2024 Indiana Conservation Voltage Program EM&V Report

Prepared for:

Indiana Michigan Power

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1. Introduction

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 2024 of its Conservation Voltage Program (CVR) Program. I&M implemented this program in conjunction with Utilidata, Inc.

1.1 Description of Program

Under ANSI Standard C84.1-2016 Electric Power Systems and Equipment, a utility system is to deliver electricity to end-users at a voltage within the range of 120 +/- 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 (VVO) 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.

Using the AdaptiVolt™ system, voltages are controlled for each of the three phases being distributed to the circuits served by the substation. Thus, the voltage for Phase A was the same for all three circuits, and similarly for Phases B and C.

1.2 Impact Evaluation Findings

Table 1-1 below presents the total aggregated annual gross and net energy (kWh) savings achieved by the CVR Program during PY2024.

Table 1-1. Summary of Ex Post PY2024 kWh Savings

Ex Ante Annual kWh Savings	*Gross Audited kWh Savings*	*Gross Verified kWh Savings*	*Ex Post Annual Gross kWh Savings*	*Gross Realization Rate*	*Ex Post Annual Net kWh Savings*	*Net-to-Gross Ratio*
23,086,176	23,086,176	23,086,176	26,028,581	113%	26,028,581	100%

Table 1-2 presents the total gross and net peak demand (kW) impacts achieved by the CVR Program during PY2024.

Table 1-2. Summary of Ex Post PY2024 kW Peak Demand Impacts

Ex Ante Gross kW Savings	*Gross Audited kW Savings*	*Gross Verified kW Savings*	*Ex Post Gross kW Savings*	*Gross Realization Rate*	*Ex Post Net kW Savings*	*Net-to-Gross Ratio*
3,205.95	3,205.95	3,205.95	4,953.04	154%	4,953.04	100%

1.3 Organization of Report

This report is organized as follows:

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

2. Data Collection

The effects of voltage optimization for 2024 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 2024.[1] 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 2024, 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 2024 for most circuits included in the analysis, the CVR system was initially engaged during 2024 for the circuits listed below in Table 2-1. VVO was initially engaged for Berne circuits in mid-2024. Because there was very little engagement subsequent to initial engagement, energy savings could not be estimated for these circuits.

Table 2-1. Initial CVR System Engagement During 2024 by Circuit by Date

Circuit ID	*Date CVR System Initially Engaged*
Berne-4923222	5/31/2024
Berne-4923223	5/31/2024
Berne-4923224	5/31/2024
Blaine-4098026	2/22/2024
Blaine-4098027	2/22/2024
Blaine-4098028	2/22/2024
Cleveland-4933321	4/3/2024
Cleveland-4933322	4/3/2024
Cleveland-4933323	4/3/2024
Decatur-4926421	10/25/2024
Decatur-4926422	10/25/2024
Decatur-4926423	10/25/2024
Dunlap-4932721	2/15/2024
Dunlap-4932722	2/15/2024
Dunlap-4932723	2/15/2024

[1] For discussion of "on / off" testing, see, for example, Pacific Northwest Regional Technical Forum, *Standard Protocol #1 for Automated CVR,* November 2011.

Circuit ID	*Date CVR System Initially Engaged*
Dunlap-4932724	2/15/2024
Dunlap-4932725	2/15/2024
Dunlap-4932726	2/15/2024
Jay-4054321	3/20/2024
Jay-4054322	3/20/2024
Muessel-4103021	10/17/2024
Muessel-4103022	10/17/2024
Muessel-4103023	10/17/2024
Muessel-4103024	10/17/2024

Hourly temperature readings were available from the quality controlled local climatological data program of the National Climatic Data Center[2] for 2024 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 2024 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 PY2024 CVR System Engagement, CVR Engaged State Energy Savings, and CVR Factors by Station

Substation / Circuit Group	*Average CVR Factor*	*Hours Engaged*	*Engaged State kWh Consumption*	*Engaged State kWh Savings*	*kWh Savings Rate*
Blaine	0.64	6,173	68,226,139	1,519,361	2.2%
Cleveland	0.64	3,877	32,779,862	365,683	1.1%
Daleville	0.74	7,137	48,217,588	828,161	1.7%
Dunlap	1.14	3,964	50,644,285	1,282,142	2.5%
EastSide (4093121, 4093122, 4093123)	0.50	3,396	23,287,279	526,365	2.3%
EastSide (4093124, 4093125, 4093126)	0.78	6,839	44,825,093	1,823,776	4.1%
Elcona	0.31	2,417	22,543,493	390,773	1.7%
Farmland	0.51	7,126	20,866,160	461,641	2.2%
Grabill	0.68	5,868	51,017,215	1,119,670	2.2%
Hacienda (4933521, 4933523, 4933524)	1.07	3,660	2,203,630	107,343	4.9%

[2] 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

Substation / Circuit Group	*Average CVR Factor*	*Hours Engaged*	*Engaged State kWh Consumption*	*Engaged State kWh Savings*	*kWh Savings Rate*
Hacienda (4933525, 4933526, 4933527)	1.02	612	6,252,684	218,434	3.5%
Harper	0.59	6,467	50,253,436	1,099,266	2.2%
IllinoisRoad	0.60	5,165	35,063,052	781,734	2.2%
Jay	0.64	6,408	30,620,923	303,019	1.0%
Lincoln	0.59	4,634	56,314,508	718,227	1.3%
LusherAvenue (4094021, 4094022)	0.62	1,851	7,084,264	209,408	3.0%
LusherAvenue (4094023, 4094024, 4094025, 4094026)	0.60	4,191	20,544,013	490,660	2.4%
Mackey (4535221, 4535225)	0.33	5,907	26,013,013	179,826	0.7%
Mackey (4535222, 4535223, 4535224)	0.67	6,511	54,204,676	1,091,327	2.0%
McKinley (4055921,4055922, 4055926)	0.46	5,874	72,536,765	699,140	1.0%
McKinley (4055923, 4055924, 4055925)	0.54	5,925	37,968,178	636,917	1.7%
Muessel	0.33	838	5,052,461	90,868	1.8%
Northland (4933421, 4933422, 4933423)	0.12	6,252	42,202,795	79,071	0.2%
Northland (4933424, 4933425, 4933426)	1.07	1,391	13,895,711	473,408	3.4%
Osolo (4058021, 4058022, 4058024)	0.83	3,437	32,104,664	846,090	2.6%
Osolo (4058023, 4058025, 4058026)	0.95	3,627	29,819,488	244,764	0.8%
PettitAvenue	0.49	6,542	55,912,701	663,969	1.2%
SouthBend	0.76	6,837	63,540,564	1,437,411	2.3%
Southside (4094621, 4094622, 4094623, 4094624)	0.72	7,837	46,839,826	1,684,090	3.6%
Southside (4099921, 4099922, 4099923)	0.46	5,773	45,279,608	1,014,560	2.2%
Spyrun	0.55	5,779	23,246,302	765,497	3.3%
StateStreet	0.79	2,069	14,862,133	361,822	2.4%
Summit	0.90	2,170	1,732,362	16,503	1.0%
Trier	1.01	3,729	2,105,417	89,613	4.3%
Wallen (4923421, 4923422, 4923423)	0.84	1,944	1,291,206	38,681	3.0%
Wallen (4923424, 4923425, 4923426)	0.66	3,340	1,855,472	32,692	1.8%
Total			1,141,206,966	22,691,914	2.0%

3. Impact Evaluation Methods

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

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

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

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

Table 3-1. Regression Analysis Model Variables

Variable Name	*Variable Description*
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 β_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*
β_1	Coefficient of *Engaged* variable of applicable circuit-phase regression analysis, which is the estimate of the change in energy usage associated with CVR system engagement.
$kWh_{engaged\_sample}$	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.
$V_{engaged\_sample}$	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_{idle_sample}	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.
$kWh_{engaged\_pop}$	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.
$V_{engaged\_pop}$	Average voltage for the applicable circuit-phase when the CVR system status is engaged, taken from the same population of observations.
V_{idle_pop}	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

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

Variable Name	*Variable Description*
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 PY2024 CVR Program energy savings.

3.3 Application of Meta-Regression CVR Factors for Circuits with Insufficient On/Off Observations

For several circuit groups with extended CVR engagement periods in 2024, the specified schedule for alternating system engagement and disengagement was not sufficiently applied. For this reason, for the applicable circuits, it was not possible to apply the analytical methods outlined in section 3.1 to determine CVR factors. Table 3-5 presents a list of circuits affected by this data limitation.

Table 3-5. Circuits with Insufficient Alternation Between System Engagement and Disengagement

Circuit ID	*Engaged State kWh Consumption*
Blaine-4098021	17,258,413
Blaine-4098024	4,489,345
Blaine-4098025	4,389,811
Blaine-4098026	3,591,996
Blaine-4098027	20,665,831
Blaine-4098028	17,830,744
Cleveland-4933321	13,380,887
Cleveland-4933322	12,413,785
Cleveland-4933323	6,985,189
Jay-4054321	11,544,228
Jay-4054322	19,076,694
Lakeside-4091323	512,828
Lakeside-4091324	395,742

To address this data limitation, the meta-regression CVR factors developed through the methods presented in section 3.2 were referenced to establish conservative CVR factors for these circuits. The goal was to ensure that energy savings estimates remained methodologically sound while accounting for the lack of direct on/off observations.

The following steps were taken to derive the CVR factors for circuits with insufficient on/off engagement:

- Meta-regression CVR factors were compiled separately for each phase (A, B, and C).
- A weighted average CVR factor was computed, using each circuit's total kWh engaged as the weighting factor.
- To ensure the CVR factors applied to untested circuits were not overstated, a 95% confidence interval (CI) lower bound was calculated.

- The weighted standard deviation of meta-regression CVR factors was computed, and a t-distribution adjustment was applied to derive the lower bound of the 95% confidence interval.

The final assigned CVR factors applied to circuits in Table 3-5 were determined using the lower bound of the 95% confidence interval. The resulting CVR factors are presented in Table 3-6.

Table 3-6. CVR Factors for Circuits with Insufficient Alternation Between System Engagement and Disengagement

Phase	*CVR Factor*
A	0.60
B	0.67
C	0.64

3.4 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 3-7.

Table 3-7. Baseline Energy Usage Calculation Input Variables

Variable Name	*Variable Description*
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.[3] Eligible and ineligible operating periods are described in Table 3-8.

Table 3-8. Eligible and Ineligible Operating Periods

Status	*Description*	*Note*	*Category*
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

[3] For an example of a similar CVR savings calculation provision, see 2023 Illinois Statewide Technical Reference Manual for Energy Efficiency, Version 11.0, 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.

