Date of Hearing: April 26, 2023

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY
Eduardo Garcia, Chair
AB 643 (Berman) – As Introduced February 9, 2023

SUBJECT: Electricity: interconnection timelines: report

SUMMARY: Allows the CPUC to impose fines for electrical corporations (investor-owned utilities, IOUs) that routinely violate established interconnection timelines, and consider negligent exceedance of the timeline, as defined, as a violation of CPUC rules subject to a maximum $100,000 penalty per offense. Additionally adds new reporting requirements for interconnections of customer-sited energy generation projects.

Specifically, **this bill**:

1) Defines "negligent exceedance" as the exceedance of an interconnection timeline by an electrical corporation that does not result from unresponsiveness by the customer and is not justified by characteristics of a project that are uniquely time-consuming compared to typical interconnection requests.

2) Requires the CPUC to consider negligent exceedance of any step in an interconnection timeline as a violation of CPUC rules subject to a maximum $100,000 penalty per offense.

3) Requires an IOU to provide a substantial response to any questions from an interconnection applicant related to completeness of the application and the submission of supporting information to pending applications within three business days.

4) Specifies the CPUC may impose fines for routine violations of interconnection timelines.

5) Requires the CPUC to annually, by June 1, submit a report to the Legislature on timelines for the interconnection of customer-sited energy generation and storage resources. The report shall, at minimum, contain interconnection timeline compliance split between projects >30 kilowatts (kW) and projects < 30 kW; timeliness of the IOUs in completing steps not specifically identified in CPUC rules governing interconnection; the number of interconnection requests received in each of the past five years, the number withdrawn, and the number of requests granted permission to operate; a summary of challenges and past improvements in reducing interconnection timelines; and any penalties assessed for timeline violations.

EXISTING LAW:

1) Authorizes the CPUC to establish an expedited distribution grid interconnection dispute resolution process with the goal of resolving disputes over interconnection applications within the jurisdiction of the CPUC in no more than 60 days from the time the dispute is formally brought to the CPUC. (Public Utilities Code § 769.5)

2) Requires an electrical corporation to permit any new or existing customer who applies for an extension of service from that electrical corporation to install an electric extension in

accordance with the regulations of the CPUC and any applicable specifications of that electrical corporation. (Public Utilities Code § 783)

3) Establishes that any public utility that violates or fails to comply with any provision of the state Constitution or any provision of any order, decision, rule, or requirement of the CPUC, is subject to a penalty of not less than five hundred dollars ($500) nor more than one hundred thousand dollars ($100,000), per offense. (Public Utilities Code § 2107)

4) Establishes guidelines for the design, cost allocation, and responsibilities of a project applicant and a utility for electric distribution line extensions necessary to furnish permanent electric service. (Electric Rule 15)

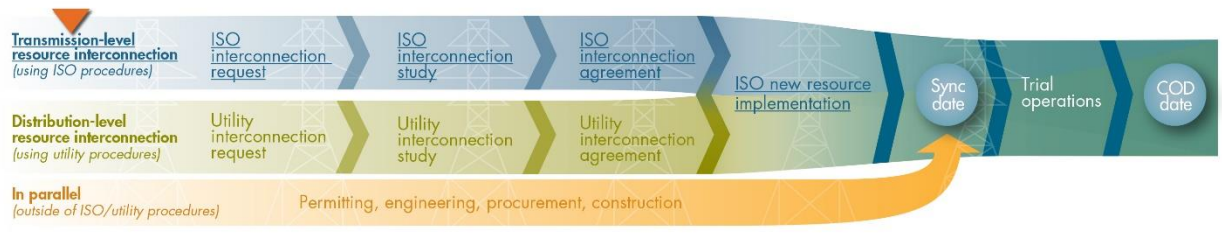
5) Establishes guidelines for the design, cost allocation, and responsibilities of a project applicant and a utility for the extension of electric service from an investor-owned utility (IOU) distribution line. (Electric Rule 16)

FISCAL EFFECT: Unknown. This bill is keyed fiscal and will be referred to the Committee on Appropriations for its review.

BACKGROUND:

IOUs and Interconnection – California's IOUs build, own, and manage most of the transmission and distribution that serves their customers. Consequently, the IOUs play an integral role in interconnecting new generation and battery resources, which are generally owned by merchant developers. These interconnection projects are split into two queues: the distribution interconnection queue, which are operated by the individual IOUs, or the transmission interconnection queue, which is operated by the California Independent System Operator (CAISO) but also involves the utilities. Which of the two queues a project enters is determined by the desired interconnection voltage level of the project. Projects exceeding a specific voltage threshold, set by whichever IOU covers the territory that the project is sited in, are routed into the transmission queue and shepherded through the process by CAISO.[1] Regardless of whether the resource interconnects using the CAISO's transmission interconnection process or a utility's distribution interconnection process, additional steps must be completed with the CAISO in order for the resource to participate in the wholesale power market.

