

FINAL STATEMENT OF REASONS

April 2020

Photovoltaic (PV) Modules – Universal Waste Management

Department of Toxic Substances Control reference number: R-2017-04

Office of Administrative Law Notice Reference Number: Z-2019-0409-04

Table of Contents

FINAL STATEMENT OF REASONS	1
GENERAL INFORMATION	3
Update to the Initial Statement of Reasons	3
Mandates on Local Governments and School Districts	3
Alternatives Considered	4
Small Business Alternatives Considered.....	4
MODIFICATIONS MADE TO THE ECONOMIC AND FISCAL IMPACT ANALYSIS (STD 399)	4
MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL	6
Nonsubstantial Modifications	6
SUMMARY OF COMMENTS AND AGENCY RESPONSE	23
List of Commenters and their Affiliations.....	23
Summary of Objections and Recommendations during the First Comment Period (April 19, 2019 – June 10, 2019).....	25
Summary of Objections and Recommendations during the Second Comment Period (September 9, 2019 – September 24, 2019).....	25
Summary of Objections and Recommendations during the Third Comment Period (October 18, 2019 – November 2, 2019).....	25

Summary of Objections and Recommendations during the Fourth Comment Period (December 24, 2019 – January 8, 2020).....	25
PEER REVIEW.....	25
APPENDICES	26

GENERAL INFORMATION

Update to the Initial Statement of Reasons

As authorized by Government Code section 11346.9, subsection (d), the Department of Toxic Substances Control (DTSC) incorporates by reference the Initial Statement of Reasons (ISOR) prepared for this rulemaking. This regulation was noticed four (4) times for public review and comment on the following dates:

52-Day Public Review and Comment Period (First Comment Period):

On April 19, 2019, DTSC published the Notice of Proposed Action (NOPA), proposed regulatory text, ISOR, and Economic and Fiscal Impact Analysis for public review and comment. This public review and comment period concluded on June 10, 2019 with a public hearing held by DTSC on the proposed regulations.

15-Day Notice of Changes (Second Comment Period):

On September 9, 2019, DTSC published revised post-hearing regulatory text for public review and comment and summarized in a NOPA for the revised proposed regulatory text. This public review and comment period concluded on September 24, 2019.

15-Day Notice of Changes (Third Comment Period):

On October 18, 2019, DTSC published further revised regulatory text for public review and comment and summarized in a NOPA for the revised proposed regulatory text. This public review and comment period concluded on November 2, 2019. During this time, DTSC also published an ISOR Addendum for the revised regulations.

15-Day Notice of Changes (Fourth Comment Period):

On December 24, 2019, DTSC published further revised regulatory text and summarized in a NOPA for the revised proposed regulatory text. This public review and comment period concluded on January 8, 2020.

This Final Statement of Reasons (FSOR) addresses the regulatory text first proposed on April 19, 2019, and subsequently revised on September 9, 2019, October 18, 2019, and December 24, 2019 following the 15-day public review and comment periods. The nonsubstantial and substantial changes are summarized in this FSOR.

Mandates on Local Governments and School Districts

DTSC has determined that this regulatory action will not result in a mandate to any local agencies or school districts which are reimbursable by the state pursuant to part 7 (commencing with section 17500, division 4, title 2) of the Government Code.

Alternatives Considered

For the reasons set forth in the ISOR, the responses to comments received, and this FSOR, DTSC determined that no alternative considered by DTSC would be more effective in carrying out the purpose for which the regulatory action was proposed, or would be as effective and less burdensome to affected private persons, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law than the regulation proposed by this FSOR.

Small Business Alternatives Considered

DTSC has not identified reasonable alternatives that would lessen any adverse impact on small business.

MODIFICATIONS MADE TO THE ECONOMIC AND FISCAL IMPACT ANALYSIS (STD 399)

DTSC has re-estimated the economic and fiscal impact of the regulation based on changes made in the assumptions for the Economic and Fiscal Impact Analysis to reflect more realistic impacts of the regulation:

Assumption 1. The total volume used to estimate the economic impact due to the regulation

DTSC is aware that not all PV module waste generated are hazardous. The regulation only applies to waste PV modules that are determined to be hazardous and does not apply to the modules that are not hazardous. DTSC does not have enough data to accurately predict the percent of PV module waste generated in California that would be considered hazardous. Therefore, DTSC conservatively assumed in the Economic and Fiscal Impact Analysis that half of the total volume of PV module waste generated in California would be hazardous.

Assumption 2. The number of businesses that generate and/or manage hazardous waste PV modules

DTSC expects there will be new businesses that become a PV module waste generator for the first time every year. Based on the U.S. Census Bureau statistics published in 2018 in the “2014-2015 SUSB Employment Change Data Tables,” DTSC estimates that the number of generators will increase at a rate of 1.7 percent per year. Based on this assumption, DTSC estimates that 50 businesses will become newly regulated generators of PV modules each year and the total number of businesses for the economic impact is 2,947.

As of 2018, there are no businesses in California with a hazardous waste facility permit to store or treat PV modules. For the purposes of comparison, DTSC assumes that PV module waste generated would be transported from the original waste generator to the disposal facilities through either a hazardous waste storage facility in the baseline or through universal waste handlers with regulation. DTSC assumes in the baseline that at least 8 hazardous waste storage facilities could obtain hazardous waste permit modifications to manage waste PV modules. These storage facilities will dispose of 100 percent of the PV module waste as hazardous waste at the 2 hazardous waste disposal facilities.

DTSC also assumes that there will be at least 8 universal waste handlers, replacing the 8 storage facilities assumed in the baseline, that accept hazardous waste PV modules for waste management with regulation. Of the universal waste handlers, DTSC assumes that two-thirds will perform authorized removal and disassembling treatment activities under universal waste management standards. One-third will conduct authorized processing treatment activities that result in disposing of 85% of the PV module waste as hazardous waste residual in the form of processed PV module glass. Once the universal waste handlers decide to dispose of the PV modules, they become a hazardous waste generator and must manage the waste in accordance with hazardous waste management requirements. Hazardous waste residuals will be disposed of at the 2 hazardous waste disposal facilities.

Itemized costs associated with generators, storage facilities or universal waste handlers, and disposal facilities have been re-estimated based on the assumptions made above. The unit costs, total costs, and costs savings for before and after the regulation are tabulated in **Table 1** below. The total costs estimated for generators and universal waste handlers with regulation is lower than that of the baseline. The total costs for disposal facilities are the same for baseline and with regulation since all costs associated with adding a new hazardous waste stream for disposal are the same for both scenarios. Overall, DTSC estimated a total cost savings of \$18,144,865 under the proposed regulation.

