

**BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN**

Verified Petition of Vote Solar to Determine
Applicability of Wis. Stat. § 196.01(5)(a) to
Third-Party Financing of Distributed Energy
Resource Systems in Wisconsin

9300-DR-106

DIRECT TESTIMONY OF TIMOTHY ALAN SIMON

1 **Q. Please state your name, business address and title.**

2 A. My name is Timothy Alan Simon, Esq. I am the Principal at TAS STRATEGIES, 100
3 Pine Street, Suite 1250, San Francisco, California 94111.

4 **Q. Please describe your educational background and professional experience.**

5 A. I received a bachelor's degree in Economics from the University of San Francisco
6 (Distinguished Alumni) and a Juris Doctor from the University of California at Hastings,
7 College of the Law.

8 I am a Commissioner Emeritus of the California Public Utilities Commission
9 (CPUC). I served on the CPUC from February 15, 2007 until I ended my term on
10 December 31, 2012. During my time as a CPUC Commissioner, I was the assigned
11 Commissioner for the general rate case cycles for Pacific Gas & Electric (2009), San
12 Diego Gas & Electric (2008) and Southern California Energy (2008), as well as
13 Southwest Gas Corporation (2008). While a Commissioner, I also served on the Board of
14 Directors of the University of California at Berkeley, Berkeley Energy Collaborative, the
15 Energy Imbalance Market Regional Taskforce, California Green Jobs Council, and the
16 National Petroleum Council.

1 Prior to my appointment to the CPUC, I served as Appointments Secretary in the
2 California Governor’s office. In that role, I worked on the passage of AB 32 (Nunez,
3 2006) California Global Warming Solutions Act of 2006.¹ My work in this area was in
4 part the reason why I was asked to serve as a Commissioner on the CPUC.

5 I also served as Chair of the National Association of Regulatory Utility
6 Commissioners (NARUC) Gas Committee; Chair of the LNG Partnership between the
7 Department of Energy and NARUC; founding member of the National Call to Action on
8 Gas Pipeline Safety Taskforce with the United States Department of Transportation,
9 Pipeline and Hazardous Material Safety Administration, and NARUC; Vice Chair of the
10 Utility Marketplace Access Subcommittee, and as a member of the NARUC Board of
11 Directors, the Critical Infrastructure and Consumer Affairs Committees, the NARUC
12 Wireless Task Force; and the Advisory Board of the Gas Technology Institute. Currently,
13 I serve on the Advisory Committee of the North American Energy Standards Board and
14 the National Board of Directors of the American Association of Blacks in Energy, where
15 I chair the Legislative Issues and Public Policy Committees.

16 I also serve on two publicly traded Boards of Directors, Charah Solutions (NYSE:
17 CHRH) and Aemetis (NASDAQ: AMTX).

18 In the area of public and community services, I sit on the Board of Trustees of the
19 University of San Francisco and SFJAZZ, and I serve as Chair of the Board of Directors
20 of the California African American Chamber of Commerce.

21 Prior to public service, I was in-house counsel and compliance officer with the
22 capital market divisions of Bank of America, Wells Fargo, and Robertson Stephens. For

¹ California Global Warming Solutions Act of 2006, Cal. Assemb. B. 32 (2005-2006), Chapter 488 (Cal. Stat. 2006).

1 19 years, I served as an Adjunct Professor of Law at the University of California at
2 Hastings, College of the Law and Golden Gate University School of Law, where I taught
3 Securities Regulation. I was also an advisor for the International Securities Regulation
4 program at the Golden Gate University School of Law, which included the Doctor of
5 Juridical Sciences in International Legal Studies.

6 In 2013, I created TAS STRATEGIES and serve as an attorney and consultant to
7 clients on utility, infrastructure, financial services, and broadband projects. I am a
8 frequent public speaker, expert witness, and panelist on topics including energy, capital
9 markets, infrastructure, diversity and inclusion.

