BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

FILED
03/15/21
04:59 PM

Order Instituting Rulemaking to Revisit Net Energy Metering Tariffs Pursuant to Decision 16-01-044, and to Address Other Issues Related to Net Energy Metering.	Rulemaking 20-08-020 (Filed September 3, 2020)

SIERRA CLUB SUCCESSOR TARIFF PROPOSAL

Matthew Vespa
Rebecca Barker
Earthjustice
50 California Street, Suite 500
San Francisco, CA 94111
Telephone: (415) 217-2123
Email: mvespa@earthjustice.org
rbarker@earthjustice.org

Katherine Ramsey
Sierra Club
2101 Webster Street, Suite 1300
Oakland, CA 94612
Telephone: (415) 977-5627
katherine.ramsey@sierraclub.org

Attorneys for Sierra Club

Dated March 15, 2021

TABLE OF CONTENTS

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Revisit Net Energy Metering Tariffs Pursuant to Decision 16-01-044, and to Address Other Issues Related to Net Energy Metering.	Rulemaking 20-08-020 (Filed September 3, 2020)

SIERRA CLUB SUCCESSOR TARIFF PROPOSAL

Pursuant to the November 19, 2020 Joint Assigned Commissioner's Scoping Memo and Administrative Law Judge ("ALJ") Ruling Directing Comments on Proposed Guiding Principles and ALJ Hymes' January 28, 2021 Email Ruling Introducing White Paper, Noticing Workshop on White Paper, and Providing Instructions for Successor Proposals, Sierra Club submits this Proposed Successor to the Current Net Energy Metering ("NEM") Tariff. Matt Vespa (mvespa@earthjustice.org) will present Sierra Club's proposal at the workshops scheduled for March 23–24th. As set forth in the ALJ Ruling, Sierra Club first provides a three-page overview of its proposal, then sets forth its proposal in additional detail, and then provides a brief response to each proposal element specified in the ALJ Ruling.

I. PROPOSAL OVERVIEW

To best ensure sustainable growth of rooftop solar in a manner that minimizes rate impacts to non-participants and encourages deeper decarbonization through adoption of electrification and load-shifting technologies, Sierra Club recommends that the Commission look at its NEM program holistically and proposes changes to underlying rate structures for existing residential NEM customers and a successor tariff with a declining market transformation credit ("MTC") similar to what is contemplated in E3's Successor Tariff White Paper.[1]

[1] E3, *Alternative Ratemaking Mechanisms for Distributed Generation in California* (Jan. 28, 2021) ("Successor Tariff White Paper"), https://www.ethree.com/wp-content/uploads/2021/02/Alternative-Ratemaking-Mechanisms-for-Distributed-Energy-Resources-in-California-Successor-Tariff-Options-Compliant-with-AB-327-1.pdf; Sierra Club's proposal is for residential NEM customers only, which constitute roughly 98 percent of NEM solar deployment. *See* Verdant Associates, *Net-Energy Metering 2.0 Lookback Study*, at 24–25 (Jan. 21, 2021) ("Lookback Study") ("Year after year, residential projects represent the vast majority of total NEM interconnections. Almost 98 percent of NEM systems interconnected during 2019 were residential. That proportion has remained relatively constant since 2013.").

The vast majority of existing residential NEM customers are either on tiered rates or time-of-use ("TOU") rates that are not sufficiently correlated with the substantially higher marginal cost of evening electricity. To better align NEM with California's climate objectives and mitigate rate impacts to non-participants identified in the Lookback Study and the Commission's White Paper on *Utility Costs and Affordability of the Grid of the Future*,[2] Sierra Club proposes the Commission move residential NEM 1.0 and NEM 2.0 customers to existing TOU rates with at least a 2:1 differential between summer peak evening and summer weekday off-peak periods. Existing low-income NEM customers would not be required to move to a different rate.[3]

Moving existing NEM customers to a different rate structure is well within Commission authority. While the Commission has repeatedly stated that NEM customers can remain on the NEM tariff for 20 years, the Commission has also repeatedly affirmed that underlying rates are subject to change. Under Sierra Club's proposal, Pacific Gas & Electric ("PG&E") customers would have the choice of moving to either its EV2 or its proposed E-ELEC rate. Southern California Edison ("SCE") NEM customers would move to its TOU-D-Prime rate. San Diego Gas & Electric ("SDG&E") does not yet have a qualifying TOU rate but is scheduled to propose an electrification-friendly rate in September as part of its Rate Design Window application.[4] To reduce uncertainty and to ensure consistent treatment across utilities, Sierra Club recommends the Commission ensure that SDG&E's electrification-friendly rate has differentials and any fixed charge component within the range of the electrification-friendly rates approved for PG&E and SCE. Prior to moving existing customers to their new rate, each investor-owned utility ("IOU")

---

[2] CPUC, *Utility Costs and Affordability of the Grid of the Future: An Evaluation of Electric Costs, Rates, and Equity Issues Pursuant to P.U. Code Section 913.1*, at 27–28 (Feb. 2021), https://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Utilities_and_Industries/Energy/Reports_and_White_Papers/Feb%202021%20Utility%20Costs%20and%20Affordability%20of%20the%20Grid%20of%20the%20Future.pdf (Lookback Study finding that under Total Resource Cost ("TRC") test, total benefits were $7.96 billion and total costs $9.46 billion) and under ratepayer impact measure ("RIM") test, total benefits were $7.58 billion and total costs $20.58 billion).

[3] Sierra Club proposes defining low-income NEM customers as those with "household incomes below 80 percent of the area median income" as set for in the Commission's Environmental and Social Justice Action Plan. Environmental and Social Justice Action Plan at 10 n.6 (Feb. 21, 2019), https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/UtilitiesIndustries/Energy/EnergyPrograms/Infrastructure/DC/Env%20and%20Social%20Justice%20ActionPlan_%202019-02-21.docx.pdf.

[4] *See* A.10-07-009/A.19-03-002, *Joint Motion for Approval of General Rate Case Phase 2 Settlement Agreement*, at 14 (Oct. 8, 2020), https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M348/K580/348580462.PDF.

would provide customers with recommendations on maximizing system value through load-shifting, information on available rebates for electrification and demand response technologies, and the additional GHG reductions and potential operational cost savings that could be achieved through fuel switching to electric appliances and vehicle.

Assigning existing NEM customers to more differentiated rates better aligns system costs and benefits pursuant to Public Utilities Code Section ("Section") 2827.1(b)(3) and (b)(4). The reduction in mid-day summer export compensation by moving from PG&E and SCE default TOU baseline rates as compared to EV2, E-ELEC and TOU-D-Prime is between 15 and 36 percent.[5] To comply with Commission precedent allowing customers to retain their rate for at least five years and maintain reasonable expectations for system value, Sierra Club proposes the transition to more differentiated rates for existing NEM residential customers occur eight years from system interconnection.

NEM program savings resulting from reductions in mid-day export compensation for existing customers can offset costs of an MTC for successor tariff customers and Sierra Club's separate joint proposal with Grid Alternatives and Vote Solar for programs to increase solar deployment among low-income customers, thereby helping to ensure "customer-sited renewable distributed generation continues to grow sustainably" pursuant to Section 2827.1(b)(1). In sending price signals that encourage load-shifting and electrification, Sierra Club's proposal also provides "customer incentives for bill savings with benefits to the grid and advancement of California's GHG goals."[6]

With regard to a prospective tariff for residential customer-sited distributed generation, Sierra Club is generally supportive of the structure outlined in the Successor Tariff White Paper with modifications. Rather than create a new rate with complex features and/or substantial fixed charges, Sierra Club proposes successor tariff customers subscribe to the more differentiated electrification-friendly rates adopted or under consideration by each IOU. With regard to export compensation, Sierra Club supports a net billing mechanism in California.[7] Because the highly differentiated/electrification-friendly rates already reduce mid-day compensation compared to

---

[5] *See* Section II.A.4.(a).
[6] Successor Tariff White Paper at 26.
[7] Sierra Club notes that California's high residential rates and levels of solar penetration differentiate it from other states with NEM programs and that support for net billing in California should not be construed as support for net billing elsewhere.

default TOU rates, Sierra Club proposes that an export credit first be set at the more differentiated/electrification-friendly rate. This export rate would be set for 20 years and unlike NEM, would not increase with retail rates. With each GW of total solar deployment across the IOUs, export compensation for the next tranche of successor tariff customers would be reduced by 10 percent toward avoided cost as determined by that year's avoided cost calculator ("ACC"). Like the initial set of successor tariff customers, customers subscribing in each tranche would have their export rate set for 20 years. At 10 GW of total deployment, approximately equal to the total customer-sided generation modelled in the Integrated Resource Plan ("IRP") proceeding to meet 2030 energy sector greenhouse ("GHG") targets, compensation would reach avoided cost.

Unlike the Successor Tariff White Paper, Sierra Club does not propose increases to fixed charges beyond those included in underlying electrification-friendly rates and proposes that additional fees on rooftop solar customers not be considered at this time given the significant program changes already being contemplated. To encourage future electrification, systems should also be allowed to be sized to serve demand assuming all-electric appliances and up to two electric vehicles, rather than historic usage. In lieu of providing payment or credit to successor tariff customers for any Net Surplus Compensation ("NSC"), any such funds would instead be directed to help fund low-income clean energy programs.

With regard to addressing inequities in adoption by low-income customers, Sierra Club's proposal is submitted separately in collaboration with Grid Alternatives and Vote Solar. Sierra Club reserves the right to modify its proposal as discussion and analysis on a potential successor tariff continue and looks forward to reviewing other party proposals.

II. DETAILED PROPOSAL

A. The Commission Should Move Existing Residential NEM Customers to TOU Rates With at Least a 2:1 Differential Between Peak Summer Evening and Mid-Day Off Peak Periods Approximately Eight Years from Taking Service under the NEM Tariff.

To support the proposal to move existing NEM customers to more differentiated existing TOU rates, Sierra Club first identifies the legal authority permitting the Commission to change underlying rates for NEM customers. Sierra Club then provides a summary of data request responses identifying the main rate structures under which NEM 1.0 and 2.0 customers are currently enrolled. The vast majority of existing NEM customers are on either flat rates or,

depending on the IOU, TOU rates that have between a 1.2:1 to 1.7:1 differential between evening peak and off-peak weekday periods. These rates are not well aligned with system costs. As the Successor Tariff White Paper observes, "having all customer-generators enroll in TOU rates as part of NEM 2.0 helped move compensation for customer-sited renewable generation closer towards cost causation," but there is continued misalignment in part because "current residential TOU rates are not strictly reflective of the avoided (marginal) costs at different times of day."[8] Sierra Club then describes the rates it recommends existing customers be moved to, the timeframe that Sierra Club recommends the transition occur, and the resulting non-participant and environmental benefits.

1. Commission Decisions Have Repeatedly Determined that Changes to the Underlying Rate Structures for NEM Customers are Both Permitted and To Be Expected.

Both the NEM 1.0 and NEM 2.0 tariffs are overlays, meaning that the structure of the NEM program applies on top of whatever the customer's otherwise applicable tariff would be.[9] Past Commission decisions have determined that both NEM 1.0 and NEM 2.0 customers ("existing NEM customers") are guaranteed the option to remain on NEM until 20 years after their date of interconnection, while also making clear that the 20-year "transition period" for existing NEM customers guarantees only a continuing right to the NEM overlay on their rates, not to any particular underlying rate or rate structure.[10] Not only are changes to the underlying rates and rate structures through which NEM customers take service permitted,[11] but the

---

[8] Successor Tariff White Paper at 11.

[9] D.15-07-001, *Decision on Residential Rate Reform for Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company and Transition to Time-Of-Use Rates*, at 149, 154 (July 13, 2015) ("D.15-07-001"), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M153/K110/153110321.PDF.

[10] D.14-03-041, *Decision Establishing a Transition Period Pursuant to Assembly Bill 327 for Customers Enrolled in Net Energy Metering Tariffs*, at 18–20 (Apr. 4, 2014) ("D. 14-03-041") (holding NEM 1.0 customers have a right to stay on NEM 1.0 for 20 years from their individual interconnection date), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M089/K386/89386131.PDF; D.15-07-001 at 154–155; D.16-01-044, *Decision Adopting Successor to Net Energy Metering Tariff*, at 100–101 (Feb. 5, 2016) ("D.16-01-044") (holding that NEM 2.0 customers also have a right to stay on NEM 2.0 for 20 years from their interconnection date), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M158/K181/158181678.pdf.

