CONTRACTORS STATE LICENSE BOARD

LEGISLATIVE COMMITTEE SUMMARY REPORT

Legislative Committee Summary Report

A. CALL TO ORDER, ROLL CALL, ESTABLISHMENT OF A QUORUM AND CHAIR'S INTRODUCTION

Committee Chair Agustin "Augie" Beltran called the August 6, 2019 meeting of the Contractors State License Board (CSLB) Legislative Committee to order at approximately 9:30 a.m. in the Employment Development Department Auditorium at 722 Capitol Mall, Sacramento, CA 95814. A quorum was established.

Committee Members Present
Agustin "Augie" Beltran, Chair
Kevin Albanese
David De La Torre
David Dias

Committee Member Absent
Marlo Richardson

CSLB Staff Present
David Fogt, Registrar
Tonya Corcoran, Chief Deputy Registrar
Michael Jamnetski, Chief of Legislation
Kristy Schieldge, Department of Consumer Affairs (DCA) Legal Counsel
Phyliz Jones, Executive Staff

Public Visitors
Kathleen Barber, Electrician
Daniel Barnett, C-10 Employee
Byron Benton, Electrician
John Berdner, Enphase Energy
Eddie Bernacchi, National Electrical Contractors Association (NECA)
Steven Booker, Electrician
Jason Bodruk, Solar Edge
Jerome Braxton, Apprentice Electrician
Seamus Brennan, Solar Contractor
Jim Cahill, Sunrun
Steve Campbell, Grid Alternatives
Joe Cann, CalSSA
Julius Cherry, Chief of Sacramento Fire Department (Rtd.)
Andrew Christenson, Solar Developer, Attorney
Pete Chureson, Electrician, Trainer
Barry Cinnamon, Cinnamon Energy
Bernadette Del Chiaro, California Solar Storage Association (CalSSA)
David Clark, Member of the Public
Jennifer Collins, Apprentice Electrician
Joel Coppel, San Francisco Planning Commissioner
Jeanine Cotter, Luminalt
Bernie Kotlier, LMCC
Lauren Cullem, Sierra Club
Yvonne de la Pena, California Professional Firefighters

Brian Deppen, Southern California Edison
Shane Diller, California Building Officials
Travis Dodge, C-10 Employee
Jesse Elliott, A, C-10, C-46
Mike Ennett, Electrician
Tom Enso, Public Member
Jason Eshelman, IBEW
Todd Farhat, Lennar Communities
Gary Gerber, Sun Light and Power
Zac Goodman, Electrician, Instructor
Tara Hammond, Sullivan Solar Power
Glen Harris, Solar Businessman
Dan Henrich, Morrow Meadows Electrical
Martin Herzfeld, Trainer, C-46, C-7, D-31, D-56
Dave Iloff, Electrician
Michael Ingram, C-46
Jim Jenner, Solar and Storage contractor
Joe Kane, Civil Engineer
Mark Krausee, PG&E
Charlie Kuffner, Commercial Solar Construction Employee
Alex Lantsberg, C-10
Celine Lawrence, Sullivan Solar Power
Bob Lilley, C-10 Employee
Doug Mangione, International Brotherhood of Electrical Workers (IBEW)
Taylor Markwith, Sullivan Solar Power
Dan Martin, Solar Contractor
Gretchen Newsom, CSAEW
Don Osborne, C-10
S.B. Phillips, Electrician Student
Tim Ramage, Petersen Dean
Jack Ramsey, C-46, C-10
Carlos Ramirez, Safety Professional
Diane Ravnick, former Chief, California Division of Apprenticeship Standards
Stacey Reineksis, Energy Storage System Company Owner
John Reusche, B-General
Riley Riggs, C-10
Ian Rodriguez, Employee for A-General
Mark Rodriguez, Sunrun, CalSSA Permitting Chair
Antonio Sanchez, Electrical Worker Representative
Casey Saucauskas, Electrician
Allen Sloan, C-10, Safety Professional
Ed Smallwell, Vote Solar
Ed Smeloff, solar provider
Jeremy Smith, construction worker representative
Kent Stodd, solar industry worker
Matt Stoutenburg, Peak Power Solutions
Blair Swezey, C-46, Manufacturer
Paul Thoreau, C-10
Ashton Thurneysson, Tesla
Alex Tigo, Member of Public
Chris Tillery, Electrician and Instructor
Todd Tyler, Electrician
Bob Ward, IBEW
Scott Wetch, Coalition of California Utility Employers
Jim Willson, Los Angeles NECA
Bret Young, Solar Equipment Supplier

B. PUBLIC COMMENT SESSION FOR ITEMS NOT ON THE AGENDA AND FUTURE AGENDA ITEM REQUESTS

There were no comments from the public.

C. REVIEW, DISCUSSION, AND POSSIBLE ACTION TO PURSUE LEGISLATION TO AMEND BUSINESS AND PROFESSIONS CODE SECTION 7141.5 (RETROACTIVE RENEWALS)

Legislative Committee Chair Augie Beltran reviewed a legislative proposal that would simplify the rules for the Board's processing of a retroactive renewal of an expired license.

Staff Comment
Chief of Legislation Mike Jamnetski said that the Board already has statutory authority to grant a retroactive renewal, but it requires staff to determine whether the failure of the licensee to renew was out of the licensee's control, which is a value judgment that takes time. The proposal would allow staff to simply retroactively renew the license if the renewal is received by CSLB within 90 days. He stated that the language in the packet would be modified to reflect that the renewal must be submitted on a form prescribed by the Registrar and must be received within 90 days of the expiration.

MOTION: That the Legislative Committee recommend that the full Board approve this legislative proposal that simplifies the rules for processing a retroactive renewal at Business and Professions Code section 7141.5 and authorize staff to seek an author to carry this legislative proposal.

Kevin Albanese moved; David De La Torre seconded. The motion carried unanimously, 4-0, as follows.

YEA: Kevin J. Albanese, Augie Beltran, David De La Torre, David Dias

NAY: None

ABSENT: Marlo Richardson

D. REVIEW, DISCUSSION, AND POSSIBLE ACTION TO PURSUE LEGISLATION TO CHARGE A $20 FEE FOR PROCESSING A NAME CHANGE ON A LICENSE RECORD

Committee Chair Beltran identified the second legislative proposal to establish a $20 fee for the Board to process applications to change the name of a license entity.

Staff Comment
Legislative Chief Jamnetski said that, as disclosed at the Executive Committee meeting the prior day, CSLB has a projected structural imbalance in the coming months. This proposal will authorize the board to charge $20 for a licensee to change their business name. Currently licensees can submit a form to change a name as often as they'd like without restriction or cost, but it takes staff time to process the requests. This proposal is a mechanism to recoup the expense.

MOTION: That the Legislative Committee recommend to the full Board to approve this legislative proposal that establishes a fee for processing license name changes and authorize staff to seek an author to carry the legislative proposal.

David Dias moved; David De La Torre seconded. The motion carried unanimously, 4-0, as follows.

YEA: Kevin J. Albanese, Augie Beltran, David De La Torre, David Dias

NAY: None

ABSENT: Marlo Richardson

E. PRESENTATIONS BY PANEL OF EXPERTS REGARDING THE PROPER CLASSIFICATION TO INSTALL BATTERY ENERGY STORAGE SYSTEMS

Legislative Committee Chair Beltran said that he has invited three presenters to speak on the issue of the appropriate classification to install battery energy storage systems (BESS). Under this and the next agenda item, the Committee is being asked to consider concepts for new regulations regarding the ability of specified contractors to install BESS. It is important for the Committee members to understand any problems that may need to be addressed with the existing classifications authorized to install BESS and discuss what options may be available to address any concerns they may have.

Chair Beltran noted that Government Code section 11349 requires the record of potential rulemaking to demonstrate by "substantial evidence" the need for any proposed changes to regulations, including any proposed changes to existing contractor classifications. According to this legal standard, "evidence" includes, but is not limited to, facts, studies, and expert opinion; therefore, the Committee is being asked to carefully consider the facts or opinions provided at today's meeting in formulating their recommendations to the full Board.

Chair Beltran said that the next agenda item will present facts and options that staff have prepared for the Committee's consideration. This agenda item will consist of the expert opinion of presenters from three different industries on this topic that will serve as the foundation for the next agenda item. Mr. Beltran invited the Committee to ask the presenters any questions they may have when he calls for Committee comment, and public comment will be invited after the presentations. Each presenter was given 15 minutes for their presentation.

Public Comment

Presentation from C-10 Electrical Industry Representative (Dan Henrich)

Dan Henrich identified himself as an electrician for 44 years and licensed as a C-10 Electrical contractor for 30 years. He started his company to design and build critical power systems, BESS, and microgrids; and had numerous projects for battery energy

storage, microgrids, and solar throughout California, the United States, and internationally, as well as some military projects.

Mr. Henrich said that he will provide clarity on why and how, by practice, battery energy storage systems are electrical systems that must be considered electrical work. There is a lot of confusion in the field over this topic and it is necessary to have clarity from the Board on this matter.

Mr. Henrich indicated that the national electrical grid has been the same for more than 140 years, and overnight it has all changed, which is why there is such a need for clarity about these systems. To get an understanding how the systems fit into the overall electrical system of a home or building, he provided a drawing for the Committee's review that shows a typical solar system, including the solar panels that are interconnected to combiner boxes that are connected to the recombiner boxes that are connected to the solar inverter. Per the National Electrical Code (NEC) and National Fire Protection Association (NFPA) 70, that is where it should stop. It requires the C-10 Electrical contractor license to install from the inverter to the electrical equipment in that building.

Referring back to his drawing, Mr. Henrich said that BESS are required to be installed by a C-10 Electrical licensee. The BESS connects to battery inverters that connect to the building's existing electrical equipment, often requiring upgrades to be done to the existing electrical equipment, which clearly requires the use of a C-10 Electrical license.

Mr. Henrich said that the California Building Standards Commission is charged by the California Building Standards Law and the Health and Safety Code to administer the process related to the adoption, approval, publication, and implementation of California's building codes, which serve as the basis for the design and construction of buildings in California. The 2019 California Building Standards Code, Title 24, was published July 1, 2019 with an effective date of January 1, 2020. Under that Code, solar systems and BESS are separate systems.