Status	*Description*	*Note*	*Category*
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
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 2024 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 4-27.

Table 4-1 PY2024 Energy Savings and CVR Factors by Phase: Blaine Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Blaine-4098021	A	125.43	120.94	125,999	5,727,314	2.15%	0.60
	B	125.41	121.10	137,178	5,857,462	2.29%	0.67
	C	125.33	120.93	131,028	5,673,637	2.26%	0.64
	Total /Average	125.39	120.99	394,205	17,258,413	2.23%	0.64
Blaine-4098024	A	125.24	120.68	38,207	1,706,148	2.19%	0.60
	B	125.34	120.61	53,042	2,057,405	2.51%	0.67
	C	125.32	120.78	17,354	725,792	2.34%	0.64
	Total /Average	125.30	120.66	108,603	4,489,345	2.36%	0.64
Blaine-4098025	A	125.36	120.95	27,823	1,286,506	2.12%	0.60
	B	125.17	120.70	32,985	1,352,066	2.38%	0.67
	C	125.08	120.65	40,814	1,751,239	2.28%	0.64
	Total /Average	125.19	120.75	101,622	4,389,811	2.26%	0.64
Blaine-4098026	A	125.27	121.58	19,388	1,073,174	1.77%	0.60
	B	125.40	121.20	11,554	505,454	2.23%	0.67
	C	124.94	121.25	39,037	2,013,368	1.90%	0.64
	Total /Average	125.11	121.34	69,979	3,591,996	1.91%	0.63
Blaine-4098027	A	124.23	120.41	143,764	7,628,475	1.85%	0.60
	B	124.53	120.42	147,266	6,553,396	2.20%	0.67
	C	124.11	120.41	126,929	6,483,960	1.92%	0.64
	Total /Average	124.29	120.41	417,959	20,665,831	1.98%	0.64
Blaine-4098028	A	125.43	120.86	135,435	6,038,994	2.19%	0.60
	B	125.27	120.63	127,293	5,032,815	2.47%	0.67
	C	125.37	120.75	164,265	6,758,935	2.37%	0.64
	Total /Average	125.36	120.75	426,993	17,830,744	2.34%	0.64

Table 4-2 PY2024 Energy Savings and CVR Factors by Phase: Cleveland Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Cleveland-4933321	A	122.23	120.59	32,866	4,037,787	0.81%	0.60
	B	122.06	120.39	38,508	4,185,492	0.91%	0.67
	C	121.89	120.37	41,800	5,157,609	0.80%	0.64
	Total /Average	122.05	120.44	113,174	13,380,887	0.84%	0.64
Cleveland-4933322	A	122.17	120.60	31,723	4,060,810	0.78%	0.60
	B	121.90	120.44	32,641	4,062,765	0.80%	0.67
	C	121.99	120.56	32,663	4,290,211	0.76%	0.64
	Total /Average	122.02	120.54	97,028	12,413,785	0.78%	0.64
Cleveland-4933323	A	124.44	120.45	47,380	2,412,744	1.93%	0.60
	B	124.80	120.51	62,790	2,682,310	2.29%	0.67
	C	125.63	121.06	45,312	1,890,135	2.34%	0.64
	Total /Average	124.90	120.64	155,482	6,985,189	2.18%	0.64

Table 4-3 PY2024 Energy Savings and CVR Factors by Phase: Daleville Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Daleville-4927921	A	125.24	122.88	85,312	8,075,609	1.05%	0.56
	B	126.09	123.67	101,772	5,967,206	1.68%	0.87
	C	126.07	123.08	258,962	9,305,529	2.71%	1.14
	Total /Average	125.79	123.16	446,046	23,348,344	1.87%	0.90
Daleville-4927922	A	125.24	122.89	22,056	2,060,484	1.06%	0.56
	B	126.06	123.65	28,654	2,752,042	1.03%	0.54
	C	126.09	123.09	29,080	2,660,657	1.08%	0.45
	Total /Average	125.84	123.24	79,790	7,473,184	1.06%	0.51
Daleville-4927923	A	125.28	122.93	56,661	3,896,875	1.43%	0.76
	B	126.10	123.69	103,939	5,508,252	1.85%	0.97
	C	126.09	123.11	141,726	7,990,934	1.74%	0.74
	Total /Average	125.91	123.25	302,326	17,396,060	1.71%	0.81

Table 4-4 PY2024 Energy Savings and CVR Factors by Phase: Dunlap Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Dunlap-4932721	A	124.89	120.74	55,133	1,566,490	3.40%	1.02
	B	125.62	121.28	26,093	1,142,569	2.23%	0.65
	C	125.00	120.98	23,020	1,154,557	1.95%	0.61
	Total /Average	125.14	120.97	104,246	3,863,616	2.63%	0.79
Dunlap-4932722	A	125.28	121.13	27,900	1,154,253	2.36%	0.71
	B	124.81	120.67	49,043	1,433,469	3.31%	1.00
	C	124.58	120.51	87,916	1,985,765	4.24%	1.30
	Total /Average	124.83	120.71	164,859	4,573,486	3.48%	1.06
Dunlap-4932723	A	124.40	120.68	81,779	3,059,489	2.60%	0.87
	B	124.43	120.74	121,780	3,422,954	3.44%	1.16
	C	124.48	120.90	82,257	3,318,201	2.42%	0.84
	Total /Average	124.44	120.78	285,816	9,800,645	2.83%	0.96
Dunlap-4932724	A	125.14	120.83	66,807	2,461,353	2.64%	0.77
	B	125.08	121.37	61,395	2,411,370	2.48%	0.84
	C	125.17	120.84	99,231	2,161,260	4.39%	1.27
	Total /Average	125.13	121.02	227,433	7,033,983	3.13%	0.95
Dunlap-4932725	A	122.13	120.48	91,827	2,299,548	3.84%	2.85
	B	121.99	120.38	67,076	2,325,047	2.80%	2.13
	C	121.77	120.35	115,227	3,276,690	3.40%	2.92
	Total /Average	121.94	120.40	274,130	7,901,285	3.35%	2.66
Dunlap-4932726	A	124.45	120.77	(2,226)	5,422,436	-0.04%	(0.01)
	B	123.73	120.47	54,370	6,271,625	0.86%	0.33
	C	124.51	120.73	173,514	5,777,210	2.92%	0.96
	Total /Average	124.21	120.65	225,658	17,471,270	1.28%	0.44

Table 4-5 PY2024 Energy Savings and CVR Factors by Phase: EastSide Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
EastSide-4093121	A	125.05	119.91	20,261	1,156,260	1.72%	0.42
	B	125.14	119.63	27,743	1,192,804	2.27%	0.52
	C	125.34	119.63	27,701	1,162,036	2.33%	0.51
	Total /Average	125.18	119.72	75,704	3,511,100	2.11%	0.48
EastSide-4093122	A	125.06	119.91	54,737	3,529,597	1.53%	0.37
	B	125.15	119.63	72,774	2,824,495	2.51%	0.57
	C	125.35	119.63	63,046	3,068,622	2.01%	0.44
	Total /Average	125.18	119.73	190,557	9,422,713	1.98%	0.46
EastSide-4093123	A	125.03	119.88	57,817	3,353,316	1.69%	0.41
	B	125.12	119.59	111,460	3,392,418	3.18%	0.72
	C	125.33	119.61	90,826	3,607,732	2.46%	0.54
	Total /Average	125.16	119.69	260,103	10,353,466	2.45%	0.56
EastSide-4093124	A	125.24	119.29	254,567	5,227,525	4.64%	0.98
	B	125.30	119.24	280,400	5,431,140	4.91%	1.02
	C	125.34	119.18	271,937	5,336,339	4.85%	0.99
	Total /Average	125.29	119.24	806,903	15,995,004	4.80%	0.99
EastSide-4093125	A	125.26	119.31	238,259	5,435,772	4.20%	0.88
	B	125.33	119.27	243,261	5,816,949	4.01%	0.83
	C	125.37	119.21	251,089	5,726,270	4.20%	0.85
	Total /Average	125.32	119.26	732,609	16,978,991	4.14%	0.86
EastSide-4093126	A	125.31	119.36	57,327	3,572,691	1.58%	0.33
	B	125.33	119.28	111,246	4,077,374	2.66%	0.55
	C	125.41	119.26	115,691	4,201,032	2.68%	0.55
	Total /Average	125.35	119.30	284,264	11,851,097	2.34%	0.48

Table 4-6 PY2024 Energy Savings and CVR Factors by Phase: Elcona Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Elcona-4938121	A	125.18	119.42	(5,325)	1,841,340	-0.29%	(0.06)
	B	125.24	119.54	1,358	2,026,601	0.07%	0.01
	C	125.36	119.68	(2,551)	1,856,423	-0.14%	(0.03)
	Total /Average	125.26	119.55	(6,517)	5,724,363	-0.11%	(0.03)
Elcona-4938122	A	125.20	119.44	19,032	1,248,958	1.50%	0.33
	B	125.26	119.56	26,856	1,426,624	1.85%	0.41
	C	125.34	119.66	34,239	1,456,978	2.30%	0.51
	Total /Average	125.27	119.56	80,127	4,132,560	1.90%	0.42
Elcona-4938123	A	125.18	119.42	103,920	4,160,129	2.44%	0.53
	B	125.22	119.52	116,815	4,168,315	2.73%	0.60
	C	125.34	119.66	96,428	4,358,126	2.16%	0.48
	Total /Average	125.25	119.54	317,163	12,686,571	2.44%	0.54

Table 4-7 PY2024 Energy Savings and CVR Factors by Phase: Farmland Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Farmland-4927321	A	125.06	119.18	80,673	3,188,504	2.47%	0.52
	B	125.09	119.74	37,832	2,600,112	1.43%	0.34
	C	125.16	119.81	71,316	2,784,566	2.50%	0.58
	Total /Average	125.10	119.55	189,821	8,573,182	2.17%	0.49
Farmland-4927322	A	125.10	119.23	14,875	615,683	2.36%	0.50
	B	125.10	119.74	14,218	587,642	2.36%	0.55
	C	125.18	119.83	26,790	926,693	2.81%	0.66
	Total /Average	125.13	119.63	55,883	2,130,017	2.56%	0.58
Farmland-4927323	A	125.07	119.21	92,392	2,685,290	3.33%	0.71
	B	125.11	119.77	76,275	3,891,029	1.92%	0.45
	C	125.19	119.85	47,269	3,586,643	1.30%	0.30
	Total /Average	125.13	119.65	215,937	10,162,961	2.08%	0.48