[11] The Commission has authority to place conditions on a customer's participation in net energy metering, such as conditioning net energy metering on enrollment in TOU rates. Federal law also requires the Commission to allow customers with distributed solar generation to opt out of net energy metering, take

Commission has repeatedly signaled changes to rates should be expected.

First, in D.14-03-041, which established the 20-year transition period for NEM 1.0 customers, the Commission acknowledged that changes to residential rate design were "expected to result in significant changes to the residential rate structure, which may reduce the monthly savings from NEM,"[12] and noted that any forecasts by utilities about payback periods were fundamentally limited because they "cannot account for future changes to the actual electric rates underlying the NEM structure."[13] Then, in D.15-07-001, a decision implementing broad residential rate reform and structuring the transition to default TOU rates for residential customers, the Commission rejected the argument that "because the residential rate tariffs and the NEM tariff work jointly to determine a customer's bill, the Commission should require the utilities to retain all existing TOU rate schedules."[14] Instead, the Commission determined "contentions regarding customers' reliance on existing rates and rate structures to be unreasonable," and reiterated that there was no right for NEM customers to retain their underlying rate structure.[15] Then, in D.16-01-044, the Decision adopting NEM 2.0, the Commission again stated:

> To avoid any misunderstanding, we reiterate our observation in D.15-07-001 that [NEM] customers do not have any entitlement to the continuation of any particular underlying rate design, or particular rates. The 20-year period we designate applies only to a customer-generator's ability to continue service under the NEM successor tariff established by this decision.[16]

Accordingly, while existing NEM customers have the right to retail rate compensation for exports for twenty years, the retail rates themselves are subject to change. As the Commission has observed, "rates and rate structures change periodically, mostly gradually, though periodic revenue requirement and revenue allocation proceedings, but occasionally abruptly."[17] To mitigate the impact of changing rate structures for existing NEM customers, the Commission has

---

service under non-discriminatory rates, and sell any excess generation to the utility at avoided-cost rates. 18 C.F.R. §§ 292.305(a); 292.304.

[12] D.14-03-041 at 19 (internal citation omitted).

[13] *Id.* at 18–19.

[14] D.15-07-001 at 150.

[15] *Id.* at 154.

[16] D.16-01-044 at 100–101.

[17] D.15-07-001 at 155.

allowed customers to remain on their existing rates for at least five years.[18] Ensuring a NEM customer can stay on their existing rate for five years is the balance the Commission has struck between moving to rates that better align with grid conditions and avoiding abrupt impacts to provide greater certainty to NEM customers.[19] Changing the underlying rate structure to which NEM customers subscribe – provided that any such change occurs after five years of a customer subscribing to NEM – is in keeping with Commission precedent.

2. The Vast Majority of Existing Residential NEM Customers Are on Tiered or Mildly Differentiated TOU Rate Structures.

In response to data requests, the utilities provided Sierra Club with information on the amount of NEM capacity subscribed to the various rate structures offered by each utility. The overwhelming majority of existing PG&E NEM customers are on a tiered rate or a TOU rate with approximately a 1.3:1 differential between summer peak evening periods and weekday off-peak periods. Close to half of SCE's existing NEM capacity is on a tiered rate. SCE's default TOU rate for NEM 2.0 customers, TOU-D (4 to 9), is more differentiated than PG&E's with a summer weekday peak to off-peak differential of approximately 1.6:1. Similarly, close to half of SDG&E's NEM capacity is on a tiered rate. The default TOU rate most NEM 2.0 customers subscribe to in SDG&E's service territory also has a differential of close to 1.7:1 between summer peak evening and mid-day periods. To assist the Commission and parties in understanding the rates and main rate structures existing NEM customers are currently enrolled in, and the value in moving existing NEM customers to more differentiated TOU rates, Sierra Club summarizes residential NEM enrollment for each IOU below.

a) PG&E

As of October 2020, PG&E had over 2,750 MW of installed residential rooftop solar capacity, with approximately 1,350 MW under NEM 1.0 and 1,400 MW under NEM 2.0.[20] The majority of NEM 1.0 capacity, or over 880 MW, takes service under Schedule E1, a single-family residential tiered rate with the following rates:[21]

---

[18] *Id.* ("Given the number of significant changes we are adopting, including tier flattening and increased use of minimum bills, and given the need for customer acceptance, we also find that the transition period for PG&E's E-6 tariff and SDG&E's DR-TOU tariff should be at least five years.").
[19] D.16-01-044 at 93–94.
[20] PG&E Response to Data Request Sierra Club-PG&E-01, Q.1, Attachment 1.
[21] *Id.* (combining totals for E1 and E1L) Rate Schedules; PG&E, *Electric Schedule E-1*, at 1

Schedule E1	
Baseline Usage	$0.26/kWh
101% to 400% of Baseline Usage	$0.33/kWh
High Usage (Over 400% of Baseline)	$0.41/kWh
Minimum bill of $0.33 per day.	

The next most common rate for PG&E's residential NEM 1.0 customers is Schedule E6, a legacy tiered TOU rate serving approximately 290 MW of NEM 1.0 residential installed capacity and slightly over 23 MW of NEM 2.0 residential capacity.[22] With a partial peak from noon to 3 pm, this rate provides substantial compensation for solar exports during hours of peak solar generation. Schedule E6 provides the following rates:[23]

Schedule E6				
	Tier	**Peak** (3 pm to 8 pm M-F)	**Partial Peak** (Noon to 3 pm & 8 pm to 10 pm M-F; plus 5 pm to 8 pm on weekends)	**Off-Peak** (All other times, including holidays)
Summer Rates (June 1 – September 30)	Baseline Usage	$0.42/kWh	$0.30/kWh	$0.23/kWh
	Over 100% of Baseline	$0.50/kWh	$0.38/kWh	$0.30/kWh
		Peak	**Partial Peak** (5 pm to 8 pm M-F)	**Off-Peak** (All other times, including holidays)
Winter Rates (October 1 – May 31)	Baseline Usage	N/A	$0.25/kWh	$0.23/kWh
	Over 100% of Baseline	N/A	$0.32/kWh	$0.31/kWh

The most common rate for NEM 2.0 capacity is E-TOU-C, a tiered TOU rate, which serves over 950 MW of residential installed NEM 2.0 capacity and 68 MW of NEM 1.0 capacity.[24] Schedule E-TOU-C has a summer peak to off-peak differential of approximately

https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHEDS_E-1.pdf. All rates are rounded to the nearest $0.01 and updated as of March 9, 2021.

[22] PG&E Response to Data Request Sierra Club-PG&E-01, Q.1, Attachment 1.

[23] PG&E, *Electric Schedule E-6*, https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHEDS_E-6.pdf.

[24] PG&E Response to Data Request Sierra Club-PG&E-01, Q.1, Attachment 1 (combining installation capacities for TOU-C and TOU-CL).

1.2:1.[25]

E-TOU-C		
	Peak (4 pm to 9 pm, all days)	**Off-Peak** (All other hours)
Summer Rates (June 1 – September 30)	$0.42/kWh	$0.35/kWh
Winter Rates (October 1 – May 31)	$0.32/kWh	$0.30/kWh
With a $0.07 baseline credit applied to baseline usage and a minimum bill of $.033/day.		

E-TOU-B accounts for 230 MW of residential NEM 2.0 and 28 MW of NEM 1.0 capacity. Schedule E-TOU-B is an untiered TOU offering rates as follows with a summer peak to off-peak ratio of approximately 1.3:1.[26]

E-TOU-B		
	Peak (4 pm to 9 pm on non-holiday weekdays)	**Off-Peak** (All other hours)
Summer Rates (June 1 – September 30)	$0.41/kWh	$0.31/kWh
Winter Rates (October 1 – May 31)	$0.28/kWh	$0.26/kWh
Minimum bill of $0.33/day.		

The only residential TOU rate with a substantial differential between evening peak and mid-day periods is EV2. Only 63 MW of NEM capacity, approximately two percent of total NEM capacity in PG&E's service territory, is currently under this rate.[27]

b) SCE

As of January 2021, SCE had approximately 2,044 MW of residential rooftop solar, with approximately 1,171 MW under NEM 1.0 and 873 MW under NEM 2.0.[28] The largest subset of

[25] PG&E, *Electric Schedule E-TOU-C*, https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHEDS_E-TOU-C.pdf.
[26] PG&E, *Electric Schedule E-TOU-B*, https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHEDS_E-TOU-B.pdf. Schedule E-TOU-B has been closed to new customers since May 2020 and will be eliminated effective October 31, 2025. *Id.* at 1.
[27] PG&E Response to Data Request Sierra Club-PG&E-01, Q.1, Attachment 1 (36.6 MW under NEM 1.0 and 26.6 MW under NEM 2.0).
[28] SCE Response to Data Request Sierra Club-SCE-01, Q.1, Attachment 1 (numbers and percentages indicated here excluded information from the Attachment about any non-residential rates, and includes residential NEM Aggregation capacity). SCE provided Total Nameplate Capacity for each rate schedule

SCE's installed NEM capacity takes service under the Tiered D Rate: approximately 963 MW of NEM 1.0 capacity and 1 MW of NEM 2.0 capacity, or roughly 47 percent of all of SCE's existing NEM capacity.[29] The rates for the Tiered D Schedule are as follows:[30]

Tiered D	
Baseline	$0.23/kWh
101% - 400% of Baseline	$0.30/kWh
High Usage Charge – Over 400% of Baseline	$0.37/kWh
1. Basic Charge of $0.03 per meter per day for single-family and $0.02 per meter per day for multi-family residences. 2. Minimum charge of $0.35 per meter per day in the event that the bill, including the basic charge, is less than the minimum charge.	

The next most common rate schedule for SCE's NEM customers is its TOU-D (4 pm to 9 pm) Schedule.[31] This is the default rate for NEM 2.0 customers, with approximately 430 MW of NEM 2.0 capacity taking service under this Schedule and TOU Period Option, as well as 36 MW of NEM 1.0 capacity.[32] Schedule TOU-D (4 pm to 9 pm) has a summer weekday peak to off-peak differential of approximately 1.6:1, and offers the following rates:[33]

Schedule TOU-D (4 to 9 PM)			
Summer TOU Periods:	**On-Peak** 4 pm to 9 pm on weekdays	**Mid-Peak** 4 pm to 9 pm on weekends	**Off-Peak** All other hours
Summer Rates (June 1 – October 31)	$0.43/kWh	$0.35/kWh	$0.27/kWh
Winter TOU Periods:	**Mid-Peak** 4 pm to 9 pm all days	**Off-Peak** 9 pm to 8 am all days	**Super-Off-Peak** 8 am to 4 pm all days
Winter Rates (November 1 – May 31)	$0.37/kWh	$0.28/kWh	$0.26/kWh
1. Baseline credit of $0.07/kWh applies to 100% of Baseline Usage regardless of time of use. 2. Basic charge of $0.03 per day for single-family and $0.02 per day for multi-family residences.			

by multiplying the Average Nameplate Capacity from that rate schedule by the number of customers enrolled.

[29] *Id.*

[30] SCE, *Schedule D: Domestic Service*, https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/residential-rates/ELECTRIC_SCHEDULES_D.pdf.

[31] SCE Response to Data Request Sierra Club-SCE-01, Q.1, Attachment 1 (numbers and percentages indicated here excluded information from the Attachment about any non-residential rates, and includes residential NEM Aggregation capacity).

[32] *Id.*

[33] SCE, *Schedule TOU-D: Time-of-Use Domestic*, at Sheet 2, https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/residential-rates/ELECTRIC_SCHEDULES_TOU-D.pdf.

3. Minimum charge of $0.35 per day in the event that the bill, including the basic charge, is less than the minimum charge.

