

**MEMORANDUM OF UNDERSTANDING
BETWEEN THE CALIFORNIA PUBLIC UTILITIES COMMISSION, THE
CALIFORNIA DEPARTMENT OF RESOURCES RECYCLING AND
RECOVERY, THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCE
CONTROL, THE CALIFORNIA AIR RESOURCES BOARD, AND THE
CALIFORNIA ENERGY COMMISSION**

This Memorandum of Understanding (“MOU”) between the CALIFORNIA PUBLIC UTILITIES COMMISSION (“CPUC”), the CALIFORNIA DEPARTMENT OF RESOURCES RECYCLING AND RECOVERY (“CalRecycle”), the CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL (“DTSC”), the CALIFORNIA AIR RESOURCES BOARD (“CARB”), and the CALIFORNIA ENERGY COMMISSION (“Energy Commission”) (each a “Party” and collectively “Parties”) is entered into for the purpose of cooperatively developing consistent approaches to the proper collection and management of used or damaged photovoltaic (PV) panels, electric vehicle (EV) batteries, energy storage systems based on lithium ion technology, and related equipment, such as inverters, that can no longer serve their primary purpose and have reached their “end of use” phase.

OVERALL ROLES AND RESPONSIBILITIES

- The CPUC regulates energy utilities and passenger transportation companies, among other entities. The CPUC requires regulated entities to deliver services in a safe and reliable manner, while ensuring consumer protection and meeting California’s ambitious environmental goals. The CPUC administers many programs and mandates that promote the deployment of PV panels, EV batteries, energy storage batteries, and related equipment, including for energy storage, transportation electrification, the California Solar Initiative, and Net Energy Metering.
- CalRecycle administers and provides oversight for all of California’s state-managed waste handling and recycling programs working towards a society that uses less, recycles more, and takes resource conservation to higher levels. CalRecycle and DTSC have responsibilities implementing the Electronic Waste Recycling Program. CalRecycle administers the Covered Electronic Waste (CEW) recycling payment system intended to offset the cost of appropriate collection and recycling of certain discarded electronic devices.
- DTSC was established to protect Californians against threats from hazardous waste and restore properties affected by environmental contamination to productive use. DTSC regulates the generation, handling, treatment, storage, and disposal of hazardous waste in California, which includes household hazardous wastes and universal wastes.
- CARB is charged with protecting the public from the harmful effects of air pollution and developing programs and actions to mitigate climate change emissions. CARB has adopted a broad range of regulations and programs to reduce air pollution and greenhouse gas emissions from all sectors, aiming to reach the State’s emission reduction goals. Regulations like the ZEV mandate

will help ensure 1.5 million plug-in or hydrogen fuel cell electric vehicles are on the roads by 2025, and promote the adoption of cleaner technologies like EV batteries, energy storage batteries, and related equipment. Additionally, CARB is adopting similar measures and regulations for heavy-duty vehicles to ensure emission reductions. Addressing automotive battery recycling and second use is important as the market rapidly expands.

- The Energy Commission is the state's primary energy policy and planning agency, serving in a critical role to create a clean, modern energy system to serve California energy needs. Relevant to this multi-agency effort, the Energy Commission administers an extensive research and market development program and implements a wide range of other programs that promote the development of PV technologies and facilities, the installation of PV systems, the adoption of energy storage technologies, and the growing use of clean transportation alternatives. The Energy Commission also assesses and develops forecasts for the supply of energy serving the state as well as the demand for electricity in California.

SHARED PRIORITIES

- The falling cost of PV panels, EV batteries, and storage technologies has driven consumer adoption of solar energy systems, storage systems, and EVs. Although the useful life of these technologies can be years or even decades long, inevitably there will be a need to dispose of these products and their component materials and California does not currently have a robust reuse or recycling program in place for them. The Parties intend to develop consistent approaches to ensure appropriate collection, handling, and reuse or recycling of end-of-use PV panels¹, EV batteries, energy storage systems, related energy technology equipment and their component materials. Specifically, the Parties will:
 - Explore how end-of-use materials can be recycled in a way which minimizes harm to the environment and public health.
 - Explore whether financially sustainable mechanisms exist to incentivize and facilitate the collection, reuse or recycling and proper management of these technologies when they reach the end of their useful life.
 - Explore solutions to adequately address PV panels, EV batteries, and energy storage technologies, and associated components that are already installed and for emerging photovoltaic and battery technologies when they eventually reach the end of their useful life.

¹ Due to DTSC's ongoing rulemaking process for the management of PV modules as universal waste, DTSC will not discuss any information that is not available to the general public in accordance with the Administrative Procedures Act.

- Support and develop programs to divert energy technologies from waste streams to support safety objectives and resource management including reuse of materials.

