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Witnesses:	R. Thomas

(U 338-E)

2025 General Rate Case

Study of Residential Disconnections and Arrearages

Before the

Public Utilities Commission of the State of California

Rosemead, California
May 12, 2023

SCE 07 Vol. 5: Study of Residential Disconnections and Arrearages

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I.

BACKGROUND

A. Compliance Requirement

Senate Bill 598, approved in September 2017, added Section 718 to the Public Utilities Code. Subsection (b)(1) of Section 718 requires the Commission in every general rate case (GRC) for gas and electrical corporations to "[d]esignate the impact of any proposed increase in rates on disconnections for nonpayment as an issue in the scope of the proceeding" and to "[c]onduct an assessment of and properly identify the impact of any proposed increase in rates on disconnections for nonpayment, which shall be included in the record of the proceeding."

In order to comply with this requirement in this GRC, the Commission's final decision in SCE's 2021 GRC, Decision (D.)21-08-036, directed SCE to include in its next GRC filing a report on the number and percentage of residential utility disconnections and amount of arrearages during the 2021 GRC cycle, and an analysis of the impacts that any proposed rate increases would have on disconnections and arrearages.[1] The decision further provided that SCE's report shall: (1) reflect consideration of approaches other than the Consumer Price Index (CPI) to capture changes in purchasing power, such as use of nominal bills and rates (*e.g.*, if there are minimal changes) or household income levels; and (2) present analyses based solely on bill variables.[2]

Accordingly, Section II below provides the required report on the number and percentage of residential utility disconnections and amount of arrearages during the 2021 GRC cycle. Section III presents SCE's analysis of the impacts that any proposed rate increases would have on disconnections and arrearages.

B. Regulatory Background and Policies Relating to Disconnections

In recent years, the Commission has issued several decisions and resolutions putting limitations and protections in place for utility disconnections of residential customers for non-payment. Many of these limitations and protections were in place during the 2021 GRC cycle.

Most notably, in March 2020, following Governor Newsom's declaration of a state of emergency due to the COVID-19 pandemic, the Commission's Executive Director issued a letter directing energy utilities to implement the protections established in D.19-07-015 for states of emergency, which include

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[1] D.21-08-036, pp. 29-30.

[2] D.21-08-036, p. 30.

the suspension of disconnections for non-payment for residential customers.[3] Subsequently, in April 2020, the Commission issued Resolution M-4842, which, among other things, ordered that all residential customers would be eligible for these protections for one year.[4] The Commission then extended the duration of these protections twice more, first to June 30, 2021 in Resolution M-4849,[5] and then to September 30, 2021 in D.21-06-036.[6] After September 30, 2021, these protections, including the suspension of disconnections, expired. However, SCE did not resume sending disconnection notices for nonpayment for residential customers until October 2022 due to the need to make significant system upgrades to our billing and collections processes in SAP in order to implement several new complex legislative and regulatory requirements that issued during the disconnections moratorium, including the California Arrearage Payment Plan and changes to the automatic payment posting priority process. As a result, SCE did not disconnect any residential customers for nonpayment from April 2020 through October 2022.

In addition to this suspension of disconnections, several other limitations and protections for residential disconnections were put in place during the last five years. First, in D.18-12-013, the Commission adopted interim rules for disconnections, including prohibiting disconnections when temperatures above 100 degrees or below 32 degrees are forecasted based on a 72-hour look-ahead period; prohibiting disconnections for customers who qualify for medical baseline and/or are above 65 years old so long as they agree to a payment plan; and capping SCE disconnections for residential customers at 9.75%.[7] Subsequently, D.20-06-003 ordered SCE to cap residential customer disconnections at 4% by January 1, 2024, and ordered SCE to meet interim caps of 8% as of July 1, 2020, 7% as of January 1, 2021, 6% as of January 1, 2022, and 5% as of January 1, 2023.[8] This Decision further affirmed the prohibitions on disconnections for residential customers that qualify for medical baseline and agree to a 12-month payment plan and when temperatures above 100 degrees or below 32 degrees are forecasted based on a 72-hour look-ahead period.[9] Finally, this Decision

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[3] D.19-07-015.

[4] Resolution M-4842.

[5] Resolution M-4849.