The third most common rate for SCE's existing NEM capacity is TOU-D-A, which serves approximately 57 MW of NEM 1.0 capacity and 351 MW of NEM 2.0 capacity.[34] TOU-D-A is not currently enrolling new customers and it is Sierra Club's understanding that NEM 1.0 and NEM 2.0 customers who are enrolled in this rate are permitted to continue using its TOU periods in legacy capacity for up to five years.[35] Schedule TOU-D-A offers the following rates:[36]

Schedule TOU-D-A			
TOU Periods Year-Round:	**On-Peak** 2 pm to 8 pm weekdays	**Off-Peak** All other hours	**Super Off-Peak** 10 pm to 8 am all days
Summer Rates (June 1 – October 31)	$0.61/kWh	$0.34/kWh	$0.16/kWh
Winter Rates (November 1 – May 31)	$0.40/kWh	$0.30/kWh	$0.16/kWh
1. Baseline credit of $0.07/kWh applies to 100% of Baseline Usage regardless of time of use. 2. Basic charge of $0.03 per day for single-family and $0.02 per day for multi-family residences. 3. Minimum charge of $0.35 per day in the event that the bill, including the basic charge, is less than the minimum charge.			

c) SDG&E

As of December 31, 2020, SDG&E had over 1,090 MW of residential rooftop solar, with

---

[34] SCE Response to Data Request Sierra Club-SCE-02, Q.02, Attachment 1 (numbers and percentages indicated here include both legacy and non-legacy customers, and exclude capacity allocable to less than 15 customers on any given rate schedule as SCE could not provide that information while protecting customer privacy).

[35] *See* SCE, *Schedule TOU-D, Time-of-Use Domestic*, at Sheet 22, Special Condition No. 13, https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/residential-rates/ELECTRIC_SCHEDULES_TOU-D.pdf; D.17-10-018, *Decision Granting Limited Modification and Otherwise Denying Petition for Modification of Decision 17-01-006* (Nov. 1, 2017).

[36] SCE, *Schedule TOU-D, Time-of-Use Domestic*, at Sheet 8, https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/residential-rates/ELECTRIC_SCHEDULES_TOU-D.pdf. SCE did not distinguish NEM capacity served by Schedule TOU-D-A from capacity served by the Critical Peak Pricing ("CPP") version of TOU-D-A. The CPP version of this rate includes a CPP Event Energy Charge of $0.80/kWh during CPP Event Periods, which can occur up to 12 times every calendar year between 4 pm and 9 pm on weekdays. In exchange for the potential for CPP pricing, customers receive a $0.15/kWh "on-peak energy credit" during summer on-peak hours when there is not a CPP event. *See id.*, https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/residential-rates/ELECTRIC_SCHEDULES_TOU-D.pdf.

approximately 463 MW under NEM 1.0 and 628 MW under NEM 2.0.[37] The majority of SDG&E's NEM customers take service under a tiered, non-TOU rate, or the default tiered TOU rate. Because SDG&E's residential TOU rates were in the process of being adjusted at the time that NEM 2.0 was adopted, SDG&E currently has some NEM 2.0 customers who take service under non-TOU rates and are permitted to remain on their rate for up to five years from interconnection before transitioning to TOU rates.[38]

Approximately 46 percent of SDG&E's NEM 1.0 installed capacity, 212 MW, and 25 percent of SDG&E's NEM 2.0 capacity, 159 MW, takes service under Schedule DR, which is a single-family residential tiered rate.[39]

The year-round rates for Schedule DR are as follows:

Schedule DR[40]	
Tier 1 – Up to 130% of Baseline	$0.33/kWh
Tier 2 – 130% to 400% of Baseline	$0.41/kWh
High Usage Charge – Over 400% of Baseline	$0.51/kWh
Minimum bill of $0.34/day	

The most popular TOU rate for NEM 1.0 and NEM 2.0 customers is the default residential TOU rate, Schedule TOU-DR1, which includes usage tiers and three TOU periods. Approximately 37 percent of residential NEM 1.0 capacity, or 171 MW, is enrolled in Schedule TOU-DR1, as well as 27 percent, or 169 MW, of NEM 2.0 capacity.[41] This rate is more

[37] SDG&E Response to Data Request Sierra Club-SDG&E-01, Q.1, Attachment 1 (numbers and percentages indicated here excluded information from the worksheet about any non-residential rates).
[38] *See* D.16-01-044 at 93, fn. 111; SDG&E Response to Data Request Sierra Club-SDG&E-01, Q.1, Attachment 1 (footnotes); D.17-01-006 at 48–49 (finding that a legacy transition period of five years was appropriate for residential customers, but that no TOU period legacy treatment could extend past July 31, 2022). These customers are permitted to remain on the tiered rate they signed up for "for up to five years," if they had completed their interconnection application prior to 120 days after the effective date of SDG&E's 2016 General Rate Case Phase 2. The 2016 General Rate Case Phase 2 went into effect on December 1, 2017.
[39] SDG&E Response to Data Request Sierra Club-SDG&E-01, Q.1, Attachment 1 (numbers and percentages indicated here excluded information from the worksheet about any non-residential rates). There are also three other non-TOU rates that serve NEM 1.0 customers, but the amount of capacity taking service under those rates is negligible. (Schedules DM, DT, and DS, the Multi-Family Residential Inclining Block Tiered Rates (2.2 MW, 0.88 MW, and 0.0081 MW NEM 1.0 capacity respectively)).
[40] Schedule DR's rates are not seasonally differentiated, although baseline usage calculations are. SDG&E Response to Data Request Sierra Club-SDG&E-01, Q.1, Attachment 1 (numbers and percentages indicated here excluded information from the worksheet about any non-residential rates).
[41] *Id.*

differentiated than PG&E's default TOU rate, with a 1.67:1 differential between peak summer evening and mid-day off peak periods on weekdays and a 2:1 differential on weekends and holidays. Schedule TOU-DR1's rates are as follows:[42]

Schedule TOU-DR1			
	Peak 4 pm to 9 pm all days	**Off-Peak** Weekdays: 6 am to 4 pm; 9 pm to midnight Weekends and Holidays: 2 pm to 4 pm; 9 pm to midnight	**Super Off-Peak** Weekdays: Midnight to 6 am Weekends and Holidays: Midnight to 2 pm
Summer Rates (June 1 – October 31)	$0.60/kWh	$0.36/kWh	$0.30/kWh
	Peak 4 pm to 9 pm all days	**Off-Peak** Weekdays: 6 am to 4 pm, excluding 10 am to 2 pm in March and April, 9 pm to midnight Weekends and Holidays: 2 pm to 4 pm, 9 pm to midnight	**Super Off-Peak** Weekdays: Midnight to 6 am, 10 am to 2 pm in March and April Weekends and Holidays: Midnight to 2 pm
Winter Rates (November 1 – May 31)	$0.42/kWh	$0.41/kWh	$0.40/kWh
1. For Tier 1, up to 130% of baseline usage, there is a $0.08/kWh baseline adjustment credit that is not applied to higher usage. 2. There is a minimum bill of approximately $0.35 per day.			

The remainder of SDG&E's NEM 1.0 and NEM 2.0 residential customers take service on a variety of underlying rates, most of which are TOU rates. The next most popular rate for NEM customers is Schedule DR-SES. Schedule DR-SES offers similar rates to TOU-DR1 during summer months[43] and serves 30 MW of NEM 1.0 capacity and 178 MW of NEM 2.0 capacity.[44]

---

[42] SDG&E, *Schedule TOU-DR1*, http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_TOU-DR1.pdf.

[43] Schedule DR-SES offers summer rates of $0.61, $0.34, and $0.28 for On-Peak, Off-Peak, and Super Off-Peak periods respectively, compared with TOU-DR1's summer rates of $0.60, $0.36, and $0.30 for the same TOU periods. The major differences between DR-SES and TOU-DR1 are the winter rates, which are more than 10 cents lower on DR-SES for all winter TOU periods, and the tiers and corresponding baseline credit offered under TOU-DR1. SDG&E Response to Data Request Sierra Club-SDG&E-01, Q.1, Attachment 1.

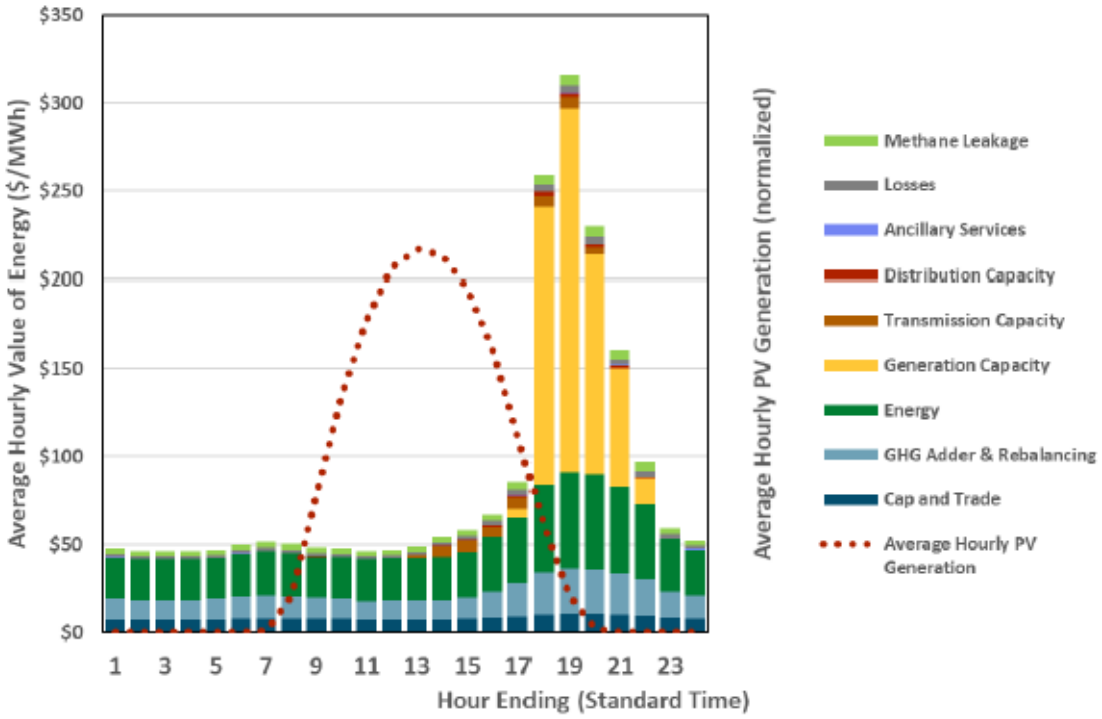
[44] *Id.*

3. The Rates Most Existing Residential NEM Customers Subscribe to Are Not Well-Aligned with System Costs and Do Not Encourage Environmentally Beneficial Outcomes.

The high value of mid-day export compensation under many of the residential rate structures to which existing NEM 1.0 and NEM 2.0 customers are subscribed is poorly aligned with system costs and does not incentivize optimal environmental outcomes. According to the Solar Energy Industries Association ("SEIA"), solar now provides over 22 percent of California's electricity needs.[45] As penetration levels approach ten percent, the marginal economic value of solar decreases in large part due to decreased capacity value, with energy value decreases at higher penetration levels.[46] As noted in the Successor Tariff White Paper, "[w]hile the majority of the solar photovoltaic ("PV") generation takes place during the middle of the day, the higher marginal cost value falls between hours ending 16 through 21 (4 to 9 pm), which include almost the entire fixed generation capacity, transmission, and upstream (primary) distribution costs."[47] The Successor Tariff White Paper illustrates the misalignment between peak solar generation and system costs as follows:[48]

[45] SEIA, *California Solar* (Q3 2020), https://www.seia.org/state-solar-policy/california-solar.
[46] Andrew Mills & Ryan Wiser, *Changes in the Economic Value of Variable Generation at High Penetration Levels: A Pilot Case Study of California*, Lawrence Berkeley National Laboratory, at 7 (June 2012), https://eta-publications.lbl.gov/sites/default/files/lbnl-5445e.pdf.
[47] Successor Tariff White Paper at 11.
[48] *Id.* at 12.

