

# 2023 Indiana Conservation Voltage Program EM&V Report

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Prepared for:

Indiana Michigan Power

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# 1. Introduction

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This report addresses the measuring, verifying and evaluating of energy savings and demand reductions that resulted from the implementation by Indiana Michigan Power Company (I&M) in 2023 of its Conservation Voltage Program (CVR) Program. I&M implemented this program in conjunction with Utilidata, Inc.

## 1.1 Description of Program

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Under ANSI Standard C84.1 Electric Power Systems and Equipment, a utility system is to deliver electricity to end-users at a voltage within the range of  $120 \pm 5\%$  volts (i.e., 114 – 126). With the usual system design, customers close to a substation receive voltages closer to 126 volts and customers farther from the substation receive lower voltages. Voltage regulating equipment is applied as necessary to ensure the required minimum voltages are provided.

The CVR program is based on implementing Conservation Voltage Reduction (CVR), which is a process by which the utility systematically reduces voltages in its distribution network, resulting in a proportional reduction of load on the network. Because most devices operated by electricity (especially motors) are designed to operate most efficiently at 115 volts, any “excess” voltage is typically wasted, usually in the form of heat. Tighter voltage regulation allows end-use devices to operate more efficiently without any action on the part of consumers. Consumers receive a lower but still acceptable voltage and use less energy to accomplish the same tasks.

Voltage is controlled for the circuits at the substations using Utilidata’s AdaptiVolt™ Volt/VAR Optimization platform. AdaptiVolt™ uses secure digital communications to implement a closed-loop control system. Using AdaptiVolt™ allows I&M to dispatch voltage-based demand control within seconds. The system measures end-of-line voltage and sends the voltage information back to the controller at the substation in real time.

## 1.2 Impact Evaluation Findings

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Table 1-1 below presents the total aggregated annual gross and net energy (kWh) savings achieved by the CVR Program during PY2023.

*Table 1-1. Summary of Ex Post PY2023 kWh Savings*

| <i>Ex Ante Annual kWh Savings</i> | <i>Gross Audited kWh Savings</i> | <i>Gross Verified kWh Savings</i> | <i>Ex Post Annual Gross kWh Savings</i> | <i>Gross Realization Rate</i> | <i>Ex Post Annual Net kWh Savings</i> | <i>Net-to-Gross Ratio</i> |
|-----------------------------------|----------------------------------|-----------------------------------|---|-------------------------------|---------------------------------------|---------------------------|
| 19,735,646                        | 19,735,646                       | 19,735,646                        | 27,071,349                              | 137%                          | 27,071,349                            | 100%                      |

Table 1-2 presents the total gross and net peak demand (kW) impacts achieved by the CVR Program during PY2023.

*Table 1-2. Summary of Ex Post PY2023 kW Peak Demand Impacts*

| <i>Ex Ante Gross kW Savings</i> | <i>Gross Audited kW Savings</i> | <i>Gross Verified kW Savings</i> | <i>Ex Post Gross kW Savings</i> | <i>Gross Realization Rate</i> | <i>Ex Post Net kW Savings</i> | <i>Net-to-Gross Ratio</i> |
|---------------------------------|---------------------------------|----------------------------------|---------------------------------|-------------------------------|-------------------------------|---------------------------|
| 4,013.31                        | 4,013.31                        | 4,013.31                         | 5,818.24                        | 145%                          | 5,818.24                      | 100%                      |

### 1.3 Organization of Report

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This report is organized as follows:

- Chapter 2: Data Collection
- Chapter 3: Impact Evaluation Methods
- Chapter 4: Impact Evaluation Findings

## 2. Data Collection

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The effects of voltage optimization for 2023 were analyzed using voltage and power data extracted from I&M’s SCADA system.

I&M and Utilidata used an “on/off” procedure for voltage reductions during various parts of 2023.<sup>1</sup> This procedure involves disengaging the CVR system during specified days to enable the provision of data sets with measurements of voltages and energy use that include both regular voltages (measured on “off” days, during which the CVR system is disengaged) and reduced voltages (measured on “on” days, during which the CVR system is engaged).

During 2023, data were collected for regulated source voltages by phase and power by circuit. Voltage and power were measured at 30 second intervals, giving 120 data-points per hour for each element. Voltages were measured at the substation level for three phases.

While CVR was initially engaged prior to 2023 for most circuits included in the analysis, the CVR system was initially engaged during 2023 for the circuits listed below in Table 2-1. VVO was initially engaged for Blaine circuits at the end of August 2023. Due to very limited availability of interspersed days of VVO engagement and disengagement for these circuits, energy savings achieved during late 2023 through VVO system engaged could not be estimated for these circuits.

*Table 2-1. Initial CVR System Engagement During 2023 by Circuit by Date*

| <i>Circuit ID</i>    | <i>Date CVR System Initially Engaged</i> |
|----------------------|--|
| Blaine-4098021       | 8/30/2023                                |
| Blaine-4098024       | 8/30/2023                                |
| Blaine-4098025       | 8/30/2023                                |
| IllinoisRoad-4510721 | 8/17/2023                                |
| IllinoisRoad-4510722 | 8/17/2023                                |
| IllinoisRoad-4510723 | 8/17/2023                                |
| LusherAvenue-4094021 | 9/19/2023                                |
| LusherAvenue-4094022 | 9/19/2023                                |
| LusherAvenue-4094023 | 9/19/2023                                |
| LusherAvenue-4094024 | 9/19/2023                                |
| LusherAvenue-4094025 | 9/19/2023                                |
| LusherAvenue-4094026 | 9/19/2023                                |
| Mackey-4535221       | 7/11/2023                                |
| Mackey-4535222       | 7/11/2023                                |
| Mackey-4535223       | 7/11/2023                                |

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<sup>1</sup> For discussion of “on / off” testing, see, for example, Pacific Northwest Regional Technical Forum, *Standard Protocol #1 for Automated CVR*, November 2011.

| <i>Circuit ID</i> | <i>Date CVR System Initially Engaged</i> |
|-------------------|--|
| Mackey-4535224    | 7/11/2023                                |
| Mackey-4535225    | 7/11/2023                                |

Hourly temperature readings were available from the quality controlled local climatological data program of the National Climatic Data Center<sup>2</sup> for 2023 for the multiple weather stations selected based on proximity to the substations for which CVR is enabled. This temperature data was used for the analysis.

Table 2-2 shows the time during 2023 during which the CVR system was engaged, as well as associated average CVR factors and energy savings rate. Where CVR engagement rates were uniform across circuits, information is presented by station; otherwise, results are shown by group of circuits at a station with uniform CVR engagement rates.

*Table 2-2 PY2023 CVR System Engagement, CVR Engaged State Energy Savings, and CVR Factors by Station*

| <i>Substation / Circuit Group</i>                 | <i>Average CVR Factor</i> | <i>Hours Engaged</i> | <i>Engaged State kWh Consumption</i> | <i>Engaged State kWh Savings</i> | <i>kWh Savings Rate</i> |
|---|---------------------------|----------------------|--------------------------------------|----------------------------------|-------------------------|
| Daleville   | 0.73                      | 6,236                | 40,078,884                           | 1,034,832                        | 2.6%                    |
| EastSide (4093121, 4093122, 4093123)              | 0.50                      | 2,058                | 13,485,639                           | 311,066                          | 2.3%                    |
| EastSide (4093124, 4093125, 4093126)              | 0.78                      | 6,671                | 43,619,843                           | 1,825,465                        | 4.2%                    |
| Elcona  | 0.18                      | 3,365                | 30,883,388                           | 302,852                          | 1.0%                    |
| Farmland  | 0.51                      | 6,471                | 19,119,851                           | 405,990                          | 2.1%                    |
| Grabill   | 0.68                      | 5,025                | 41,163,311                           | 982,448                          | 2.4%                    |
| Hacienda (4933521, 4933523, 4933524)              | 1.07                      | 1,338                | 768,533                              | 41,017                           | 5.3%                    |
| Hacienda (4933525, 4933526, 4933527)              | 1.02                      | 238                  | 2,043,289                            | 72,772                           | 3.6%                    |
| Harper  | 0.58                      | 6,433                | 50,695,474                           | 1,179,783                        | 2.3%                    |
| IllinoisRoad                                      | 0.15                      | 2,137                | 14,383,138                           | 76,407                           | 0.5%                    |
| Lincoln   | 0.48                      | 4,387                | 51,180,048                           | 426,713                          | 0.8%                    |
| LusherAvenue (4094021, 4094022)                   | 0.41                      | 1,444                | 6,342,855                            | 96,412                           | 1.5%                    |
| LusherAvenue (4094023, 4094024, 4094025, 4094026) | 0.50                      | 1,613                | 7,589,023                            | 176,221                          | 2.3%                    |
| Mackey (4535221, 4535225)                         | 0.01                      | 2,165                | 9,981,622                            | 14,905                           | 0.1%                    |
| Mackey (4535222, 4535223, 4535224)                | 0.79                      | 1,104                | 9,892,144                            | 270,142                          | 2.7%                    |
| McKinley (4055921, 4055922, 4055926)              | 0.53                      | 3,673                | 42,490,855                           | 501,420                          | 1.2%                    |
| McKinley (4055923, 4055924, 4055925)              | 0.80                      | 1,778                | 13,770,350                           | 401,424                          | 2.9%                    |

<sup>2</sup> For information on the QCLCD data, see <http://www.ncdc.noaa.gov/data-access/land-based-station-data/land-based-datasets/quality-controlled-local-climatological-data-qclcd>

| <i>Substation / Circuit Group</i>                 | <i>Average<br/>CVR<br/>Factor</i> | <i>Hours<br/>Engaged</i> | <i>Engaged State<br/>kWh<br/>Consumption</i> | <i>Engaged State<br/>kWh Savings</i> | <i>kWh<br/>Savings<br/>Rate</i> |
|---|-----------------------------------|--------------------------|--|--------------------------------------|---------------------------------|
| Northland (4933421, 4933422, 4933423)             | 0.86                              | 5,733                    | 39,733,339                                   | 658,902                              | 1.7%                            |
| Northland (4933424, 4933425, 4933426)             | 1.06                              | 116                      | 1,061,039                                    | 33,786                               | 3.2%                            |
| Osolo (4058021, 4058022, 4058024)                 | 0.83                              | 4,061                    | 38,571,352                                   | 1,032,218                            | 2.7%                            |
| Osolo (4058023, 4058025, 4058026)                 | 0.95                              | 4,657                    | 35,384,255                                   | 1,043,768                            | 2.9%                            |
| PettitAvenue                                      | 0.50                              | 3,069                    | 20,151,064                                   | 227,272                              | 1.1%                            |
| SouthBend   | 0.75                              | 6,559                    | 57,920,716                                   | 1,652,432                            | 2.9%                            |
| Southside (4094621, 4094622, 4094623,<br>4094624) | 0.72                              | 6,262                    | 36,858,829                                   | 1,235,682                            | 3.4%                            |
| Southside (4099921, 4099922, 4099923)             | 0.52                              | 2,790                    | 22,438,309                                   | 501,625                              | 2.2%                            |
| Spyrun  | 0.46                              | 6,741                    | 53,867,995                                   | 558,531                              | 1.0%                            |
| StateStreet                                       | 0.79                              | 5,746                    | 47,960,112                                   | 1,105,866                            | 2.3%                            |
| Summit  | 0.90                              | 1,868                    | 1,646,174                                    | 32,758                               | 2.0%                            |
| Trier   | 1.01                              | 5,501                    | 2,913,350                                    | 114,470                              | 3.9%                            |
| Wallen (4923421, 4923422, 4923423)                | 0.84                              | 6,048                    | 3,957,937                                    | 119,768                              | 3.0%                            |
| Wallen (4923424, 4923425, 4923426)                | 0.86                              | 4,575                    | 2,469,295                                    | 66,773                               | 2.7%                            |
| Total   |                                   |                          | 762,422,014                                  | 16,503,719                           | 2.2%                            |



### 3. Impact Evaluation Methods

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This chapter discusses the method used for analysis of data to determine energy savings attributable to the CVR Program.

#### 3.1 Determination of CVR Factors

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CVR system data analysis was performed using Stata, a statistical software program used for data analysis, data management, and graphics. Stata code was used to analyze CVR data to assess the performance of the system based on the energy usage and voltage data across different time intervals and conditions.

The panel data is organized in a structured manner that represents multiple circuits of stations for which CVR is enabled. Circuit-level data is further broken down into its respective phases. This means for every single circuit in the dataset, there are three corresponding entries or groups – one for each phase of that circuit. Each circuit-phase combination (e.g., Circuit 1 - Phase A, Circuit 1 - Phase B, Circuit 1 - Phase C, and so forth) serves as an individual group within the panel, allowing for detailed analysis and comparison of CVR's performance across different circuits and their respective phases.

The raw data files contain circuit-phase-level 30-second time series data, including energy usage, voltage, and CVR operating status information. Three files are conveyed for each hour, with data for the various stations and circuits divided between the three files.

The data analysis is aimed at creation of two products facilitating calculation of energy savings:

- **Circuit-Phase Operational Report:** This comprehensive report provides circuit-phase-level insights, including voltage levels, power consumption, and the operating status of the CVR system for each circuit and its respective phase. It serves as a detailed snapshot of the system's operational history, with information presented for each month of system operation.
- **Regression Analysis Report:** This report presents the results of regression analyses performed on data samples. It provides detailed information on CVR factors and related data.

Regression analysis is used to relate circuit power data to month of year, day type (business day/non-business day), CVR operating state and weather. The regression model used is given in Equation 3-1 below.

*Equation 3-1*

$$kWh_i = \beta_0 + \beta_1 Engaged_j + \beta_2 CDH_i + \beta_3 HDH_i + \beta_4 Hour_i + \beta_5 Month_i + \beta_6 Day\_Type_i + e_i$$

Regression analysis model variables are described in Table 3-1.

Table 3-1. Regression Analysis Model Variables

| <i>Variable Name</i> | <i>Variable Description</i>   |
|----------------------|---|
| kWh                  | Dependent variable; hourly power (kW).  |
| Engaged              | 1 if CVR is engaged; otherwise 0.   |
| CDH                  | MAX (Outdoor Temperature - 65°F, 0)   |
| HDH                  | MAX (65°F - Outdoor Temperature, 0)   |
| Hour * Day_Type      | Group of dummy variables for hour of the day, by day type (business day, non-business day). |
| Month                | Group of dummy variables for month.   |

For each circuit and phase, regression models using the specification in Equation 3-1 are estimated. Regression models are performed using a sample of data generated through pairing hourly observations occurring during CVR system engagement with hourly observations occurring during CVR system disengagement. Paired observations occurred during consecutive days of the same day type (business/non-business) and during the same hour of day. The approach to selection of paired observations is intended to minimize the impact of non-CVR-related variables impacting energy usage that are not otherwise controlled for by model independent variables.

The regression model reference a full year of data, when available. This full-year reference holds true not only for annual analyses, which have been presented in annual Energy Measurement & Verification (EM&V) reports, but also for any preliminary, mid-year investigations undertaken.

The value for  $\beta_1$  estimated through the regression analysis captures the impact of CVR system engagement on circuit-level energy usage, controlling for month of year, weather, day type, and hour of day.

The results of the regression analyses and associated voltage reduction reflected in the regression data set are used to determine applicable conservation voltage reduction factor (*CVRf*) for each circuit and phase. A *CVRf* measures the relationship between changes in energy in response to changes in voltage effected under the operation of the CVR system. Mathematically, *CVRf* is calculated as the ratio between the percentage change in energy usage and the percentage change in voltage, as shown below in Equation 3-2.

Equation 3-2

$$CVRf = -(\beta_1 / (kWh_{engaged\_sample} + \beta_1)) / ((V_{idle\_sample} - V_{engaged\_sample}) / V_{idle\_sample})$$

Inputs to the calculation of *CVRf* are described in Table 3-2.