Figure 1: The Parallel Interconnection Queues for Transmission and Distribution-level Projects.[2]



[1] California ISO; "Getting started - exploring interconnection to the grid"; http://www.caiso.com/participate/Pages/ResourceInterconnectionGuide/default.aspx
[2] California ISO; "Getting started - exploring interconnection to the grid"; http://www.caiso.com/participate/Pages/ResourceInterconnectionGuide/default.aspx

Connecting to the Distribution Grid – Rules governing the ability of new buildings, electricity generation, and storage resources to connect to the electric distribution grid are generally determined by statute, CPUC rules, and tariffs[3] for each of the IOUs. These service connections include:

- Interconnections, which generally refer to the interaction of physical connection of an energy generation or storage device to the electric distribution system that is either in front of the meter or behind-the-meter. Interconnection is a defined term in utility tariff rules that generally describe an electric utility's physical connection to an external source of power. The interconnection process of generation resources is largely structured by Electric Tariff Rule 21.[4]

- New service connections, also known as "energization," involve extending an electricity line or expanding distribution infrastructure to service new or expanded customer load. Energizations are subject to provisions specified in Electric Tariff Rule 15 (multiple customers served by circuit) and Electric Tariff Rule 16 (one customer served by circuit).

Interconnection Tariffs for Distributed Generation – All generating facilities seeking interconnection with the distribution provider's system shall apply to the CAISO for interconnection and be subject to CAISO tariffs except for 1) Net Energy Metering (NEM) generating facilities, and 2) generating facilities that do not export to the grid or sell any exports sent to the grid (non-export generating facilities). These two resource types are subject to CPUC jurisdiction and interconnect under Rule 21 regardless of whether they interconnect to a distribution or transmission system.[5]

Electric Tariff Rule 21 describes the interconnection, operating, and metering requirements for generation facilities to be connected to an electrical utility's electrical system. The tariff provides customers who would like to install generating or storage facilities on their premises with access to the electric grid while protecting the safety and reliability of the electric grid at the local and system levels. Each IOU is responsible for administration of the rule in its service territory and maintains its own version of the tariff.[6] The vast majority of Rule 21 interconnection requests are for customer-sited generation (NEM rooftop solar) on a utility's distribution system.

Rule 21 does not apply to the interconnection of generating or storage facilities intending to participate in wholesale markets overseen by the Federal Energy Regulatory Commission (FERC). These facilities must typically apply for interconnection under the FERC-jurisdictional Wholesale Distribution Access Tariff (WDAT), when connecting to the distribution system, or the CAISO tariff, when connecting to the transmission system. The utility WDAT governs all other exporting facilities connected to the distribution system not on a NEM tariff.

Rule 21 Lifecycle – Rule 21 contains extensive provisions governing the multiple aspects of interconnection, including procedures and timeframes for reviewing applications; fee schedules to process applications and perform impact studies; standardized application forms; technical

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[3] Documents that specify rates, charges, rules, and conditions under which an IOU will provide service.
[4] CPUC; "Rule 21 Interconnection"; https://www.cpuc.ca.gov/rule21/
[5] CAISO "Interconnection Basics" presentation; November 2014; http://www.caiso.com/documents/interconnectionoptionsbasics.pdf
[6] CPUC; "Rule 21 Interconnection"; https://www.cpuc.ca.gov/rule21/

requirements for inverters and meters; and procedures for dispute resolution, among other information. The timelines provided by Rule 21 are highly specific, as shown in Figure 2.

Figure 2: Selected Timeline Requirements in Rule 21.[7]

Step in the Interconnection Process	Number of Business Days	Rule 21 Page Reference
End to end process if no major studies are needed	30	42
Standard pre-application report	10	46
Enhanced pre-application report	10	48
Enhanced pre-application data	30	49
Acknowledgment of application receipt	10	67
Review application for completeness	10	67
Incorporate change to application if no study is needed	10	72
Incorporate change to application if study is needed	20	72
Initial engineering review	15	78
Provide interconnection agreement after study	15	78, 86, 87
Cost estimate for simple grid upgrades	15	81, 86
Supplemental engineering review	20	82
Schedule mitigation work scoping meeting	10	89
Electrical independence test	20	90
Schedule Detailed Study scoping meeting	5	92
Provide Detailed Study Agreement	15	93
System Impact Study	60	93
Schedule engineering results meeting	5	81, 86, 94, 101
Design of interconnection facilities and grid upgrades	60	100, 144
Construction of grid upgrades	60	144
Design Net Generation Output Meter	20	225
Install Net Generation Output Meter	20	225
Issue permission to operate after all materials are final	5	133