Table 4-8 PY2024 Energy Savings and CVR Factors by Phase: Grabill Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Grabill-4935221	A	124.34	120.54	67,414	4,820,311	1.38%	0.45
	B	124.60	120.82	81,929	3,958,878	2.03%	0.67
	C	125.36	121.40	111,088	5,371,793	2.03%	0.64
	Total /Average	124.80	120.94	260,432	14,150,983	1.81%	0.58
Grabill-4935222	A	124.36	120.55	240,507	9,039,839	2.59%	0.85
	B	124.59	120.80	228,054	9,981,326	2.23%	0.74
	C	125.35	121.39	185,371	8,575,837	2.12%	0.67
	Total /Average	124.75	120.90	653,932	27,597,003	2.31%	0.75
Grabill-4935223	A	124.44	120.66	50,930	2,437,647	2.05%	0.67
	B	124.68	120.91	34,952	2,921,526	1.18%	0.39
	C	125.44	121.48	119,424	3,910,056	2.96%	0.94
	Total /Average	124.94	121.08	205,307	9,269,229	2.17%	0.70

Table 4-9 PY2024 Energy Savings and CVR Factors by Phase: Hacienda Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Hacienda-4933521	A	125.15	120.19	11,910	280,347	4.08%	1.03
	B	125.32	119.61	16,512	320,425	4.90%	1.08
	C	125.15	119.42	9,012	181,533	4.73%	1.03
	Total /Average	125.22	119.77	37,435	782,306	4.57%	1.05
Hacienda-4933523	A	125.12	120.17	10,629	275,459	3.72%	0.94
	B	125.30	119.59	11,212	223,466	4.78%	1.05
	C	125.13	119.38	11,713	223,431	4.98%	1.08
	Total /Average	125.18	119.75	33,553	722,357	4.44%	1.02
Hacienda-4933524	A	125.14	120.19	12,820	261,111	4.68%	1.18
	B	125.30	119.58	12,255	231,488	5.03%	1.10
	C	125.14	119.41	11,280	206,367	5.18%	1.13
	Total /Average	125.19	119.76	36,355	698,967	4.94%	1.14
Hacienda-4933525	A	123.84	120.26	22,198	719,368	2.99%	1.03
	B	124.29	119.98	24,451	692,481	3.41%	0.98
	C	124.53	119.94	22,135	689,674	3.11%	0.84
	Total /Average	124.21	120.06	68,784	2,101,523	3.17%	0.95
Hacienda-4933526	A	123.91	120.34	25,322	558,587	4.34%	1.51
	B	124.37	120.06	39,291	778,397	4.81%	1.39
	C	124.57	119.99	38,345	636,603	5.68%	1.55
	Total /Average	124.30	120.12	102,958	1,973,586	4.96%	1.47
Hacienda-4933527	A	123.80	120.23	13,996	748,255	1.84%	0.64
	B	124.29	119.97	15,039	787,851	1.87%	0.54
	C	124.52	119.95	17,656	641,469	2.68%	0.73
	Total /Average	124.19	120.05	46,691	2,177,575	2.10%	0.63

Table 4-10 PY2024 Energy Savings and CVR Factors by Phase: Harper Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Harper-4928821	A	123.73	119.27	121,575	8,186,979	1.46%	0.41
	B	124.48	119.72	219,805	7,522,017	2.84%	0.74
	C	124.25	119.88	164,318	8,655,690	1.86%	0.53
	Total /Average	124.15	119.63	505,698	24,364,686	2.03%	0.56
Harper-4928822	A	123.72	119.26	171,087	6,880,287	2.43%	0.67
	B	124.46	119.71	243,214	10,048,755	2.36%	0.62
	C	124.27	119.88	179,268	8,959,708	1.96%	0.56
	Total /Average	124.20	119.65	593,568	25,888,750	2.24%	0.61

Table 4-11 PY2024 Energy Savings and CVR Factors by Phase: Illinois Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
IllinoisRoad-4510721	A	124.94	120.45	84,680	3,802,244	2.18%	0.61
	B	125.13	120.49	94,370	3,605,076	2.55%	0.69
	C	124.69	120.37	87,181	3,801,036	2.24%	0.65
	Total /Average	124.92	120.44	266,231	11,208,356	2.32%	0.65
IllinoisRoad-4510722	A	125.74	121.37	78,884	4,113,874	1.88%	0.54
	B	125.37	120.84	118,783	5,104,204	2.27%	0.63
	C	126.28	121.70	125,554	4,523,765	2.70%	0.75
	Total /Average	125.78	121.28	323,221	13,741,843	2.30%	0.64
IllinoisRoad-4510723	A	124.84	120.37	57,351	2,615,530	2.15%	0.60
	B	125.14	120.59	61,840	3,845,331	1.58%	0.44
	C	125.21	120.56	73,092	3,651,992	1.96%	0.53
	Total /Average	125.09	120.52	192,283	10,112,853	1.87%	0.51

Table 4-12 PY2024 Energy Savings and CVR Factors by Phase: Jay Circuit

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Jay-4054321	A	123.77	122.43	24,648	3,767,021	0.65%	0.60
	B	123.52	121.68	41,346	4,141,541	0.99%	0.67
	C	123.76	121.32	46,689	3,635,666	1.27%	0.64
	Total /Average	123.68	121.81	112,683	11,544,228	0.97%	0.64
Jay-4054322	A	123.77	122.43	37,825	5,766,341	0.65%	0.60
	B	123.51	121.68	64,786	6,484,394	0.99%	0.67
	C	123.74	121.30	87,724	6,825,960	1.27%	0.64
	Total /Average	123.67	121.77	190,336	19,076,694	0.99%	0.64

Table 4-13 PY2024 Energy Savings and CVR Factors by Phase: Lincoln Circuit

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Lincoln-4051821	A	123.70	121.00	66,745	8,095,581	0.82%	0.37
	B	123.77	121.06	82,407	7,835,582	1.04%	0.47
	C	123.13	120.23	73,889	7,778,499	0.94%	0.40
	Total /Average	123.54	120.77	223,042	23,709,662	0.93%	0.42
Lincoln-4051822	A	122.51	119.68	126,832	6,553,301	1.90%	0.82
	B	123.16	120.66	97,434	6,140,956	1.56%	0.77
	C	123.79	121.45	119,914	6,031,855	1.95%	1.03
	Total /Average	123.14	120.57	344,180	18,726,112	1.80%	0.87
Lincoln-4051824	A	124.15	121.08	34,858	4,681,304	0.74%	0.30
	B	123.50	120.92	61,226	4,501,486	1.34%	0.64
	C	123.57	121.01	54,921	4,695,944	1.16%	0.56
	Total /Average	123.74	121.00	151,005	13,878,734	1.08%	0.49

Table 4-14 PY2024 Energy Savings and CVR Factors by Phase: Lusher Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
LusherAvenue-4094021	A	125.41	119.92	35,484	1,221,166	2.82%	0.65
	B	125.09	118.97	41,112	1,576,903	2.54%	0.52
	C	125.76	120.09	32,892	1,251,444	2.56%	0.57
	Total /Average	125.39	119.60	109,488	4,049,514	2.63%	0.57
LusherAvenue-4094022	A	124.27	118.70	30,842	955,670	3.13%	0.70
	B	124.95	118.84	36,681	1,027,832	3.45%	0.70
	C	124.61	118.75	32,397	1,051,249	2.99%	0.64
	Total /Average	124.62	118.76	99,920	3,034,750	3.19%	0.68
LusherAvenue-4094023	A	124.98	120.56	18,589	1,118,079	1.64%	0.46
	B	124.81	120.14	27,492	1,608,953	1.68%	0.45
	C	125.08	120.24	34,519	1,385,450	2.43%	0.63
	Total /Average	124.95	120.29	80,600	4,112,481	1.92%	0.52
LusherAvenue-4094024	A	125.17	120.80	38,884	1,906,732	2.00%	0.57
	B	125.23	120.59	60,955	2,193,263	2.70%	0.73
	C	125.28	120.51	33,051	1,169,340	2.75%	0.72
	Total /Average	125.22	120.65	132,891	5,269,335	2.46%	0.67
LusherAvenue-4094025	A	124.12	119.78	63,742	2,650,327	2.35%	0.67
	B	124.45	119.84	64,982	2,939,282	2.16%	0.58
	C	124.58	119.82	64,326	2,501,439	2.51%	0.66
	Total /Average	124.38	119.81	193,050	8,091,048	2.33%	0.63
LusherAvenue-4094026	A	125.10	119.49	25,092	951,042	2.57%	0.57
	B	125.01	118.86	28,420	1,173,797	2.36%	0.48
	C	125.30	119.45	30,607	946,310	3.13%	0.67
	Total /Average	125.13	119.24	84,120	3,071,149	2.67%	0.57

Table 4-15 PY2024 Energy Savings and CVR Factors by Phase: Mackey Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Mackey-4535221	A	124.86	122.69	52,477	5,776,452	0.90%	0.52
	B	125.23	123.15	70,062	5,743,181	1.21%	0.72
	C	124.73	122.76	43,116	6,209,959	0.69%	0.44
	Total /Average	124.94	122.86	165,656	17,729,592	0.93%	0.56
Mackey-4535222	A	124.97	121.20	147,061	5,931,604	2.42%	0.80
	B	125.15	121.22	161,340	5,572,343	2.81%	0.90
	C	125.17	121.23	164,908	6,275,446	2.56%	0.81
	Total /Average	125.10	121.22	473,309	17,779,394	2.59%	0.84
Mackey-4535223	A	124.55	120.59	61,837	8,681,694	0.71%	0.22
	B	124.80	120.70	174,018	8,202,396	2.08%	0.63
	C	124.86	120.74	80,628	8,092,059	0.99%	0.30
	Total /Average	124.73	120.67	316,482	24,976,149	1.25%	0.38
Mackey-4535224	A	125.04	121.13	92,913	3,736,857	2.43%	0.78
	B	125.29	121.21	108,510	3,837,333	2.75%	0.84
	C	125.13	121.02	100,113	3,874,942	2.52%	0.77
	Total /Average	125.15	121.12	301,536	11,449,133	2.57%	0.80
Mackey-4535225	A	124.94	122.77	8,097	2,643,092	0.31%	0.18
	B	125.05	122.82	20,644	2,973,789	0.69%	0.39
	C	124.73	122.73	(14,571)	2,666,538	-0.55%	(0.34)
	Total /Average	124.91	122.77	14,171	8,283,420	0.17%	0.10