Table 3-2. CVRf Calculation Input Variables

| Variable Name                 | Variable Description   |
|-------------------------------|--|
| $\beta_1$                     | Coefficient of <i>Engaged</i> variable of applicable circuit-phase regression analysis, which is the estimate of the change in energy usage associated with CVR system engagement. |
| kWh <sub>engaged_sample</sub> | Average hourly kWh electric energy usage for the applicable circuit-phase when the CVR system is engaged, based on the selected sample of data used in the regression analysis.    |
| V <sub>engaged_sample</sub>   | Average voltage for the applicable circuit-phase when the CVR system status is engaged, taken from the same data subset utilized for regression analysis.                          |
| V <sub>idle_sample</sub>      | Average voltage for the applicable circuit-phase when the CVR system status is idle, also derived from the data subset used for the regression analysis.                           |

The Regression Analysis Report presents the results of the regression analyses performed for each circuit and phase. The CVR factors presented in the report are then referenced along with the system data presented in the Circuit-Phase Operational Report to estimate ex post energy savings. This is facilitated by estimating the applicable baseline energy usage ( $kWh_{baseline\_pop}$ ) using Equation 3-3 shown below.

Equation 3-3

$$kWh_{baseline\_pop} = (kWh_{engaged\_pop} * V_{idle\_pop}) / (-CVRf * V_{idle\_pop} + CVRf * V_{engaged\_pop} + V_{idle\_pop})$$

Inputs to the calculation of CVRf are described in Table 3-2.

Table 3-3. Baseline Energy Usage Calculation Input Variables

| Variable Name              | Variable Description   |
|----------------------------|--|
| CVRf                       | Applicable CVR factor calculated by using Equation 3-2.  |
| kWh <sub>engaged_pop</sub> | kWh electric energy usage for the applicable circuit-phase when the CVR system is engaged, based on the population of observations for the applicable circuit and phase. |
| V <sub>engaged_pop</sub>   | Average voltage for the applicable circuit-phase when the CVR system status is engaged, taken from the same population of observations.                                  |
| V <sub>idle_pop</sub>      | Average voltage for the applicable circuit-phase when the CVR system status is idle, also derived from the population of observations.                                   |

The calculation of  $kWh_{baseline\_pop}$  enables calculation of energy savings ( $kWh_{savings}$ ) using Equation 3-4 shown below.

Equation 3-4

$$kWh_{savings} = kWh_{baseline\_pop} - kWh_{engaged\_pop}$$

### 3.2 Determination of Meta-Regression CVR Factors

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The savings analyses described in section 3.1 are based on regression analyses performed over a data span of up to 365 days (“365-day regression analysis”). These regression models are designed to account for overall energy consumption by employing specific independent variables, including a dummy variable designed to discern the incremental impact of CVR system engagement on energy consumption. However, for certain circuits and phases, there may be marked energy consumption deviations caused by factors that are not accounted for by the model. Even with data sampling methodology outlined in section 3.1, unaccounted factors may still influence the results. Hence, there is a possibility that results derived from any specific 365-day data frame could be disproportionately influenced by distinct variables not considered in our model.

To mitigate the potential impact of unaccounted-for factors, we carried out a meta-analysis spanning multiple 365-day periods. This holistic approach aims to critically evaluate the integrity of our various models and subsequently establish refined CVR factors grounded in the comprehensive meta-review.

All 365-day regression analyses available over a 365 day period were included in the meta-regression analysis.

For each 365-day regression analysis, Equation 3-5 and Equation 3-6 were used to create data quality metric variable  $n_{norm}$  and  $f_{norm}$ , based on number of hourly observations and F-statistic, which measures model goodness of fit.

*Equation 3-5*

$$n_{norm} = (n_i - n_{min}) / (n_{max} - n_{min})$$

*Equation 3-6*

$$f_{norm} = (f_i - f_{min}) / (f_{max} - f_{min})$$

Table 3-4 describes the inputs to the calculation of  $n_{norm}$  and  $f_{norm}$ .

Table 3-4. Data Quality Score Input Variables

| <i>Variable Name</i> | <i>Variable Description</i>   |
|----------------------|---|
| $n_i$                | Number of hourly observations on which the applicable 365-day regression analysis is based.   |
| $n_{\min}$           | Number of hourly observations for the 365-day regression analysis with the fewest observations, to be included in the meta-analysis for the applicable circuit and phase. |
| $n_{\max}$           | Number of hourly observations for the 365-day regression analysis with the most observations, to be included in the meta-analysis for the applicable circuit and phase.   |
| $f_i$                | F-statistic of the applicable 365-day regression analysis.  |
| $f_{\min}$           | F-statistic for the 365-day regression analysis with the lowest F-statistic to be included in the meta-analysis for the applicable circuit and phase.                     |
| $f_{\max}$           | F-statistic for the 365-day regression analysis with the highest F-statistic to be included in the meta-analysis for the applicable circuit and phase.                    |

The data quality metrics described by Equation 3-5 and Equation 3-6 were then referenced to create a score variable using Equation 3-7 shown below.

Equation 3-7

$$score = (n_{norm} + f_{norm}) / 2$$

Meta-regression analysis is then performed to generate preliminary meta-CVR factors for each circuit and phase based on the CVRf and score of the 365-day regression analyses included in the analysis, as shown in Equation 3-8.

Equation 3-8

$$CVRf_{meta\_preliminary} = \beta_0 + \beta_1 CVRf_i + \beta_2 Score_i + e_i$$

Using the coefficients from the regression model specified above, predicted  $CVRf_{meta\_preliminary}$  values are generated for each observation included in the meta-analysis for the applicable circuit and phase. These preliminary meta-analysis CVR factors require further refinement.

Given the variability in the reliability and significance of different datasets, we calculate a weighted CVR factor. Each predicted  $CVRf_{meta\_preliminary}$  is weighted by its associated  $score$ , ensuring that more reliable and significant datasets have a larger influence on the final updated CVR factor, and the final meta-regression CVR factor is calculated as the mean of the weighted predicted  $CVRf_{meta\_preliminary}$  values as shown below in Equation 3-9.

Equation 3-9

$$CVRf_{meta} = \sum (CVRf_{meta\_preliminary,i} * Score_i) / \sum Score_i$$

The meta-analysis CVR factor is representative of the collective behavior across all datasets, with due consideration given to the characteristics of all the 365-day regression analyses.

Meta-analysis CVR factors were referenced to support calculation of PY2023 CVR Program energy savings.

### 3.3 Ex Post Savings Calculations

The meta-analysis CVR factors the system data presented in the Circuit-Phase Operational Report (described in section 3.1) were referenced to estimate ex post energy savings. This is facilitated by estimating the applicable average baseline energy usage ( $kWh_{avg\_baseline}$ ) using Equation 3-10 shown below.

*Equation 3-10*

$$kWh_{avg\_baseline} = (kWh_{avg\_engaged} * V_{baseline}) / (-CVRf * V_{idle\_pop} + CVRf * V_{engaged} + V_{baseline})$$

Inputs to the calculation of CVRf are described in Table 3-5.

*Table 3-5. Baseline Energy Usage Calculation Input Variables*

| <i>Variable Name</i> | <i>Variable Description</i>   |
|----------------------|---|
| CVRf                 | If available, use meta-analysis CVR factor calculated by using Equation 3-9; otherwise use CVR factor calculated by using Equation 3-2.                       |
| $kWh_{avg\_engaged}$ | Average hourly kWh electric energy usage for the applicable circuit-phase when the CVR system status is engaged during the applicable year.                   |
| $V_{engaged}$        | Average voltage for the applicable circuit-phase when the CVR system status is engaged during the applicable year.  |
| $V_{baseline}$       | Use average voltage when the CVR system status was idle, derived from the population of observations of the 365-day regression analyses associated with CVRf. |

The calculation of  $kWh_{avg\_baseline}$  enables calculation of the energy savings rate ( $kWh_{savings\_rate}$ ) using Equation 3-11 shown below.

*Equation 3-11*

$$kWh_{savings\_rate} = (kWh_{avg\_baseline} - kWh_{avg\_engaged}) / kWh_{avg\_baseline}$$

To calculate ex post energy savings, the energy savings rate is factored by energy consumption during eligible operating periods. Eligible operating periods includes times when the CVR system

is engaged and times when the CVR system is not engaged due to reasons beyond the utility's control.<sup>3</sup> Eligible and ineligible operating periods are described in Table 3-6.

*Table 3-6. Eligible and Ineligible Operating Periods*

| <i>Status</i>        | <i>Description</i>  | <i>Note</i>  | <i>Category</i> |
|----------------------|---|--|-----------------|
| CVR Engaged          | The CVR system is engaged.  | N/A  | Eligible        |
| Test Schedule        | Any time the system is disengaged due to employment of an on/off testing schedule.  | If deemed CVR factors are not applicable, schedules are implemented that disengage the CVR system for approximately 18% of the year to support performance of impact evaluation.   | Eligible        |
| Feeder Outage        | Any time the majority of a feeder is out due to any reason.   | Feeder outages are typically not predictable or planned and are outside of I&M's control. They are an anomaly and are not certain to occur on the same feeder in subsequent years.   | Eligible        |
| Repair / Maintenance | Repair or maintenance work is performed on a CVR feeder causing CVR to be disabled.   | Repair and maintenance of I&M's system is an operational necessity to provide customers with safe and reliable electric service. These events are not certain to occur on the same feeder in subsequent years.   | Eligible        |
| Switching            | Dispatch disables CVR on the feeder for any necessary switching event.  | I&M will perform switching for storms, outages, repair, maintenance, safety, and work to support new customer growth. These events are not certain to occur on the same feeder in subsequent years.  | Eligible        |
| Technology           | A failure of the Information and/or Communication Technology which results in "all" CVR feeders being disabled simultaneously due to events outside of I&M's control. | CVR is dependent upon third party infrastructure that I&M has no control over. Examples include the loss of the cellular communications network (AT&T and Verizon), the failure of the CVR software provided by the outside vendor, or a cyber event. Events of this nature are an anomaly and are not certain to occur year after year. This event is not predictable or planned and is outside of I&M's control. | Eligible        |

<sup>3</sup> For an example of a similar CVR savings calculation provision, see [2023 Illinois Statewide Technical Reference Manual for Energy Efficiency, Version 11.0](https://www.ilsag.info/wp-content/uploads/IL-TRM-Version-11.0-Volumes-1-4-Compiled-Final.pdf), Volume 4, p. 22-31 (Section 6.2.1 Voltage Optimization). Created in collaboration with the Illinois Energy Efficiency Stakeholder Advisory Group (SAG). Available at: <https://www.ilsag.info/wp-content/uploads/IL-TRM-Version-11.0-Volumes-1-4-Compiled-Final.pdf>.

| <i>Status</i>                                    | <i>Description</i>  | <i>Note</i>  | <i>Category</i> |
|--|---|--|-----------------|
| Worldwide Pandemic / Orders by Civil Authorities | Repairs and maintenance may take longer due to limited crew availability or other restrictions/priorities.  | Due to restrictions, repairs and maintenance may take longer. This reasonable delay is outside the control of I&M.                                     | Eligible        |
| Disaster Recovery (DR) Testing                   | I&M periodically performs Disaster Recovery testing on systems (AMI, ADMS, CVR, etc.) which could result in CVR disabling. Typically all CVR feeders would be affected during DR testing. | Disaster Recovery testing is necessary and critical to ensure that I&M can operate safely and effectively during an unforeseen event.                  | Ineligible      |
| Server patching/issues                           | Anytime servers go down or patching takes place and the CVR system does not come back online due to servers not rebooting correctly.  | Events of this nature are unavoidable, but should be addressed by I&M in a timely fashion. This should result in negligible impacts to energy savings. | Ineligible      |
| Configuration Changes                            | Anytime CVR is disabled for making updates to the Orion, go-live testing, or to make changes on the system resulting in shutting down services.   | Events of this nature are unavoidable, but should be addressed by I&M in a timely fashion. This should result in negligible impacts to energy savings. | Ineligible      |
| CVR field hardware failures                      | The loss or failure of a voltage regulator control, LTC control, or switched capacitor control on a feeder.   | Events of this nature are unavoidable, but should be addressed by I&M in a timely fashion. This should result in negligible impacts to energy savings. | Ineligible      |
| Loss of communications                           | Anytime a device has a communications failure that would result in CVR disabling. This event does not include 3rd party cellular communications network (AT&T and Verizon) failures.      | Events of this nature are unavoidable, but should be addressed by I&M in a timely fashion. This should result in negligible impacts to energy savings. | Ineligible      |

Ex post energy savings ( $kWh_{savings}$ ) are calculated using Equation 3-12, where  $kWh_{eligible}$  is the total electric energy consumption during the eligible operating periods.

Equation 3-12

$$kWh_{savings} = (kWh_{eligible} * (1 + kWh_{savings\_rate})) - kWh_{eligible}$$

Ex post peak demand savings ( $kW_{savings}$ ) are calculated using Equation 3-13, where  $kWh_{eligible\_peak}$  is the electric energy consumption during the eligible operating periods during the applicable peak period, and  $hours_{peak}$  is the number of hours comprising the applicable peak period.

Equation 3-13

$$kW_{savings} = ((kWh_{eligible\_peak} * (1 + kWh_{savings\_rate})) - kWh_{eligible\_peak}) / hours_{peak}$$



## 4. Impact Evaluation Findings

This chapter presents the results from the analysis of data for the Indiana CVR program in 2023 to determine kWh savings and CVR factors associated with voltage reduction for the various circuits and phases.

### 4.1 Circuit/Phase-Level Energy Savings and CVR Factors

For each circuit and phase, kWh savings and CVR factors were calculated. The percentage savings from reducing voltage was calculated and divided by the percentage reduction in voltage to determine the CVR factor. The resulting estimates of engaged state kWh savings and CVR factors for the various phases of the circuits and phases are reported by substation in Table 4-1 through Table 4-22.