Figure 4. 2020 Hourly Average Avoided Costs and Solar Generation, Annual Averages



In awarding the same or slightly lower export compensation for mid-day solar, the tiered and mildly differentiated TOU rates many NEM customers currently subscribe to fail to reflect the steep difference in value between mid-day and evening generation.

In addition to failing to reflect value, tiered and mildly differentiated TOU rates do not incentivize optimal environmental outcomes. As a result of California's success in solar deployment, the carbon intensity of grid electricity is now at its lowest during hours of peak solar generation. As shown below in CAISO's analysis of grid emissions in both recent summer and winter months, greenhouse gas emissions from energy use in the middle of the day are now lower than in the middle of the night, with evening energy use in summer months having the higher greenhouse gas intensity.[49]

[49] CAISO, *Greenhouse Gas Emission Tracking Report* (July 2020), http://www.caiso.com/Documents/GreenhouseGasEmissions-TrackingReport-Jul2020.pdf; CAISO, *Greenhouse Gas Emission Tracking Report* (January 2021), http://www.caiso.com/Documents/GreenhouseGasEmissions-TrackingReport-Jan2021.pdf.

FIGURE 3 – Total hourly GHG emissions to serve ISO load. This figure reflects the hourly sum of GHG emissions from internal ISO dispatches and GHG emissions from imports serving ISO load for the month of July 2020.

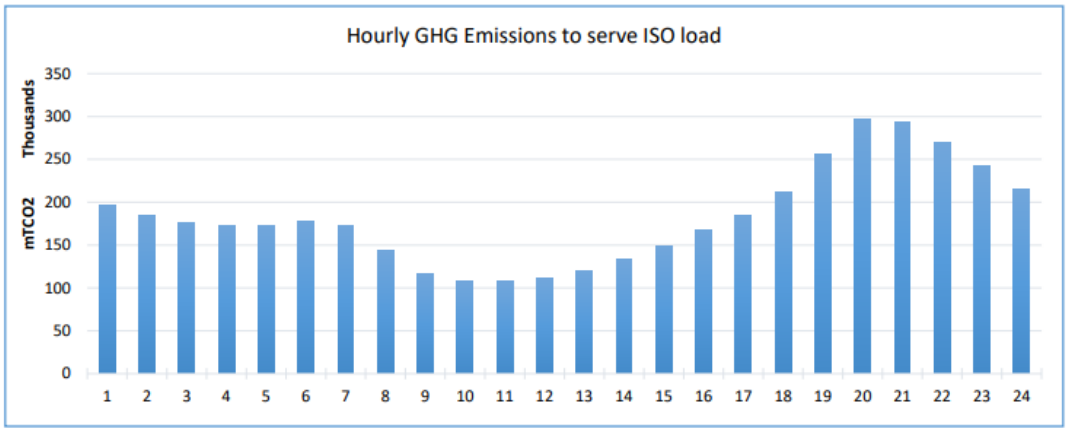
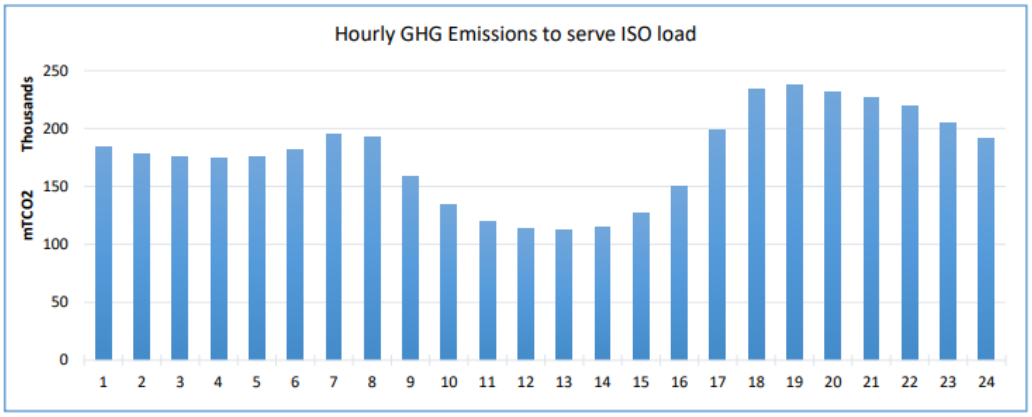


FIGURE 3 – Total hourly GHG emissions to serve ISO load. This figure reflects the hourly sum of GHG emissions from internal ISO dispatches and GHG emissions from imports serving ISO load for the month of January 2021.



As solar continues to be deployed, the direct greenhouse gas benefits of solar production will continue to diminish as the carbon intensity of mid-day grid emissions is further reduced. Maximizing the climate benefits of solar will therefore increasingly depend on the degree to which solar energy is either directly used to power end uses, such as water heating and vehicles that have traditionally been powered by fossil fuel combustion, or is stored and discharged during hours of higher intensity. In continuing to put a high value on mid-day solar exports though tiered and poorly differentiated TOU rates, existing NEM customers do not have a significant economic incentive to load shift and minimize energy use during hours when grid emissions are highest or deploy electrification technologies.

4. Moving Existing Customers to More Differentiated TOU Rates will Better Align with Cost-Causation and Incentivize Load Shifting, Electrification of Fossil Fuel End Uses, and Storage Deployment.

Moving existing NEM customers to more differentiated rates mitigates non-participant impacts by better aligning export compensation with cost-causation, and encourages load shifting and deployment of electrification technologies that are critical for California to achieve its decarbonization objectives. As set forth in Section II.A., Commission precedent allows underlying rates for NEM customers to be changed five years from interconnection. Sierra Club proposes the Commission move existing NEM customers to existing more differentiated rates at eight years from interconnection.

a) Moving Existing NEM Customers to More Differentiated TOU Rates Substantially Reduces Export Compensation During Hours of Peak Solar Generation While Still Providing System Value.

(1) PG&E

PG&E's EV2 rate has at least a 2:1 differential between evening and mid-day summer rates. This rate is currently open only to customers with registered electric vehicles ("EVs") but could be modified to be open to all customers.[50]

PG&E EV2 Rate			
	Peak 4 pm to 9 pm	**Part-Peak** 3 pm to 4 pm; 9 pm to midnight	**Off-Peak** Midnight to 3 pm
Summer Rates (June 1 – September 30)	$0.50/kWh	$0.39/kWh	$0.18/kWh
Winter Rates (October 1 – May 31)	$0.37/kWh	$0.35/kWh	$0.18/kWh
Minimum bill of $0.33/day.			

As part of Phase 2 of its General Rate Case ("GRC"), PG&E has also proposed E-ELEC, a rate design to encourage all-electric homes. As currently proposed, rates under E-ELEC are as follows:[51]

[50] PG&E, *Electric Schedule EV2*, https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHEDS_EV2%20(Sch).pdf.
[51] A.19-11-019, *PG&E 2020 GRC Phase II, Exhibit PG&E-5, Schedule E-ELEC-Un-Tiered Residential TOU Rate with Fixed Charge*, at 1-8 (May 15, 2020).

PG&E Proposed E-ELEC			
	Peak 4 pm to 9 pm	**Part-Peak** 3 pm to 4 pm; 9 pm to midnight	**Off-Peak** Midnight to 3 pm
Summer Rates (June 1 – September 30)	$0.42/kWh	$0.26/kWh	$0.21/kWh
Winter Rates (October 1 – May 31)	$0.21/kWh	$0.19/kWh	$0.18/kWh
This rate has a proposed $25/month fixed charge.			

Sierra Club has not attempted to quantify cost-shift reductions that would be achieved should the Commission require existing NEM customers to move to either of these rates. However, a comparison of the current default TOU rates under E-TOU-C and the more highly differentiated EV2 and E-ELEC rates show a substantial percentage decrease in export compensation during hours of peak solar generation.

Comparison between E-TOU-C Baseline and EV2/Proposed E-ELEC Rates[52]					
Time of Day (Summer)	**E-TOU-C Rate**	**EV2 Rate**	**Percent Difference (E-TOU-C/EV2)**	**E-ELEC[53] Rate**	**Percent Difference (E-TOU-C/E-ELEC)**
Midnight to 3 pm	$0.28	$0.18	-36%	$0.21	-25%
3 pm to 4 pm	$0.28	$0.39	+39%	$0.26	-7%
4 pm to 9 pm	$0.35	$0.50	+43%	$0.42	+20%
9 pm to Midnight	$0.28	$0.39	+39%	$0.26	-7%

E-TOU-B, which substantially less NEM 2.0 customers currently subscribe to, can be used for a comparison between an untiered TOU rate and the proposed EV2 and E-ELEC rates:

[52] This analysis assumes self-generation reduces consumption to below baseline and that exports are valued at baseline rates based on the finding in the Lookback Study that "NEM 2.0 system electricity production averages 89 to 96 percent of household post-installation electricity consumption." Lookback Study at 31. Using export compensation at the baseline rate assumes self-consumption by the solar system moves the customer to below baseline such that exports are valued at the a $0.07/kWh reduction under the baseline credit. To the extent exports are above baseline, the difference between mid-day export compensation under TOU-C and EV2/E-ELEC would increase.

[53] As currently proposed, Schedule E-ELEC also has a $25/month fixed charge.

Comparison between E-TOU-B and EV2/Proposed E-ELEC Rates					
Time of Day (Summer)	**E-TOU-B Rate**	**EV2 Rate**	**Percent Difference (E-TOU-B/EV2)**	**E-ELEC Rate**	**Percent Difference (E-TOU-B/E-ELEC)**
Midnight to 3 pm	$0.31	$0.18	-42%	$0.21	-32%
3 pm to 4 pm	$0.31	$0.39	+26%	$0.26	-16%
4 pm to 9 pm	$0.41	$0.50	+22%	$0.42	+2%
9 pm to Midnight	$0.31	$0.39	+26%	$0.26	-16%

Notably, were the Commission to require existing NEM customers to move to the EV2 or E-ELEC rate, these systems would still provide substantial value. As an initial matter, Sierra Club does not propose that existing NEM customers be required to move to these rates until eight years from interconnection. In addition, export compensation of $0.18 kWh under EV2 and $0.21/kWh under E-ELEC for exports until 3 p.m. compare favorably to export compensation under NEM in other Western states. For example, the residential TOU rates in Colorado to which NEM customers subscribe are $0.14/$0.08/$0.04 for summer on-peak/shoulder and off-peak respectively.[54]

(2) SCE

SCE offers its TOU-D-Prime rate for customers who can confirm ownership or lease of clean energy technologies, including EVs and plug-in hybrids, residential batteries, or electric

[54] Public Service Company of Colorado, *Electric Rates Summary* (effective Aug. 19, 2020), https://www.xcelenergy.com/staticfiles/xe-responsive/Company/Rates%20&%20Regulations/Electric_Summation_Sheet_All_Rates_08.19.20.pdf. Similarly, NEM customers in Idaho are credited at tiered volumetric retail rates, which range from $0.08/kWh to $0.12/kWh and include a $5.00/month basic charge. Idaho Power Company, *Schedule 6: Residential Service On-Site Generation* (effective June 1, 2018), https://docs.idahopower.com/pdfs/aboutus/ratesregulatory/tariffs/313.pdf. *See also* NV Energy, *NV Energy Electric Rate Schedules for Residential and General Service Customer Generation – Southern Nevada*, at page 2, columns 3–5 (Jan. 1, 2021), https://www.nvenergy.com/publish/content/dam/nvenergy/brochures_arch/about-nvenergy/rates-regulatory/np_netmetering_rates.pdf (reflecting the four tiers of NEM export compensation under NV Energy's Optional Residential Single-Family TOU Rate, with Tier 4 customers receiving $0.26 for summer on-peak generation and $0.04 at all other times, including all winter hours, which run from October 1 through May 31. Summer on-peak hours are 1 pm to 7 pm from June 1 through September 30. This rate also has a monthly service charge of $12.50.).

heat pumps for space or water heating.[55] This rate has a 2.6:1 differential between summer peak evening and mid-weekday off-peak periods.