Table 4-16 PY2024 Energy Savings and CVR Factors by Phase: McKinley Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Mckinley-4055921	A	123.32	120.15	28,561	9,965,145	0.29%	0.11
	B	123.97	120.76	20,283	10,632,390	0.19%	0.07
	C	124.77	121.56	161,968	11,409,313	1.40%	0.54
	Total /Average	124.05	120.85	210,811	32,006,847	0.65%	0.25
McKinley-4055922	A	123.33	120.16	103,558	5,065,994	2.00%	0.78
	B	123.98	120.78	100,829	4,575,592	2.16%	0.83
	C	124.84	121.63	91,046	3,700,500	2.40%	0.93
	Total /Average	123.97	120.78	295,434	13,342,086	2.17%	0.84
McKinley-4055923	A	123.46	119.33	83,221	2,641,857	3.05%	0.91
	B	123.35	119.15	42,314	1,420,868	2.89%	0.85
	C	123.41	119.38	28,837	1,383,897	2.04%	0.62
	Total /Average	123.42	119.29	154,371	5,446,622	2.76%	0.82
McKinley-4055924	A	123.43	119.29	114,010	6,616,412	1.69%	0.51
	B	123.30	119.10	156,502	6,253,641	2.44%	0.72
	C	123.30	119.27	117,299	6,939,509	1.66%	0.51
	Total /Average	123.34	119.22	387,810	19,809,561	1.92%	0.57
McKinley-4055925	A	123.43	119.29	16,506	4,575,583	0.36%	0.11
	B	123.30	119.10	54,522	3,785,057	1.42%	0.42
	C	123.28	119.25	23,707	4,351,354	0.54%	0.17
	Total /Average	123.34	119.22	94,736	12,711,994	0.74%	0.22
McKinley-4055926	A	123.33	120.16	42,960	9,260,980	0.46%	0.18
	B	123.98	120.77	96,045	9,122,419	1.04%	0.40
	C	124.75	121.54	53,890	8,804,433	0.61%	0.24
	Total /Average	124.01	120.81	192,896	27,187,832	0.70%	0.27

Table 4-17 PY2024 Energy Savings and CVR Factors by Phase: Northland Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Muessel-4103021	A	124.55	120.92	(1,333)	413,459	-0.32%	(0.11)
	B	124.98	121.16	513	402,907	0.13%	0.04
	C	124.91	121.20	3,019	401,680	0.75%	0.25
	Total /Average	124.81	121.09	2,198	1,218,046	0.18%	0.06
Muessel-4103022	A	125.02	121.05	(1,971)	205,565	-0.97%	(0.30)
	B	125.08	121.04	(186)	177,615	-0.10%	(0.03)
	C	125.02	120.98	(1,890)	168,848	-1.13%	(0.35)
	Total /Average	125.04	121.02	(4,047)	552,028	-0.74%	(0.23)
Muessel-4103023	A	125.27	120.67	3,545	549,428	0.64%	0.17
	B	125.20	120.58	11,502	495,619	2.27%	0.61
	C	125.14	120.76	4,572	510,737	0.89%	0.25
	Total /Average	125.21	120.67	19,619	1,555,784	1.25%	0.34
Muessel-4103024	A	125.20	120.56	24,018	545,945	4.21%	1.14
	B	125.37	120.89	26,907	659,328	3.92%	1.10
	C	125.02	120.78	22,173	521,329	4.08%	1.20
	Total /Average	125.21	120.75	73,098	1,726,602	4.06%	1.14

Table 4-18 PY2024 Energy Savings and CVR Factors by Phase: Northland Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Northland-4933421	A	124.51	121.74	(40,743)	4,692,837	-0.88%	(0.39)
	B	124.97	122.23	(44,420)	4,706,022	-0.95%	(0.43)
	C	123.87	121.08	(35,238)	4,098,125	-0.87%	(0.39)
	Total /Average	124.48	121.71	(120,401)	13,496,984	-0.90%	(0.41)
Northland-4933422	A	124.45	121.55	30,727	3,518,211	0.87%	0.37
	B	125.26	122.40	61,370	3,267,211	1.84%	0.81
	C	124.97	122.08	60,304	3,164,679	1.87%	0.81
	Total /Average	124.88	121.99	152,401	9,950,101	1.51%	0.65
Northland-4933423	A	124.43	121.53	27,612	6,139,556	0.45%	0.19
	B	125.22	122.37	(8,162)	6,326,212	-0.13%	(0.06)
	C	124.92	122.03	27,620	6,289,941	0.44%	0.19
	Total /Average	124.86	121.98	47,070	18,755,709	0.25%	0.11
Northland-4933424	A	125.14	121.09	45,325	2,060,516	2.15%	0.67
	B	125.20	120.99	59,116	2,010,916	2.86%	0.85
	C	125.13	121.02	49,375	2,216,120	2.18%	0.66
	Total /Average	125.16	121.04	153,817	6,287,552	2.39%	0.73
Northland-4933425	A	125.15	121.10	77,950	1,925,859	3.89%	1.20
	B	125.21	121.01	57,908	1,533,229	3.64%	1.09
	C	125.11	121.01	75,888	1,673,699	4.34%	1.32
	Total /Average	125.15	121.05	211,746	5,132,787	3.96%	1.21
Northland-4933426	A	125.14	121.09	29,081	766,790	3.65%	1.13
	B	125.20	120.99	43,167	906,776	4.54%	1.35
	C	125.11	120.99	35,598	801,805	4.25%	1.29
	Total /Average	125.15	121.02	107,845	2,475,371	4.17%	1.27

Table 4-19 PY2024 Energy Savings and CVR Factors by Phase: Osolo Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Osolo-4058021	A	125.44	122.07	57,339	3,194,072	1.76%	0.66
	B	125.43	121.34	105,399	3,270,110	3.12%	0.96
	C	125.47	121.21	74,940	2,905,090	2.51%	0.74
	Total /Average	125.45	121.55	237,679	9,369,272	2.47%	0.80
Osolo-4058022	A	125.46	122.11	52,831	2,855,650	1.82%	0.68
	B	125.40	121.33	94,885	2,789,418	3.29%	1.01
	C	125.45	121.20	103,512	3,270,587	3.07%	0.91
	Total /Average	125.44	121.53	251,229	8,915,655	2.74%	0.88
Osolo-4058023	A	125.31	124.20	32,818	4,723,883	0.69%	0.78
	B	125.47	124.13	49,262	4,280,839	1.14%	1.07
	C	125.42	124.48	21,718	4,246,149	0.51%	0.68
	Total /Average	125.40	124.27	103,798	13,250,871	0.78%	0.86
Osolo-4058024	A	125.47	122.10	95,952	5,181,064	1.82%	0.68
	B	125.42	121.35	148,909	4,704,761	3.07%	0.94
	C	125.49	121.24	112,321	3,933,911	2.78%	0.82
	Total /Average	125.46	121.60	357,183	13,819,737	2.52%	0.82
Osolo-4058025	A	125.27	124.16	17,043	1,502,670	1.12%	1.26
	B	125.41	124.07	20,764	1,807,043	1.14%	1.07
	C	125.34	124.39	16,409	1,856,507	0.88%	1.16
	Total /Average	125.34	124.21	54,216	5,166,220	1.04%	1.15
Osolo-4058026	A	125.27	124.16	39,357	3,854,794	1.01%	1.14
	B	125.45	124.12	30,487	3,582,259	0.84%	0.79
	C	125.39	124.45	16,906	3,965,345	0.42%	0.57
	Total /Average	125.37	124.25	86,751	11,402,398	0.76%	0.84

Table 4-20 PY2024 Energy Savings and CVR Factors by Phase: Pettit Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
PettitAvenue-4917221	A	124.27	121.33	170,408	9,123,228	1.83%	0.78
	B	124.27	121.54	139,412	8,833,386	1.55%	0.71
	C	124.51	122.16	97,006	7,881,055	1.22%	0.64
	Total /Average	124.34	121.66	406,826	25,837,669	1.55%	0.72
PettitAvenue-4917222	A	124.20	121.24	74,563	6,485,761	1.14%	0.48
	B	124.24	121.50	56,158	6,948,189	0.80%	0.36
	C	124.41	122.04	60,039	7,844,882	0.76%	0.40
	Total /Average	124.29	121.62	190,760	21,278,831	0.89%	0.41
PettitAvenue-4917223	A	124.21	121.26	21,980	2,367,282	0.92%	0.39
	B	124.24	121.50	28,046	3,023,630	0.92%	0.42
	C	124.44	122.09	16,357	3,405,288	0.48%	0.25
	Total /Average	124.31	121.66	66,383	8,796,200	0.75%	0.35

Table 4-21 PY2024 Energy Savings and CVR Factors by Phase: SouthBend Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
SouthBend-4050321	A	124.36	120.65	151,271	10,085,568	1.48%	0.50
	B	124.24	120.38	215,606	11,294,890	1.87%	0.60
	C	124.67	120.50	246,655	9,084,572	2.64%	0.79
	Total /Average	124.41	120.51	613,532	30,465,030	1.97%	0.63
SouthBend-4050322	A	124.45	121.11	142,135	6,866,478	2.03%	0.75
	B	124.97	121.17	204,172	7,344,010	2.70%	0.89
	C	124.98	120.70	144,122	4,467,605	3.13%	0.91
	Total /Average	124.78	121.04	490,429	18,678,093	2.56%	0.85
SouthBend-4050323	A	125.14	121.92	92,696	4,699,425	1.93%	0.75
	B	124.87	121.17	123,156	5,435,204	2.22%	0.75
	C	125.06	121.13	117,598	4,262,812	2.68%	0.85
	Total /Average	125.01	121.40	333,450	14,397,441	2.26%	0.78