[6] D.21-06-036, OP 1.

[7] D.18-12-013, OP 1.

[8] D.20-06-003, OP 1.

[9] D.20-06-003, OP 1.

implemented additional limitations on disconnections, including prohibiting disconnections for residential customers that (1) are on a 12-month payment plan and are current on both monthly bills and the payment plan, or (2) have a Low-Income Home Energy Assistance Program pledge pending.[10]

Finally, in D.21-06-036, the Commission provided an additional reprieve from disconnection by requiring SCE to default residential customers with arrearages greater than 60 days past due in a "COVID-19 relief payment plan" which amortizes the customer's arrearages over 24 months.[11] Customers are not eligible for disconnection while participating in a "COVID-19 relief payment plan."

[10] D.20-06-003, OP 1.

[11] D.21-06-036, OP 2.

II.

REPORT ON THE NUMBER AND PERCENTAGE OF RESIDENTIAL DISCONNECTIONS AND ARREARAGES SINCE 2018

This section of SCE's testimony provides the required report on the number and percentage of disconnections and amount of arrearages during the 2021 GRC cycle (from January 2018 through February 2023, the most recent data available at the time SCE prepared this report).

Table II-1 below shows the number and percentage of monthly disconnections for all residential customers from January 2018 through February 2023.

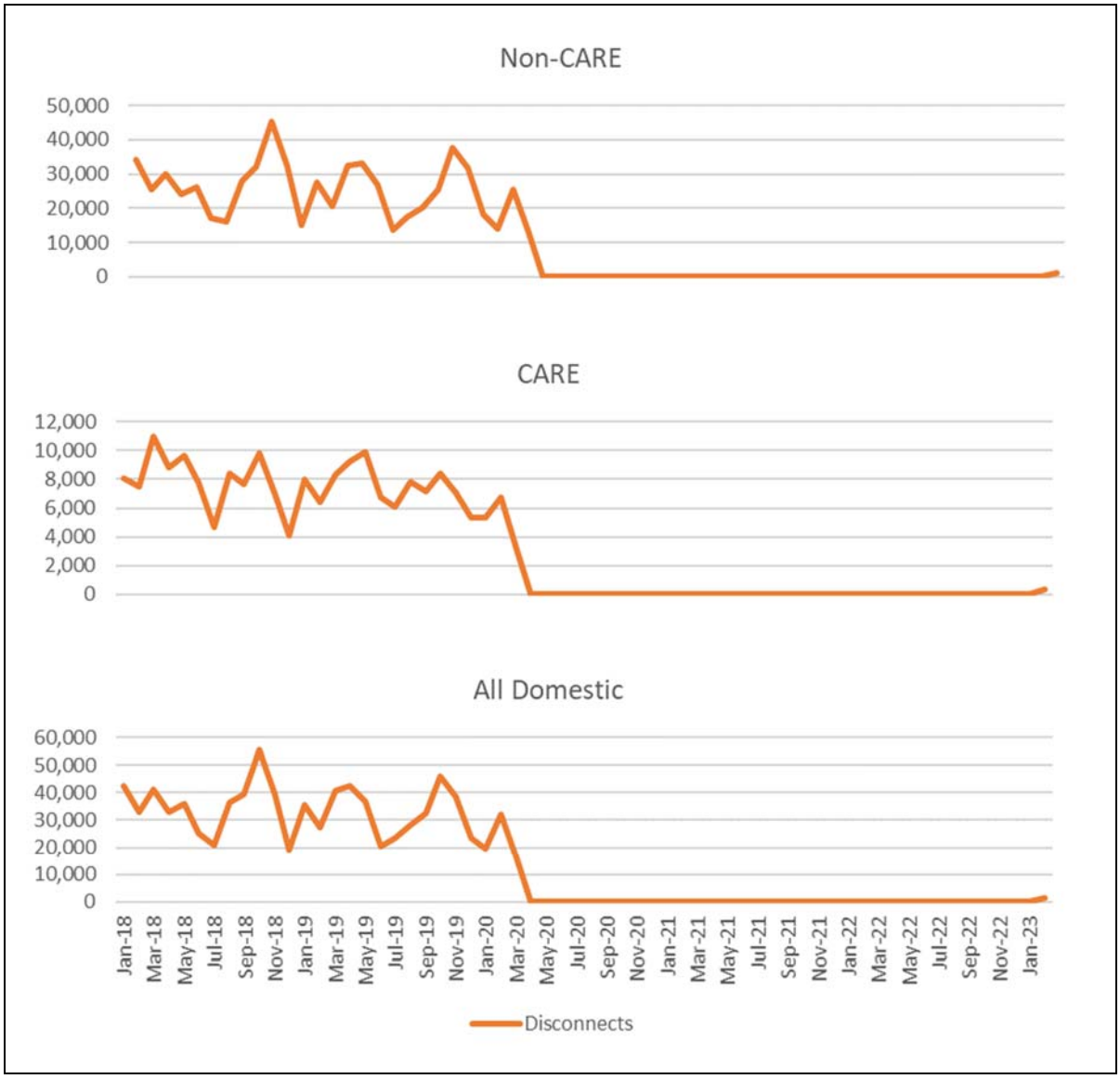
Table II-1
Monthly Disconnects (Jan. 2018 – Feb. 2023)[12]