Table 1. Comparison of Costs or Savings Before and After Proposed Regulation

COST CATEGORY	BASELINE			WITH REGULATION			COSTS SAVINGS		
	Generators	Storage Facilities	Disposal Facilities	Generators	Handlers	Disposal Facilities	Generators	Storage Facilities / Handlers	Disposal Facilities
One-time Costs (\$)	\$24,300	\$59,544	\$14,886	\$12,500	\$16,358	\$14,886	\$11,800	\$43,186	\$0
Fixed Annual Costs (\$)	\$6,235,852	\$617,664	\$792,896	\$4,028,549	\$38,792	\$792,896	\$2,207,303	\$578,872	\$0
Variable Costs (\$)	\$67,506,929	\$70,551,656	\$1,371,008	\$62,734,881	\$60,020,000	\$1,371,008	\$4,772,048	\$10,531,656	\$0
Total Costs (\$)	\$73,767,081	\$71,228,864	\$2,178,790	\$66,775,930	\$60,075,150	\$2,178,790	\$6,991,151	\$11,153,714	\$0
Total Costs (Generators, Storage Facilities / Handlers, and Disposal Facilities)	\$147,174,735			\$129,029,870			\$18,144,865		

DTSC also included an estimate of the fiscal impact to the department in the analysis. Allowing PV modules to be managed as universal waste decreases the fees associated with managing the waste as hazardous waste. As a result, fees connected to the DTSC's hazardous waste management program, which would otherwise be collected for hazardous waste PV module, would not be assessed under the proposed regulation. DTSC estimates the decrease in annual fee revenues under the proposed regulations would be \$661,944, a calculation based on the hazardous waste Manifest Fee, Generator Fee, and Disposal Fee, as shown in **Table 2**.

Table 2. Estimated Loss of Fees for DTSC with Regulation

DTSC Fees Impact	Baseline	With Regulations
Annual Facility Fee	\$ 93,840.00	\$ -
Manifest Fee	\$ 185,661	\$ 49,820
Generator Fee	\$ 677,810	\$ 245,547
Disposal Fee	\$ 1,371,008	\$ 1,371,008
Total Fees	\$ 2,328,319	\$ 1,666,374
Loss of Fees from Regulations	\$	661,944

MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

For purposes of this FSOR, all regulatory references are to the California Code of Regulations, title 22, division 4.5, unless otherwise specified.

Nonsubstantial Modifications

The following definitions are amended or added in Section 66260.10.

Amend the definition of “Photovoltaic cell.” This definition is revised to ensure businesses understand that PV cells can be individual cells or array of cells, which are an integral part of a PV module. The definition further clarifies that PV cells are managed as PV modules.

Amend the definition of “Photovoltaic module.” This definition is revised to clarify for businesses that integrated components that cannot be separated without breaking the PV module glass are considered a PV module. The revision to the definition added

housing or pocket holding the PV cells/modules as an example of what DTSC determined to be integrated components, in addition to protective glass, conductive metal contact, metal framing the PV cells, and top and back layers, to clarify that devices that have a PV module integrated can be managed as a PV module. The revision also added perovskite as a new example of a type of PV module to provide an additional example of types of PV modules that exist. A spelling error for the word “radiation” was corrected.

Add the definition of “Photovoltaic system.” This new definition is added to distinguish the PV module from the ancillary components that make up the operational unit of the PV system. The new term clarifies that a PV system is made up of PV modules and ancillary components can be manually separated without breaking the PV module glass. The ancillary components that are not integrated with the PV module and can be manually separated without breaking the PV module glass, such as connectors, junction boxes, batteries, inverters, wires, and cables, are not considered to be PV modules, but are instead considered to be a part of the PV system.

Add the definition of “PV system.” This new definition is added to capture a commonly used abbreviation of the term “photovoltaic system” and directs the user to the definition of “photovoltaic system.”

Amend the definition of “Scrap metal.” This definition is amended to include the term “PV module” to the description of what is not considered to be scrap metal. This amendment is necessary to clarify that printed circuit boards removed from a universal waste PV module after treatment activities conducted pursuant to chapter 23 are not considered scrap metal.

Add the definition of “Solar system.” This new definition is added because the term “solar system” may be used interchangeably with the term “photovoltaic system” and directs the user to the definition of “photovoltaic system.”

Add subsection (a)(2) to section 66273.7.1. This subsection is added to identify which PV modules are subject to universal waste requirements. As originally proposed, it appears to be unclear to the regulated community, based on the comments received, that only PV modules that exhibit the hazardous characteristic of toxicity are to be managed as universal waste. This subsection was added to further clarify the existing subsection (b)(3) of this section that not all PV modules that meet the regulatory definition of PV modules are expected to be managed as universal waste.

Amend subsection (b)(1) of section 66273.7.1. The reference used in this subsection is changed from “(c)” to “(d)” to reflect the section numbering changes made. No requirements are added or deleted from this subsection.

Amend subsection (b)(6) of section 66273.7.1. The word “and” is added after “,” in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (b)(7) of section 66273.7.1. The punctuation “; and” is deleted from this subsection and replaced with “.” No requirements are added or deleted from this subsection.

Remove subsection (b)(8) from section 66273.7.1. This subsection is removed to relocate the terms associated with electronic devices, that were initially proposed under subsection (b)(8), to renumbered subsection (c) under this section. This is necessary because devices that meet the definition of an electronic device and that contain PV modules are to be managed as electronic devices and not PV modules.

Amend subsection (c) of section 66273.7.1. This subsection is renumbered from 66273.7.1(b)(8) to renumbered subsection (c) under this section. This subsection clarifies that devices that meet the definition of an electronic device in chapter 23, but contain a PV module, are to be managed as electronic devices and not PV modules. This relocation is necessary to establish management standards for devices that meet the definition of both electronic devices and PV modules, ensuring that these types of wastes are subject to only one set of universal waste standards.

Amend renumbered subsection (d) of section 66273.7.1. This subsection is renumbered from (c) to (d). No requirements are added or deleted from this subsection.

Amend renumbered subsection (e) of section 66273.7.1. This subsection is renumbered from (d) to (e). No requirements are added or deleted from this subsection.

Amend Section 66273.9. Definitions. This section defines terms used in chapter 23 and is amended to revise or add the same definitions that were added or amended in section 66260.10. Any additional changes from those made under section 66260.10 are identified below.

Amend the definition of “Photovoltaic module.” The spelling error for “radiation” was corrected, and the word “protected” was amended to “protective.” No requirements are added or deleted from this subsection.