Through their joint efforts, the Parties seek to:

- Pursue open and cooperative coordination at all times.
- Establish regular efforts for information sharing on both the management and staff levels, including a process for regular information flow and opportunities for joint planning and goal setting.
- Increase knowledge of reuse and recycling opportunities and technologies to make California a global leader in handling end-of-use materials.
- Make use of established programs, systems, knowledge and best practices like the repository of solar PV modules and inverters on the Energy Commission's List of Solar Equipment, currently made available on the Go Solar website.
- Develop and maintain alignment on key policy issues related to reuse and recycling of PV panels, EV batteries, energy storage technologies, and related equipment.
- Explore current estimates of waste volumes for each identified technology or product based on a 25-year outlook and develop projections of potential end-of-use waste volumes based on forecasted consumer adoption rates for PV systems, electric vehicles, energy storage systems, and related equipment.

The Parties are specifically agreeing to conduct the following immediate tasks:

- Convene an interagency staff-level working group by Q1 of 2019.
- Identify all relevant legislation and regulatory proceedings before the CPUC, CalRecycle, Energy Commission, CARB, and DTSC that may affect the management of end-of-use materials.
- Convene a joint public workshop on the collection, handling, and reuse or recycling of end-of-use PV panels, EV batteries, energy storage batteries, and related energy technology equipment in Q1 of 2019 inviting experts, industry representatives, consumer representatives, environmental groups, community members, State agencies, federal agencies, and other stakeholders to discuss current policy, best management practices, concerns, and potential solutions.
- Use information gathered at the Q1 public workshop to support the publication of a joint white paper identifying and exploring the

recycling and reuse of end-of-use materials, projected quantities of end-of-use materials, and proposed solutions by Q3 of 2019.

- Convene an “En Banc” meeting between the Parties with relevant panelists, to present and receive public input on the white paper.
- Convene a principals steering committee consisting of principals from each of the Parties to receive updates from the staff-level working group at milestones.
- Develop a plan for next-steps by end of 2019.

CPUC Responsibilities

In order to achieve optimal results for the shared priorities, the CPUC will perform the activities and functions summarized below.

1. In conjunction with the other signatories to the MOU, identify and explore programs and mandates administered by the CPUC that could be modified to include provisions for the collection and recycling of clean energy technologies. In conjunction with CalRecycle, develop best management practices for recycling and reuse that can be shared with consumers, developers, and other relevant entities.
2. Consider changes to CPUC programs and policies to address the collection, handling and re-use or recycling of end-of-use materials and other decommissioning strategies, requirements, and incentives.
3. Investigate potential methods for including decommissioning requirements for generation and energy storage infrastructure during the contracting process.
4. Consider use of a lifecycle approach and precautionary principle when considering widespread deployment of energy generation technologies.
5. Assist other signatories to this MOU in additional areas of CPUC expertise.

CalRecycle Responsibilities

In order to achieve optimal results for the shared priorities, CalRecycle will perform the activities and functions summarized below.

1. Provide subject matter expertise related to the reuse and recycling for waste generated by PV panels, EV batteries, energy storage batteries, and related equipment.
2. In conjunction with other State agencies, identify costs and infrastructure needs to properly manage end-of-use materials from PV panels, EV batteries, and energy storage batteries.
3. Research appropriate incentives for recycling, collection, and proper management for end-of-use materials from PV panels, EV batteries, and energy storage batteries.

4. Inform recyclers and industry representatives and their agents of these opportunities as they are developed to increase recycling and reuse programs for PV panels, EV batteries, and energy storage batteries in this state.
5. Facilitate dialogue between industry, waste management, and local government.

DTSC Responsibilities

In order to achieve optimal results for the shared priorities, DTSC will perform the activities and functions summarized below.

1. Provide subject matter expertise related to the management of hazardous waste resulting from PV panels, EV batteries, energy storage batteries, and related equipment.

CARB Responsibilities

In order to achieve optimal results for the shared priorities, CARB will perform the activities and functions summarized below.

1. Provide subject matter expertise related to the reuse and recycling of waste generated by EV batteries, energy storage batteries, and related equipment.
2. Assist the Parties in additional areas of CARB expertise.
3. In conjunction with other Parties, identify and explore programs and mandates administered by CARB that could include provisions for the collection and recycling of technologies addressed in this MOU and related workgroup activities.

Energy Commission Responsibilities

In order to achieve optimal results for the shared priorities, the Energy Commission will perform the activities and functions summarized below.

1. In conjunction with other Parties, identify and explore programs and mandates administered by the Energy Commission that could include provisions for the collection and recycling of technologies addressed in this MOU and related workgroup activities.
2. Consider changes to Energy Commission programs and policies to address the collection, handling and re-use or recycling of end-of-use materials and other decommissioning strategies, requirements, and incentives.
3. In conjunction with the Parties, develop best management practices for recycling and reuse that can be shared with consumers, developers, manufacturers, installers, and other relevant entities.
4. Identify existing data and forecasts to provide information that can contribute to documents and reports developed under this MOU as well as the development of best practices for collection and management of end-of-life products and materials addressed in this MOU.