10 **Q. Have you previously testified before the Public Service Commission of Wisconsin**
11 **(Commission)?**

12 A. No.

13 **Q. What is the purpose of your direct testimony in this proceeding?**

14 A. Vote Solar's Verified Petition discusses the purported benefits of distributed energy
15 resources in support of its position that third-party ownership of such resources should be
16 exempted from the definition of "public utility" in Wisconsin, and therefore exempted
17 from Commission oversight. Among other alleged benefits, Vote Solar says that such
18 arrangements provide customers "with cost-effective solutions to manage the size and
19 ensure the stability of their electric bills," and "greatly increase[] customers' freedom to
20 become more energy independent and self-sufficient."² Similar claims have been made
21 by the rooftop solar industry in California in the past. I will present the policy
22 considerations and highlight the unintended negative consequences observed from

² Verified Petition, at 2-3.

1 California's experience with third-party ownership of distributed energy generation and
2 distributed energy resources.

3 **Q. Are you sponsoring any exhibits with your testimony?**

4 A. Yes. I am sponsoring the following exhibits:

- 5 • Ex.-WUA-Simon-1 is a copy of the "Net-Energy Metering 2.0 Lookback Study"
6 commissioned by the CPUC and prepared by Verdant Associates, LLC with
7 assistance from Energy and Environmental Economics and Itron, Inc. dated Jan.
8 21, 2021;
- 9 • Ex.-WUA-Simon-2 is a report by Bridget Sieren-Smith, and other contributors,
10 commissioned by CPUC titled "Utility Costs and Affordability of the Grid of the
11 Future: An Evaluation of Electric Costs, Rates and Equity Issues Pursuant to P.U.
12 Code Section 913.1" dated May 2021;
- 13 • Ex.-WUA-Simon-3 is a presentation prepared by Clyde Loutan of the California
14 Independent System Operator titled "Briefing on the Duck Curve and Current
15 System Conditions";
- 16 • Ex.-WUA-Simon-4 is a copy of the CPUC's "Solar Consumer Protection Guide"
17 published March 2022;
- 18 • Ex.-WUA-Simon-5 is an article by Eli Wolfe titled "A Major Player in Solar
19 Energy Leaves Some Customers Seething" published on May 9, 2020;
- 20 • Ex.-WU-Simon-6 is an article by Kirsten Grind titled "SEC Probes Solar
21 Companies Over Disclosure of Customer Cancellations" published on May 3,
22 2017;

- 1 • Ex.-WU-Simon-7 is a press release from the Attorney General of New Mexico
2 and a Complaint by the State of Mexico against Vivint Solar and related entities
3 dated March 8, 2018;
- 4 • Ex.-WU-Simon-8 is a report from the Campaign for Accountability titled “What
5 Consumer Complaints Reveal about the Solar Industry: CfA’s year-long
6 investigation into the solar industry reveals Vivint and SolarCity are the
7 Industry’s Leading Bad Actors”; and
- 8 • Ex.-WU-Simon-9 is a Class Action Complaint against Vivint Solar and related
9 entities dated December 3, 2019.

10 **Q. How is third-party ownership of solar energy systems treated in California?**

11 A. Based on California state statutes, the CPUC has regulatory authority over public utilities
12 including electrical corporations.³ In 2008, the California legislature passed AB 2863
13 (Leno), which created an exception for independent solar energy producers from the
14 definition of an electrical corporation.⁴ However, even after creating this exception,
15 independent solar energy producers remain subject to certain requirements, which are
16 enforced by the CPUC, and remain responsible for making disclosure to customers. For
17 example, an independent solar energy producer contracting for use or sale of electricity or
18 the lease of a solar energy system to an entity or person for use in a residence must
19 disclose to the buyer or lessee the following:

- 20 • A good faith estimate of the kilowatt hours to be delivered by the solar energy
21 system;
- 22 • A plain language explanation of the pricing terms;

³ Cal. Pub. Util. Code § 216

⁴ Independent Solar Energy Producers, Cal. Assemb. B. 2863 (2007-2008), Chapter 535 (Cal. Stat. 2008).

