

EXECUTIVE SUMMARY

Solar panel installation is on the rise due to new regulations and the need to meet California's progressive climate and sustainability goals. Despite the growing number of solar panels being installed and subsequently removed, there are currently no permanent and reliable options for residents and installers in Marin County to properly dispose of or recycle their old solar panels. The limited options for disposal, recycling, and reuse cause residents to improperly dispose of panels or lead solar contractors to stockpile unwanted panels.

To address this issue, the California Product Stewardship Council (CPSC) and Zero Waste Marin launched a pilot to reuse and recycle solar panels. Throughout the last three Phases of this pilot, CPSC, on behalf of Zero Waste Marin, has conducted outreach to local solar panel installers, published a reuse case study, collected 701 solar panels, hosted two training events, launched a reuse project application, scoped 2 reuse installations, and completed 1 reuse installation project.

In Phase 3 (starting August 1st, 2025), CPSC collected solar panels, provided general solar panel education outreach, promoted solar panel reuse/recycling, hosted an in-person education event, worked with a videographer to capture the pilot's accomplishments, and coordinated farm solar panel reuse installations. This final report details the pilot's milestones at the end of Phase 3.

I. SOLAR PANEL COLLECTION

Starting this Phase, CPSC resumed solar panel collection with the Conservation Corps North Bay (CCNB). CCNB conducted 13 pick-ups and facilitated 2 drop-offs over the period of August 2025 – June 2026. In the previous two Phases, we collected 255 solar panels. Phase 3 led to a surge in collection due to further outreach and education. In Phase 3, we collected 446 solar panels, bringing the total number of panels collected over the course of this project to 701.

Pick-Up/Drop-Off Date	Number of Panels	Year of Panels
8/12/2025	40	2005
11/25/2025	40	2009
11/25/2025	1	2004
11/25/2025	7	2020
11/25/2025	20	2010
12/8/2025	24	2004
1/27/2026	103	N/A
3/24/2026	21	2010
4/21/2026	24	2020
5/5/2026	48	2005-2012
5/12/2026	58	2005-2012
6/2/2026	28	2005-2012
6/23/2026	32	2006
	Total: 446	Median Year: 2009

II. SOLAR PANEL REUSE & RECYCLING

To track reuse and recycling, CPSC collected two sets of data:

1. Self-reported data from Marin County residents/installers, sourced from solar panel collection request forms.
2. Data from Recycle 1234's testing results.



Picture: Marin County resident's solar panels awaiting pickup from CCNB.

"I want to thank you for all your efforts and professionalism! The Conservation team just left and picked up my panels. They were very cordial and professional as well."

Marin County Resident's Testimonial

A. RECYCLE 1234

To recycle and/or reuse collected solar panels, CPSC partnered with Eddie Inamdar, owner of Recycle 1234, a recycling e-waste business in Union City.

Recycle 1234 picks up solar panels from CCNB and follows their procedures of cleaning, testing, and finding responsible markets for reuse and recycling. Testing is completed at no additional cost. If collected solar panels are deemed eligible for reuse, the customer receives partial reimbursement.

Pick-Up Date	Number of Panels	Reuse	Recycling
10/6/2025	58	29	29
11/13/2025	206	1	205
1/15/2026	100	8	92
4/2/2026	139	107	32
6/25/2026	188	0	188
TOTAL	**691**	**145**	**546**

Recycle 1234 collected a total of 691 solar panels from CCNB, originally collected from Marin County residents and installers participating in this pilot. Out of this total, 21% of panels were eligible for reuse, and 79% were recycled.