*Table 4-1 PY2023 Energy Savings and CVR Factors by Phase: Daleville Circuits*

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Daleville-4927921 | A              | 125.24                  | 121.31                       | 121,967                          | 6,869,471                            | 1.74%                  | 0.56              |
|                   | B              | 126.09                  | 122.05                       | 159,926                          | 5,561,051                            | 2.80%                  | 0.87              |
|                   | C              | 126.07                  | 122.11                       | 274,601                          | 7,371,786                            | 3.59%                  | 1.14              |
|                   | Total /Average | 125.79                  | 121.81                       | 556,495                          | 19,802,308                           | 2.73%                  | 0.87              |
| Daleville-4927922 | A              | 125.24                  | 121.31                       | 29,176                           | 1,619,633                            | 1.77%                  | 0.56              |
|                   | B              | 126.06                  | 122.04                       | 38,083                           | 2,173,294                            | 1.72%                  | 0.54              |
|                   | C              | 126.09                  | 122.11                       | 30,799                           | 2,119,388                            | 1.43%                  | 0.45              |
|                   | Total /Average | 125.85                  | 121.87                       | 98,058                           | 5,912,314                            | 1.63%                  | 0.52              |
| Daleville-4927923 | A              | 125.28                  | 121.35                       | 81,162                           | 3,303,146                            | 2.40%                  | 0.76              |
|                   | B              | 126.10                  | 122.08                       | 144,028                          | 4,510,335                            | 3.09%                  | 0.97              |
|                   | C              | 126.09                  | 122.13                       | 155,090                          | 6,550,781                            | 2.31%                  | 0.74              |
|                   | Total /Average | 125.91                  | 121.94                       | 380,280                          | 14,364,262                           | 2.58%                  | 0.82              |

Table 4-2 PY2023 Energy Savings and CVR Factors by Phase: EastSide Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| EastSide-4093121  | A              | 125.05                  | 119.63                       | 11,925                           | 645,296                              | 1.81%                  | 0.42              |
|                   | B              | 125.14                  | 119.63                       | 18,883                           | 811,690                              | 2.27%                  | 0.52              |
|                   | C              | 125.34                  | 119.53                       | 19,130                           | 787,176                              | 2.37%                  | 0.51              |
|                   | Total /Average | 125.18                  | 119.59                       | 49,938                           | 2,244,163                            | 2.18%                  | 0.49              |
| EastSide-4093122  | A              | 125.06                  | 119.64                       | 32,182                           | 1,970,564                            | 1.61%                  | 0.37              |
|                   | B              | 125.15                  | 119.63                       | 41,809                           | 1,624,000                            | 2.51%                  | 0.57              |
|                   | C              | 125.35                  | 119.53                       | 37,079                           | 1,771,977                            | 2.05%                  | 0.44              |
|                   | Total /Average | 125.18                  | 119.60                       | 111,070                          | 5,366,542                            | 2.03%                  | 0.45              |
| EastSide-4093123  | A              | 125.03                  | 119.61                       | 34,608                           | 1,904,657                            | 1.78%                  | 0.41              |
|                   | B              | 125.12                  | 119.60                       | 62,307                           | 1,897,715                            | 3.18%                  | 0.72              |
|                   | C              | 125.33                  | 119.51                       | 53,143                           | 2,072,562                            | 2.50%                  | 0.54              |
|                   | Total /Average | 125.16                  | 119.57                       | 150,058                          | 5,874,934                            | 2.49%                  | 0.56              |
| EastSide-4093124  | A              | 125.24                  | 119.06                       | 251,479                          | 4,965,916                            | 4.82%                  | 0.98              |
|                   | B              | 125.30                  | 119.01                       | 276,336                          | 5,140,176                            | 5.10%                  | 1.02              |
|                   | C              | 125.34                  | 118.99                       | 270,441                          | 5,138,656                            | 5.00%                  | 0.99              |
|                   | Total /Average | 125.29                  | 119.02                       | 798,256                          | 15,244,748                           | 4.98%                  | 0.99              |
| EastSide-4093125  | A              | 125.26                  | 119.08                       | 238,915                          | 5,238,340                            | 4.36%                  | 0.88              |
|                   | B              | 125.33                  | 119.03                       | 240,626                          | 5,524,120                            | 4.17%                  | 0.83              |
|                   | C              | 125.37                  | 119.01                       | 243,603                          | 5,376,336                            | 4.33%                  | 0.85              |
|                   | Total /Average | 125.32                  | 119.04                       | 723,144                          | 16,138,796                           | 4.29%                  | 0.86              |
| EastSide-4093126  | A              | 125.31                  | 119.13                       | 61,994                           | 3,717,621                            | 1.64%                  | 0.33              |
|                   | B              | 125.33                  | 119.04                       | 118,699                          | 4,180,062                            | 2.76%                  | 0.55              |
|                   | C              | 125.41                  | 119.06                       | 123,372                          | 4,338,615                            | 2.76%                  | 0.55              |
|                   | Total /Average | 125.35                  | 119.08                       | 304,065                          | 12,236,299                           | 2.42%                  | 0.48              |

Table 4-3 PY2023 Energy Savings and CVR Factors by Phase: Elcona Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Elcona-4938121    | A              | 125.28                  | 119.32                       | 8,681                            | 2,698,081                            | 0.32%                  | 0.07              |
|                   | B              | 125.27                  | 119.43                       | 14,731                           | 2,956,123                            | 0.50%                  | 0.11              |
|                   | C              | 125.43                  | 119.55                       | 7,569                            | 2,704,956                            | 0.28%                  | 0.06              |
|                   | Total /Average | 125.32                  | 119.43                       | 30,981                           | 8,359,159                            | 0.37%                  | 0.08              |
| Elcona-4938122    | A              | 125.30                  | 119.34                       | 3,917                            | 1,607,528                            | 0.24%                  | 0.05              |
|                   | B              | 125.29                  | 119.45                       | 14,845                           | 1,845,264                            | 0.80%                  | 0.17              |
|                   | C              | 125.41                  | 119.54                       | 25,976                           | 1,905,757                            | 1.34%                  | 0.29              |
|                   | Total /Average | 125.33                  | 119.45                       | 44,738                           | 5,358,549                            | 0.83%                  | 0.18              |
| Elcona-4938123    | A              | 125.28                  | 119.31                       | 78,877                           | 5,685,591                            | 1.37%                  | 0.29              |
|                   | B              | 125.25                  | 119.42                       | 93,114                           | 5,621,900                            | 1.63%                  | 0.35              |
|                   | C              | 125.41                  | 119.54                       | 55,143                           | 5,858,188                            | 0.93%                  | 0.20              |
|                   | Total /Average | 125.31                  | 119.43                       | 227,133                          | 17,165,680                           | 1.31%                  | 0.28              |

Table 4-4 PY2023 Energy Savings and CVR Factors by Phase: Farmland Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Farmland-4927321  | A              | 125.06                  | 119.42                       | 71,211                           | 2,939,238                            | 2.37%                  | 0.52              |
|                   | B              | 125.09                  | 120.00                       | 32,258                           | 2,330,973                            | 1.37%                  | 0.34              |
|                   | C              | 125.16                  | 119.96                       | 60,254                           | 2,423,005                            | 2.43%                  | 0.58              |
|                   | Total /Average | 125.10                  | 119.77                       | 163,723                          | 7,693,216                            | 2.08%                  | 0.49              |
| Farmland-4927322  | A              | 125.10                  | 119.47                       | 16,267                           | 703,255                              | 2.26%                  | 0.50              |
|                   | B              | 125.10                  | 120.00                       | 8,824                            | 383,783                              | 2.25%                  | 0.55              |
|                   | C              | 125.18                  | 119.98                       | 23,396                           | 834,163                              | 2.73%                  | 0.66              |
|                   | Total /Average | 125.13                  | 119.80                       | 48,488                           | 1,921,201                            | 2.46%                  | 0.58              |
| Farmland-4927323  | A              | 125.07                  | 119.45                       | 83,480                           | 2,535,542                            | 3.19%                  | 0.71              |
|                   | B              | 125.11                  | 120.03                       | 67,430                           | 3,618,995                            | 1.83%                  | 0.45              |
|                   | C              | 125.19                  | 120.00                       | 42,868                           | 3,350,897                            | 1.26%                  | 0.30              |
|                   | Total /Average | 125.13                  | 119.87                       | 193,779                          | 9,505,434                            | 2.00%                  | 0.48              |

Table 4-5 PY2023 Energy Savings and CVR Factors by Phase: Grabill Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Grabill-4935221   | A              | 124.34                  | 120.17                       | 62,400                           | 4,064,561                            | 1.51%                  | 0.45              |
|                   | B              | 124.60                  | 120.49                       | 79,223                           | 3,509,650                            | 2.21%                  | 0.67              |
|                   | C              | 125.36                  | 121.07                       | 102,827                          | 4,574,422                            | 2.20%                  | 0.64              |
|                   | Total /Average | 124.80                  | 120.60                       | 244,450                          | 12,148,633                           | 1.97%                  | 0.59              |
| Grabill-4935222   | A              | 124.36                  | 120.19                       | 208,126                          | 7,113,781                            | 2.84%                  | 0.85              |
|                   | B              | 124.59                  | 120.47                       | 198,887                          | 7,977,627                            | 2.43%                  | 0.74              |
|                   | C              | 125.35                  | 121.05                       | 158,840                          | 6,759,424                            | 2.30%                  | 0.67              |
|                   | Total /Average | 124.75                  | 120.56                       | 565,853                          | 21,850,832                           | 2.52%                  | 0.75              |
| Grabill-4935223   | A              | 124.44                  | 120.27                       | 44,441                           | 1,927,174                            | 2.25%                  | 0.67              |
|                   | B              | 124.68                  | 120.56                       | 30,325                           | 2,315,522                            | 1.29%                  | 0.39              |
|                   | C              | 125.44                  | 121.13                       | 97,380                           | 2,921,150                            | 3.23%                  | 0.94              |
|                   | Total /Average | 124.93                  | 120.72                       | 172,145                          | 7,163,846                            | 2.35%                  | 0.70              |

Table 4-6 PY2023 Energy Savings and CVR Factors by Phase: Hacienda Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Hacienda-4933521  | A              | 125.15                  | 119.67                       | 4,649                            | 98,603                               | 4.50%                  | 1.03              |
|                   | B              | 125.32                  | 119.21                       | 6,300                            | 113,723                              | 5.25%                  | 1.08              |
|                   | C              | 125.15                  | 118.82                       | 3,587                            | 65,123                               | 5.22%                  | 1.03              |
|                   | Total /Average | 125.22                  | 119.28                       | 14,536                           | 277,449                              | 4.98%                  | 1.05              |
| Hacienda-4933523  | A              | 125.12                  | 119.65                       | 4,238                            | 99,012                               | 4.10%                  | 0.94              |
|                   | B              | 125.30                  | 119.18                       | 4,244                            | 78,713                               | 5.12%                  | 1.05              |
|                   | C              | 125.13                  | 118.79                       | 4,324                            | 74,352                               | 5.50%                  | 1.08              |
|                   | Total /Average | 125.18                  | 119.25                       | 12,806                           | 252,076                              | 4.83%                  | 1.02              |
| Hacienda-4933524  | A              | 125.14                  | 119.66                       | 4,883                            | 89,389                               | 5.18%                  | 1.18              |
|                   | B              | 125.30                  | 119.17                       | 4,441                            | 77,973                               | 5.39%                  | 1.10              |
|                   | C              | 125.14                  | 118.81                       | 4,351                            | 71,646                               | 5.73%                  | 1.13              |
|                   | Total /Average | 125.19                  | 119.25                       | 13,675                           | 239,009                              | 5.41%                  | 1.14              |
| Hacienda-4933525  | A              | 123.84                  | 120.10                       | 7,526                            | 233,097                              | 3.13%                  | 1.03              |
|                   | B              | 124.29                  | 119.79                       | 8,262                            | 223,675                              | 3.56%                  | 0.98              |
|                   | C              | 124.53                  | 119.76                       | 7,510                            | 224,714                              | 3.23%                  | 0.84              |
|                   | Total /Average | 124.22                  | 119.88                       | 23,298                           | 681,486                              | 3.31%                  | 0.95              |
| Hacienda-4933526  | A              | 123.91                  | 120.17                       | 9,088                            | 190,712                              | 4.55%                  | 1.51              |
|                   | B              | 124.37                  | 119.87                       | 11,126                           | 210,714                              | 5.02%                  | 1.39              |
|                   | C              | 124.57                  | 119.80                       | 12,050                           | 191,241                              | 5.93%                  | 1.55              |
|                   | Total /Average | 124.29                  | 119.94                       | 32,264                           | 592,667                              | 5.16%                  | 1.48              |
| Hacienda-4933527  | A              | 123.80                  | 120.08                       | 4,620                            | 236,807                              | 1.91%                  | 0.64              |
|                   | B              | 124.29                  | 119.79                       | 6,111                            | 306,744                              | 1.95%                  | 0.54              |
|                   | C              | 124.52                  | 119.76                       | 6,479                            | 225,584                              | 2.79%                  | 0.73              |
|                   | Total /Average | 124.21                  | 119.87                       | 17,211                           | 769,136                              | 2.19%                  | 0.63              |

Table 4-7 PY2023 Energy Savings and CVR Factors by Phase: Harper Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Harper-4928821    | A              | 123.73                  | 119.22                       | 127,079                          | 8,463,109                            | 1.48%                  | 0.41              |
|                   | B              | 124.48                  | 119.49                       | 235,864                          | 7,686,673                            | 2.98%                  | 0.74              |
|                   | C              | 124.25                  | 119.32                       | 187,516                          | 8,739,606                            | 2.10%                  | 0.53              |
|                   | Total /Average | 124.14                  | 119.34                       | 550,459                          | 24,889,388                           | 2.16%                  | 0.56              |
| Harper-4928822    | A              | 123.72                  | 119.21                       | 174,437                          | 6,935,459                            | 2.45%                  | 0.67              |
|                   | B              | 124.46                  | 119.47                       | 255,685                          | 10,059,615                           | 2.48%                  | 0.62              |
|                   | C              | 124.27                  | 119.32                       | 199,202                          | 8,811,012                            | 2.21%                  | 0.56              |
|                   | Total /Average | 124.20                  | 119.35                       | 629,324                          | 25,806,086                           | 2.38%                  | 0.61              |

Table 4-8 PY2023 Energy Savings and CVR Factors by Phase: Illinois Circuits

| <i>Circuit ID</i>    | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|----------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| IllinoisRoad-4510721 | A              | 124.77                  | 120.53                       | 10,667                           | 1,592,278                            | 0.67%                  | 0.20              |
|                      | B              | 124.91                  | 120.53                       | 16,869                           | 1,451,168                            | 1.15%                  | 0.33              |
|                      | C              | 124.45                  | 120.37                       | 11,995                           | 1,588,940                            | 0.75%                  | 0.23              |
|                      | Total /Average | 124.70                  | 120.48                       | 39,531                           | 4,632,386                            | 0.85%                  | 0.25              |
| IllinoisRoad-4510722 | A              | 125.41                  | 121.41                       | 3,635                            | 1,715,756                            | 0.21%                  | 0.07              |
|                      | B              | 125.03                  | 120.85                       | 11,245                           | 2,108,930                            | 0.53%                  | 0.16              |
|                      | C              | 126.14                  | 121.71                       | 17,668                           | 1,884,014                            | 0.93%                  | 0.26              |
|                      | Total /Average | 125.51                  | 121.30                       | 32,548                           | 5,708,700                            | 0.57%                  | 0.17              |
| IllinoisRoad-4510723 | A              | 124.59                  | 120.40                       | (2,286)                          | 1,052,853                            | -0.22%                 | (0.06)            |
|                      | B              | 124.78                  | 120.62                       | (545)                            | 1,519,134                            | -0.04%                 | (0.01)            |
|                      | C              | 125.15                  | 120.60                       | 7,159                            | 1,470,065                            | 0.48%                  | 0.13              |
|                      | Total /Average | 124.87                  | 120.56                       | 4,328                            | 4,042,052                            | 0.11%                  | 0.03              |

Table 4-9 PY2023 Energy Savings and CVR Factors by Phase: Lincoln Circuit

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Lincoln-4051821   | A              | 124.08                  | 121.33                       | (24,354)                         | 7,234,849                            | -0.34%                 | (0.15)            |
|                   | B              | 124.02                  | 121.35                       | (23,282)                         | 7,119,509                            | -0.33%                 | (0.15)            |
|                   | C              | 123.05                  | 120.42                       | (23,070)                         | 7,127,060                            | -0.32%                 | (0.15)            |
|                   | Total /Average | 123.72                  | 121.03                       | (70,706)                         | 21,481,419                           | -0.33%                 | (0.15)            |
| Lincoln-4051822   | A              | 122.33                  | 120.00                       | 119,676                          | 5,880,933                            | 1.99%                  | 1.05              |
|                   | B              | 123.78                  | 121.36                       | 117,587                          | 5,626,089                            | 2.05%                  | 1.05              |
|                   | C              | 124.29                  | 121.84                       | 118,631                          | 5,629,659                            | 2.06%                  | 1.05              |
|                   | Total /Average | 123.45                  | 121.05                       | 355,894                          | 17,136,682                           | 2.03%                  | 1.05              |
| Lincoln-4051824   | A              | 123.13                  | 120.84                       | 7,390                            | 4,245,909                            | 0.17%                  | 0.09              |
|                   | B              | 123.96                  | 121.50                       | 80,467                           | 4,158,250                            | 1.90%                  | 0.96              |
|                   | C              | 124.49                  | 121.80                       | 53,668                           | 4,157,788                            | 1.27%                  | 0.59              |
|                   | Total /Average | 123.85                  | 121.38                       | 141,525                          | 12,561,947                           | 1.11%                  | 0.56              |