Table 4-22 PY2024 Energy Savings and CVR Factors by Phase: Southside Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
SouthSide-4094621	A	124.92	119.10	10,033	417,679	2.35%	0.50
	B	125.67	120.01	31,598	925,149	3.30%	0.73
	C	125.29	119.43	25,695	531,214	4.61%	0.99
	Total /Average	125.40	119.64	67,326	1,874,042	3.47%	0.76
SouthSide-4094622	A	124.94	119.12	337,948	8,993,389	3.62%	0.78
	B	125.71	120.04	325,681	8,340,482	3.76%	0.83
	C	125.33	119.45	365,683	9,560,221	3.68%	0.79
	Total /Average	125.32	119.52	1,029,313	26,894,093	3.69%	0.80
SouthSide-4094623	A	124.92	119.10	128,642	4,450,245	2.81%	0.60
	B	125.73	120.04	186,506	4,972,033	3.62%	0.80
	C	125.38	119.49	143,755	4,460,424	3.12%	0.67
	Total /Average	125.36	119.56	458,903	13,882,702	3.20%	0.69
SouthSide-4094624	A	124.89	119.09	16,298	969,527	1.65%	0.36
	B	125.67	120.01	49,148	1,405,755	3.38%	0.75
	C	125.32	119.45	63,102	1,813,706	3.36%	0.72
	Total /Average	125.34	119.55	128,547	4,188,989	2.98%	0.65
Southside-4099921	A	125.07	119.15	111,041	4,040,889	2.67%	0.56
	B	124.97	119.05	144,493	6,010,057	2.35%	0.50
	C	125.23	119.22	119,475	4,496,149	2.59%	0.54
	Total /Average	125.08	119.13	375,009	14,547,095	2.51%	0.53
Southside-4099922	A	125.10	119.17	135,457	6,784,840	1.96%	0.41
	B	124.99	119.08	160,577	6,791,130	2.31%	0.49
	C	125.27	119.26	127,138	6,648,547	1.88%	0.39
	Total /Average	125.12	119.17	423,172	20,224,517	2.05%	0.43
Southside-4099923	A	125.08	119.17	67,252	2,917,997	2.25%	0.48
	B	124.98	119.07	78,780	3,948,650	1.96%	0.41
	C	125.25	119.24	70,347	3,641,349	1.90%	0.40
	Total /Average	125.10	119.16	216,379	10,507,996	2.02%	0.42

Table 4-23 PY2024 Energy Savings and CVR Factors by Phase: Spyrun Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Spyrun-4923321	A	125.07	118.84	85,874	3,074,169	2.72%	0.55
	B	125.01	118.79	135,797	4,030,710	3.26%	0.65
	C	125.60	119.35	116,920	3,049,123	3.69%	0.74
	Total /Average	125.21	118.97	338,592	10,154,001	3.23%	0.65
Spyrun-4923322	A	125.04	118.82	6,249	964,876	0.64%	0.13
	B	124.99	118.77	16,749	1,217,045	1.36%	0.27
	C	125.59	119.34	18,510	1,283,220	1.42%	0.29
	Total /Average	125.23	118.99	41,508	3,465,141	1.18%	0.24
Spyrun-4923329	A	125.02	118.80	79,228	3,409,214	2.27%	0.46
	B	124.99	118.76	150,583	2,917,999	4.91%	0.99
	C	125.57	119.32	155,586	3,299,946	4.50%	0.90
	Total /Average	125.20	118.97	385,397	9,627,160	3.85%	0.77

Table 4-24 PY2024 Energy Savings and CVR Factors by Phase: StateStreet Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
StateStreet-4928721	A	123.79	120.27	36,397	2,678,698	1.34%	0.47
	B	123.63	119.77	71,754	2,535,934	2.75%	0.88
	C	123.79	120.27	58,796	2,526,240	2.27%	0.80
	Total /Average	123.74	120.10	166,948	7,740,872	2.11%	0.72
StateStreet-4928722	A	123.93	120.26	43,361	1,520,913	2.77%	0.94
	B	123.93	120.26	55,431	1,472,200	3.63%	1.23
	C	123.93	120.26	52,183	1,583,303	3.19%	1.08
	Total /Average	123.93	120.26	150,975	4,576,416	3.19%	1.08
StateStreet-4928723	A	123.78	120.24	13,337	833,950	1.57%	0.55
	B	123.62	119.74	15,268	868,811	1.73%	0.55
	C	123.78	120.24	15,295	842,085	1.78%	0.62
	Total /Average	123.73	120.07	43,899	2,544,845	1.70%	0.57

Table 4-25 PY2024 Energy Savings and CVR Factors by Phase: Summit Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Summit-4937824	A	124.27	123.19	2,571	295,670	0.86%	0.99
	B	124.37	123.39	2,567	304,094	0.84%	1.06
	C	124.32	123.35	2,537	320,876	0.78%	1.01
	Total /Average	124.32	123.31	7,675	920,640	0.83%	1.02
Summit-4937825	A	125.27	123.65	3,031	271,998	1.10%	0.85
	B	125.13	123.36	2,972	269,005	1.09%	0.77
	C	125.30	123.53	2,826	270,719	1.03%	0.73
	Total /Average	125.23	123.52	8,828	811,722	1.08%	0.78

Table 4-26 PY2024 Energy Savings and CVR Factors by Phase: Trier Circuits

Circuit ID	*Phase*	*Baseline Voltage*	*Engaged State Voltage*	*Engaged State kWh Savings*	*Engaged State kWh Consumption*	*Percent Savings*	*CVR Factor*
Trier-4936421	A	125.30	119.58	15,952	423,474	3.63%	0.80
	B	125.32	119.70	16,638	419,580	3.81%	0.85
	C	125.40	119.71	15,326	413,244	3.58%	0.79
	Total /Average	125.34	119.66	47,915	1,256,298	3.67%	0.81
Trier-4936422	A	125.22	119.67	9,143	203,993	4.29%	0.97
	B	125.27	119.76	8,231	175,331	4.48%	1.02
	C	125.29	119.74	11,347	246,705	4.40%	0.99
	Total /Average	125.26	119.72	28,722	626,029	4.39%	0.99
Trier-4936423	A	125.08	119.33	4,014	71,405	5.32%	1.16
	B	125.11	119.41	4,503	78,718	5.41%	1.19
	C	125.27	119.72	4,459	72,967	5.76%	1.30
	Total /Average	125.15	119.48	12,976	223,090	5.50%	1.21

Table 4-27 PY2024 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	120.86	5,769	182,845	3.06%	0.84
	B	125.48	120.92	5,752	132,809	4.15%	1.14
	C	125.56	120.85	5,950	141,861	4.03%	1.07
	Total /Average	125.49	120.87	17,471	457,516	3.68%	1.00
Wallen-4923422	A	124.92	120.51	5,835	212,742	2.67%	0.76
	B	125.02	120.60	5,534	222,796	2.42%	0.69
	C	124.84	120.48	3,241	196,029	1.63%	0.47
	Total /Average	124.93	120.53	14,610	631,568	2.26%	0.64
Wallen-4923423	A	125.31	120.78	2,624	77,521	3.27%	0.91
	B	125.38	120.84	1,169	41,397	2.75%	0.76
	C	125.31	120.79	2,807	83,205	3.26%	0.91
	Total /Average	125.32	120.80	6,601	202,122	3.16%	0.88
Wallen-4923424	A	125.41	120.78	1,118	53,231	2.06%	0.56
	B	125.04	120.88	2,191	104,557	2.05%	0.62
	C	125.33	120.74	2,208	78,149	2.75%	0.75
	Total /Average	125.22	120.81	5,517	235,937	2.28%	0.65
Wallen-4923425	A	124.99	123.84	1,487	248,648	0.59%	0.65
	B	124.83	121.51	5,120	257,232	1.95%	0.73
	C	125.18	123.75	2,789	268,123	1.03%	0.90
	Total /Average	125.00	123.04	9,396	774,003	1.20%	0.76
Wallen-4923426	A	124.87	120.39	4,870	284,190	1.68%	0.47
	B	125.18	120.53	6,527	311,626	2.05%	0.55
	C	125.37	120.75	6,383	249,715	2.49%	0.68
	Total /Average	125.13	120.55	17,779	845,531	2.06%	0.56

The percentage savings rates presented in Table 4-1 through Table 4-27 were applied to electric energy usage occurring during eligible periods outlined in Table 3-8. Table 4-32 shows the circuit-level and total eligible and ineligible period energy usage during PY2024.

Table 4-28 PY2024 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*
Blaine-4098021	1,608,543	17,258,413	842,248	-	-	1,635,063	19,735,724
Blaine-4098024	780,990	4,489,345	276,540	-	-	388,118	5,154,004
Blaine-4098025	840,388	4,389,811	509,598	-	-	1,318,678	6,218,087
Blaine-4098026	623,351	3,591,996	139,146	-	-	-	3,731,143
Blaine-4098027	3,401,611	20,665,831	752,433	-	-	-	21,418,264

Circuit ID	*Total Ineligible Period*	*CVR Engaged*	*Test Schedule*	*Feeder Outage*	*Repair / Maintenance*	*Switching*	*Total Eligible Period*
Blaine-4098028	2,673,117	17,830,744	563,063	-	-	-	18,393,806
Cleveland-4933321	10,296,334	13,380,887	1,978,432	-	-	900,148	16,259,467
Cleveland-4933322	10,365,535	12,413,785	1,937,013	-	-	972,154	15,322,953
Cleveland-4933323	5,655,143	6,985,189	1,138,818	-	-	1,244,337	9,368,344
Daleville-4927921	3,012,213	23,348,344	-	-	-	-	23,348,344
Daleville-4927922	920,232	7,473,184	-	-	-	-	7,473,184
Daleville-4927923	2,216,686	17,396,060	-	-	-	-	17,396,060
Dunlap-4932721	2,040,046	3,863,616	1,034,510	-	-	1,433,836	6,331,962
Dunlap-4932722	2,104,636	4,573,486	1,113,826	-	-	1,557,632	7,244,944
Dunlap-4932723	4,489,440	9,800,645	2,379,275	-	-	3,388,888	15,568,808
Dunlap-4932724	3,710,416	7,033,983	1,152,984	-	-	-	8,186,966
Dunlap-4932725	4,379,676	7,901,285	1,356,381	-	-	-	9,257,666
Dunlap-4932726	8,025,673	17,471,270	2,478,748	-	-	-	19,950,018
EastSide-4093121	58,226	3,511,100	-	-	-	5,061,197	8,572,297
EastSide-4093122	136,612	9,422,713	-	-	-	358,852	9,781,566
EastSide-4093123	200,343	10,353,466	-	-	-	17,190,721	27,544,187
EastSide-4093124	1,814,129	15,995,004	-	-	-	737,059	16,732,063
EastSide-4093125	1,457,916	16,978,991	-	-	-	492,791	17,471,783
EastSide-4093126	1,105,961	11,851,097	-	-	-	443,854	12,294,951
Elcona-4938121	2,142,030	5,724,363	2,409,159	-	-	4,831,930	12,965,452
Elcona-4938122	1,550,290	4,132,560	2,962,561	-	-	8,401,340	15,496,460
Elcona-4938123	4,671,341	12,686,571	5,807,547	-	-	10,349,777	28,843,895
Farmland-4927321	357,737	8,573,182	-	-	970,980	11,105	9,555,266
Farmland-4927322	89,068	2,130,017	-	-	330,663	2,710	2,463,391
Farmland-4927323	429,275	10,162,961	-	-	1,049,748	11,855	11,224,565
Grabill-4935221	2,030,719	14,150,983	-	-	-	3,931,811	18,082,794
Grabill-4935222	3,432,192	27,597,003	-	-	-	7,459,630	35,056,633
Grabill-4935223	1,083,635	9,269,229	-	-	-	5,112,112	14,381,341
Hacienda-4933521	348,402	782,306	-	-	618,425	174,093	1,574,825
Hacienda-4933523	317,574	722,357	-	-	418,292	155,464	1,296,114
Hacienda-4933524	303,524	698,967	-	-	485,290	357,246	1,541,503
Hacienda-4933525	20,060,819	2,101,523	-	-	-	-	2,101,523
Hacienda-4933526	18,470,383	1,973,586	-	-	-	-	1,973,586
Hacienda-4933527	22,348,009	2,177,575	-	-	-	-	2,177,575
Harper-4928821	6,706,153	24,364,686	-	-	329,011	-	24,693,697
Harper-4928822	6,904,432	25,888,750	-	-	377,722	-	26,266,472
IllinoisRoad-4510721	2,915,164	11,208,356	2,249,728	-	62,214	-	13,520,299
IllinoisRoad-4510722	3,697,968	13,741,843	2,705,560	-	126,780	-	16,574,183