B. SOLAR PANEL REUSE PICK-UP

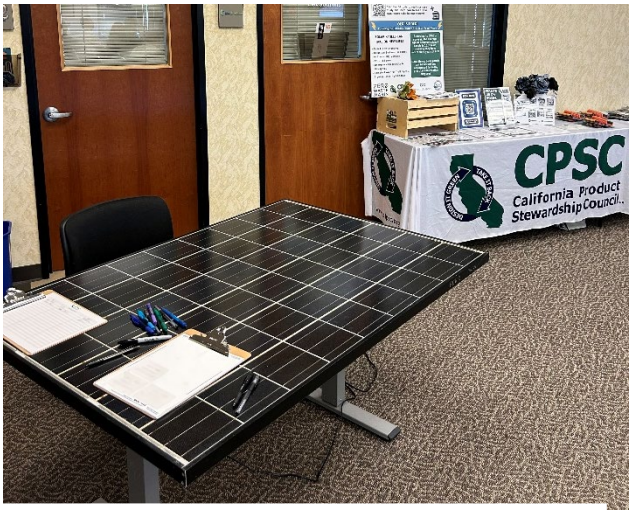
Marin County residents and installers can pick up working solar panels from the Conservation Corps North Bay (CCNB). To facilitate the program, CPSC created a survey application which was shared via social media, newsletters, and email. The survey was further promoted in the Marin Independent Journal, along with relevant educational content on solar panel reuse. Interested residents and installers can complete the survey to obtain free, used solar panels collected throughout the pilot. CPSC also contacted respondents to arrange pick-up of solar panels from CCNB. As of this report, four respondents have picked up a total of 26 solar panels for reuse.

To track the outflow of solar panels for reuse at CCNB, CPSC has generated a QR code displayed on each solar panel, which opens to a survey that records the number of solar panels, the panel's type, brand, age, and collects the respondents' contact information.

C. SOLAR PANEL TABLE REUSE CASE STUDY

Through this Phase, Reuse Alliance and Amy's Roofing & Solar published a reuse case study focused on converting a used solar panel into a table.

Reuse Alliance and Amy's Roofing & Solar presented their case study and conducted a demonstration of the reused solar panel table at CPSC and Zero Waste Marin's Solar Panel Reuse Education Fair event. CPSC promoted the publication on our website.



Picture: Reuse Solar Panel Table on display at the Solar Panel Reuse Education Fair

For a step-by-step guide, please read the full case study funded by CPSC and Zero Waste Marin. For a video version of this case study, visit: https://youtu.be/FyZ8MvfKDEI

III. AGRIVOLTAICS - MARKET FOR REUSE

Agrivoltaics, or "agri-solar," is the practice of co-locating solar panels and agricultural activities on the same land, allowing for dual use for both renewable energy generation and farming.

Previously, in Phase 2, CPSC and Zero Waste Marin published a microgrid case study and identified a school community garden as a potential site for an agri-solar project using reused solar panels.

Moving to the current Phase 3, and building on this momentum, CPSC and Zero Waste Marin launched a call for farm solar panel reuse projects in Marin County via social media, newsletters, and direct email. This initiative is offering eligible farms and gardens in Marin County free and low-cost access to five used solar panels that have been tested and deemed eligible for reuse. Selected projects will receive up to $5,000 in funding to assist with project installations. The funding may go towards well-pumps, electric fences, irrigation systems, and other non-residential dwellings. Out of the three farms that applied, one farm received funding and completed solar panel installation within this Phase.

A. GILARDI'S FAMILY FARM

Don Gilardi, owner of Gilardi's Family Farm, submitted a solar panel reuse application for his mobile poultry housing. Don worked with an installer of his choice, Ben Ielmorini from Rocky Hill Electric, to complete the project. Rocky Hill Electric is a San Rafael-based electrician. The solar panels used in this installation were panels collected through our pilot: 20 250-watt solar panels tested and deemed eligible for reuse from Recycle 1234. Don was interviewed by Desire to Inspire Studios, CPSC and Zero Waste Marin's contracted videographer.





IV. OUTREACH

To promote this project, CPSC has created two graphics which provide information on agrivoltaics solar panel reuse and installation in Marin County. Additionally, we have promoted an installer feedback survey. Lastly, CPSC completed and published an educational advertisement titled "Interested residents and installers can fill out this survey to obtain free, used solar panels collected throughout the pilot" in the Marin Independent Journal.