Mr. Henrich explained that one part of the 2019 Building Standards Code is the California Electrical Code, which incorporates by adoption the NEC published by NFPA. The International Code Council states that the California Electrical Code contains electrical design and construction standards, as well as provisions for minimum standards to safeguard life or limb and health, property, and public welfare and to protect against hazards that may arise out of the use of electricity by regulating and controlling the design, construction, installation, quality of materials, and the location and operation of electrical equipment, wiring, and systems.

Referring to Article 706 of the NEC, "Energy Storage Systems," Mr. Henrich said it was specifically created to address the building standards for energy storage systems and set them aside as separate electrical systems, saying that all permanently-installed energy storage systems are separate systems that provide a separate power source

and are often interconnected with other power production sources, such as wind, photovoltaic (PV), and generators. BESS could be standalone to provide emergency power, load shifting, peak shaving, or demand response; they can do multiple things by themselves such as being connected with a fuel cell, solar, wind, or a generator.

Mr. Henrich said that the rules in Chapters 1 – 4 of the NEC apply in addition to the rules in Article 706. Because the NEC has captured within Article 706 that energy systems are separate electrical systems, clarity is needed from CSLB that installation of these systems when performed by a specialty contractor shall be covered by the C-10 Electrical classification. The voltage in Article 706 is for energy storage systems operating above 50 volts AC (alternating current) or 60 volts DC (direct current).

Mr. Henrich said that the NEC requires that a "qualified individual" install interconnected power systems, and that C-10 Electrical contractors are required to utilize State-certified electricians when connections are being made of electrical devices of over 100 volt-amperes per the Labor Code. The NEC requirement of a qualified individual is a key point in the issue because it is a clear indicator that C-46 workers who perform the installation and maintenance of PV systems are not qualified individuals to install BESS and the associated electrical work with them. Per Article 100 of the NFPA 70E or the NEC, a qualified person is one who has demonstrated skills and knowledge related to construction and operation of electrical equipment and installations and has received safety training to identify the hazards and reduce the associated risks.

Mr. Henrich said that the C-46 contractor's exam is an employers' test, not a test of a solar worker who actually performs the installation. While some solar installers may have years of experience installing solar PV systems, that is not the necessary electrical experience required to safely and effectively install and maintain BESS and the associated electrical work. There is no state testing requirement and certification for electrical experience, training, and skills of a C-46 installer, which means that there are no state-recognized means of determining or qualifying the electrical skill level of C-46 workers to install BESS. By definition, C-46 workers are not qualified individuals, and fail to meet the National and California Electrical Code requirements to install BESS.

Mr. Henrich asked the Committee to consider that consumer protection and safety is elevated with the requirement that C-10 Electrical contractors install BESS. C-10 Electrical contractors understand how to protect consumers from electrical hazards and that they are by far the most versed in the NEC and, under State law, must use certified electricians who have a minimum of 8,000 hours of electrical experience and training. Mr. Henrich stated that CSLB itself maintains that a C-10 license is required to install BESS as standalone systems, whereas a C-46 is not permitted to do so. Because of the ambiguity of current license law, California is the only state in the nation where lack of clarification in this area has authorized solar contractors to install BESS. Even states that have a solar classification, such as Utah and Hawaii, have made a clear clarification that BESS installations must be performed by electrical contractors.

Mr. Henrich concluded that BESS work is without question electrical work and should be performed by contractors with a C-10 Electrical contracting license using State-certified electricians. This all about safety and competence – pairing the storage to PV does not make it any less electrical or any safer.

Mr. Henrich said that the NEC and NFPA 70E have spoken on this issue, the County of Los Angeles Chief Electrical Inspector has said that he will not issue an electrical permit to a C-46 to install BESS, and the same is true in relation to the Chief Electrical Inspector for the City of Los Angeles. Michael Johnston from the NEC, who conducts and helps write code, shares that position.

Public Comment

Presentation from C-46 Solar Industry Representatives (Bernadette Del Chiaro and Jim Cahill)

Ms. Del Chiaro said that in the seven seconds that just passed, the California solar and storage industry just installed a solar module on a roof somewhere in California; in the 15 minutes that the Committee is allotting for the presentations, they will have installed 12 solar systems throughout the State; and in the course of the day, they will have installed over 350 solar systems, 12 of which will be paired with an energy storage device, critical for helping the State meet its clean energy goals, build more climate resilient communities, and protect and save lives when disaster strikes and critical services are needed to keep the lights on. They do, will do, and have done all of this work safely, expertly, and efficiently. Despite this indisputable track record, CSLB staff are suggesting that the Committee strictly restrict them from doing the work they have been doing for decades. This baseless effort to restrict an important trade must end.

Ms. Del Chiaro introduced herself as the Executive Director of the California Solar and Storage Association (CALSSA), and said that she will be sharing her presentation time with Dan Cahill, Vice President of Field Effectiveness of Sunrun.

Ms. Del Chiaro indicated that it was CALSSA that petitioned CSLB 40 years ago to create the very license in question today, specifically to install solar electric and battery systems. They did that because they believe very strongly in the role of regulation and licensing properly designed to help build a growing market. CALSSA cheers CSLB on when they nab bad contractors; they are subject experts when CSLB designs and updates the C-46 test, the most extensive test on solar and storage; and they believe that CSLB's work in protecting consumers is unparalleled on the agency level in the State. CSLB does good and essential work, but CALSSA is appalled by the process and the subject matter being presented at this meeting.

Ms. Del Chiaro expressed that this has been a rigged process from CALSSA's point of view, where the electrician's union has co-opted staff, even hired CSLB's recently-retired Registrar, to increase costs for rooftop solar by taking the work away from the C-46 workforce that has been building these very systems for 40 years and setting it aside for C-10s and their electrical contractors only, who have less training on solar and

storage, less experience, higher costs, and inadequate numbers to meet a growing demand in the market. This contradicts longstanding State policy that promotes cost-effective rooftop solar to meet California's renewable energy goals. CSLB staff is pushing a contrived solution to a nonexistent problem. She asked the Committee what problem they are trying to solve. By CSLB's own admission, there is no problem with the work that the C-46 contractor is doing and has been doing for the past 40 years, and they are doing the lion's share of the work. This is a completely arbitrary and capricious use of CSLB power.

Ms. Del Chiaro said that, back in March, the Board directed staff to engage industry experts on this issue. There is no question that CALSSA, as the industry, are the preeminent subject matter experts who are not only installing most of the systems, but they are also designing and manufacturing the technology in question. This is their industry, they are the experts. One would think that staff would have engaged them in the substantive policy proposals being presented today, but they did not. CALSSA did not know about the proposals before the Committee today until seven days ago when the meeting packet was published. This is not how complex public policy is developed.

Ms. Del Chiaro said that when CALSSA reached out to staff to request a meeting to sit down and substantively talk about the issue with CSLB, they were denied that meeting and were told that they could only have it if the International Brotherhood of Electrical Workers (IBEW) was present. They have been specifically directed to not directly reach out to Board members, and they have been told to negotiate instead directly with the IBEW, making one wonder who is in charge here, CSLB or the IBEW.

Ms. Del Chiaro said that the IBEW has been systematically trying to push C-46s out of the solar market that they have created for years. Roughly every five years, this fight takes on a new dimension and a new form, often assisted by Pacific Gas & Electric (PG&E) and other utilities who would like to see rooftop solar disappear because it threatens their monopoly. Now CSLB is poised to do PG&E's and other utilities heavy lifting by arbitrarily taking this work away from the very people who have been doing it successfully for decades, and not just a handful of folks out in the hinterlands, but the billion dollar solar industry that has been the envy of the world with regards to solar energy that C-46s have been doing the majority of this work without incident.

Ms. Del Chiaro said that not only is the problem nonexistent, but staff is proposing solutions that are arbitrary. Staff is presenting three alternatives on which the Committee is supposed to be taking a vote that will take this work away from C-46s that hinge on a type of property and a capacity of a system. There is no basis for those distinctions, the report provides no explanation and they are completely arbitrary.

Ms. Del Chiaro explained that storage is quickly becoming dominated by plug-and-play solutions with built-in safety protections compared to custom-built systems. As CALSSA has testified numerous times to CSLB, this is the logical basis for any distinction if it were to be made, but staff has not bothered to engage the product manufacturers that

are in her association on this question. Staff have instead presented the Committee with proposals that ignore technological realities and market conditions and that State law prohibits arbitrary regulation.

Ms. Del Chiaro said that when the issue was first raised to CSLB's Licensing Committee in February 2018, IBEW was making a push to limit energy storage installations exclusively to the C-10 license, claiming that neither the C-46, the A – General Engineering, nor B – General Building had the experience, knowledge, or the certified electrician workforce needed to do the work safely. That was the proposal, it is unclear what happened with that claim. Suddenly staff are presenting the Committee with a proposal solely to restrict the C-46 license, ironically, the specialty license for installing solar and storage that CSLB admits has been doing it without issue for 40 years. It is unclear why this is, but it has been stated in meetings that IBEW does not want to take a legislative fight with the B contractors over to the Capitol. That is an arbitrary reason when it comes to setting up regulations. If IBEW's safety claims had any merit, they would apply not only to the C-46, but also to the folks that have general practice. The proposals before the Committee today subject the specialty license holder, the folks who have been developing this market for 40 years, to new restrictions relegating them to the small, cookie-cutter systems that are easier to install, leaving the larger, more complex systems to the generalists. This does not make sense.

Ms. Del Chiaro said that State law requires financial impact analysis, but staff has basically all but ignored this question. The staff report admits that they have done no real analysis on how prohibiting the 45,000 strong C-46 workforce from installing the vast majority of storage systems would impact the cost of storage on existing homes and the commercial market. This financial analysis should have been done. As for the new home market, it is important, but staff provide no more than an unsupported guess that the policy proposals before the Committee will add only $100, which was laughable on many levels. It is unclear how staff came up with this number; the report is silent on the substance and staff refused to meet and discuss the matter with CALSSA.