Circuit ID	*Total Ineligible Period*	*CVR Engaged*	*Test Schedule*	*Feeder Outage*	*Repair / Maintenance*	*Switching*	*Total Eligible Period*
IllinoisRoad-4510723	2,628,724	10,112,853	2,071,594	-	72,317	-	12,256,764
Jay-4054321	2,872,555	11,544,228	403,721	-	-	-	11,947,950
Jay-4054322	4,708,026	19,076,694	727,982	-	-	-	19,804,676
Lincoln-4051821	10,039,852	23,709,662	6,548,298	-	-	823,512	31,081,471
Lincoln-4051822	7,785,197	18,726,112	5,143,080	-	-	423,034	24,292,226
Lincoln-4051824	5,945,271	13,878,734	3,768,843	-	-	321,729	17,969,306
LusherAvenue-4094021	19,015,819	4,049,514	2,763,030	-	-	-	6,812,544
LusherAvenue-4094022	8,485,348	3,034,750	1,599,643	-	-	-	4,634,393
LusherAvenue-4094023	1,242,377	4,112,481	779,322	-	-	464,711	5,356,514
LusherAvenue-4094024	1,814,392	5,269,335	1,050,878	-	-	595,262	6,915,475
LusherAvenue-4094025	2,681,117	8,091,048	1,595,070	-	-	909,006	10,595,124
LusherAvenue-4094026	8,943,354	3,071,149	1,687,997	-	-	-	4,759,146
Mackey-4535221	2,752,313	17,729,592	3,920,984	-	-	-	21,650,576
Mackey-4535222	400,499	17,779,394	3,492,060	-	-	486,698	21,758,152
Mackey-4535223	561,768	24,976,149	4,847,870	-	-	474,812	30,298,831
Mackey-4535224	270,274	11,449,133	2,285,653	-	-	196,434	13,931,220
Mackey-4535225	1,231,045	8,283,420	1,738,261	-	-	-	10,021,681
Mckinley-4055921	3,563,715	32,006,847	6,893,165	-	-	1,404,118	40,304,130
Mckinley-4055922	1,589,481	13,342,086	2,845,329	-	-	520,927	16,708,343
Mckinley-4055923	127,212	5,446,622	1,207,800	-	710,498	-	7,364,920
Mckinley-4055924	509,473	19,809,561	4,091,185	-	2,650,771	-	26,551,518
Mckinley-4055925	344,376	12,711,994	2,917,770	-	1,959,380	-	17,589,144
Mckinley-4055926	3,065,771	27,187,832	5,826,220	-	-	1,136,411	34,150,463
Muessel-4103021	8,844,923	1,218,046	-	-	-	-	1,218,046
Muessel-4103022	5,150,687	552,028	-	-	-	-	552,028
Muessel-4103023	4,486,658	1,555,784	721,366	-	-	-	2,277,150
Muessel-4103024	4,954,804	1,726,602	748,291	-	-	-	2,474,893
Northland-4933421	922,658	13,496,984	2,673,550	-	-	161,599	16,332,133
Northland-4933422	708,161	9,950,101	2,085,298	-	-	114,389	12,149,788
Northland-4933423	1,232,170	18,755,709	3,750,278	-	-	252,909	22,758,896
Northland-4933424	22,752,507	6,287,552	-	-	5,405,798	565,033	12,258,383
Northland-4933425	10,436,301	5,132,787	-	-	1,771,195	199,458	7,103,440
Northland-4933426	5,809,687	2,475,371	-	-	572,936	-	3,048,307
Osolo-4058021	2,036,142	9,369,272	-	-	-	7,647,813	17,017,086
Osolo-4058022	1,651,768	8,915,655	-	-	-	6,378,149	15,293,805

Circuit ID	*Total Ineligible Period*	*CVR Engaged*	*Test Schedule*	*Feeder Outage*	*Repair / Maintenance*	*Switching*	*Total Eligible Period*
Osolo-4058023	7,847,283	13,250,871	-	-	-	-	13,250,871
Osolo-4058024	1,936,356	13,819,737	-	-	-	9,271,965	23,091,702
Osolo-4058025	4,523,129	5,166,220	-	-	-	-	5,166,220
Osolo-4058026	5,077,922	11,402,398	-	-	-	-	11,402,398
PettitAvenue-4917221	524,092	25,837,669	-	-	-	3,391,137	29,228,807
PettitAvenue-4917222	1,456,924	21,278,831	-	-	-	2,056,230	23,335,061
PettitAvenue-4917223	329,630	8,796,200	-	-	-	811,195	9,607,395
SouthBend-4050321	1,281,885	30,465,030	-	-	-	-	30,465,030
SouthBend-4050322	4,099,499	18,678,093	-	-	-	-	18,678,093
SouthBend-4050323	1,910,215	14,397,441	-	-	-	-	14,397,441
SouthSide-4094621	45,118	1,874,042	-	-	-	-	1,874,042
SouthSide-4094622	615,706	26,894,093	-	-	-	-	26,894,093
SouthSide-4094623	370,653	13,882,702	-	-	-	-	13,882,702
SouthSide-4094624	75,715	4,188,989	-	-	-	-	4,188,989
Southside-4099921	2,304,596	14,547,095	1,442,978	-	-	230,771	16,220,843
Southside-4099922	2,570,877	20,224,517	1,750,335	-	-	483,467	22,458,320
Southside-4099923	1,693,727	10,507,996	1,047,934	-	-	264,343	11,820,273
Spyrun-4923321	482,174	10,154,001	1,137,794	-	-	-	11,291,795
Spyrun-4923322	263,724	3,465,141	332,130	-	-	-	3,797,271
Spyrun-4923329	543,983	9,627,160	1,203,547	-	-	-	10,830,706
StateStreet-4928721	272,168	7,740,872	-	-	1,186,068	-	8,926,940
StateStreet-4928722	32,247	4,576,416	-	-	2,192,783	-	6,769,199
StateStreet-4928723	72,964	2,544,845	-	-	321,610	2,155	2,868,610
Summit-4937824	1,583,064	920,640	-	-	15,232	-	935,872
Summit-4937825	1,157,105	811,722	-	-	11,763	-	823,485
Trier-4936421	536,190	1,256,298	-	-	272,361	263,424	1,792,083
Trier-4936422	146,724	626,029	-	-	87,210	436,748	1,149,987
Trier-4936423	563	223,090	-	-	52,447	1,010	276,547
Wallen-4923421	-	457,516	-	-	-	-	457,516
Wallen-4923422	-	631,568	-	-	-	-	631,568
Wallen-4923423	-	202,122	-	-	-	-	202,122
Wallen-4923424	-	235,937	-	-	-	-	235,937
Wallen-4923425	-	774,003	-	-	-	-	774,003
Wallen-4923426	-	845,531	-	-	-	-	845,531
Total	408,288,836	1,141,282,561	118,886,826	-	22,051,495	118,210,855	1,400,431,736

Below, Table 4-29 shows circuit-level and total ex post kWh savings.

Table 4-29 PY2024 CVR Ex Post kWh Savings

Circuit ID	*Total Eligible Period kWh Consumption*	*CVR Savings Rate*	*Ex Post kWh Savings*
Blaine-4098021	19,735,724	2.2%	445,909
Blaine-4098024	5,154,004	2.4%	123,443
Blaine-4098025	6,218,087	2.3%	140,251
Blaine-4098026	3,731,143	1.9%	71,855
Blaine-4098027	21,418,264	2.0%	428,798
Blaine-4098028	18,393,806	2.3%	435,661
Total - Blaine	**74,651,027**	**2.2%**	**1,645,916**
Cleveland-4933321	16,259,467	0.8%	128,814
Cleveland-4933322	15,322,953	0.8%	111,746
Cleveland-4933323	9,368,344	2.2%	196,892
Total - Cleveland	**40,950,765**	**1.1%**	**437,452**
Daleville-4927921	23,348,344	1.9%	446,046
Daleville-4927922	7,473,184	1.1%	79,790
Daleville-4927923	17,396,060	1.7%	302,326
Total - Daleville	**48,217,588**	**1.7%**	**828,161**
Dunlap-4932721	6,331,962	2.6%	151,021
Dunlap-4932722	7,244,944	3.5%	238,502
Dunlap-4932723	15,568,808	2.8%	424,443
Dunlap-4932724	8,186,966	3.1%	299,394
Dunlap-4932725	9,257,666	3.4%	369,284
Dunlap-4932726	19,950,018	1.3%	288,244
Total - Dunlap	**66,540,364**	**2.7%**	**1,770,888**
EastSide-4093121	8,572,297	2.1%	78,654
EastSide-4093122	9,781,566	2.0%	190,808
EastSide-4093123	27,544,187	2.5%	275,552
EastSide-4093124	16,732,063	4.8%	913,568
EastSide-4093125	17,471,783	4.1%	820,528
EastSide-4093126	12,294,951	2.3%	318,362
Total - EastSide	**92,396,846**	**2.8%**	**2,597,472**
Elcona-4938121	12,965,452	-0.1%	(9,138)
Elcona-4938122	15,496,460	1.9%	115,659
Elcona-4938123	28,843,895	2.4%	436,676
Total - Elcona	**57,305,807**	**0.9%**	**543,197**
Farmland-4927321	9,555,266	2.2%	209,345
Farmland-4927322	2,463,391	2.6%	63,429