A. OUTREACH CONTENT

- Installer Feedback Survey Graphic
  - 7,855 Views
  - 149 Link Clicks
- Installer Feedback Survey
  - 1 installer response
- Solar Panel Reuse Education Fair Graphic (shown on right)
  - 35,751 views
  - 803 link clicks
- Solar Panel Reuse Education Fair Flier
- Farm Reuse Funding Application Graphic
  - 22,267 views
  - 261 link clicks
- Marin Independent Journal Email Newsletter
  - Email published 12/22/2025
  - Reached approximately 50,000 people
- Did You Know Solar Panel Education Slides (one shown on right)
- Shorter Form Content from Phase 2 Video
  - Katherine Rico Interview Clip Reel
  - Rick Wells Interview Clip Reel
- Bay Area Installer Postcard (shown below)
  - A total of 582 postcards mailed to all electric, roofing, and general contractors within Alameda and Marin Counties
- Bay Area Installer Survey Graphic
  - 50,906 views

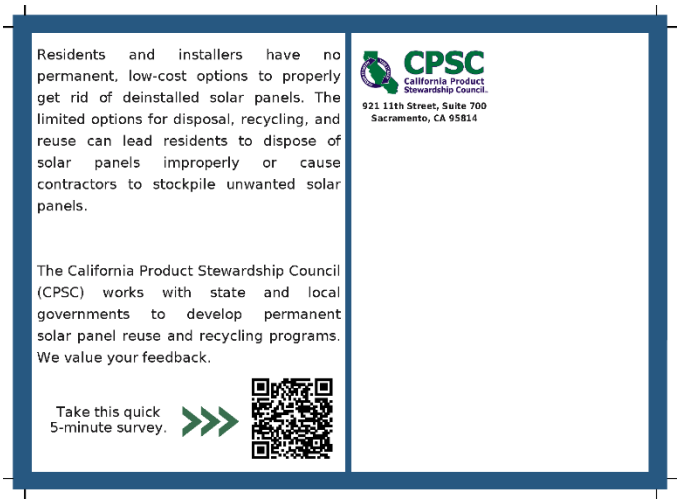




Photo Source: Santa Monica Solar Panel Collection (left). Zero Waste Marin (right)

- 653 link clicks





B. EDUCATIONAL CONTENT

- CPSC Solar Panel Curriculum Webpage
- Solar Panel Reuse Article - Environmental Research
  - This scientific article examines the current state of solar panel recycling in California and the need for policies that support reuse and recycling infrastructure to ensure affordable, sustainable end-of-life options for photovoltaic modules.
- Marin Independent Journal Article
  - This article highlights local solar panel reuse and repair leaders bringing success to the pilot, such as the Marin Builders Association, Quattro Solar, Recycle 1234, and Reuse Alliance.

V. IN-PERSON SOLAR PANEL REUSE EDUCATION FAIR

During Phase 3, in conjunction with Zero Waste Marin, CPSC planned and hosted a solar panel reuse education fair at the Marin Builders Association in San Rafael, CA. This event focused on the importance of reducing solar panel waste and emphasizing solar panel reuse, repair, and recycling in Marin County.

Speakers included: Phoebe Schenker from Reuse Alliance, Amy Atchley from Amy's Roofing and Solar, Kyle LaRue from the Conservation Corps North Bay, David Quattro

from Quattro Solar, Joanne Brasch from CPSC, and Katherine Rico from Zero Waste Marin.

The event held two solar panel demonstrations. Reuse Alliance and Amy's Roofing & Solar displayed their solar panel reuse table and walked through their case study. Furthermore, David Quattro, a local solar panel installer, conducted a solar panel testing demonstration outside with a deinstalled solar panel.



The event hosted 35 attendees consisting of installers, electricians, residents, students, local government, and non-profit organizations. Chine Ngbemeneh, a University of San Francisco graduate student, was the winner of the Jackery portable generator raffle giveaway. This educational event sparked engaging conversations and a chance for attendees to network and learn more about solar panels.

VI. ATTENDANCE AT EVENTS

CPSC attended and presented on solar panel policy and reuse at two waste-related events: Household Hazardous Waste Information Exchange in Citrus Heights and the North Bay Zero Waste Symposium.



