impacted by rate hikes; the first priority should be to keep rates affordable, with assistance making up whatever gap remains.

An EDIIP is not a rate case, but it is an appropriate forum for reviewing general costs and benefits of investment plans, as differentiated from the rate impacts of specific projects. MI-MAUI urges DTE, and the Commission, to undertake a more holistic analysis of energy security as part of the EDIIP process and content.

#### DTE Should Involve Local Governments in Distribution System Project Planning

Local governments and the communities they serve experience the costs and burdens of DTE's infrastructure activities both in the rates they pay and the impact of infrastructure operations on neighborhoods. Because DTE proposes a higher activity rate in the coming years, local governments are concerned both about the rate impacts of those activities and the disruptions that neighborhoods experience during projects. MI-MAUI members believe that DTE could reduce costs and disruptions caused by its infrastructure projects if those projects were better coordinated with local infrastructure projects.

Here, we are not addressing distribution system planning at the level of this current docket, nor are we commenting on DTE's communication of its project plans to local governments, or its responsiveness to local government project requests. Instead, we are advocating for DTE to implement more careful coordination with municipal infrastructure projects, such as road rebuilds or water and sewer projects. Public Works departments report too many times that DTE has implemented projects that disrupt neighborhoods and damage public infrastructure shortly before or after a municipal infrastructure project was planned in that same location. The best time to relocate conductor underground, or replace it, is when the city is tearing up the street for a road, water, or sewer project – not a year or two later. Likewise, DTE should make every reasonable effort to schedule co-located electric and gas infrastructure projects concurrently.

The general point is that DTE should seek to schedule non-emergent infrastructure projects in coordination (i.e., concurrently or consecutively) with other infrastructure projects to minimize neighborhood disruptions and reduce total costs. Non-emergent projects may be implemented a year or two earlier or later than DTE's project scheduling processes would otherwise indicate to optimize this kind of coordination.

While DTE appears to recognize that community leaders want better coordination, the EDIIP makes short shrift of the topic and describes no plans to implement responsive processes:

"There is a desire to understand the reliability performance of the local community and how that compares to other communities. In addition, communities want to understand how the overarching investment programs identified in the DGP will translate into investment plans at the local level, when that investment is expected to take place, and the reliability improvements that can be expected after the plans have been implemented. DTEE looks forward to maintaining a dialogue with its communities and further understanding the communities' sentiments toward distribution issues."<sup>1</sup>

This passage is helpful, as far as it goes, but it does not go far. Communities want to inform DTE's project priorities concerning local goals, plans, and needs, and to influence project scheduling. This desire is much more concrete and specific than "further understanding the communities' sentiments toward distribution issues."

Local governments recognize that the kind of project coordination they desire is laborious – because they do it all the time in coordination of municipal infrastructure projects and with other service providers. Complaints

<sup>1</sup> EDIIP, p203.

that coordinating in this fashion would be prohibitively expensive and time-consuming ignore that DTE's current approach externalizes substantial total cost and other burdens on the community.

Although the EDIIP section on community engagement fails to mention project coordination with municipal governments and others, DTE elsewhere in the EDIIP recognizes the potential of coordinated project implementation. In the section on undergrounding:

*First, DTE Gas is performing gas main replacement in the area, and cost and other construction synergies are expected from collaboration between the two utilities, both of which will be using directional boring to complete their work. The combination work will also minimize the time for construction disturbance for customers, when compared to coming in before or after gas main renewal has occurred.<sup>2</sup>*

This example is compelling but focuses only on minimizing construction disturbance. DTE should also seek, whenever possible, to coordinate excavation schedules and infrastructure (e.g., road or sidewalk) repair to reduce total costs and neighborhood disturbance.

The Commission should require DTE to adopt and document its implementation of processes for genuine and comprehensive project coordination and limit the Company's recovery of costs when it falls short. We recommend that DTE undertake annual meetings with each local government, county road commission, water and sewer authority, or other public agency with responsibility for infrastructure projects in the right of way, to identify and coordinate upcoming projects.

#### Storm response

Local governments appreciate DTE's efforts to improve the accuracy and timeliness of its outage reporting and restoration estimates. The EDIIP gives no attention, unfortunately, to the vital roles of local governments in storm response. This is unfortunate because local governments are partners of DTE in storm response, in that they provide public safety and social services made necessary by power outages. However local governments get scarcely more accurate, timely or granular information or communication from DTE during outages than any other customer, making it very hard to provide vital public services in a timely and efficient manner. Shortcomings were detailed in testimony provided by MI-MAUI in case no. U-21297 by witness James Krizan, then city manager of Lincoln Park, and by City of Ann Arbor witness Mike Kennedy, fire chief.

We recommend that the EDIIP should:

- Discuss how DTE can properly and efficiently share information with local officials about outage locations, expected durations, and vulnerable customers and critical facilities impacted that may need emergency or social services support.
- Discuss how DTE will improve its responsiveness to local government priorities during power outages.
- Support local governments with resiliency resources, including but not limited to solar PV, backup power, and energy storage at critical municipal facilities and warming/cooling centers.

#### Streetlights

Unlike Consumers Energy's EDIIP, DTE's plan makes no mention of streetlights, a topic of special and proprietary concern for local governments.

<sup>2</sup> EDIIP, p127.

MI-MAUI has repeatedly shown in rate case testimony that the reliability of DTE's streetlight services is getting worse, calling into question whether and how streetlight customers will ever benefit from the Company's accelerated spending on its distribution system and its heavy investment in LED technology. The benefits customers seek in converting to LEDs include, in varying order of priority, cost savings, improved reliability, and higher-quality lighting.

DTE reported distribution rate base for E-1 (streetlights), E-2 (signals), and OPL (outdoor protective lighting) of \$286,672,000 for the period ending November 30, 2024.<sup>3</sup> For the test year ending June 30, 2016, the Company reported \$215,689,000 in distribution rate base. That increase equates to an average annual growth in the value of lighting assets of about 3.4%. Over the same period, customers have provided many additional millions of dollars in customer contributions for DTE to convert their streetlights to LED.<sup>4</sup>

The results of all this investment are underwhelming so far. The number of streetlight outage days the Company reported in 2022 was 13% higher than in 2017.<sup>5</sup> Over that same period, Total Duration Days rose from 6.08 days in 2017 to 7.24 days in 2022; only in 2020 were Total Duration Days less than in 2017. There were even more outages in 2022 than that, though, because the Company does not include in this total the 4,685 outages it discovered itself via its Night Patrol program. None of these outages include outages due to widespread distribution outages – these are outages *in addition* to dark nights due to distribution grid failures.

The EDIIP ignores this reliability problem, using only standard SAIDI and SAIFI metrics that do not include streetlight outages. For streetlighting customers, that ignores the vast majority of their reliability problem, as problems with streetlighting equipment dwarf general distribution system outages for this rate class. The Company cannot come up with an investment plan that is fair to streetlight customers by ignoring the primary source of the reliability problems they experience. Nor should the cost implications of their planned spending be ignored while every other distribution investment is included.

Customers also seek to use less energy and achieve climate goals by investing in LED streetlights. In case no. U-21297, MI-MAUI provided evidence that the Company systematically chooses LED streetlights that are brighter, and more expensive, than its supplier recommends to replace older HID lights. In its final order, the Commission held that DTE had overspent on LEDs by \$5.8 million and reduced the Company's cost recovery accordingly. The instant point, however, is not cost but waste: the Company installs LEDs that use more electricity than is required to meet technical lighting standards, thus denying customers of energy savings and climate progress. The EDIIP should address how the Company proposes to comply with technical lighting standards going forward.

The Company's historic overspending on excessively bright LEDs has another impact that ought to be discussed in the EDIIP: light pollution. A growing chorus of scientific studies has shown that the transition to outdoor LED lighting has significantly increased global light pollution and associates it with impacts on human health and ecosystems, among other issues. The EDIIP should discuss how the Company proposes to reduce or mitigate these impacts as the transition to LEDs continues. Potential solutions include installation of less-bright LEDs, reducing their color temperature, specifying and installing them carefully to illuminate only intended areas of the street and sidewalk, scheduled dimming, and occupancy sensors.

<sup>3</sup> U-21297 Cost of Service Study.

<sup>4</sup> From 2017-2022, 34,039 high-pressure sodium streetlights were converted to LED. Customers pay for HPS conversions, typically \$250-\$400/luminaire. This is consistent with total customer CIAC of \$10 million over that period.

<sup>5</sup> U-21297, Exh A-25:O1. Outage days are figured as (standard events adjusted) x (Average days duration) + (# of Follow-up Events) x (Follow Up Outage Events Duration).

Thank you for the opportunity to comment on DTE's plan.

Sincerely,

A handwritten signature in black ink, appearing to read "Rick Bunch", written over a light blue rectangular background.

Rick Bunch  
Executive Director

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-4.26

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**Respondent:** R. Bellini

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**Page:** 1 of 1

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**Question:** Witness Bellini describes the underground cable replacement program on p. 16 of his testimony. Please explain any criteria or method for the selection and prioritization of underground cable system replacement projects. Specifically, please address what role, if any, a history of outage events on the circuit, or the ability to coordinate with other infrastructure projects being undertaken in the same right of way, are considered.

**Answer:** The cable replacement program uses the following criteria to determine selection and prioritization of projects: 1) age of cable, 2) pedestrian conflict (level of pedestrian traffic), 3) recurring outages, 4) number of lights on the circuit, and 5) type of road. Though none of our completed or planned cable replacement projects have overlapped directly with municipal projects, we are open to coordinating in any way that would drive efficiencies where opportunities to do so arise.

**Attachment:** None.

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-4.24

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**Respondent:** R. Bellini

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**Page:** 1 of 1

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**Question:** Should the second and third footnotes on Company's Exhibit A-25, Schedules O1 and O2, be understood to mean the Company had no OMS in operation from January through October 2023? If not, please explain the proper interpretation.

**Answer:** The Company was able to catalog outage events, but was not able to calculate duration metrics, or delineate long duration and follow-up events. Therefore, the Company used actual duration metrics as well as actual long duration and follow-up events from the point the new OMS system went live and extrapolated that data for the first 9 months of 2023.

**Attachment:** None.

Line  
No.

1 repairs” which result in sections of failed cable being isolated and replaced. Though  
2 this addresses the immediate root cause, it doesn’t necessarily increase the  
3 longevity of the stretch of cable supporting that circuit, in a manner that replacing  
4 failed, or end-of-life underground cable would.

5

6 **Q29. Are there any other long-term benefits expected to be realized from the Cable**  
7 **Replacement program?**

8 A29. First, most of the underground system cable that is currently in service is direct  
9 buried, meaning that the cable is unsleeved and buried at a depth which makes it  
10 more susceptible to freezing and thawing impacts as well as 3<sup>rd</sup> party strikes during  
11 excavation work (i.e. other utility work or municipal driven projects such as road  
12 widening). Cable that is replaced under this program is now installed within a  
13 protective sleeve which increases the likelihood that it can survive a 3<sup>rd</sup> party strike  
14 or become exposed through excavation. Second, as damaged and end-of-life cable  
15 is replaced with newly installed and protected cable, we expect to see a reduction  
16 in outages whose root cause is determined to be an underground cable failure. Over  
17 time, this will reduce the number of reactive underground cable events and increase  
18 lighting system reliability.

19

20 **Outage Restoration Activities**

21 **Q30. What was DTE Electric’s performance with respect to outage duration for its**  
22 **lighting customers?**

23 A30. DTE Electric has several targets for outage performance: outage duration and  
24 outage defects. DTE Electric’s 2021 outage duration target was 3.0 business days  
25 and DTE Electric’s 2021 actual performance was 5.2 business days. These

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-6.55

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**Respondent:** R. Bellini

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**Page:** 1 of 1

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**Question:** In case no. U-21279, the revenue requirement included a spend of \$1,279,807 on Community Lighting Supervisory and Administrative staff. The current filing proposes an expenditure of \$1,800,000 for Community Lighting Supervisory and Administrative staff. Please explain the assumptions underlying the approximately \$520,000 in increased cost in this category.

**Answer:** Assuming the question meant to refer to MPSC Case No. U-21297, the Company's assumptions included:

- 1) New hires for unfilled positions
- 2) Inflation impacting various costs including employee salaries
- 3) Increase in administrative costs inclusive of using contractors

**Attachment:** None.

**R. A. BELLINI**  
U-20836

Line  
No.

1 pedestrian conflict areas that again, allow the Company to remain compliant with  
2 ANSI/IES RP-8-18 lighting standards.

3

4 **Q30. Are you saying that in response to Witness Bunch's comparison to LED's**  
5 **purchased by Consumer's Energy on page 59, line 20 through page 60, line 2,**  
6 **that they are not using the appropriate LED luminaire equivalent to light its**  
7 **roadways?**

8 A30. No, not at all. What I am saying is that each roadway setting, and related lighting  
9 application will be different, and that each utility should design and implement  
10 adequate streetlighting that meets the unique of roadways that they serve. As  
11 mentioned in the preceding answer, our streetlighting systems for major  
12 thoroughfares are designed to provide adequate lighting on long stretches of  
13 roadway that commonly involve several lanes of traffic. Using higher wattage  
14 fixtures means fewer poles and luminaires are used which is economical and  
15 reduces the need for additional infrastructure.

16

17 **Q31. Witness Bunch suggests on page 62, line 3 of his testimony that the Company's**  
18 **LED Washing program is needlessly washing lamps on an accelerated basis**  
19 **and out of step with Illumination Engineering Society (IES) recommended**  
20 **practices. Do you agree?**

21 A31. No. First, the IES study did not include the luminaire type predominately used by  
22 the Company, which is a secondary acrylic optics (SAO) luminaire. Second, and  
23 more importantly, this study was not specific to the environment in which the LED  
24 luminaires are intended to operate. Heavy truck traffic and salt spray are unique to  
25 a Midwest state such as Michigan, and the tri-counties (Macomb, Wayne, and

**R. A. BELLINI**  
U-20836

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25 a Midwest state such as Michigan, and the tri-counties (Macomb, Wayne, and

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-6.56

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**Respondent:** R. Bellini

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**Page:** 1 of 1

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**Question:** Please provide a breakdown of the number of FTEs broken down by title and/or classification within the Community Lighting Supervisory and Administrative staff in 2021, 2022, 2023, and the same data for the projected test year if the requested \$1,800,000 were to be included in the revenue requirement.

**Answer:** DTE Electric objects for the reason that the information requested consists of confidential, proprietary, research and development of trade secrets, or commercial information, the disclosure of which would cause DTE Electric, its ratepayers, and its customers competitive harm. Subject to these objections, but without waiving them, DTE Electric's response follows:

See below for supervisory and administrative positions in Community Lighting:



Please note for 2024 and 2025 these are preliminary estimates that will continue to evolve due to the need to fill many key roles in both Community Lighting and throughout the Company.

**Attachment:** None.

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-4.20

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**Respondent:** R. Bellini

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**Page:** 1 of 1

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**Question:** The E1, Option 1 tariff reads “Special Order Material Provision: For decorative or ornamental special order material, there may be an additional per luminaire per month charge for procurement and material handling. Company and Customer to mutually agree upon charges.” (Sheet D-49.0) Does the phrase “decorative or ornamental special order material” encompass luminaires with different wattages, CCTs or light distribution patterns than the Company generally uses but that are otherwise the same luminaire models?

**Answer:** Yes. Special order material (SOM) would refer to material, whether it be luminaires or posts for example, that the Company does not maintain as standard stock. It should be noted that while LEDs can be purchased with more expensive adjustable drivers to change the wattage output, the correlated color temperature (CCT) and the lighting distribution pattern (optics) are fixed and cannot be altered.

**Attachment:** None.

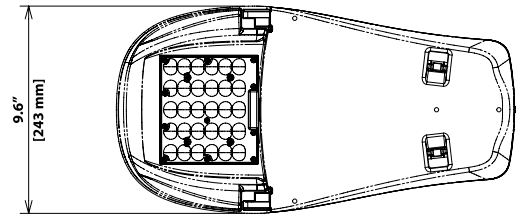
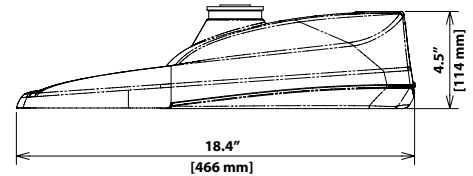
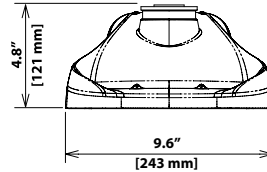
# GreenCobra™ Jr. LED Street Light

## GCJ J-Series Specification Data Sheet

### Luminaire Data

**Weight** 7.7 lbs [3.5 kg]

**EPA** 0.39 ft<sup>2</sup>



### Ordering Information

Sample Catalog No. GCJ1-30J-MV-40K-2R-GY-055-PCR7-WL

| Model*                           | LED Code | Voltage                    | Color Temperature                                | Distribution                                                  | Finish <sup>1</sup>                   | Output Code <sup>2</sup>                        | Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------|----------|----------------------------|--------------------------------------------------|---------------------------------------------------------------|---------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCJ1*<br>GCJ2*<br>GCJ3*<br>GCJ4* | 30J      | MV 120-277V<br>HV 347-480V | 27K 2700K<br>30K 3000K<br>40K 4000K<br>50K 5000K | 2R Type 2<br>3R Type 3R<br>3F Type 3F<br>4 Type 4<br>5 Type 5 | GY Gray<br>DB Dark Bronze<br>BK Black | Refer to Page 3 to select the performance code. | <b>FOC<sup>3</sup></b> Fixed Output Code<br><b>LPCR</b> Less Photocontrol Receptacle<br><b>PCR7<sup>4</sup></b> ANSI 7-wire Photocontrol Receptacle<br><b>PCR7-CR<sup>5</sup></b> Control Ready 7-wire PC Receptacle<br><b>MSL3</b> Motion Sensor, L3 Lens<br><b>MSL7</b> Motion Sensor, L7 Lens<br><b>WL</b> Utility Wattage Label<br><b>4B</b> 4-Bolt Mounting Bracket<br><b>RWG</b> Rubber Wildlife Guard<br><b>SWTB</b> Straight Wire Terminal Block<br><b>BBL</b> Bubble Level<br><b>DSC</b> Door Safety Cable<br><b>CF<sup>6</sup></b> Coastal Paint Finish<br><b>SP2<sup>7</sup></b> Extreme Surge Protection, 20KV/10KA, Fail-to-on<br><b>LSSP2<sup>7</sup></b> Extreme Surge Protection, Fail-to-off, 20kv/10kA Rating |

\* Refer to performance data table on page 3, 4 for specific model with corresponding output code

#### Notes:

- Gray, Black, and Dark Bronze standard. Consult factory for other finishes. See page 2 for RAL codes of Standard finishes.
- Specified output code is the factory set lumen performance. Refer to performance data table on page 3, 4 of this spec sheet. Field adjustable output selector enables fixture to be changed in the field to adjust light output for local conditions (not available with Fixed Output Code, FOC) or PCR7-CR option. Consult factory if wattage limits require a special drive current.
- Non-field adjustable, fixed output code. Specify required output code. Not available with PCR7-CR option.
- Includes output selector that enables field adjustability of light levels. Includes connectors to allow easy upgrade of wireless dimming via PCR7. Wireless node by others.
- Control-ready wired at factory for wireless node dimming (node by others). Output selector not included in the fixture. Not able to adjust above specified output code.
- Specify the CF Option for coastal installation. See warranty for details.
- Standard surge protection, 10kv/5kA, fail-to-on, meets enhanced surge protection based on ANSI 136.25-2015 3-part test.
- Flush mounted house side shield. Shield cuts light off at 1 mounting height behind luminaire. Gray frame with black louvers.
- Flush mounted cul-de-sac shield. Shield cuts light off at 1 mounting height behind luminaire and 2 times the mounting height on either side of luminaire. Gray frame with black louvers.
- Flush mounted front side shield cuts light off at approximately 1½ mounting height in front of luminaire (street side). Gray frame with black louvers.
- Specify Color (GY, DB, BK). Refer to Leotek web site for specific mounting details and drawings at <https://leotek.com/lighting-library/>
- Specify MV (120-277V) or HV (347-480V).