Amend subsection (d)(2) of section 66273.32. Spelling error “pursuant” was corrected in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (e)(2)(H) of section 66273.32. This subsection is amended to require that notification include types of PV modules only if the types of PV module are known and provides examples of types of PV modules. This modification is necessary because DTSC recognizes that universal waste handlers will not always know what type of PV modules they will be handling when notifying DTSC.

Amend subsection (e)(2)(I) of section 66273.32. This subsection is amended to require the notification to include the source of PV modules only if the source is known. This modification is necessary because DTSC recognizes that universal waste handlers will not always know the source of PV modules they will be handling when notifying DTSC.

Amend subsection (e)(3) of section 66273.32. This subsection is amended to clarify that the notification requirements are specific for each handler's facility where the handler conducts the handling activities, not for the location where handlers accept or generate the PV modules.

Amend subsection (f)(3)(A) of section 66273.32. The term "If" is capitalized in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (f)(3)(H) of section 66273.32. This subsection is amended to clarify that the type of PV modules only needs to be reported in the annual report if the type is known to the reporter. Examples are provided, such as crystalline silicon and thin film. This modification is necessary because universal waste handlers do not always know from appearance alone what type of PV modules they handle. Additionally, the word "The" is deleted and "(s)" is added to the word "type."

Amend subsection (f)(3)(I) of section 66273.32. This subsection is amended to clarify that the annual report must include the total quantity of PV modules handled during the previous calendar year and clarified that this could be reported either by count or weight. This clarification is necessary to ensure that universal waste handlers understand the acceptable method of reporting this information and to eliminate ambiguous language. Additionally, the quantity of PV modules is changed to report the "total" quantity of PV modules and the spelling error of the word "quantity" is corrected.

Amend subsection (f)(3)(J)2 of section 66273.32. This subsection is amended to clarify that the annual report must include the total quantity of PV modules shipped to each location identified in the annual report pursuant to subsection (f)(3)(j)1 of this section, and clarified that this could be reported either by count or weight. This clarification is necessary to ensure that universal waste handlers understand the acceptable method of reporting this information and to eliminate ambiguous language.

Amend section (g)(1) of section 66273.32. The hyperlink in this subsection is amended by adding the "s" to "https:". No requirements are added or deleted from this subsection.

Amend section (h)(1) of section 66273.32. A comma was added between "(d)" and "or" in this subsection to clarify that subsections "(c) and (d)" referenced in this subsection are respective to notification and annual reporting requirements for electronic devices and cathode ray tubes (CRTs), while subsections "(e) and (f)" referenced in this subsection are respective to notification and annual reporting requirements for PV modules. No requirements are added or deleted from this subsection.

Amend subsection (a) of section 66273.33.6. The heading of this subsection was amended to state the word "PV modules" to align the renumbering of this section to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. Consistent numbering for both sections 66273.33.5 and 66273.33.6 provides clarity for management requirements that universal waste handlers must comply with if universal

waste electronic devices and PV modules are both handled at the same handling facility. No requirements are added or deleted from this subsection.

Amend subsection (a)(1) of section 66273.33.6. This subsection is renumbered from “(a)” to “(a)(1)” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. No requirements are added or deleted from this subsection.

Amend subsection (a)(1)(A) of section 66273.33.6. The subsection is renumbered from “(a)(1)” to “(a)(1)(A)” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. No requirements are added or deleted from this subsection.

Amend subsection (a)(1)(B) of section 66273.33.6. The subsection is renumbered from “(a)(2)” to “(a)(1)(B)” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. No requirements are added or deleted from this subsection.

Amend subsection (a)(1)(B)1.a of section 66273.33.6. The subsection is renumbered from “(a)(2)(A)” to “(a)(1)(B)1.a” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. No requirements are added or deleted from this subsection.

Amend subsection (a)(1)(B)1.b of section 66273.33.6. The subsection is renumbered from “(a)(2)(B)” to “(a)(1)(B)1.b” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. This subsection is further amended to include stretch-film on a pallet, as an example of an acceptable containment method universal waste handlers can use to prevent breakage of PV modules resulting in a potential release to the environment. The reference used in this subsection is amended from “(a)(2)(A)” to “(a)(1)(B)1.a” to reflect the section numbering changes.

Amend subsection (a)(1)(B)2 of section 66273.33.6. The subsection is renumbered from “(a)(3)” to “(a)(1)(B)2” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices in section 66273.33.5. No requirements are added or deleted from this subsection.

Amend subsection (a)(2) of section 66273.33.6. This subsection is renumbered from “(b)” to “(a)(2)” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. Two references used in this subsection are amended to reflect the section numbering changes: “(c)” is revised to “(a)(3)” and “(a)” is revised to “(a)(1).” No requirements are added or deleted from this subsection.

Amend subsection (a)(3) of section 66273.33.6. This subsection is renumbered from “(c)” to “(a)(3)” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. No requirements are added or deleted from this subsection.

Amend subsection (a)(3)(A) of section 66273.33.6. This subsection is renumbered from “(c)(1)” to “(a)(3)(A)” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. No requirements are added or deleted from this subsection.

Amend subsection (a)(3)(B) of section 66273.33.6. This subsection is renumbered from “(c)(2)” to “(a)(3)(B)” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. No requirements are added or deleted from this subsection.

Amend subsection (a)(3)(C) of section 66273.33.6. This subsection is renumbered from “(c)(3)” to “(a)(3)(C)” as a part of renumbering amendments to section 66273.33.6 to be consistent with that of electronic devices, CRTs, and CRT glass in section 66273.33.5. No requirements are added or deleted from this subsection.

Amend subsection (g) of section 66273.34. This subsection is amended to clarify that PV modules must be contained, either in a container, pallet, or a designated area, and must be clearly labeled or marked with the phrase “Universal Waste-PV module(s).” This clarifying language is necessary to ensure that universal waste handlers clearly label or mark the container or area where the PV modules are contained in order to segregate the waste from other wastes accumulated at the handler’s facility and prevent unauthorized comingling.

Amend subsection (h) of section 66273.34. This subsection is amended by removing PV modules from the universal waste label which allows the commingling of other specific universal wastes. This amendment makes clear that DTSC is not authorizing the commingling of PV modules with other universal wastes.

Amend subsection (c) of section 66273.37. This subsection is amended to clarify that when responding to releases, broken and damaged universal waste PV modules may continue to be managed as universal waste if repackaged according to the universal waste management requirements for PV modules that are specified in section 66273.33.6. This is necessary because PV module breakage may result in a release to the environment or harm to human health, and therefore, universal waste handlers are responsible for determining the nature and the extent of the spill or release as well as the appropriate method(s) of cleanup. Additionally, Health and Safety Code section 25259 has also been added to the authority and reference sections.