Table 4-10 PY2023 Energy Savings and CVR Factors by Phase: Lusher Circuits

| <i>Circuit ID</i>    | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|----------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| LusherAvenue-4094021 | A              | 123.77                  | 119.76                       | 15,811                           | 1,320,607                            | 1.18%                  | 0.37              |
|                      | B              | 124.20                  | 119.09                       | 13,159                           | 1,434,090                            | 0.91%                  | 0.22              |
|                      | C              | 124.15                  | 119.75                       | 13,241                           | 1,395,909                            | 0.94%                  | 0.27              |
|                      | Total /Average | 124.04                  | 119.52                       | 42,211                           | 4,150,606                            | 1.01%                  | 0.28              |
| LusherAvenue-4094022 | A              | 124.21                  | 118.88                       | 18,790                           | 683,048                              | 2.68%                  | 0.62              |
|                      | B              | 124.93                  | 119.00                       | 18,558                           | 755,666                              | 2.40%                  | 0.51              |
|                      | C              | 124.43                  | 119.01                       | 16,853                           | 753,535                              | 2.19%                  | 0.50              |
|                      | Total /Average | 124.53                  | 118.96                       | 54,201                           | 2,192,249                            | 2.41%                  | 0.54              |
| LusherAvenue-4094023 | A              | 124.98                  | 119.38                       | 1,485                            | 336,650                              | 0.44%                  | 0.10              |
|                      | B              | 124.84                  | 119.03                       | 3,233                            | 494,588                              | 0.65%                  | 0.14              |
|                      | C              | 125.02                  | 119.11                       | 7,202                            | 422,460                              | 1.68%                  | 0.35              |
|                      | Total /Average | 124.94                  | 119.15                       | 11,920                           | 1,253,697                            | 0.94%                  | 0.20              |
| LusherAvenue-4094024 | A              | 125.16                  | 119.56                       | 22,537                           | 586,886                              | 3.70%                  | 0.83              |
|                      | B              | 125.22                  | 119.40                       | 30,568                           | 674,796                              | 4.33%                  | 0.93              |
|                      | C              | 125.25                  | 119.30                       | 26,283                           | 357,144                              | 6.85%                  | 1.44              |
|                      | Total /Average | 125.20                  | 119.44                       | 79,388                           | 1,618,826                            | 4.67%                  | 1.01              |
| LusherAvenue-4094025 | A              | 124.15                  | 118.78                       | 16,504                           | 800,323                              | 2.02%                  | 0.47              |
|                      | B              | 124.44                  | 118.82                       | 13,967                           | 898,600                              | 1.53%                  | 0.34              |
|                      | C              | 124.53                  | 118.82                       | 17,085                           | 747,429                              | 2.23%                  | 0.49              |
|                      | Total /Average | 124.37                  | 118.81                       | 47,556                           | 2,446,352                            | 1.91%                  | 0.43              |
| LusherAvenue-4094026 | A              | 125.04                  | 119.65                       | 9,436                            | 725,172                              | 1.28%                  | 0.30              |
|                      | B              | 124.94                  | 119.06                       | 13,642                           | 794,155                              | 1.69%                  | 0.36              |
|                      | C              | 125.10                  | 119.60                       | 14,279                           | 750,821                              | 1.87%                  | 0.42              |
|                      | Total /Average | 125.03                  | 119.43                       | 37,357                           | 2,270,148                            | 1.62%                  | 0.36              |



Table 4-11 PY2023 Energy Savings and CVR Factors by Phase: Mackey Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Mackey-4535221    | A              | 124.98                  | 121.09                       | 617                              | 2,294,272                            | 0.03%                  | 0.01              |
|                   | B              | 124.99                  | 121.08                       | 17,369                           | 2,290,589                            | 0.75%                  | 0.24              |
|                   | C              | 124.75                  | 120.98                       | 6,014                            | 2,486,251                            | 0.24%                  | 0.08              |
|                   | Total /Average | 124.90                  | 121.05                       | 24,000                           | 7,071,112                            | 0.34%                  | 0.11              |
| Mackey-4535222    | A              | 124.99                  | 121.22                       | 31,965                           | 1,040,047                            | 2.98%                  | 0.99              |
|                   | B              | 125.13                  | 121.18                       | 22,588                           | 1,011,930                            | 2.18%                  | 0.69              |
|                   | C              | 125.17                  | 121.18                       | 27,037                           | 1,126,281                            | 2.34%                  | 0.74              |
|                   | Total /Average | 125.10                  | 121.20                       | 81,590                           | 3,178,258                            | 2.50%                  | 0.80              |
| Mackey-4535223    | A              | 124.62                  | 120.50                       | 48,967                           | 1,602,615                            | 2.96%                  | 0.90              |
|                   | B              | 124.83                  | 120.58                       | 48,163                           | 1,528,803                            | 3.05%                  | 0.90              |
|                   | C              | 124.91                  | 120.62                       | 47,981                           | 1,510,087                            | 3.08%                  | 0.90              |
|                   | Total /Average | 124.78                  | 120.57                       | 145,111                          | 4,641,505                            | 3.03%                  | 0.90              |
| Mackey-4535224    | A              | 124.95                  | 121.17                       | 13,814                           | 680,085                              | 1.99%                  | 0.66              |
|                   | B              | 125.13                  | 121.23                       | 14,527                           | 693,704                              | 2.05%                  | 0.66              |
|                   | C              | 125.03                  | 121.01                       | 15,099                           | 698,592                              | 2.12%                  | 0.66              |
|                   | Total /Average | 125.04                  | 121.13                       | 43,440                           | 2,072,381                            | 2.05%                  | 0.66              |
| Mackey-4535225    | A              | 124.94                  | 120.97                       | (5,538)                          | 920,978                              | -0.61%                 | (0.19)            |
|                   | B              | 125.11                  | 121.04                       | 2,975                            | 1,058,313                            | 0.28%                  | 0.09              |
|                   | C              | 124.69                  | 120.82                       | (6,532)                          | 931,218                              | -0.71%                 | (0.23)            |
|                   | Total /Average | 124.92                  | 120.95                       | (9,096)                          | 2,910,510                            | -0.31%                 | (0.10)            |

Table 4-12 PY2023 Energy Savings and CVR Factors by Phase: McKinley Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| McKinley-4055921  | A              | 123.59                  | 120.20                       | 21,970                           | 5,840,395                            | 0.37%                  | 0.14              |
|                   | B              | 123.90                  | 120.79                       | 29,401                           | 6,218,141                            | 0.47%                  | 0.19              |
|                   | C              | 124.27                  | 121.67                       | 75,004                           | 6,742,884                            | 1.10%                  | 0.52              |
|                   | Total /Average | 123.94                  | 120.92                       | 126,375                          | 18,801,420                           | 0.67%                  | 0.27              |
| McKinley-4055922  | A              | 123.69                  | 120.22                       | 83,665                           | 3,174,300                            | 2.57%                  | 0.92              |
|                   | B              | 124.10                  | 120.81                       | 79,145                           | 2,885,256                            | 2.67%                  | 1.01              |
|                   | C              | 124.56                  | 121.74                       | 54,189                           | 2,337,698                            | 2.27%                  | 1.00              |
|                   | Total /Average | 124.07                  | 120.85                       | 216,999                          | 8,397,253                            | 2.52%                  | 0.97              |
| McKinley-4055923  | A              | 123.42                  | 119.03                       | 49,979                           | 1,595,839                            | 3.04%                  | 0.85              |
|                   | B              | 123.35                  | 119.04                       | 39,117                           | 1,221,684                            | 3.10%                  | 0.89              |
|                   | C              | 123.39                  | 119.05                       | 39,186                           | 1,179,056                            | 3.22%                  | 0.91              |
|                   | Total /Average | 123.39                  | 119.04                       | 128,281                          | 3,996,578                            | 3.11%                  | 0.88              |
| McKinley-4055924  | A              | 123.39                  | 119.00                       | 50,591                           | 1,973,544                            | 2.50%                  | 0.70              |
|                   | B              | 123.30                  | 118.99                       | 57,284                           | 1,931,702                            | 2.88%                  | 0.82              |
|                   | C              | 123.28                  | 118.94                       | 64,704                           | 2,071,880                            | 3.03%                  | 0.86              |
|                   | Total /Average | 123.32                  | 118.98                       | 172,579                          | 5,977,125                            | 2.81%                  | 0.80              |
| McKinley-4055925  | A              | 123.40                  | 119.00                       | 39,471                           | 1,383,290                            | 2.77%                  | 0.78              |
|                   | B              | 123.30                  | 118.99                       | 29,155                           | 1,113,450                            | 2.55%                  | 0.73              |
|                   | C              | 123.26                  | 118.93                       | 31,937                           | 1,299,906                            | 2.40%                  | 0.68              |
|                   | Total /Average | 123.32                  | 118.97                       | 100,563                          | 3,796,646                            | 2.58%                  | 0.73              |
| McKinley-4055926  | A              | 123.84                  | 120.22                       | 54,480                           | 5,221,502                            | 1.03%                  | 0.35              |
|                   | B              | 124.52                  | 120.81                       | 54,576                           | 5,135,180                            | 1.05%                  | 0.35              |
|                   | C              | 125.14                  | 121.66                       | 48,990                           | 4,935,500                            | 0.98%                  | 0.35              |
|                   | Total /Average | 124.49                  | 120.88                       | 158,045                          | 15,292,182                           | 1.02%                  | 0.35              |

Table 4-13 PY2023 Energy Savings and CVR Factors by Phase: Northland Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Northland-4933421 | A              | 123.81                  | 121.51                       | 72,359                           | 4,553,703                            | 1.56%                  | 0.84              |
|                   | B              | 124.16                  | 121.91                       | 63,169                           | 4,551,258                            | 1.37%                  | 0.76              |
|                   | C              | 123.39                  | 121.05                       | 49,857                           | 3,986,820                            | 1.24%                  | 0.65              |
|                   | Total /Average | 123.80                  | 121.51                       | 185,385                          | 13,091,782                           | 1.40%                  | 0.75              |
| Northland-4933422 | A              | 124.15                  | 121.52                       | 59,799                           | 3,337,304                            | 1.76%                  | 0.83              |
|                   | B              | 124.68                  | 122.13                       | 81,187                           | 3,079,791                            | 2.57%                  | 1.25              |
|                   | C              | 124.48                  | 121.89                       | 92,298                           | 3,001,707                            | 2.98%                  | 1.43              |
|                   | Total /Average | 124.43                  | 121.83                       | 233,284                          | 9,418,803                            | 2.42%                  | 1.16              |
| Northland-4933423 | A              | 124.13                  | 121.50                       | 82,220                           | 5,671,224                            | 1.43%                  | 0.67              |
|                   | B              | 124.65                  | 122.10                       | 72,579                           | 5,751,576                            | 1.25%                  | 0.61              |
|                   | C              | 124.43                  | 121.84                       | 85,434                           | 5,799,956                            | 1.45%                  | 0.70              |
|                   | Total /Average | 124.41                  | 121.81                       | 240,233                          | 17,222,755                           | 1.38%                  | 0.66              |
| Northland-4933424 | A              | 125.14                  | 121.39                       | 3,198                            | 157,028                              | 2.00%                  | 0.67              |
|                   | B              | 125.20                  | 121.22                       | 4,306                            | 155,182                              | 2.70%                  | 0.85              |
|                   | C              | 125.13                  | 121.26                       | 3,516                            | 167,964                              | 2.05%                  | 0.66              |
|                   | Total /Average | 125.16                  | 121.29                       | 11,021                           | 480,174                              | 2.24%                  | 0.73              |
| Northland-4933425 | A              | 125.15                  | 121.40                       | 4,525                            | 120,971                              | 3.61%                  | 1.20              |
|                   | B              | 125.21                  | 121.24                       | 3,992                            | 112,072                              | 3.44%                  | 1.09              |
|                   | C              | 125.11                  | 121.26                       | 5,585                            | 131,451                              | 4.08%                  | 1.32              |
|                   | Total /Average | 125.15                  | 121.30                       | 14,102                           | 364,494                              | 3.72%                  | 1.21              |
| Northland-4933426 | A              | 125.14                  | 121.39                       | 3,023                            | 86,294                               | 3.39%                  | 1.13              |
|                   | B              | 125.20                  | 121.23                       | 3,154                            | 70,333                               | 4.29%                  | 1.35              |
|                   | C              | 125.11                  | 121.24                       | 2,485                            | 59,743                               | 3.99%                  | 1.29              |
|                   | Total /Average | 125.15                  | 121.29                       | 8,663                            | 216,371                              | 3.85%                  | 1.25              |

Table 4-14 PY2023 Energy Savings and CVR Factors by Phase: Osolo Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Osolo-4058021     | A              | 125.44                  | 121.92                       | 74,494                           | 3,971,542                            | 1.84%                  | 0.66              |
|                   | B              | 125.43                  | 121.27                       | 135,370                          | 4,122,568                            | 3.18%                  | 0.96              |
|                   | C              | 125.47                  | 121.20                       | 94,177                           | 3,646,788                            | 2.52%                  | 0.74              |
|                   | Total /Average | 125.45                  | 121.47                       | 304,040                          | 11,740,899                           | 2.52%                  | 0.80              |
| Osolo-4058022     | A              | 125.46                  | 121.96                       | 62,904                           | 3,252,593                            | 1.90%                  | 0.68              |
|                   | B              | 125.40                  | 121.26                       | 109,313                          | 3,155,652                            | 3.35%                  | 1.01              |
|                   | C              | 125.45                  | 121.20                       | 117,193                          | 3,698,604                            | 3.07%                  | 0.91              |
|                   | Total /Average | 125.44                  | 121.46                       | 289,410                          | 10,106,848                           | 2.78%                  | 0.88              |
| Osolo-4058023     | A              | 125.31                  | 121.12                       | 152,923                          | 5,726,271                            | 2.60%                  | 0.78              |
|                   | B              | 125.47                  | 121.25                       | 191,241                          | 5,128,643                            | 3.59%                  | 1.07              |
|                   | C              | 125.42                  | 121.89                       | 98,866                           | 5,065,345                            | 1.91%                  | 0.68              |
|                   | Total /Average | 125.40                  | 121.41                       | 443,030                          | 15,920,259                           | 2.71%                  | 0.85              |
| Osolo-4058024     | A              | 125.47                  | 121.96                       | 124,743                          | 6,448,593                            | 1.90%                  | 0.68              |
|                   | B              | 125.42                  | 121.27                       | 179,711                          | 5,577,178                            | 3.12%                  | 0.94              |
|                   | C              | 125.49                  | 121.23                       | 134,314                          | 4,697,834                            | 2.78%                  | 0.82              |
|                   | Total /Average | 125.46                  | 121.53                       | 438,768                          | 16,723,605                           | 2.56%                  | 0.82              |
| Osolo-4058025     | A              | 125.27                  | 121.09                       | 78,860                           | 1,789,874                            | 4.22%                  | 1.26              |
|                   | B              | 125.41                  | 121.19                       | 78,901                           | 2,124,480                            | 3.58%                  | 1.07              |
|                   | C              | 125.34                  | 121.81                       | 75,972                           | 2,247,995                            | 3.27%                  | 1.16              |
|                   | Total /Average | 125.34                  | 121.39                       | 233,733                          | 6,162,349                            | 3.65%                  | 1.16              |
| Osolo-4058026     | A              | 125.27                  | 121.09                       | 177,334                          | 4,483,788                            | 3.80%                  | 1.14              |
|                   | B              | 125.45                  | 121.23                       | 114,432                          | 4,169,849                            | 2.67%                  | 0.79              |
|                   | C              | 125.39                  | 121.86                       | 75,240                           | 4,648,010                            | 1.59%                  | 0.57              |
|                   | Total /Average | 125.37                  | 121.40                       | 367,005                          | 13,301,647                           | 2.69%                  | 0.85              |