Month	Disconnects	All Accounts	Monthly % Disconnect		Month	Disconnects	All Accounts	Monthly % Disconnect
Jan-18	42,343	4,304,331	1.0%		Aug-20	0	4,471,764	0.0%
Feb-18	33,190	4,305,923	0.8%		Sep-20	0	4,473,392	0.0%
Mar-18	41,104	4,316,578	1.0%		Oct-20	0	4,473,823	0.0%
Apr-18	32,989	4,309,861	0.8%		Nov-20	0	4,479,276	0.0%
May-18	35,858	4,310,353	0.8%		Dec-20	0	4,481,990	0.0%
Jun-18	25,027	4,324,441	0.6%		Jan-21	0	4,482,842	0.0%
Jul-18	20,945	4,316,547	0.5%		Feb-21	0	4,485,658	0.0%
Aug-18	36,373	4,328,738	0.8%		Mar-21	0	4,489,846	0.0%
Sep-18	39,704	4,318,871	0.9%		Apr-21	0	4,483,807	0.0%
Oct-18	55,330	4,325,511	1.3%		May-21	0	4,480,494	0.0%
Nov-18	39,614	4,335,566	0.9%		Jun-21	0	4,478,852	0.0%
Dec-18	19,108	4,337,058	0.4%		Jul-21	0	4,477,875	0.0%
Jan-19	35,622	4,456,061	0.8%		Aug-21	0	4,478,957	0.0%
Feb-19	27,259	4,458,965	0.6%		Sep-21	0	4,482,479	0.0%
Mar-19	40,805	4,468,707	0.9%		Oct-21	0	4,484,425	0.0%
Apr-19	42,462	4,478,482	0.9%		Nov-21	0	4,487,111	0.0%
May-19	36,888	4,483,663	0.8%		Dec-21	0	4,488,460	0.0%
Jun-19	20,583	4,492,800	0.5%		Jan-22	0	4,495,834	0.0%
Jul-19	23,543	4,515,656	0.5%		Feb-22	0	4,503,464	0.0%
Aug-19	28,207	4,519,790	0.6%		Mar-22	0	4,500,946	0.0%
Sep-19	32,785	4,495,705	0.7%		Apr-22	0	4,499,876	0.0%
Oct-19	46,028	4,500,921	1.0%		May-22	0	4,508,329	0.0%
Nov-19	38,751	4,486,978	0.9%		Jun-22	0	4,513,291	0.0%
Dec-19	23,627	4,486,866	0.5%		Jul-22	0	4,516,028	0.0%
Jan-20	19,481	4,491,112	0.4%		Aug-22	0	4,520,463	0.0%
Feb-20	32,323	4,493,549	0.7%		Sep-22	0	4,524,815	0.0%
Mar-20	16,069	4,509,455	0.4%		Oct-22	0	4,526,547	0.0%
Apr-20	0	4,459,907	0.0%		Nov-22	24	4,527,245	0.0%
May-20	0	4,461,656	0.0%		Dec-22	115	4,530,765	0.0%
Jun-20	0	4,460,942	0.0%		Jan-23	252	4,536,275	0.0%
Jul-20	0	4,469,358	0.0%		Feb-23	1,514	4,537,438	0.0%

[12] Service disconnections from November 2022 through February 2023 are less than 0.05% of the population. Refer to WP SCE-07, Vol. 05, pp. 1-2, Monthly Disconnects.