### Accessories\*

|                             |                                                |
|-----------------------------|------------------------------------------------|
| <b>HSSJGCI<sup>8</sup></b>  | House Side Shield, Snap-On*                    |
| <b>CSSJGCI<sup>9</sup></b>  | Cul-De-Sac Side Shield, Snap-On*               |
| <b>FSSJGCI<sup>10</sup></b> | Front Side Shield, Snap-On*                    |
| <b>SPB<sup>11</sup></b>     | Square Pole Horizontal Arm Bracket             |
| <b>RPB<sup>11</sup></b>     | Round Pole Horizontal Arm Bracket              |
| <b>PTB<sup>11</sup></b>     | Pole Top Tenon Horizontal Arm Bracket          |
| <b>PTB2<sup>11</sup></b>    | Pole Top Tenon Horizontal Arm Bracket (2@180°) |
| <b>WB<sup>11</sup></b>      | Wall Horizontal Arm Bracket                    |
| <b>BSK</b>                  | Bird Deterrent Spider Kit                      |
| <b>LLPC<sup>12</sup></b>    | Long-Life Twist Lock Photocontrol              |
| <b>SC</b>                   | Twist Lock Shorting Cap                        |

\* Unless specified for field installation, Shields and Shorting Caps are shipped installed. All other options are shipped separately.



### Luminaire Specifications

#### Housing

Die cast aluminum housing with universal two-bolt slip fitter mounts to 1-1/4" to 2" (1-5/8" to 2-3/8" O.D.) diameter mast arm. One-piece aluminum housing provides passive heat-sinking of the LEDs and has upper surfaces that shed precipitation. Four-bolt mounting bracket (4B option) is available. Mounting provisions meet 3G vibration per ANSI C136.31-2010 Normal Application, Bridge & Overpass by independent lab. Mounting has leveling adjustment from  $\pm 5^\circ$  in  $2.5^\circ$  steps. All hardware is stainless steel. Electrical components are accessed without tools via die cast aluminum door with stainless steel quick release latches. Provided standard with removable polycarbonate wild life guard. For additional protection, optional rubber wildlife guard (RWG) which conforms snugly to the mast arm is offered.

#### Light Emitting Diodes

LEDs produce minimum 90% of initial intensity at 60,000 hours of life per IES recommended lumen maintenance life projection based on 6 times the duration of the collected LM-80 data. For details on IESNA Position on LED Product Lifetime Prediction, PS-10-18. LEDs have correlated color temperature of 2700K (27K), 3000K (30K), 4000K (40K), or 5000K (50K) and 70 CRI minimum. LEDs are ROHS compliant, 100% mercury and lead free.

#### Field Adjustability

LED lumen output can be changed in the field to adjust light output for local conditions (not available with PCR7-CR option). The specified output code will be the factory set output. Field adjustments can be made with the output selector included in the fixture. Field adjustable range shown in performance data table.

#### Quality Control

Every luminaire is performance tested before and after a 2-hour burn-in period. Assembled in the USA.

#### Optical Systems

Micro-lens optical systems produce IESNA Type 2, Type 3, Type 4, or Type 5 distributions and are fully sealed to maintain an IP66 rating. Luminaire produces 0% total lumens above  $90^\circ$  (BUG Rating, U=0). Optional house side shield cuts light off at 1/2 mounting height behind luminaire. Front side shield cuts light off at approximately one mounting height in front of the luminaire (street side). Cul-de-sac shield provides back and side light control for end of cul-de-sac applications. All shields are field installable without tools.

#### Electrical

Rated life of electrical components is 100,000 hours. Uses isolated power supply that is 1-10V dimmable. Power supply is wired with quick-disconnect terminals. EMC meets or exceeds FCC CFR Part 15. Terminal block accommodates 6 to 14 gauge wire. Surge protection complies with IEEE/ANSI C62.41 Category C High, 10kV/5kA and ANSI C136.2-2015, 3-part test.

#### Power Supply

IP66 rated power power supply with high power factor of  $> 90\%$ . Auto sensing universal AC input from 120 to 277VAC (MV model) and 347 to 480VAC (HV mode) rated for both line to line and line to neutral applications. Maximum THD rating of 20%. Class 1 or Class 2. Built-in overheating protection mechanism will reduce drive current to LEDs and electrical components if the driver experiences unusual internal overheating situation. Built-in short circuit, voltage overload, and current overload protection with automatic recovery after correction.

#### Controls

3-Wire photocontrol receptacle is standard. ANSI C136.41 7-wire (PCR7) photocontrol receptacles is available. All photocontrol receptacles have tool-less rotatable bases. Wireless control module is provided by others.

#### Finish

Housing receives a durable, fade-resistant polyester powder coat finish with 3.0 mil nominal thickness. Standard finish tested to withstand 5000 hours in salt spray exposure per ASTM B117 and Coastal Finish per ASTM G85. Finish meets scribe creepage rating 8 per ASTM D1654. Finish tested 500 hours in UV exposure per ASTM G154 and meets ASTM D523 gloss retention.

#### Listings/Ratings/Labels

Luminaires are UL listed for use in wet locations in the United States and Canada. DesignLights Consortium™ qualified product. Consult DLC QPL for Standard and Premium Classification Listings. All electronic components inside of the luminaire are NRTL damp location rated per ANSI 136.37-2011 Ingress Protection standard. International Dark Sky Association listed. Luminaire is qualified to operate at ambient temperatures of  $-40^\circ\text{C}$  to  $40^\circ\text{C}$ . Assembled in the U.S.A

#### Photometry

Luminaires photometrics are tested by certified independent testing laboratories in accordance with IES LM-79 testing procedures.

#### Warranty

10-year limited warranty is standard on luminaire and components. See Leotek.com for warranty details.

#### Vandal Resistance

Housing and optics rated to IK10

#### Certification and Compliance

Luminaire complies with:  
ANSI: C136.2, C136.3, C136.10, C136.13, C136.15, C136.22, C136.31, C136.35, C136.37, C136.41, C62.41, C78.377, C82.77  
Other: FCC 47 CFR, IEC 60598, ROHS II, UL 1449, UL 1598

### Color Specifications

| Order Code | Color       | RAL # | Pantone Equivalent |
|------------|-------------|-------|--------------------|
| GY         | Gray        | 7040  | 429C               |
| BK         | Black       | 9004  | 426C               |
| DB         | Dark Bronze | 6022  | BLACK 2C           |

### TM21 Lumen Maintenance per IES TM21-11 Calculation

| Model Number | 60,000 Hours* | 80,000 Hours | 100,000 Hours |
|--------------|---------------|--------------|---------------|
| GCI1/2/3 30J | $>98.9\%$     | $>98.7\%$    | $>98.5\%$     |
| GCI4         | $>92.4\%$     | $>90.6\%$    | $>88.7\%$     |

\*Calculation based on IES position statement on Lumen Maintenance Life Projections

### Performance Data: 2700K (27K)

All data nominal. IES files for all CCTs available at leotek.com.

| Product | LED Code | Output Code | System Wattage (W) | Delivered Lumens (Lm) <sup>1</sup> | Efficacy (Lm/W) | Field Adjustable Output Range |
|---------|----------|-------------|--------------------|------------------------------------|-----------------|-------------------------------|
| GCJ1    | 30J      | 025         | 17                 | 2397                               | 141             | ↕                             |
|         |          | 035         | 26                 | 3692                               | 142             |                               |
|         |          | 040         | 30                 | 4140                               | 138             |                               |
|         |          | 045         | 34                 | 4742                               | 139             |                               |
| GCJ2    | 30J      | 050         | 37                 | 5291                               | 143             | ↕                             |
|         |          | 060         | 44                 | 6229                               | 141             |                               |
| GCJ3    | 30J      | 065         | 49                 | 6734                               | 137             | ↕                             |
|         |          | 075         | 54                 | 7398                               | 137             |                               |
|         |          | 080         | 58                 | 7830                               | 135             |                               |
|         |          | 085         | 64                 | 8448                               | 132             |                               |
|         |          | 090         | 67                 | 8813                               | 132             |                               |
| GCJ4    | 30J      | 100         | 70                 | 9937                               | 142             | ↕                             |
|         |          | 110         | 80                 | 11062                              | 138             |                               |
|         |          | 120         | 87                 | 11813                              | 136             |                               |
|         |          | 130         | 100                | 13063                              | 131             |                               |

Notes:

1. Nominal lumens. Normal tolerance  $\pm 10\%$  due to factors including distribution type, LED bin variance, and ambient temperatures.
2. Maximum LED driver current is 500mA.

### Performance Data: 3000K (30K)

All data nominal. IES files for all CCTs available at leotek.com.

| Product | LED Code | Output Code | System Wattage (W) | Delivered Lumens (Lm) <sup>1</sup> | Efficacy (Lm/W) | Field Adjustable Output Range |
|---------|----------|-------------|--------------------|------------------------------------|-----------------|-------------------------------|
| GCJ1    | 30J      | 025         | 17                 | 2533                               | 149             | ↕                             |
|         |          | 040         | 27                 | 4058                               | 152             |                               |
|         |          | 045         | 30                 | 4560                               | 152             |                               |
|         |          | 050         | 34                 | 5223                               | 154             |                               |
| GCJ2    | 30J      | 055         | 37                 | 5550                               | 150             | ↕                             |
|         |          | 065         | 44                 | 6425                               | 146             |                               |
| GCJ3    | 30J      | 070         | 49                 | 7062                               | 145             | ↕                             |
|         |          | 075         | 54                 | 7722                               | 143             |                               |
|         |          | 080         | 58                 | 8236                               | 142             |                               |
|         |          | 090         | 64                 | 8960                               | 140             |                               |
|         |          | 095         | 67                 | 9380                               | 140             |                               |
| GCJ4    | 30J      | 105         | 70                 | 10490                              | 150             | ↕                             |
|         |          | 115         | 80                 | 11637                              | 145             |                               |
|         |          | 125         | 87                 | 12428                              | 143             |                               |
|         |          | 135         | 100                | 13730                              | 137             |                               |

Notes:

1. Nominal lumens. Normal tolerance  $\pm 10\%$  due to factors including distribution type, LED bin variance, and ambient temperatures.
2. Maximum LED driver current is 500mA.

### Performance Data: 4000K (40K) and 5000K (50K)

All data nominal. IES files for all CCTs available at leotek.com.

| Product | LED Code | Output Code | System Wattage (W) | Delivered Lumens (lm) <sup>1</sup> | Efficacy (lm/W) | Field Adjustable Output Range |
|---------|----------|-------------|--------------------|------------------------------------|-----------------|-------------------------------|
| GCJ1    | 30J      | 025         | 17                 | 2669                               | 157             |                               |
|         |          | 045         | 27                 | 4299                               | 161             |                               |
|         |          | 050         | 30                 | 4830                               | 161             |                               |
|         |          | 055         | 34                 | 5532                               | 163             |                               |
| GCJ2    | 30J      | 060         | 37                 | 5883                               | 159             |                               |
|         |          | 070         | 44                 | 6864                               | 156             |                               |
| GCJ3    | 30J      | 075         | 49                 | 7256                               | 149             |                               |
|         |          | 080         | 54                 | 7992                               | 148             |                               |
|         |          | 085         | 58                 | 8468                               | 146             |                               |
|         |          | 090         | 64                 | 9216                               | 144             |                               |
|         |          | 095         | 67                 | 9648                               | 144             |                               |
| GCJ4    | 30J      | 110         | 70                 | 10988                              | 157             |                               |
|         |          | 120         | 80                 | 12207                              | 153             |                               |
|         |          | 130         | 87                 | 13047                              | 150             |                               |
|         |          | 145         | 100                | 14399                              | 144             |                               |

Notes:

1. Nominal lumens. Normal tolerance  $\pm 10\%$  due to factors including distribution type, LED bin variance, and ambient temperatures.
2. Maximum LED driver current is 500mA.

### BUG Ratings: 2700K (27K)

All data nominal. IES files for all CCTs are available at leotek.com.

| Product & LED Code | Output Code | Type 2R    | Type 3R    | Type 3F    | Type 4     | Type 5     |
|--------------------|-------------|------------|------------|------------|------------|------------|
|                    |             | BUG Rating | BUG Rating | BUG Rating | BUG Rating | BUG Rating |
| GCJ1 30J           | 025         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   |
|                    | 035         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B2-U0-G1   |
|                    | 040         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B2-U0-G1   |
|                    | 045         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B2-U0-G1   |
| GCJ2 30J           | 050         | B2-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B3-U0-G1   |
|                    | 060         | B2-U0-G2   | B1-U0-G2   | B1-U0-G2   | B1-U0-G2   | B3-U0-G3   |
| GCJ3 30J           | 065         | B2-U0-G2   | B1-U0-G2   | B1-U0-G2   | B1-U0-G2   | B3-U0-G1   |
|                    | 075         | B2-U0-G2   | B1-U0-G2   | B1-U0-G2   | B2-U0-G2   | B3-U0-G1   |
|                    | 080         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G1   |
|                    | 085         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G1   |
|                    | 090         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G3   |
| GCJ4 30J           | 100         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 110         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 120         | B3-U0-G3   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 130         | B3-U0-G3   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B4-U0-G2   |

### BUG Ratings: 3000K (30K)

All data nominal. IES files for all CCTs are available at leotek.com.

| Product & LED Code | Output Code | Type 2R    | Type 3R    | Type 3F    | Type 4     | Type 5     |
|--------------------|-------------|------------|------------|------------|------------|------------|
|                    |             | BUG Rating | BUG Rating | BUG Rating | BUG Rating | BUG Rating |
| GCJ1 30J           | 025         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B2-U0-G1   |
|                    | 040         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B2-U0-G1   |
|                    | 045         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B2-U0-G1   |
|                    | 050         | B2-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B3-U0-G1   |
| GCJ2 30J           | 055         | B2-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B3-U0-G1   |
|                    | 065         | B2-U0-G2   | B1-U0-G2   | B1-U0-G2   | B1-U0-G2   | B3-U0-G3   |
| GCJ3 30J           | 070         | B2-U0-G2   | B1-U0-G2   | B1-U0-G2   | B2-U0-G2   | B3-U0-G1   |
|                    | 075         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G1   |
|                    | 080         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G1   |
|                    | 090         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 095         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
| GCJ4 30J           | 105         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 115         | B3-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 125         | B3-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 135         | B3-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B4-U0-G2   |

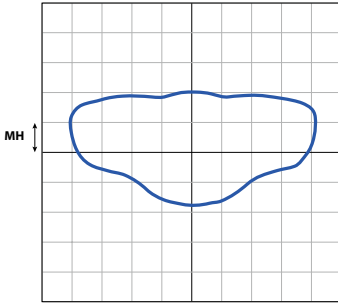
### BUG Ratings: 4000K (40K) and 5000K (50K)

All data nominal. IES files for all CCTs are available at leotek.com.

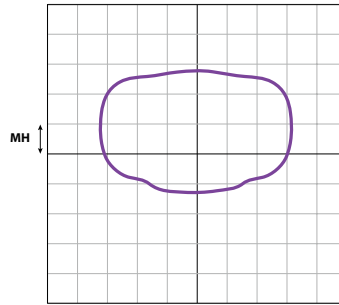
| Product & LED Code | Output Code | Type 2R    | Type 3R    | Type 3F    | Type 4     | Type 5     |
|--------------------|-------------|------------|------------|------------|------------|------------|
|                    |             | BUG Rating | BUG Rating | BUG Rating | BUG Rating | BUG Rating |
| GCJ1 30J           | 025         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B2-U0-G1   |
|                    | 045         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B2-U0-G1   |
|                    | 050         | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B2-U0-G1   |
|                    | 055         | B2-U0-G1   | B1-U0-G1   | B1-U0-G1   | B1-U0-G1   | B3-U0-G1   |
| GCJ2 30J           | 060         | B2-U0-G1   | B1-U0-G1   | B1-U0-G2   | B1-U0-G1   | B3-U0-G1   |
|                    | 070         | B2-U0-G2   | B1-U0-G2   | B1-U0-G2   | B1-U0-G2   | B3-U0-G1   |
| GCJ3 30J           | 075         | B2-U0-G2   | B1-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G1   |
|                    | 080         | B2-U0-G2   | B1-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G1   |
|                    | 085         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G1   |
|                    | 090         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 095         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
| GCJ4 30J           | 110         | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 120         | B3-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   |
|                    | 130         | B3-U0-G2   | B2-U0-G2   | B2-U0-G2   | B2-U0-G2   | B4-U0-G2   |
|                    | 145         | B3-U0-G2   | B2-U0-G2   | B2-U0-G2   | B3-U0-G2   | B4-U0-G2   |

## Optical Distribution

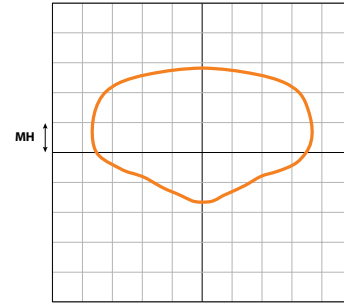
(Each square block represents one mounting height, MH)



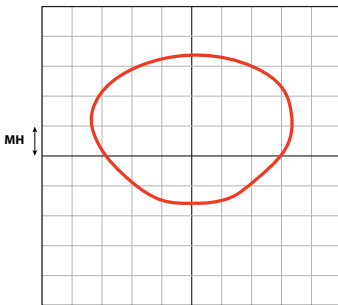
Type 2R



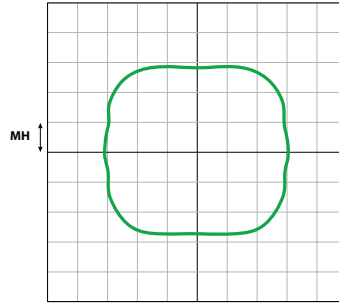
Type 3F



Type 3R



Type 4



Type 5

# LED Streetlight Conversion Project

**Project Manager**

Cyrus Naheedy

[CNaheedy@a2gov.org](mailto:CNaheedy@a2gov.org)

734.794.6410 x43645

## Public Engagement

Public engagement for the LED Streetlight Conversion Project concluded in early 2024. DTE installed several sample streetlights and the city sought input from the public on the color temperature and wattage of the sample lights. The survey was available to the public for 5 weeks (Dec. 8, 2023 - Jan 12, 2024), during which 56 survey responses were collected. In considering both this public feedback as well as technical considerations, staff are requesting that DTE convert their streetlights in Ann Arbor to a wattage of 58W, and color temperature of 2700K.

## Timeline

- Public Engagement - Complete
- Grant Acceptance - Anticipated Summer 2024
- MDOT Environmental Review - In Progress
- Estimated installation - Fall/Winter 2024, completion in 2025

## Why is this project being done?

The Streetlight Conversion Project will install light emitting diode (LED) bulbs in DTE owned and maintained streetlights within the City of Ann Arbor, which aligns with the city's goals of increasing sustainability and decreasing our carbon footprint as outlined in the [city's A2ZERO climate action plan](#):

- Strategy 3: Significantly Improve the Energy Efficiency in our Homes, Businesses, Schools, Places of Worship, Recreational Sites, and Government Facilities
  - Action 3: Power Street Lighting and Traffic Signals with LED

In March 2023, the City of Ann Arbor was awarded the Carbon Reduction Grant from the Southeast Michigan Council of Governments (SEMCOG), which will allow the city to transition DTE streetlights from High Pressure Sodium (HPS) to LED lights. The city is seeking input from the public on the color temperature and wattage of the new lights.

The DTE Streetlight Selection Project will consider both the street light color temperature and the wattage, as there are tradeoffs between visibility needs, light pollution, and aesthetic preferences when brightness or temperature vary. The City is considering the following streetlight options: 29w/2700K, 29w/3000K, 58w/2700K, and 58w/3000K.