Ms. Del Chiaro said that the report completely ignores the practical impact that these changes will have on the market. CSLB's sister agency, the California Energy Commission (CEC), has far more experience on these energy matters and the CEC is opposed because it would harm the State's ability to meet its clean energy and climate goals. Now is not the time to place restrictions on this market, especially without facts to justify those restrictions and especially in the face of overwhelming evidence to support the absolute opposite conclusion.

Ms. Del Chiaro said that after a year and a half of meetings, reports, and public hearings, the Committee has not been presented with a well-developed policy proposal backed by sufficient facts necessary to restrict the C-46 license. In contrast, the Committee has been presented with sufficient evidence to put this issue to rest today and vote definitively to uphold the ability of the C-46 license to modify, install, and repair solar and energy storage systems as they have expertly done for the past 40 years.

Urging the committee to vote Option 4, she turned over the remainder of her time to Jim Cahill.

Public Comment (Cont.)
Presentation from C-46 Solar Industry Representatives (Bernadette Del Chiaro and Jim Cahill)
Jim Cahill said he holds the A, B, C-10, and C-46 licenses within California and he has been installing solar for his own company for about 10 years and another 10 years with Solar City, Tesla, and Sunrun, so he has some experience on the topic.

Mr. Cahill said that the policy options presented by staff lack foundation, in that CALSSA, as the voice of the industry, has asked for the opportunity to provide input on the substantial matters that CSLB was directed to investigate and staff have not allowed for their input. Now staff have recommendations to the Committee without having undertaken sufficient process steps. There is a range of policy options that the Board could take to address licensing questions related to the installation of energy storage systems, but the Board must go through an open and fair process to develop those policy options and CALSSA would love to be part of that.

Mr. Cahill said that the Committee should not set hard boundaries on the range of policy solutions today. At the March 21, 2019 Board meeting, the Board adopted a motion that staff shall "consider energy storage system size, complexity, voltage, and potential risk" and "draft proposed regulatory language." Following that meeting, staff reports that it reviewed the previous record and conducted interviews with five entities, one of which requested not to have its information entered into the record, which is not a sufficient basis for staff recommendations. CALSSA requested to provide input and was denied.

Mr. Cahill said that staff presents four options for Committee consideration, but states, "The options presented are concepts and are not intended to be and do not include draft or final regulatory language." They would argue that these concepts are not ready for Committee action. The four characteristics that staff was tasked with investigating are size, complexity, voltage, and potential risks. The report notes comments that have been made to staff over the past 15 months in summary form, but that have not been incorporated into the staff proposals before the Committee today.

Mr. Cahill noted that the Option 2 concept includes a size limit for 10 kilowatts for a PV system, which is puzzling because C-46 contractors are eligible to install PV systems of any size currently. No justification is given to create a new restriction for PV. Staff drew the 10-kilowatt reference from California Solar Rights Act that has no relevance to safety; the Act protects the rights of customers to maintain unobstructed sunlight and prohibits homeowner associations and local governments from denying permission for solar installations based on aesthetic concerns. Those protections are not related in any way to code compliance or contractor licensing.

Regarding complexity, Mr. Cahill said that staff report that energy storage systems commonly installed for residential customers have built-in circuit protections that preclude the arc flash and thermal runaway, and installers do not have to access the terminals. This is important information, but the relevant conclusion is that a C-46 contractor should be permitted to install any integrated energy storage systems that do not have exposed battery terminals. The Option 2 concept does not include this threshold, and the Option 3 concept includes a requirement for plans to be drawn or approved by an electrical engineer, but the supporting information does not present a level of complexity that would require an engineering stamp. As a professional engineer (PE) in California for 30 years, these plans do not require a stamp. Most energy storage systems have template designs. The staff report notes that the calculations are required to ensure that the existing electrical system can withstand installing a BESS. This is the exact same calculation that is needed for every single solar system. Solar contractors do these calculations every day.

In relation to voltage, Mr. Cahill said that the staff report includes no information about voltage considerations. The Committee should not accept the staff report without this information that staff was tasked with considering. Voltage should be a main consideration. The NEC makes a clear distinction for devices that have exposed DC terminals greater than 60 volts DC. If a device does not have exposed terminals greater than 60 volts DC, it is considered an appliance that can be handled by people without any specialized training. Of a device does have exposed terminals above 60 volts DC, it must be installed by "qualified persons." CALSSA contends that the C-46 contractors are qualified persons.

Mr. Cahill said that CALSSA does not feel that there are any potential safety risks and none were identified in the report. The cost factor is way out of line. They would ask the Board to start from scratch and go back to the drawing board and CALSSA would be willing to work with the Committee to develop anything that would be a concern to them.

Public Comment

Presentation from California Building Officials Representative (Shane Diller)

Shane Diller identified himself as the Assistant Director of Development Services for the City of Elk Grove and the Vice President of the California Building Officials Association (CALBO). They have been following the issue since it first came before the Board and have testified in the past about their interest in staying engaged and watching the issue that comes forward. After the agenda and formal options were published, they reviewed those and have been in discussion with folks involved in this issue, including the California Building Industry Association (CBIA).

Mr. Diller said that CALBO and CBIA would like to jointly support either Option 2 or 3, depending on what the specificity of those come out to be, with the caveat that they feel as though right now the proposals need a little more development of the details. CALBO and CBIA would like to offer their assistance or support on identifying the appropriate

delineation from a code compliance and a public safety standpoint would be in regard to where to split the work between a C-46 and a C-10.

Mr. Diller said that primarily based on technical requirements for the work and how that impacts the safety of a structure, CALBO, in discussion with CBIA, recognizes the need for both solar and housing industries in California to accomplish the installation of PV systems and the associated energy storage systems that are being driven by the new code requirements coming out in 2020. They believe that there is middle ground to be found in Options 2 or 3. Through improved testing or certification and appropriate delineation of the technical work, the issue could be solved to be sure that the work is done by the people with the right expertise. As building officials, they are committed to working and provide any expertise they have on the inspection side and the plan review side to help decide where that delineation is made. They otherwise align their comments with Dan Henrich (above).

Board Member Comment
Committee Chair Beltran thanked Mr. Diller and asked the Committee members if they had any relevant questions of the speakers.

Board Member David Dias affirmed that CALBO voted for Option 2 or 3 and that C-46 voted for Option 4, but sought clarification from the C-10 presenter about his vote.
Mr. Henrich said that he is advocating for Option 1.

Board Member Kevin Albanese asked Mr. Henrich about his discussion regarding Section 706 of the NEC relating to voltage operating at 50 AC or 60 DC or greater requiring a C-10 license. He asked if and how that corresponds with the 5 kilowatts and 20 kilowatt hours on the BESS in the Option 2.

Public Comment
Mr. Henrich said that it corresponds in relation to the discussions others have been having on the plug-and-play systems, saying that the connection from the system to the electrical equipment within the house or building requires a C-10 license and is covered under the NEC and the NFPA 70E.

Board Member Comment
Board Member Albanese asked if currently when a C-46 installs a PV system, does a C-10 typically then come in and make the connection to the electrical equipment.
Mr. Henrich said yes, and referred Mr. Albanese to the drawing he distributed for his presentation, and he explained the flow of connections from one product to the next on the diagram. He said that C-46 work stops at the inverter, and the connection from the inverter to the electrical equipment within the building is done by a C-10 per the NEC and NFPA 70E.

Board Member Albanese asked if that was what was currently happening in practice now. Mr. Henrich said no, he thinks a lot of C-46s are installing from the inverter to the

electrical equipment. He said that in his professional opinion, and pursuant to the NEC, the NFPA 70E, and in the City and County of Los Angeles, C-46s are not qualified to do that work.

Public Comment
Mr. Cahill responded to Mr. Henrich's opinion by saying that the C-46 is a multi-trade discipline that has roofing work going on within the C-46 and electrical work going. He said that they actually tie in the systems to the electrical systems at the home. Mr. Cahill said that if they need to do a main panel upgrade, they will typically sub that work out to a C-10.

Board Member Comment
Board Member Albanese asked Mr. Henrich about Utah and Hawaii that specifically segregate out the energy system from their solar contractor and Mr. Henrich's comment that California is the only one that does not. He asked if there are any other states in addition to Utah and Hawaii that keep them separate. Mr. Henrich said that he believes that there are other states and some of the other speakers will clarify that. Mr. Albanese said that it would be great to see the models that Utah and Hawaii use to keep them segregated for the Committee's consideration.

Public Comment
Ms. Del Chiaro said that California is the oldest and the only state that created a license 40 years ago that included energy storage. She said that the other states have relatively new markets, so they have established licenses that apply to everybody and apply to the different technologies as they come to that marketplace. Ms. Del Chiaro said that California is very unique in terms of our history and our development of this technology. She said that the C-46s have been the leaders and not only the inventors but the installers of these very technologies under one license for 40 years.

Board Member Comment
Board Member Albanese asked Ms. Del Chiaro, in the 40 years since we have been doing solar in California, how long battery systems have been around. He said that he thinks that solar is a relatively new technology, relative to everything else that CSLB regulates, but how long have BESS been on the market and installed by C-46s.

Public Comment
Ms. Del Chiaro said that per the staff report, the C-46 license created in 1981 was specifically created to allow contractors to install solar PV systems paired with batteries, back in the 1980s. This is not actually all that new, and as they have testified, those technologies were actually more dangerous than the technologies being packaged and presented and ready for market and install today. Of the 4,000 solar and storage systems that have been installed in California every year for the past several years, the vast majority are being installed by C-46 licensed contractors. They are familiar with this work, have been doing this work, are experts in this work, and they do not need to be restricted because there is no evidence at all. It is true the technology is constantly

evolving and they are proud of that evolution. The C-46s are the inventors and creators of clean energy, so they know what it takes to do it well.

Board Member Comment
Board Member Albanese asked Mr. Cahill about his discussion about open battery terminals versus the plug-and-play, asking what are some of the distinctions that the Committee should consider. He asked if the Board should be thinking about open terminals when drawing a line, if a line is to be drawn. Mr. Cahill said that he thinks that open terminals are pretty rare these days because of the manufacturing and the plug-and-play systems that have their own inverters inside, so it is completely enclosed. He said that in the early years, there were battery systems that were put together by C-46 and designed by C-46 contractors that were combined from various equipment because there were no plug-and-play systems, which there now are, so it should not be an issue with the current systems.