Table 4-15 PY2023 Energy Savings and CVR Factors by Phase: Pettit Circuits

| <i>Circuit ID</i>    | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|----------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| PettitAvenue-4917221 | A              | 124.27                  | 121.06                       | 55,491                           | 2,716,818                            | 2.00%                  | 0.78              |
|                      | B              | 124.27                  | 121.31                       | 43,985                           | 2,563,751                            | 1.69%                  | 0.71              |
|                      | C              | 124.51                  | 122.70                       | 20,663                           | 2,184,693                            | 0.94%                  | 0.64              |
|                      | Total /Average | 124.34                  | 121.63                       | 120,139                          | 7,465,262                            | 1.58%                  | 0.73              |
| PettitAvenue-4917222 | A              | 124.20                  | 120.99                       | 32,838                           | 2,625,207                            | 1.24%                  | 0.48              |
|                      | B              | 124.24                  | 121.28                       | 25,891                           | 2,959,615                            | 0.87%                  | 0.36              |
|                      | C              | 124.41                  | 122.60                       | 19,025                           | 3,250,544                            | 0.58%                  | 0.40              |
|                      | Total /Average | 124.29                  | 121.68                       | 77,754                           | 8,835,366                            | 0.87%                  | 0.41              |
| PettitAvenue-4917223 | A              | 124.21                  | 121.00                       | 10,650                           | 1,052,875                            | 1.00%                  | 0.39              |
|                      | B              | 124.24                  | 121.28                       | 13,283                           | 1,321,596                            | 1.00%                  | 0.42              |
|                      | C              | 124.44                  | 122.63                       | 5,446                            | 1,475,964                            | 0.37%                  | 0.25              |
|                      | Total /Average | 124.31                  | 121.72                       | 29,380                           | 3,850,436                            | 0.76%                  | 0.36              |

Table 4-16 PY2023 Energy Savings and CVR Factors by Phase: SouthBend Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| SouthBend-4050321 | A              | 124.36                  | 119.58                       | 172,440                          | 8,896,885                            | 1.90%                  | 0.50              |
|                   | B              | 124.24                  | 119.44                       | 245,029                          | 10,272,959                           | 2.33%                  | 0.60              |
|                   | C              | 124.67                  | 119.52                       | 277,933                          | 8,233,939                            | 3.27%                  | 0.79              |
|                   | Total /Average | 124.41                  | 119.51                       | 695,402                          | 27,403,783                           | 2.47%                  | 0.63              |
| SouthBend-4050322 | A              | 124.45                  | 120.31                       | 164,683                          | 6,386,212                            | 2.51%                  | 0.75              |
|                   | B              | 124.97                  | 120.62                       | 219,340                          | 6,866,202                            | 3.10%                  | 0.89              |
|                   | C              | 124.98                  | 120.12                       | 153,141                          | 4,160,931                            | 3.55%                  | 0.91              |
|                   | Total /Average | 124.78                  | 120.39                       | 537,164                          | 17,413,345                           | 2.99%                  | 0.85              |
| SouthBend-4050323 | A              | 125.14                  | 120.36                       | 132,969                          | 4,501,651                            | 2.87%                  | 0.75              |
|                   | B              | 124.87                  | 120.04                       | 141,029                          | 4,736,048                            | 2.89%                  | 0.75              |
|                   | C              | 125.06                  | 119.74                       | 145,867                          | 3,865,889                            | 3.64%                  | 0.85              |
|                   | Total /Average | 125.02                  | 120.06                       | 419,865                          | 13,103,588                           | 3.10%                  | 0.78              |

Table 4-17 PY2023 Energy Savings and CVR Factors by Phase: Southside Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| SouthSide-4094621 | A              | 124.92                  | 119.49                       | 7,677                            | 342,962                              | 2.19%                  | 0.50              |
|                   | B              | 125.67                  | 120.32                       | 23,454                           | 727,903                              | 3.12%                  | 0.73              |
|                   | C              | 125.29                  | 119.85                       | 18,773                           | 419,591                              | 4.28%                  | 0.99              |
|                   | Total /Average | 125.39                  | 120.00                       | 49,904                           | 1,490,456                            | 3.24%                  | 0.75              |
| SouthSide-4094622 | A              | 124.94                  | 119.51                       | 248,792                          | 7,112,153                            | 3.38%                  | 0.78              |
|                   | B              | 125.71                  | 120.35                       | 238,848                          | 6,484,682                            | 3.55%                  | 0.83              |
|                   | C              | 125.33                  | 119.87                       | 265,486                          | 7,499,342                            | 3.42%                  | 0.79              |
|                   | Total /Average | 125.32                  | 119.90                       | 753,126                          | 21,096,178                           | 3.45%                  | 0.80              |
| SouthSide-4094623 | A              | 124.92                  | 119.49                       | 91,798                           | 3,408,898                            | 2.62%                  | 0.60              |
|                   | B              | 125.73                  | 120.35                       | 136,469                          | 3,861,134                            | 3.41%                  | 0.80              |
|                   | C              | 125.38                  | 119.92                       | 103,981                          | 3,488,804                            | 2.89%                  | 0.67              |
|                   | Total /Average | 125.36                  | 119.94                       | 332,249                          | 10,758,836                           | 3.00%                  | 0.69              |
| SouthSide-4094624 | A              | 124.89                  | 119.47                       | 12,935                           | 825,474                              | 1.54%                  | 0.36              |
|                   | B              | 125.67                  | 120.32                       | 39,264                           | 1,190,143                            | 3.19%                  | 0.75              |
|                   | C              | 125.32                  | 119.88                       | 48,204                           | 1,497,742                            | 3.12%                  | 0.72              |
|                   | Total /Average | 125.34                  | 119.93                       | 100,403                          | 3,513,358                            | 2.78%                  | 0.64              |
| Southside-4099921 | A              | 125.13                  | 119.67                       | 50,951                           | 2,047,450                            | 2.43%                  | 0.56              |
|                   | B              | 125.04                  | 119.55                       | 66,266                           | 2,995,364                            | 2.16%                  | 0.49              |
|                   | C              | 125.28                  | 119.86                       | 48,954                           | 2,280,859                            | 2.10%                  | 0.49              |
|                   | Total /Average | 125.14                  | 119.68                       | 166,171                          | 7,323,673                            | 2.22%                  | 0.51              |
| Southside-4099922 | A              | 125.16                  | 119.69                       | 64,345                           | 3,220,477                            | 1.96%                  | 0.45              |
|                   | B              | 125.06                  | 119.57                       | 67,275                           | 3,348,373                            | 1.97%                  | 0.45              |
|                   | C              | 125.31                  | 119.89                       | 63,748                           | 3,221,869                            | 1.94%                  | 0.45              |
|                   | Total /Average | 125.17                  | 119.72                       | 195,369                          | 9,790,719                            | 1.96%                  | 0.45              |
| Southside-4099923 | A              | 125.15                  | 119.69                       | 43,401                           | 1,501,997                            | 2.81%                  | 0.64              |
|                   | B              | 125.06                  | 119.56                       | 56,464                           | 1,970,445                            | 2.79%                  | 0.63              |
|                   | C              | 125.30                  | 119.88                       | 40,220                           | 1,851,475                            | 2.13%                  | 0.49              |
|                   | Total /Average | 125.17                  | 119.71                       | 140,085                          | 5,323,917                            | 2.56%                  | 0.59              |

Table 4-18 PY2023 Energy Savings and CVR Factors by Phase: Spyrun Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Spyrun-4923321    | A              | 125.09                  | 120.71                       | 37,243                           | 3,242,266                            | 1.14%                  | 0.32              |
|                   | B              | 125.04                  | 120.46                       | 83,742                           | 4,313,902                            | 1.90%                  | 0.52              |
|                   | C              | 125.61                  | 120.54                       | 132,127                          | 3,192,115                            | 3.97%                  | 0.99              |
|                   | Total /Average | 125.22                  | 120.56                       | 253,112                          | 10,748,283                           | 2.30%                  | 0.62              |
| Spyrun-4923322    | A              | 125.08                  | 120.69                       | (203,299)                        | 10,647,010                           | -1.95%                 | (0.56)            |
|                   | B              | 125.03                  | 120.45                       | 120,083                          | 11,072,436                           | 1.07%                  | 0.29              |
|                   | C              | 125.61                  | 120.55                       | 75,179                           | 10,967,216                           | 0.68%                  | 0.17              |
|                   | Total /Average | 125.24                  | 120.56                       | (8,036)                          | 32,686,662                           | -0.02%                 | (0.01)            |
| Spyrun-4923329    | A              | 125.05                  | 120.67                       | 68,835                           | 3,741,513                            | 1.81%                  | 0.52              |
|                   | B              | 125.02                  | 120.44                       | 118,423                          | 3,173,128                            | 3.60%                  | 0.98              |
|                   | C              | 125.58                  | 120.52                       | 126,198                          | 3,518,408                            | 3.46%                  | 0.86              |
|                   | Total /Average | 125.22                  | 120.55                       | 313,456                          | 10,433,050                           | 2.92%                  | 0.78              |

Table 4-19 PY2023 Energy Savings and CVR Factors by Phase: StateStreet Circuits

| <i>Circuit ID</i>   | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|---------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| StateStreet-4928721 | A              | 123.79                  | 120.35                       | 111,367                          | 8,407,224                            | 1.31%                  | 0.47              |
|                     | B              | 123.63                  | 119.81                       | 227,166                          | 8,123,842                            | 2.72%                  | 0.88              |
|                     | C              | 123.79                  | 120.35                       | 186,898                          | 8,239,002                            | 2.22%                  | 0.80              |
|                     | Total /Average | 123.74                  | 120.17                       | 525,431                          | 24,770,068                           | 2.08%                  | 0.72              |
| StateStreet-4928722 | A              | 123.93                  | 120.65                       | 128,419                          | 5,046,753                            | 2.48%                  | 0.94              |
|                     | B              | 123.93                  | 120.65                       | 164,577                          | 4,902,101                            | 3.25%                  | 1.23              |
|                     | C              | 123.93                  | 120.65                       | 150,653                          | 5,123,853                            | 2.86%                  | 1.08              |
|                     | Total /Average | 123.93                  | 120.65                       | 443,648                          | 15,072,707                           | 2.86%                  | 1.08              |
| StateStreet-4928723 | A              | 123.78                  | 120.34                       | 41,216                           | 2,651,532                            | 1.53%                  | 0.55              |
|                     | B              | 123.62                  | 119.80                       | 47,687                           | 2,753,259                            | 1.70%                  | 0.55              |
|                     | C              | 123.78                  | 120.34                       | 47,883                           | 2,712,545                            | 1.73%                  | 0.62              |
|                     | Total /Average | 123.73                  | 120.16                       | 136,786                          | 8,117,337                            | 1.66%                  | 0.57              |

Table 4-20 PY2023 Energy Savings and CVR Factors by Phase: Summit Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Summit-4937824    | A              | 124.27                  | 121.82                       | 5,514                            | 275,841                              | 1.96%                  | 0.99              |
|                   | B              | 124.37                  | 121.98                       | 5,953                            | 285,676                              | 2.04%                  | 1.06              |
|                   | C              | 124.32                  | 121.99                       | 5,838                            | 303,633                              | 1.89%                  | 1.01              |
|                   | Total /Average | 124.32                  | 121.93                       | 17,305                           | 865,150                              | 1.96%                  | 1.02              |
| Summit-4937825    | A              | 125.27                  | 122.25                       | 5,491                            | 261,257                              | 2.06%                  | 0.85              |
|                   | B              | 125.13                  | 121.99                       | 5,154                            | 260,814                              | 1.94%                  | 0.77              |
|                   | C              | 125.30                  | 122.18                       | 4,809                            | 258,953                              | 1.82%                  | 0.73              |
|                   | Total /Average | 125.23                  | 122.14                       | 15,454                           | 781,024                              | 1.94%                  | 0.79              |

Table 4-21 PY2023 Energy Savings and CVR Factors by Phase: Trier Circuits

| <i>Circuit ID</i> | <i>Phase</i>   | <i>Baseline Voltage</i> | <i>Engaged State Voltage</i> | <i>Engaged State kWh Savings</i> | <i>Engaged State kWh Consumption</i> | <i>Percent Savings</i> | <i>CVR Factor</i> |
|-------------------|----------------|-------------------------|------------------------------|----------------------------------|--------------------------------------|------------------------|-------------------|
| Trier-4936421     | A              | 125.30                  | 119.79                       | 21,105                           | 583,057                              | 3.49%                  | 0.80              |
|                   | B              | 125.32                  | 120.09                       | 21,975                           | 596,681                              | 3.55%                  | 0.85              |
|                   | C              | 125.40                  | 119.86                       | 20,609                           | 571,678                              | 3.48%                  | 0.79              |
|                   | Total /Average | 125.34                  | 119.92                       | 63,689                           | 1,751,415                            | 3.51%                  | 0.81              |
| Trier-4936422     | A              | 125.22                  | 120.22                       | 11,402                           | 283,605                              | 3.86%                  | 0.97              |
|                   | B              | 125.27                  | 120.39                       | 10,301                           | 249,412                              | 3.97%                  | 1.02              |
|                   | C              | 125.29                  | 120.30                       | 14,090                           | 342,244                              | 3.95%                  | 0.99              |
|                   | Total /Average | 125.26                  | 120.30                       | 35,793                           | 875,261                              | 3.93%                  | 0.99              |
| Trier-4936423     | A              | 125.08                  | 119.88                       | 4,490                            | 88,776                               | 4.81%                  | 1.16              |
|                   | B              | 125.11                  | 120.06                       | 5,193                            | 103,144                              | 4.79%                  | 1.19              |
|                   | C              | 125.27                  | 120.16                       | 5,306                            | 94,754                               | 5.30%                  | 1.30              |
|                   | Total /Average | 125.15                  | 120.04                       | 14,989                           | 286,675                              | 4.97%                  | 1.22              |



Table 4-22 PY2023 Energy Savings and CVR Factors by Phase: Wallen Circuits

| Circuit ID     | Phase          | Baseline Voltage | Engaged State Voltage | Engaged State kWh Savings | Engaged State kWh Consumption | Percent Savings | CVR Factor |
|----------------|----------------|------------------|-----------------------|---------------------------|-------------------------------|-----------------|------------|
| Wallen-4923421 | A              | 125.45           | 120.79                | 16,236                    | 507,107                       | 3.10%           | 0.84       |
|                | B              | 125.48           | 120.82                | 18,580                    | 419,142                       | 4.24%           | 1.14       |
|                | C              | 125.56           | 120.85                | 17,856                    | 426,170                       | 4.02%           | 1.07       |
|                | Total /Average | 125.49           | 120.82                | 52,672                    | 1,352,420                     | 3.75%           | 1.01       |
| Wallen-4923422 | A              | 124.92           | 120.47                | 18,182                    | 656,568                       | 2.69%           | 0.76       |
|                | B              | 125.02           | 120.52                | 18,605                    | 734,722                       | 2.47%           | 0.69       |
|                | C              | 124.84           | 120.44                | 10,164                    | 609,652                       | 1.64%           | 0.47       |
|                | Total /Average | 124.93           | 120.48                | 46,950                    | 2,000,942                     | 2.29%           | 0.64       |
| Wallen-4923423 | A              | 125.31           | 120.69                | 7,804                     | 225,829                       | 3.34%           | 0.91       |
|                | B              | 125.38           | 120.74                | 3,797                     | 131,482                       | 2.81%           | 0.76       |
|                | C              | 125.31           | 120.69                | 8,545                     | 247,265                       | 3.34%           | 0.91       |
|                | Total /Average | 125.33           | 120.70                | 20,146                    | 604,576                       | 3.22%           | 0.87       |
| Wallen-4923424 | A              | 125.40           | 121.25                | 2,426                     | 65,518                        | 3.57%           | 1.08       |
|                | B              | 124.97           | 120.87                | 5,353                     | 131,500                       | 3.91%           | 1.19       |
|                | C              | 125.34           | 120.96                | 3,925                     | 109,174                       | 3.47%           | 0.99       |
|                | Total /Average | 125.19           | 120.99                | 11,703                    | 306,192                       | 3.68%           | 1.10       |
| Wallen-4923425 | A              | 124.01           | 120.48                | 6,725                     | 327,378                       | 2.01%           | 0.71       |
|                | B              | 124.72           | 120.48                | 11,464                    | 348,078                       | 3.19%           | 0.94       |
|                | C              | 124.61           | 120.56                | 11,384                    | 354,990                       | 3.11%           | 0.96       |
|                | Total /Average | 124.45           | 120.51                | 29,573                    | 1,030,446                     | 2.79%           | 0.88       |
| Wallen-4923426 | A              | 124.96           | 120.39                | 6,848                     | 381,536                       | 1.76%           | 0.48       |
|                | B              | 125.29           | 120.67                | 9,674                     | 414,492                       | 2.28%           | 0.62       |
|                | C              | 125.44           | 120.82                | 8,975                     | 336,629                       | 2.60%           | 0.71       |
|                | Total /Average | 125.22           | 120.62                | 25,497                    | 1,132,657                     | 2.20%           | 0.60       |

The percentage savings rates presented in Table 4-1 through Table 4-22 were applied to electric energy usage occurring during eligible periods outlined in Table 3-6. Table 4-27 shows the circuit-level and total eligible and ineligible period energy usage during PY2023.