Circuit ID	*Total Eligible Period kWh Consumption*	*CVR Savings Rate*	*Ex Post kWh Savings*
Farmland-4927323	11,224,565	2.1%	235,912
Total - Farmland	**23,243,222**	**2.2%**	**508,687**
Grabill-4935221	18,082,794	1.8%	337,209
Grabill-4935222	35,056,633	2.3%	840,933
Grabill-4935223	14,381,341	2.2%	327,822
Total - Grabill	**67,520,768**	**2.2%**	**1,505,963**
Hacienda-4933521	1,574,825	4.6%	63,579
Hacienda-4933523	1,296,114	4.4%	45,594
Hacienda-4933524	1,541,503	4.9%	68,143
Hacienda-4933525	2,101,523	3.2%	68,784
Hacienda-4933526	1,973,586	5.0%	102,958
Hacienda-4933527	2,177,575	2.1%	46,691
Total - Hacienda	**10,665,125**	**3.7%**	**395,750**
Harper-4928821	24,693,697	2.0%	509,188
Harper-4928822	26,266,472	2.2%	597,921
Total - Harper	**50,960,169**	**2.2%**	**1,107,110**
IllinoisRoad-4510721	13,520,299	2.3%	370,187
IllinoisRoad-4510722	16,574,183	2.3%	436,500
IllinoisRoad-4510723	12,256,764	1.9%	270,935
Total - IllinoisRoad	**42,351,246**	**2.5%**	**1,077,622**
Jay-4054321	11,947,950	1.0%	115,517
Jay-4054322	19,804,676	1.0%	195,538
Total - Jay	**31,752,626**	**1.0%**	**311,054**
Lincoln-4051821	31,081,471	0.9%	277,074
Lincoln-4051822	24,292,226	1.8%	427,790
Lincoln-4051824	17,969,306	1.1%	187,439
Total - Lincoln	**73,343,003**	**1.2%**	**892,303**
LusherAvenue-4094021	6,812,544	2.6%	141,571
LusherAvenue-4094022	4,634,393	3.2%	127,300
LusherAvenue-4094023	5,356,514	1.9%	101,353
LusherAvenue-4094024	6,915,475	2.5%	167,778
LusherAvenue-4094025	10,595,124	2.3%	243,642
LusherAvenue-4094026	4,759,146	2.7%	108,440
Total - LusherAvenue	**39,073,196**	**2.3%**	**890,085**
Mackey-4535221	21,650,576	0.9%	201,853
Mackey-4535222	21,758,152	2.6%	576,819
Mackey-4535223	30,298,831	1.3%	383,354

Circuit ID	*Total Eligible Period kWh Consumption*	*CVR Savings Rate*	*Ex Post kWh Savings*
Mackey-4535224	13,931,220	2.6%	365,004
Mackey-4535225	10,021,681	0.2%	17,192
Total - Mackey	**97,660,460**	**1.6%**	**1,544,221**
Mckinley-4055921	40,304,130	0.7%	268,526
Mckinley-4055922	16,708,343	2.2%	373,204
Mckinley-4055923	7,364,920	2.8%	189,190
Mckinley-4055924	26,551,518	1.9%	470,108
Mckinley-4055925	17,589,144	0.7%	116,931
Mckinley-4055926	34,150,463	0.7%	245,314
Total - Mckinley	**142,668,518**	**1.2%**	**1,663,272**
Northland-4933421	16,332,133	-0.9%	(146,000)
Northland-4933422	12,149,788	1.5%	185,832
Northland-4933423	22,758,896	0.3%	57,162
Northland-4933424	12,258,383	2.4%	177,576
Northland-4933425	7,103,440	4.0%	225,192
Northland-4933426	3,048,307	4.2%	119,489
Total - Northland	**73,650,948**	**0.8%**	**619,251**
Muessel-4103021	1,218,046	0.2%	2,198
Muessel-4103022	552,028	-0.7%	(4,047)
Muessel-4103023	2,277,150	1.2%	20,304
Muessel-4103024	2,474,893	4.1%	79,312
Total - Muessel	**6,522,118**	**1.5%**	**97,767**
Osolo-4058021	17,017,086	2.5%	265,176
Osolo-4058022	15,293,805	2.7%	287,004
Osolo-4058023	13,250,871	0.8%	103,798
Osolo-4058024	23,091,702	2.5%	408,390
Osolo-4058025	5,166,220	1.0%	54,216
Osolo-4058026	11,402,398	0.8%	86,751
Total - Osolo	**85,222,080**	**1.4%**	**1,205,334**
PettitAvenue-4917221	29,228,807	1.6%	438,782
PettitAvenue-4917222	23,335,061	0.9%	191,666
PettitAvenue-4917223	9,607,395	0.7%	73,054
Total - PettitAvenue	**62,171,263**	**1.1%**	**703,502**
SouthBend-4050321	30,465,030	2.0%	613,532
SouthBend-4050322	18,678,093	2.6%	490,429
SouthBend-4050323	14,397,441	2.3%	333,450
Total - SouthBend	**63,540,564**	**2.3%**	**1,437,411**

Circuit ID	*Total Eligible Period kWh Consumption*	*CVR Savings Rate*	*Ex Post kWh Savings*
SouthSide-4094621	1,874,042	3.5%	67,326
SouthSide-4094622	26,894,093	3.7%	1,029,313
SouthSide-4094623	13,882,702	3.2%	458,903
SouthSide-4094624	4,188,989	3.0%	128,547
Southside-4099921	16,220,843	2.5%	417,677
Southside-4099922	22,458,320	2.0%	469,926
Southside-4099923	11,820,273	2.0%	243,786
Total - Southside	**97,339,262**	**2.9%**	**2,815,479**
Spyrun-4923321	11,291,795	3.2%	375,101
Spyrun-4923322	3,797,271	1.2%	45,516
Spyrun-4923329	10,830,706	3.8%	430,717
Total - Spyrun	**25,919,773**	**3.3%**	**851,334**
StateStreet-4928721	8,926,940	2.1%	166,961
StateStreet-4928722	6,769,199	3.2%	150,975
StateStreet-4928723	2,868,610	1.7%	43,939
Total - StateStreet	**18,564,749**	**1.9%**	**361,875**
Summit-4937824	935,872	0.8%	7,794
Summit-4937825	823,485	1.1%	8,954
Total - Summit	**1,759,357**	**1.0%**	**16,748**
Trier-4936421	1,792,083	3.7%	64,902
Trier-4936422	1,149,987	4.4%	48,411
Trier-4936423	276,547	5.5%	16,040
Total - Trier	**3,218,617**	**4.0%**	**129,353**
Wallen-4923421	457,516	3.7%	17,471
Wallen-4923422	631,568	2.3%	14,610
Wallen-4923423	202,122	3.2%	6,601
Wallen-4923424	235,937	2.3%	5,517
Wallen-4923425	774,003	1.2%	9,396
Wallen-4923426	845,531	2.1%	17,779
Total - Wallen	**3,146,677**	**2.3%**	**71,373**
Grand Total	**1,400,356,140**	**1.9%**	**26,028,581**

During 2024, 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

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

Table 4-30 presents circuit-level energy savings associated with deployment of the AMI module.

Table 4-30 PY2024 AMI Module Ex Post kWh Savings

Circuit ID	*AMI Module kWh Savings*	*AMI Module Savings Share of Total Engaged State kWh Savings*	*AMI Module Enabled Time as Share of Total CVR Engaged Time*
EastSide-4093121	15,246	20.1%	94.7%
EastSide-4093122	36,085	18.9%	94.7%
EastSide-4093123	44,238	17.0%	94.7%
EastSide-4093124	192,343	23.8%	76.1%
EastSide-4093125	178,446	24.4%	76.1%
EastSide-4093126	47,772	16.8%	76.1%
Total - EastSide	**418,562**	**17.8%**	**85.4%**
Elcona-4938121	-	0.0%	81.5%
Elcona-4938122	15,078	18.8%	81.5%
Elcona-4938123	75,279	23.7%	81.5%
Total - Elcona	**90,357**	**23.1%**	**81.5%**
Farmland-4927321	40,277	21.2%	80.0%
Farmland-4927322	9,704	17.4%	80.0%
Farmland-4927323	64,710	30.0%	80.0%
Total - Farmland	**114,692**	**24.8%**	**80.0%**
Grabill-4935221	57,486	22.1%	82.6%
Grabill-4935222	203,650	31.1%	82.6%
Grabill-4935223	55,130	26.9%	82.6%

Circuit ID	*AMI Module kWh Savings*	*AMI Module Savings Share of Total Engaged State kWh Savings*	*AMI Module Enabled Time as Share of Total CVR Engaged Time*
Total - Grabill	**316,266**	**28.2%**	**82.6%**
Hacienda-4933521	3,973	10.6%	36.8%
Hacienda-4933523	3,265	9.7%	36.8%
Hacienda-4933524	3,970	10.9%	36.8%
Hacienda-4933525	-	0.0%	38.7%
Hacienda-4933526	-	0.0%	38.7%
Hacienda-4933527	-	0.0%	38.7%
Total - Hacienda	**-**	**0.0%**	**37.7%**
Harper-4928821	89,159	17.6%	55.6%
Harper-4928822	155,401	26.2%	55.6%
Total - Harper	**244,561**	**22.2%**	**55.6%**
IllinoisRoad-4510721	-	0.0%	0.0%
IllinoisRoad-4510722	-	0.0%	0.0%
IllinoisRoad-4510723	-	0.0%	0.0%
Total - IllinoisRoad	**-**	**0.0%**	**0.0%**
Jay-4054321	-	0.0%	0.0%
Jay-4054322	-	0.0%	0.0%
Total - Jay	**-**	**0.0%**	**0.0%**
Lincoln-4051821	20,908	9.4%	86.2%
Lincoln-4051822	200,989	58.4%	86.2%
Lincoln-4051824	-	0.0%	86.2%
Total - Lincoln	**221,898**	**30.9%**	**86.2%**
Mckinley-4055921	19,405	9.2%	91.0%
Mckinley-4055922	57,014	19.3%	91.0%
Mckinley-4055923	20,824	13.5%	83.7%
Mckinley-4055924	41,818	10.8%	83.7%
Mckinley-4055925	5,756	6.1%	83.7%
Mckinley-4055926	26,530	13.8%	91.0%
Total - Mckinley	**74,104**	**5.5%**	**87.4%**
Northland-4933421	-	0.0%	0.0%
Northland-4933422	-	0.0%	0.0%
Northland-4933423	-	0.0%	0.0%
Northland-4933424	8,198	5.3%	52.0%
Northland-4933425	13,456	6.4%	52.0%
Northland-4933426	4,156	3.9%	52.0%
Total - Northland	**25,810**	**4.7%**	**26.0%**