Amend subsection (e) of section 66273.51. The reference in this subsection is amended from “(a)(2)” to “(a)(1)(B)” to reflect the renumbering changes made in section 66273.33.6. No requirements are added or deleted from this subsection.

Amend subsection (b) of section 66273.70. The grammar in this subsection is corrected by adding “of” before “CRTs,” by deleting “and” after “66273.33,” and by adding “and to” after “66273.33.5.” No requirements are added or deleted from this subsection.

Amend subsection (c)(1) of section 66273.70. This subsection is revised by replacing “modules” with “systems.” This revision clarifies that removal activities that universal waste handlers who treat are authorized to conduct applies to PV systems instead of PV modules. This modification is based on the revised definitions for “Photovoltaic module” and “Photovoltaic system” in both sections 66260.10 and 66273.9. Additionally, the plurality of the word “system” is corrected to “systems.”

Amend subsection (c)(3)(C) of section 66273.70. The reference in this subsection is amended from “(d)” to “(c)” due to renumbering changes made in section 66273.73. No requirements are added or deleted from this subsection.

Amend subsection (a) of section 66273.71. This subsection is revised by replacing “modules” with “systems.” This revision clarifies that removal activities that universal waste handlers who treat are authorized to conduct applies to PV systems instead of PV modules. This modification is based on the revised definitions “Photovoltaic module” and “Photovoltaic system” in both sections 66260.10 and 66273.9.

Amend subsection (b) of section 66273.71. This subsection is revised by replacing “modules” or “module” with “systems” or “system.” This revision clarifies that removal of discrete assemblies as authorized in this subsection applies to PV systems instead of PV modules. This subsection is also revised to add maintenance activities to clarify that these activities are authorized under this subsection. Even though maintenance activities are inherently a part of the normal operation of the product, DTSC added this clarification to be explicitly clear. The removal of discrete assemblies, such as batteries or inverters, which are typically removed for replacement during the normal operations and maintenance, are now a part of the PV system instead of PV module as originally proposed. This modification is based on the revised definitions for “Photovoltaic module” and “Photovoltaic system” in both sections 66260.10 and 66273.9.

Amend subsection (c) of section 66273.71. This subsection is revised by replacing “module” with “system.” This revision clarifies that removal of discrete assemblies, as prescribed in the operating manual, in this subsection applies to a PV system instead of a PV module. This subsection is also revised to add maintenance activities to clarify that these activities are authorized under this subsection. Even though maintenance activities are inherently a part of the normal operation of the product, DTSC added this clarification to be explicitly clear. The authorized removal activities as described in section 66273.71(b) and as prescribed in the operating manual are specific for the PV systems instead of for PV modules as previously proposed. This modification is based on the revised definitions for “Photovoltaic module” and “Photovoltaic system” in both sections 66260.10 and 66273.9.

Amend subsection (f)(2) of section 66273.71. This subsection is amended based on the information provided from the commenters regarding the presence of printed circuit boards in PV systems. Therefore, it is necessary to clarify that any further treatment of residual printed circuit boards resulting from removal activities are required to comply with the amended authorized treatment activities as specified in sections 66273.73(c)(1)

and/or (c)(2) pertaining to management of residual printed circuit boards generated from authorized PV module treatment.

Amend subsection (f)(1) of section 66273.72. This subsection is amended to provide additional examples of components that universal waste handlers are authorized to dismantle, remove, or segregate, provided universal waste handlers do not break the PV module glass. Additionally, examples of components, such as junction boxes, inverters, wires, and cables, are removed from this subsection since they are no longer part of a PV module based on the revised definitions “Photovoltaic module” and “Photovoltaic system” in both sections 66260.10 and 66273.9.

Amend subsection (f)(2)(B) of section 66273.72. The word “and” is deleted in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (f)(2)(D)1. of section 66273.72. The punctuation is amended from “.” to “;” in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (f)(2)(D)2. of section 66273.72. The punctuation is amended from “.” to “;” in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (f)(2)(D)3. of section 66273.72. The punctuation is amended from “.” to “;” in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (f)(2)(D)4. of section 66273.72. The punctuation is amended from “.” to “;” in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (f)(2)(D)5. of section 66273.72. The punctuation is amended from “.” to “; and” in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (f)(3)(A) of section 66273.72. The punctuation is amended from “.” to “; and” in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (f)(3)(B) of section 66273.72. The words “Ensure that” are added and capitalization of “for” is corrected in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (a)(1)(B) of section 66273.73. The reference in this subsection is amended from “(c)” to “(d)” due to renumbering changes made in section 66273.73. No requirements are added or deleted in this subsection.

Amend subsection (a)(2)(B) of section 66273.73. The reference in this subsection is amended from “(c)” to “(d)” due to renumbering changes made in section 66273.73. No requirements are added or deleted in this subsection.

Amend subsection (b)(2) of section 66273.73. The reference in this subsection is amended from “(c)” to “(d)” due to renumbering changes made in section 66273.73. No requirements are added or deleted in this subsection.

Amend subsection (c) of section 66273.73. The subsection that was originally proposed as “(d)” is renumbered as “(c).” The capitalization of the word “modules” is corrected. No requirements are added or deleted in this subsection.

Amend subsection (c)(1) of section 66273.73. This subsection is added to include management requirements for the treatment of residual printed circuit boards from PV modules, based on the information provided by the commenters regarding the presence of printed circuit boards in PV modules. The language is necessary to clarify that additional management requirements apply when further treatment is conducted on the residual printed circuit boards pursuant to section 66273.73. This subsection is further amended to reflect the subsection numbering changes: referenced section amended from “(d)(1)” to “(c)(1)(A),” both referenced sections amended from “(d)(2)” to “(c)(3),” and referenced section amended from “(d)(3)” to “(c)(4).”

Amend subsection (c)(1)(A) of section 66273.73. This subsection has been renumbered from “(d)(1)” to “(c)(1)(A)” due to renumbering changes made in this subsection. No requirements are added or deleted in this subsection.