Figure II-1 below shows the trend in disconnections over this time period for non-CARE and CARE customers separately as well as for all residential customers together.

Figure II-1
Monthly Disconnects by Customer Type (Jan. 2018 – Feb. 2023)[13]



Note that operational constraints also impact the monthly disconnections throughout the year. For example, SCE pauses disconnections around the holidays in the latter half of December. Service disconnections are also postponed when local temperatures are forecast to be above 100 degrees

[13] Refer to WP SCE-07, Vol. 05, pp. 1-2, Monthly Disconnects.

Fahrenheit which can lead to lower disconnects during the warmest months. Finally, as discussed above, there were zero disconnections from April 2020 through October 2022.

Table II-2 below shows the monthly amounts of arrearages for all residential customers from January 2018 through February 2023.

Table II-2
Monthly Amount of Arrearages[14] (Jan. 2018 – Feb. 2023)[15]

Month	Total Monthly Arrearages		Month	Total Monthly Arrearages
Jan-18	$76,027,573		Aug-20	$176,676,017
Feb-18	$75,811,219		Sep-20	$225,063,210
Mar-18	$64,570,704		Oct-20	$279,743,936
Apr-18	$60,435,157		Nov-20	$323,177,942
May-18	$50,252,917		Dec-20	$331,534,755
Jun-18	$58,124,888		Jan-21	$376,524,725
Jul-18	$62,429,099		Feb-21	$392,978,324
Aug-18	$93,572,099		Mar-21	$391,683,916
Sep-18	$121,539,559		Apr-21	$397,726,527
Oct-18	$108,462,319		May-21	$402,899,263
Nov-18	$81,051,504		Jun-21	$418,021,766
Dec-18	$82,623,852		Jul-21	$438,833,427
Jan-19	$80,513,666		Aug-21	$513,136,020
Feb-19	$84,704,283		Sep-21	$577,679,019
Mar-19	$76,215,662		Oct-21	$617,793,190
Apr-19	$68,005,940		Nov-21	$626,600,368
May-19	$53,344,992		Dec-21	$646,463,099
Jun-19	$59,483,450		Jan-22	$668,519,286
Jul-19	$67,259,632		Feb-22	$524,778,420
Aug-19	$106,742,538		Mar-22	$541,532,326
Sep-19	$97,760,986		Apr-22	$541,124,425
Oct-19	$119,155,424		May-22	$546,089,558
Nov-19	$83,709,706		Jun-22	$577,156,199
Dec-19	$85,457,870		Jul-22	$638,113,406
Jan-20	$89,630,131		Aug-22	$746,784,476
Feb-20	$86,414,504		Sep-22	$869,468,196
Mar-20	$95,390,755		Oct-22	$934,362,155
Apr-20	$106,308,674		Nov-22	$954,143,167
May-20	$104,600,151		Dec-22	$959,042,746
Jun-20	$128,895,507		Jan-23	$801,006,407
Jul-20	$141,024,971		Feb-23	$822,237,580

[14] Active residential accounts 21+ days in arrears.

[15] Refer to WP SCE-07, Vol. 05, pp. 3-4, Monthly Arrearages.

III.

ANALYSIS OF THE IMPACTS OF PROPOSED RATE INCREASES ON DISCONNECTIONS AND ARREARAGES

This section of SCE's testimony provides SCE's analysis of the impacts of its proposed rate increases on disconnections and arrearages. SCE conducted a study of its monthly disconnections and arrearages data from 2018 through October 2022 (the most recent data available at the time of the study) to investigate whether there was a trend in the data over time and to determine the effect, if any, of SCE's average residential bills or rates on the number of disconnections and amounts of arrearages.