- 1 • A plain language explanation of the operations and maintenance responsibilities
2 for the system;
- 3 • A plain language explanation of the terms and conditions relating to transfer of
4 the contract or transfer of ownership; and
- 5 • A plain language explanation of the disposition of the solar energy system at the
6 end of the contract.⁵

7 The CPUC may also require additional disclosures to the buyer, lessee, or the
8 CPUC.⁶ In this way, although third-party owners of solar energy systems are not
9 considered public utilities, they are still subject to the jurisdiction of the CPUC. This is
10 important because it means that a regulator with subject matter expertise continues to
11 oversee these generation owners and their conduct towards consumers. This should be
12 contrasted with the proposal in this docket, where Vote Solar seeks to have the
13 Commission interpret long standing Wisconsin state statutes in a way that would strip the
14 Commission of *all* jurisdiction over third-party ownership arrangements and the
15 developers and tax equity investors behind them.

16 From my analysis of California and other states, this lack of regulation and
17 oversight could create a market vulnerable to predatory practices and market imbalance.
18 Further, accelerated adoption of third-party ownership of distributed energy generation
19 does not allow regulators and legislators the opportunity to evaluate unintended
20 consequences, which typically fall on consumers.

⁵ *Id.*

⁶ *Id.*

1 **Q. What is the history of distributed generation in California?**

2 A. The California legislature and the CPUC are national leaders and have played an active
3 role in the development of distributed energy generation. In 1995, the California
4 legislature passed Senate Bill 656 (Alquist, 1995), which created Net Energy Metering
5 (NEM) tariffs for eligible customer-generators.⁷ Customers who installed and operated
6 small renewable generation facilities (originally 10 kilowatts and subsequently increased
7 to 1 megawatt (MW) or less) that met certain technical requirements could choose to
8 participate in a NEM tariff. Under the original NEM tariff (which is referred to as NEM
9 1.0), customers received a full retail rate bill credit for the power generated by their
10 onsite system that was fed back into the power grid when generation exceeded onsite
11 energy demand. The credits offset a customer's monthly electricity bills and could be
12 applied against subsequent bills for up to one year.

13 The CPUC also worked in parallel and began rulemakings on distributed energy
14 resources and distributed energy generation starting in 1998. These rulemakings have
15 ranged from renewable distributed generation programs, residential rate redesign,
16 microgrids and resiliency, distribution resources planning, interconnection of distributed
17 generation, and financial incentive programs.

18 In 2013, the California Legislature passed Assembly Bill 327 (Perea, 2013)
19 directing the CPUC to develop a successor NEM tariff (NEM 2.0) for eligible customers
20 with a renewable electric generation system on their property because the California
21 Legislature sought to continue the NEM program beyond its original program cap, to
22 address unfair residential electrical rate structures, and to avoid overburdening low-

⁷ Public Utilities: Energy Metering, Cal. S. B. 656 (1995-1996), Chapter 369 (Cal. Stat. 1995).

1 income and moderate-income customers.⁸ Although NEM 2.0 continued the full retail
2 rate credit, NEM 2.0 also sought to align NEM customer costs with non-NEM customer
3 costs. The costs imposed on NEM customers under the NEM 2.0 framework include
4 paying a one-time interconnection fee and monthly non-bypassable charges, as well as
5 mandating that all NEM 2.0 customers take service under a time-of-use rate. By 2017, all
6 investor-owned utilities (PG&E, SCE, SDG&E, and Pacificorp Berkshire Hathaway
7 Energy) had implemented the NEM 2.0 tariff.

8 **Q. How has net energy metering affected non-NEM customers?**

9 A. The California Legislature required a NEM 2.0 Lookback Study to evaluate the impacts
10 of NEM 2.0.⁹ To that end, an independent third-party study was conducted by Verdant
11 Associates with assistance from Energy and Environmental Economics and Itron, Inc.
12 This Lookback Study came to the following conclusions:¹⁰

- 13 • NEM 2.0 negatively impacts non-NEM participant ratepayers;
- 14 • NEM 2.0 is not cost-effective; and
- 15 • NEM 2.0 disproportionately harms low-income ratepayers.

16 NEM as implemented in California has created a revenue under-collection that
17 must be recovered by non-participating customers. NEM participants have benefited from
18 bills lower than the utility's cost to serve them, while non-participant ratepayers have
19 seen increased rates, resulting in a predicted annual cost shift of \$998 to \$1,817 per

⁸ California Renewables Portfolio Standard Program, Cal. Assemb. B. 327 (2013-2014), Chapter 611 (Cal. Stat. 2013).