Dr. Joanne Brasch, CPSC's Assistant Director, spoke at the 2026 North Bay Zero Waste Symposium on the issue of solar panel waste, CPSC's solar stewardship campaign, solar panel reuse case studies, and the pilot program with Zero Waste Marin.

Doug Kobold, CPSC's Executive Director, provided a legislative update at the NorCal Household Hazardous Waste Information Exchange. He touched on AB 864 (Ward), a bill that requires the department to institute a rulemaking to develop alternative management standards for solar photovoltaic modules that facilitate greater material recovery.

Furthermore, Dr. Brasch is set to present at Zero Waste Marin's Local Task Force meeting on July 9th, 2026. The presentation will highlight how CPSC advocates for the responsible disposal and regulation of hard-to-dispose-of materials, including solar panels and the accomplishments through Zero Waste Marin's solar pilot project.

VII. DESIGNING A PERMANENT PROGRAM

Throughout the pilot, input from installer surveys, project partners, and residents has led to the idea of establishing a permanent program in Marin County. Survey questions for local installers, such as "How can solar panel recycling be improved locally?" and "How do you manage solar panels that are still viable/can be reused?" have resulted in 13 responses indicating the lack of a permanent, accessible solar panel collection site and local reuse partner in Marin County.

Over the past decade, the number of building permits for solar panels has risen, with 6.4% of all permits in 2021 including solar installations—representing the median over that period. As these solar panels are replaced and taken down, this influx of decommissioned panels is expected to increase disposal costs over the next 5-15 years.

With no decommissioning or maintenance plans in place, County-owned and resident-owned solar panels lack a reliable, permanent location for disposal management. Therefore, as the number of solar panels being processed grows, Marin County's local government will require additional funding to prevent residents and installers from bearing the costs of drop-off and disposal. Policy measures will be necessary to lower the risk of rising program costs.

VIII. POLICY RECOMMENDATIONS

Going forward, CPSC and Zero Waste Marin aim to turn this pilot project into a permanent program that offers solar panel reuse and recycling at no cost to local installers and residents. Towards this, CPSC will engage CCNB to establish a permanent solar panel collection drop-off location for the County.

However, solar panel collection alone will not enable a permanent program that ensures reuse and recycling to the same standards as e-waste and other extended producer responsibility (EPR) programs, which track materials through final disposition. Education and emphasis on solar panel reuse and recycling must be integrated into the program to ensure proper management at end-of-life.

CPSC-led initiatives to create a solar panel EPR program at the state level can be seen through legislation such as AB 864 (Ward). If passed, this bill will allow for a more effective solar panel reuse and recycling system. However, it will not cover the costs to do so, nor will it provide the transparency for tracking to end markets. EPR policies are not merely collection programs, but regulatory mechanisms that mandate transparency and traceability. Local governments can successfully engage communities and collect solar panels but cannot scale specialized downstream processing on their own. EPR programs take the logistical and financial burden off individual counties by establishing centralized, high-volume processing hubs that unlock regional economies of scale. Therefore, in the absence of a state EPR program,

a local ordinance can be a way to prevent an expensive permanent program and offer protection.

Recommendations include:

- Require future large-scale solar installations to utilize solar panels that come with an industry-funded takeback program.
- Update future solar panel decommissioning plans to include reuse and recycling information, a catalog of funding sources, and preferred vendors.
- Require a recycling fee for future residential solar permits that funds a permanent program with the Conservation Corps and/or reuse/recycling partners.
- Require all licensed contractors working on solar to offer recycling services with a vendor that tests for reuse potential.

IX. NEXT STEPS

As this pilot continues for another cycle, CPSC and Zero Waste Marin will:

- Continue solar panel reuse and recycling education through social media graphics, newsletters, and upcoming professional videos
- Promote ongoing solar panel pick-up and reuse through various avenues of outreach: postcards, newsletters, direct emails/calls, and social media graphics
- Maintain solar panel pilot details on CPSC's solar stewardship webpage
- Coordinate and complete remaining reused solar panel farm installations
- Submit solar speaker proposal for Sacramento Energy Summit Conference