While these timelines are specific and provide clear targets for the IOUs to meet, there are currently no penalties levied on the IOUs for failure to adhere to the timelines. The CPUC is capable of adopting penalties pursuant to Public Utilities Code § 2107 at any time, should they so choose.

COMMENTS:

1) *Author's Statement.* According to the author, "Solar adoption is key to meeting our state's aggressive climate goals, but far too many Californians buy and install solar panels, and then lose time and money waiting for investor-owned utilities to inspect and sign off on the setup so they can start using them. The state's rules for interconnecting

[7] Data provided by the author to committee, February 28, 2023.

solar and storage contain many time limits for various steps in the process, but the utilities routinely fail to meet those timelines with no repercussions. The cost of customer-sited solar and storage systems is often escalated by the utilities' inconsistent review process and long delays. This bill would clarify that the CPUC can assess financial penalties if the utilities are "negligent" in adhering to the established timelines. It is our hope that the bill does not result in ongoing penalties but rather ensures the utilities do not deprioritize staffing the teams that process interconnection applications and schedule service work."

2) *Evolutions in the NEM program.* California's NEM program started in 1997, prompted by SB 656 (Alquist, Chapter 369, Statutes of 1995). It allows customers who install eligible renewable electrical generation facilities to serve onsite energy needs and receive credits on their electric bills for surplus energy sent to the electric grid. Most customer-sited, grid-connected renewable generation in California is rooftop solar, and is interconnected through NEM tariffs. Enrollment in the first NEM program, now colloquially known as "NEM 1.0," was phased out between 2016 and 2017.

   The Legislature called for revision of NEM 1.0 per AB 327 (Perea, Chapter 611, Statutes of 2013) primarily to address cost shifting associated with the full retail credits available under NEM 1.0. The CPUC responded to AB 327 with what is commonly referred to as NEM 2.0 in 2016. Customers taking service under NEM 2.0 pay the cost to connect to the grid; take service on a "time-of-use" rate plan; and pay "non-bypassable" charges that are not offset with surplus energy credits from the solar facility. In December 2022, the CPUC issued a decision adopting "NEM 3.0" seeking to further address the cost disparity between solar generators and those not on a NEM tariff,[8] after an earlier proposed decision[9] to refine NEM met obstacles.

   The decision adopted a new tariff, and renamed it "Net Billing Tariff" (NBT), to replace the earlier NEM tariffs. The NBT's major difference from NEM 2.0 is that under the NBT, compensation for excess generation exported to the electric grid is applied to a customer's bill at a rate reflecting the value of this generation to the grid. The value of the export compensation is usually lower than the retail rate, but can rise above the retail rate on late summer evenings. Customer-generators can maximize bill savings under the NBT by installing battery storage along with their generation, so they can use or export stored energy during these high-value hours. NEM 2.0 ended on April 14, 2023; now all customers seeking interconnection under a NEM tariff will be under the NBT.

   These changing tariff rules have led to a recent surge in NEM interconnection requests, with customers (and developers) seeking to receive service under the more lucrative NEM 2.0 prior to the April 14th cut-off. Both Pacific Gas & Electric (PG&E) and Southern California Edison (SCE) have noted increase in applicant volume over the last year, largely driven by these tariff changes. PG&E reports in typical months they have approximately 10,000 unique NEM applications, but for February 2023 those jumped to

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[8] CPUC D.22-12-056, *Decision Revising Net Energy Metering Tariff and Subtariffs,* R. 20-08-020, December 15, 2022; https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M500/K043/500043682.PDF

[9] See *Decision Revising Net Energy Metering and Subtariffs*, CPUC, December 13, 2021, at: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M430/K903/430903088.PDF

20,000.[10] SCE saw roughly the same volume of applications in the first two months of 2023 as they did for the entirety of 2020 (~50,000); albeit the work slowdown from the COVID-19 pandemic likely impacts this comparison.[10] This large influx of new NEM applications has had an understandable impact on IOU response times, but led to increasing customer anxiety and frustration as the April deadline approached.