A. Data Descriptions

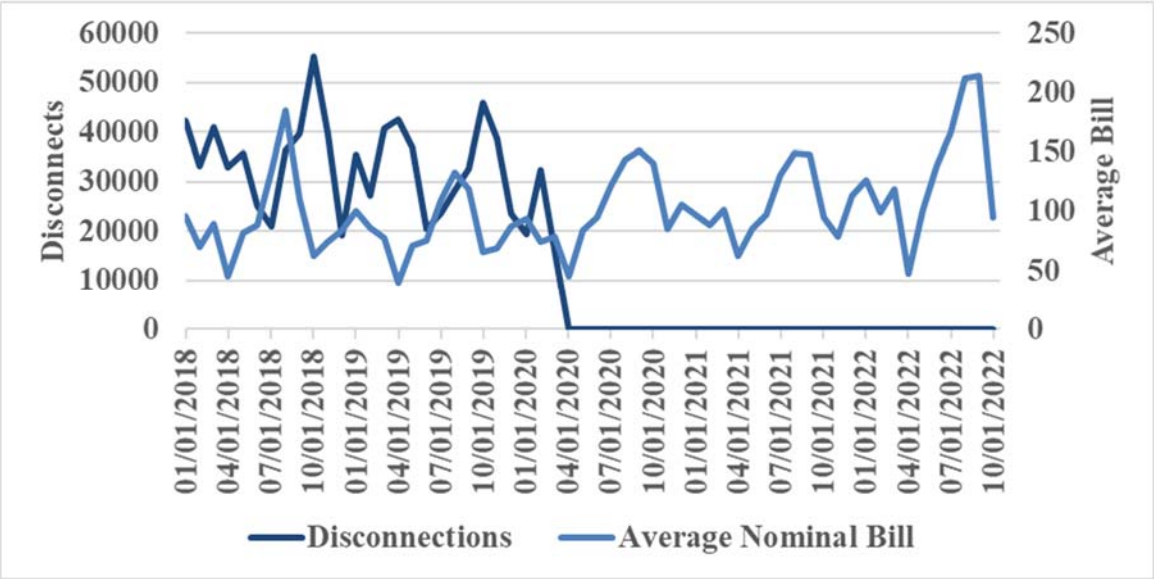
SCE relied on the following data to perform its study:

- All residential monthly disconnections data and residential monthly disconnections data segmented by CARE, non-CARE, and climate zone for the time period 2018 through October 2022
- Average monthly residential bills for all customers and average monthly bills segmented by CARE, non-CARE, and climate zone for the time period 2018 through October 2022
- Average monthly residential rates and average monthly residential rates segmented by CARE, non-CARE, and climate zone for the time period 2018 through October 2022
- All residential monthly arrearage data in dollar units and residential monthly arrearage data segmented by CARE and non-CARE for the time period 2018 through October 2022

B. Disconnections Analyses

The monthly total disconnects and nominal bills are shown together in Figure III-2. As this shows, before the disconnections moratorium, the number of monthly disconnects tended to lag the level of the monthly bill. Then, starting in April 2020, disconnects dropped to zero through October 2022, during which time there was no relationship between the number of disconnections and the monthly bill.

Figure III-2
Monthly Disconnects and Average Nominal Bills (Jan. 2018 – Oct. 2022[16,17]



To investigate whether there was a trend in this data over time and to determine the effect, if any, of SCE's average residential bills or rates on the number of disconnections, SCE conducted a regression analysis. SCE's regression analyses used the number of disconnections as the dependent variable. The explanatory variables used were nominal first-, second-, and third-period lag[18] of the average rate,[19] the nominal first-, second-, and third-period lag of the average bill,[20] and the number of residential customers. Unlike its regression analyses in the 2021 GRC, and pursuant to the Commission's direction in the Decision, SCE did not adjust its nominal rates and bills for inflation,[21] did not use monthly dummy variables, and did not use both rate and bill variables within the same regression model.

The regression equations are:

16 Note that the spike in bills in August and September 2022 corresponds to a record heat wave.

17 Refer to WP SCE-07, Vol. 02, pp. 5-113, Regression Results – Disconnections.

18 First-, second- and third-period lags represent lags of one, two and three months, respectively.

19 The average rate ($/kWh) was calculated by dividing SCE's nominal residential revenues by customers' usage measured in kWh.

20 The average bill ($/customer) was calculated by dividing SCE's residential revenues by the number of residential customers.