Schedule TOU-D-Prime[56]				
	On-Peak Weekdays: 4 pm to 9 pm	**Mid-Peak** Weekends and Holidays: 4 pm to 9 pm	**Off-Peak** All other hours	**Super Off-Peak** N/A during Summer
Summer Rates (June 1 to October 1)	$0.44/kWh	$0.33/kWh	$0.17/kWh	N/A
	On-Peak N/A during Winter	**Mid-Peak** 4 pm to 9 pm all days	**Off-Peak** 9 pm to 8 am all days	**Super Off-Peak** 8 am to 4 pm all days
Winter Rates (October 1 to June 1)	N/A	$0.41/kWh	$0.16/kWh	$0.16/kWh
Fixed daily basic charge of $0.40 ("approximately $12 per month").[57]				

Comparing baseline export compensation of the TOU-D (4 to 9 pm) rate, which is the current default rate for NEM 2.0 customers, with TOU-D-Prime, shows a 15 percent reduction in export compensation at times of peak summer mid-day solar generation.[58]

Comparison between TOU-D (4-9pm Option) Baseline and TOU-D-PRIME Rates			
Time of Day (Summer)	**TOU-D Baseline Rate**	**TOU-D-PRIME Rate**	**Percent Difference**
4 to 9 pm Weekdays	$0.36	$0.44	+22%
4 to 9 pm Weekends	$0.28	$0.33	+18%
All Other Hours	$0.20	$0.17	-15%

[55] SCE, *Schedule TOU-D: Time-Of-Use Domestic, Option PRIME*, at Sheet 6, https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/residential-rates/ELECTRIC_SCHEDULES_TOU-D.pdf. The TOU Prime rate option is also available to customers on three other legacy TOU rates.
[56] *Id.*
[57] *Id.*, *see also* SCE, *Time-of-Use Rate: TOU-D-PRIME*, https://www.sce.com/sites/default/files/inline-files/TOU-D-PRIME_Fact_Sheet_0320_WCAG.pdf.
[58] This comparison assumes that self-consumption by the solar system moves the customer to below baseline such that exports are valued at a $0.07/kWh reduction under the baseline credit.

(3) SDG&E

SDG&E currently does not offer an EV or other rate that is substantially more differentiated between mid-day summer and evening periods than its default TOU-DR-1 rate. Its current EV rate schedules are more differentiated than its default TOU rate but its off-peak period is from midnight to 6 a.m. and therefore does not establish at least a 2:1 differential between summer evening peak and weekday off-peak rates.[59] It is Sierra Club's understanding that SDG&E will propose an electrification-friendly rate similar to SCE's TOU-D-Prime and PG&E's proposed E-ELEC by no later than September 1, 2021.[60] The Commission should ensure this rate falls within the differentials and fixed charges of the electrification-friendly rates adopted by PG&E and SCE to ensure consistent treatment across utilities.

b) Moving Existing NEM Customers to More Differentiated TOU Rates Incentivizes Load Shifting and Electrification.

Sierra Club has retained Synapse to assess how moving NEM customers to more differentiated rate structures incentivizes electrification. Synapse's preliminary analysis has assessed the impact of moving solar NEM customers from PG&E's default TOU-C rate to E-ELEC or EV2 and found moving to these rates results in annual operational cost savings for customers who electrify their home and vehicle, with additional savings through load shifting. Sierra Club intends to present this analysis in more detail in testimony. In providing an additional incentive to electrify by increasing operational savings of electrification technologies, moving existing NEM customers to more differentiated rates aligns with California's decarbonization objectives and furthers Guiding Principle (e).[61]

---

[59] For example, with the exception of weekends and holidays, SDG&E's EV-TOU-5 rate has a summer 6 a.m. to 4 p.m. off-peak rate of $0.33/kWh and 4 p.m. to 9 p.m. peak rate of $0.60/kWh. SDG&E, *Schedule EV-TOU-5*, http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EV-TOU-5.pdf. As discussed SDG&E's default TOU-DR-1 rate has a summer 6 a.m. to 4 p.m. off-peak rate of $0.30/kWh and 4 p.m. to 9 p.m. peak rate of $0.60/kWh.

[60] *See* A.10-07-009/A.19-03-002, *Joint Motion for Approval of General Rate Case Phase 2 Settlement Agreement*, Attachment A at 14 (Oct. 8, 2020), https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M348/K580/348580462.PDF.

[61] D.21-02-007, *Decision Adopting Guiding Principles for the Development of a Successor to the Current Net Energy Metering Tariff*, at 46 (Feb. 17, 2021) https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M366/K418/366418635.PDF.

5. Prior to Moving to More Differentiated Rates, the Utilities Should Provide Existing NEM Customers With Information on Ways to Maximize System Value and Environmental Benefits through Load Shifting and Electrification Technologies.

California now has over 1 million residential NEM customers.[62] Transitioning these customers to more differentiated TOU rates provides over 1 million opportunities to market load-shifting and electrification technologies that can improve system value, provide increased environmental benefits needed for California to meet its decarbonization goals, and generate bill savings for NEM customers from fuel switching to electric vehicles and appliances. Sierra Club recommends that prior to moving existing residential NEM customers to a more highly differentiated TOU rate, as part of customer notification, the utilities provide information on technologies and available incentives that can improve system value such as programmable thermostats, heat pump water and space heaters, electric vehicles and batteries. For example, SCE's Fact Sheet about the TOU-D-Prime rate points out that charging an EV or plug-in hybrid during off-peak hours is "roughly equivalent to paying less than $2 per gallon for a gas-powered vehicle," and suggests charging EVs overnight, shifting energy usage from large household appliances to off-peak hours, and using stored energy from residential batteries during on-peak hours.[63] This type of information would be provided to existing NEM customers but adjusted to account for the added value of using solar generation during off-peak periods. In addition to operational cost saving information, materials should also explain the climate benefits of electrification and how utilizing energy during periods of mid-day solar generation and limiting evening usage reduces climate pollution.

6. Transitioning Existing NEM Customers to More Differentiated TOU Rates Should Occur Approximately 8 Years from Interconnection.

As set forth in Section A, Commission precedent allows moving customers off their existing rate after five years. However, given the significance of the change from tiered and default TOU rates to highly differentiated/electrification-friendly rates, Sierra Club recommends providing additional time such that this transition occurs approximately eight years from interconnection. As shown in the following two graphs from the E3 White Paper and Lookback

---

[62] Successor Tariff White Paper at 30.
[63] SCE, *Time-of-Use Rate: TOU-D-PRIME*, https://www.sce.com/sites/default/files/inline-files/TOU-D-PRIME_Fact_Sheet_0320_WCAG.pdf.

Study illustrating annual and cumulative NEM 1.0 and NEM 2.0 deployment,[64] the vast majority of NEM customers installed their systems within the past eight years. An eight-year transition would provide these relatively new customers additional time before they are impacted, and allow for a gradual but significant annual transition to electrification-friendly rates.

FIGURE 3-1: NUMBER AND CAPACITY OF NEM SYSTEMS INSTALLED BY NEM 1.0 VS. NEM 2.0

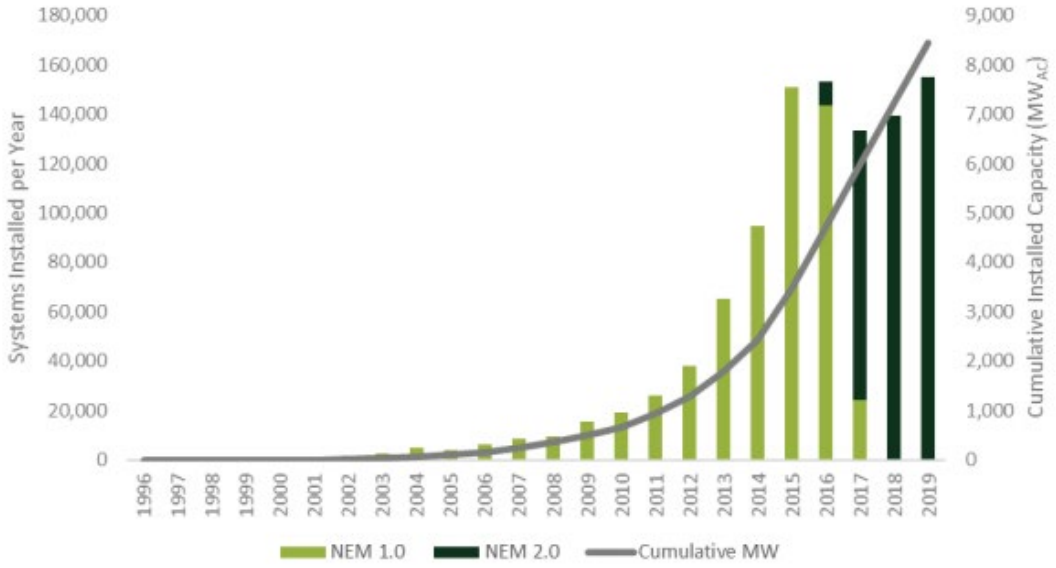
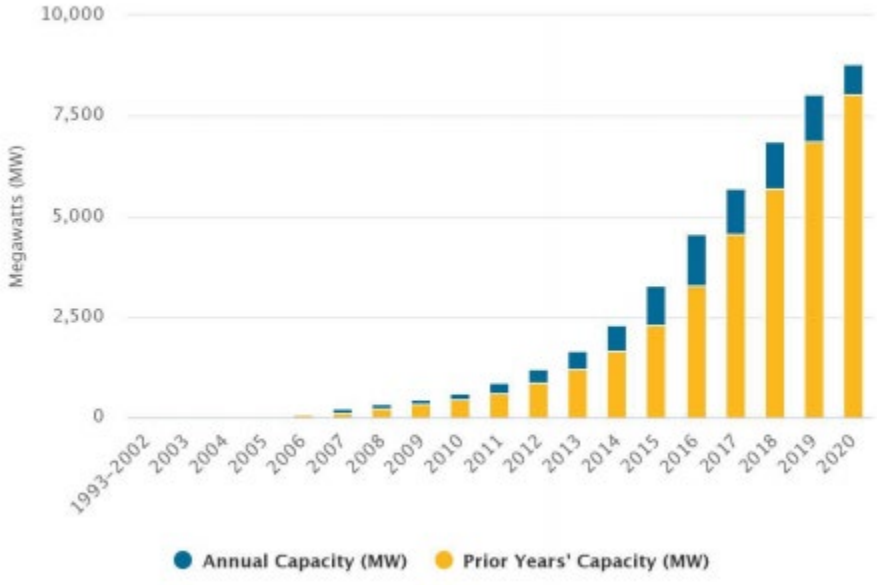


Figure 3. California BTM Solar Penetration, Large Investor-Owned Utilities[3]



[64] Lookback Study at 24; Successor Tariff White Paper at 8.

To implement this proposal, Sierra Club recommends that the Commission move customers that had been enrolled in NEM for eight years at the beginning of the ninth year following subscription to NEM. For example, provided a Commission decision was issued that left sufficient time for the IOUs to develop informational materials and notify affected NEM customers, under an 8-year transition period, an implementation date of January 1, 2023 would impact NEM customers that had interconnected in 2014 or earlier. On January 1, 2024, residential customers receiving service under NEM in 2015 would transition. Assuming the successor tariff is put into place in 2022, the transition for existing NEM customers to more differentiated rates would be complete by January 1, 2031.

B. Successor Tariff

1. The Commission Should Require Residential NEM 3.0 Customers to Be on a Highly Differentiated/Electrification-Friendly TOU Rate.

Sierra Club proposes that successor tariff customers be required to enroll in the electrification-friendly rates that have been adopted or are under development by each IOU or a rate with at least a 2:1 differential between summer peak evening and weekday off-peak periods. For PG&E, qualifying rates are either EV2 or the proposed E-ELEC rate, and for SCE the qualifying rate is TOU-D-Prime. As set forth above, SDG&E does not yet have a qualifying rate, though its electrification-friendly rate is currently under development. SDG&E successor tariff customers would be required to enroll in that, or another qualifying rate, once approved. To ensure consistency across IOUs, an SDG&E qualifying rate should be within both the differential and range of any fixed charges of PG&E and SCE's qualifying rates.