3) *Which interconnection is included?* This bill establishes penalties for violation of "interconnection timelines," and defines such timelines as any established by the CPUC for reviewing interconnection applications. But as noted above, there are many types of interconnections: NEM systems operating under Rule 21; systems participating in the wholesale market under WDAT and seeking interconnection to the distribution grid; large generation systems participating in the wholesale market under CAISO's tariff and seeking interconnection to the transmission grid. All of these interconnection processes are unique and have unique timelines associated with their steps. Presumably, because the definition of "interconnection timelines" is limited to those established by the CPUC, and the WDAT and CAISO interconnection processes are authorized by FERC, this bill is limited to the Rule 21 process. The author has expressed his intent that this bill is focused on Rule 21, yet this is unclear in the current language.

4) *Piling on the Penalties.* As noted above, this bill establishes penalties for violation of "interconnection timelines," that may rise up to $100,000 per offense. The bill additionally authorizes the CPUC to impose fines if an IOU routinely violates timelines, also with a maximum of $100,000 per offense. As shown in Figure 2, Rule 21 has many timelines associated with its processes, with interconnection applications routinely going through 15 or more steps. This holds the possibility for a much delayed project to result in a penalty to the IOU in excess of a million dollars. Multiply that by the tens of thousands of applications an IOU receives per month, and the penalties could rapidly escalate. If timelines persist across multiple projects, the IOU could be additionally penalized under this bill for routine violations, piling on more costs. The supporters of this measure have noted their intent with the penalty structure is to motivate the IOUs to prioritize these projects, citing project delays leading to customer frustration. While the bill does acknowledge that the penalty does not apply if the delay resulted from unresponsiveness by the customer or specific characteristics of the project that are uniquely time-consuming, such exceptions fail to capture the many nuances that might lead to project delays outside the IOU's control; principle among them the massive influx of new applications received since the CPUC issued their revised NEM decision in December 2022, as noted above.

5) *Onerous Reporting.* Currently, IOUs are required to track interconnection timelines and submit the results to the CPUC and stakeholders every quarter. This reporting is limited to larger NEM systems, those greater than 30kW, and represent ~1% of most IOU NEM interconnection requests.[11] Whhile these >30kW systems are subject to the CPUC requirement that at least 95% of projects meet the Rule 21 timelines, it has proven difficult for IOUs to meet that. However, for 99% of Rule 21 requests, which are <30kW,

[10] IOU data requests to the committee, on March 14, 2023.
[11] D. 20-09-035, CPUC, *Decision Adopting Recommendations from Working Groups Two, Three and Subgroup*, R. 17-07-007, September 30, 2020.

the IOUs are able to utilize a fast-track process and have a high success rate of timely interconnection, as shown in Figures 3-5.

Figure 3: PG&E NEM 30-day Results. ("BD" = business days)[12]

Category	Count	Mean (BD)	Std. Dev. (BD)	Percent ≤ 30 BD
By Project Size				
Less than 30 kW	183,589	5.5	16.6	96.9%
30-100 kW	1,288	60.8	90.2	54.0%
100 kW-1 MW	1,024	75.6	102.3	52.1%
1 MW or greater	7	30.4	47.8	71.4%

Figure 4: SCE NEM 30-day Results. ("BD" = business days)[13]

Category	Count	Mean (BD)	Std. Dev. (BD)	Percent ≤ 30 BD
By Project Size				
Less than 30 kW	75	8.9	20.0	90.7%
30-100 kW	4	52.8	52.9	50.0%
100 kW-1 MW	2	33.5	37.5	50.0%
1 MW or greater	1	27.0	-	100%

Figure 5: SDG&E NEM 30-day Results. ("BD" = business days)[14]

Category	Count	Mean (BD)	Std. Dev. (BD)	Percent ≤ 30 BD
By Project Size				
Less than 30 kW	70,473	3.4	7.3	99.2%
30-100 kW	418	14.8	22.0	87.8%
100 kW-1 MW	358	13.7	18.5	89.4%
1 MW or greater	1	153.0	-	0%

This bill adds new reporting requirements to the IOUs to include the 99% of projects (the <30kW projects) currently not subject to CPUC reporting rules. However, these projects represent upwards of two orders of magnitude more applications to be reported to the CPUC quarterly. As shown in Figures 3-5, the vast majority of these <30kW projects are interconnected within 30 days. Given these factors, the costs and work hours required by the IOUs to meet the additional reporting called for under this bill appears high, while the benefit obtained from such reporting is unclear.