21 For the reasons discussed in SCE's testimony in the 2021 GRC (*see* A.21-08-036, Exhibit SCE-18, Vol. 05), SCE continues to believe that it is inappropriate to use nominal rates and bills in these regression analyses.

$$Disconnects_t = \beta_0 + \beta_1 * Customers_t + \beta_2 * AvgBill_{t-1} + \beta_3 * AvgBill_{t-2} + \beta_4 * AvgBill_{t-3} + \varepsilon_t$$

$$Disconnects_t = \beta_0 + \beta_1 * Customers_t + \beta_2 * AvgRate_{t-1} + \beta_3 * AvgRate_{t-2} + \beta_4 * AvgRate_{t-3} + \varepsilon_t$$

Regression results are provided in SCE's workpapers.[22]

1. The original regression models, which focused solely on rates and bills, fit the data poorly

Overall, SCE's regression analysis found little relationship between the explanatory variables—bills, rates, and number of customers—and the dependent variable—number of disconnections. The coefficient of determination, or R^2 value, represents the proportion of variance in the dependent variable (i.e., disconnections) that can be explained by the independent variables (i.e., number of customers, average rates, and average bills) included in the regression model equation. The constructed regression model with average nominal bills fit the data weakly as indicated by the disparate coefficient of determination (or R^2) values of 0.19, 0.44, and 0.75 for the non-CARE, CARE, and total residential models, respectively. The similarly constructed regression models with average nominal rates also had weak R^2 values of 0.40, 0.48, and 0.75 for the non-CARE, CARE, and total residential models respectively. The R^2 of the models for each climate zone ranged from 0.08 to 0.75 for the average bill regressions and 0.09 to 0.75 for the average rate regressions, which suggest low correlation between average bills and average rates and disconnections over the period studied.

These results are not surprising given the 31-month pause on disconnections from April 2020 through October 2022 during which there was no relationship between average rates or average bills and disconnections. As the Commission noted in the Decision: "[w]e would expect that rates would have limited, if any, meaningful relationship to disconnections so long as there are policies and caps in effect limiting disconnections such as those adopted in D.20-06-003 and Resolution [M]-4842 (which adopted a moratorium on utility disconnections because of the COVID-19 pandemic)."[23]

[22] Refer to WP SCE-07, Vol. 05, pp. 5-113, Regression Results – Disconnections.

[23] D.21-08-036, p. 30.

2. After accounting for the disconnections moratorium in supplemental regression models, correlation improved

Because the Decision did not preclude SCE from presenting any additional analyses of its choosing, SCE performed supplemental regression analyses that went beyond the requirements of D.21-08-036 to attempt to ameliorate the modelling issues that arose when SCE attempted to conduct regressions using just rate and bill variables. The supplemental analysis is primarily intended to demonstrate how the model's fit can be improved when accounting for Commission policies regarding disconnections. For simplicity, these supplemental regression analyses are an improvement of the current model specification discussed above. However, other types of regression analyses could also be considered that do not start with the current model specification.

In these supplemental regression analyses, SCE accounts for the period from April 2020 through October 2022 during which disconnections were suspended by including an indicator variable for this period. While SCE also believes it would be prudent to account for seasonal variation in disconnections and bills in this type of analysis, with only two years in the data set during which disconnections were performed, there is insufficient data to measure any seasonal effects.

The fit, as measured by R^2, of the regressions of nominal bills on disconnections significantly improves after accounting for the moratorium on disconnections as shown in Table III-3.

Table III-3
Comparison of Regression Model Fit (R-Square) of Total Disconnections[24]

	Original Model	Supplemental Model
Non-CARE	0.19	0.88
CARE	0.44	0.91
All Domestic	0.75	0.91

The indicator added for the period of April 2020 through October 2022, during which disconnections were suspended, provides a better fit describing the relationship between the explanatory variables (i.e., number of customers, rates, and bills) and disconnections for the period of January 2018 through October 2022. For the group of non-CARE customers, there was a statistically significant relationship between the second lag of the nominal average bill and the number of monthly

[24] Refer to WP SCE-07, Vol. 05, pp. 5-113, Regression Results – Disconnections.

disconnections, notwithstanding the fact that disconnections did not occur after March 2020 due to the moratorium put in place during the COVID pandemic. In contrast the relationship between average nominal bills and disconnections was not statistically significant for the group of CARE customers.