## Questions and answers

*What did you take into consideration when making streetlight decisions?*

Staff tried to balance many different considerations, but safety and sustainability were two key areas of focus. LED streetlight conversion was identified as a key strategy in the A<sup>2</sup>Zero Carbon Neutrality Plan. City policy, specifically the Ann Arbor Moving Together Towards Vision Zero Transportation Plan, also prioritizes pedestrian safety. Staff worked to ensure that the proposed streetlights would do so, ultimately deciding that higher color temperatures and wattages are justified along major street locations with mid-block/uncontrolled crosswalks (that is, those without traffic signals or stop signs).

City staff are aware that the color of the light (cooler vs. warmer) can change how people feel about the light, and are sensitive to the desire not to have streetlights be any brighter than necessary: both to be more sustainable (by reducing energy usage and associated costs) and to avoid light pollution. In consideration of all of the above factors, the approach to making streetlight decisions has been one of balance, trying to find the "Goldilocks" light: one that is "just right" in terms of both its brightness and its color temperature.

Staff also had to balance operational and practical limitations given that these streetlights are owned and operated by DTE.

***Why does Ann Arbor want to switch to LEDs instead of using the High Pressure Sodium lights I am used to?***

LED lights have become the standard technology; for instance, DTE recently announced that its supplier had discontinued selling non-LED streetlights because of a lack of demand. LED streetlights are the new norm for a lot of reasons. They are more environmentally and financially sustainable (lower maintenance and operating costs).

***DTE recently announced it will be going 100% LED in the future. Why doesn't Ann Arbor just wait for old lights to burn out instead of spending money to convert now?***

There are two key reasons to make the switch now. First, the City has been awarded a Carbon Reduction Program grant from SEMCOG for approximately \$1 million that must be used to support this conversion; waiting too long would essentially forfeit that funding. Second, the City prefers not to install the standard LED light DTE currently offers, as the standard offering does not take into account the various considerations listed throughout this FAQ. Unless DTE agrees to switch their standard light to our preferred light (which the City has suggested), the City would need to pay some up-front money regardless.

***Why does Ann Arbor want a different light from the DTE standard LED light?***

Ann Arbor (in cooperation with other local governments) successfully argued that DTE's proposed streetlighting rates were too high because DTE's standard LED light fixtures are too high a wattage for the City's needs, which makes them more expensive to buy and operate. Staff have also heard feedback from a number of residents that they wanted a warmer light (color temperature of 3000K or less) than DTE's standard offerings have. For these reasons, staff's recommendation is for the City to consider other options besides the standard DTE LED offerings.

***How does the recommended streetlight differ from those DTE recommends to cities?***

The LED light fixtures the City are recommending are both lower wattage (less bright) and a warmer color temperature (more orange, less blue) than any of DTE's current standard LED offerings.

***Did Ann Arbor get public feedback about different lighting possibilities?***

Yes. City staff asked DTE to install four sample streetlights that were all certified to meet lighting standard IES RP-8, have a correlated color temperature (CCT) no higher than 3000K, and restrict the amount of upward-directed light. Those sample lights were two low (29W) and two medium (58W) wattage fixtures, each with a different color temperature (2700K and 3000K). They were installed at two locations in the city during some of the darkest times of the year, and staff asked the public to provide feedback on all these options. While no single light made everyone happy (for instance, every single light option had some people say it was too bright and others say it was too dim), the public feedback clearly favored warmer-temperature lights. The public feedback suggested that most people thought the brighter of the two alternatives shown would be appropriate to install on a residential street.

***If these lights aren't as bright as DTE recommends, do you still think they will be bright enough to be safe?***

Yes. All lights considered are RP-8 certified, in line with manufacturer recommendations for LED conversions, and are expected to provide sufficient light to meet the ANSI streetlight standard.

***Why didn't you pick an even lower wattage light, to reduce costs and light pollution?***

One of the goals of public engagement was to understand if there were strong preferences between the wattage options. In all circumstances, the chosen lights would be less bright than DTE's normal wattage and warmer than its standard color temperature, because staff can meet minimum brightness standards for safety while lowering costs and energy usage. Staff prioritized brighter lights for crosswalks to ensure pedestrians are visible, especially when crosswalks are uncontrolled (that is, at intersections without traffic signals or stop signs).

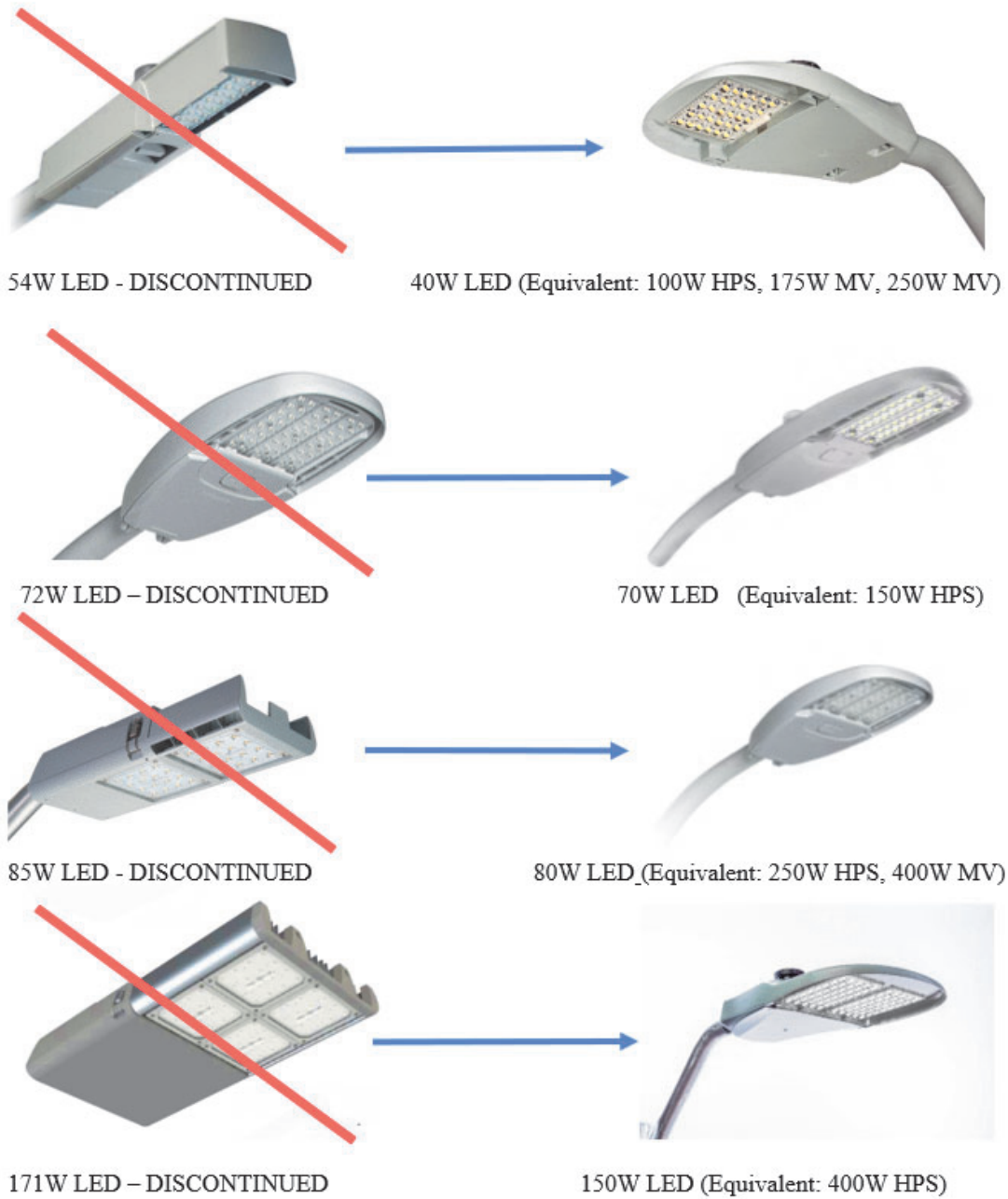
While there might be some locations in the City where even lower-wattage lights could be installed, there are drawbacks to having multiple types of lights, namely increased coordination, maintenance costs, and delay in responding to streetlight outages on an ongoing basis.

DANIEL A. SCHMOECKEL  
DIRECT TESTIMONY

1 fixtures have a wattage which will reduce the electric consumption. Figure 2 below  
2 presents a comparison of the recently solicited lights to those that were discontinued.

*FIGURE 2*

*NEW LED COBRAHEADS*





*Geotech, Inc.*  
Engineered Systems

[Info@geotech-inc.com](mailto:Info@geotech-inc.com)

616.949.3340

**TRANSMITTAL LETTER**

To: Jeff McCaul  
City of Grand Rapids

Date: April 2, 2021

From: Kevin Mattox

Via: ☐ Mail  
☐ Hand Deliver  
☐ FAX #  
☒ E-Mail

Re: Submittals for LED Upgrade (#20026)

For your:

☐ Review & Approval  
☐ Adjustment/Correction/Revision  
☐ General Use and Information  
☒ As Requested

Memo:

|                  |                                                                                                                                                   |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Fixture Type "A" | Found No Exception                                                                                                                                |
| Fixture Type "B" | Found No Exception                                                                                                                                |
| Fixture Type "C" | Found No Exception                                                                                                                                |
| Fixture Type "D" | Found Exception as Noted<br>-Provide letter for 10-year warranty.                                                                                 |
| Fixture Type "E" | Revise and Resubmit<br>-Housing Style doesn't match between the<br>description and the drawing.<br>-Performance Package descriptions don't match. |

Sincerely,

Kevin L Mattox, PE

☒ Enclosure – Marked-up Submittals  
*Geotech, Inc.*

4900 Cascade Road S.E., Grand Rapids, Michigan 49645

We Listen....

....We Understand & Communicate....

....We Deliver



Consistent with LEED® goals  
& Green Globes™ criteria  
for light pollution reduction

Case No. U-21534

Exhibit: MAU-33

Witness: R. Bunch

2 of 14

# Autobahn Series ATBS

## Roadway & Security Lighting

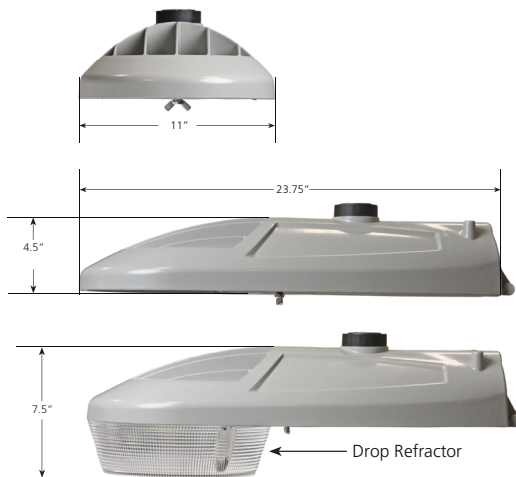
### PRODUCT OVERVIEW



### Applications:

Residential streets  
Parking lots  
General security lighting

### DIMENSIONS



Effective Projected Area (EPA) The EPA for the ATBS is 0.3 sq. ft.,  
Approx. Wt. = 12 lbs. (5 kg)

### STANDARDS

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at [www.designlights.org/QPL](http://www.designlights.org/QPL) to confirm which versions are qualified.

Color temperatures of  $\leq 3000\text{K}$  must be specified for International Dark-Sky Association certification.

Rated for  $-40^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  ambient

CSA Certified to U.S. and Canadian standards

Complies with ANSI: C136.2, C136.10, C136.14, C136.31, C136.15, C136.37

**Note:** Actual performance may differ as a result of end-user environment and application. Specifications subject to change without notice.

### Features:

#### OPTICAL

Same Light: Performance is comparable to 50W – 150W HPS and up to 175W Mercury Vapor roadway and security lighting luminaires.

White Light: Correlated color temperature - 4000K, 70 CRI minimum, 3000K, 70 CRI minimum or optional 5000K, 70 CRI minimum.

IP66 rated borosilicate glass optics ensure longevity and minimize dirt depreciation. Unique IP66 rated LED light engines provide 0% uplight and restrict backlight to within sidewalk depth, providing optimal application coverage and optimal pole spacing.

Available distributions are Type II, III, and V roadway distributions. When used with the optional acrylic refractor the unit provides approximately 10% uplight and increased vertical foot-candles

#### ELECTRICAL

Expected Life: LED light engines are rated  $>100,000$  hours at  $25^{\circ}\text{C}$ , L70. Electronic driver has an expected life of 100,000 hours at a  $25^{\circ}\text{C}$  ambient.

Lower Energy: Saves an expected 40-60% over comparable HID luminaires.

Robust Surge Protection: Three different surge protection options provide a minimum of ANSI C136.2 10kV/5kA protection. 20kV/10kA surge protection is also available.

#### MECHANICAL

Includes standard AEL lineman-friendly features such as tool-less entry, 3 station terminal block and quick disconnects. Bubble level located inside the electrical compartment for easy leveling at installation.

Rugged die-cast aluminum housing and door are polyester powder-coated for durability and corrosion resistance. Rigorous five-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5000 hours exposure to salt fog chamber (operated per ASTM B117).

Mast arm mount is adjustable for arms from 1-1/4" to 2" (1-5/8" to 2-3/8" O.D.) diameter. The 2 – bolt clamping mechanism provides 3G vibration rating per ANSI C136.

The Wildlife shield is cast into the housing (not a separate piece).

#### CONTROLS

NEMA 3 pin photocontrol receptacle is standard, with the Acuity designed ANSI standard 5 pin and 7 pin receptacles optionally available.

Premium solid state locking-style photocontrol – PCSS (10 year rated life) Extreme long life solid state locking-style photocontrol – PCL1 (20 year rated life)

Optional onboard Adjustable Output module allows the light output and input wattage to be modified to meet site specific requirements, and also can allow a single fixture to be flexibly applied in many different applications.

# Autobahn Series ATBS

## Roadway & Security Lighting

### ORDERING INFORMATION

Example: ATBS A MVOLT R2

| Series                                            | Performance Packages                                                                                                                                                                                 | MVOLT                             | R2                                                                                                                                                                                                                            |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ATBS</b> Autobahn LED<br>Roadway &<br>Security | <b>A</b> 2,500 lumens<br><b>B</b> 3,200 lumens<br><b>C</b> 3,800 lumens<br><b>E</b> 4,700 lumens<br><b>F</b> 5,400 lumens<br><b>G</b> 6,100 lumens<br><b>H</b> 7,100 lumens<br><b>I</b> 8,500 lumens | <b>MVOLT</b> Multi-volt, 120-277V | <b>R2</b> Roadway Type II<br><b>R3</b> Roadway Type III<br><b>R5</b> Roadway Type V<br><b>D2</b> Type II, Drop Refractor included<br><b>D3</b> Type III, Drop Refractor included<br><b>D5</b> Type V, Drop Refractor included |

4K,NL,MP,P7 DALI Driver per RFD 311161

### Options

#### Color Temperature (CCT)

**(Blank)** 4000K CCT, 70 CRI Min.  
**3K** 3000K CCT, 70 CRI Min.  
**5K** 5000K CCT, 70 CRI Min.

#### Paint

**Blank** Gray (Standard)  
**BK** Black  
**WH** White  
**BZ** Bronze

#### Surge Protection

Standard 10kV/5kA SPD  
**Blank** Acuity SPD-10kV/5kA with inductive filter (Standard)  
**20** 20kV/10KA SPD  
**MP** MOV Pack  
**IL** SPD with Indicator Light

#### Misc.

**HS** House Side Shield  
**NL** NEMA Label

**XL** Not CSA Certified

#### Controls

**(Blank)** 3 Pin NEMA Photocontrol Receptacle  
**NR<sup>1</sup>** No Photocontrol Receptacle  
**DM<sup>2</sup>** 0V-10V Dimmable Driver  
**P5** 5 Pin Photocontrol Receptacle (dimmable driver included)  
**P7** 7 Pin Photocontrol Receptacle (dimmable driver included)  
**PCSS<sup>1</sup>** DTL DSS Photocontrol  
**PCL1<sup>1</sup>** DTL DLL Photocontrol 120-277V  
**AO** Field Adjustable Output  
**SH** Shorting Cap

#### Packages

**(Blank)** Standard Pack  
**JP** Job Pack (54/pallet)

#### Install Packages

**PKGS** DTL DSS Photocontrol  
**PKGL** DTL DLL Photocontrol  
 Packages ship with selected photocontrol, 24", 1 1/4" diameter arm, 5' of prewire and

#### mounting hardware



#### Reviewed:

- ☒ Found no exceptions.
- ☐ Found exceptions as noted.
- ☐ Found not in compliance.
- ☐ Revise and resubmit.
- ☐ Rejected.

Drawings have been reviewed for general compliance with construction documents. We do not accept responsibility for non-complying items not detected by our review. The responsibility remains with the Contractor.

DATE: 04.02.21 BY: KLM

#### Accessories

**ATBSREF** Drop Refractor for field installation  
**ATBSHSS** House Side Shield for field installation  
**ATBSLTS** Light Trespass Shield for field installation  
**ATBS LOUVER KIT** Louver Kit for field installation

with Dali Driver per RFD  
311161

DALI Grand Rapids look up table - 001B

#### Notes

- Not available with Install Packages.
- Not available with AO option.

PART # ATBS H MVOLT MP R2 4K NL  
 P7 DALI RFD311161  
 DESCRIPTION: Autobahn LED  
 Roadway - S Series (ATBS): Autobahn  
 S Series, 7100 lumens, 120-277V,  
 Roadway Type 2, Nema Label, 7 Pin  
 Nema Photo Control Receptacle, MOV  
 PackSpecial: DALI driver; CSA listed



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Please contact your sales representative for the latest product information.