Add subsection (c)(1)(B) to section 66273.73. This subsection is added to specify that universal waste handlers are authorized to conduct treatment on PV modules and/or residual printed circuit boards that are generated from the removal and disassembling activities, specified in section 66273.71 and 66273.72, respectively. This subsection clarifies that treatment of hazardous residuals resulting from PV module treatment activities are still authorized under universal waste regulations if they meet either criteria specified in the newly **added subsections (c)(1)(B)1 and (c)(1)(B)2**. The first criteria, as listed in subsection (c)(1)(B)1, specifies the residuals that meet the definition of scrap metal as defined in section 66273.9 and captures the management of residual printed circuit boards. Alternatively, the second criteria, as listed in subsection (c)(1)(B)2, specifies that the residuals qualify for management as universal waste. These criteria are necessary to explicitly identify that universal waste handlers who meet either the first or second criteria are still authorized to manage these treatment residuals even though they no longer meet the definition of a PV module. It is also necessary to clarify that universal waste handlers are authorized to perform the treatment activities as long as they comply with appropriate management standards identified in section 66273.75.

Add subsection (c)(2) to section 66273.73. This subsection is added to include management requirements for the treatment of PV modules and residual printed circuit boards generated from PV modules, based on the information provided by the commenters regarding the presence of printed circuit boards in PV modules. The language is necessary to clarify that additional management requirements apply when treatment is conducted on the PV modules and/or residual printed circuit boards pursuant to section 66273.73. This is necessary to specify terms and conditions under which universal waste handlers are authorized by DTSC to treat PV modules and residuals in lieu of requiring a hazardous waste permit, as would be required for treatment of other hazardous wastes.

Add subsection (c)(2)(A) to section 66273.73. This subsection is added to mirror the language in subsection 66273.73(c)(1)(A) that specifies that intentionally breaking the PV module, such as breaking its glass, is an authorized treatment under this section. This subsection is necessary to clarify for both the universal waste handler of PV modules and DTSC inspectors that treatment activities, such as intentionally breaking PV module glass, are deemed authorized as long as the treatment facility meets the management standards of this section.

Add subsection (c)(2)(B) to section 66273.73. This subsection is added to specify that universal waste handlers are authorized to conduct treatment on PV modules and/or residual printed circuit boards that are generated from the removal and disassembling activities specified in sections 66273.71 and 66273.72, respectively. This clarifies that treatment of hazardous residuals resulting from treatment activities for PV modules are still authorized under universal waste standards if they meet both criteria specified in the newly **added subsections (c)(2)(B)1. and (c)(2)(B)2.** Subsection (c)(2)(B)1. specifies the first criterion that must be met, which is that the residuals do not meet the definition of scrap metal, as defined in section 66273.9, which captures the management of residual printed circuit boards. Subsection (c)(2)(B)2. specifies the second criterion that must be met, which captures PV module treatment residuals that do not qualify for management as universal waste. These criteria are necessary to explicitly identify that universal waste handlers are still authorized to manage these treatment residuals even though they no longer meet the definition of a PV module. It is also necessary to clarify that universal waste handlers are authorized to perform these treatment activities as long as they comply with appropriate management standards identified in section 66273.75.

Amend subsection (c)(3) of section 66273.73. This subsection is renumbered from "(2)" to "(3)" and a reference is revised from "(e)" to "(d)" to reflect the renumbering changes in this section. No requirements are added or deleted in this subsection.

Amend subsection (c)(4) of section 66273.73. This subsection is renumbered from "(3)" to "(4)" and a reference is revised from "(a)" to "(a)(1)" to reflect the renumbering changes in section 66273.33.6. No requirements are added or deleted in this subsection.

Amend subsection (d) of section 66273.73. This subsection is renumbered from "(c)" to "(d)" and amended by adding "PV modules" to this subsection based on the removal and consolidation of requirements from the originally proposed subsection (e) to subsection (d).

Amend subsection (d)(1) of section 66273.73. This subsection is amended by referencing section 66273.73(c), which specifies the authorized treatment methods for PV modules, based on the removal of and consolidation of requirements from the originally proposed subsection (e)(1) to subsection (d)(1). The reference used in this subsection is renumbered from "(c)(2)" to "(d)(2)" to reflect the section number changes.

Amend subsection (d)(1)(A) of section 66273.73. This subsection is amended by adding PV modules to this subsection based on the removal of and consolidation of requirements from the originally proposed subsection (e)(1)(A) to subsection (d)(1)(A).

Amend subsection (d)(2) of section 66273.73. The reference in this subsection is amended from “(c)(1)” to “(d)(1)” to reflect the section number changes in this section. No requirements are added or deleted.

Amend subsection (d)(2)(B) of section 66273.73. This subsection is amended to specify that further treatment of residuals resulting from authorized treatment and management as described in subsection (c)(1) and (c)(2) of this section are not authorized under chapter 23. This is necessary for universal waste handlers to clarify what treatment activities they are authorized to conduct under chapter 23, and which further treatment activities would require compliance with the requirements of chapters 14, 15, 16, 18, 20, and 22 related to hazardous waste management permits. Additionally, the reference in this subsection is renumbered from “(c)(1)(D)” to “(d)(1)(D)” to reflect the section number changes.

Remove subsection (e) of section 66273.73. This subsection is removed from the regulation text due to consolidation with renumbered subsection (d) of this section.

Remove subsection (e)(1) of section 66273.73. This subsection is removed from the regulation text due to the consolidation with renumbered subsection 66273.73(d)(1); no requirements are added or deleted.

Remove subsection (e)(1)(A) of section 66273.73. This subsection is removed from the regulation text due to the consolidation with renumbered subsection 66273.73(d)(1)(A); no new requirements are added or deleted.

Remove subsection (e)(1)(B) of section 66273.73. This subsection is removed from the regulation text due to the consolidation of requirements in renumbered subsection 66273.73(d)(1)(B); no new requirements are added or deleted.

Remove subsection (e)(2) of section 66273.73. This subsection is removed from the regulation text due to the consolidation of requirements in renumbered subsection 66273.73(d)(2) and 66273.73(d)(2)(A); no new requirements are added or deleted.

Remove subsection (e)(2)(A) of section 66273.73. This subsection is removed from the regulation text due to the consolidation of requirements in renumbered subsection 66273.73(d)(2)(A).; no new requirements are added or deleted.

Remove subsection (e)(2)(B) of section 66273.73. This subsection is removed from the regulation text due to the consolidation of requirements in renumbered subsection 66273.73(d)(2)(A).; no new requirements are added or deleted.

Remove subsection (e)(3) of section 66273.73. This subsection is removed from the regulation text because the disposal of PV modules is not applicable after the treatment activities specified in section 66273.73 are conducted by the universal waste handler.

The remains of the PV module, after the treatment activities authorized pursuant to this section are conducted, are considered to be residuals and no longer meet the definition of PV module.