Table 4-23 PY2023 Energy Usage during Eligible and Ineligible Operating Periods

| Circuit ID        | Total Ineligible Period | CVR Engaged | Test Schedule | Feeder Outage | Repair / Maintenance | Switching | Total Eligible Period |
|-------------------|-------------------------|-------------|---------------|---------------|----------------------|-----------|-----------------------|
| Daleville-4927921 | 2,286,217               | 19,802,308  | 4,078,109     | -             | -                    | -         | 23,880,417            |
| Daleville-4927922 | 604,146                 | 5,912,314   | 1,219,935     | -             | -                    | -         | 7,132,250             |
| Daleville-4927923 | 1,609,221               | 14,364,262  | 3,020,358     | -             | -                    | -         | 17,384,620            |
| EastSide-4093121  | 637,015                 | 2,244,163   | 1,351,361     | -             | 4,166,298            | -         | 7,761,822             |

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| <i>Circuit ID</i>    | <i>Total Ineligible Period</i> | <i>CVR Engaged</i> | <i>Test Schedule</i> | <i>Feeder Outage</i> | <i>Repair / Maintenance</i> | <i>Switching</i> | <i>Total Eligible Period</i> |
|----------------------|--------------------------------|--------------------|----------------------|----------------------|-----------------------------|------------------|------------------------------|
| EastSide-4093122     | 380,331                        | 5,366,542          | 1,117,382            | -                    | 355,147                     | -                | 6,839,071                    |
| EastSide-4093123     | 2,205,844                      | 5,874,934          | 4,851,383            | -                    | 18,657,754                  | -                | 29,384,071                   |
| EastSide-4093124     | 391,613                        | 15,244,748         | 3,150,417            | -                    | 733,421                     | -                | 19,128,586                   |
| EastSide-4093125     | 395,542                        | 16,138,796         | 3,226,578            | -                    | 407,903                     | -                | 19,773,278                   |
| EastSide-4093126     | 324,010                        | 12,236,299         | 2,372,782            | -                    | 256,038                     | -                | 14,865,118                   |
| Elcona-4938121       | 2,024,229                      | 8,359,159          | 3,835,108            | -                    | -                           | 10,146,505       | 22,340,772                   |
| Elcona-4938122       | 1,045,632                      | 5,358,549          | 2,408,205            | -                    | -                           | 7,674,124        | 15,440,879                   |
| Elcona-4938123       | 2,584,711                      | 17,165,680         | 6,190,869            | -                    | -                           | 10,547,011       | 33,903,560                   |
| Farmland-4927321     | 537,275                        | 7,693,216          | 1,484,935            | -                    | -                           | -                | 9,178,151                    |
| Farmland-4927322     | 124,423                        | 1,921,201          | 379,235              | -                    | -                           | -                | 2,300,436                    |
| Farmland-4927323     | 656,757                        | 9,505,434          | 1,779,398            | -                    | -                           | -                | 11,284,832                   |
| Grabill-4935221      | 3,944,150                      | 12,148,633         | 3,220,232            | -                    | 1,187,480                   | -                | 16,556,345                   |
| Grabill-4935222      | 7,679,864                      | 21,850,832         | 6,026,632            | -                    | 2,193,441                   | -                | 30,070,905                   |
| Grabill-4935223      | 2,311,459                      | 7,163,846          | 1,952,431            | -                    | 632,607                     | -                | 9,748,885                    |
| Hacienda-4933521     | 1,045,753                      | 277,449            | 285,449              | -                    | -                           | 174,461          | 737,359                      |
| Hacienda-4933523     | 952,886                        | 252,076            | 219,357              | -                    | -                           | 18,036           | 489,469                      |
| Hacienda-4933524     | 964,339                        | 239,009            | 257,409              | -                    | -                           | 149,667          | 646,085                      |
| Hacienda-4933525     | 15,345,010                     | 681,486            | 2,767,486            | -                    | -                           | 1,028,825        | 4,477,796                    |
| Hacienda-4933526     | 15,091,728                     | 592,667            | 3,532,378            | -                    | -                           | 2,698,850        | 6,823,895                    |
| Hacienda-4933527     | 18,276,301                     | 769,136            | 4,257,871            | -                    | -                           | 3,545,929        | 8,572,936                    |
| Harper-4928821       | 1,197,240                      | 24,889,388         | 4,823,122            | -                    | -                           | -                | 29,712,510                   |
| Harper-4928822       | 1,311,523                      | 25,806,086         | 5,071,459            | -                    | -                           | -                | 30,877,545                   |
| IllinoisRoad-4510721 | 1,328,863                      | 4,632,386          | 875,833              | -                    | -                           | -                | 5,508,218                    |
| IllinoisRoad-4510722 | 1,661,932                      | 5,708,700          | 1,069,218            | -                    | -                           | -                | 6,777,918                    |
| IllinoisRoad-4510723 | 1,154,191                      | 4,042,052          | 753,896              | -                    | -                           | -                | 4,795,948                    |
| Lincoln-4051821      | 12,742,966                     | 21,481,419         | 5,000,005            | -                    | -                           | -                | 26,481,424                   |
| Lincoln-4051822      | 10,307,717                     | 17,136,682         | 3,986,461            | -                    | -                           | -                | 21,123,143                   |
| Lincoln-4051824      | 7,702,953                      | 12,561,947         | 3,017,501            | -                    | -                           | -                | 15,579,448                   |
| LusherAvenue-4094021 | 3,156,209                      | 4,150,606          | 1,182,818            | -                    | -                           | 973,534          | 6,306,958                    |
| LusherAvenue-4094022 | 1,195,374                      | 2,192,249          | 677,349              | -                    | -                           | 234,269          | 3,103,868                    |
| LusherAvenue-4094023 | 474,204                        | 1,253,697          | 330,498              | -                    | -                           | -                | 1,584,195                    |
| LusherAvenue-4094024 | 678,227                        | 1,618,826          | 428,149              | -                    | -                           | -                | 2,046,975                    |
| LusherAvenue-4094025 | 995,334                        | 2,446,352          | 640,588              | -                    | -                           | -                | 3,086,941                    |
| LusherAvenue-4094026 | 1,193,973                      | 2,270,148          | 668,002              | -                    | -                           | 240,694          | 3,178,845                    |
| Mackey-4535221       | 15,236,973                     | 7,071,112          | 3,965,786            | -                    | -                           | -                | 11,036,898                   |

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| <i>Circuit ID</i>    | <i>Total Ineligible Period</i> | <i>CVR Engaged</i> | <i>Test Schedule</i> | <i>Feeder Outage</i> | <i>Repair / Maintenance</i> | <i>Switching</i> | <i>Total Eligible Period</i> |
|----------------------|--------------------------------|--------------------|----------------------|----------------------|-----------------------------|------------------|------------------------------|
| Mackey-4535222       | 9,964,986                      | 3,178,258          | 3,045,041            | -                    | -                           | 4,746,082        | 10,969,381                   |
| Mackey-4535223       | 14,555,795                     | 4,641,505          | 4,277,053            | -                    | -                           | 6,871,530        | 15,790,088                   |
| Mackey-4535224       | 6,920,581                      | 2,072,381          | 2,025,581            | -                    | -                           | 3,034,159        | 7,132,120                    |
| Mackey-4535225       | 6,143,403                      | 2,910,510          | 1,523,370            | -                    | -                           | -                | 4,433,880                    |
| Mckinley-4055921     | 3,398,948                      | 18,801,420         | 5,144,434            | -                    | 8,048,499                   | -                | 31,994,353                   |
| Mckinley-4055922     | 1,845,760                      | 8,397,253          | 2,465,419            | -                    | 4,568,518                   | -                | 15,431,190                   |
| Mckinley-4055923     | 1,115,048                      | 3,996,578          | 1,939,750            | -                    | 3,017,930                   | 2,748,978        | 11,703,236                   |
| Mckinley-4055924     | 3,539,374                      | 5,977,125          | 4,467,879            | -                    | 4,973,099                   | 11,425,758       | 26,843,861                   |
| Mckinley-4055925     | 2,263,911                      | 3,796,646          | 2,771,296            | -                    | 3,699,412                   | 5,598,146        | 15,865,501                   |
| Mckinley-4055926     | 3,275,391                      | 15,292,182         | 4,038,208            | -                    | 3,086,420                   | -                | 22,416,810                   |
| Northland-4933421    | 907,192                        | 13,091,782         | 2,795,875            | -                    | -                           | 1,976,217        | 17,863,873                   |
| Northland-4933422    | 590,355                        | 9,418,803          | 2,004,758            | -                    | -                           | 1,106,280        | 12,529,841                   |
| Northland-4933423    | 1,182,488                      | 17,222,755         | 3,663,749            | -                    | -                           | 2,575,659        | 23,462,163                   |
| Northland-4933424    | 4,507,707                      | 480,174            | 5,767,855            | 4,359,990            | -                           | 22,518,648       | 33,126,668                   |
| Northland-4933425    | 1,386,809                      | 364,494            | 483,510              | 758,523              | -                           | 961,165          | 2,567,692                    |
| Northland-4933426    | 1,803,633                      | 216,371            | 2,217,894            | 1,309,947            | -                           | 8,347,880        | 12,092,092                   |
| Osolo-4058021        | 651,142                        | 11,740,899         | 3,667,111            | -                    | -                           | 7,500,961        | 22,908,971                   |
| Osolo-4058022        | 621,271                        | 10,106,848         | 3,277,210            | -                    | -                           | 7,320,596        | 20,704,655                   |
| Osolo-4058023        | 7,549,795                      | 15,920,259         | 4,411,578            | -                    | -                           | -                | 20,331,837                   |
| Osolo-4058024        | 814,002                        | 16,723,605         | 4,801,931            | -                    | -                           | 8,376,072        | 29,901,608                   |
| Osolo-4058025        | 3,194,319                      | 6,162,349          | 1,724,630            | -                    | -                           | -                | 7,886,979                    |
| Osolo-4058026        | 6,470,812                      | 13,301,647         | 3,592,603            | -                    | -                           | -                | 16,894,251                   |
| PettitAvenue-4917221 | 2,232,559                      | 7,465,262          | 4,046,430            | -                    | -                           | 13,061,746       | 24,573,438                   |
| PettitAvenue-4917222 | 1,961,595                      | 8,835,366          | 3,769,622            | -                    | -                           | 10,630,045       | 23,235,034                   |
| PettitAvenue-4917223 | 810,917                        | 3,850,436          | 1,577,691            | -                    | -                           | 4,224,388        | 9,652,515                    |
| SouthBend-4050321    | 812,660                        | 27,403,783         | 5,325,578            | -                    | -                           | -                | 32,729,360                   |
| SouthBend-4050322    | 575,684                        | 17,413,345         | 3,644,664            | -                    | -                           | 1,362,263        | 22,420,272                   |
| SouthBend-4050323    | 395,680                        | 13,103,588         | 2,670,171            | -                    | -                           | 513,326          | 16,287,084                   |
| SouthSide-4094621    | 264,924                        | 1,490,456          | 364,509              | -                    | -                           | 433,275          | 2,288,241                    |
| SouthSide-4094622    | 1,081,037                      | 21,096,178         | 4,223,145            | -                    | -                           | 492,895          | 25,812,218                   |
| SouthSide-4094623    | 834,941                        | 10,758,836         | 2,133,614            | -                    | -                           | 513,122          | 13,405,573                   |
| SouthSide-4094624    | 191,408                        | 3,513,358          | 697,113              | -                    | -                           | 97,502           | 4,307,974                    |
| Southside-4099921    | 1,560,314                      | 7,323,673          | 3,211,060            | -                    | -                           | 8,639,078        | 19,173,811                   |
| Southside-4099922    | 2,189,346                      | 9,790,719          | 4,609,947            | -                    | -                           | 12,551,906       | 26,952,573                   |
| Southside-4099923    | 1,106,935                      | 5,323,917          | 2,371,319            | -                    | -                           | 6,482,952        | 14,178,188                   |
| Spyrun-4923321       | 548,252                        | 10,748,283         | 2,151,476            | -                    | -                           | -                | 12,899,759                   |
| Spyrun-4923322       | 1,757,109                      | 32,686,662         | 6,049,757            | -                    | -                           | -                | 38,736,419                   |

| <i>Circuit ID</i>   | <i>Total Ineligible Period</i> | <i>CVR Engaged</i> | <i>Test Schedule</i> | <i>Feeder Outage</i> | <i>Repair / Maintenance</i> | <i>Switching</i>   | <i>Total Eligible Period</i> |
|---------------------|--------------------------------|--------------------|----------------------|----------------------|-----------------------------|--------------------|------------------------------|
| Spyrun-4923329      | 457,619                        | 10,433,050         | 2,050,240            | -                    | -                           | -                  | 12,483,289                   |
| StateStreet-4928721 | 1,336,051                      | 24,770,068         | 3,400,152            | -                    | 825,187                     | 2,969,308          | 31,964,716                   |
| StateStreet-4928722 | 913,171                        | 15,072,707         | 2,441,618            | -                    | 504,059                     | 3,075,502          | 21,093,886                   |
| StateStreet-4928723 | 464,592                        | 8,117,337          | 1,153,928            | -                    | 288,298                     | 1,014,855          | 10,574,417                   |
| Summit-4937824      | 2,356,299                      | 865,150            | 592,878              | -                    | -                           | -                  | 1,458,027                    |
| Summit-4937825      | 2,096,070                      | 781,024            | 508,134              | -                    | -                           | -                  | 1,289,158                    |
| Trier-4936421       | 403,200                        | 1,751,415          | 431,486              | -                    | -                           | -                  | 2,182,901                    |
| Trier-4936422       | 536,229                        | 875,261            | 329,100              | -                    | -                           | -                  | 1,204,361                    |
| Trier-4936423       | 80,654                         | 286,675            | 81,395               | -                    | -                           | -                  | 368,070                      |
| Wallen-4923421      | 154,007                        | 1,352,420          | 298,159              | -                    | -                           | -                  | 1,650,579                    |
| Wallen-4923422      | 263,715                        | 2,000,942          | 443,024              | -                    | -                           | -                  | 2,443,966                    |
| Wallen-4923423      | 96,413                         | 604,576            | 131,701              | -                    | -                           | -                  | 736,277                      |
| Wallen-4923424      | 147,667                        | 306,192            | 88,339               | -                    | -                           | -                  | 394,531                      |
| Wallen-4923425      | 790,377                        | 1,030,446          | 343,679              | -                    | -                           | -                  | 1,374,125                    |
| Wallen-4923426      | 686,911                        | 1,132,657          | 344,369              | -                    | -                           | -                  | 1,477,026                    |
| <b>Total</b>        | <b>251,565,189</b>             | <b>762,422,014</b> | <b>225,067,020</b>   | <b>6,428,460</b>     | <b>57,601,509</b>           | <b>198,602,203</b> | <b>1,250,121,207</b>         |

Below, Table 4-24 shows circuit-level and total ex post kWh savings.