While the Successor Tariff White Paper proposes several potential rate design alternatives for consideration, including TOU demand charges, dynamic rates or a subscription rate, these rate structures would represent significant and untested changes to existing rate designs. In contrast, rates such as SCE's TOU-D-Prime and PG&E's proposed E-ELEC rate have or are undergoing substantial stakeholder input and are likely more easily understood than alternatives such as dynamic rates or demand charges because they build off existing TOU structures that NEM customers already subscribe to by increasing the differentiation between TOU periods. Existing and planned electrification-friendly rates also further the objectives identified in the Successor Tariff White Paper and the Commission's Guiding Principles. Rates such as TOU-D-Prime were specifically designed for "electric vehicle or plug-in hybrid owners

and lessees, customers with a residential battery, or customers with an electric heat pump system for water or space heating," and therefore help to "unlock[] the full value of battery storage as well as end-use and building electrification" and achieve the deeper GHG reductions needed for California to decarbonize.[65] In substantially decreasing export compensation for mid-day solar and increasing rates in the evening, these rates also help to better align "retail rates and customer-sited renewable generation compensation with underlying grid costs."[66]

2. Export Compensation

a) Sierra Club Agrees with the White Paper that the Successor Tariff Should Use Net Billing.

The NEM structure has been instrumental in facilitating rooftop solar growth and the maturation of the industry in California. With approximately 10 GW of rooftop solar deployment in California,[67] and retail rates among the highest in the nation, it is appropriate for the NEM successor tariff to transition to an export credit model for rooftop solar generation. Sierra Club emphasizes that the transition away from retail rate compensation for exported customer generation in California is not intended to suggest this is currently appropriate in other jurisdictions. In states with lower electricity rates and solar penetration, retail rate compensation can continue to serve as a reasonably proxy for the grid and societal benefits provided by the solar system. In addition, solar now provides over 22 percent of California's electricity needs, further differentiating it from other states.[68] As noted in recent analysis by Lawrence Berkeley National Laboratory, as solar penetration levels have increased, its relative market value in CAISO has "declined because of a solar-induced shift in the timing of high and low energy prices and a reduction in solar's capacity credit. In contrast, the market values of solar in

---

[65] SCE, *Time-of-Use (TOU) Rate Plans*, https://www.sce.com/residential/rates/Time-Of-Use-Residential-Rate-Plans; Successor Tariff White Paper at 11; D.21-02-007, *Decision Adopting Guiding Principles for the Development of a Successor to the Current Net Energy Metering Tariff* at 46 (principle (e)) (a successor tariff "should be coordinated with the Commission and California's energy polices, including but not limited to ….California Executive Order B-55-18") (Feb. 11, 2021).

[66] Successor Tariff White Paper at 14–15.

[67] CPUC, *2020 California Solar Initiative: Annual Program Assessment*, at 6 ("By the end of 2019, California has installed approximately 9,607 MW of solar capacity at 1,072,354 customer sites" and "approximately 8,796 MW of solar capacity was installed at 974,784 customer sites in the large IOU territories.") (June 2020), https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442465653.

[68] SEIA, *California Solar*, (Dec. 15, 2020), https://www.seia.org/state-solar-policy/california-solar. In contrast, solar supplies less than 8 percent of electricity needs in Arizona and less than 4 percent in Colorado. SEIA, *Arizona Solar*, (Dec. 15, 2020) https://www.seia.org/state-solar-policy/arizona-solar; SEIA, *Colorado Solar*, (Dec. 15, 2020) https://www.seia.org/state-solar-policy/colorado-solar.

ERCOT, SPP, MISO, PJM Interconnection (PJM), and NYISO—where solar penetrations were low—did not decline relative to average prices."[69] Accordingly, while Sierra Club supports a successor tariff in California that no longer compensates exports at retail rates for residential customers, this should not be interpreted to signal support for a similar approach in states with lower retail rates or solar penetration.

b) Step-Downs in Export Compensation Should be Based off Capacity.

With regard to MTC implementation, the Successor Tariff White Paper asks whether "MTC vintages be based on time (e.g., annual), number of participants, or capacity (e.g., MW blocks)?"[70] Sierra Club recommends structuring step-downs in successor tariff export compensation based on MW of deployment, administered at a pro rata share by each IOU within their service territory. Sierra Club has concerns with setting adjustments to incentives or export compensation according to calendar-based parameters (e.g., annual step-downs) because calendar-based incentive adjustments fail to capture the relevant market conditions and can cause unintended stalls and rushes in adoption based on the artificial market condition they impose.

The experience of the California Solar Initiative ("CSI") program in developing a mechanism for gradual incentive declines is instructive.[71] Initially, the Commission approved the program with a combination system for reducing incentives. Incentives would be reduced annually, either on an automatic basis at the end of the calendar year or when deployment hit certain MW benchmarks. Whichever condition was met first (*e.g.*, MW benchmark or December 31) would trigger the stepdown.[72] However, upon reaching the first MW trigger, parties on all

---

[69] Andrew D. Mills et al., *Solar-to-Grid: Trends in System Impacts, Reliability, and Market Value in the United States*, at viii–ix, Lawrence Berkeley National Laboratory (Feb. 2021) https://emp.lbl.gov/sites/default/files/solar-to-grid_technical_report.pdf.

[70] Successor Tariff White Paper at 33.

[71] *See* D.06-01-024, *Interim Order Adopting Policies and Funding for the California Solar Initiative* (authorizing the CSI Program and setting a combination time- and deployment-based system for triggering incentive reductions) (Jan. 12, 2006) ("D.06-01-024"); D.06-08-028, *Opinion Adopting Performance-Based Incentives, an Administrative Structure, and Other Phase One Program Elements for the California Solar Initiative* (revising the triggering mechanism to adopt a solely deployment-based system) (Aug. 24, 2006) ("D.06-08-028"); D.06-12-033, *Opinion Modifying Decision 06-01-024 and Decision 06-08-028 in Response to Senate Bill 1* (confirming the pure deployment-based mechanism while adjusting the deployment levels of each tranche to comply with SB 1) (Dec. 14, 2006) ("D.06-12-033").

[72] D.06-01-024 at 24–25; *see also id.*, App. A, at 15 (Table 5 shows the MW triggers and incentive levels).

sides raised concerns about the implementation of the program, and the Commission revised its stepdown structure in D.06-08-028 to adopt a purely MW deployment-based trigger system, with each IOU administering incentives based on the rate of adoption in its service territory.[73] While the utilities supported the initial combined system to preserve the program's budget, the Commission agreed with the solar parties' concerns about the artificial effects of time-based incentive reductions on the market, causing stalls when program funds for each year were exhausted and rushes to sign up for the program before an anticipated drop in incentive levels. The Commission also acknowledged the solar parties' and TURN's observation that a deployment-based mechanism responds directly to market conditions without requiring the Commission to constantly monitor the market.[74] While the levels of MW capacity in each tranche were adjusted thereafter to comply with SB 1 goals, the Commission did not alter its decision to remain on a purely deployment-based structure for incentives, and affirmed that such a structure was "simple, transparent, and predictable and correspond[ed] to the economics of the solar marketplace without resource intensive reviews."[75]

To allow for more regulatory certainty in implementing a capacity-based step-down for an MTC, Sierra Club recommends that IOUs set a date certain for the next step-down three months in advance of when the capacity limit is estimated to be reached based on a projection of deployment trends. This will allow for better planning for developments and remove uncertainty as to which vintage a project may qualify for.

c) Sierra Club Recommends Step-Downs to Reach Avoided Cost Compensation After 10 GW of Additional Residential NEM Capacity.

Sierra Club proposes a glide path to export compensation at avoided cost that is tied to achieving 10 GW of distributed resource deployment. Ten GW is the approximate level of additional customer solar deployment assumed under 2030 IRP Scenario modeling.[76] Sierra Club recognizes that IRP modeling projections for deployment of customer solar are based off

---

[73] D.06-08-028 at 84–87.
[74] *Id.* at 85–87.
[75] D.06-12-033 at 10.
[76] D.20-02-028, *2019-2020 Electric Resource Portfolios to Inform Integrated Resource Plans and Transmission Planning*, at 42 (Apr. 6, 2020), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M331/K772/331772681.PDF (identifying 9,927 MW of deployment in 2020 and 20,066 MW by 2030).

existing deployment trends and there are alternative solutions to achieving the IRP GHG targets. Nonetheless, a 10 GW glide path is a useful guidepost that strikes the appropriate balance between utility scale and distributed resource development. This balance furthers a variety of objectives, including the protection of open space and provision of generation in local capacity areas that can help enable the retirement of gas plants in disadvantaged communities.

Notably, a 10 GW glide path constitutes only a small fraction of the additional solar resources California will likely need to meet SB 100 requirements. The Draft SB 100 Joint Agency Report assumes deployment of 39 GW of customer-side solar under all scenarios.[77] Achievement of the 10 GW glide path coupled with existing deployment of customer sited solar therefore represents roughly half of SB 100 projections for customer cited generation. Even with this level of distributed solar deployment, the SB 100 Joint Agency Report assumes 67 GW of additional utility scale solar, far above what is currently deployed in California.[78]

A 10 GW glide path appropriately recognizes the importance of continued rooftop solar deployment in limiting the land use impacts of utility scale solar. Failure to achieve rooftop solar deployment levels in IRP modeling and in the SB 100 Joint Agency Report means more development pressure on California's open spaces, working lands, and sensitive habitats.[79] This is already occurring at current deployment levels. As one recent example, despite the California Fish and Game Commission recently moving forward with a petition to determine whether the Western Joshua Tree should be designated a threatened or endangered species and granting it temporary endangered species status, 15 proposed utility scale solar projects sited in Joshua Tree habitat were nonetheless allowed to proceed under an emergency authorization, permitting the razing of this species.[80] California has recognized the importance of preserving its natural and

---

[77] CEC, CPUC, CARB, *Draft 2021 SB 100 Joint Agency Report* at 108 (Dec. 2020), https://www.energy.ca.gov/event/workshop/2020-12/notice-senate-bill-100-draft-report-workshop.
[78] *Id.* at 86. According to the CEC, 12.3 GW of solar plants have been deployed in California as of 2019. CEC, *California Solar Energy Data and Statistics*, https://ww2.energy.ca.gov/almanac/renewables_data/solar/index_cms.php.
[79] Central-station solar photovoltaic plants with fixed arrays or single-axis tracking typically require 7.5 to 9.0 acres per MW-AC, or 3.3 to 4.4 acres per GWh per year. Sean Ong et al., *Land-Use Requirements for Solar Power Plants in the United States*, National Renewable Energy Laboratory, at Table ES-1 (June 2013), https://www.nrel.gov/docs/fy13osti/56290.pdf. 67 GW of solar would occupy roughly 500,000 to 600,000 acres.
[80] LA Times, *California grants western Joshua trees temporary endangered species protections* (Sept. 22, 2020), https://www.latimes.com/environment/story/2020-09-22/western-joshua-trees-granted-temporary-endangered-species-protections.

working lands, with a recent Executive Order committing "to conserve at least 30 percent of California's land and coastal waters by 2030."[81] In planning for the appropriate ratio of utility scale to distributed solar in California's clean energy future, the Commission should consider the preservation of California's natural heritage and open space. As set forth in the Vote Solar/SEIA Proposal, assuming no new distributed generated results in increased utility scale development that runs into significant land use constraints under Integrated Resource Plan modeling. A 10 GW capacity target, which would still require an additional 20 GW of rooftop solar deployment at avoided cost compensation to meet SB 100 objectives, strikes this balance.