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[12] Pg. 45, Betanabhatla ,V., et al., "Rule 21 Interconnection Program Evaluation," prepared for the CPUC by Guidehouse Inc., March 2021; https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/rule21/rule-21-interconnection-program-eval_2021.pdf
[13] Pg. 46, *Ibid.*
[14] Pg. 47, *Ibid.*

6) *Need for amendments. Given the identified challenges with this bill's proposed new penalty structure and reporting guidelines, the author and committee may wish to consider amendments that strike the contents of the bill and instead direct the CPUC to examine ways to further improve the Rule 21 process and address potential delays that arise outside of the current Rule 21 timelines.*

7) *Related Legislation.*

AB 50 (Wood) establishes interim timelines for large electrical corporations to provide customer energization following a written commitment to serve by the utility. Requires that a failure to energize customers by the date provided on a commitment to serve will entitle a customer to a utility bill credit, as specified. Requires the CPUC to determine criteria for timely service for electric customers by January 1, 2025 that may replace or revise the interim timelines. Status: *set for hearing* in this committee on April 26, 2023.

AB 1293 (Irwin) requires the CPUC to provide guidance to investor-owned utilities (IOUs) for the prioritization of interconnection projects, including that the project is shovel-ready, as determined by the CPUC. Status: *set for hearing* in this committee on April 26, 2023.

AB 1482 (Gabriel) would establish an average service energization time for electric vehicle charging infrastructure of 125 business days for publicly-owned utilities (POUs), and would require POUs to annually report certain information to the CEC regarding the service energization time for electric vehicle charging infrastructure projects. It would additionally require the CPUC and the CEC, in consultation with IOUs and POUs, to jointly host an annual public workshop to review and evaluate the information submitted and to revise, if needed, the average service energization time for EV charging infrastructure. Status: *set for hearing* in this committee on April 26, 2023.

SB 83 (Wiener) requires IOUs to interconnect development projects to the electrical distribution system within eight weeks for projects defined as interconnection ready. Additionally, this bill requires electrical corporations to compensate development projects for failing to meet the deadline. Status: *pending hearing* in the Senate Committee on Energy, Utilities, and Communications.

SB 319 (McGuire) would require the CEC, CPUC, and CAISO to jointly develop and recommend an expedited permitting roadmap that describes timeframes and milestones for a coordinated, comprehensive, and efficient permitting process for electrical transmission infrastructure. Status: *pending hearing* in the Senate Committee on Energy, Utilities and Communications.

SB 410 (Becker) requires the CPUC to establish a working group to improve the ability of the electric IOUs to be informed of needed distribution capacity and requires the CPUC to establish timelines for interconnection projects. Status: *pending hearing* in the Senate Committee on Appropriations, after passage in the Senate Committee on Energy, Utilities, and Communications on a 17-0-1 vote.

8) *Prior Legislation.*

AB 2861 (Ting) authorizes the CPUC to establish an expedited dispute resolution process for generating facility interconnection disputes. Status: Chapter 672, Statutes of 2016.

REGISTERED SUPPORT / OPPOSITION:

Support

1000 Grandmothers for Future Generations
350 Bay Area Action
Adt, INC.
Alameda County Democratic Party
Albany Climate Action Coalition
Aztec Solar INC.
Bioenergy Association of California
California Solar & Storage Association
California State Grange
Camptonville Community Partnership, INC
Center for Community Energy
Clean Power Campaign
Climate Action California
Climate Mobilization San Diego
Climate Reality Project, Orange County
Eco Active 101
Electrochaea Corporation
Engie
Engie North America
Environmental Working Group
Extinction Rebellion San Francisco Bay Area
Indivisible East Bay
Indivisible Green Team
Infinity Energy
Jkb Energy
Mcgee-spaulding Neighbors in Action
Morongo Basin Conservation Association
Newgen Energy
Oil & Gas Action Network
Project Development Solutions (PDS)
Récolte Energy
Resource Renewal Institute
Revel Energy
Romero Institute
San Diego Community Power
San Joaquin Valley Democratic Club
Santa Cruz Climate Action Network
Sierra Club California
Skyline Smart Energy
SolidarityINFOService

Sonoma Clean Power
Sunflower Alliance
Sunnova Energy Corporation
Sunnova Energy International, INC.
Sunpower Corporation
Sunrise Bay Area
Sunrun
Sustainable Mill Valley
Terraverde Energy
Tesla
The Climate Reality Project: Silicon Valley
Wellstone Democratic Renewal Club

Oppose

Edison International and Affiliates, Including Southern California Edison
Pacific Gas and Electric Company and Its Affiliated Entities
San Diego Gas & Electric

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