# Autobahn Series ATBS

## Roadway & Security Lighting

| P E R F O R M A N C E   P A C K A G E |              |             |                           |     |   |   |   |                                    |     |   |   |   |            |           |            |
|---------------------------------------|--------------|-------------|---------------------------|-----|---|---|---|------------------------------------|-----|---|---|---|------------|-----------|------------|
| Performance Package                   | Distribution | Input Watts | 3K<br>(3000K CCT, 70 CRI) |     |   |   |   | 4K/5K<br>(4000K/5000K CCT, 70 CRI) |     |   |   |   | LLD @ 25°C |           |            |
|                                       |              |             | Lumens                    | LPW | B | U | G | Lumens                             | LPW | B | U | G | 25k Hours  | 75k Hours | 100k Hours |
| A                                     | R2           | 19          | 2,363                     | 124 | 1 | 0 | 1 | 2,514                              | 132 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                                       | R3           |             | 2,364                     | 124 | 1 | 0 | 1 | 2,515                              | 132 | 1 | 0 | 1 |            |           |            |
|                                       | R5           |             | 2,490                     | 131 | 2 | 0 | 0 | 2,649                              | 139 | 2 | 0 | 1 |            |           |            |
|                                       | D2           |             | 2,250                     | 118 | 1 | 3 | 2 | 2,394                              | 126 | 1 | 3 | 2 |            |           |            |
|                                       | D3           |             | 2,231                     | 117 | 1 | 3 | 2 | 2,373                              | 125 | 1 | 3 | 2 |            |           |            |
|                                       | D5           |             | 2,370                     | 125 | 2 | 3 | 2 | 2,521                              | 133 | 2 | 3 | 2 |            |           |            |
| B                                     | R2           | 24          | 3,053                     | 127 | 1 | 0 | 1 | 3,166                              | 132 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                                       | R3           |             | 3,010                     | 125 | 1 | 0 | 1 | 3,167                              | 132 | 1 | 0 | 1 |            |           |            |
|                                       | R5           |             | 3,136                     | 131 | 2 | 0 | 1 | 3,336                              | 139 | 2 | 0 | 1 |            |           |            |
|                                       | D2           |             | 2,906                     | 121 | 1 | 3 | 2 | 3,014                              | 126 | 1 | 3 | 2 |            |           |            |
|                                       | D3           |             | 2,840                     | 118 | 1 | 3 | 3 | 2,988                              | 125 | 1 | 3 | 3 |            |           |            |
|                                       | D5           |             | 2,985                     | 124 | 2 | 3 | 3 | 3,175                              | 132 | 2 | 3 | 3 |            |           |            |
| C                                     | R2           | 31          | 3,628                     | 117 | 1 | 0 | 1 | 3,784                              | 122 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                                       | R3           |             | 3,820                     | 123 | 1 | 0 | 1 | 3,780                              | 122 | 1 | 0 | 1 |            |           |            |
|                                       | R5           |             | 3,787                     | 122 | 2 | 0 | 1 | 4,029                              | 130 | 3 | 0 | 1 |            |           |            |
|                                       | D2           |             | 3,456                     | 111 | 1 | 3 | 3 | 3,605                              | 116 | 1 | 3 | 3 |            |           |            |
|                                       | D3           |             | 3,603                     | 116 | 1 | 3 | 3 | 3,565                              | 115 | 1 | 3 | 3 |            |           |            |
|                                       | D5           |             | 3,605                     | 116 | 2 | 3 | 3 | 3,835                              | 124 | 2 | 3 | 3 |            |           |            |
| E                                     | R2           | 40          | 4,604                     | 115 | 1 | 0 | 1 | 4,770                              | 119 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                                       | R3           |             | 4,532                     | 113 | 1 | 0 | 1 | 4,704                              | 118 | 1 | 0 | 1 |            |           |            |
|                                       | R5           |             | 4,575                     | 114 | 3 | 0 | 1 | 4,867                              | 122 | 3 | 0 | 1 |            |           |            |
|                                       | D2           |             | 4,385                     | 110 | 1 | 3 | 3 | 4,543                              | 114 | 1 | 3 | 3 |            |           |            |
|                                       | D3           |             | 4,276                     | 107 | 1 | 3 | 3 | 4,438                              | 111 | 1 | 3 | 3 |            |           |            |
|                                       | D5           |             | 4,371                     | 109 | 2 | 3 | 3 | 4,650                              | 116 | 3 | 3 | 3 |            |           |            |
| F                                     | R2           | 47          | 5,136                     | 109 | 1 | 0 | 1 | 5,392                              | 115 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                                       | R3           |             | 5,071                     | 108 | 1 | 0 | 1 | 5,407                              | 115 | 1 | 0 | 1 |            |           |            |
|                                       | R5           |             | 4,864                     | 103 | 3 | 0 | 1 | 5,175                              | 110 | 3 | 0 | 1 |            |           |            |
|                                       | D2           |             | 4,891                     | 104 | 1 | 3 | 3 | 5,135                              | 109 | 1 | 3 | 3 |            |           |            |
|                                       | D3           |             | 4,783                     | 102 | 1 | 3 | 3 | 5,100                              | 109 | 1 | 3 | 3 |            |           |            |
|                                       | D5           |             | 4,747                     | 101 | 3 | 3 | 3 | 5,051                              | 107 | 3 | 3 | 3 |            |           |            |
| G                                     | R2           | 50          | 6,020                     | 120 | 1 | 0 | 1 | 6,235                              | 125 | 1 | 0 | 1 | 0.94       | 0.92      | 0.90       |
|                                       | R3           |             | 5,931                     | 119 | 1 | 0 | 1 | 6,101                              | 122 | 1 | 0 | 1 |            |           |            |
|                                       | R5           |             | 6,084                     | 122 | 3 | 0 | 1 | 6,404                              | 128 | 3 | 0 | 1 |            |           |            |
|                                       | D2           |             | 5,733                     | 115 | 1 | 3 | 3 | 5,938                              | 119 | 1 | 3 | 3 |            |           |            |
|                                       | D3           |             | 5,596                     | 112 | 1 | 3 | 3 | 5,756                              | 115 | 1 | 3 | 3 |            |           |            |
|                                       | D5           |             | 5,884                     | 118 | 3 | 3 | 3 | 6,193                              | 124 | 3 | 3 | 3 |            |           |            |
| H                                     | R2           | 60          | 6,914                     | 115 | 1 | 0 | 2 | 7,194                              | 120 | 2 | 0 | 2 | 0.94       | 0.92      | 0.90       |
|                                       | R3           |             | 6,794                     | 113 | 1 | 0 | 2 | 7,141                              | 119 | 2 | 0 | 2 |            |           |            |
|                                       | R5           |             | 7,133                     | 119 | 3 | 0 | 1 | 7,508                              | 125 | 3 | 0 | 1 |            |           |            |
|                                       | D2           |             | 6,584                     | 110 | 1 | 3 | 3 | 6,851                              | 114 | 2 | 3 | 3 |            |           |            |
|                                       | D3           |             | 6,410                     | 107 | 2 | 3 | 4 | 6,737                              | 112 | 2 | 3 | 4 |            |           |            |
|                                       | D5           |             | 6,793                     | 113 | 2 | 3 | 3 | 7,150                              | 119 | 3 | 3 | 4 |            |           |            |
| I                                     | R2           | 76          | 8,212                     | 108 | 2 | 0 | 2 | 8,653                              | 114 | 2 | 0 | 2 | 0.94       | 0.92      | 0.90       |
|                                       | R3           |             | 8,092                     | 106 | 2 | 0 | 2 | 8,525                              | 112 | 2 | 0 | 2 |            |           |            |
|                                       | R5           |             | 8,553                     | 113 | 3 | 0 | 2 | 9,003                              | 118 | 3 | 0 | 2 |            |           |            |
|                                       | D2           |             | 7,821                     | 103 | 2 | 3 | 4 | 8,241                              | 108 | 2 | 3 | 4 |            |           |            |
|                                       | D3           |             | 7,634                     | 100 | 2 | 3 | 4 | 8,042                              | 106 | 2 | 3 | 4 |            |           |            |
|                                       | D5           |             | 8,146                     | 107 | 3 | 3 | 3 | 8,575                              | 113 | 3 | 3 | 4 |            |           |            |

**Note:** Individual fixture performance may vary. Specifications subject to change without notice.



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Consistent with LEED® goals  
& Green Globes™ criteria  
for light pollution reduction

Case No. U-21534

Exhibit: MAU-33

Witness: R. Bunch  
5 of 14

# Autobahn Series ATBS

## Roadway & Security Lighting

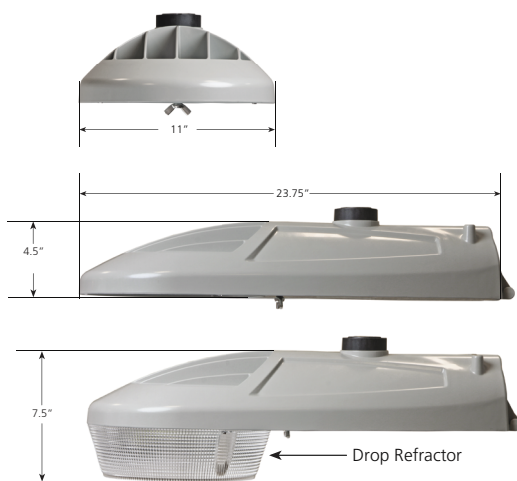
### PRODUCT OVERVIEW



### Applications:

Residential streets  
Parking lots  
General security lighting

### DIMENSIONS



Effective Projected Area (EPA) The EPA for the ATBS is 0.3 sq. ft.,  
Approx. Wt. = 12 lbs. (5 kg)

### STANDARDS

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at [www.designlights.org/QPL](http://www.designlights.org/QPL) to confirm which versions are qualified.

Color temperatures of  $\leq 3000\text{K}$  must be specified for International Dark-Sky Association certification.

Rated for  $-40^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  ambient

CSA Certified to U.S. and Canadian standards

Complies with ANSI: C136.2, C136.10, C136.14, C136.31, C136.15, C136.37

**Note:** Actual performance may differ as a result of end-user environment and application. Specifications subject to change without notice.

### Features:

#### OPTICAL

Same Light: Performance is comparable to 50W – 150W HPS and up to 175W Mercury Vapor roadway and security lighting luminaires.

White Light: Correlated color temperature - 4000K, 70 CRI minimum, 3000K, 70 CRI minimum or optional 5000K, 70 CRI minimum.

IP66 rated borosilicate glass optics ensure longevity and minimize dirt depreciation. Unique IP66 rated LED light engines provide 0% uplight and restrict backlight to within sidewalk depth, providing optimal application coverage and optimal pole spacing.

Available distributions are Type II, III, and V roadway distributions. When used with the optional acrylic refractor the unit provides approximately 10% uplight and increased vertical foot-candles

#### ELECTRICAL

Expected Life: LED light engines are rated  $>100,000$  hours at  $25^{\circ}\text{C}$ , L70. Electronic driver has an expected life of 100,000 hours at a  $25^{\circ}\text{C}$  ambient.

Lower Energy: Saves an expected 40-60% over comparable HID luminaires.

Robust Surge Protection: Three different surge protection options provide a minimum of ANSI C136.2 10kV/5kA protection. 20kV/10kA surge protection is also available.

#### MECHANICAL

Includes standard AEL lineman-friendly features such as tool-less entry, 3 station terminal block and quick disconnects. Bubble level located inside the electrical compartment for easy leveling at installation.

Rugged die-cast aluminum housing and door are polyester powder-coated for durability and corrosion resistance. Rigorous five-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5000 hours exposure to salt fog chamber (operated per ASTM B117).

Mast arm mount is adjustable for arms from 1-1/4" to 2" (1-5/8" to 2-3/8" O.D.) diameter. The 2 – bolt clamping mechanism provides 3G vibration rating per ANSI C136.

The Wildlife shield is cast into the housing (not a separate piece).

#### CONTROLS

NEMA 3 pin photocontrol receptacle is standard, with the Acuity designed ANSI standard 5 pin and 7 pin receptacles optionally available.

Premium solid state locking-style photocontrol – PCSS (10 year rated life) Extreme long life solid state locking-style photocontrol – PCL1 (20 year rated life)

Optional onboard Adjustable Output module allows the light output and input wattage to be modified to meet site specific requirements, and also can allow a single fixture to be flexibly applied in many different applications.

# Autobahn Series ATBS

## Roadway & Security Lighting

### ORDERING INFORMATION

Example: ATBS A MVOLT R2

| Series                                      |  | Performance Packages |              | MVOLT        |                      | R2        |                                   |
|---------------------------------------------|--|----------------------|--------------|--------------|----------------------|-----------|-----------------------------------|
|                                             |  |                      |              | Voltage      |                      | Optics    |                                   |
| <b>ATBS</b> Autobahn LED Roadway & Security |  | <b>A</b>             | 2,500 lumens | <b>MVOLT</b> | Multi-volt, 120-277V | <b>R2</b> | Roadway Type II                   |
|                                             |  | <b>B</b>             | 3,200 lumens |              |                      | <b>R3</b> | Roadway Type III                  |
|                                             |  | <b>C</b>             | 3,800 lumens |              |                      | <b>R5</b> | Roadway Type V                    |
|                                             |  | <b>E</b>             | 4,700 lumens |              |                      | <b>D2</b> | Type II, Drop Refractor included  |
|                                             |  | <b>F</b>             | 5,400 lumens |              |                      | <b>D3</b> | Type III, Drop Refractor included |
|                                             |  | <b>G</b>             | 6,100 lumens |              |                      | <b>D5</b> | Type V, Drop Refractor included   |
|                                             |  | <b>H</b>             | 7,100 lumens |              |                      |           |                                   |
|                                             |  | <b>I</b>             | 8,500 lumens |              |                      |           |                                   |

4K,NL,MP,P7 DALI Driver per RFD 311161

#### Options

##### Color Temperature (CCT)

**(Blank)** 4000K CCT, 70 CRI Min.  
**3K** 3000K CCT, 70 CRI Min.  
**5K** 5000K CCT, 70 CRI Min.

##### Paint

**Blank** Gray (Standard)  
**BK** Black  
**WH** White  
**BZ** Bronze

##### Surge Protection

Standard 10kV/5kA SPD  
**Blank** Acuity SPD-10kV/5kA with inductive filter (Standard)  
**20** 20kV/10kA SPD  
**MP** MOV Pack  
**IL** SPD with Indicator Light

##### Misc.

**HS** House Side Shield  
**NL** NEMA Label

**XL** Not CSA Certified

##### Controls

**(Blank)** 3 Pin NEMA Photocontrol Receptacle  
**NR<sup>1</sup>** No Photocontrol Receptacle  
**DM<sup>2</sup>** 0V-10V Dimmable Driver  
**P5** 5 Pin Photocontrol Receptacle (dimmable driver included)  
**P7** 7 Pin Photocontrol Receptacle (dimmable driver included)  
**PCSS<sup>1</sup>** DTL DSS Photocontrol  
**PCL1<sup>1</sup>** DTL DLL Photocontrol 120-277V  
**AO** Field Adjustable Output  
**SH** Shorting Cap

##### Packages

**(Blank)** Standard Pack  
**JP** Job Pack

##### Install Packages

**PKGS** DTL DSS Photocontrol  
**PKGL** DTL DLL Photocontrol  
Packages ship with selected photocontrol, 24", 1 1/4" diameter arm, 5' of prewire and mounting hardware

##### Accessories

**ATBSREF** Drop Refractor for field installation  
**ATBSHSS** House Side Shield for field installation  
**ATBSLTS** Light Trespass Shield for field installation  
**ATBS LOUVER KIT** Louver Kit for field installation

With DALI Driver per RFD 321259

DALI look up code - 001B

Autobahn LED Roadway - S Series (ATBS): Autobahn S Series, 7100 lumens, 120-277V, Roadway Type 2, Nema Label, 7 Pin Nema Photo Control Receptacle, MOV PackSpecial: **DALI driver**; CSA listed; JP - Job Pack

#### Notes

- Not available with Install Packages.
- Not available with AO option.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>Geotech, Inc.</b><br>Engineered Systems<br>816.949.3340 info@geotech-inc.com<br>816.949.8218 FAX www.geotech-inc.com<br>4000 Cascade Road, St. Louis, Grand Rapids, Modesto, 65146                                                                                                                                                                                                                                                 |
| Reviewed:<br><input checked="" type="checkbox"/> Found no exceptions.<br><input type="checkbox"/> Found exceptions as noted.<br><input type="checkbox"/> Found not in compliance.<br><input type="checkbox"/> Revise and resubmit.<br><input type="checkbox"/> Rejected.<br>Drawings have been reviewed for general compliance with construction documents. We do not accept responsibility for non-complying items not detected by our review. The responsibility remains with the Contractor.<br>DATE: 04.02.21 BY: KLM |



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Please contact your sales representative for the latest product information.

# Autobahn Series ATBS

## Roadway & Security Lighting

### PERFORMANCE PACKAGE

| Performance Package | Distribution | Input Watts | 3K<br>(3000K CCT, 70 CRI) |     |   |   |   | 4K/5K<br>(4000K/5000K CCT, 70 CRI) |     |   |   |   | LLD @ 25°C |           |            |
|---------------------|--------------|-------------|---------------------------|-----|---|---|---|------------------------------------|-----|---|---|---|------------|-----------|------------|
|                     |              |             | Lumens                    | LPW | B | U | G | Lumens                             | LPW | B | U | G | 25k Hours  | 75k Hours | 100k Hours |
| A                   | R2           | 19          | 2,363                     | 124 | 1 | 0 | 1 | 2,514                              | 132 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                     | R3           |             | 2,364                     | 124 | 1 | 0 | 1 | 2,515                              | 132 | 1 | 0 | 1 |            |           |            |
|                     | R5           |             | 2,490                     | 131 | 2 | 0 | 0 | 2,649                              | 139 | 2 | 0 | 1 |            |           |            |
|                     | D2           |             | 2,250                     | 118 | 1 | 3 | 2 | 2,394                              | 126 | 1 | 3 | 2 |            |           |            |
|                     | D3           |             | 2,231                     | 117 | 1 | 3 | 2 | 2,373                              | 125 | 1 | 3 | 2 |            |           |            |
|                     | D5           |             | 2,370                     | 125 | 2 | 3 | 2 | 2,521                              | 133 | 2 | 3 | 2 |            |           |            |
| B                   | R2           | 24          | 3,053                     | 127 | 1 | 0 | 1 | 3,166                              | 132 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                     | R3           |             | 3,010                     | 125 | 1 | 0 | 1 | 3,167                              | 132 | 1 | 0 | 1 |            |           |            |
|                     | R5           |             | 3,136                     | 131 | 2 | 0 | 1 | 3,336                              | 139 | 2 | 0 | 1 |            |           |            |
|                     | D2           |             | 2,906                     | 121 | 1 | 3 | 2 | 3,014                              | 126 | 1 | 3 | 2 |            |           |            |
|                     | D3           |             | 2,840                     | 118 | 1 | 3 | 3 | 2,988                              | 125 | 1 | 3 | 3 |            |           |            |
|                     | D5           |             | 2,985                     | 124 | 2 | 3 | 3 | 3,175                              | 132 | 2 | 3 | 3 |            |           |            |
| C                   | R2           | 31          | 3,628                     | 117 | 1 | 0 | 1 | 3,784                              | 122 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                     | R3           |             | 3,820                     | 123 | 1 | 0 | 1 | 3,780                              | 122 | 1 | 0 | 1 |            |           |            |
|                     | R5           |             | 3,787                     | 122 | 2 | 0 | 1 | 4,029                              | 130 | 3 | 0 | 1 |            |           |            |
|                     | D2           |             | 3,456                     | 111 | 1 | 3 | 3 | 3,605                              | 116 | 1 | 3 | 3 |            |           |            |
|                     | D3           |             | 3,603                     | 116 | 1 | 3 | 3 | 3,565                              | 115 | 1 | 3 | 3 |            |           |            |
|                     | D5           |             | 3,605                     | 116 | 2 | 3 | 3 | 3,835                              | 124 | 2 | 3 | 3 |            |           |            |
| E                   | R2           | 40          | 4,604                     | 115 | 1 | 0 | 1 | 4,770                              | 119 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                     | R3           |             | 4,532                     | 113 | 1 | 0 | 1 | 4,704                              | 118 | 1 | 0 | 1 |            |           |            |
|                     | R5           |             | 4,575                     | 114 | 3 | 0 | 1 | 4,867                              | 122 | 3 | 0 | 1 |            |           |            |
|                     | D2           |             | 4,385                     | 110 | 1 | 3 | 3 | 4,543                              | 114 | 1 | 3 | 3 |            |           |            |
|                     | D3           |             | 4,276                     | 107 | 1 | 3 | 3 | 4,438                              | 111 | 1 | 3 | 3 |            |           |            |
|                     | D5           |             | 4,371                     | 109 | 2 | 3 | 3 | 4,650                              | 116 | 3 | 3 | 3 |            |           |            |
| F                   | R2           | 47          | 5,136                     | 109 | 1 | 0 | 1 | 5,392                              | 115 | 1 | 0 | 1 | 0.93       | 0.89      | 0.85       |
|                     | R3           |             | 5,071                     | 108 | 1 | 0 | 1 | 5,407                              | 115 | 1 | 0 | 1 |            |           |            |
|                     | R5           |             | 4,864                     | 103 | 3 | 0 | 1 | 5,175                              | 110 | 3 | 0 | 1 |            |           |            |
|                     | D2           |             | 4,891                     | 104 | 1 | 3 | 3 | 5,135                              | 109 | 1 | 3 | 3 |            |           |            |
|                     | D3           |             | 4,783                     | 102 | 1 | 3 | 3 | 5,100                              | 109 | 1 | 3 | 3 |            |           |            |
|                     | D5           |             | 4,747                     | 101 | 3 | 3 | 3 | 5,051                              | 107 | 3 | 3 | 3 |            |           |            |
| G                   | R2           | 50          | 6,020                     | 120 | 1 | 0 | 1 | 6,235                              | 125 | 1 | 0 | 1 | 0.94       | 0.92      | 0.90       |
|                     | R3           |             | 5,931                     | 119 | 1 | 0 | 1 | 6,101                              | 122 | 1 | 0 | 1 |            |           |            |
|                     | R5           |             | 6,084                     | 122 | 3 | 0 | 1 | 6,404                              | 128 | 3 | 0 | 1 |            |           |            |
|                     | D2           |             | 5,733                     | 115 | 1 | 3 | 3 | 5,938                              | 119 | 1 | 3 | 3 |            |           |            |
|                     | D3           |             | 5,596                     | 112 | 1 | 3 | 3 | 5,756                              | 115 | 1 | 3 | 3 |            |           |            |
|                     | D5           |             | 5,884                     | 118 | 3 | 3 | 3 | 6,193                              | 124 | 3 | 3 | 3 |            |           |            |
| H                   | R2           | 60          | 6,914                     | 115 | 1 | 0 | 2 | 7,194                              | 120 | 2 | 0 | 2 | 0.94       | 0.92      | 0.90       |
|                     | R3           |             | 6,794                     | 113 | 1 | 0 | 2 | 7,141                              | 119 | 2 | 0 | 2 |            |           |            |
|                     | R5           |             | 7,133                     | 119 | 3 | 0 | 1 | 7,508                              | 125 | 3 | 0 | 1 |            |           |            |
|                     | D2           |             | 6,584                     | 110 | 1 | 3 | 3 | 6,851                              | 114 | 2 | 3 | 3 |            |           |            |
|                     | D3           |             | 6,410                     | 107 | 2 | 3 | 4 | 6,737                              | 112 | 2 | 3 | 4 |            |           |            |
|                     | D5           |             | 6,793                     | 113 | 2 | 3 | 3 | 7,150                              | 119 | 3 | 3 | 4 |            |           |            |
| I                   | R2           | 76          | 8,212                     | 108 | 2 | 0 | 2 | 8,653                              | 114 | 2 | 0 | 2 | 0.94       | 0.92      | 0.90       |
|                     | R3           |             | 8,092                     | 106 | 2 | 0 | 2 | 8,525                              | 112 | 2 | 0 | 2 |            |           |            |
|                     | R5           |             | 8,553                     | 113 | 3 | 0 | 2 | 9,003                              | 118 | 3 | 0 | 2 |            |           |            |
|                     | D2           |             | 7,821                     | 103 | 2 | 3 | 4 | 8,241                              | 108 | 2 | 3 | 4 |            |           |            |
|                     | D3           |             | 7,634                     | 100 | 2 | 3 | 4 | 8,042                              | 106 | 2 | 3 | 4 |            |           |            |
|                     | D5           |             | 8,146                     | 107 | 3 | 3 | 3 | 8,575                              | 113 | 3 | 3 | 4 |            |           |            |