It is important to note that these models do not consider the impact of seasonality given there is not enough data on disconnections to account for seasonality during the period studied due to the disconnection moratorium. Nominal bills vary throughout the calendar year and while disconnections may also vary with the level of bills throughout the year, whether the average level of disconnection is increasing over time is a separate matter not addressed by these models. Any future studies should account for the seasonal variation in disconnections. It is also important to note the supplemental regression model is a better predictor of the relationship between nominal bills and disconnections with policies in place that limit the level of disconnections.

C. Arrearage Analyses

In addition to looking at disconnections, SCE performed regression analyses of residential arrearages to investigate trends in the data over time and to determine the effect, if any, of SCE's average residential bills and/or rates on arrearages. Here, the explanatory variables used were the nominal first-period lag[25] of the average rate,[26] the nominal first-period lag of the average bill,[27] and the number of residential customers. SCE again did not adjust for inflation, used separate regression equations for rate and bill variables, and did not use dummy variables.

The regression equations are:

$$Arrears_t = \beta_0 + \beta_1 * Customers + \beta_2 * AvgBill_{t-1} + \varepsilon_t$$

$$Arrears_t = \beta_0 + \beta_1 * Customers + \beta_2 * AvgRate_{t-1} + \varepsilon_t$$

Regression results are provided in SCE's workpapers.[28]

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[25] First-period lag represent lag of one month.

[26] The average rate ($/kWh) was calculated by dividing SCE's nominal residential revenues by customers' usage measured in kWh.

[27] The average bill ($/customer) was calculated by dividing SCE's residential revenues by the number of residential customers.

[28] Refer to WP SCE-07, Vol. 05, pp. 114-126, Regression Results – Arrearages.

1. The original regression model found a relationship between nominal bills and the monthly amount of arrears; however, the existence of the disconnections moratorium clouds the meaning of this relationship

In contrast to the results for the original disconnections regressions, SCE's regression analysis for arrearages found a strong relationship between two explanatory variables—bills and number of customers—and the dependent variable—monthly amount of arrearages. The constructed arrearages regression models fit the data reasonably well as can be seen through the R^2 values of 0.81, 0.32, and 0.54 for the residential, non-CARE, and CARE models, respectively. The positive relationship between the average nominal bill and arrearages is to be expected because nonpayment of larger bills will result in larger arrears. However, the model does not account for the fact that persistent nonpayment resulting from the disconnection moratorium beginning in March 2020 led to the compounding of arrears over the period studied.

2. The increase in arrearages over time is likely attributable to the disconnections moratorium

Arrearages increased sharply from 2020 to 2022. However, this was not primarily tied to bill increases but instead to a change in customer behavior in response to the disconnections moratorium. This is illustrated in in Figure III-3 below, which shows that both the arrears and the one month lag of the average bill move together in a seasonal pattern until early 2020. However, once the disconnection moratorium went into effect, arrears start to rise dramatically.[29] This is not surprising. Eliminating disconnections for nonpayment eliminates one of the incentives for a customer to pay down arrears. Additionally, disconnections act as a "sink" for arrears. For example, in 2019, approximately 84% of customers disconnected for non-payment were reconnected within 24 hours.[30] Disconnection prompts accounts to be brought current, reducing the amount of arrearages. Once the disconnections moratorium was in place, this "sink" effect never occurred.