Circuit ID	*AMI Module kWh Savings*	*AMI Module Savings Share of Total Engaged State kWh Savings*	*AMI Module Enabled Time as Share of Total CVR Engaged Time*
PettitAvenue-4917221	-	0.0%	60.4%
PettitAvenue-4917222	-	0.0%	60.4%
PettitAvenue-4917223	-	0.0%	60.4%
Total - PettitAvenue	**-**	**0.0%**	**60.4%**
SouthSide-4094621	4,981	7.4%	95.4%
SouthSide-4094622	116,314	11.3%	95.4%
SouthSide-4094623	45,355	9.9%	95.4%
SouthSide-4094624	8,167	6.4%	95.4%
Southside-4099921	111,556	29.7%	94.6%
Southside-4099922	114,148	27.0%	94.6%
Southside-4099923	67,674	31.3%	94.6%
Total - Southside	**293,378**	**10.9%**	**95.0%**
Spyrun-4923321	64,710	19.1%	83.2%
Spyrun-4923322	6,126	14.8%	83.2%
Spyrun-4923329	51,475	13.4%	83.2%
Total - Spyrun	**122,311**	**16.0%**	**83.2%**
StateStreet-4928721	12,032	7.2%	34.6%
StateStreet-4928722	14,628	9.7%	34.6%
StateStreet-4928723	4,568	10.4%	34.6%
Total - StateStreet	**31,228**	**8.6%**	**34.6%**
Trier-4936421	3,483	7.3%	36.2%
Trier-4936422	2,099	7.3%	36.2%
Trier-4936423	775	6.0%	36.2%
Total - Trier	**6,357**	**7.1%**	**36.2%**
Grand Total	**1,990,751**	**8.8%**	**42.4%**

4.2 Peak Reduction

This chapter presents the results of the analysis of demand reduction occurring during 2024 PJM 5CP hours. Demand reductions, accounting for those circuits for which the CVR system was enabled during the 5CP hours, are presented in Table 4-31.

Table 4-31. kW Reduction during PY2024 PJM 5CP

Circuit ID	*6/21/2024*	*7/15/2024*	*7/16/2024*	*8/1/2024*	*8/28/2024*
	5:00 PM - 6:00 PM	*5:00 PM - 6:00 PM*	*5:00 PM - 6:00 PM*	*5:00 PM - 6:00 PM*	*5:00 PM - 6:00 PM*
Blaine-4098021	135.36	128.41	110.25	112.06	-
Blaine-4098024	33.60	32.63	25.47	25.34	-
Blaine-4098025	23.72	21.85	19.08	19.06	-
Blaine-4098026	18.46	17.69	15.63	15.53	-
Blaine-4098027	83.95	83.88	74.44	68.85	-
Blaine-4098028	115.96	108.11	88.95	85.26	-
Cleveland-4933321	-	66.25	57.21	51.58	54.32
Cleveland-4933322	-	38.39	35.08	30.89	34.20
Cleveland-4933323	-	83.73	72.54	66.90	79.76
Daleville-4927921	99.71	99.90	-	82.01	-
Daleville-4927922	20.45	18.73	-	16.09	-
Daleville-4927923	69.01	65.57	-	55.54	-
Dunlap-4932721	-	62.71	-	49.38	55.73
Dunlap-4932722	-	95.91	-	72.66	84.27
Dunlap-4932723	-	132.85	-	111.68	121.36
Dunlap-4932724	-	80.38	79.18	-	91.77
Dunlap-4932725	-	163.25	134.47	-	136.48
Dunlap-4932726	-	100.90	91.74	-	93.02
EastSide-4093121	40.74	38.05	34.49	33.12	33.08
EastSide-4093122	-	-	-	101.45	104.77
EastSide-4093123	197.52	190.56	159.90	128.34	131.53
EastSide-4093124	-	256.95	214.60	206.22	213.56
EastSide-4093125	-	226.64	199.91	193.33	203.29
EastSide-4093126	-	61.13	57.05	56.21	60.48
Elcona-4938121	-	-	(2.80)	(3.09)	(0.73)
Elcona-4938122	-	-	43.87	64.06	65.30
Elcona-4938123	-	-	96.83	93.12	89.13
Farmland-4927321	46.08	44.24	36.65	36.12	-
Farmland-4927322	10.30	10.53	8.54	9.13	-
Farmland-4927323	44.10	42.09	37.58	40.36	-
Grabill-4935221	-	56.56	-	48.65	61.16
Grabill-4935222	-	212.12	-	187.08	210.10

Circuit ID	*6/21/2024*	*7/15/2024*	*7/16/2024*	*8/1/2024*	*8/28/2024*
	5:00 PM - 6:00 PM	*5:00 PM - 6:00 PM*	*5:00 PM - 6:00 PM*	*5:00 PM - 6:00 PM*	*5:00 PM - 6:00 PM*
Grabill-4935223	-	70.01	-	59.36	67.53
Hacienda-4933521	24.38	-	-	19.11	42.44
Hacienda-4933523	22.89	-	-	17.91	-
Hacienda-4933524	26.62	-	-	20.57	23.51
Hacienda-4933525	-	208.77	179.18	-	197.88
Hacienda-4933526	-	323.96	276.23	-	316.74
Hacienda-4933527	-	110.96	100.96	-	113.19
Harper-4928821	-	127.92	121.53	124.14	123.38
Harper-4928822	-	169.57	152.07	147.24	159.79
IllinoisRoad-4510721	-	-	-	93.76	107.26
IllinoisRoad-4510722	-	-	-	109.78	123.32
IllinoisRoad-4510723	-	-	-	70.98	80.98
Jay-4054321	32.54	31.79	26.51	28.53	-
Jay-4054322	53.87	48.75	41.12	42.30	-
Lincoln-4051821	71.28	56.79	-	69.06	-
Lincoln-4051822	125.61	117.34	-	106.90	-
Lincoln-4051824	40.76	43.55	-	40.03	-
LusherAvenue-4094021	-	-	-	-	193.75
LusherAvenue-4094022	-	-	80.39	77.02	79.64
LusherAvenue-4094023	-	29.65	25.96	23.86	25.76
LusherAvenue-4094024	-	44.94	41.97	38.99	40.51
LusherAvenue-4094025	-	68.11	-	58.80	63.68
LusherAvenue-4094026	-	-	-	-	81.41
Mackey-4535221	29.22	27.98	33.99	30.01	-
Mackey-4535222	125.97	116.26	106.42	96.90	-
Mackey-4535223	75.83	75.79	72.93	68.59	-
Mackey-4535224	85.31	79.11	73.09	66.13	-
Mackey-4535225	2.22	6.20	5.53	2.40	-
Mckinley-4055921	-	39.43	39.72	-	-
Mckinley-4055922	-	99.63	89.57	-	-
Mckinley-4055923	54.83	49.36	43.93	48.46	-
Mckinley-4055924	105.27	101.89	100.02	95.30	-
Mckinley-4055925	22.96	25.49	23.61	18.76	-
Mckinley-4055926	-	42.65	41.25	-	-
Muessel-4103021	-	-	-	-	7.09
Muessel-4103022	-	-	-	-	(15.78)
Muessel-4103023	-	-	-	-	35.08
Muessel-4103024	117.17	106.21	96.36	93.56	107.69
Northland-4933421	(16.52)	-	-	(21.11)	-

Circuit ID	*6/21/2024*	*7/15/2024*	*7/16/2024*	*8/1/2024*	*8/28/2024*
	5:00 PM - 6:00 PM	*5:00 PM - 6:00 PM*	*5:00 PM - 6:00 PM*	*5:00 PM - 6:00 PM*	*5:00 PM - 6:00 PM*
Northland-4933422	58.10	-	-	45.62	-
Northland-4933423	9.71	-	-	9.00	-
Northland-4933424	136.87	-	-	-	-
Northland-4933425	267.55	-	-	-	-
Northland-4933426	156.21	-	-	123.83	-
Osolo-4058021	96.12	-	-	98.54	-
Osolo-4058022	129.85	-	-	-	-
Osolo-4058023	-	-	-	41.01	-
Osolo-4058024	155.77	-	-	-	-
PettitAvenue-4917221	137.79	125.45	110.79	105.43	-
PettitAvenue-4917222	64.70	57.58	52.97	51.66	-
PettitAvenue-4917223	19.77	17.84	16.25	15.54	-
SouthBend-4050321	-	149.06	134.17	129.57	141.05
SouthBend-4050322	-	134.86	121.40	115.73	120.37
SouthBend-4050323	-	90.60	80.74	78.75	77.76
SouthSide-4094621	13.59	11.73	10.80	9.94	-
SouthSide-4094622	269.33	238.46	208.88	204.98	-
SouthSide-4094623	93.22	92.08	86.23	82.06	-
SouthSide-4094624	26.71	25.23	24.38	24.35	-
Southside-4099921	102.07	97.00	79.85	85.65	-
Southside-4099922	109.04	105.97	91.30	92.29	-
Southside-4099923	59.46	59.32	45.95	47.40	-
Spyrun-4923321	-	86.03	79.54	79.79	-
Spyrun-4923322	-	10.30	9.35	9.11	-
Spyrun-4923329	-	108.28	100.85	103.91	-
Summit-4937824	-	-	-	-	6.32
Summit-4937825	-	-	-	-	1.37
Trier-4936421	27.12	24.97	20.95	21.44	24.63
Trier-4936422	16.68	15.40	13.84	13.36	15.04
Trier-4936423	8.17	7.43	6.24	6.36	7.27
Wallen-4923421	19.48	18.97	16.10	15.45	17.27
Wallen-4923422	18.40	17.40	14.87	14.71	16.41
Wallen-4923423	6.71	6.49	5.75	5.40	6.06
Wallen-4923424	18.09	18.08	15.83	15.12	17.27
Wallen-4923425	3.61	3.46	2.99	2.92	3.34
Total	3,963.30	6,284.12	4,813.01	5,353.16	4,351.59

The summarized results for each PJM 5CP hour are presented in Table 4-32 below.

Table 4-32. Summary of kW Reductions during PJM 5CP Hours

Date	*Hour Start*	*Hour End*	*Ex Post Net kW Savings*
6/21/2024	5:00 PM	6:00 PM	3,963.30
7/15/2024	5:00 PM	6:00 PM	6,284.12
7/16/2024	5:00 PM	6:00 PM	4,813.01
8/1/2024	5:00 PM	6:00 PM	5,353.16
8/28/2024	5:00 PM	6:00 PM	4,351.59
Maximum Peak kW Reduction			6,284.12
Average Peak kW Reduction			4,953.04