**Note:** Individual fixture performance may vary. Specifications subject to change without notice.



AEL Headquarters, 3825 Columbus Road, Granville, OH 43023

www.americanelectriclighting.com

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**Warranty** Five-year limited warranty. Complete warranty terms located at:

[www.acuitybrands.com/resources/terms-and-conditions](http://www.acuitybrands.com/resources/terms-and-conditions)

Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

**Please contact your sales representative for the latest product information.**

## ORDERING INFORMATION

|                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| ATBM                                                                                                                                                                                                                                                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  | MVOLT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Series                                                                                                                                                                                                                                                                                                             |  | Performance Packages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | Voltage                                                                                                                                                                                                                                                            |  | Optics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| <b>ATBM</b> Autobahn LED Roadway                                                                                                                                                                                                                                                                                   |  | <b>P05</b> 9,700 lumens<br><b>P10</b> 11,000 lumens<br><b>P20</b> 12,800 lumens<br><b>P30</b> 15,500 lumens<br><b>P40</b> 17,400 lumens<br><b>P50</b> 18,700 lumens<br><b>P60</b> 20,000 lumens<br><b>P70</b> 21,500 lumens                                                                                                                                                                                                                                                                                        |  | <b>MVOLT</b> Multi-volt, 120-277V<br><b>347</b> 347V<br><b>480</b> 480V                                                                                                                                                                                            |  | <b>R2</b> Roadway Type II<br><b>R3</b> Roadway Type III<br><b>R4</b> Roadway Type IV<br><b>R5</b> Roadway Type V                                                                                                                                                                                                                                                                                                                                                                                |  |
|                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  | <b>(Blank)</b> 2 Bolt Mounting<br><b>4B</b> 4 Bolt Mounting                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
|                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  |  <b>Geotech, Inc.</b><br>Engineered Systems<br><small>410.949.5140 info@geotech-inc.com<br/>         410.949.8238-FAX www.geotech-inc.com<br/>         4900 Cascade Road, S.E., Grand Rapids, Michigan 49546</small>                                                                                                                                                                                         |  |
|                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  | Reviewed:<br><input checked="" type="checkbox"/> Found no exceptions.<br><input type="checkbox"/> Found exceptions as noted.<br><input type="checkbox"/> Found not in compliance.<br><input type="checkbox"/> Revise and resubmit.<br><input type="checkbox"/> Rejected.<br>Drawings have been reviewed for general compliance with construction documents. We do not accept responsibility for non-complying items not detected by our review. The responsibility remains with the Contractor. |  |
| R2                                                                                                                                                                                                                                                                                                                 |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Options                                                                                                                                                                                                                                                                                                            |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Color Temperature (CCT)                                                                                                                                                                                                                                                                                            |  | Control Options                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | Accessories                                                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| <b>(Blank)</b> 4000K CCT, 70 CRI Min.<br><b>3K</b> 3000K CCT, 70 CRI Min.<br><b>5K</b> 5000K CCT, 70 CRI Min.                                                                                                                                                                                                      |  | <b>(Blank)</b> 3 Pin NEMA Photocontrol Receptacle<br><b>P7</b> 7 Pin Photocontrol Receptacle (dimmable driver included) <sup>1</sup><br><b>NR</b> No Photocontrol Receptacle<br><b>AO</b> Field Adjustable Output <sup>3</sup><br><b>DM</b> 0-10V Dimmable Driver <sup>2</sup><br><b>PCSS</b> Solid-State Lighting Photocontrol <sup>4</sup><br><b>PCLL</b> Solid-State Long Life Photocontrol<br><b>PCCC</b> Solid-State Long Life Photocontrol with remote control on/off <sup>4</sup><br><b>SH</b> Shorting Cap |  | <b>ATBMHSS</b> House Side Shield<br><b>ATBMLTS</b> Light Trespass Shield<br><b>RKATBMMVOLTSPD</b> ATBM Acuity SPD, MVOLT<br><b>RKATBMHVSPD</b> ATBM Acuity SPD, 347/480V<br><b>RKATBMMVOLTMP</b> ATBM MOV Pack, MVOLT<br><b>RKATBMHVMP</b> ATBM MOV Pack, 347/480V |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Paint                                                                                                                                                                                                                                                                                                              |  | Packages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | <b>RFD302291: Autobahn LED Roadway - M Series (ATBM): ATBM, 18,700 lumens, MVOLT, Roadway Type II, NEMA Label, 7 Pin Photocontrol Receptacle, Special: DALI driver; CSA listed.</b>                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| <b>(Blank)</b> Gray<br><b>BK</b> Black<br><b>BZ</b> Bronze<br><b>DDB</b> Dark Bronze<br><b>GI</b> Graphite<br><b>WH</b> White                                                                                                                                                                                      |  | <b>(Blank)</b> Standard 20kV/10kA SPD<br><b>MP</b> MOV Pack<br><b>JP</b> Job Pack (36/pallet)                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Surge Protection                                                                                                                                                                                                                                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| <b>(Blank)</b> Standard 20kV/10kA SPD<br><b>MP</b> MOV Pack                                                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Miscellaneous Options                                                                                                                                                                                                                                                                                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| <b>HSS</b> House Side Shield<br><b>NL</b> NEMA Label Indicating Wattage<br><b>XL</b> Not CSA Certified – No Terminal Block Cover                                                                                                                                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| <b>UMR-XX</b> 8" Horizontal Arm for Round Pole, Painted to match Fixture<br><b>UMS-XX</b> 8" Horizontal Arm for Square Pole, Painted to match Fixture<br><b>UMR-GALV</b> 8" Horizontal Arm for Round Pole, Painted to match Fixture<br><b>UMS-GALV</b> 8" Horizontal Arm for Square Pole, Painted to match Fixture |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | Catalogue No: <b>ATBMP50MVOLTR24KNLP7DALI</b>                                                                                                                                                                                                                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | DALI look up code- 0003                                                                                                                                                                                                                                            |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | Drawing No: <b>DR-22714</b><br>Date: <b>02/26/21</b><br>Type: <b>B</b>                                                                                                                                                                                             |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |

Autobahn Series ATBM  
Roadway

ORDERING INFORMATION

| ATBM                      |  |                      |  |                            |  | MVOLT               |                         |
|---------------------------|--|----------------------|--|----------------------------|--|---------------------|-------------------------|
| Series                    |  | Performance Packages |  | Voltage                    |  | Optics              |                         |
| ATBM Autobahn LED Roadway |  | P05 9,700 lumens     |  | MVOLT Multi-volt, 120-277V |  | R2 Roadway Type II  | (Blank) 2 Bolt Mounting |
|                           |  | P10 11,000 lumens    |  |                            |  | R3 Roadway Type III | 4B 4 Bolt Mounting      |
|                           |  | P20 12,800 lumens    |  | 347 347V                   |  | R4 Roadway Type IV  |                         |
|                           |  | P30 15,500 lumens    |  | 480 480V                   |  | R5 Roadway Type V   |                         |
|                           |  | P40 17,400 lumens    |  |                            |  |                     |                         |
|                           |  | P50 18,700 lumens    |  |                            |  |                     |                         |
|                           |  | P60 20,000 lumens    |  |                            |  |                     |                         |
|                           |  | P70 21,500 lumens    |  |                            |  |                     |                         |



**Geotech, Inc.**  
Engineered Systems  
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616.949.8234 FAX www.geotech-inc.com  
4900 Cascade Road, S.E., Grand Rapids, Michigan 49546

Reviewed:

- ☒ Found no exceptions.
- ☐ Found exceptions as noted.
- ☐ Found not in compliance.
- ☐ Revise and resubmit.
- ☐ Rejected.

Drawings have been reviewed for general compliance with construction documents. We do not accept responsibility for non-complying items not detected by our review. The responsibility remains with the Contractor.

DATE: 04.02.21 BY: KLM

| Options                                                              |  |                                                                                 |  |
|----------------------------------------------------------------------|--|---------------------------------------------------------------------------------|--|
| Color Temperature (CCT)                                              |  | Control Options                                                                 |  |
| (Blank) 4000K CCT, 70 CRI Min.                                       |  | (Blank) 3 Pin NEMA Photocontrol Receptacle                                      |  |
| 3K 3000K CCT, 70 CRI Min.                                            |  | P7 7 Pin Photocontrol Receptacle (dimmmable driver included) <sup>1</sup>       |  |
| 5K 5000K CCT, 70 CRI Min.                                            |  | NR No Photocontrol Receptacle                                                   |  |
| Paint                                                                |  | AO Field Adjustable Output <sup>3</sup>                                         |  |
| (Blank) Gray                                                         |  | DM 0-10V Dimmable Driver <sup>2</sup>                                           |  |
| BK Black                                                             |  | PCSS Solid-State Lighting Photocontrol <sup>4</sup>                             |  |
| BZ Bronze                                                            |  | PCLL Solid-State Long Life Photocontrol                                         |  |
| DDB Dark Bronze                                                      |  | PCCC Solid-State Long Life Photocontrol with remote control on/off <sup>4</sup> |  |
| GI Graphite                                                          |  | SH Shorting Cap                                                                 |  |
| WH White                                                             |  |                                                                                 |  |
| Surge Protection                                                     |  | Packages                                                                        |  |
| (Blank) Standard 20kV/10kA SPD                                       |  | (Blank) Standard Pack                                                           |  |
| MP MOV Pack                                                          |  | JP Job Pack                                                                     |  |
| Miscellaneous Options                                                |  |                                                                                 |  |
| HSS House Side Shield                                                |  |                                                                                 |  |
| NL NEMA Label Indicating Wattage                                     |  |                                                                                 |  |
| XL Not CSA Certified – No Terminal Block Cover                       |  |                                                                                 |  |
| UMR-XX 8" Horizontal Arm for Round Pole, Painted to match Fixture    |  |                                                                                 |  |
| UMS-XX 8" Horizontal Arm for Square Pole, Painted to match Fixture   |  |                                                                                 |  |
| UMR-GALV 8" Horizontal Arm for Round Pole, Painted to match Fixture  |  |                                                                                 |  |
| UMS-GALV 8" Horizontal Arm for Square Pole, Painted to match Fixture |  |                                                                                 |  |

RFD321260: Autobahn LED Roadway - M Series (ATBM): ATBM, 18,700 lumens, MVOLT, Roadway Type II, NEMA Label, 7 Pin Photocontrol Receptacle, Special: DALI driver, CSA listed.

DALI look up code - 0003

Catalogue No: ATBMP50MVOLTR24KNLP7DALI JP

Drawing No: DR-22714  
Date: 02/26/21  
Type: B-JP

Autobahn Series ATBL  
Roadway

## ORDERING INFORMATION

Example: ATBL A MVOLT R2

## ATBM

| Series                           |
|----------------------------------|
| <b>ATBL</b> Autobahn LED Roadway |

## Performance Packages

|          |               |
|----------|---------------|
| <b>A</b> | 19,000 lumens |
| <b>B</b> | 21,000 lumens |
| <b>C</b> | 22,000 lumens |
| <b>D</b> | 25,000 lumens |
| <b>E</b> | 27,000 lumens |
| <b>F</b> | 29,000 lumens |
| <b>G</b> | 30,000 lumens |

## Voltage

|              |                         |
|--------------|-------------------------|
| <b>MVOLT</b> | Multi-volt,<br>120-277V |
| <b>347</b>   | 347V                    |
| <b>480</b>   | 480V                    |

## Optics

|           |                            |
|-----------|----------------------------|
| <b>N2</b> | Roadway Type II,<br>Narrow |
| <b>R2</b> | Roadway Type II            |
| <b>R3</b> | Roadway Type III           |
| <b>R4</b> | Roadway Type IV            |
| <b>R5</b> | Roadway Type V             |

## MVOLT

## Mounting

|                |                 |
|----------------|-----------------|
| <b>(Blank)</b> | 2 Bolt Mounting |
| <b>4B</b>      | 4 Bolt Mounting |

R2

## Options

## Color Temperature (CCT)

|                |                        |
|----------------|------------------------|
| <b>(Blank)</b> | 4000K CCT, 70 CRI Min. |
| <b>3K</b>      | 3000K CCT, 70 CRI Min. |
| <b>5K</b>      | 5000K CCT, 70 CRI Min. |

## Paint

|                |             |
|----------------|-------------|
| <b>(Blank)</b> | Gray        |
| <b>BK</b>      | Black       |
| <b>BZ</b>      | Bronze      |
| <b>DDB</b>     | Dark Bronze |
| <b>GI</b>      | Graphite    |
| <b>WH</b>      | White       |

## Surge Protection

|                |                                                       |
|----------------|-------------------------------------------------------|
| <b>(Blank)</b> | Standard 10kA/5kV SPD                                 |
| <b>20</b>      | 20kV/10kA SPD                                         |
| <b>MP</b>      | MOV Pack - 10kA/5kV SPD                               |
| <b>IL</b>      | SPD with Indicator Light<br>10kA/5kV SPD <sup>1</sup> |

## Miscellaneous Options

|            |                                                |
|------------|------------------------------------------------|
| <b>HSS</b> | House Side Shield                              |
| <b>NL</b>  | NEMA Label Indicating Wattage                  |
| <b>PT</b>  | Power Tray                                     |
| <b>XL</b>  | Not CSA Certified – No Terminal<br>Block Cover |

## Control Options

|                |                                                                          |
|----------------|--------------------------------------------------------------------------|
| <b>(Blank)</b> | 3 Pin NEMA Photocontrol<br>Receptacle                                    |
| <b>P5</b>      | 5 Pin Photocontrol Receptacle<br>(dimnable driver included) <sup>1</sup> |
| <b>P7</b>      | 7 Pin Photocontrol Receptacle<br>(dimnable driver included) <sup>1</sup> |
| <b>NR</b>      | No Photocontrol Receptacle <sup>2</sup>                                  |
| <b>A0</b>      | Field Adjustable Output <sup>1</sup>                                     |
| <b>DM</b>      | 0-10V Dimmable Driver <sup>3</sup>                                       |
| <b>PCSS</b>    | Solid-State Lighting Photocontrol <sup>4</sup>                           |
| <b>PCLL</b>    | Solid-State Long Life Photocontrol                                       |
| <b>PCCC</b>    | Solid-State Long Life Photocontrol<br>with remote control on/off         |
| <b>SH</b>      | Shorting Cap <sup>5</sup>                                                |

## Packages

|                |                          |
|----------------|--------------------------|
| <b>(Blank)</b> | Standard Pack            |
| <b>JP</b>      | Job Pack (24 per pallet) |

## Notes:

1. Dimmable Driver included. Not available with DM.
2. Not available with P5 or P7.
3. Controls by Others. Not available with A0.
4. MVOLT only.
5. Not available with PCSS or PCLL.

RFD300745: Autobahn LED Roadway - L  
Series (ATBL): ATBL, 22,000 Lumen  
Package, MVOLT, Roadway Type II,  
NEMA Label, 7 Pin Photocontrol  
Receptacle

**DALI Driver**

Special: DALI Driver. CSA listed.

DALI look up code- 001C

Catalogue No: ATBLCMVOLTR24KNLP7DL

Drawing No: DR-22714

Date: 02/26/21

Type: C



## Reviewed:

- ☒ Found no exceptions.
- ☐ Found exceptions as noted.
- ☐ Found not in compliance.
- ☐ Revise and resubmit.
- ☐ Rejected.

Drawings have been reviewed for general compliance with construction documents. We do not accept responsibility for non-complying items not detected by our review. The responsibility remains with the Contractor.

DATE: 04.02.21 BY: KLM

Autobahn Series ATBL  
Roadway

## ORDERING INFORMATION

Example: ATBL A MVOLT R2

## ATBM

| Series                           |
|----------------------------------|
| <b>ATBL</b> Autobahn LED Roadway |

## Performance Packages

|          |               |
|----------|---------------|
| <b>A</b> | 19,000 lumens |
| <b>B</b> | 21,000 lumens |
| <b>C</b> | 22,000 lumens |
| <b>D</b> | 25,000 lumens |
| <b>E</b> | 27,000 lumens |
| <b>F</b> | 29,000 lumens |
| <b>G</b> | 30,000 lumens |

## Voltage

|              |                         |
|--------------|-------------------------|
| <b>MVOLT</b> | Multi-volt,<br>120-277V |
| <b>347</b>   | 347V                    |
| <b>480</b>   | 480V                    |

## Optics

|           |                            |
|-----------|----------------------------|
| <b>N2</b> | Roadway Type II,<br>Narrow |
| <b>R2</b> | Roadway Type II            |
| <b>R3</b> | Roadway Type III           |
| <b>R4</b> | Roadway Type IV            |
| <b>R5</b> | Roadway Type V             |

## MVOLT

## Mounting

|                |                 |
|----------------|-----------------|
| <b>(Blank)</b> | 2 Bolt Mounting |
| <b>4B</b>      | 4 Bolt Mounting |

R2

## Options

## Color Temperature (CCT)

|                |                        |
|----------------|------------------------|
| <b>(Blank)</b> | 4000K CCT, 70 CRI Min. |
| <b>3K</b>      | 3000K CCT, 70 CRI Min. |
| <b>5K</b>      | 5000K CCT, 70 CRI Min. |

## Paint

|                |             |
|----------------|-------------|
| <b>(Blank)</b> | Gray        |
| <b>BK</b>      | Black       |
| <b>BZ</b>      | Bronze      |
| <b>DDB</b>     | Dark Bronze |
| <b>GI</b>      | Graphite    |
| <b>WH</b>      | White       |

## Surge Protection

|                |                                                       |
|----------------|-------------------------------------------------------|
| <b>(Blank)</b> | Standard 10kA/5kV SPD                                 |
| <b>20</b>      | 20kV/10kA SPD                                         |
| <b>MP</b>      | MOV Pack - 10kA/5kV SPD                               |
| <b>IL</b>      | SPD with Indicator Light<br>10kA/5kV SPD <sup>1</sup> |

## Miscellaneous Options

|            |                                                |
|------------|------------------------------------------------|
| <b>HSS</b> | House Side Shield                              |
| <b>NL</b>  | NEMA Label Indicating Wattage                  |
| <b>PT</b>  | Power Tray                                     |
| <b>XL</b>  | Not CSA Certified – No Terminal<br>Block Cover |

## Control Options

|                |                                                                          |
|----------------|--------------------------------------------------------------------------|
| <b>(Blank)</b> | 3 Pin NEMA Photocontrol<br>Receptacle                                    |
| <b>P5</b>      | 5 Pin Photocontrol Receptacle<br>(dimnable driver included) <sup>1</sup> |
| <b>P7</b>      | 7 Pin Photocontrol Receptacle<br>(dimnable driver included) <sup>1</sup> |
| <b>NR</b>      | No Photocontrol Receptacle <sup>2</sup>                                  |
| <b>A0</b>      | Field Adjustable Output <sup>1</sup>                                     |
| <b>DM</b>      | 0-10V Dimmable Driver <sup>3</sup>                                       |
| <b>PCSS</b>    | Solid-State Lighting Photocontrol <sup>4</sup>                           |
| <b>PCLL</b>    | Solid-State Long Life Photocontrol                                       |
| <b>PCCC</b>    | Solid-State Long Life Photocontrol<br>with remote control on/off         |
| <b>SH</b>      | Shorting Cap <sup>5</sup>                                                |

## Packages

|                |               |
|----------------|---------------|
| <b>(Blank)</b> | Standard Pack |
| <b>JP</b>      | Job Pack      |

## Notes:

1. Dimmable Driver included. Not available with DM.
2. Not available with P5 or P7.
3. Controls by Others. Not available with A0.
4. MVOLT only.
5. Not available with PCSS or PCLL.