*Table 4-24 PY2023 CVR Ex Post kWh Savings*

| <i>Circuit ID</i>        | <i>Total Eligible Period kWh Consumption</i> | <i>CVR Savings Rate</i> | <i>Ex Post kWh Savings</i> |
|--------------------------|--|-------------------------|----------------------------|
| Daleville-4927921        | 23,880,417                                   | 2.8%                    | 667,988                    |
| Daleville-4927922        | 7,132,250                                    | 1.7%                    | 117,966                    |
| Daleville-4927923        | 17,384,620                                   | 2.6%                    | 458,187                    |
| <b>Total - Daleville</b> | <b>48,397,287</b>                            | <b>2.6%</b>             | <b>1,244,141</b>           |
| EastSide-4093121         | 7,761,822                                    | 2.2%                    | 169,395                    |
| EastSide-4093122         | 6,839,071                                    | 2.1%                    | 141,016                    |
| EastSide-4093123         | 29,384,071                                   | 2.5%                    | 734,613                    |
| EastSide-4093124         | 19,128,586                                   | 5.2%                    | 991,497                    |
| EastSide-4093125         | 19,773,278                                   | 4.4%                    | 879,015                    |
| EastSide-4093126         | 14,865,118                                   | 2.5%                    | 367,916                    |
| <b>Total - EastSide</b>  | <b>97,751,946</b>                            | <b>3.4%</b>             | <b>3,283,452</b>           |
| Elcona-4938121           | 22,340,772                                   | 0.4%                    | 82,474                     |
| Elcona-4938122           | 15,440,879                                   | 0.8%                    | 127,121                    |
| Elcona-4938123           | 33,903,560                                   | 1.3%                    | 446,961                    |
| <b>Total - Elcona</b>    | <b>71,685,210</b>                            | <b>0.9%</b>             | <b>656,556</b>             |

| <i>Circuit ID</i>           | <i>Total Eligible Period kWh Consumption</i> | <i>CVR Savings Rate</i> | <i>Ex Post kWh Savings</i> |
|-----------------------------|--|-------------------------|----------------------------|
| Farmland-4927321            | 9,178,151                                    | 2.1%                    | 194,678                    |
| Farmland-4927322            | 2,300,436                                    | 2.5%                    | 57,815                     |
| Farmland-4927323            | 11,284,832                                   | 2.0%                    | 229,291                    |
| <b>Total - Farmland</b>     | <b>22,763,419</b>                            | <b>2.1%</b>             | <b>481,784</b>             |
| Grabill-4935221             | 16,556,345                                   | 2.0%                    | 331,382                    |
| Grabill-4935222             | 30,070,905                                   | 2.6%                    | 773,380                    |
| Grabill-4935223             | 9,748,885                                    | 2.4%                    | 233,278                    |
| <b>Total - Grabill</b>      | <b>56,376,134</b>                            | <b>2.4%</b>             | <b>1,338,040</b>           |
| Hacienda-4933521            | 737,359                                      | 5.1%                    | 37,417                     |
| Hacienda-4933523            | 489,469                                      | 5.0%                    | 24,330                     |
| Hacienda-4933524            | 646,085                                      | 5.5%                    | 35,706                     |
| Hacienda-4933525            | 4,477,796                                    | 3.3%                    | 148,834                    |
| Hacienda-4933526            | 6,823,895                                    | 5.2%                    | 354,234                    |
| Hacienda-4933527            | 8,572,936                                    | 2.2%                    | 188,186                    |
| <b>Total - Hacienda</b>     | <b>21,747,539</b>                            | <b>3.6%</b>             | <b>788,706</b>             |
| Harper-4928821              | 29,712,510                                   | 2.2%                    | 654,737                    |
| Harper-4928822              | 30,877,545                                   | 2.4%                    | 750,036                    |
| <b>Total - Harper</b>       | <b>60,590,054</b>                            | <b>2.3%</b>             | <b>1,404,773</b>           |
| IllinoisRoad-4510721        | 5,508,218                                    | 0.9%                    | 46,952                     |
| IllinoisRoad-4510722        | 6,777,918                                    | 0.6%                    | 38,614                     |
| IllinoisRoad-4510723        | 4,795,948                                    | 0.1%                    | 5,120                      |
| <b>Total - IllinoisRoad</b> | <b>17,082,085</b>                            | <b>0.5%</b>             | <b>90,687</b>              |
| Lincoln-4051821             | 26,481,424                                   | -0.3%                   | (87,218)                   |
| Lincoln-4051822             | 21,123,143                                   | 2.1%                    | 437,005                    |
| Lincoln-4051824             | 15,579,448                                   | 1.1%                    | 175,234                    |
| <b>Total - Lincoln</b>      | <b>63,184,014</b>                            | <b>0.8%</b>             | <b>525,021</b>             |
| LusherAvenue-4094021        | 6,306,958                                    | 1.0%                    | 63,936                     |
| LusherAvenue-4094022        | 3,103,868                                    | 2.5%                    | 76,199                     |
| LusherAvenue-4094023        | 1,584,195                                    | 0.9%                    | 15,037                     |
| LusherAvenue-4094024        | 2,046,975                                    | 4.9%                    | 99,374                     |
| LusherAvenue-4094025        | 3,086,941                                    | 1.9%                    | 59,767                     |
| LusherAvenue-4094026        | 3,178,845                                    | 1.6%                    | 52,069                     |
| <b>Total - LusherAvenue</b> | <b>19,307,782</b>                            | <b>1.9%</b>             | <b>366,382</b>             |
| Mackey-4535221              | 11,036,898                                   | 0.3%                    | 37,440                     |
| Mackey-4535222              | 10,969,381                                   | 2.5%                    | 276,932                    |
| Mackey-4535223              | 15,790,088                                   | 3.1%                    | 483,120                    |
| Mackey-4535224              | 7,132,120                                    | 2.1%                    | 147,331                    |
| Mackey-4535225              | 4,433,880                                    | -0.3%                   | (13,873)                   |

| <i>Circuit ID</i>           | <i>Total Eligible Period kWh Consumption</i> | <i>CVR Savings Rate</i> | <i>Ex Post kWh Savings</i> |
|-----------------------------|--|-------------------------|----------------------------|
| <b>Total - Mackey</b>       | <b>49,362,368</b>                            | <b>1.9%</b>             | <b>930,950</b>             |
| Mckinley-4055921            | 31,994,353                                   | 0.7%                    | 214,617                    |
| Mckinley-4055922            | 15,431,190                                   | 2.6%                    | 394,294                    |
| Mckinley-4055923            | 11,703,236                                   | 3.1%                    | 367,554                    |
| Mckinley-4055924            | 26,843,861                                   | 2.8%                    | 758,296                    |
| Mckinley-4055925            | 15,865,501                                   | 2.6%                    | 411,967                    |
| Mckinley-4055926            | 22,416,810                                   | 1.0%                    | 230,926                    |
| <b>Total - Mckinley</b>     | <b>124,254,951</b>                           | <b>1.9%</b>             | <b>2,377,654</b>           |
| Northland-4933421           | 17,863,873                                   | 1.4%                    | 251,977                    |
| Northland-4933422           | 12,529,841                                   | 2.5%                    | 308,538                    |
| Northland-4933423           | 23,462,163                                   | 1.4%                    | 326,031                    |
| Northland-4933424           | 33,126,668                                   | 2.2%                    | 742,780                    |
| Northland-4933425           | 2,567,692                                    | 3.7%                    | 96,129                     |
| Northland-4933426           | 12,092,092                                   | 3.9%                    | 470,990                    |
| <b>Total - Northland</b>    | <b>101,642,329</b>                           | <b>2.2%</b>             | <b>2,196,444</b>           |
| Osolo-4058021               | 22,908,971                                   | 2.6%                    | 585,589                    |
| Osolo-4058022               | 20,704,655                                   | 2.8%                    | 584,520                    |
| Osolo-4058023               | 20,331,837                                   | 2.8%                    | 562,477                    |
| Osolo-4058024               | 29,901,608                                   | 2.6%                    | 776,636                    |
| Osolo-4058025               | 7,886,979                                    | 3.8%                    | 296,787                    |
| Osolo-4058026               | 16,894,251                                   | 2.7%                    | 463,387                    |
| <b>Total - Osolo</b>        | <b>118,628,299</b>                           | <b>2.8%</b>             | <b>3,269,395</b>           |
| PettitAvenue-4917221        | 24,573,438                                   | 1.6%                    | 389,374                    |
| PettitAvenue-4917222        | 23,235,034                                   | 0.9%                    | 203,252                    |
| PettitAvenue-4917223        | 9,652,515                                    | 0.8%                    | 73,002                     |
| <b>Total - PettitAvenue</b> | <b>57,460,987</b>                            | <b>1.2%</b>             | <b>665,628</b>             |
| SouthBend-4050321           | 32,729,360                                   | 2.5%                    | 827,098                    |
| SouthBend-4050322           | 22,420,272                                   | 3.1%                    | 687,667                    |
| SouthBend-4050323           | 16,287,084                                   | 3.2%                    | 518,659                    |
| <b>Total - SouthBend</b>    | <b>71,436,716</b>                            | <b>2.8%</b>             | <b>2,033,424</b>           |
| SouthSide-4094621           | 2,288,241                                    | 3.3%                    | 75,596                     |
| SouthSide-4094622           | 25,812,218                                   | 3.5%                    | 915,681                    |
| SouthSide-4094623           | 13,405,573                                   | 3.1%                    | 411,500                    |
| SouthSide-4094624           | 4,307,974                                    | 2.8%                    | 122,451                    |
| Southside-4099921           | 19,173,811                                   | 2.2%                    | 429,030                    |
| Southside-4099922           | 26,952,573                                   | 2.0%                    | 531,155                    |
| Southside-4099923           | 14,178,188                                   | 2.6%                    | 367,071                    |
| <b>Total - Southside</b>    | <b>106,118,578</b>                           | <b>2.7%</b>             | <b>2,852,485</b>           |

| <i>Circuit ID</i>          | <i>Total Eligible Period kWh Consumption</i> | <i>CVR Savings Rate</i> | <i>Ex Post kWh Savings</i> |
|----------------------------|--|-------------------------|----------------------------|
| Spyrun-4923321             | 12,899,759                                   | 2.3%                    | 302,500                    |
| Spyrun-4923322             | 38,736,419                                   | 0.0%                    | (9,655)                    |
| Spyrun-4923329             | 12,483,289                                   | 3.0%                    | 373,306                    |
| <b>Total - Spyrun</b>      | <b>64,119,467</b>                            | <b>1.0%</b>             | <b>666,151</b>             |
| StateStreet-4928721        | 31,964,716                                   | 2.1%                    | 673,544                    |
| StateStreet-4928722        | 21,093,886                                   | 2.9%                    | 615,347                    |
| StateStreet-4928723        | 10,574,417                                   | 1.7%                    | 177,501                    |
| <b>Total - StateStreet</b> | <b>63,633,019</b>                            | <b>2.3%</b>             | <b>1,466,392</b>           |
| Summit-4937824             | 1,458,027                                    | 2.0%                    | 28,932                     |
| Summit-4937825             | 1,289,158                                    | 2.0%                    | 25,320                     |
| <b>Total - Summit</b>      | <b>2,747,186</b>                             | <b>2.0%</b>             | <b>54,252</b>              |
| Trier-4936421              | 2,182,901                                    | 3.6%                    | 78,829                     |
| Trier-4936422              | 1,204,361                                    | 4.0%                    | 48,722                     |
| Trier-4936423              | 368,070                                      | 5.2%                    | 19,035                     |
| <b>Total - Trier</b>       | <b>3,755,332</b>                             | <b>3.9%</b>             | <b>146,587</b>             |
| Wallen-4923421             | 1,650,579                                    | 3.9%                    | 63,838                     |
| Wallen-4923422             | 2,443,966                                    | 2.3%                    | 57,101                     |
| Wallen-4923423             | 736,277                                      | 3.3%                    | 24,394                     |
| Wallen-4923424             | 394,531                                      | 3.8%                    | 14,953                     |
| Wallen-4923425             | 1,374,125                                    | 2.8%                    | 39,089                     |
| Wallen-4923426             | 1,477,026                                    | 2.2%                    | 33,072                     |
| <b>Total - Wallen</b>      | <b>8,076,503</b>                             | <b>2.9%</b>             | <b>232,447</b>             |
| <b>Grand Total</b>         | <b>1,250,121,207</b>                         | <b>2.2%</b>             | <b>27,071,349</b>          |

During 2023, a CVR system module that leverages AMI interval data – hereafter referenced as “AMI module” – was implemented for selected circuits to enable achievement of further voltage reduction through the CVR system. The incremental savings associated with the employment of the AMI module are included in the savings values presented throughout this report. To estimate the component of aggregate CVR savings that is associated with deployment of the AMI module, the circuit-level incremental voltage reduction achieved during times of AMI module employment was calculated. The following variables are defined as inputs to the AMI module savings calculation:

- $kwh\_AMI$  = kWh usage: AMI module-enabled, CVR system engaged state
- $volt\_AMI$  = voltage: AMI module enabled, CVR system engaged state
- $volt\_non\_AMI$  = voltage: AMI module not enabled, CVR system engaged state
- $CVR_f$  = applicable CVR factor developed through analysis of aggregate CVR savings

The variables defined above were used in the following equation to calculate the savings associated with the deployment of the AMI module.

*Equation 4-1*

$$AMI \text{ Module } kWh \text{ Savings} = kWh\_AMI + ((1 - (volt\_AMI / volt\_non\_AMI)) * CVR_f * kWh\_AMI) - kWh\_AMI$$

Table 4-25 presents circuit-level energy savings associated with deployment of the AMI module.