⁹ Ex.-WUA-Simon-1.

¹⁰ *Proposed Decision Revising Net Energy Metering Tariff and Subtariffs*, Docket No. R. 20-08-020, at 34 (Cal. Pub. Util. Comm., Dec. 13, 2021) (Proposed Decision).

1 customer in 2023 and \$1,269 to \$2,651 per customer in 2030 (under NEM 2.0 tariffs).¹¹
2 Moreover, this issue is exacerbated as the number of NEM tariff customers grows and the
3 pool of non-participants shrinks; a situation that will lead to a financial burden on the
4 shrinking pool of non-participants and is not sustainable. Two major areas of cost shift
5 are (1) non-participating customers overcompensating NEM customers for energy they
6 export to the grid; and (2) non-participants paying for infrastructure and public policy¹²
7 costs that NEM customers avoid (since these costs are embedded in volumetric rates). A
8 recent CPUC study concluded:

9 [T]he cost to the electric utilities of providing these extra electric
10 bill savings is greater than the energy's value, i.e. the utility pays
11 more to NEM customers than it would pay elsewhere for the same
12 amount of energy and other electric grid benefits. This is illustrated
13 by the CPUC's total resource cost (TRC) test, which compares an
14 energy resource's benefits and costs to both participants and
15 utilities. Using a model representing the NEM 2.0 population, the
16 study found a statewide weighted average TRC ratio of 0.84,
17 meaning the total benefits, \$7.96 billion, are about one-sixth lower
18 than the total costs, \$9.46 billion. A related test, the CPUC's
19 ratepayer impact measure (RIM) test, calculates effects of an energy
20 resource on customer bills. The model had a NEM 2.0 weighted
21 average RIM ratio of 0.37, with total benefits of \$7.58 billion and
22 total costs of \$20.58 billion. A RIM ratio below 1.0 means that NEM
23 2.0 increases non-participant bills. Non-NEM customers' bills rise
24 most, not being offset by onsite energy generation.¹³

25 Low-income customers are participating much less in NEM than other residential
26 customers, and are therefore subsidizing the electric rates of residential customers who
27 are better off economically than them.¹⁴ In California, the three lowest income brackets
28 had lower rates of NEM participation in comparison to their share of the population and

¹¹ *Cost-effectiveness of NEM Successor Rate Proposals under Rulemaking 20-08-020: A Comparative Analysis*, Verdant Associates, LLC (May 28, 2021).

¹² "Public policy" costs refers to costs the CPUC has authorized investor-owned utilities to recover related to specific public policy objectives such as transportation electrification and demand response.

¹³ Ex.-WUA-Simon-2, at 29-30.

¹⁴ Ex.-WUA-Simon-1, at 34.

1 the three highest income brackets had higher participation rates compared to their share
2 of the population. A Lawrence Berkeley National Laboratory study corroborated the
3 Lookback Study’s finding, and showed that 13% of NEM customers come from the
4 lowest 40 percentile of income, while customers in the top 20 percentile represent 43% of
5 NEM adopters.¹⁵

6 **Q. Which groups or demographics have not benefitted from traditional NEM?**

7 A. A recent CPUC study found that:

8 as compared to the general California population, NEM customers
9 are disproportionately older, located in high-income areas, likely to
10 own their home, and less likely to live in a disadvantaged
11 community. Consequently, the costs of NEM are
12 disproportionately paid by younger, less wealthy, and more
13 disadvantaged ratepayers, many of whom are renters.”¹⁶

14 This reality exists despite the fact that California has initiated programs intended to
15 benefit low-income and non-NEM utility customers. The failure of those efforts is
16 addressed in the ALJ’s Proposed Decision in NEM 3.0.

17 In addition to the harm caused by cost shifting, disadvantaged communities and
18 low-income customers tend to be renters or live in multi-unit buildings where traditional
19 NEM programs do not create the financial incentives to adopt solar photovoltaic systems.
20 Thus, in order to protect and benefit low-income customers two things must occur: (1)
21 minimize cost shifting and (2) provide programs to help low-income participate in NEM
22 through incentives, reducing initial system costs, and providing alternative NEM
23 programs that align with their housing situation.