Remove subsection (e)(3)(A) of section 66273.73. Due to the deletion of subsection 66273.73(e)(3), this subsection is no longer relevant and therefore is deleted.

Remove subsection (e)(3)(B) of section 66273.73. Due to the deletion of subsection 66273.73(e)(3), this subsection is no longer relevant and therefore is deleted.

Amend subsection (e)(1) of section 66273.73. This subsection is renumbered from the original “(d)(1)” to the new “(e)(1).” DTSC added requirements for the management of residual printed circuit boards that are generated from PV modules as specified in section 66273.73(c)(3), based on the comments received regarding the presence of printed circuit boards in PV modules, which could qualify as scrap metal. Therefore, this subsection is amended to clarify that handlers who only recycle scrap metal are not required to comply with the requirements applicable to the universal waste handlers who conduct authorized treatment activities.

Amend subsection (e)(2)(A) of section 66273.73. DTSC added requirements for the management of residual printed circuit boards that are generated from PV modules in section 66273.73(c)(1), based on the comments received regarding the presence of printed circuit boards in PV modules. Therefore, DTSC added “PV modules” to this subsection to clarify that residual printed circuit boards can be derived from PV modules.

Amend Reference for section 66273.73. The additional comma between “25214.9” and “25219” is deleted.

Note on amendments to subsections (a) and (b) of section 66273.74: The notification and annual reporting requirements that universal waste handlers that treat PV modules are required to comply with are restructured and reorganized to be consistent with those same notification and annual reporting requirements for electronic devices. This restructuring is intended to streamline the notification and annual reporting requirements for universal waste handlers that may accept both PV modules and electronic devices.

Amend subsection (a)(4)(A) of section 66273.74. This subsection is amended to remove the clarifying language regarding providing the name of the facility owner if it is different from the universal waste handler. Instead, this requirement is moved to subsection (a)(4)(D) of this section as a separate requirement.

Amend subsection (a)(4)(B) of section 66273.74. This subsection is amended to remove the ID number of the universal waste handler in the notification requirement, which is moved to subsection (a)(4)(F) of this section. This subsection is further amended to add the telephone number of the universal waste handler for the notification requirements, which was originally listed under subsection (a)(4)(C).

Amend subsection (a)(4)(C) of section 66273.74. This subsection is amended to remove the telephone number of the universal waste handler in the notification requirement, which is moved to subsection (a)(4)(B) of this section. This subsection is further amended to add the mailing address of the universal waste handler, and physical address, if different from the mailing address for the notification requirements, which was originally listed under subsection (a)(4)(D).

Add subsection (a)(4)(D) of section 66273.74. This subsection is amended to remove the mailing address of the universal waste handler, and physical address, if different from the mailing address for the notification requirements, which is moved to subsection (a)(4)(C) of this section. This subsection is further amended to add the clarifying language regarding providing the name of the facility owner if it is different from the universal waste handler, which was originally listed under subsection (a)(4)(A). The language is clarified to accommodate situations where an organization owns or operates the handling facility, rather than a single universal waste handler.

Amend subsection (a)(4)(E) of section 66273.74. This subsection is amended to add the business telephone number, which was previously listed as subsection (a)(4)(F), and email address of the person (if available), which was previously listed as subsection (a)(4)(G), at the universal waste handler's site who should be contacted regarding universal waste management activities, together with the name of the contact person.

Amend subsection (a)(4)(F) of section 66273.74. This subsection is amended to remove the telephone number of the contact person at the universal waste handling site, which is now added under subsection (a)(4)(E). This subsection is further amended to include the facility ID number which was previously listed under subsection (a)(4)(B).

Amend subsection (a)(4)(G) of section 66273.74. This subsection is amended to remove the email address of the contact person at the universal waste handling site, which is now added under subsection (a)(4)(E). A new requirement to include a general description of the sources of PV modules is added to this subsection. Examples of sources of PV modules, such as residential collections and other collectors, are also provided. This information provides data to DTSC to understand the sources of the PV modules universal waste handlers are accepting.

Add subsection (a)(4)(H) of section 66273.74. A new requirement to include the types of PV modules, such as crystalline and thin film, the universal waste handler expects to treat is added to this subsection. This information is necessary for DTSC to gather information about the PV module industry and types of PV modules universal waste handlers expect to treat.

Amend subsection (a)(4)(I) of section 66273.74. The subsection is renumbered from "(a)(4)(H)" to "(a)(4)(I)." The language in this subsection is amended to maintain consistency with the language in this section for describing treatment process(es) to be used for universal waste electronic devices. No requirements are added or deleted.

Remove previously numbered subsection (a)(4)(I) in section 66273.74. This subsection, previously numbered as (a)(4)(I), that originally required universal waste handlers to include a description of how treated PV modules will be recycled or disposed of in the notification, was removed from the section. DTSC understands that it is not always possible to predict in advance how universal waste handlers will recycle or dispose of treated PV modules before they accept the PV modules for treatment. The originally proposed language asked handlers to include in the notification information that is not necessarily known to the handler at the time of notification. Therefore, this requirement is removed from the notification.

Add subsection (a)(4)(J) of section 66273.74. This subsection is added to include in the notification documentation that the facility operator has notified the facility property owner, if different, that the facility operator is treating the PV modules at the facility. This is necessary so that both the operator and facility owner, if different, are aware of and agree with the activities conducted at the handling facility. This is also necessary because the facility property owner may be ultimately responsible for any hazardous waste handling activities and potential contamination that might occur. The spelling error of the word “modules” is also corrected.

Amend subsection (a)(5) of section 66273.74. The requirement for the disposal of PV modules as originally proposed as section 66273.73(e)(3) was deleted. Therefore, the reference to this subsection is no longer relevant.

Amend subsection (a)(5)(A) of section 66273.74. The plurality of the word “modules” and the verb subject agreement of the word “was” to “were” are corrected in this subsection. No new requirements are added or deleted from this subsection.

Amend subsection (b)(3) of section 66273.74. This subsection is amended to specify the requirements in subsections (b)(3)(A) through (b)(3)(K) to include in the annual report, instead of generalizing by using the phrase “following.” The punctuation is amended by adding a “.” to the end of “Universal waste handlers of PV modules.”

Amend subsection (b)(3)(A) of section 66273.74 This subsection is amended to remove the clarifying language regarding providing the name of the facility owner if it is different from the universal waste handler. Instead, this requirement is added as a separate requirement under subsection (b)(3)(C). This subsection is further amended to add the mailing address of the person, which is originally listed under subsection (b)(3)(C), and the telephone number, which is originally listed under subsection (b)(3)(B), of the universal waste handler.