Public Comment
Mr. Henrich said that he got started in the telecom industry in the early 1990s, doing fire alarms system that had a huge area where they were going to install batteries, so he studied that technology and started doing the installation. Those installations are still going on and those are open terminals that are exposed and require a lot of knowledge and skill to do those installations. All of the different technologies have different requirements, such as containment for lead acid and air exchange for the hydrogen and hydrogen sensors, and there are special tools, such as insulated tools, that are required because people are working on live batteries as they are stringing batteries together. Those types of batteries are still being used and lead acid is very inexpensive and the technology is evolving constantly, so he does not feel that those installations have gone away, they are still going on.

Mr. Diller said that he had nothing specific to add, but made notes about reviewing the delineations of the requirements of Utah and Hawaii, and he will look at those if they are given the opportunity to continue to work with staff on fleshing out Option 2 or 3.

Board Member Comment
Board Member Dias asked for clarification on how the C-46 classification came into play.

Staff Comment
Legislation Chief Jamnetski said that the mention of storage and the regulatory development of the C-46 in the early 1980s was in reference to thermal storage; however, the Board also did discuss making electrical connections in the development of the classification.

Board Member Comment
Board Member David De La Torre said that the technology that has been around for decades, and in April, the Board directed staff to do an analysis and bring up data of

any faulty installations of BESS, but so far there have not been any. He asked Mr. Henrich why these concerns are being brought up now after decades of installations.

Public Comment
Mr. Henrich said that he thinks that it is because of the technology as it is evolving. He said that the electrical grid has been the same for 140 years, and overnight it has changed. Mr. Henrich referenced some of the systems he mentioned earlier and said that they are all new systems. He said that the NEC and the NFPA 70E have begun to address it, which they do every year through code additions to address new technologies as they come out and what is happening in the industry. He said he thinks that is what is driving the issue.

Board Member Comment
Board Member De La Torre said that with evolving technologies come certain safeguards that come with the evolution. He asked if that would allay the safety concerns. Mr. Henrich said that it gets back to who is the more qualified individual as he discussed earlier, saying that the State certified electricians take a test on the NEC, national installation standards, and safety to be certified, but C-46s do none of that. He said that the NEC is the subject manager of this new technology and code, and they are the ones dictating who is authorized and who is qualified to do this work. Hr. Henrich said that certified electricians have 8,000 hours of experience, but you could have a C-46 who has been on the job one week and he is going to connect to an electrical panel. He said that that does not make any sense to him at all.

Public Comment
Ms. Del Chiaro said that on page 79 of the staff report, it states that CSLB created the C-46 license in 1981 specifically to specialize in the installation of “all types” of solar systems and that C-46s have testified that they have been installing these systems for 40 years, which is repeated several times in different reports. The C-46 license was not limited to solar thermal back in the 1980s. The CSLB C-46 test, as Wendi Balvanz [Chief of Testing, CSLB] has testified multiple times in the last year and a half, extensively tests contractors on solar and storage and has been doing so for decades. Ms. Balvanz has further testified that the C-10 test is devoid of any questions, except for in the past couple of years, occasionally a test will pop up with one or two questions on solar and storage.

Ms. Del Chiaro questioned if the C-46 contractor was incapable of doing these installations, why has CSLB been testing them and allowing them to do it for decades. To answer Mr. De La Torre’s question about why now, it is because storage is now being mandated on every new home in California along with solar, and the C-10s want to take this market for their own. This is not fair practice and not fair trade. No one is saying that the C-10 cannot do this and CALSSA have many excellent C-10 contractors in their membership doing excellent work. This is a multi-craft trade that involves many different skills, and the battery being added to it does not change a thing.

Board Member Comment
Board Member Dias said a contractor's license does not train any workforce at all. He said that he used to work for an HVAC company for 36 years and they trained through their apprenticeship, but they did not get trained because one of their contractors had a license. Mr. Dias asked what the required training is, not what training is available, but the required training for a C-46 employee. Mr. Dias said that a certified electrician has to be trained and take a test, and he asked if there was anything comparable for the C-46 that is required by the State of California.

Public Comment
Ms. Del Chiaro said that the C-46 is the licensed contractor that is responsible for their employees and for providing the training for their employees, like every other license except hazardous waste material haulers as she understands. C-46s do an excellent job of training their staff, going through OSHA-required training and manufacturer-required training. The manufacturers that are present at the meeting can testify to the fact that they do not allow the systems to go out without people being properly trained on how to install them. C-46s have their own way of training, just like the two general contractor licenses do. It is not necessary to require a certified electrician to install a multi-craft technology.

Board Member Comment
Committee Chair Beltran asked Mr. Cahill what his electricians do since he is also a C-10 licensee. Mr. Cahill said that they have journeyman electricians who install residential PV systems. He continued to say that it is not exclusively electricians; they have both types of people in their organization – some that work purely on solar and when they sometimes have to do a main panel upgrade, electricians do that work.

Committee Chair Beltran invited the public to comment for two minutes apiece limited to the topic of the expert testimony presented

Public Comment on Agenda Item E
An unidentified C-46 contractor, his company has installed over 1,000 BESS in the last few months with no incidents, using C-10 licensees when a main panel upgrade is involved. The NEC contains no mandate that installations must be done by C-10s, only the reference to qualified personnel. The NFPA has no PE requirement relating to BESS; C-46s could go up to a 5-megawatt system without a PE being mandated, even though it may be recommended. Technical advances have brought safety improvements, and international codes are improving safety as well. A BESS fire in Arizona last year involved an unlisted system, but he would not install such a system.

Todd Farhat, C-46 licensee for about 12 years, recently got his C-10 license, but there was no influx of knowledge with the additional classification, no new safety knowledge

about installations. Relating to PV and storage, the C-10 license was far inferior to the C-46. Mr. Farhat encouraged the Committee to consider Option 4.

Barry Cinnamon, C-46 and C-10 licensee for nearly 40 years, said that Mr. Henrich misrepresented BESS on small- and medium-sized systems and the ability and training of C-46s to install them, just as many other specialty contractors have connected other devices to the electrical system in buildings. The majority of BESS are integrated systems with one inverter than connects to both solar (typically operating at about 400-600 volts) and storage (typically with protected terminals or plug-and-play) with safety built into the system by new technology. This will hurt the ability to solve the global warming problem.

Ian Rodriguez, representative for an A licensee, says no need has been shown with empirical evidence that there is any risk to life and limb caused by a solar contractor. This issue threatens an entire industry and interferes with green energy initiatives statewide but does nothing to protect consumers or homeowners.

Diane Ravnick, former Chief of the California Division of Apprenticeship Standard, said that approved and monitored apprenticeship standards for both union and nonunion workers produce a highly skilled, trained workforce for trades in the construction industry, which helps ensure the safety of the workforce, consumers, and the public in general. There is a five-year training requirement for State-certified electricians, but none specified for solar installers. The C-10s workforce is the most qualified.

Jason Bodruk, representing a manufacturer and with an engineering background, said that they depend on the standards, Underwriters Laboratories (UL) 1741 and 9540, and today's UL-listed systems are plug-and-play systems and engineered appliances that cannot be shorted out, so they cannot injure a person. They are designed to be installed by qualified persons, which includes both C-46s and C-10s. They train all of their installers to ensure safe systems.

Bret Young, supplier of solar-based and solar/storage inverters, thinks that both C-10 and C-46 are competent and capable of installing systems and storage, reading blueprints, and doing testing. No two buildings are the same, so there is always a variety of circumstances under which installations take place, so there is a place for both C-10s and C-46s. The C-46s are qualified personnel and there is no need to create an unnecessary barrier to slow things down.

Allen Sloan, credentialled safety professional and C-10 contractor for more than 20 years, questioned the C-46s claim that there have been no serious injury or death with energy storage systems and that it's more likely injuries did occur (e.g., electrical shock or burn) but were misclassified as just construction issues because solar and storage do not have a category of their own.

Charlie Kuffner, worker in commercial construction and solar for more than 30 years, said that safety is the first priority, and, as with every industry, training takes precedence and makes for a safe industry. There does not appear to be a record of safety issues with C-46-performed installations. The NEC does not define solar requirements because it is just a small trade and only active in a few states. They regularly work at voltages at 480 volts AC and 1500 volts DC, and they learn about new technologies and train their employees to work safely, just like any other trade group.

Alex Lantsberg, C-10 contractor, supports greater licensing requirements. He questioned the solar industry's statement that there are 45,000 solar workers. Based on figures provided by the solar foundation, there are between 18,000 – 21,000 people installing solar of any sort in California. Utility-scale and institutional and commercial installations dominate the market over the past six years at approximately 80 percent of the market. The industry probably has some good C-46s who are good at what they do but CSLB does not regulate for the good guys, they regulate for the bad ones.

Ashton Thurneysson, C-10 and C-46 licensee representing a manufacturer/installer, train and extensively vet their certified installers that include both C-10s and C-46s. Their products are getting better and safer all of the time, using a simpler system that is AC coupled, so there is no separate inverter, and a lot of other manufacturers are following that model. Limiting the workforce that does this work goes against the advancement of the goal of energy sustainability.

Julius Cherry, public safety expert and retired Chief of Sacramento Fire Department, wants the highest standards for installers because of the potential fire risks involved (e.g., arcing, meltdowns, explosions), and to protect first responders and members of the public. The California Fire Code regulates BESS differently from PV solar systems; and, from a public safety perspective, State-certified electricians supervised by a C-10 contractor are the most qualified for these installations.

An unidentified speaker, C-10 and C-46 licensee with 25 years in the solar industry, said his company uses both solar technicians and electricians, and they give the technicians the option of entering into the electrician apprenticeship program, but some solar technicians who love solar work elect to not pursue their C-10 certification training because it involves a lot of general electrical content that is not relevant or necessary to complete solar work. While there is always room for improvement, making a classification distinction would not be an improvement.