*Table 4-25 PY2023 AMI Module Ex Post kWh Savings*

| <i>Circuit ID</i>       | <i>AMI Module kWh Savings</i> | <i>AMI Module Savings Share of Total Engaged State kWh Savings</i> | <i>AMI Module Enabled Time as Share of Total CVR Engaged Time</i> |
|-------------------------|-------------------------------|--|---|
| EastSide-4093121        | 9,665                         | 19.4%  | 93.1%   |
| EastSide-4093122        | 20,712                        | 18.6%  | 93.1%   |
| EastSide-4093123        | 25,082                        | 16.7%  | 93.1%   |
| EastSide-4093124        | 251,412                       | 31.5%  | 97.1%   |
| EastSide-4093125        | 233,867                       | 32.3%  | 97.1%   |
| EastSide-4093126        | 66,484                        | 21.9%  | 97.1%   |
| <b>Total - EastSide</b> | <b>551,763</b>                | <b>25.8%</b>   | <b>95.1%</b>  |
| Elcona-4938121          | 5,603                         | 18.1%  | 86.8%   |
| Elcona-4938122          | 2,640                         | 5.9%   | 86.8%   |
| Elcona-4938123          | 48,095                        | 21.2%  | 86.8%   |
| <b>Total - Elcona</b>   | <b>56,337</b>                 | <b>18.6%</b>   | <b>86.8%</b>  |
| Farmland-4927321        | 39,624                        | 24.2%  | 93.9%   |
| Farmland-4927322        | 9,083                         | 18.7%  | 93.9%   |
| Farmland-4927323        | 65,613                        | 33.9%  | 93.9%   |
| <b>Total - Farmland</b> | <b>114,320</b>                | <b>28.2%</b>   | <b>93.9%</b>  |
| Grabill-4935221         | 63,134                        | 25.8%  | 84.5%   |
| Grabill-4935222         | 214,316                       | 37.9%  | 84.5%   |
| Grabill-4935223         | 56,421                        | 32.8%  | 84.5%   |
| <b>Total - Grabill</b>  | <b>333,870</b>                | <b>34.0%</b>   | <b>84.5%</b>  |
| Hacienda-4933521        | 3,675                         | 25.3%  | 83.3%   |
| Hacienda-4933523        | 3,047                         | 23.8%  | 83.3%   |
| Hacienda-4933524        | 3,645                         | 26.7%  | 83.3%   |
| Hacienda-4933525        | 4,512                         | 19.4%  | 76.9%   |
| Hacienda-4933526        | 5,737                         | 17.8%  | 76.9%   |
| Hacienda-4933527        | 3,147                         | 18.3%  | 76.9%   |
| <b>Total - Hacienda</b> | <b>13,396</b>                 | <b>11.8%</b>   | <b>80.1%</b>  |
| Harper-4928821          | 140,459                       | 25.5%  | 98.2%   |



| <i>Circuit ID</i>          | <i>AMI Module kWh Savings</i> | <i>AMI Module Savings Share of Total Engaged State kWh Savings</i> | <i>AMI Module Enabled Time as Share of Total CVR Engaged Time</i> |
|----------------------------|-------------------------------|--|---|
| Harper-4928822             | 239,081                       | 38.0%  | 98.2%   |
| <b>Total - Harper</b>      | <b>392,936</b>                | <b>33.3%</b>   | <b>98.2%</b>  |
| Lincoln-4051822            | 195,497                       | 54.9%  | 94.0%   |
| Lincoln-4051824            | 12,982                        | 9.2%   | 94.0%   |
| <b>Total - Lincoln</b>     | <b>208,479</b>                | <b>48.9%</b>   | <b>94.0%</b>  |
| Mckinley-4055921           | 11,979                        | 9.5%   | 82.8%   |
| Mckinley-4055922           | 35,621                        | 16.4%  | 82.8%   |
| Mckinley-4055923           | 23,125                        | 18.0%  | 94.0%   |
| Mckinley-4055924           | 27,718                        | 16.1%  | 94.0%   |
| Mckinley-4055925           | 20,072                        | 20.0%  | 94.0%   |
| Mckinley-4055926           | 25,104                        | 15.9%  | 82.8%   |
| <b>Total - Mckinley</b>    | <b>72,894</b>                 | <b>8.1%</b>  | <b>88.4%</b>  |
| Northland-4933421          | 129                           | 0.1%   | 8.8%  |
| Northland-4933422          | 688                           | 0.3%   | 8.8%  |
| Northland-4933423          | 771                           | 0.3%   | 8.8%  |
| SouthBend-4050321          | 13,412                        | 1.9%   | 9.5%  |
| SouthBend-4050322          | 8,953                         | 1.7%   | 9.5%  |
| SouthBend-4050323          | 11,745                        | 2.8%   | 9.5%  |
| <b>Total - SouthBend</b>   | <b>34,110</b>                 | <b>2.1%</b>  | <b>9.5%</b>   |
| SouthSide-4094621          | 1,117                         | 2.2%   | 16.7%   |
| SouthSide-4094622          | 24,460                        | 3.2%   | 16.7%   |
| SouthSide-4094623          | 10,130                        | 3.0%   | 16.7%   |
| SouthSide-4094624          | 1,912                         | 1.9%   | 16.7%   |
| Southside-4099921          | 35,700                        | 21.5%  | 58.4%   |
| Southside-4099922          | 38,014                        | 19.5%  | 58.4%   |
| Southside-4099923          | 30,877                        | 22.0%  | 58.4%   |
| <b>Total - Southside</b>   | <b>104,592</b>                | <b>6.0%</b>  | <b>34.6%</b>  |
| Spyrun-4923321             | 6,310                         | 2.5%   | 24.2%   |
| Spyrun-4923329             | 10,160                        | 3.2%   | 24.2%   |
| <b>Total - Spyrun</b>      | <b>16,470</b>                 | <b>2.9%</b>  | <b>24.2%</b>  |
| StateStreet-4928721        | 96,655                        | 18.4%  | 99.1%   |
| StateStreet-4928722        | 81,120                        | 18.3%  | 99.1%   |
| StateStreet-4928723        | 37,033                        | 27.1%  | 99.1%   |
| <b>Total - StateStreet</b> | <b>214,808</b>                | <b>19.4%</b>   | <b>99.1%</b>  |
| Trier-4936421              | 6,770                         | 10.6%  | 37.7%   |
| Trier-4936422              | 4,210                         | 11.8%  | 37.7%   |
| Trier-4936423              | 1,562                         | 10.4%  | 37.7%   |

| <i>Circuit ID</i>    | <i>AMI Module kWh Savings</i> | <i>AMI Module Savings Share of Total Engaged State kWh Savings</i> | <i>AMI Module Enabled Time as Share of Total CVR Engaged Time</i> |
|----------------------|-------------------------------|--|---|
| <b>Total - Trier</b> | <b>12,542</b>                 | <b>11.0%</b>   | <b>37.7%</b>  |
| <b>Grand Total</b>   | <b>2,341,326</b>              | <b>14.2%</b>   | <b>47.4%</b>  |

## 4.2 Peak Reduction

This chapter presents the results of the analysis of demand reduction occurring during 2023 PJM 5CP hours. Demand reductions, accounting for those circuits for which the CVR system was enabled during the 5CP hours, are presented in Table 4-26.

*Table 4-26. kW Reduction during PY2023 PJM 5CP*

| Circuit ID           | 7/5/2023          | 7/27/2023         | 7/28/2023         | 9/5/2023          | 9/6/2023          |
|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                      | 5:00 PM - 6:00 PM | 5:00 PM - 6:00 PM | 5:00 PM - 6:00 PM | 4:00 PM - 5:00 PM | 4:00 PM - 5:00 PM |
| Daleville-4927921    | 140.26            | 158.17            | 148.92            | 147.56            | 129.47            |
| Daleville-4927922    | 26.28             | 30.04             | 26.28             | 26.73             | 23.89             |
| Daleville-4927923    | 99.22             | 107.34            | 97.91             | 95.51             | 87.73             |
| EastSide-4093121     | 36.27             | 43.11             | 40.51             | 43.56             | 36.32             |
| EastSide-4093122     | -                 | -                 | -                 | -                 | -                 |
| EastSide-4093123     | 239.63            | 196.80            | 192.40            | 221.68            | 183.32            |
| EastSide-4093124     | 246.01            | 277.77            | 264.05            | 290.18            | 238.37            |
| EastSide-4093125     | 229.58            | 251.16            | 240.65            | 259.50            | 219.16            |
| EastSide-4093126     | 62.34             | 65.99             | 64.92             | 73.24             | 69.38             |
| Elcona-4938121       | 8.46              | 13.27             | 12.68             | 14.43             | 13.71             |
| Elcona-4938122       | 24.92             | 28.43             | 25.42             | 31.30             | 30.56             |
| Elcona-4938123       | 38.05             | 50.92             | 36.33             | 50.37             | 57.02             |
| Farmland-4927321     | 41.69             | -                 | 39.83             | 40.72             | 36.13             |
| Farmland-4927322     | 9.41              | -                 | 9.07              | 9.60              | 8.59              |
| Farmland-4927323     | 40.13             | -                 | 40.05             | 52.13             | 48.48             |
| Grabill-4935221      | 56.89             | -                 | -                 | 62.03             | 65.74             |
| Grabill-4935222      | 234.90            | -                 | -                 | 198.30            | 208.35            |
| Grabill-4935223      | 75.25             | -                 | -                 | 61.55             | 58.92             |
| Hacienda-4933521     | -                 | -                 | 25.71             | 22.74             | 20.85             |
| Hacienda-4933523     | -                 | -                 | 23.61             | 20.61             | 19.49             |
| Hacienda-4933524     | -                 | -                 | 27.91             | 22.95             | 21.94             |
| Hacienda-4933525     | -                 | -                 | -                 | 188.06            | 179.85            |
| Hacienda-4933526     | -                 | -                 | -                 | 296.62            | 273.85            |
| Hacienda-4933527     | -                 | -                 | -                 | 116.42            | 108.53            |
| Harper-4928821       | 135.46            | 149.73            | 143.46            | 146.65            | 135.47            |
| Harper-4928822       | 180.61            | 175.27            | 173.08            | 167.93            | 164.22            |
| IllinoisRoad-4510721 | -                 | -                 | -                 | 42.21             | 33.92             |
| IllinoisRoad-4510722 | -                 | -                 | -                 | 32.61             | 27.52             |
| IllinoisRoad-4510723 | -                 | -                 | -                 | 4.68              | 3.90              |
| Lincoln-4051821      | (23.75)           | (25.16)           | (22.75)           | -                 | (22.54)           |
| Lincoln-4051822      | 129.77            | 136.21            | 133.04            | -                 | 122.21            |
| Lincoln-4051824      | 39.29             | 44.68             | 39.44             | -                 | 40.40             |

| Circuit ID           | 7/5/2023          | 7/27/2023         | 7/28/2023         | 9/5/2023          | 9/6/2023          |
|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                      | 5:00 PM - 6:00 PM | 5:00 PM - 6:00 PM | 5:00 PM - 6:00 PM | 4:00 PM - 5:00 PM | 4:00 PM - 5:00 PM |
| LusherAvenue-4094021 | -                 | -                 | -                 | 89.20             | 77.42             |
| LusherAvenue-4094022 | -                 | -                 | -                 | 86.88             | 63.60             |
| LusherAvenue-4094023 | -                 | -                 | -                 | 14.78             | 12.36             |
| LusherAvenue-4094024 | -                 | -                 | -                 | -                 | 83.34             |
| LusherAvenue-4094025 | -                 | -                 | -                 | -                 | 48.78             |
| LusherAvenue-4094026 | -                 | -                 | -                 | -                 | 48.07             |
| Mackey-4535221       | -                 | -                 | 10.58             | -                 | 13.85             |
| Mackey-4535222       | -                 | -                 | 109.20            | 131.79            | 112.39            |
| Mackey-4535223       | -                 | -                 | 188.00            | 183.50            | 169.52            |
| Mackey-4535224       | -                 | -                 | 61.35             | 64.53             | 56.21             |
| Mackey-4535225       | -                 | -                 | (3.56)            | -                 | (3.93)            |
| Mckinley-4055921     | 15.30             | 36.31             | 33.23             | 38.25             | 36.02             |
| Mckinley-4055922     | 118.83            | 127.68            | 119.50            | 116.78            | 101.79            |
| Mckinley-4055923     | 56.84             | 59.17             | 58.01             | 55.81             | 48.71             |
| Mckinley-4055924     | 146.06            | 151.37            | 145.41            | 221.12            | 198.55            |
| Mckinley-4055925     | 81.18             | 71.60             | 80.45             | 80.86             | 73.85             |
| Mckinley-4055926     | 24.72             | 62.27             | 54.22             | 56.47             | 52.39             |
| Northland-4933421    | 21.63             | 36.11             | 26.65             | 37.01             | 34.93             |
| Northland-4933422    | 83.94             | 91.39             | 85.35             | 90.24             | 73.72             |
| Northland-4933423    | 36.17             | 60.87             | 42.23             | 60.52             | 56.20             |
| Northland-4933424    | 105.34            | 114.03            | 113.41            | 140.59            | 144.11            |
| Northland-4933425    | -                 | -                 | -                 | -                 | -                 |
| Northland-4933426    | 133.51            | 144.75            | 136.02            | 153.67            | 123.29            |
| Osolo-4058021        | 93.80             | 119.82            | 99.37             | 125.00            | 115.17            |
| Osolo-4058022        | 116.33            | 131.56            | 121.82            | 134.97            | 122.03            |
| Osolo-4058023        | 146.54            | -                 | -                 | 170.89            | 154.01            |
| Osolo-4058024        | 134.35            | -                 | -                 | 171.07            | 156.45            |
| Osolo-4058025        | 87.90             | -                 | -                 | 104.50            | 90.67             |
| Osolo-4058026        | 93.56             | -                 | -                 | 129.67            | 114.90            |
| PettitAvenue-4917221 | 133.11            | 138.46            | 132.89            | 132.09            | 109.00            |
| PettitAvenue-4917222 | 58.24             | 60.78             | 58.03             | 58.11             | 48.53             |
| PettitAvenue-4917223 | 17.65             | 19.92             | 18.99             | 17.97             | 15.34             |
| SouthBend-4050321    | 167.39            | 187.75            | 180.35            | 199.60            | 172.40            |
| SouthBend-4050322    | 150.94            | 164.77            | 160.49            | 181.64            | 150.80            |
| SouthBend-4050323    | 115.85            | 121.18            | 118.35            | 125.33            | 109.61            |
| SouthSide-4094621    | 10.71             | 12.23             | 11.67             | 12.34             | 10.28             |
| SouthSide-4094622    | 210.31            | 229.50            | 223.05            | 247.61            | 209.10            |
| SouthSide-4094623    | 83.00             | 86.70             | 86.89             | 94.11             | 79.94             |
| SouthSide-4094624    | 24.63             | 25.64             | 25.74             | 27.12             | 24.21             |

| Circuit ID          | 7/5/2023             | 7/27/2023            | 7/28/2023            | 9/5/2023             | 9/6/2023             |
|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                     | 5:00 PM -<br>6:00 PM | 5:00 PM -<br>6:00 PM | 5:00 PM -<br>6:00 PM | 4:00 PM -<br>5:00 PM | 4:00 PM -<br>5:00 PM |
| Southside-4099921   | 86.61                | -                    | 86.04                | 89.09                | 75.54                |
| Southside-4099922   | 112.21               | -                    | 103.82               | 104.09               | 91.52                |
| Southside-4099923   | 71.03                | -                    | 75.29                | 72.93                | 59.70                |
| Spyrun-4923321      | 59.65                | 60.74                | 60.83                | 57.43                | 54.34                |
| Spyrun-4923322      | (2.29)               | (2.47)               | (2.31)               | (2.23)               | (2.23)               |
| Spyrun-4923329      | 90.38                | 96.16                | 92.36                | 91.62                | 81.63                |
| StateStreet-4928721 | 153.50               | 163.78               | 157.95               | 152.48               | 137.99               |
| StateStreet-4928722 | 151.98               | 164.01               | 158.27               | 142.05               | 129.39               |
| StateStreet-4928723 | 47.32                | 49.62                | 47.75                | 44.67                | 40.29                |
| Summit-4937824      | -                    | -                    | -                    | -                    | 13.82                |
| Summit-4937825      | -                    | -                    | -                    | -                    | 13.38                |
| Trier-4936421       | 24.39                | 26.68                | -                    | 22.55                | 21.56                |
| Trier-4936422       | 14.32                | 14.79                | -                    | 12.70                | 11.87                |
| Trier-4936423       | 6.97                 | 7.45                 | -                    | 6.07                 | 5.52                 |
| Wallen-4923421      | 18.26                | 19.80                | 18.09                | 14.62                | 14.87                |
| Wallen-4923422      | 16.83                | 16.93                | 16.40                | 14.33                | 14.22                |
| Wallen-4923423      | 6.74                 | 6.92                 | 6.26                 | 6.05                 | 5.67                 |
| Wallen-4923424      | 4.26                 | 4.83                 | 4.25                 | 4.03                 | 3.53                 |
| Wallen-4923425      | 17.86                | 20.36                | 18.74                | 16.16                | 15.59                |
| Wallen-4923426      | 12.22                | 13.11                | 12.13                | 10.57                | 10.53                |
| Total               | 5,430.73             | 4,620.27             | 5,136.03             | 7,153.08             | 6,751.07             |

The summarized results for each PJM 5CP hour are presented in Table 4-26 below.

*Table 4-27. Summary of kW Reductions during PJM 5CP Hours*

| Date                      | Hour Start | Hour End | Ex Post Net kW Savings |
|---------------------------|------------|----------|------------------------|
| 7/5/2023                  | 5:00 PM    | 6:00 PM  | 5,430.73               |
| 7/27/2023                 | 5:00 PM    | 6:00 PM  | 4,620.27               |
| 7/28/2023                 | 5:00 PM    | 6:00 PM  | 5,136.03               |
| 9/5/2023                  | 4:00 PM    | 5:00 PM  | 7,153.08               |
| 9/6/2023                  | 4:00 PM    | 5:00 PM  | 6,751.07               |
| Maximum Peak kW Reduction |            |          | 7,153.08               |
| Average Peak kW Reduction |            |          | 5,818.24               |