Amend subsection (b)(3)(B) of section 66273.74. This subsection is amended to remove the telephone number of the universal waste handler in the annual reporting requirement, which is now moved under subsection (b)(3)(A). The subsection is further amended to include a description of the facility in the annual reporting. This is necessary for DTSC to understand the general nature of treatment facilities and their operations where universal waste PV modules are treated.

Amend subsection (b)(3)(C) of section 66273.74. This subsection is amended to remove the mailing address of the universal waste handler in the annual reporting requirement, which is added under subsection (b)(3)(A) of this section. The subsection is further amended to add the mailing address of the organization that owns and/or operates the handling facility in the annual report to this subsection, which was originally listed under (b)(3)(A). This subsection is further amended to add the clarifying language regarding providing the name of the facility owner if it is different from the universal waste handler, which was originally listed under subsection (b)(3)(A). The language is clarified to accommodate situations where an organization owns or operates the handling facility, rather than a single universal waste handler.

Amend subsection (b)(3)(D) of section 66273.74. This subsection is amended to add the telephone number of the contact person at the treatment facility, which was originally under subsection (b)(3)(E), and e-mail address of the contact person (if available), which was originally under subsection (b)(3)(F) of this section. The subsection is further amended to include the title of the contact person. This is necessary for DTSC to identify the title of the person who is responsible for submitting the annual report.

Amend subsection (b)(3)(E) of section 66273.74. This subsection is amended to remove the telephone number of the contact person at the treatment facility in the annual reporting requirement, which is now added under subsection (b)(3)(D). Subsection (b)(3)(E) now lists the facility ID number, if issued, which was previously listed under (b)(3)(G).

Amend subsection (b)(3)(F) of section 66273.74. This subsection is amended to remove the e-mail of the contact person (if available) at the treatment facility in the annual reporting requirement, which is now moved under subsection (b)(3)(D). Subsection (b)(3)(F) now lists the number of days the facility operated, which was previously listed under (b)(3)(H).

Amend subsection (b)(3)(G) of section 66273.74. This subsection is added to require the annual report to include the types of PV modules, if known, such as crystalline and thin film, treated by the universal waste handler. It is necessary for DTSC to know what types of PV modules universal waste handlers treated to understand waste trends in the PV module industry.

Amend subsection (b)(3)(H) of section 66273.74. This subsection is renumbered from "(b)(3)(I)" to "(b)(3)(H)" and lists the requirement to include a description of treatment processes used for PV modules treated at the facility. This requirement is revised to keep the language consistent with that of electronic devices in (a)(4)(I) of this section.

Amend subsection (b)(3)(I) of section 66273.74. This subsection is renumbered from "(b)(3)(J)" to "(b)(3)(I)" and the punctuation is amended from ":" to ";" in this subsection. No requirements are added or deleted from this subsection.

Amend subsection (b)(3)(J) of section 66273.74. This subsection is renumbered from “(b)(3)(K)” to “(b)(3)(J)”; no requirements are added or deleted from this subsection.

Amend subsection (b)(3)(J)1. of section 66273.74. This subsection is amended to require the annual report to include a list of the names, addresses, and telephone numbers for each location to which the PV module handler shipped scrap metal and/or exempt materials during the previous calendar year. This information is added due to the amended provisions for residual printed circuit boards that are generated from the treatment of PV modules.

Amend subsection (b)(3)(K) of section 66273.74. This subsection is renumbered from “(b)(3)(L)” to “(b)(3)(K)” and is amended to add an example of an appropriate conversion factor to convert the mass data to count data when a universal waste handler uses a mass-based inventory system for annual reporting.

Amend subsection (c)(3)(A) of section 66273.74. This subsection is amended to exclude the universal waste handlers who conduct removal activities specified in section 66273.71 from the requirements of this section. This is necessary to make sure that the universal waste handler who conducts only removal activities as specified in section 66273.71 understands any recordkeeping exceptions applicable to them.

Add subsection (c)(3)(A)1. of section 66273.74. This subsection is added to include that a copy of the notification submitted to DTSC, as required by subsection 66273.74(a)(4), is required to be maintained on file by the universal waste handler that treats PV modules. This is necessary as proof of completed notifications required by these regulations for DTSC inspection and enforcement activities.

Amend subsection (c)(3)(A)2. of section 66273.74. This subsection for a recordkeeping requirement was previously listed under subsection (c)(3)(A)1. and is renumbered as (c)(3)(A)2. No requirements are added or deleted from this subsection.

Amend subsection (c)(3)(A)3. of section 66273.74. This subsection for a recordkeeping requirement was previously listed under subsection (c)(3)(A)2. and is renumbered as (c)(3)(A)3. No requirements are added or deleted from this subsection.

Amend subsection (c)(3)(A)4. of section 66273.74. This subsection for a recordkeeping requirement was previously listed under subsection (c)(3)(A)3. and is renumbered as (c)(3)(A)4. No requirements are added or deleted from this subsection.

Amend subsection (c)(3)(B) of section 66273.74. This subsection is corrected to align with all of the recordkeeping requirements as described in section 66273.74(c)(3)(A) due to the insertion of the new recordkeeping requirement added under section 66273.74(c)(3)(A)1. This renumbering change includes all the documents universal waste handlers are required to keep at their facility as a record.

Amend subsection (c)(3)(C) of section 66273.74. This subsection is corrected by deleting the reference to the originally proposed “(c)(3)(A)3” and aligning the reference to all of the recordkeeping requirements as described in section 66273.74(c)(3)(A). The

originally proposed reference was incorrectly cited to narrowly require only one type of documents instead of the full scope of documents that universal waste handlers are required to maintain. This renumbering change now covers the scope of all documents universal waste handlers are required to provide to DTSC, if requested, in alignment with recordkeeping requirements as specified in section 66273.74(c)(3)(B).

Amend subsection (e)(1) of section 66273.74. The website address is corrected to include “s” in “https.” No requirements are added or deleted from this subsection.

Amend subsection (a)(1) of section 66273.75. The reference used in this subsection is corrected from “(c)” to “(d)” to reflect the renumbering changes made in section 66273.73. The reference to subsection 66273.73(e), that as originally proposed specified the treatment methods for PV modules, is removed from this subsection due to the removal of subsection 66273.73(e) and consolidation of the requirements under subsection 66273.73(d).

Amend Authority for section 66273.75. The additional comma between “25141.5” and “25150” is deleted.

Amend subsection (a) of section 66273.76. The reference in this subsection is corrected from “(d)” to “(c)” due to renumbering changes made in subsection 66273.73. No requirements are added or deleted.