Jim Wilson, representative of C-10 contractors, said that the 45,000 solar and storage workers in California claimed by CALSSA are not certified. According to California Employment Development Department (EDD), there are only 3,920 solar PV installers in California, excluding electricians who install and work on solar. CALSSA's concerns about the 1-1-1 ratio required for certified electricians to apprentices to trainees are questionable.

Scott Wetch, representing utility employees and electrical workers, said that CALSSA claims they perform the vast majority of solar work and that there is not enough C-10 workers to perform the work. But there are over 30,000 licensed C-10 contractors in California and approximately 1,400 C-46s. C-10s originally did solar installations after the industry came out of solar thermal for swimming pools. CSLB's regulations say that C-46s are not authorized to install BESS as separate systems and they are not authorized to upgrade an electrical panel, so they should not be allowed to install BESS that connect to a panel. The serious safety hazard potentials with lithium ion BESS contained in the NFPA are voltage, arc flash blast potential, fire potential, vented gas combustibility, and vented gas toxicity. Back feed can also be a problem that is regularly experienced with PV and storage systems.

Joe Kane, civil engineer, said that the statement that the NEC requires C-10s for interconnection is not true. Hawaii's C-60 license allows assembly and installation of PV panels, batteries, controls, and related low-voltage DC wiring. The legislative intent of the Solar Rights Act was to remove barriers to rapid deployment of renewable energy systems, including batteries that will be an important option after the upcoming energy standard changes. Any considerations on this issue need an open process and stakeholder engagement.

Mark Krausse, on behalf of Pacific Gas & Electric (PG&E), supports Option 1. They have been educating customers about their de-energization programs due to wildfire risks, and that includes discussions about backup systems. They are encouraging renewable energy options like BESS, but this brings an increased reliability factor that impacts the overall safety concerns.

Kent Stodd, who has worked in the solar industry for about 12 years, said that this issue is limiting the industry by fighting between C-10s and C-46s. The sides should work together for the benefit of both C-10s and C-46s, as they are sisters and brothers.

Jason Eshelman questioned why there are 30,000 certified electricians and 45,000 solar and storage workers in California. There are actually less than 4,000 solar workers, as well as 7,615 state-approved electrical apprentices, 11,627 state-registered electrical trainees, and about 30,000 electricians, totaling more than 50,000 electrical workers in California who do this work.

Alex Tigo said that there are 32,000 C-10 contractors, as opposed to 1,425 C-46 contractors, 450 of whom also have the C-10 license, so only 976 only hold the C-46. Since the stated cost difference is only $100 per project and C-10s have far greater numbers and the skills to perform the work safely, all BESS should be installed by C-10 contractors.

Bob Lilley, representing a large C-10 contractor that has been doing BESS since 1946, said battery storage work is much more powerful and dangerous than PV solar work. BESSs provide emergency power and exist completely separately from solar systems

and without any solar components. They employ a well-trained, State-certified workforce, and this is clearly electrical work that should be performed only by C-10 contractors for the safety of workers and the public.

Blair Swezey, C-46 contractor and solar manufacturer, said that his company has extensive experience in installing paired solar and energy storage systems. Today's energy storage technologies are safer, simpler to install, and many are plug-and-play and UL-listed as an engineered system with safety features. Safety is of the utmost importance to his company, and they work with a trained workforce of 200 different C-46 installers. There is no evidence that the installation of BESS needs to be restricted to a C-10 license.

Antonio Sanchez, on behalf of various electrical workers, said a letter was submitted to CSLB in March from 70 elected officials that supported having C-10s be solely authorized to install BESS for safety reasons. Another speaker, David Clark, read some of the names of people who signed the letter mentioned above.

S.B. Phillips said she is studying to be an electrician, with 1,000 hours of classroom instruction and 8,000 hours of on-the-job training that covers the NEC for proper and safe AC and DC electrical installations. Only C-10 contractors should do BESS work.

Jesse Elliott, A, C-10, and C-46 licensee doing solar work for more than 15 years, has hired many employees at various levels and their prior training or testing does not matter; the only thing that matters is their in-house training once they are hired. The electrical trade is very vast, and there is always a need for specific training. Electricians often do not understand solar work before they are hired because they had been doing things like installing lighting inside a building. The best thing for safety of the workers and the installations is the quality control program that a company has in place.

Byron Benton, electrician for 32 years, has been running a C-10 training center for 17 years, and the NEC is clear that BESS over 50 volts AC and 60 volts DC should be installed only by a qualified person to protect from hazards from electricity. This requirement is not being adhered to by C-46s. He described an incident where a panel being worked on by two uncertified workers exploded in Emeryville. State-certified C-10s should be required to install BESS.

Brian Deppen, manager with Southern California Edison, reviews solar plans and troubleshoot, considering the safety of utility employees, their customers, and the public at large. C-10s are properly authorized to install BESS as standalone systems, and it should be the same with paired systems.

Dave Iloff, certified electrician, said that C-46s are not qualified because they have not had training on the proper use of equipment, and they do not have a fundamental understanding of electrical systems, safety issues, or toxic chemicals involved.

Jerome Braxton, an apprentice electrician, said that a UL listing does not guarantee safety because such systems still require proper calculations and installation. C-46s are not qualified because they do not have the required training or certification, but C-10s do.

Jack Ramsey, a C-46 and C-10 licensee, said that if a C-10 license is required to install BESS, CSLB will have to notify HVAC and appliance contractors that what they are doing is against the law as well because they also make connections with electrical equipment and upgrade panels.

Kathleen Barber, certified electrician for 35 years and training director for more than 600 qualified electricians, said that they are required to have more than 1,200 hours of classroom instruction and a minimum of 8,000 hours of on-the-job training. It is inaccurate to state that electricians do not work with DC power; it constitutes 220 hours of their training and they have been doing it since the invention of the DC motor and uninterrupted power supply (UPS) backup systems.

Jennifer Collins, apprentice electrician, said that C-10s are doing megawatts of renewable energy that is DC work, and they have requirements for safety knowledge, skills, and abilities (KSA), but there is no way to know what KSAs C-46s have because there are no State training requirements to confirm their electrical skills related to BESS. All BESS should be installed by C-10s only.

Stacey Reineksis, founder of energy storage companies, has installed more than 100 solar systems in California and several hundred in the United States and Canada using C-46 installers with no incidents so far, and strongly supports the CALSSA position. If there was a requirement for only C-10s to install, there would not be enough labor workforce available, and it would result in a significant loss of jobs and a hold back of technological development that is essential for greenhouse gas reduction. Strongly opposes the idea of requiring only C-10s to install BESS because it would have ramifications, including restricting the market and contributing to climate issues.

Eddie Bernacchi, representative of the National Electrical Contractors Association, said that the claim that this was a rigged process without enough input is a misrepresentation. Multiple meetings were held to discuss the issue, including a Board meeting, and staff did extensive outreach to C-10 and C-46 experts to see how the industry works, as well as to State agencies that would be impacted. It was inappropriate for the C-46s to make this claim to get it on the record for this issue.

Bob Ward, IBEW representative and electrician for 24 years, said there has been a lot of discussion about plug-and-play, and there are a lot of plug-and-play batteries that plug directly into the inverter, but the interconnection of the device into the panel is not plug-and-play. When you have to drill a hole into a UL-listed cabinet and run wiring and pipe across live bus bars, there is nothing plug-and-play about it. Since that is how it is done with every installation, it should be C-10 work only.

Tara Hammond, CALSSA member, said her company utilizes only certified electricians for installing both solar and storage. As more C-46 installers get into storage, there will be more safety risks and potential for accidents that could harm the installers, property owners, and emergency responders. Since the Solar Consumer Protection bill was passed, CSLB is tasked with tracking complaints about solar companies because some solar companies were operating unethically, and the unethical companies will not train their workers properly. She is in support of Option 1.

Celine Lawrence, from the same company as Ms. Hammond that was founded in 2004. In the past few years, solar storage has been increasing rapidly, but it is still in its infancy. Storage is much more complex and dangerous than solar alone, involving complex circuitry, wiring, and electrical assessment and calculations. The existing electrical condition of homes varies greatly and can pose a safety threat if not assessed properly, which would put workers and the industry at risk. They recommend requiring C-10s to install storage paired with solar for safety reasons.

Taylor Markwith, from the same company as Ms. Hammond, said that solar panel expertise does not translate to BESS expertise because solar power is a flow of energy. They support requiring C-10s only as the C-46 exam does not cover the workers.

Matt Stoutenburg, C-10 and C-46 licensee, said his company has completed over 7,000 residential solar projects. The people at the meeting are passionate on both sides of the issue and are the most skilled workers, but they are not the only people doing the work. The solar industry is littered with a zero-barrier of entry from the public outreach to the installers. There are no standards for the installations, and installers think of themselves as electricians, but they quickly fail tests his organizations puts them through. In support of Option 1 to raise the standards for installations in California.

Chris Tillery, State-certified journey-level electrician and instructor, said it is inaccurate to state that C-10s do AC work and not DC work because electricians have more training, experience, and expertise in DC power.

Yvonne de la Peña, representing firefighters and builders, echoes the remarks made by Chief Cherry (above), saying that as BESS become more prevalent, C-10s should perform the work for safety reasons. Fires are often the fault of improper installation and maintenance, and fires involving BESS can burn at extreme heat, react violently with water, and reignite after being exhausted. The California Professional Firefighters encourages the Board to make it clear that only C-10 licensees and certified electricians should install and maintain BESS.

Gretchen Newsom, representing electricians, signed the letter previously mentioned that was signed by 140 supporters of restricting BESS installations to only C-10 licensees to protect public safety. She read an excerpt regarding the public safety risks of BESS that are not installed by certified electricians and encouraged the Board to limit

such work to only C-10s, as they are required to employ State-certified electricians, but C-46s are not.