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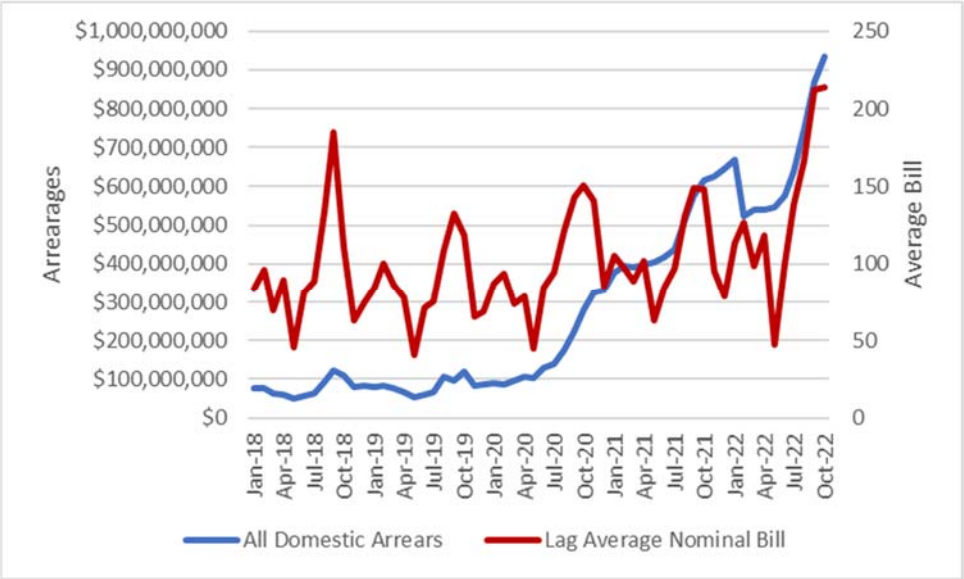
[29] There is one decline in arrears seen once the moratorium went into effect in February 2022. However, this was due to the application of the California Arrearages Payment Program (CAPP), which was a state program to help pay eligible residential customers' past due energy bills that had increased during the COVID-19 pandemic. *See* https://www.csd.ca.gov/capp.

[30] R.18-07-005, Southern California Edison Company's Monthly Disconnect Data Report, Appendix A, "December 2019 Monthly Disconnect Data Report."

Figure III-3
Arrears & One Month Lag of Average Bill[31]



D. Conclusion

SCE's initial disconnections regression analyses that focused solely on rate and bill variables over the time period 2018 through October 2022 found little relationship between bills and rates and the number of disconnections. As discussed above, this is not surprising given the 31-month pause on disconnections from April 2020 through October 2022 due to the policies put in place to limit disconnections in response to the COVID-19 pandemic. In contrast to the results for the original disconnections regressions, SCE's regression analysis for arrearages did find a relationship between bills and the monthly amount of arrearages. However, the model did not take into account the fact that the sharp increase in arrears seen from 2020 to 2022 was primarily tied to a change in customer behavior in response to the disconnections moratorium. Based on these regression results, SCE finds that attempting to predict disconnections and arrearages based solely on changes in bills and rates is ineffective during periods in which there are policies in place limiting disconnections. This is consistent with the Commission's prediction in the 2021 GRC decision that "[w]e would expect that rates would have limited, if any, meaningful relationship to disconnections so long as there are policies and caps in effect

[31] Refer to WP SCE-07, Vol. 05, pp. 114-126, Regression Results - Arrearages.

limiting disconnections such as those adopted in D.20-06-003 and Resolution [M]-4842 (which adopted a moratorium on utility disconnections because of the COVID-19 pandemic)."[32]

After SCE supplemented the initial disconnections regression models to account for the disconnections moratorium, SCE found that, for the population of all residential customers, there was a statistically significant relationship between the second lag of the nominal average bill and the number of monthly disconnections for the period of January 2018 through October 2022. Given the fact that the disconnections moratorium is no longer in effect, this finding suggests that SCE's proposed rate increases may have a limited effect on disconnections and arrearages during the 2025 GRC period. That being said, there are still extensive limitations on disconnections that have been put in place since 2018 as discussed in Section I.B. above. These include a cap on the percentage of residential customer accounts that SCE can disconnect from utility service at 5% as of January 1, 2023 and 4% as of January 1, 2024.[33] As such, any impact that SCE's rates and bills will have on disconnections during the 2025 GRC period is likely to be muted by these Commission-adopted limitations on disconnections. Future assessments of disconnections should include consideration of the impact of such Commission policies and limitations on disconnections, rather than focusing solely on rates and bills.

[32] D.21-08-036, p. 30.

[33] D.20-06-003 at Ordering Paragraph (OP) 1(a). While this decision did not establish disconnection caps beyond 2024, the Commission did note: "Ideally, the Commission would like to strive for a disconnection rate of zero. However, setting the disconnection rates below 4 percent in 2024 is a good first start at curbing the increasing disconnection rates." D.20-06-003, pp. 33-34.