Distributed generation is also an important resource to displace gas-fired generation in disadvantaged communities in local capacity areas. Local capacity requirements for 2021 are over 21 GW, of which approximately 14 GW are being met with gas-fired generation.[82] Local areas and sub-areas have limited transmission capability and therefore rely on internal resources to be available to serve local need in the event of a transmission contingency. For batteries to displace other local capacity resources in the event of a transmission outage, remaining "resources must be sufficient to recharge the batteries in anticipation of the outage continuing through the night and into the next day's peak load period."[83] Local capacity areas with significant amounts of gas generation in disadvantaged communities such as Western LA Basin are largely developed and therefore cannot accommodate utility scale renewables to serve as a local generation source to charge batteries in the event of an extended transmission contingency. Distributed generation is a key part of local reliability solutions that enable the retirement of gas generation in local capacity areas and achieve California's decarbonization objectives, and Commission policies should be designed to ensure continued deployment.[84]

---

[81] Executive Order N-82-20 (Oct. 2020), https://www.gov.ca.gov/wp-content/uploads/2020/10/10.07.2020-EO-N-82-20-signed.pdf.
[82] CPUC, *The State of the Resource Adequacy Market – Revised* at 17 (Jan. 13, 2020) https://www.cpuc.ca.gov/RA/.
[83] *See* R.19-11-009, *CAISO Final Local Capacity Technical Study* at 3 (May 1, 2020), https://www.caiso.com/Documents/May1-2020-Final-2021-LocalCapacityTechnicalStudyReport-R19-11-009.pdf.
[84] While adders that increase value of solar generation in local capacity areas is a more targeted approach to encouraging solar deployment in capacity constrained areas, to Sierra Club's knowledge, no such adders have been adopted by the Commission.

d) The Initial Export Credit Should be Set to Allow for a Transition Between Default and All-Electric Rates and Have Export Compensation at Avoided Cost as the End State.

Sierra Club supports the use of an MTC proposed in the Successor Tariff White Paper to "enable the transition of NEM customers towards a more fully cost-reflective rate, by making up the gap between the estimated acceptable payback amount and the transitional rates that will more closely align rates with avoided costs."[85] To allow for a transition from existing compensation to avoided cost, Sierra Club proposes export compensation first be set equal to the IOUs' respective qualifying successor tariff rate, and dropped down by 10% per GW tranche of the difference between the retail rate from the eligible rate and avoided cost for that TOU period at the time of the step-down. For example, under SCE's TOU-D-Prime rate, the off-peak summer rates are currently $0.17/kWh. The initial tranche of successor tariff customers would receive an export credit during those hours of $0.17/kWh, to match the eligible rate, and would receive this compensation for the next 20 years. Once this initial tranche is filled, new successor tariff customers would be compensated at the avoided cost plus 90% of the difference between the eligible retail rate and the avoided cost averaged over that TOU period. That is, if avoided cost averaged over this TOU period for off-peak hours were hypothetically $0.07 and the TOU-D-Prime rate was the same ($0.17), the second tranche of successor tariff customers would receive avoided cost ($0.07) plus 90% of the difference between avoided cost and the retail rate (approximately $0.09), which is $0.16. For summer peak export compensation (weekdays from 4 to 9 pm), if avoided cost over this period hypothetically averaged at $0.24 and the TOU-D-Prime rate was the same at the time of a step-down ($0.44), the second tranche of successor tariff customers would receive avoided cost ($0.24) plus 90% of the difference between avoided cost and the retail rate (approximately $0.17), for an export rate of $0.41 during summer peak periods. Step-downs would decrease export compensation by an additional 10% of the difference between retail and avoided cost per tranche until the export rate is equal to avoided cost, as determined by the avoided cost calculator at the time of the step-down.

0 GW	1 GW	2 GW	3 GW	4 GW	5 GW	6 GW	7 GW	8 GW	9 GW	10+ GW
Export Credit	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	Percent decline to avoided cost									

[85] Successor Tariff White Paper at 17.

Deployment steps would be divided among IOUs based or their relative electric loads and account for all behind-the-meter solar deployment, including solar on new construction under Title 24 and programs targeted at low-income customers. Sierra Club recognizes that solar costs may not decline at the pace set forth above. The purpose of the proposed glide path is to provide enough of a trajectory for the solar + storage market to evolve with an end state toward avoided cost compensation. As export compensation declines with successive vintages, storage will become an increasingly attractive option to maximize system value with the goal of an end state where solar + storage is the default installation option.

Sierra Club does not support additional fixed charges for successor tariff customers such as those proposed in the Successor Tariff White Paper. Given the significant changes to NEM already being proposed, any additional fixed charges should be considered at a later juncture.

3. System Size Limits Should Be Based Off Demand with Electric Appliances and Vehicle Charging Rather than Historic Demand.

Current NEM 2.0 tariffs implement the statutory eligibility requirement that NEM customers' generation facilities be "primarily intended to offset part or all of the customer's own electrical requirements"[86] by assessing historical load data for the customer to determine the customer's "electrical requirements" and limiting system sizing based on that data.[87] For any electricity that is produced in excess of a NEM customer's on-site load at the end of a 12-month true-up period, the NEM customer receives net surplus compensation ("NSC"). Pursuant to D.11-06-016, NSC is calculated as a simple rolling average of the IOUs' default load aggregation point price from 7 a.m. to 5 p.m., corresponding to the customer's 12-month true-up period.[88] The rate is typically "approximately $0.02 to $0.03 per kWh."[89]

---

[86] Pub. Util. Code § 2827(4)(A); § 2827.1(a) (defining "eligible customer-generator" for the purposes of the NEM 2.0 Tariff as the same definition from § 2827(4)(A)).
[87] *See*, *e.g.*, SCE, *Schedule NEM-ST Net Energy Metering Successor Tariff*, Special Condition 1(b)(iii) at Sheet 9 https://library.sce.com/content/dam/sce-doclib/public/regulatory/tariff/electric/schedules/other-rates/ELECTRIC_SCHEDULES_NEM-ST.pdf.
[88] D.11-06-016, *Decision Adopting Net Surplus Compensation Rate Pursuant to Assembly Bill 920 and the Public Utility Regulatory Policies Act of 1978*, at 65, Ordering ¶ 1 (June 9, 2011).
[89] CPUC, *Net Energy Metering*, https://www.cpuc.ca.gov/NEM/. *See also* PG&E, *Net Surplus Compensation Rates for Energy*, https://www.pge.com/pge_global/common/pdfs/solar-and-vehicles/green-energy-incentives/AB920_RateTable.pdf (Net Surplus Compensation Rates from PG&E for January 2019 – February 2021 varying between approximately $0.02/kWh to $0.03/kWh).

With the state's focus on widespread electrification as a key policy to reach California's decarbonization objectives, continued reliance on historical load data where a customer has not yet adopted electrification technologies could function to discourage their future adoption by reducing the operational savings achieved through electrification. For the successor tariff to be "coordinated"[90] with the Commission and the State's climate and decarbonization policy, sizing requirements should be based on annual load that incorporates a reasonable approximation of demand with electric appliance and vehicle adoption.

Notably, a recent proposed decision in Connecticut updated its system size policy to further its electrification goals, stating:

> [I]n order to promote the state's policy goals with respect to vehicle electrification and fuel switching as noted by stakeholders in the above-captioned proceeding, the [IOUs] shall allow the system to be sized based on the historical load parameters above *plus* a reasonable approximation of the annual load of two electric vehicles and, for non-electric heating customers, a reasonable approximation of the incremental electric load associated with fuel switching. These approximations may be applied to each Residential Tariff application and do not have to be unique or specific to each application or customer.[91]

To facilitate building and vehicle electrification, the Commission should adopt a similar policy for determining system size requirements.

To the extent allowing systems larger than historic usage to facilitate future electrification is a concern, rather than provide a bill credit or payment for NSC to the successor tariff customer, the Commission should require that NSC be directed to clean energy programs targeting low-income ratepayers. This approach for net surplus generation is used in Oregon,[92] and would avoid a potential circumstance where systems are oversized to take advantage of NSC without future adoption of electrification technologies. It would also advance equity objectives

---

[90] *See* D.21-02-007 at 46 (principle (e)).

[91] State of Connecticut, Public Utilities Regulatory Authority, Docket No. 20-07-01, *Interim Decision* at 16 (Feb. 10, 2021), http://www.dpuc.state.ct.us/DOCKHISTPost2000.NSF/8e6fc37a54110e3e852576190052b64d/a6e81afafc71c8c78525869600507797/$FILE/200701-021021.pdf.

[92] *See* Portland General Electric Company, *Schedule 215: Solar Payment Option Pilot, Small Systems (10 kW or Less)*, at 2, available at: https://assets.ctfassets.net/416ywc1laqmd/7pnrjJtnZJhkh7DzUZe5xD/6c4d11952cb74e82f19f2f2539959f66/Sched_215.pdf. ("[A]t the end of the last monthly Billing Period ending on or before the last day of each generation year, any excess generation kWh credits accumulated will be transferred to the Company's low income assistance program at the average annual Schedule 201 Avoided Cost rate.").

by providing additional resources to low-income programs until such time as the customer's electric load is increased through electrification of fossil-fueled end uses.

III. RESPONSE TO ALJ QUESTIONS ON PROPOSAL

1. Proposal elements:

a. Export compensation structure(s) (e.g., net metering, net billing, feed-in tariff)

Net Billing.

b. Description of methodology and inputs for calculating export compensation price(s) (e.g., avoided greenhouse gas emissions, transmission capacity, distribution capacity, generation energy, system generation capacity, local generation capacity).

The proposal uses the ACC as the end state for export compensation. The ACC incorporates values for avoided costs of generation capacity, energy, ancillary services, greenhouse gases, and transmission and distribution capacity.[93] Export compensation declines from export levels beginning at retail rates of qualifying well-differentiated/electrification-friendly rate structures to meet avoided costs in 1 GW capacity step-downs to achieve 10 GW of total additional rooftop solar deployment.

c. Rate structure(s) (e.g., time-of-use rate requirement, fixed or demand charges, minimum bill, market transition credit, nonbypassable charges)

Successor tariff customers would be required to be on a TOU rate with at least a 2:1 differential between summer evening peak and mid-weekday off peak periods. Sierra Club does not propose charges additional to what may be part of the underlying rate.

Sierra Club also proposes the Commission move existing NEM customers to a TOU rate with at least a 2:1 differential between summer evening peak and mid-weekday off peak periods eight years from taking service on the NEM tariff.

d. Continued application of secondary customer benefits (e.g., exemptions from interconnection upgrade costs, standby charges, and departing load charges)

Sierra Club does not propose changes from existing NEM 2.0 rules.

---

[93] *See* CPUC, *2020 Distributed Energy Resources Avoided Cost Calculation Documentation* (June 24, 2020), https://www.cpuc.ca.gov/General.aspx?id=5267.

e. Terms of service and billing rules (e.g., duration of service, true-up period, netting interval)

Sierra Club proposes that residential customers be allowed to size their system to meet energy demand for all-electric appliances and two electric vehicles. Any net-surplus compensation upon an annual true-up would no longer be credited to the customer and instead be used to fund low-income clean energy programs. Sierra Club proposes no other changes to terms of service and billing rules.

f. Treatment for systems 1 megawatt and larger

Sierra Club does not propose changes from existing NEM 2.0 rules.

g. How to address variations on the current net energy metering tariff (e.g., net energy metering aggregation and virtual net energy metering)

Sierra Club's proposal is directed at residential NEM customers. Sierra Club does not have a specific proposal for virtual net metering ("VNEM") customers and it is Sierra Club's understanding that net energy metering aggregation is not used by residential customers.

h. Any modifications to existing smart inverter requirements for systems taking service on the successor tariff

Sierra Club's proposal does not include any changes to existing rules on smart inverter requirements.

i. Whether and how energy storage and other distributed energy resources are integrated into the tariff

In moving existing NEM customers to a more highly differentiated TOU rate, Sierra Club's proposal provides a greater economic incentive for battery storage deployment and electrification technologies. Initial modeling results by Synapse indicate that NEM customers that switch to a more differentiated rate (such as from PG&E's default TOU-C rate to EV2 or the proposed E-ELEC rate) obtain greater operational cost savings from fuel switching to electric appliances and an electric vehicle. Sierra Club will provide additional detail regarding potential cost savings in testimony.

In providing capacity step-downs that reduce export compensation to ACC avoided cost, Sierra Club's successor tariff proposal provides a glide path for the market to routinely provide solar paired with battery storage as part of new installations.

j. Any safety issues related to the successor tariff

Sierra Club is not aware of any safety issues associated with its proposal.

k. Any legal issues associated with your proposal (e.g., consistency with other Commission decisions or statutory requirements, tax implications for customers)

Moving existing NEM customers to more differentiated TOU rates five or more years after taking service under the NEM tariff is consistent with multiple Commission decisions underscoring that the rates underlying NEM service are occasionally subject to more abrupt changes and that NEM customers do not have a reasonable expectation to maintain service under a particular rate structure.[94] Sierra Club believes other aspects of its proposal are also consistent with relevant Commission and statutory requirements and is not aware of any tax implications of its proposal.