Jeanine Cotter, C-46 licensee since 2004, said that, in 2007, then-Mayor of San Francisco Gavin Newsom headed an effort to remove barriers to the solar industry, and now many people who benefitted from that training have 10-plus years of experience installing solar and BESS. Based on all the testimony today, it is clear that there is not enough information yet to make a decision that would impact the ability of C-46s to do their work. There is currently a shortage of skilled labor throughout the construction industry, but there are C-46s who are skilled to do this work and have been doing it safely. The Committee should consider how their decision could transform an industry in a way that people would not be able to get in and do qualified work. Standards are important, but the impacts must be considered, and the board should wait to have sufficient facts to make a decision.

Don Osborne, C-10 licensee with 40-plus years in the solar industry and worked on renewable energy with utilities, strongly urged the Committee to adopt Option 4 based on the Board's own record that there has been no indication that there is a problem that warrants this kind of restrictive solution. There is an industry that has been doing highly qualified, effective, and safe work for 40 years and the solution being proposed would restrict the development of the industry unfairly and without cause. The Committee should look at the facts and keep the industry moving along as it needs to be.

Gary Gerber, C-46 licensee for 42 years, said that when they first started installing batteries, it was dangerous dealing with live wires, but it is a completely different world now with batteries that are sealed and very safe. Trains all 70 of their employees, even the certified electricians, because they will not have the necessary knowledge for the installations. They get the training from the manufacturers. The license test and the certification test does not guarantee that the person knows anything about batteries. All C-46s and C-10s alike, need to be installing solar without restriction on the industry to keep it growing.

Martin Herzfeld, solar master trainer and holder of C-46, C-7, D-31, and D-56 licenses, said that there have been changes to the fire code and the international code in 2018 regarding BESS and size and voltage restrictions (706.30A), and all contractors should follow the codes. There must be evidence of a certified electrician making an interconnection for a residential property that caused a fire. Greed should not overshadow a logical outcome, and he votes for Option 4.

Glenn Harris, solar businessman for 20-plus years who does not hold C-46 or C-10, said that each side claims the other side does not know enough. Everyone must learn all the way through, there needs to be a fifth option where each group gets to learn what the other group knows, which would take some time and would require the license classifications to be updated to reflect the additional knowledge required. Now is not the

time to reduce the number of people working in solar because there is a lot of work to do, and restricting licenses is not the solution.

The Committee recessed at 12:00 p.m.

The Committee reconvened at 1:00 p.m.

Paul Thoreau, C-10 licensee of a company founded in 1919, whose company has done solar, wind, and BESS work for 40-plus years, and employs more than 1,300 State-certified electricians in California. Current batteries are more powerful and potentially more dangerous if not handled with skill, and whether or not paired with solar, battery work is electrical work. Non-electricians are not qualified to perform BESS work, and the Board should restrict BESS work to only C-10 licensees.

Pete Chureson, apprentice electrician trainer and 25-year electrician, said that apprenticeship training covers Office of Safety and Health Administration (OSHA) safety courses, and there is ongoing journey-level training on various topics to keep electricians' skills up-to-date throughout their careers. All PV energy systems must be installed by State-certified, trained electricians employed by C-10 licensees.

Joel Coppel, San Francisco planning commissioner and apprenticeship program graduate, said that the C-46s are underemphasizing the need for comprehensive training, not only for installations, but for testing, repairing, and maintaining systems. An understanding of electrical theory is essential for these systems. On March 12, the City and County of San Francisco Board of Supervisors hearing unanimously approved a resolution urging CSLB to ensure that BESS are installed only by valid C-10 licensees. The committee should vote for Option 1.

Mike Ennett, electrician, said that worker and public safety will be at risk because non-electrical solar installers have no training or certification requirements. Improperly installed or maintained electrical equipment caused more than 53,000 residential fires in the United States each year. BESS are primarily lithium, not lead acid as they used to be, which is more dangerous and should be installed only by C-10 licensees. Having C-46s putting in breakers in electrically charged panels will be dangerous. The committee should vote for Option 1.

Steven Booker, journey-level electrician for more than 20 years, said that solar and BESS are distinctive and separate with their own inherent risks, technical specifications, codes, installations, and fire safety hazards. 8,000 hours of hands-on training and passing a comprehensive test to be certified is required to have a thorough understanding of the NEC and safely do work on BESS that now vary widely in type and size. BESS work is electrical and should be performed by C-10s for the consumer safety mission of CSLB. The Committee should vote option 1.

Steve Campbell, solar developer, said that substantial evidence is required in the record to prove that change is necessary, in addition to performing an industry fiscal economic impact assessment. What evidence has proven the need for a change? The record shows no incidents. The economic impact assessment of $100 per unit did not seem to be reached in a consensus-driven manner, so the threshold for change has not been met. Unnecessarily increasing the costs will impact low-income Californians who need BESS the most to deal with rising energy costs and other impacts of climate change. He agrees with the California Energy Commission and votes for Option 4.

John Reusche, B contractor since 1981 who works for company that also holds an A and C-10 license has been doing solar since 2008. This proposal is being backed by unions and utilities because solar threatens their business model. This proposal would result in a shortage of solar workers and put thousands of installers out of work who are often entry-level construction workers who go on to become skilled craftsmen. The unaffordability of solar will negatively impact the installers, contractors, customers, and California's ability to meet green energy goals and mandates. This is a solution in search of a problem that does not exist. Recommended Option 4.

Casey Saucauskas, industrial and utility electrician, recommended that C-46s not be allowed to perform any BESS work of any type or size because the anticipated increase in the number of BESS and volume of interconnections to the utility power distribution systems means that the quality, reliability, and safety of BESS will similarly have an increasing impact the distribution grid. There are many stakeholders that have an interest in the successful integration of BESS into the statewide power system, which can be accomplished only if all BESS installations and maintenance are performed by C-10 licensees who are duly qualified to install standalone BESS. While C-46s are licensed to install, modify, and repair PV systems, those skills are not sufficient for BESS for safety reasons. For the safety of the utilities' employees, customers, contractors, and the public at large, recommend the Committee votes to limit the work to C-10 contractors.

Andrew Christenson, attorney and solar developer since 2012, said his company employs both C-10 and C-46 licensees, and is concerned about their workforce that is trained and qualified and has successfully installed without incident. You need to show cause and why there is a problem or need for change, but there has not been any incident or concern about their ability to successfully deploy storage. Vote Option 4.

Zac Goodman, State-certified journey-level electrician and instructor, said that C-10 employees have training requirements. While C-46s are trained by their specific employers, the overall training is important. Vote 100 percent for safety.

Ed Smeloff, non-profit solar provider, said that energy storage is ready to grow over the next decade, needing ten times the amount of storage than is currently installed. There is an enormous amount of work for everyone – C-10s and C-46s and the electric utilities – and they need to be cognizant and not restrain competition or entry into the field

because everybody's effort will be needed. Over a million solar PV systems have been installed over the past decade with very few problems, so there is a quality workforce in both fields. Paired solar and BESS is the future to manage power throughout the day, and the Committee should adopt Option 4.

Carlos Ramirez, safety professional with 30 years of experience, said that there has been a lot of discussion about fear regarding installations; he designs safety solutions for the industry. There are some solar companies with fantastic safety numbers and are far superior to other industries because they are intent on protecting every installer and every home that they install on. Most fires and failures that occur are component issues not installer errors, so they have the manufacturers repair those products and seek better products in the future. Their company and others have their safety data that they would be happy to share with CSLB, and hope the Committee will consider the facts.

Travis Dodge, representing C-10 contractor with 90 years of experience, said that there are many hazards associated with BESS and their electricians have direct training on those systems, but very few C-46s have comparable safety training or equipment. BESS is electrical work and should only be performed by C-10s for safety reasons.

Daniel Barnett, representing the same company as Mr. Dodge, said that although C-46s may have some PV training, they are not certified electricians and do not have the knowledge and training to safely install BESS of any size. Electricians have been installing various types and sizes of storage systems for decades, and are trained to do such installations properly and safely with specialized tools and personal protective equipment. BESS work should only be performed by C-10s and certified electricians who work for them.

Tim Ramage, solar and storage contractor, said that this capricious change would drastically change his company and impact the installers of solar and storage who have worked their way up from working on the rooftops to being lead installers and have worked for a decade without incident. If limited to hiring a C-10 contractor, there will be a bidding war that will only benefit C-10s because everyone will need them. There is already a short supply, especially for smaller, residential projects. Storage used to be about three percent of the jobs, but it is now about 30 percent, and this change will preclude keeping up with the 6,000 installations for his company. The time-of-use programs that the utilities are implementing are driving the need for more storage so people can manage their electricity throughout the day. This will affect workforce. There is one permit for solar and storage, and the two cannot be separated.

Michael Ingram, C-46 contractor, said that when he got into the field 10 years ago, he went through multiple solar-specific schools and got his license and he has been installing BESS and non-BESS solar safely since then because safety is a priority. Batteries are on the rise, but they are not new and the C-46s, as the C-10s, are qualified and have been installing them for decades.

Jim Jenner, solar and storage contractor, said that Option 1 would put him out of a job in about five years because nearly all PV systems will include storage at that time. Options 2 and 3 would limit about half of his business. Urges the Committee to vote for Option 4 based on the facts.

Riley Riggs, C-10 employed by a solar company, said a lot of new construction will have batteries along with their solar. It has been stated batteries are a separate power source, but technically the data shows they are all tied together in one system that cannot be separated. Despite a C-10 license, solar craft safety requires going through training from manufacturers that have UL-listed products. Everyone must install per the code, based on approved plans, and subject to inspection before being energized, so the safety aspect is moot. Taking the C-10 test does not better prepare you for the work. C-46s have more skin in the game because they have to make sure the systems work, or the free market will put them out of business.

Seamus Brennan, solar contractor, said that storage will be essential for solar in the future, and the only way to get there is if everyone is on the same page with paths for both the C-46s and C-10s to work together. Last month was the 415th month that the average temperature exceeded the 20th century temperature, and customers will be relying on storage more and more. The Committee should not rule anything out and vote for Option 4.

Doug Mangione, 40-year electrician and IBEW representative, said that there is talk of plug-and-play and that the systems are tied together, but they are not, and electricians have been installing energy storage since the 1980s in buildings that had no solar whatsoever. The codes treat them as two different systems, and batteries are not integral to solar. BESS stand on their own and utilize chemical energy to make electricity. The Board's job is to make sure that California's commercial and residential customers have safe and reliable systems installed by safe and reliable construction workers and electricians.