RFD#321261 Autobahn LED Roadway -  
L Series (ATBL): ATBL, 22,000 Lumen  
Package, MVOLT, Roadway Type II,  
NEMA Label, 7 Pin Photocontrol  
Receptacle

**DALI Driver**

Special: DALI Driver. CSA listed.

Catalogue No: ATBLCMVOLTR24KNLP7DLJP

DALI look up code - 001C

Drawing No: DR-22714

Date: 02/26/21 Type:

C-JP



## Reviewed:

- ☒ Found no exceptions.
- ☐ Found exceptions as noted.
- ☐ Found not in compliance.
- ☐ Revise and resubmit.
- ☐ Rejected.

Drawings have been reviewed for general compliance with construction documents. We do not accept responsibility for non-complying items not detected by our review. The responsibility remains with the Contractor.

DATE: 04.02.21 BY: KLM

Autobahn Series ATBL  
Roadway

## ORDERING INFORMATION

Example: ATBL A MVOLT R2

## ATBM

| Series                           |
|----------------------------------|
| <b>ATBL</b> Autobahn LED Roadway |

## Performance Packages

|          |               |
|----------|---------------|
| <b>A</b> | 19,000 lumens |
| <b>B</b> | 21,000 lumens |
| <b>C</b> | 22,000 lumens |
| <b>D</b> | 25,000 lumens |
| <b>E</b> | 27,000 lumens |
| <b>F</b> | 29,000 lumens |
| <b>G</b> | 30,000 lumens |

## Voltage

|              |                         |
|--------------|-------------------------|
| <b>MVOLT</b> | Multi-volt,<br>120-277V |
| <b>347</b>   | 347V                    |
| <b>480</b>   | 480V                    |

## Optics

|           |                            |
|-----------|----------------------------|
| <b>N2</b> | Roadway Type II,<br>Narrow |
| <b>R2</b> | Roadway Type II            |
| <b>R3</b> | Roadway Type III           |
| <b>R4</b> | Roadway Type IV            |
| <b>R5</b> | Roadway Type V             |

## MVOLT

## Mounting

|                |                 |
|----------------|-----------------|
| <b>(Blank)</b> | 2 Bolt Mounting |
| <b>4B</b>      | 4 Bolt Mounting |



- Reviewed:
- ☐ Found no exceptions.
  - ☒ Found exceptions as noted.
  - ☐ Found not in compliance.
  - ☐ Revise and resubmit.
  - ☐ Rejected.

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DATE: 04.02.21 BY: KLM

R2

## Options

## Color Temperature (CCT)

|                |                        |
|----------------|------------------------|
| <b>(Blank)</b> | 4000K CCT, 70 CRI Min. |
| <b>3K</b>      | 3000K CCT, 70 CRI Min. |
| <b>5K</b>      | 5000K CCT, 70 CRI Min. |

## Paint

|                |             |
|----------------|-------------|
| <b>(Blank)</b> | Gray        |
| <b>BK</b>      | Black       |
| <b>BZ</b>      | Bronze      |
| <b>DDB</b>     | Dark Bronze |
| <b>GI</b>      | Graphite    |
| <b>WH</b>      | White       |

## Surge Protection

|                |                                                       |
|----------------|-------------------------------------------------------|
| <b>(Blank)</b> | Standard 10kA/5kV SPD                                 |
| <b>20</b>      | 20kV/10kA SPD                                         |
| <b>MP</b>      | MOV Pack - 10kA/5kV SPD                               |
| <b>IL</b>      | SPD with Indicator Light<br>10kA/5kV SPD <sup>1</sup> |

## Control Options

|                |                                                                          |
|----------------|--------------------------------------------------------------------------|
| <b>(Blank)</b> | 3 Pin NEMA Photocontrol<br>Receptacle                                    |
| <b>P5</b>      | 5 Pin Photocontrol Receptacle<br>(dimnable driver included) <sup>1</sup> |
| <b>P7</b>      | 7 Pin Photocontrol Receptacle<br>(dimnable driver included) <sup>1</sup> |
| <b>NR</b>      | No Photocontrol Receptacle <sup>2</sup>                                  |
| <b>AO</b>      | Field Adjustable Output <sup>1</sup>                                     |
| <b>DM</b>      | 0-10V Dimmable Driver <sup>3</sup>                                       |
| <b>PCSS</b>    | Solid-State Lighting Photocontrol <sup>4</sup>                           |
| <b>PCLL</b>    | Solid-State Long Life Photocontrol                                       |
| <b>PCCC</b>    | Solid-State Long Life Photocontrol<br>with remote control on/off         |
| <b>SH</b>      | Shorting Cap <sup>5</sup>                                                |

## Packages

|                |                          |
|----------------|--------------------------|
| <b>(Blank)</b> | Standard Pack            |
| <b>JP</b>      | Job Pack (24 per pallet) |

## Notes:

- Dimmable Driver included. Not available with DM.
- Not available with P5 or P7.
- Controls by Others. Not available with A0.
- MVOLT only.
- Not available with PCSS or PCLL.

RFD300747: Autobahn LED Roadway - L Series (ATBL): ATBL, 29,000 Lumen Package, MVOLT, Roadway Type II, NEMA Label, 7 Pin Photocontrol Receptacle  
Special: DALI Driver. CSA listed.

## Miscellaneous Options

|            |                                             |
|------------|---------------------------------------------|
| <b>HSS</b> | House Side Shield                           |
| <b>NL</b>  | NEMA Label Indicating Wattage               |
| <b>PT</b>  | Power Tray                                  |
| <b>XL</b>  | Not CSA Certified - No Terminal Block Cover |

Catalogue No: ATBLFMVOLTR24KNLP7DL

DALI look up code - 001D

Drawing No: DR-22714

Date: 02/26/21

Type: D

Provide letter for  
10 year warranty.



AEL Headquarters, 3825 Columbus Road, Granville, OH 43023  
www.americanelectriclighting.com

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**Warranty** Five-year limited warranty. Complete warranty terms located at:  
[www.acuitybrands.com/CustomerResources/Terms\\_and\\_conditions.aspx](http://www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx)  
Actual performance may differ as a result of end-user environment and application.  
All values are design or typical values, measured under laboratory conditions at 25 °C.  
Specifications subject to change without notice.

Please contact your sales representative for the latest product information.

**Autobahn Series ATBL  
Roadway****ORDERING INFORMATION****Example: ATBL A MVOLT R2****ATBM**

| Series                           |
|----------------------------------|
| <b>ATBL</b> Autobahn LED Roadway |

**Performance Packages**

|          |               |
|----------|---------------|
| <b>A</b> | 19,000 lumens |
| <b>B</b> | 21,000 lumens |
| <b>C</b> | 22,000 lumens |
| <b>D</b> | 25,000 lumens |
| <b>E</b> | 27,000 lumens |
| <b>F</b> | 29,000 lumens |
| <b>G</b> | 30,000 lumens |

**Voltage**

|              |                         |
|--------------|-------------------------|
| <b>MVOLT</b> | Multi-volt,<br>120-277V |
| <b>347</b>   | 347V                    |
| <b>480</b>   | 480V                    |

**Optics**

|           |                            |
|-----------|----------------------------|
| <b>N2</b> | Roadway Type II,<br>Narrow |
| <b>R2</b> | Roadway Type II            |
| <b>R3</b> | Roadway Type III           |
| <b>R4</b> | Roadway Type IV            |
| <b>R5</b> | Roadway Type V             |

**MVOLT****Mounting**

|                |                 |
|----------------|-----------------|
| <b>(Blank)</b> | 2 Bolt Mounting |
| <b>4B</b>      | 4 Bolt Mounting |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  <b>Geotech, Inc.</b><br><i>Engineered Systems</i><br><small>616.949.3340 info@geotech-inc.com<br/>         616.949.8218 FAX www.geotech-inc.com<br/>         4900 Cascade Road, S.W., Grand Rapids, Michigan 49508</small>                                                                                                                                                                                         |  |
| <b>Reviewed:</b><br><input checked="" type="checkbox"/> Found no exceptions.<br><input type="checkbox"/> Found exceptions as noted.<br><input type="checkbox"/> Found not in compliance.<br><input type="checkbox"/> Revise and resubmit.<br><input type="checkbox"/> Rejected.<br>Drawings have been reviewed for general compliance with construction documents. We do not accept responsibility for non-complying items not detected by our review. The responsibility remains with the Contractor. |  |
| <b>DATE: 04.02.21 BY: KLM</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |

R2

**Options****Color Temperature (CCT)**

|                |                        |
|----------------|------------------------|
| <b>(Blank)</b> | 4000K CCT, 70 CRI Min. |
| <b>3K</b>      | 3000K CCT, 70 CRI Min. |
| <b>5K</b>      | 5000K CCT, 70 CRI Min. |

**Paint**

|                |             |
|----------------|-------------|
| <b>(Blank)</b> | Gray        |
| <b>BK</b>      | Black       |
| <b>BZ</b>      | Bronze      |
| <b>DDB</b>     | Dark Bronze |
| <b>GI</b>      | Graphite    |
| <b>WH</b>      | White       |

**Surge Protection**

|                |                                                       |
|----------------|-------------------------------------------------------|
| <b>(Blank)</b> | Standard 10kA/5kV SPD                                 |
| <b>20</b>      | 20kV/10kA SPD                                         |
| <b>MP</b>      | MOV Pack - 10kA/5kV SPD                               |
| <b>IL</b>      | SPD with Indicator Light<br>10kA/5kV SPD <sup>1</sup> |

**Miscellaneous Options**

|            |                                                |
|------------|------------------------------------------------|
| <b>HSS</b> | House Side Shield                              |
| <b>NL</b>  | NEMA Label Indicating Wattage                  |
| <b>PT</b>  | Power Tray                                     |
| <b>XL</b>  | Not CSA Certified – No Terminal<br>Block Cover |

**Control Options**

|                |                                                                          |
|----------------|--------------------------------------------------------------------------|
| <b>(Blank)</b> | 3 Pin NEMA Photocontrol<br>Receptacle                                    |
| <b>P5</b>      | 5 Pin Photocontrol Receptacle<br>(dimnable driver included) <sup>1</sup> |
| <b>P7</b>      | 7 Pin Photocontrol Receptacle<br>(dimnable driver included) <sup>1</sup> |
| <b>NR</b>      | No Photocontrol Receptacle <sup>2</sup>                                  |
| <b>AO</b>      | Field Adjustable Output <sup>1</sup>                                     |
| <b>DM</b>      | 0-10V Dimmable Driver <sup>3</sup>                                       |
| <b>PCSS</b>    | Solid-State Lighting Photocontrol <sup>4</sup>                           |
| <b>PCLL</b>    | Solid-State Long Life Photocontrol                                       |
| <b>PCCC</b>    | Solid-State Long Life Photocontrol<br>with remote control on/off         |
| <b>SH</b>      | Shorting Cap <sup>5</sup>                                                |

**Packages**

|                |               |
|----------------|---------------|
| <b>(Blank)</b> | Standard Pack |
| <b>JP</b>      | Job Pack      |

**Notes:**

1. Dimmable Driver included. Not available with DM.
2. Not available with P5 or P7.
3. Controls by Others. Not available with A0.
4. MVOLT only.
5. Not available with PCSS or PCLL.

**RFD321262: Autobahn LED Roadway**  
**- L Series (ATBL): ATBL, 29,000 Lumen**  
**Package, MVOLT, Roadway Type II,**  
**NEMA Label, 7 Pin Photocontrol**  
**Receptacle**  
**Special: DALI Driver. CSA listed.**

DALI look up table - 001D

Catalogue No: ATBLFMVOLTR24KNLP7DL JP

**Drawing No: DR-22714**  
**Date: 02/26/21 Type:**  
**D-JP**

DALI look up code - 0024

**Contempo Series 245L LED (245L)**

20LED, 1200mA

120-277V

4000K CCT

Distribution Type III

Optics Glass

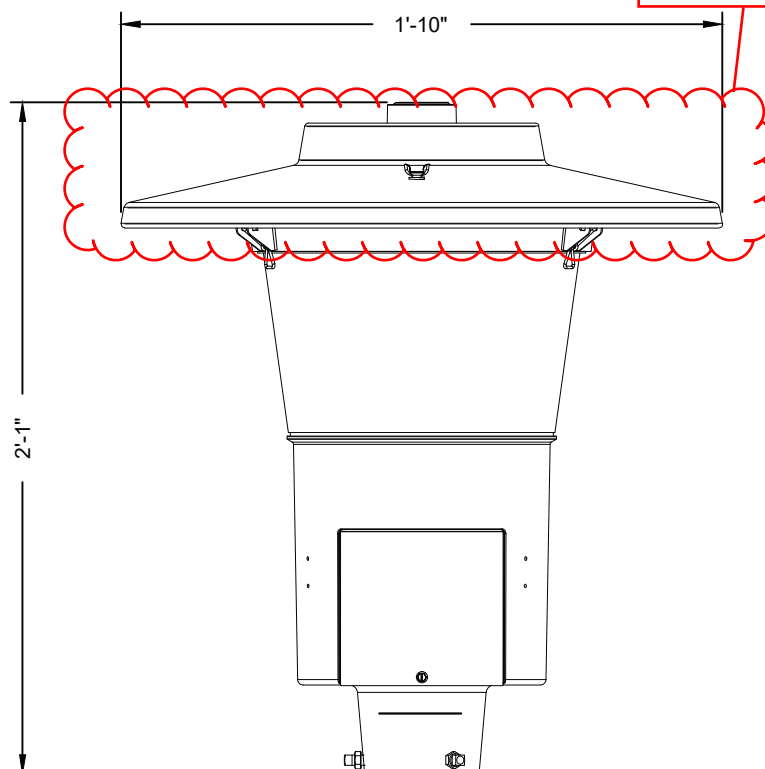
Finish: Black

7 Pin Receptacle, Style D

Stainless Steel Hardware

Tool-Less

Modified with DALI Driver

**Old Performance Package Description****Don't match****Geotech, Inc.**  
Engineered Systems616.949.3340 info@geotech-inc.com  
616.949.8238 FAX www.geotech-inc.com  
4900 Cascade Road, S.E., Grand Rapids, Michigan 49508

## Reviewed:

- ☐ Found no exceptions.
- ☐ Found exceptions as noted.
- ☐ Found not in compliance.
- ☒ Revise and resubmit.
- ☐ Rejected.

Drawings have been reviewed for general compliance with construction documents. We do not accept responsibility for non-complying items not detected by our review. The responsibility remains with the Contractor.

DATE: 04.02.21 BY: KLM

## CUSTOMER NOTES:

1. STANDARD SPECS NOT SHOWN HERE CAN BE FOUND ON SEPARATE CUT SHEETS (PLEASE SEE SALES).
2. SIGNED APPROVAL TO ACCOMPANY PO.

## Catalog #'s:

Fixture: 245LP55AS40KR3GLBKP7SDSSTLDL RFD309214

Customer SignatureDate

# Grand Rapids 2021 Relight

## Grand Rapids, Michigan

|                         |                         |                   |
|-------------------------|-------------------------|-------------------|
| ORDER #:2006-21-12861-2 | TYPE: E                 | DRAWING #:        |
| REVISION: 2             | REVISION DATE: 02/26/21 | <b>TSG 012539</b> |
| DRAWN: AS/SS            | ORIGIN DATE: 01/21/21   | PAGE: 9 of 18     |

THIS DRAWING, WHEN APPROVED, SHALL BECOME THE COMPLETE SPECIFICATION FOR THE MATERIAL TO BE FURNISHED BY HOLOPHANE ON THE ORDER NOTED ABOVE. A UNIT OF SIMILAR DESIGN MAY BE SUPPLIED, BUT ONLY AFTER APPROVAL BY THE CUSTOMER IN WRITING. ON POLE ORDERS AN ANCHOR BOLT TEMPLATE PRINT WILL BE SUPPLIED WITH EACH ANCHOR BOLT ORDER TO MATCH THE POLE PROVIDED. THIS PRINT IS THE PROPERTY OF HOLOPHANE AND IS LOANED SUBJECT TO RETURN UPON DEMAND AND UPON EXPRESS CONDITION THAT IT WILL NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO OUR INTERESTS, AND ONLY IN CONNECTION WITH MATERIAL FURNISHED BY HOLOPHANE.