¹⁵ Proposed Decision, at 46.

¹⁶ Ex.-WUA-Simon-2, at 29-30.

1 **Q. How has the CPUC responded to the issues you’ve just discussed?**

2 Recognizing the above issues in NEM 2.0, the CPUC is currently evaluating a third NEM
3 tariff (NEM 3.0). In developing NEM 3.0, the CPUC has emphasized the following
4 guiding principles:¹⁷

- 5 • equity among customers;
- 6 • enhance consumer protection measures for customer-generators providing NEM
7 services;
- 8 • transparent and understandable to all customers;
- 9 • uniformity across utilities;
- 10 • maximize the value of customer-sited renewable generation to all customers and
11 to the electrical system; and
- 12 • neutrality amongst Load Serving Entities.

13 An Administrative Law Judge has issued a Proposed Decision. The Proposed Decision
14 has drawn criticism from solar rooftop industry; however, it draws strong support from
15 consumer protection groups like The Utility Reform Network, and California utilities.

16 This third iteration of the NEM tariff has encountered a multitude of issues –
17 some of which are highlighted in this direct testimony – and California still has not come
18 up with comprehensive solutions for the issues that have arisen from NEM 1.0 and NEM
19 2.0.

20

21

¹⁷ *Decision Adopting Guiding Principles for the Development of a Successor to the Current Net Energy Metering Tariff*, Docket No. R. 20-08-020, Decision 21-02-007, at 33-34 (Cal. Pub. Util. Comm., Feb. 11, 2021).

1 **Q. Has the proliferation of solar photovoltaic systems affected California’s grid?**

2 A. Yes. In 2013, the California Independent System Operator (CAISO) published a chart
3 showing the potential for “overgeneration” occurring at increased penetration of solar
4 photovoltaics. This “duck curve” shows the potential for solar photovoltaic generation to
5 provide more energy than can be used by the system, especially considering the host of
6 technical and institutional constraints on power system operation.¹⁸ The CAISO duck
7 curve illustrates the general challenge of accommodating solar energy and the potential
8 for overgeneration and solar curtailment.

9 The overgeneration risk occurs when conventional dispatchable resources cannot
10 be backed down to accommodate the supply of variable generation. Overgeneration has a
11 relatively simple technical solution, often referred to as curtailment. Curtailment occurs
12 when CAISO decreases the output from a plant below what it would normally produce.
13 For solar, generation is curtailed by either reducing output from the inverter or
14 disconnecting the plant altogether. This of course requires a plant or system operator to
15 have physical control of the generation resource, which is typically available for large
16 renewable power plants but uncommon for smaller systems, particularly distributed or
17 rooftop systems.

18 While curtailment is technically easy if the system operator can control the
19 system, it has the obvious undesirable trait of reducing the economic and environmental
20 benefits of variable generation, like solar. Each unit of variable generation curtailed
21 represents a unit of energy not sold on to the grid and a unit of fossil fuel generation not

¹⁸ Ex.-WUA-Simon-3.

1 avoided. As the amount of curtailment increases, the overall benefits of additional solar
2 may drop to the point where additional installations are not worth the cost.

3 **Q. What consumer protection issues have arisen because of third-party ownership and**
4 **financing of photovoltaic systems?**

5 A. In discussing consumer protection and consumer education, the CPUC identified the
6 following consumer protection issues:

7 aggressive and misleading sales tactics and marketing practices[;] .
8 . . . persistent robocalls; pressure to sign a contract or agreement on
9 the same day by solar salespersons; misrepresentation of the
10 utilities' role; and confusing, incomplete or incorrect information
11 about the costs and benefits of rooftop solar, including estimated bill
12 savings and value and treatment of solar Renewable Energy Credits
13 (RECs) under different products (purchase/lease/power purchase
14 agreement). Additional issues raised include language barriers for
15 non-English speaking customers; predatory financing; vendor
16 failure to follow through after installation; incorrect system sizing;
17 contract complexity; unlicensed contractors; and a lack of customer
18 understanding of the factors impacting their actual bill savings,
19 including changes in their energy usage and rate structures
20 underlying the current NEM framework.¹⁹