Dan Martin, solar contractor, said that everything he does, commercial and residential, has energy storage, and this fight and uncertainty are costing him money right now. The batteries he puts in buildings are in locked rooms and behind fences and yet people are driving around in vehicles that are powered by batteries and there is no concern about those mobile batteries. The safety claims are misleading because there is no evidence that they ever started a fire. If there are safety issues, take some time and set a bar for safety and have the C-46s and the C-10s adhere to that bar, but do not take away business from people who have installed 90 percent of the BESS to date. C-10s and C-46s are both needed, but more uncertainty and costs are not. The earth is running out of time to do this as well.

John Berdner, 35-year solar contractor and code developer, said that being an expert on State and national code issues, would like to have been contacted by staff as they did their research on this issue. The facts show that there is not a problem with C-46s or

C-10s installing BESS. The issues they have seen with fires with lithium chemistry have been problems with product standards and installation standards, not problems with the training of the installers. Their installers are trained and they see no difference between the installers that are C-46s and C-10s. Committee should vote for Option 4 because there is no problem that needs to be solved.

Ms. Del Chiaro said some of the testimony called some of her presentation into question. The Solar Foundation reports that there are 46,000 installers, the folks out in the field handling the installations, in 2017; 42,000 in 2018; and they anticipate 45,000 now in 2019. The point they were making with those facts is that IBEW's own numbers say that there are 50,000 combined electricians and registered apprentices, so the C-46 installer workforce cannot simply be replaced with the C-10 workforce. Regarding the swimming pool comment, at a 1981 Board meeting, it was said that the intent of the new C-46 classification was to include the "electrical components" of solar systems, and since the systems at the time were off-grid, they did not get installed without batteries.

Ms. Del Chiaro said CSLB's own report said that of the 21,000 complaints about solar projects, not one involved energy storage, and CSLB's own documents say that there is no difference between C-10 and C-46 on consumer protection. The Committee should not confuse those issues. Another speaker questioned the percentage of work being done by contractors holding C-46 licenses and there is factual evidence on this matter, including that of the 393 paired solar and storage systems that received a rebate from the State's self-generation incentive program, 312 were installed by contractors with C-46 licenses, so they are doing the bulk of the work without incident.

Ms. Del Chiaro said that her concern with the process is that she brought a panel of experts to inform a report that staff took a year to write and that was presented to the Board in March, and the Board went through this exact same process in March in San Diego, and there was not one piece of evidence in that report that there is a safety problem, such as incidents, injuries, or fires, being caused by the C-46 contractors. This is problematic because not once were the experts asked about whether a line should be drawn at residential property, whether that was the logical place to draw a line.

Tom Enso said that C-46 licenses are not energy storage licenses and never have been able to do standalone BESS. It is being suggested that the proposals being discussed are trying to take away solar jobs, but no one is trying to replace that workforce or take away those jobs. when a panel needs to be upgraded, that work gets subcontracted out to a C-10, so the same would be for when C-46s are doing solar work and they need to add a BESS, they would have to subcontract that to a C-10. Regarding the idea that the Board cannot take action that would be considered arbitrary and capricious because there is no evidence supporting the need, that is not how the law works because under that theory, the recent State Fire Marshall's action about fire and safety would be arbitrary and capricious as well. Precautionary action can be taken based on concerns of harm or technical testimony about potential for harm. The State Water Resources Control Board said that "agencies have the authority to enact precautionary regulations

to reduce identified risks or prevent future harm," and that is what is happening here. A study by the utilities a few years ago said that 85 percent of residential BESS are under five kilowatts, but commercial systems can be one or two megawatts, which are almost utility-level systems.

Bernie Cottlier, representing C-10 contractors, questioned the information about the number of installers reported in today's testimony. The Board should look at State statistics. Regarding safety and supposed plug-and-play systems, it does not matter how safe a device is because it is going into an electrical environment that have all different situations that must be assessed and evaluated, and calculations must be made. There is no such thing as plug-and-play because the whole system must be assessed, and electricians are the only ones who can do that safely.

Chair Beltran thanked the public commenters and introduced item F.

F. REVIEW, DISCUSSION, AND CONSIDERATION OF THE PROPER CLASSIFICATION TO INSTALL BATTERY ENERGY STORAGE SYSTEMS AND OPTIONS FOR REGULATORY PROPOSAL TO RESTRICT THE C-46 (SOLAR CONTRACTOR) LICENSE CLASSIFICATION

Committee Chair Beltran explained, for background purposes, that on March 21, 2019, the board unanimously adopted a motion to consider battery energy storage system size, complexity, voltage and potential risks, draft proposed regulatory language to present to the board for consideration that would prohibit or restrict certain contractor classifications from performing the installation of battery energy storage systems; and assign this to the appropriate board committee or committees and provide updates at each board meeting.

Chair Beltran stated that CSLB currently authorized four license contractor classifications to install ESS, in some cases with certain restrictions, the "A" General Engineering, "B" General Building, C-10 Electrical, and C-46 Solar licensees.

Chair Beltran explained that in May, CSLB Executive Staff met with leaders of the electrical, solar, and home building industries to discuss next steps. At this meeting, CSLB staff shared its plan to meet with various entities to obtain their insight regarding the development of the proposed regulatory language. A summary of this meeting is posted on the CSLB website under the Energy Storage Systems page.

Chair Beltran stated that over the next few weeks, CSLB staff had conversations with staff representing the California Department of Finance, California Public Utilities Commission, Governor's Office of Business and Economic Development, California Building Industry Association, California Building Officials Association, and the California Energy Commission. Summaries of some of these conversations are included in the packet.

Chair Beltran asked the Board to consider relevant facts and evidence that support the need for any proposed regulation. Chair Beltran thanked staff for presenting the four options that begin on page 72 of the packet, and for providing the facts obtained from its research and information collecting and pairing them with each option for the Committee to consider.

Chair Beltran stated that the Legislative Committee has now heard the presentations provided by experts today, and has heard testimony on this topic over several meetings over the last two years. Members of this committee have also reviewed the facts and information in this packet as well as the Energy Storage Systems Report issued by CSLB staff in March of this year. As a result, the Committee is now being asked to consider options for this item. There are currently four for consideration but committee members may suggest others.

Chair Beltran then introduced the four options and explained that the Committee may then make a motion for one of the options or develop its own option if they so choose, including directing staff to conduct further research into other options. It was clarified that the options relate only to the C-46 solar classification and would make no change to any other license classification. The current suggested options are as follows:

> **Option 1**: Recommend directing staff to prepare regulatory language to preclude the C-46 Solar classification from installing battery energy storage systems
>
> **Option 2**: Recommend directing staff to prepare regulatory language to permit the C-46 Solar classification to install battery energy storage systems on specified residential units with restrictions
>
> **Option 3**: Recommend directing staff to prepare regulatory language to permit the C-46 Solar classification to install battery energy storage systems on residential units with restrictions
>
> **Option 4:** Make no change to the existing C-46 Solar classification

Chair Beltran then invited public comment and limited it to one minute to ensure everyone gets an opportunity to speak.

<u>Public Comment on Agenda Item F</u>
Jeremy Smith, representing construction workers, stands for health and safety, good wages and benefits, workers being trained for careers not just jobs, and employing a skilled and trained workforce. C-10s, with their 8,000 hours of training, are skilled, trained, and safe, and have a career, and stand for these principles. The same cannot be said about C-46 licensees or their workers. BESS installations are electrical work, and it is recommended the Committee chooses Option 1.

Lauren Cullem, Sierra Club, supports SB 100, which leads California to a clean energy economy by 2045, and BESS will be critical elements along with solar and other clean energy sources. Only qualified people should install and maintain BESS, whether standalone or paired with solar, in the most safe and effective manner, so all BESS should be installed by C-10s with State-certified electricians. This initiative is an opportunity to build a stronger and more equitable California by bringing clean air to communities and providing jobs and careers for residents. Improper installations of BESS could be harmful to the environment and consumers. It is recommended that BESS work be performed by C-10s only.

Mr. Herzfeld said that all contractors need to follow the code and have a hazard-free workplace. The Committee is asked to vote for Option 4 for no changes.

Tim Ramage, PetersenDean. The first three options won't work because items are sold together. The first three options would limit how BESS can be sold it because it would require finding certified electricians for all of them. Also precludes original installing contractor from going back to work on their own jobs and would void the warranty to have someone else work on it.

Todd Tyler, certified electrician. Improperly installed energy systems pose risks to everyone. Dangers are not diminished when BESS is paired with solar. They are separate and unique systems from each other. Because C-46 contractors are not required to use certified electricians their scope of work should not be expanded.

Mark Rodriguez, Sunrun, Permitting Chair for CalSSA. Regarding complexity and calculations of doing interconnection, from a PV system to a BESS, the interconnection piece follows the same rules. Those rules can be found in tables in the NEC and the California Solar Permitting Guidebook. The calculations are so easy that they have been done for you. As long as you fit within certain parameters, you do not need to do the calculations. This is to help contractors and jurisdiction officials speed up the permitting process. Recommend option 4.

Bernadette Del Chiaro, a residential solar system is not a small system. Large off grid systems are up to 20 kw, so 10 kw is an arbitrary number.

Jim Cahill, Options 2 and 3 preclude upgrades or alteration to the existing electrical system of the structure. Just by the nature of the C-46, that means no one can connect to the structure, because an alteration to the main panel could be as simple as a breaker being added. So just as they read, options 2 and 3 don't make sense, or C-46s couldn't do anything.

[Did not identify]. There is an underlying current of unskilled people with both C-10s and C-46s causing problems in the industry. The standards should be raised

Joe Cann, CalSSA. Nevada, Connecticut, Florida, Idaho, allow PV installers to do batteries. Proponent of Option 4.

[Did not identify]. Staff should study what the licenses are being tested on and find out what the manufacturers qualifications are for their contractors installing their equipment. Use the resources around you to answer these questions.