U-21534 WP MI-MAUI LED luminaire plant balance disallowance  
U-21534 Exhibit MAU-32, LED luminaire plant balance disallowance

data source U-21534 WP Bellini Lighting Rate Model

|                     |       |       |       |       |            | Leotek   |        |         |          |        |            |              | COS of   |           |         |           |        |            |              |
|---------------------|-------|-------|-------|-------|------------|----------|--------|---------|----------|--------|------------|--------------|----------|-----------|---------|-----------|--------|------------|--------------|
|                     |       |       |       |       |            | Recomme  |        | COS of  |          |        |            |              |          |           | COS of  |           |        |            |              |
|                     | LAMP  |       | Syste | Count | Current    | Original | nded   | Nearest | Leotek   | COS of | Unit       | Total        | Original | Consumers | Nearest | Consumers | COS of | Unit       | Total        |
| LookUp              | WATTA | Hours | mWat  | as of | Load as of | HID      | watts  | DTE LED | recomme  | DTE    | COS        | difference   | HID      | Recommen  | DTE LED | recommen  | DTE    | COS        | difference   |
|                     | GE    |       | age   | 2024  | 2024       | fixture  | medium | tariff  | nded LED | choice | difference | (overspend)  | fixture  | ded watts | tariff  | ed LED    | choice | difference | (overspend)  |
| E1 SL - Option I-UG | 65    | 0     | 65    | 27    | 0          |          |        |         |          | 286.58 |            |              | 0        |           |         |           | 286.58 |            |              |
| E1 SL - Option I-UG | 135   | 2100  | 135   | 21    | 5.9535     |          |        |         |          | 381.88 |            |              |          |           |         |           | 381.88 |            |              |
| E1 SL - Option I-UG | 35    | 4200  | 35    | 3345  | 491.715    | 70       | 27     | 35      | 245.73   | 245.73 | 0.00       | \$ -         |          |           |         |           | 245.73 |            |              |
| E1 SL - Option I-UG | 45    | 4200  | 45    | 1     | 0.189      |          |        |         |          | 259.35 |            |              |          |           |         |           | 259.35 |            |              |
| E1 SL - Option I-UG | 55    | 4200  | 55    | 9207  | 2126.817   | 100      | 30     | 35      | 245.73   | 272.96 | 27.23      | \$ 250,710   | 100      | 40        | 45      | 259.35    | 272.96 | 13.62      | \$ 125,355   |
| E1 SL - Option I-UG | 65    | 4200  | 65    | 9746  | 2660.658   | 100      | 30     | 35      | 245.73   | 286.58 | 40.85      | \$ 398,080   | 100      | 40        | 45      | 259.35    | 286.58 | 27.23      | \$ 265,387   |
| E1 SL - Option I-UG | 75    | 4200  | 75    | 1781  | 561.015    | 150      | 64     | 65      | 286.58   | 300.19 | 13.62      | \$ 24,249    | 150      | 70        | 75      | 300.19    | 300.19 | 0.00       | \$ -         |
| E1 SL - Option I-UG | 85    | 4200  | 85    | 2315  | 826.455    | 150      | 64     | 65      | 286.58   | 313.81 | 27.23      | \$ 63,038    | 150      | 70        | 75      | 300.19    | 313.81 | 13.62      | \$ 31,519    |
| E1 SL - Option I-UG | 95    | 4200  | 95    | 119   | 47.481     |          |        |         |          | 327.42 |            |              |          |           |         |           | 327.42 |            |              |
| E1 SL - Option I-UG | 105   | 4200  | 105   | 508   | 224.028    |          |        |         |          | 341.04 |            |              |          |           |         |           | 341.04 |            |              |
| E1 SL - Option I-UG | 115   | 4200  | 115   | 367   | 177.261    |          |        |         |          | 354.65 |            |              |          |           |         |           | 354.65 |            |              |
| E1 SL - Option I-UG | 125   | 4200  | 125   | 4     | 2.1        |          |        |         |          | 368.27 |            |              |          |           |         |           | 368.27 |            |              |
| E1 SL - Option I-UG | 135   | 4200  | 135   | 21534 | 12209.778  | 250      | 89     | 85      | 313.81   | 381.88 | 68.08      | \$ 1,465,944 | 250      | 80        | 85      | 313.81    | 381.88 | 68.08      | \$ 1,465,944 |
| E1 SL - Option I-UG | 145   | 4200  | 145   | 216   | 131.544    | 250      | 89     | 85      | 313.81   | 394.31 | 80.51      | \$ 17,389    | 250      | 80        | 85      | 313.81    | 394.31 | 80.51      | \$ 17,389    |
| E1 SL - Option I-UG | 155   | 4200  | 155   | 1016  | 661.416    | 250      | 89     | 85      | 313.81   | 406.74 | 92.93      | \$ 94,421    | 250      | 80        | 85      | 313.81    | 406.74 | 92.93      | \$ 94,421    |
| E1 SL - Option I-UG | 165   | 4200  | 165   | 23    | 15.939     |          |        |         |          | 419.17 |            |              |          |           |         |           | 419.17 |            |              |
| E1 SL - Option I-UG | 175   | 4200  | 175   | 639   | 469.665    | 310      | 123    | 125     | 368.27   | 431.60 | 63.33      | \$ 40,469    |          |           |         | 431.60    |        |            |              |
| E1 SL - Option I-UG | 185   | 4200  | 185   | 39    | 30.303     |          |        |         |          | 444.03 |            |              |          |           |         |           | 444.03 |            |              |
| E1 SL - Option I-UG | 205   | 4200  | 205   | 604   | 520.044    | 400      | 133    | 135     | 381.88   | 468.89 | 87.00      | \$ 52,551    | 400      | 150       | 155     | 406.74    | 468.89 | 62.15      | \$ 37,536    |
| E1 SL - Option I-UG | 215   | 4200  | 215   | 9     | 8.127      |          |        |         |          | 481.32 |            |              |          |           |         |           | 481.32 |            |              |
| E1 SL - Option I-UG | 235   | 4200  | 235   | 939   | 926.793    | 400      | 133    | 135     | 381.88   | 506.17 | 124.29     | \$ 116,710   | 400      | 150       | 155     | 406.74    | 506.17 | 99.43      | \$ 93,368    |
| E1 SL - Option I-UG | 245   | 4200  | 245   | 88    | 90.552     |          |        |         |          | 518.60 |            |              |          |           |         |           | 518.60 |            |              |
| E1 SL - Option I-UG | 255   | 4200  | 255   | 28    | 29.988     |          |        |         |          | 531.03 |            |              |          |           |         |           | 531.03 |            |              |
| E1 SL - Option I-UG | 265   | 4200  | 265   | 18    | 20.034     |          |        |         |          | 543.46 |            |              |          |           |         |           | 543.46 |            |              |
| E1 SL - Option I-UG | 285   | 4200  | 285   | 1099  | 1315.503   | 400      | 133    | 135     | 381.88   | 568.32 | 186.44     | \$ 204,896   | 400      | 150       | 155     | 406.74    | 568.32 | 161.58     | \$ 177,576   |
| E1 SL - Option I-UG | 295   | 4200  | 295   | 15    | 18.585     |          |        |         |          | 614.38 |            |              |          |           |         |           | 614.38 |            |              |
| E1 SL - Option I-OH | 135   | 2100  | 135   | 5     | 1.4175     |          |        |         |          | 374.15 |            |              |          |           |         |           | 374.15 |            |              |
| E1 SL - Option I-OH | 285   | 2100  | 285   | 2     | 1.197      |          |        |         |          | 599.37 |            |              |          |           |         |           | 599.37 |            |              |
| E1 SL - Option I-OH | 35    | 4200  | 35    | 3     | 0.441      |          |        |         |          | 203.04 |            |              |          |           |         |           | 203.04 |            |              |
| E1 SL - Option I-OH | 45    | 4200  | 45    | 73    | 13.797     |          |        |         |          | 220.15 |            |              |          |           |         |           | 220.15 |            |              |
| E1 SL - Option I-OH | 55    | 4200  | 55    | 22280 | 5146.68    | 100      | 30     | 35      | 203.04   | 237.27 | 34.22      | \$ 762,468   | 100      | 40        | 45      | 220.15    | 237.27 | 17.11      | \$ 381,234   |
| E1 SL - Option I-OH | 65    | 4200  | 65    | 36373 | 9929.829   | 100      | 30     | 35      | 203.04   | 254.38 | 51.33      | \$ 1,867,139 | 100      | 40        | 45      | 220.15    | 254.38 | 34.22      | \$ 1,244,759 |
| E1 SL - Option I-OH | 75    | 4200  | 75    | 607   | 191.205    | 100      | 30     | 35      | 203.04   | 271.49 | 68.44      | \$ 41,546    |          |           |         | 271.49    |        |            |              |
| E1 SL - Option I-OH | 85    | 4200  | 85    | 1685  | 601.545    | 150      | 64     | 65      | 254.38   | 288.60 | 34.22      | \$ 57,664    | 150      | 70        | 75      | 271.49    | 288.60 | 17.11      | \$ 28,832    |
| E1 SL - Option I-OH | 95    | 4200  | 95    | 1509  | 602.091    | 150      | 64     | 65      | 254.38   | 305.71 | 51.33      | \$ 77,462    | 150      | 70        | 75      | 271.49    | 305.71 | 34.22      | \$ 51,641    |
| E1 SL - Option I-OH | 105   | 4200  | 105   | 90    | 39.69      |          |        |         |          | 322.82 |            |              |          |           |         |           | 322.82 |            |              |
| E1 SL - Option I-OH | 115   | 4200  | 115   | 3     | 1.449      |          |        |         |          | 339.93 |            |              |          |           |         |           | 339.93 |            |              |
| E1 SL - Option I-OH | 125   | 4200  | 125   | 58    | 30.45      |          |        |         |          | 357.04 |            |              |          |           |         |           | 357.04 |            |              |
| E1 SL - Option I-OH | 135   | 4200  | 135   | 21218 | 12030.606  | 250      | 89     | 85      | 288.60   | 374.15 | 85.56      | \$ 1,815,310 | 250      | 80        | 85      | 288.60    | 374.15 | 85.56      | \$ 1,815,310 |
| E1 SL - Option I-OH | 145   | 4200  | 145   | 165   | 100.485    | 250      | 89     | 85      | 288.60   | 389.17 | 100.57     | \$ 16,594    |          |           |         | 389.17    |        |            |              |
| E1 SL - Option I-OH | 155   | 4200  | 155   | 400   | 260.4      | 250      | 89     | 85      | 288.60   | 404.18 | 115.58     | \$ 46,234    |          |           |         | 404.18    |        |            |              |
| E1 SL - Option I-OH | 165   | 4200  | 165   | 108   | 74.844     | 250      | 89     | 85      | 288.60   | 419.20 | 130.60     | \$ 14,105    |          |           |         | 419.20    |        |            |              |

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| E1 SL - Option I-OH | 175 | 4200 | 175 | 53 | 38.955 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------|-----|------|-----|----|--------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

| Inputs                            |         |        |        |        |  |
|-----------------------------------|---------|--------|--------|--------|--|
| Crossover conversion equivalences |         |        |        |        |  |
| Incumbent HPS                     | Leotek  | Neares | Consu  | Neares |  |
|                                   | MED     | t DTE  | mers   | t DTE  |  |
|                                   | equival | LED    | equiva | LED    |  |
|                                   | ent     | tariff | lent   | tariff |  |
|                                   |         |        |        |        |  |
| 50                                | 17      | 15     |        |        |  |
| 70                                | 27      | 25     |        |        |  |
| 100                               | 30      | 35     | 40     | 45     |  |
| 150                               | 64      | 65     | 70     | 75     |  |
| 200                               | 72      | 75     |        |        |  |
| 250                               | 89      | 85     | 80     | 85     |  |
| 310                               | 123     | 125    |        |        |  |
| 400                               | 133     | 135    | 150    | 155    |  |

| 1                                              | 2                   | 3       | 4            | 77                | 78            | 79       | 80           | 81      | 82        | 83                                              | 192     | 193      | 194          | 195       | 196     | 197 | 198 | 199 | 200 |
|------------------------------------------------|---------------------|---------|--------------|-------------------|---------------|----------|--------------|---------|-----------|-------------------------------------------------|---------|----------|--------------|-----------|---------|-----|-----|-----|-----|
| Total Revenue Comparison - COS vs Current (\$) |                     |         |              |                   |               |          |              |         |           | Total Revenue Comparison - Proposed vs COS (\$) |         |          |              |           |         |     |     |     |     |
| LookUp                                         | Energize<br>d/Dusk- | Lamp Ty | Lamp Wattage | E1-OptionI-<br>OH | E1-OptionI-UG | OptionII | E1-OptionIII | D9-OH   | D9-UG     | E1-OptionI-OH                                   | UG      | OptionII | E1-OptionIII | D9-OH     | D9-UG   |     |     |     |     |
|                                                |                     |         |              |                   |               |          |              |         |           |                                                 |         |          |              |           |         |     |     |     |     |
| MV100                                          |                     | MV      | 100 W        | 25,405            | (123)         | -        | 162          | -       | (1,409)   | (22,451)                                        | 123     | -        | -            | -         | 1,409   |     |     |     |     |
| MV175                                          |                     | MV      | 175 W        | 425,563           | (3,449)       | -        | 3,954        | 184,119 | (1,204)   | (361,896)                                       | 9,873   | -        | -            | (63,719)  | 1,204   |     |     |     |     |
| MV250                                          |                     | MV      | 250 W        | -                 | (1)           | -        | 677          | 4,515   | (61)      | -                                               | 15      | -        | -            | (1,951)   | 61      |     |     |     |     |
| MV400                                          |                     | MV      | 400 W        | 178,091           | 2,741         | 2,070    | 7,002        | 43,795  | (2,539)   | (153,688)                                       | 7,878   | -        | -            | (14,366)  | 2,539   |     |     |     |     |
| MV1000                                         |                     | MV      | 1,000 W      | -                 | -             | -        | -            | 9,259   | -         | -                                               | -       | -        | -            | (2,735)   | -       |     |     |     |     |
| HPS70                                          |                     | HPS     | 70 W         | 63,873            | (957)         | -        | 3,139        | -       | (6,020)   | (42,290)                                        | 957     | -        | -            | -         | 6,020   |     |     |     |     |
| HPS100                                         |                     | HPS     | 100 W        | 626,441           | (150,893)     | -        | 134,400      | 192,302 | (5,068)   | (485,331)                                       | 154,256 | -        | -            | (118,605) | 5,068   |     |     |     |     |
| HPS150                                         |                     | HPS     | 150 W        | -                 | 134           | -        | 37,639       | 36      | -         | -                                               | 4,418   | -        | -            | (19)      | -       |     |     |     |     |
| HPS250                                         |                     | HPS     | 250 W        | 269,041           | 20,758        | 2,816    | 33,910       | 177,581 | (65)      | (181,197)                                       | 36,756  | -        | -            | (82,487)  | 65      |     |     |     |     |
| HPS310                                         |                     | HPS     | 310 W        | -                 | -             | -        | 1,200        | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| HPS360                                         |                     | HPS     | 360 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| HPS400                                         |                     | HPS     | 400 W        | -                 | 18,927        | 1,254    | 22,179       | 155,892 | -         | -                                               | 15,644  | -        | -            | (96,505)  | -       |     |     |     |     |
| HPS1000                                        |                     | HPS     | 1,000 W      | -                 | 270           | -        | -            | 9,430   | -         | -                                               | (24)    | -        | -            | (5,736)   | -       |     |     |     |     |
| MH70                                           |                     | MH      | 70 W         | 365               | (4,996)       | -        | -            | -       | -         | (337)                                           | 4,996   | -        | -            | -         | -       |     |     |     |     |
| MH100                                          |                     | MH      | 100 W        | 389               | (1,855)       | -        | 1,218        | -       | -         | (359)                                           | 1,855   | -        | -            | -         | -       |     |     |     |     |
| MH150                                          |                     | MH      | 150 W        | -                 | 828           | -        | -            | -       | -         | -                                               | (156)   | -        | -            | -         | -       |     |     |     |     |
| MH175                                          |                     | MH      | 175 W        | 3,270             | (2,788)       | -        | 3,197        | -       | -         | (2,866)                                         | 2,788   | -        | -            | -         | -       |     |     |     |     |
| MH250                                          |                     | MH      | 250 W        | 390               | (2,297)       | -        | 1,150        | -       | -         | (339)                                           | 4,052   | -        | -            | -         | -       |     |     |     |     |
| MH320                                          |                     | MH      | 320 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| MH400                                          |                     | MH      | 400 W        | 3,293             | 6,020         | -        | 1,712        | 132     | -         | (2,872)                                         | 4,491   | -        | -            | (38)      | -       |     |     |     |     |
| MH1000                                         |                     | MH      | 1,000 W      | 2,326             | -             | -        | -            | 14,710  | 111       | (2,179)                                         | -       | -        | -            | (3,680)   | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | MV      | 100 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | MV      | 175 W        | 203               | -             | -        | -            | -       | -         | (180)                                           | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | MV      | 250 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | MV      | 400 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | MV      | 1,000 W      | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | HPS     | 70 W         | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | HPS     | 100 W        | 352               | -             | -        | -            | -       | -         | (290)                                           | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | HPS     | 250 W        | (7)               | (1,513)       | -        | -            | -       | -         | 32                                              | 1,696   | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | HPS     | 360 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | HPS     | 400 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | HPS     | 1,000 W      | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| De-Energiz                                     | De-Energ            | LED     | 65 W         | -                 | 1,252         | -        | -            | -       | -         | -                                               | (1,244) | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | MV      | 100 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | MV      | 175 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | MV      | 250 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | MV      | 400 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | MV      | 1,000 W      | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | HPS     | 70 W         | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | HPS     | 100 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | HPS     | 250 W        | 55                | -             | -        | -            | -       | -         | 28                                              | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | HPS     | 360 W        | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | HPS     | 400 W        | 39                | -             | -        | -            | -       | -         | (2,197)                                         | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | HPS     | 1,000 W      | -                 | -             | -        | -            | -       | -         | -                                               | -       | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | LED     | 135 W        | (110)             | (709)         | -        | -            | -       | -         | 255                                             | 992     | -        | -            | -         | -       |     |     |     |     |
| Dusk-Midn                                      | Dusk-Mik            | LED     | 285 W        | (24)              | -             | -        | -            | -       | -         | 119                                             | -       | -        | -            | -         | -       |     |     |     |     |
| LED25                                          |                     | LED     | 25 W         | -                 | -             | -        | -            | -       | (3,973)   | -                                               | -       | -        | -            | -         | 3,973   |     |     |     |     |
| LED35                                          |                     | LED     | 35 W         | (9)               | (51,419)      | -        | 18,095       | 148     | (207,080) | 15                                              | 51,419  | -        | -            | (56)      | 207,080 |     |     |     |     |
| LED45                                          |                     | LED     | 45 W         | 242               | (12)          | -        | 787          | -       | -         | 384                                             | 12      | -        | -            | -         | -       |     |     |     |     |
| LED55                                          |                     | LED     | 55 W         | 219,639           | (85,499)      | -        | 7,231        | 52,058  | (12,570)  | 123,059                                         | 85,499  | -        | -            | (21,797)  | 12,570  |     |     |     |     |
| LED65                                          |                     | LED     | 65 W         | 404,353           | (60,849)      | -        | 5,285        | 75,267  | (29,868)  | 214,903                                         | 69,314  | -        | -            | (32,732)  | 29,868  |     |     |     |     |

|        |     |       |                  |                  |              |                  |                  |                  |                  |                |          |          |                  |                |
|--------|-----|-------|------------------|------------------|--------------|------------------|------------------|------------------|------------------|----------------|----------|----------|------------------|----------------|
| LED75  | LED | 75 W  | 7,512            | (5,700)          | -            | 1,674            | 5,535            | (121,684)        | 3,820            | 13,124         | -        | -        | (2,466)          | 121,684        |
| LED85  | LED | 85 W  | 22,974           | (365)            | -            | 136,437          | 246              | (94,651)         | 11,253           | 17,653         | -        | -        | (113)            | 94,651         |
| LED95  | LED | 95 W  | 22,474           | 101              | -            | 2,196            | -                | (506)            | 10,659           | 944            | -        | -        | -                | 506            |
| LED105 | LED | 105 W | 1,454            | 939              | -            | 172,885          | -                | (383)            | 670              | 4,185          | -        | -        | -                | 383            |
| LED115 | LED | 115 W | 52               | 1,046            | -            | 187,198          | 295              | (6,527)          | 24               | 3,136          | -        | -        | (143)            | 6,527          |
| LED125 | LED | 125 W | 1,083            | 15               | -            | 13,122           | -                | -                | 477              | 35             | -        | -        | -                | -              |
| LED135 | LED | 135 W | 443,198          | 104,579          | -            | 121,202          | 84,441           | (51,603)         | 182,054          | 197,192        | -        | -        | (42,102)         | 51,603         |
| LED145 | LED | 145 W | 3,902            | 1,269            | -            | 65               | 715              | -                | 1,465            | 2,038          | -        | -        | (358)            | -              |
| LED155 | LED | 155 W | 10,613           | 6,879            | -            | 21,865           | -                | -                | -                | 9,870          | -        | -        | -                | -              |
| LED165 | LED | 165 W | 3,164            | 179              | -            | 8,652            | -                | -                | -                | 230            | -        | -        | -                | -              |
| LED175 | LED | 175 W | 1,705            | 5,626            | -            | 1,894            | -                | -                | -                | 6,562          | -        | -        | -                | -              |
| LED185 | LED | 185 W | 314              | 378              | -            | 1,815            | -                | -                | -                | 411            | -        | -        | -                | -              |
| LED195 | LED | 195 W | -                | -                | -            | 198              | -                | -                | -                | -              | -        | -        | -                | -              |
| LED205 | LED | 205 W | 6,087            | 7,015            | -            | 4,392            | 5,025            | (44,089)         | -                | 6,708          | -        | -        | (2,599)          | 44,089         |
| LED215 | LED | 215 W | 1,521            | 114              | -            | 74,767           | 20,464           | -                | (46)             | 102            | -        | -        | (10,636)         | -              |
| LED225 | LED | 225 W | -                | -                | -            | 6,825            | 45               | -                | -                | -              | -        | -        | (24)             | -              |
| LED235 | LED | 235 W | 43,973           | 13,658           | -            | -                | 55,169           | (1,668)          | (13,823)         | 11,212         | -        | -        | (28,862)         | 1,668          |
| LED245 | LED | 245 W | 330              | 1,369            | -            | 28               | -                | -                | (109)            | 1,075          | -        | -        | -                | -              |
| LED255 | LED | 255 W | 761              | 464              | -            | 5,032            | -                | -                | (262)            | 350            | -        | -        | -                | -              |
| LED265 | LED | 265 W | -                | 315              | -            | 132,614          | -                | -                | -                | 230            | -        | -        | -                | -              |
| LED275 | LED | 275 W | -                | -                | -            | 8,124            | -                | (1,623)          | -                | -              | -        | -        | -                | 1,623          |
| LED285 | LED | 285 W | 60,630           | 21,309           | -            | 418              | 45,140           | (148)            | (23,097)         | 14,652         | -        | -        | (23,957)         | 148            |
| LED295 | LED | 295 W | 1,145            | 306              | -            | -                | 87,543           | (9,859)          | (448)            | 204            | -        | -        | (46,616)         | 9,859          |
| LED305 | LED | 305 W | 1,273            | -                | -            | 172              | -                | -                | (510)            | -              | -        | -        | -                | -              |
| LED315 | LED | 315 W | -                | -                | -            | -                | -                | -                | -                | -              | -        | -        | -                | -              |
| LED325 | LED | 325 W | 365              | -                | -            | -                | -                | -                | (152)            | -              | -        | -        | -                | -              |
| LED335 | LED | 335 W | -                | -                | -            | -                | -                | -                | -                | -              | -        | -        | -                | -              |
| LED345 | LED | 345 W | -                | -                | -            | -                | -                | -                | -                | -              | -        | -        | -                | -              |
| LED355 | LED | 355 W | -                | -                | -            | -                | -                | -                | -                | -              | -        | -        | -                | -              |
| LED365 | LED | 365 W | -                | -                | -            | -                | -                | -                | -                | -              | -        | -        | -                | -              |
| LED375 | LED | 375 W | -                | -                | -            | -                | -                | -                | -                | -              | -        | -        | -                | -              |
| LED385 | LED | 385 W | -                | -                | -            | -                | -                | -                | -                | -              | -        | -        | -                | -              |
| LED395 | LED | 395 W | -                | -                | -            | -                | 546              | -                | -                | -              | -        | -        | (296)            | -              |
|        |     |       | <b>2,857,710</b> | <b>(156,935)</b> | <b>6,141</b> | <b>1,184,512</b> | <b>1,224,409</b> | <b>(602,488)</b> | <b>(747,703)</b> | <b>745,523</b> | <b>-</b> | <b>-</b> | <b>(602,599)</b> | <b>602,599</b> |

