

Closing the Loop in the (Renewable) Energy Cycle: Decommissioning Considerations for Renewables

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Over the past 20 or 30 years, renewables have gained popularity and momentum, and governments and industry groups have actively tackled the new and emerging challenges associated with their project lifecycles. As some of the first-installed projects begin reaching the end of their useful life, though, the focus has started to shift to the back-end as project components, such as wind turbines and solar panels, require decommissioning. Due to the new technologies and new components involved in renewable projects, the quantities and types of waste streams are evolving, introducing new (or exacerbating existing) environmental and public health risks. Fortunately, recent developments offer helpful insights into potential approaches for addressing this challenge and ensuring the sustainability of renewable projects.

California Example: Streamlining Management of Solar Panel Waste

Taking the lead in the United States, the [California Department of Toxic Substances Control \(DTSC\)](#) announced that, effective Jan. 1, 2021, “California will be the first state in the nation to add hazardous waste solar panels to its universal waste program, a move intended to promote solar panel recycling and reuse and to keep them out of landfills.” Until this new [Regulation](#) comes into effect, solar panels that exhibit characteristics of hazardous waste must be managed as hazardous wastes and not as universal wastes.

By adding solar panels to California’s universal waste program, DTSC has simplified requirements for generators of solar panel waste on two levels. Firstly, generators will no longer be required to go through the process of determining whether the panels contain hazardous materials at such levels that they must be considered hazardous waste. Secondly, generators will be subject to the streamlined waste management requirements of the universal waste program, rather than the more rigorous hazardous waste requirements. In addition to basic handling and labeling requirements, the streamlined universal waste requirements include:

- **Accumulation Time:** Universal waste handlers can accumulate waste on-site for up to one year, whereas hazardous waste generators will typically only be able to accumulate waste on-site for 90, 180, or 270 days [depending on their hazardous waste generator](#) classification (i.e., Large Quantity Generator (LQG) or Small Quantity Generator (SQG))—note, California does not have a “Very Small Quantity Generator (VSQG) category). This means facilities will be able to arrange for less-frequent pickup and off-site transportation of solar panel waste, thereby reducing overhead costs.
- **Generator Classification:** Facilities will be able to exclude the weight of solar panel waste from their hazardous waste generation totals. Therefore, facilities that have historically been LQGs may be able to qualify as SQGs and take advantage of that classification’s less burdensome requirements.
- **Transportation:** Universal waste handlers are required to maintain basic shipping records of all universal waste shipments received at or sent from their facility. However, unlike LQGs and SQGs, universal waste is not required to be shipped with a manifest or by a hazardous waste transporter.

Generators of solar panel waste are not the only beneficiaries, though, as DTSC notes. By classifying solar panels as universal waste, DTSC estimates a total annual cost savings of [roughly \\$18 million](#) due to the streamlining of the collection, recycling, and treatment/disposal process, as well as total statewide benefits from this regulation totaling [more than \\$91 million](#). By engaging stakeholders, such as e-waste recyclers, DTSC found that vendors were interested in creating e-waste treatment facilities in California if solar panels could be managed as universal waste, and in fact, DTSC has already observed the creation of some such facilities.

Besides stakeholder engagement, another crucial step that California took was to obtain [U.S. Environmental Protection Agency \(EPA\) authorization](#), making the changes to its hazardous waste program federally enforceable. This makes the California example a potentially replicable approach for tackling the solar panel waste problem. Regulators and industry groups alike may wish to explore this approach for its potential environmental, economic, and social benefits. More information on other state-specific universal waste programs is available on EPA’s [U.S. State Universal Waste Programs](#) page.

Germany Example: Streamlining and Enforcing Management of Waste Batteries

Across the Atlantic, Germany is similarly taking the lead when it comes to electric vehicle (EV) technology and its associated environmental impacts. The [German Batteries Act \(BattG\)](#), which transposes Directive 2006/66/EC of the European Parliament and of the Council of Sept. 6, 2006 (the [Batteries Directive](#)), aims to minimize the negative impact of batteries and accumulators and waste batteries and accumulators. On Sept. 17, 2020, the German federal parliament (the Bundestag) passed a comprehensive amendment to the BattG, which will enter into force on Jan. 1, 2021, and which aims to streamline the collection and disposal of waste batteries and improve competition among companies.

Of particular note, [the amendment](#) replaces the existing common collection scheme for portable batteries, operated by the [GRS Batterien Foundation](#), with a new requirement for manufacturers to set up or participate in other manufacturers’ take-back schemes. Manufacturers must register with, and take-back schemes must be approved by the competent authorities. Without the requirement to use the common collection scheme, Germany anticipates improved competition among manufacturers, which, [as defined in the BattG](#), can include producers, importers, distributors, and/or their authorized representatives, making the requirement applicable to non-E.U. based businesses as well.

Parallel to this regulatory development, an important enforcement case has also been unfolding, with [Tesla potentially facing a \\$14 million fine](#) for its alleged failure to comply with take-back and recycling provisions of the current BattG with respect to end-of-life battery products. In particular, the UBA

states that Tesla has failed to meet the requirement that manufacturers of EVs take back the batteries they sell or else name a disposal partner. According to [Tesla's report to the U.S. Securities and Exchange Commission \(SEC\)](#) for the quarter ending Sept. 30, 2020, the notice and fine are "primarily relating to administrative requirements, but Tesla has continued to take back battery packs." Additionally, while Tesla recognizes it "cannot predict the outcome of this matter, including the final amount of any penalties," it has filed an objection and does not expect the matter "to have a material adverse impact" on their business.

While the outcome in the Tesla matter remains to be seen, the magnitude of the fine, paired with the amended BattG entering into force on Jan. 1, signals an increased focus on the EV industry and battery waste. Anyone placing batteries on the German market, including manufacturers based outside of the European Union, should be aware of these developments and ensure they comply with the applicable requirements.

What's Next?

The California and Germany examples are not unique. Researchers estimate that the U.S. will have [more than 720,000 tons of wind turbine blade material](#) to dispose of over the next 20 years. According to the [International Renewable Energy Agency](#), by 2050, the world will be generating about 6 million metric tons of new solar e-waste per year. With increasing dependence on renewable energy, including mandates for higher percentages of renewable generation, the sector's waste problem will continue to grow. Both government and industry groups, even individual companies, have the opportunity to play a significant role in paving the path forward. Clark Hill's attorneys can assist you along this path by providing detailed legislative, policy, and regulatory insights on this evolving issue. For further questions, please contact Clark Hill's [Environment, Energy, and Natural Resources \(EENR\)](#) and [Government and Regulatory Affairs \(GRA\)](#) Practice Leaders.