Ed Smallwell, VoteSolar. The 10kw cap is arbitrary. If you look at the facts, less than 30% of systems in commercial are 10kw and less. Please re-review the facts on the size of installations.

Board Member Comment
Committee Chair Beltran brought the matter back to the board. He explained that the members have listened to quite a few people today, reviewed letters from leaders, the legislature, first responders, utilities, building officials, apprenticeship standards, sellers of batteries. Chair Beltran expressed the opinion that if you reach a decision that nobody likes it's probably the right one. Chair Beltran stated that he is in support of Option 2 and invited Board Member De La Torre to speak.

Board Member De La Torre stated that the last speaker mentioned that 10kw was too low, and asked the speaker what would be acceptable in instead.

Public Comment
Bernadette Del Chiaro, stated that CalSSA would be willing to come to the table and negotiate a line under which there is a difference between C-10 and C-46. That line is not 10kw, and would start at 1MW. 1MW is a very large behind the meter system more in line with utility-scale projects, which is the sole and exclusive jurisdiction of the C-10 contractor today. We are doing a lot of solar in this state that is all utility scale in front of the meter, the C-46 does not go there. To split this market and be fair to everyone, you have to start at 1MW and go from there. This has to be based in facts.

Board Member Comment
Board Member Albanese stated that he agreed that option 2 is the correct direction. He is not convinced that the numbers are right. CSLB licenses employers and not the individuals. The skill of the qualified electricians are not being question and the apprenticeship program is fantastic, but the CSLB regulate contractors and we are here to protect the consumer through that regulation. The licenses are not mutually exclusive. Some work can be done under multiple licenses. Option 2 with some additional staff research, expert testimony, that addresses what the board asked for in March: size, complexity, voltage, and risk should be the direction. With that input and more specifics on that, we could get to where we need to get. We do not have enough information to say that we need to change this entire industry because of the great training the electricians have. It is different work, and there are different sizes we need to consider.

Board Member Dias, stated that Option 4 is “not an option” for him. He stated he is uncomfortable leaving the status quo because of the new technologies that are coming out, nor was he comfortable allowing up to 1 MW. He stated that he was initially leaning toward Option 1, but some of the testimony clarified that Option 2 is probably the best option. Talking with building officials is recommended to see which direction should go, whether it should 10kw or another number; CALBO wanted Option 2 or 3.

Committee Chair Beltran invited a motion. Board Member Dias moved for Option 2, Board Member De La Torre seconded.

Staff Comment
Legal Counsel Schieldge requested that there be clarification whether the motion is to accept Option 2 as written or amend it with clarification as was just discussed by Board Member Albanese.

Board Member Comment
Board Member Dias stated his acceptance of Option 2 with Mr. Albanese’s clarification.

Board Member Albanese stated that he would offer an amendment, that the selection is Option 2, but subject to staff developing and presenting a potential regulation addressing the size, complexity, voltage and risks of energy storage systems. That’s one modification. The other suggestion is to address one of the audience members. It sounds like the C-46 is installing the PV system and plugging it in to the utility without upgrading the utility or making any other modifications other than that connection. It is not the intent of the Board to change that aspect of what they are doing. So those would be the two amendments to Option 2.

Board Member De la Torre accepted the amendments. Board Member Dias accepted the amendments.

Staff Comment
Counsel Schieldge, emphasizing the importance of creating a record, asked Mr. Dias to discuss the concerns he believed this proposal would address and how he thinks the selected option would help address that issue.

Board Member Comment
Board Member Dias stated that the option would limit the installations to PV paired with storage, not PV only, which is preferable to the concern of C-46 contractors installing BESS alone. Mr. Dias explained that because of the testimony heard, there is concern about whether 10kw is the right number. Mr. Dias explained his preference that a motion to be passed to the full board.

Committee Chair Beltran, in rephrasing Board Member Dias’ comments, explained that it seemed for Mr. Dias that Option 4 is not an option, and that Option 1 is too restrictive,

and that Option 2 would provide the best opportunity to work with the community and stakeholders.

Staff Comment
Counsel Schieldge asked if the members foresee working on this proposal before presenting it to the Board for full consideration, so that the Legislative Committee would work on the details for how this issue would be addressed.

Board Member Comment
Committee Chair Beltran stated that Counsel Schieldge's assessment was correct.

Board Member De La Torre confirmed the numbers will still be reviewed before decisions are made.

Board Member Albanese explained that the purpose of Option 2 and studying it further is because at the current time the specifics are lacking to allow anyone to say with certainty where the line is. The range of systems are a residential house system to a utility grade multi-megawatt system. Without having that finite information, he proposes looking carefully at the issue rather than making a broad sweeping decision today.

Board Member Dias explained his understanding that some residential systems can be quite large and that experts are needed to determine how large they can get.

Chair Beltran invited public comment.

Public Comment
Scott Wetch, for the State Association of Electrical Workers, requested clarification of the Board's motion.

Board Member Dias
Board Member Dias stated that he wanted to make sure what is recommended through staff be brought to the full board for decision

Chair Beltran explained that the staff recommendation is not ready for the full board yet.

Staff Comment
Counsel Schieldge explained that the committee typically does the heavy lifting of clarifying and specifying the proposal before it is presented to the full board. The committee works out the proposal, get the specificity done, and if the proposal as currently drafted is not sufficient, it is recommended that it go back to staff to work with stakeholders to make changes to address the concerns just raised, and then bring it back to this committee for further discussion and deliberation before the final recommendation is brought to the board. The board usually votes on the final proposal, that is what committee work is for, to make that specificity.

Board Member Comment
Board Member Dias explained that he understands Counsel's explanation but that he concerned that the original motion is now too broad. He explained that, for example, it is currently limited to residential, and now it is unclear whether it will be expanded.

Staff Comment
Counsel Schieldge explained that if the concern is the scope of the motion that the motion should be clarified further so that the restriction to residential installation is clear and have staff explore the size, complexity, voltage and other criteria mentioned and bring it back to this committee for further discussion.

Board Member Comment
Committee Chair Beltran invited public comment.

Public Comment
Bob Raymer of the California Building Industry Association expressed strong support of Option 2.

Meghan (no last name provided), a solar contractor representative, explained that 10kw would limit their ability to install batteries. There are not enough C-10 contractors in their area to install batteries. They are already two weeks out on bids and that is unacceptable.

Board Member Comment
Board Member Albanese clarified that even if the committee limited the decision to Option 2 only, the issue would still have to go back to staff to develop regulatory language that would ultimately have to go back to this committee. It cannot be voted to the Board now it has to come back to this committee.

Staff Comment
Counsel Schieldge stated that this is correct, the committee has to approve what is is being recommended to the board for a regulatory proposal

Board Member Comment
Board Member Albanese explained that the matter is in concept form right now and the direction is to go back to staff to develop the details, propose more concrete regulations that the members would review and make a determination before it goes back to the board.

Chair Beltran stated that staff needs the time to put the text together. He clarified that what staff currently has is concept, and that staff has to work with industry to get the details in and then it comes back to the committee who may vote to submit it to the board.

Public Comment

Barry Cinnamon stated that there is a lot of confusion about the difference between kilowatts, and watts, and kilowatt hours and power and energy. Contractors on both sides would welcome the opportunity to provide a little education for the board about what these numbers mean so that the board understands these systems their capacity and what they do.

Mark Rodriguez for CalSSA explained that Option 2 restricts size and zoning to residential units. It does not matter what the size is, the system is still the same. You are dealing with basically similar voltages, and you have to deal with three-phases, but the same principles are behind 208 just as well as 240, they are both part of the calculations, which don't really change with the addition of an BESS. So for Option 2 the Board is urged to consider a restriction on the size but not on the zoning, because it does not really matter either way. It is the same.

[did not identify] 35% of Californians live in multi-family housing. The average size of a multi-family job is 200kw. That is a big difference between what is in Option 2 as currently written.

Jack Ramsey votes no on Option 2. The 10kw limit is really off base. The C-10s do not understand what C-46s do. It is a symbiotic relationship with customers. Bring the C-46 classification up to a limit on current or something like that rather than make an arbitrary decision. He monitors hundreds of systems and does not believe people are set up to do that.

Martin Herzfeld votes no on Option 2. The international fire code set the limit at 20kwh arbitrarily in 608.1 which refers you to over 608.3 for the maximum allowable capacities at 600 kwh, which is arbitrary too. 690.1.6 sets it at 5mw before using a professional engineer. Please no changes at this time.

Board Member Comment
Chair Beltran expressed the need to restate the motion. It is Option 2 with the recommendation that staff be directed to prepare regulatory language to permit C-46 classification to install battery energy storage systems on specified residential units with restrictions, including the clarification made by Board Member Albanese.

Staff Comment
Legislative Chief Jamnetski restated Board Member Albanese's motion from earlier, that Option 2 be subject to further staff attention to address size, complexity, voltage and risk, and it's not the intention of the board to change the aspect of any contractors who are connecting to utilities and installing PV systems.

Board Member Comment
Board Member Albanese affirmed that this is his motion with the additional comment that it be left to staff and their discussions on the residential component that just because it is residential now does not mean that has to be part of the final version.

Staff Comment
Counsel Schieldge clarified that these are concepts and this is not regulatory language, that language will be coming back at a future meeting where there will be further public comment at that time.

MOTION: Recommend directing staff to prepare regulatory language to permit the C-46 Solar Contractor classification to install battery energy storage systems on specified residential units with restrictions, with the further recommendation that staff study ESS size, complexity, voltage, and risk, and bring back to this committee

(from above) David Dias moved; David De La Torre seconded. The motion carried unanimously, 4-0, as follows.

YEA: Kevin J. Albanese, Augie Beltran, David De La Torre, David Dias

NAY: None

ABSENT: Marlo Richardson

G. ADJOURNMENT

MOTION: To adjourn the August 6, 2019 Legislative Committee meeting at approximately 2:29 p.m.

Kevin Albanese moved; David De La Torre seconded. The motion carried unanimously, 4-0, as follows.

YEA: Kevin J. Albanese, Augie Beltran, David De La Torre, David Dias

NAY: None

ABSENT: Marlo Richardson