|     |    |           |    |           |    |           |    |           |                   |     |    |             |    |         |    |           |    |         |
|-----|----|-----------|----|-----------|----|-----------|----|-----------|-------------------|-----|----|-------------|----|---------|----|-----------|----|---------|
| LED | \$ | 1,258,621 | \$ | (37,741)  | \$ | 432,638   | \$ | (586,233) | Total by lum type | LED | \$ | 510,710     | \$ | 495,906 | \$ | (212,757) | \$ | 586,233 |
| HID | \$ | 1,599,089 | \$ | (119,194) | \$ | 791,772   | \$ | (16,255)  |                   | HID | \$ | (1,258,413) | \$ | 249,616 | \$ | (389,842) | \$ | 16,366  |
|     | \$ | 2,857,710 | \$ | (156,935) | \$ | 1,224,409 | \$ | (602,488) |                   |     | \$ | (747,703)   | \$ | 745,523 | \$ | (602,599) | \$ | 602,599 |

The City of Ann Arbor  
https://www.a2gov.org › departments › programs › Pages  
**FY2024-2029 Capital Improvements Plan**  
The Capital Improvements Plan (CIP) outlines a six-year schedule of public service expenditures for large, physical improvements that are permanent in ...

The City of Ann Arbor  
https://www.a2gov.org › systems-planning › Pages › Cap...  
**Capital Improvement Planning**  
Capital Improvements Plan (CIP) – A document that schedules projects for a period of six years into the future based on studies of available fiscal and staffing ...

MLive.com  
https://www.mlive.com › news › ann-arbor › 2023/12  
**See which projects are included in Ann Arbor's new \$1.2B ...**  
Dec 29, 2023 — See which projects are included in Ann Arbor's new \$1.2B capital plan ...  
ANN ARBOR, MI — Ann Arbor has updated the \$1.2 billion list of projects ...

WEMU  
https://www.wemu.org › wemu-news › ann-arbor-release...  
**Ann Arbor releases six-year capital improvement plan**  
Jan 3, 2024 — The \$1.2 billion plan details the infrastructure projects the city will invest in from 2024 to 2029.

MLive.com

basic facilities, services, and installations needed for the community to function.

The current CIP covers fiscal years 2024-2029 (starting July 1, 2023, and ending June 30, 2029). The Updated FY2024-2029 CIP was approved by [Planning Commission on December 5, 2023](#). The [City Planning Commission materials](#) include the complete CIP report, a list of newly added projects, a project clean-up summary identifying all projects completed since the last CIP cycle, and detailed information about the prioritization metrics used in the CIP process.

Kayla Coleman,  
Capital Projects Asset Manager

734.794.6430 x43728

[kcoleman@a2gov.org](mailto:kcoleman@a2gov.org)

Case No. U-21534  
Exhibit: MAU-36  
Witness: R. Bunch  
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## Updated FY2024-2029 CIP Quick Facts and Resources:

- Complete listing of Updated FY2024-2029 CIP [Project Costs by Asset Category](#) (PDF)
- Access detailed CIP project information through an [interactive mapping tool](#)
- 473 total projects included
- Just under \$1.2 billion of funding needed for projects within the six-year planning period
- Just under \$1.7 billion of funding is needed for the total project costs, which includes the six-year planning period plus funds spent prior to FY2024 and required funds

 Birmingham, MI  
[https://www.bhamgov.org/engineering\\_department](https://www.bhamgov.org/engineering_department)

### Current Construction Projects

Planned Projects for the 2024 Construction Season Map showing areas for 2024 Capital Improvements. The city will **host a third S. Eton Resurfacing Project** ...

 Revize websites  
<https://cms7files1.revize.com/Finance> PDF

### 2021-2022 Approved Budget

Jun 30, 2022 — Birmingham has the 7th Best School District in Michigan (2020) by Niche. ... 11.  
The "Capital Improvements" section provides a listing of capital ...

### People also ask

What is the average household income in Birmingham Michigan? 

What is the poverty rate in Birmingham Michigan? 

What is Birmingham Michigan ZIP code? 

Feedback

 Birmingham, MI  
[https://bhamgov.org/planning\\_department](https://bhamgov.org/planning_department)

The Capital Improvement Plan is a guide and forum to aid the Ferndale City Council and the Ferndale City Manager's Office in making decisions regarding the physical development and infrastructure maintenance of the City and determining what, if any, resources can or should be available to carry out City Council's ... Nov 15, 2023

Ferndale (.gov)  
https://www.ferndalemi.gov › PDFs › 2025-2030\_... PDF

**CAPITAL IMPROVEMENT PLAN - Ferndale**

About featured snippets Feedback

Ferndale (.gov)  
https://www.ferndalemi.gov › resources › community-pl...

**Community Plans**

FYE 2025-2030 Capital Improvement Plan ... The Capital Improvement Plan (CIP) is a financial planning document focused on the City's capital assets. Included ...

SG SmithGroup  
https://www.smithgroup.com › projects › city-of-fernda...

**City of Ferndale Master Plan**

In its latest master plan update, the City of Ferndale incorporates its planning goals into one cohesive framework, championing issues of equity and climate ...  
Missing: Capital Improvement

Overall, the city's capital improvement plan calls for the expenditure of over \$80M across all funding sources. The City of Lincoln Park's Capital Improvement Plan (CIP) is a planning tool for the city for future capital improvement projects. Apr 12, 2023

miplace.org  
https://www.miplace.org › bp1-cip-lincoln-park PDF

City of Lincoln Park Fiscal Year 2023-24 through 2028-29

About featured snippets Feedback

People also ask

- What is a capital improvement plan in Michigan?
  - What is the purpose of the capital improvement program?
  - What is the history of Lincoln Park?
- Feedback

City of Livonia, Mi. (.gov)  
https://livonia.gov › DocumentCenter › View › C... PDF  
**CAPITAL IMPROVEMENTS PROGRAM 2016 - 2021**  
CITY OF LIVONIA, MICHIGAN. CAPITAL IMPROVEMENTS PROGRAM. 2016 - 2021. PREPARED BY THE. CITY OF LIVONIA PLANNING COMMISSION. May 19, 2016. Page 2 ...

City of Livonia, Mi. (.gov)  
https://livonia.gov › Planning  
**Planning | Livonia, MI**  
The Livonia Guide to Development (PDF) is a great ... Quick Links · Capital Improvement Plan 2024-2035 ... Contact Us. 33000 Civic Center Drive Livonia, MI 48154

People also ask :  
What is a capital improvement plan in Michigan?  
What is the city of Livonia master plan?  
Feedback

City of Livonia, Mi. (.gov)  
https://www.ci.livonia.mi.us › Forms-Documents  
**Forms & Documents | Livonia, MI**  
View & Download Economic Development Documents · 2016 to 2021 Capital Improvements

## Design Plan

department. The [Livonia Guide to Development \(PDF\)](#) is a great reference tool in the early planning stages of your project.

## Livonia Vision 21

If you are interested in learning about the requirements for new development, construction, and renovation we strongly encourage you to schedule a preliminary design or conceptual review meeting with our staff. These meetings are available at no cost and can help to significantly reduce the lead time for future permitting, planning, and/or zoning requests. To schedule a meeting, contact us at (734) 466-2290 or email [planning@livonia.gov](mailto:planning@livonia.gov).

The Planning Director also serves as the City's Economic Development Director, providing information and assistance to those wishing to find or develop industrial facilities or land.

## SERVICES

- Site Planning
- Demographic Information
- Economic Development Corporation
- Federal Programs
- [Planning Commission](#)
- [Plymouth Road Development Authority](#)
- [Livonia Brownfield Redevelopment Authority](#)

## PLANNING COMMISSION CALENDAR

TUE, JUN. 4

### Planning Commission Meeting

TUE, JUN. 11

### Planning Commission - Study Meeting

TUE, JUN. 18

### Planning Commission Meeting

TUE, JUL. 9

### Planning Commission - Study Meeting

TUE, JUL. 16

### Planning Commission Meeting

TUE, JUL. 23

### Planning Commission - Study Meeting

[Contact the Planning Department](#)

Case No. U-21534

Exhibit: MAU-36

Witness: R. Bunch

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MARK S. TAORMINA

Department Head

Phone: [\(734\) 466-2290](tel:7344662290)

# LIVONIA VISION 21 COMPREHENSIVE. MASTER PLAN

- o [Livonia Starts Now, Book 1 of 4 \(PDF\)](#)
- o [Land Development, Book 2 of 4 \(PDF\)](#)
- o [Systems Development, Book 3 of 4 \(PDF\)](#)
- o [Strategic Development, Book 4 of 4 \(PDF\)](#)

## QUICK LINKS

- o Capital Improvement Plan 2024-2035
- o City of Livonia, Code of Ordinances
- o City of Livonia, Zoning Ordinance

Madison Heights  
https://www.madison-heights.org › Capital-Improvement...  
**Capital Improvement Plans (CIP) | Madison Heights, MI**  
Five-Year Capital Improvement Plans.

Madison Heights  
https://www.madison-heights.org › City-Budget-Capital-I...  
**City Budget / Capital Improvement Plan | Madison Heights, MI**  
The document **compiles** the financial data needed to support the City's comprehensive decision-making and policy development process, and it reflects a reasonable ...

People also ask

What is a Capital Improvement Plan in Michigan?

What is included in a Capital Improvement Plan?

What is the **shoreline** Capital Improvement Plan?

Who are the members of Madison Heights Town Council?

Feedback



GOVERNMENT

SERVICES

COMMUNITY

BUSINESS

I WANT TO...

Case No. U-21534  
Exhibit: MAU-36  
Witness: R. Bunch  
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## Capital Improvement Plans (CIP)

### Five-Year Capital Improvement Plans (CIP)

[FY 2024-29 Capital Improvement Plan \(CIP\)](#)

[FY 2023-28 Capital Improvement Plan \(CIP\)](#)

\* Once approved, the Capital Improvement Plans are included as a subsection of the Policy Budget Document

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Pdf 2021 2020



City of Pleasant Ridge Michigan  
<https://cityofpleasantridge.org> › Isvr\_document\_cat › ca...  
**Capital Improvement Plan**  
Capital Improvement Plan. Capital Improvement Plan Capital Improvement Plan **2018-2024**  
(203 KB). Category. Budget and Finance.

People also ask

- What is a capital improvement plan in Michigan?
  - What is included in a capital improvement plan?
- Feedback



Michigan Municipal League  
<https://mml.org> › cip-pleasantridge2018-2024 PDF  
**2018-2024 Capital Improvement Plan**  
Feb 5, 2018 — A Capital Improvement Plan (CIP) is a **multi-year planning instrument used to identify needs and financing sources for public infrastructure** ...



City of Pleasant Ridge Michigan  
<https://cityofpleasantridge.org> › ... › Budget and Finance  
**Budget and Finance**



Case No. U-21534  
Exhibit: MAU-36  
Witness: R. Bunch  
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# Capital Improvement Plan

## Capital Improvement Plan

 [Capital Improvement Plan 2018-2024 \(203 KB\)](#)

## Category

- [Budget and Finance](#) +
- [Building Department](#)
- [Community Development](#) +
- [General Government](#)
- [Meetings](#) +
- [Public Works Services](#)
- [Recreation](#)
- [Tax and Assessing](#)
- [The Ridger](#)

**Washtenaw County Road Commission**  
https://www.wcroads.org

**Washtenaw County Road Commission: Home**

Offers a number of services for the community to maintain a safe and convenient road system for the traveling public in **Washtenaw County**.

**Current Projects**  
More videos on YouTube · Salem Township. 7 Mile Rd · Augusta ...

**Report an Issue**  
If you need assistance using WCRC Fix It or on a request you ...

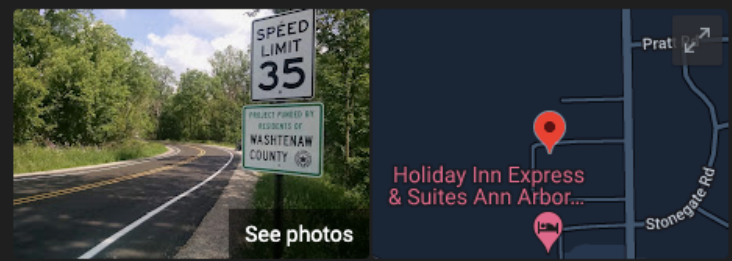
**Weekly Road Work Schedule**  
Washtenaw County Road Commission. Search. Toggle ...

**Contact Us**  
Contact Us ... Main Office & Permit Hours: 6 a.m. to 4:30 p.m ...

**Road Work Advisories**  
Road Closure: McKean Rd (Augusta & Ypsilanti Twps ...  
  
More results from wcroads.org »

**People also ask**

How do I **contact** Washtenaw County road Commission?



## Washtenaw County Road Commission

2.2 ★★★★★ 55 Google reviews  
Public works department in Washtenaw County, Michigan

Website Directions Save Call

**Address:** 555 N Zeeb Rd, Ann Arbor, MI 48103  
**Phone:** (734) 761-1500  
**Hours:** Open · Closes 4:30 PM

Suggest an edit · Own this business?

**Reviews**  
Reviews from the web

2.3/5 Facebook · 47 votes

**MPSC Case No:** U-21534

---

**Requester:** MAUI

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**Question No.:** MAUIDE-2.5

---

**Respondent:** J. Kryscynski

---

**Page:** 1 of 1

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**Question:** Refer to witness Kryscynski's testimony on AJK-101 starting at line 5. Does the Company routinely review municipal Capital Improvement Plans to identify projects that might be coordinated?

**Answer:** Assuming the question is referring to witness Kryscynski's testimony starting on AJK-102 line 5, no. Once a DTE project is selected to move forward, our local governmental affairs team reaches out to the affected municipalities to notify them of work and identify potential coordination opportunities.

**Attachment:** N/A

**MPSC Case No:** U-21534

---

**Requester:** AA

---

**Question No.:** AADE-1.7

---

**Respondent:** J. Kryscynski

---

**Page:** 1 of 1

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**Question:** Please indicate how the Company has complied with the Commission's directive in Case No. U-21297 to "include a demonstration of its efforts to improve communication and coordination with local governments regarding construction activities."

**Answer:** Please see MAUIDE-2.8.

**Attachment:** *None*

**MPSC Case No:** U-21534

---

**Requester:** MAUI

---

**Question No.:** MAUIDE-2.8

---

**Respondent:** J. Kryscynski

---

**Page:** 1 of 3

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**Question:** Please list all projects in the historical test year, or which are planned from now through the end of the test year, that were or are planned to be coordinated with another utility or local unit of government.

**Answer:** The Company does not currently have a database system that includes the coordination efforts between the Company and other utilities or local units of government. Gathering this information for the listed timeframe would take 250+ hours due to the high volume of municipalities and projects.

While there is no formal analysis on this work, the Company has included some examples that are illustrative of the coordination between DTE, local units of government and other utilities. Included in these examples are DTE-owned or municipal-owned projects on which DTE collaborates to resolve conflicts and eliminate delays where possible.

#### Ann Arbor

Regular meetings on permitting, and collaboration on city and DTE projects and potential conflicts. This includes current DTE Electric and DTE Gas major infrastructure projects planned for the near term and electric reliability and investment projects for the next five years. DTE will be reviewing city project plans to understand overlap areas and suggest collaboration opportunities.

#### Rochester Hills

Recent meeting with engineering staff and Rochester Hills city staff to discuss the need for a new substation in the area to improve reliability and meet future electricity demands. City staff is helping DTE find a suitable property that meets substation requirements including acreage, proximity to the ITC corridor and proximity to load. Regular communications have been established as both organizations seek the optimal location to benefit the customers in this area.

#### Southfield – 12 Mile/Telegraph

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-2.7

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**Respondent:** S. Deol

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**Page:** 1 of 1

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**Question:** Does the Company routinely review DTE Gas Company's planned underground projects to identify projects that might be coordinated?

**Answer:** The Buffalo-Charles pilot project was the first construction collaboration between DTE Electric and DTE Gas. Based on the efficiencies realized the company will determine next steps.

**Attachment:** N/A

**MPSC Case No:** U-21534

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**Requester:** MAUI

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**Question No.:** MAUIDE-1.2

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**Respondent:** T. Uzenski

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**Page:** 1 of 1

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**Question:** In discovery response AGDE 9.279c in U-21297, the Company reported spending “approximately \$1 million” on the Regional Relations department’s work with “local municipalities (e.g., cities, counties, villages, townships [...]) to facilitate dialogue on operational matters such as storm recovery, infrastructure improvements and other capital projects.” That response indicated these expenses were recorded in FERC accounts 920, 921, 923, and 930.2. Please provide the amount allocated to this activity in the historical test year and projected test year.

**Answer:** The total cost in FERC accounts 920, 921, 923 and 930.2 for Regional Relations is:  
2022: \$0.733 million  
2025: \$0.801 million (adjusted historical cost of \$733,000 plus inflation)

**Attachment:** *none*

STATE OF MICHIGAN  
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of **DTE ELECTRIC COMPANY** for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority.

U-21534

ALJ Sally L. Wallace

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**PROOF OF SERVICE**

On the date below, an electronic copy of the public version of the **Exhibits to the Direct Testimony of Richard Bunch for the Michigan Municipal Association for Utility Issues (MI-MAUI)** was served on the following:

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The statements above are true to the best of my knowledge, information and belief.

Dated: July 26, 2024

**RIVENOAK LAW GROUP P.C.**

By:




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