21 To address these issues, the CPUC uses the interconnection application to verify that
22 solar customers have received, read, and signed the (1) California Consumer Protection
23 Guide (that the CPUC developed); and (2) the Contractors State License Board's (CSLB)
24 Solar Energy Systems Disclosures Document (as required by the California legislature in
25 AB 1070 (Gonzalez Fletcher, 2017)²⁰). Moreover, to ensure that solar contract terms are
26 reasonable, all electric utilities are required to collect the installation contracts from solar

¹⁹ *Decision Adopting Net Energy Metering Consumer Protection Measures Including Solar Information Packet*, Docket No. R. 14-07-002, Decision No. 18-09-044, at 8 (Cal. Pub. Util. Comm., Sep. 27, 2018).

²⁰ *Solar Energy Systems: Contracts: Disclosures*, Cal. Assemb. B. 1070 (2017-2018), Chapter 662 (Cal. Stat. 2017).

1 contractors. Additionally, the CPUC highlights the following rights for customers as
2 established by California statute:²¹

- 3 • A right to receive a copy of the solar contract and financing agreement in the
4 language the salesperson used to communicate with the customer;
- 5 • A right to a solar disclosure document that shows the total costs for the solar
6 energy system, including financing and energy/power costs if applicable, as well
7 as information on how and to whom customers may submit complaints; and
- 8 • A minimum three-day “cooling-off” or cancellation period, in which a customer
9 may cancel the contract for any reason (if the customer is 65 or older, the
10 minimum period is extended to five days).

11 The CPUC specifically designed the California Consumer Protection Guide²² to
12 address the consumer protection issues identified above by including a consumer
13 protection checklist addressing misrepresentations and false claims; a list of questions
14 that customers should ask solar providers to help consumers select a reputable provider; a
15 fact sheet with information regarding financing options; and tailored the packet to a
16 layperson audience such that the document is not technical in nature.

17 In the decision developing NEM 2.0, the CPUC focused on safety, consumer
18 protection, and consumer education.²³ In regards to safety, the CPUC established
19 minimum warranty and equipment safety requirements for installations for customers
20 taking service under NEM. The CPUC requires investor-owned utilities to verify through
21 the interconnection application that all major solar system components are on the verified

²¹ *Id.*

²² Ex.-WUA-Simon-4.

²³ *Decision Adopting Successor to Net Energy Metering Tariff*, Docket No. R. 14-07-002, Decision No. 16-01-044, at 42 (Cal. Pub. Util. Comm., Sep. 27, 2018).

1 equipment list maintained by the California Energy Commission and verified as having a
2 safety certification from a nationally recognized testing laboratory. Moreover, the CPUC
3 requires a minimum 10-year system warranty. Lastly, all solar providers must have a
4 valid the CSLB license. While it has taken California over 20 years to develop the
5 protective provisions, California has the highest electricity rates in the country.

6 For customer complaints regarding solar installations, the CSLB has created a
7 form specific to solar installations. The CSLB is required to receive and review all
8 complaints and questions regarding solar energy system companies and solar contractors,
9 including complaints received by other state agencies. The CSLB is also required to
10 submit an annual report documenting solar consumer complaints. The CPUC also collects
11 data on solar complaints across the utilities through its Consumer Affairs Branch. The
12 CPUC also directed its Community Help and Awareness of Natural Gas and Electric
13 Services program to track complaints from customers with limited English proficiency in
14 its annual report. This is because this community is particularly at risk to high-pressure
15 sales tactics.

16 However, even with all these safeguards, both in California and nationwide, solar
17 providers have a history of predatory sales tactics,²⁴ poor or inadequate service,²⁵ falsely
18 representing energy savings, confusing contracts, underreporting of customer
19 cancellations,²⁶ unfair and unconscionable business practices clouding titles to consumer
20 homes,²⁷ and unsatisfactory installation of solar systems.²⁸ The SEC is examining

²⁴ Ex.-WUA-Simon-5.

²⁵ Ex.-WUA-Simon-9.

²⁶ Ex.-WUA-Simon-6.

²⁷ Ex.-WUA-Simon-7.