Amend subsection (a)(4) of section 66273.76. The reference in this subsection is corrected from “(d)” to “(c)” due to renumbering changes made in subsection 66273.73. No requirements are added or deleted.

Amend subsection (b)(5) of section 66273.76. The reference in this subsection is corrected from “(d)” to “(c)” due to renumbering changes made in subsection 66273.73. No requirements are added or deleted.

Amend subsection (a) of section 66273.77. The reference in this subsection is corrected from “(d)” to “(c)” due to renumbering changes made in subsection 66273.73. No requirements are added or deleted.

Amend subsection (a)(1)(A) of section 66273.77. The reference in this subsection is corrected from “(d)” to “(c)” due to renumbering changes made in subsection 66273.73. No requirements are added or deleted.

Amend subsection (a)(1)(B) of section 66273.77. The reference in this subsection is corrected from “(d)” to “(c)” due to renumbering changes made in subsection 66273.73. No requirements are added or deleted.

SUMMARY OF COMMENTS AND AGENCY RESPONSE

List of Commenters and their Affiliations

Written comments were received during the previously mentioned comment period, and written and oral comments were also presented at the public hearing. Listed below are the organizations and individuals that provided comments during each comment period and during the public hearing.

The tables below provide a complete list of commenters, their affiliations, and the number DTSC assigned to their correspondence or oral comment. Most of the comment letters and testimony cover more than one theme. To organize the comments, DTSC numbered individual letters and public hearing comments, as shown, then assigned a number to each individual comment. For example, the number “1-1” refers to the first comment in the letter numbered 1, and “PH-1-1” refers to public hearing commenter number 1, comment number 1.

Table 1: List of Commenters during the First Comment Period (April 19, 2019 – June 10, 2019) and the Public Hearing on June 10, 2019

#	Commenter	Affiliation
1	Veronica Pardo	California Refuse Recycling Council, Northern District
2	Kristin DiLallo Sherrill	California Electronic Asset Recovery
3	Carlos Chavez	
4	Matthew Garamone	First Solar Inc.
5	Tomey Tuttle	NextEra Energy Resources, LLC
6	Peter Beadle	Recycle PV Solar, LLC
7	Larry Sweetser	Rural Counties Environmental Services Joint Powers Authority
8	Maggie Johnson	San Francisco Department of the Environment
9	Evelyn Butler	Solar Energy Industries Association
10	Evelyn Butler and Benjamin Davis	Solar Energy Industries Association California Solar Storage Association
11	Evelyn Butler, Benjamin Davis, Doug Kobold, and Heidi Sanborn	Solar Energy Industries Association California Solar Storage Association National Stewardship Action Council California Product Stewardship Council
PH-1	Evelyn Butler	Solar Energy Industries Association
PH-2	Sharon Simpson	Waste Management
PH-3	Heidi Sanborn	National Stewardship Action Council

#	Commenter	Affiliation
PH-4	Benjamin Davis	California Solar and Storage Association
PH-5	Larry Sweetser	Rural Counties Environmental Services Joint Powers Authority

Table 2: List of Commenters during the Second Comment Period (September 9, 2019 - September 24, 2019)

#	Commenter	Affiliation
1	Kristin DiLallo Sherrill	California Electronic Asset Recovery
2	Larry Sweetser	Rural Counties Environmental Services Joint Powers Authority
3	Marie Knutson	Republic Services
4	Evelyn Butler, Benjamin Davis, Doug Kobold, and Heidi Sanborn	Solar Energy Industries Association California Solar Storage Association National Stewardship Action Council California Product Stewardship Council
5	Maggie Johnson	San Francisco Department of the Environment

Table 3: List of Commenters during the Third Comment Period (October 18, 2019 - November 2, 2019)

#	Commenter	Affiliation
1	Larry Sweetser	Rural Counties Environmental Services Joint Powers Authority
2	Evelyn Butler, Heidi Sanborn, and Rick Umoff	Solar Energy Industries Association National Stewardship Action Council
3	Evelyn Butler, Benjamin Davis, Rick Umoff, Heidi Sanborn, and Doug Kobold	Solar Energy Industries Association California Solar Storage Association National Stewardship Action Council California Product Stewardship Council

Table 4: List of Commenters during the Fourth Comment Period (December 24, 2019 – January 8, 2020)

#	Commenter	Affiliation
1	Evelyn Butler, Benjamin Davis, Rick Umoff, Heidi Sanborn, and Doug Kobold	Solar Energy Industries Association California Solar Storage Association National Stewardship Action Council California Product Stewardship Council

Summary of Objections and Recommendations during the First Comment Period (April 19, 2019 – June 10, 2019)

DTSC grouped and summarized the comments according to the listed themes, presenting summaries and responses in each section in Appendix A. For responses to specific comments, see Appendix A, *Index of Comment Letters and Public Hearing Testimony*.

Summary of Objections and Recommendations during the Second Comment Period (September 9, 2019 – September 24, 2019)

DTSC grouped and summarized the comments according to the listed themes, presenting summaries and responses in each section in Appendix B. For responses to specific comments, see Appendix B, *Index of Comment Letters*.

Summary of Objections and Recommendations during the Third Comment Period (October 18, 2019 – November 2, 2019)

DTSC grouped and summarized the comments according to the listed themes, presenting summaries and responses in each section in Appendix C. For responses to specific comments, see Appendix C, *Index of Comment Letters*.

Summary of Objections and Recommendations during the Fourth Comment Period (December 24, 2019 – January 8, 2020)

DTSC grouped and summarized the comments according to the listed themes, presenting summaries and responses in each section in Appendix D. For responses to specific comments, see Appendix D, *Index of Comment Letters*.

PEER REVIEW

Health and Safety Code section 57004 sets forth requirements for peer review of identified portions of rulemakings proposed by entities within the California Environmental Protection Agency, including DTSC. Specifically, the scientific basis or scientific portion of a proposed rule may be subject to the peer review process.

Under the provisions of Health and Safety Code section 57004, peer review is not required because the proposed regulations do not establish a regulatory level, standard, or other requirement subject to scientific peer review.

APPENDICES

- A. First Public Comment Period: Response to Comments, April 19, 2019 – June 10, 2019;
- B. Second Public Comment Period: Response to Comments, September 9, 2019 – September 24, 2019;
- C. Third Public Comment Period: Response to Comments, October 18, 2019 - November 2, 2019; and
- D. Fourth Public Comment Period: Response to Comments, December 24, 2019 – January 8, 2020.