2. Proposal consistency with each of the "guiding principles" articulated in the *Decision Adopting Guiding Principles for the Development of the Successor to the Current Net Energy Metering Tariff* in R.20-08-020, compliance with all statutory and cost-effectiveness mandates, and cost-effectiveness.

The Guiding Principles set forth in D.21-02-007 are as follows:

a. A successor to the net energy metering tariff should comply with the statutory requirements of Public Utilities Code Section 2827.1;

Public Utilities Code 2827.1 states in relevant part:

> *In developing the standard contract or tariff, the commission shall do all of the following:*
>
> > *(1) Ensure that the standard contract or tariff made available to eligible customer-generators ensures that customer-sited renewable distributed generation continues to grow sustainably and include specific alternatives designed for growth among residential customers in disadvantaged communities.*

In D.21-02-007, the Commission declined to adopt a specific definition of "grow sustainably."[95] In providing a glide path to avoided cost export compensation, Sierra Club's proposal is intended to ensure sustainable growth of customer-sited renewable generation. In Sierra Club's view, "grow sustainably" should also be interpreted to include growing in manner that goes beyond solar deployment to facilitate the deeper decarbonization and load shifting

[94] *See* D.14-03-041 at 18–20; D.15-07-001 at 149–155; D.16-01-044 at 93–94, 100–101.
[95] D.20-01-007, *Decision Approving PacifiCorp's Net Billing Proposal*, at 11 (Jan. 16, 2020).

achieved through electrification that will be necessary for California to meet its climate objectives. The price signals in more differentiated and electrification-friendly rates facilitate more sustainable outcomes by lowering the operational cost of electrification technologies compared to fossil fueled alternatives.

Sierra Club's proposal for alternatives designed for growth among low-income customers is set forth separately as part of a separate joint proposal submitted with Grid Alternatives and Vote Solar.

(2) Establish terms of service and billing rules for eligible customer-generators.

The Sierra Club proposal uses a net billing mechanism for exports.

(3) Ensure that the standard contract or tariff made available to eligible customer-generators is based on the costs and benefits of the renewable electrical generation facility and (4) Ensure that the total benefits of the standard contract or tariff to all customers and the electrical system are approximately equal to the total costs.

Sierra Club's proposal provides better alignment of costs and benefits for existing NEM customers by moving to well differentiated/electrification-friendly rates. Avoided cost compensation is the end-state for the successor tariff. Under Sierra Club's proposal, the glide path to avoided cost is gradual and designed to balance statutory criteria to ensure sustainable growth of customer-sited generation. In addition, Sierra Club proposes to offset costs of a gradual transition to avoided cost export compensation for successor tariff customers by moving existing NEM customers to well-differentiated TOU/electrification friendly rates.

Sierra Club also views total system benefits to include societal benefits. However, Sierra Club does not propose a specific adder to account for societal benefits at this time given the use of an MTC to provide a glide path to avoided cost compensation and the lack of any additional fixed charges beyond those in an underlying rate.

b. A successor to the net energy metering tariff should ensure equity among customers;

Sierra Club's separate proposal, submitted jointly with Grid Alternatives and Vote Solar, is intended to facilitate greater deployment of customer-sited generation among low-income customers. Moving existing NEM customers to well differentiated TOU rates provides increased equity among customers by better aligning export value with system benefits. Reducing export

compensation under the successor tariff that declines to avoided cost in successive step-downs similarly furthers equity among customers.

c. A successor to the net energy metering tariff should enhance consumer protection measures for customer generators providing net energy metering services;

Sierra Club's successor tariff proposal provides export compensation that is fixed for 20 years. This certainty enhances transparency and customer protection.

d. A successor to the net energy metering tariff should fairly consider all technologies that meet the definition of renewable electrical generation facility in Public Utilities Code Section 2827.1;

Sierra Club's proposal is limited to residential customers and designed to address specific issues and opportunities with deployment of customer-sited solar. Technologies that may be used for other customer classes, such as fuel cells utilizing biomethane, have separate considerations that are beyond the scope of Sierra Club's proposal.

e. A successor to the net energy metering tariff should be coordinated with the Commission and California's energy policies, including but not limited to, Senate Bill 100 (2018, DeLeon), the Integrated Resource Planning process, Title 24 Building Energy Efficiency Standards, and California Executive Order B-55-18;

Sierra Club's proposal is designed to advance California's clean energy and climate policies. Moving existing NEM customer to well-differentiated TOU rates provides a marketing opportunity and incentive for those customers to achiever deeper levels of decarbonization through adoption of electrification technologies. With regard to Title 24, the California Energy Commission ("CEC") is in the process of updating the 2022 building code. For low-rise residential construction, the CEC's current draft 2022 building code falls short of full electrification by incorporating either heat pump water heating or space heating into the project baseline. Adoption of a successor tariff rate structure that increases operational savings for electric appliances compared to gas alternatives provides an additional incentive for all-electric new construction.

f. A successor to the net energy metering tariff should be transparent and understandable to all customers and should be uniform, to the extent possible, across all utilities;

Sierra Club's proposal provides a fixed export credit over twenty years to provide transparency and certainty to prospective customers. Under Sierra Club's proposal, initial export credits are set relative to the eligible rate structures but export compensation under successive step-downs are toward avoided cost as determined by the ACC.

g. A successor to the net energy metering tariff should maximize the value of customer-sited renewable generation to all customers and to the electrical system;

Sierra Club's proposal aims to maximize value to the electrical system by proposing a tariff with price signals to encourage deployment of electrification and load-shifting technologies to optimize generated energy in a manner consistent with grid needs.

h. A successor to the net energy metering tariff should consider competitive neutrality amongst Load Serving Entities.

Sierra Club's proposal does not address competitive neutrality. Sierra Club looks forward to reviewing other party proposals on this subject.

3. Proposal's implementation plans and timelines

Sierra Club believes implementation can be achieved through Advice Letter filings and coordination with other proceedings. One key element of Sierra Club's proposal that is missing is an electrification-friendly rate for SDG&E similar to that already adopted by SCE (TOU-Prime) or proposed by PG&E (E-ELEC). It is Sierra Club's understanding that development and adoption of SDG&E's rate is anticipated to occur as part of SDG&E Rate Design Window Application in September. Another part of Sierra Club's proposal is notice to existing NEM customers on their transition to a well-differentiated/electrification-friendly rate. Sierra Club believes notification should be reviewed via a Tier 1 or Tier 2 Advice Letter process to ensure requisite information on achieving bill savings through electrification and demand response technologies, any available rebates in that customer's service territory, and the air quality and climate benefits of electrification and how utilizing energy during periods of mid-day solar generation and limiting evening usage reduces climate pollution, is appropriately and accurately communicated.

Particularly given the need for SDG&E to adopt an electrification-friendly rate, Sierra Club expects a successor tariff to be implemented by the end of 2022. Assuming there are no longer new NEM 2.0 customers by 2023, Sierra Club's proposal to shift existing NEM customers to more differentiated TOU rates after eight years from system interconnection would be fully implemented by January 1, 2031. Sierra Club's proposal also includes self-executing capacity-based step-downs in export compensation to avoided cost. It is difficult to estimate when the step-downs would be concluded. Because all rooftop solar, including from new construction, non-residential customers, and low-income customers contribute to meet the capacity step-downs, it is Sierra Club's hope that the 10 GW of additional customer-sided solar the step downs are based off of will be met by 2030 as assumed in the IRP proceeding.

4. Similarities and differences with the White Paper and the MTC

Sierra Club's proposal contains similar elements to those discussed in the White Paper, including a move to a net billing model for NEM 3.0 and a mechanism for initially setting the export rate at above avoided cost to avoid collapse of the rooftop solar industry, similar to the MTC. Sierra Club's proposal is also similar to the White Paper in that it identifies certain characteristics of underlying rates that are appropriate to serve NEM customers such that the costs and benefits of the NEM structure are in alignment with each other and with California's climate and building decarbonization objectives. However, Sierra Club's proposal differs from that of the White Paper, as the White Paper offers examples of potential new rates for NEM customers, including additional fixed charges, whereas Sierra Club uses existing or anticipated well-differentiated/electrification-friendly rates to use as the underlying rate for the successor tariff. Sierra Club also proposes moving existing NEM customers to more differentiated TOU rates. The White Paper does not address existing NEM customers.

a. Sierra Club's Responses to the White Paper Questions on the MTC

(1) What is a reasonable payback period for BTM generation?

Sierra Club considers a payback period under 10 years to be reasonable for NEM customers. However, in designing its proposal, Sierra Club took an approach of step-downs to export compensation at a specific rate for twenty years rather than attempt to ensure export compensation would allow for payback within a set period before dropping to avoided cost or some other value. Sierra Club took this approach to aid in customer understanding and financing. As a result, Sierra Club suggests that the concept of payback periods be used as a

loose guideline for development of the NEM successor tariff, rather than a calculable hard value, to account for the range of experiences and financial concerns of different NEM customers.

(2) Over what period of time should more cost-based retail rates for customer-generators be implemented? How can this rate transition best support other policy goals such as promoting electrification as a key decarbonizing strategy?

Sierra Club proposes that existing NEM customers (*i.e.*, NEM 1.0 and NEM 2.0 customers) be required to transition to an electrification-friendly rate at the eight-year point from interconnection, and that successor tariff customers be required to enroll under an electrification-friendly rate at their date of interconnection. NEM customers' enrollment in electrification-friendly rates promotes the policy goal of electrification of these customers' homes by providing cost-based price signals that incentivize load-shifting and adoption of home electrification technologies, such as heat pump water heaters, smart thermostats, electric vehicles, or battery storage, to maximize the customer's value proposition while reducing overcompensation of solar-only systems. Starting successor tariff customers on these rates means they will have these incentives as they plan and size their systems, and giving existing NEM customers eight years from interconnection on their existing rates provides those customers with time to plan for the transition without undermining reasonable expectations about the value their system would provide. Transitioning existing NEM customers also supports electrification policy as it provides an opportunity for the IOUs to educate these customers on the optimal use of their systems and opportunities to further decarbonize their homes in ways that benefit the customer, the grid, and the climate.

(3) How should a MTC for customer-generators be structured?

Sierra Club's recommended export compensation model is described in detail above. Sierra Club believes this structure will provide reasonable, sustainable growth for the industry while reducing cost impacts on non-participants and incentivizing optimal use of customer-generators' systems.

(4) Should MTC vintages be based on time (e.g., annual), number of participants, or capacity (e.g., MW blocks)?

As discussed above, Sierra Club recommends MTC vintages be based primarily on installed capacity, with each step-down being assigned a date-certain as the capacity thresholds approach. This provides a market-responsive step-down system that also avoids confusion for

prospective customers and developers.

(5) From which groups should the MTC recovery surcharge be collected? From the same vintage of customer-generators, future vintages of customer-generators, all customer-generators, all ratepayers, or some other group?

Sierra Club proposes that the MTC be collected from all ratepayers. However, Sierra Club's proposal seeks to minimize any additional costs to non-participants from its separately submitted joint proposal for low-income customers and under this successor tariff proposal by moving existing NEM customers to well-differentiated/electrification-friendly rates that will reduce mid-day export compensation and non-participant costs of the existing NEM program.

Thank you for your consideration of this proposal.

Dated March 15, 2021

Respectfully submitted,

/s/ Matthew Vespa

Matthew Vespa
Rebecca Barker
Earthjustice
50 California Street, Suite 500
San Francisco, CA 94111
Telephone: (415) 217-2123
Email: mvespa@earthjustice.org
rbarker@earthjustice.org

/s/ Katherine Ramsey
Katherine Ramsey
Sierra Club
2101 Webster Street, Suite 1300
Oakland, CA 94612

Telephone: (415) 977-5627
katherine.ramsey@sierraclub.org

Attorneys for Sierra Club