5. Foster communication with equipment manufacturers, installers, operators, laboratories, and other parties participating in relevant Energy Commission programs to gain information and support beneficial to the activities of this MOU to address the proper collection and management of end-of-use products and materials.
6. Assist Parties and all related workgroups in additional areas of Energy Commission expertise.

PROTECTION OF CONFIDENTIAL INFORMATION

The Parties may need to share confidential or privileged information in furtherance of this MOU. All confidential or privileged information may be shared as described in this MOU and as allowed by law, without waiver of any privilege.

"Confidential Information" includes information obtained pursuant to California Public Utilities Code section 583, records exempt from public disclosure under the California Public Records Act (Government Code sections 6250, et seq.), or written or verbal information that is designated by the Parties to be exempt, prohibited, or privileged from disclosure by State or federal law. Confidential documents shared under this MOU should be labeled as confidential or include a similar written advisory to that effect. Documents marked confidential or privileged and provided under this MOU shall be maintained as confidential and shall not be released without an agreement in writing by applicable Parties, unless required by law or by order of a court of competent jurisdiction.

The Parties shall take all necessary measures to protect Confidential Information and, consistent with the Public Records Act and any other laws requiring disclosure, treat the shared Confidential Information as confidential. The Parties shall impose all the requirements of this MOU on all of their respective officers, members, employees and agents with access to Confidential Information. Any Confidential Information obtained by the Parties shall only be used for purposes which are consistent with existing law.

All Confidential Information provided to the Parties pursuant to this MOU shall be subject to Government Code Section 6254.5, subdivision (e), which exempts from public disclosure under the California Public Records Act, confidential records that one State or local agency has provided to another State or local agency pursuant to an agreement that the latter will treat the disclosed records as confidential. The parties agree that, as provided in Government Code Section 6254.5(e), confidential records will only be shared with persons authorized in writing by the Executive Officer of the relevant agency (or by his or her authorized delegate), and that all information obtained by the Parties pursuant to this agreement will be used only for purposes that are consistent with existing law.

The Parties will make all reasonable efforts to ensure that disclosure of confidential or privileged information will not occur. In the event an inadvertent disclosure of confidential or privileged information occurs, the Party making such inadvertent disclosure will notify the other applicable Parties in writing and will make every reasonable effort to promptly correct the inadvertent disclosure.

If any Party receives a request to release, disclose, or access any of the confidential and privileged information (for example, pursuant to a subpoena, discovery request, or the California Public Records Act), the Party receiving the request shall promptly transmit a copy of the request to the applicable Parties that originally generated the confidential or privileged document or communication.

SCOPE

This MOU is made for the sole benefit of the Parties and no other person or entity shall have any rights or remedies under or by reason of this MOU. Nothing in this MOU may be the basis of any third-party challenges or appeals. Nothing in this MOU creates any rights, remedies, or causes of action in any person or entity not party to this MOU.

The Parties each retain all rights, responsibilities, and authorities provided for by law. Nothing in this MOU delegates any rights, responsibilities, or authorities provided by law to any Party. Nothing in this MOU delegates or otherwise prevents, compromises, or precludes each Party from exercising all rights, responsibilities, or authorities provided by law.

All Parties will meet and coordinate progress regarding the MOU on a biannual basis, or as mutually agreed upon by the Parties.

GENERAL PROVISIONS

This MOU does not provide for the exchange of funds between the Parties nor does it make any commitment of funds or resources. Nothing in this MOU authorizes or is intended to obligate the Parties to expend, exchange or reimburse funds, services, or supplies, or transfer anything of value, or to enter into any contract, interagency agreement or other obligation.

All travel and other expenses are the sole responsibility of each Party.

The Parties agree that this MOU is not intended to and does not create legally binding obligations.

APPROVAL

This MOU represents the entire agreement of the Parties, and merges and supersedes any prior written or oral understandings or agreements by, between, or among the Parties relating to the MOU. This MOU is effective upon completion of the signatures listed below. This MOU shall not be modified except by a written agreement signed by authorized representatives of all of the Parties. This MOU may be executed in counterparts.

This MOU shall continue unless or until any Party to the MOU determines that the MOU should be terminated. Unless otherwise provided for by the written agreement of all of the Parties, unilateral termination of the MOU shall be affected no sooner than 30 days from the date any Party provides written notice of its intent to terminate the MOU. Termination of this MOU shall not affect the obligation of the Parties to maintain the confidentiality of information pursuant to this MOU.

CALIFORNIA PUBLIC UTILITIES COMMISSION



ALICE STEBBINS
Executive Director

December 18, 2019

CALIFORNIA DEPARTMENT OF RESOURCES RECYCLING AND RECOVERY



SCOTT SMITHLINE
Director

December __, 2019

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Meredith Williams
Director

January __, 2020

CALIFORNIA ENERGY COMMISSION

Drew Bohan
Executive Director

February 26
January __, 2020

CALIFORNIA AIR RESOURCES BOARD

Richard W. Corey
Executive Officer

January 8, 2020