²⁸ Ex.-WUA-Simon-8.

1 whether Sunrun, Inc. and SolarCity Corp. have adequately disclosed how many
2 customers have canceled contracts after signing up for a home solar-energy system.²⁹ The
3 Attorneys General in California, Florida, Oregon, and Texas have received hundreds of
4 complaints against solar companies stating that customers are paying more on their utility
5 bills, not less as they were promised, and have been sold expensive systems they cannot
6 afford.³⁰

7 **Q. Please describe the historical growth of residential solar in California.**

8 A. Below is a chart of residential projects in California. The chart below also provides the
9 bifurcation between non-third-party owned photovoltaic systems and third-party owned
10 photovoltaic systems. Third-party ownership is further split between purchase power
11 agreements (PPA), leases (including pre-paid leases), and other forms of third-party
12 ownership.³¹

²⁹ Ex.-WUA-Simon-6.

³⁰ *Id.*

³¹ Chart compiled using data from California distributed generation statistics, specifically the interconnected project sites data set.

GROWTH OF RESIDENTIAL PV PROJECTS

Year	Non 3PO	Third-Party Ownership				Total PV	Cumulative Total	Trend
		PPA	Lease	Other	All 3PO			
Pre-2002	2,439	0	0	1	1	2,440	2,440	
2003	2,242	0	0	0	0	2,242	4,682	191.89%
2004	3,802	0	0	0	0	3,802	8,484	181.20%
2005	3,466	0	0	0	0	3,466	11,950	140.85%
2006	5,186	0	1	0	1	5,187	17,137	143.41%
2007	7,276	0	0	170	170	7,446	24,583	143.45%
2008	7,660	1	0	130	131	7,791	32,374	131.69%
2009	12,795	11	40	336	387	13,182	45,556	140.72%
2010	15,506	183	272	789	1,244	16,750	62,306	136.77%
2011	19,234	2,198	1,462	58	3,718	22,952	85,258	136.84%
2012	24,525	4,170	3,659	135	7,964	32,489	117,747	138.11%
2013	42,654	8,537	5,137	199	13,873	56,527	174,274	148.01%
2014	62,489	3,408	2,557	14,738	20,703	83,192	257,466	147.74%
2015	82,080	26,344	10,552	15,939	52,835	134,915	392,381	152.40%
2016	77,748	44,689	17,862	790	63,341	141,089	533,470	135.96%
2017	73,389	24,462	10,727	1,422	36,611	110,000	643,470	120.62%
2018	84,644	27,248	10,002	1,736	38,986	123,630	767,100	119.21%
2019	94,735	35,918	9,851	1,699	47,468	142,203	909,303	118.54%
2020	96,627	33,293	11,616	2,107	47,016	143,643	1,052,946	115.80%
2021	132,207	37,855	10,763	2,186	50,804	183,011	1,235,957	117.38%

1
2 Notably, this chart shows that by far the majority of third-party owned systems are
3 developed under PPA arrangements through which the third-party owner sells the output
4 of the solar photovoltaic system to the host.

5 **Q. What are some minimum steps for the Commission should take to protect**
6 **consumers?**

7 A. Based on the California experience with distributed energy resources and net energy
8 metering, the Commission should consider the following *before* considering a

1 determination that entities other than utilities will be allowed to sell electricity to
2 customers:

- 3 • Rational utility rate design to ensure that distributed generation owners and
4 customers pay their fair share and that non-NEM customers are not unduly
5 burdened, with the goal to minimize cost-shifting;
- 6 • Strong consumer protections to ensure consumers have access to accurate
7 information and recourse for poor service;
- 8 • Growth of distributed energy resources should not come at the undue and
9 burdensome financial expense of non-participant ratepayers; and
- 10 • Programs that incentivize disadvantaged communities to gain access to distributed
11 generation systems and benefits.

12 Such actions would be consistent with the CPUC's third iteration of net energy metering,
13 where the CPUC is building on its extensive 25-year history with distributed energy
14 resources and attempting to balance the competing requirements impacting participants
15 and non-participants, the grid, and the environment.

16 **Q. Does this conclude your direct testimony?**

17 **A. Yes.**