



## TCEQ REGULATORY GUIDANCE

---

Waste Permits Division

RG-660 • December 2025

# Requirements for Renewables Energy Component Recycling Facilities

House Bill 3229, passed by the 89th Texas Legislature, adds Chapter 376 to the Texas Health and Safety Code. This new law creates reporting requirements for facilities that recycle components of renewable energy systems, such as wind turbines, solar devices, and battery energy storage systems.

The purpose of this guidance is to explain how the law applies, what information must be reported to the Texas Commission on Environmental Quality (TCEQ), and how to prepare required cost estimates and financial assurance.

## ***Applicability***

A recycling facility that accepts, processes, or repurposes components for recovery of valuable materials from:

- **Wind Turbine Generators:** Including turbine blades, nacelles, towers, drivetrains, generators, magnets, power electronics, and cables.
- **Solar Energy Devices:** Including solar modules, junction boxes, transformers, inverters, racks or trackers, and cables.
- **Battery Energy Storage Systems:** Including battery cells, racks, containers, inverters, battery management systems, cooling and fire suppression systems, and cables.

## ***Definitions***

- **Recycling Facility:** A facility that accepts, processes, and repurposes components to recover valuable materials from wind turbine generator, solar energy device, and a battery energy storage system.
- **Unrecycled Components:** Components that are accepted by the facility for recycling that have not yet been recycled or used as a product. The term includes any components the facility has taken title to or assumed control of regardless of whether the components are located at the facility.
- **Wind Turbine:** A machine that converts wind energy into electrical energy, consisting of a rotor (blades and hub), nacelles and nacelles covers, drivetrains, magnets, generator, tower, and associated cables or power electronic control systems.
- **Solar Energy Device:** A solar energy collector or solar energy system that provides for the collection of solar energy or the subsequent use of that energy as thermal, mechanical, or electrical energy.

---

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY • PO BOX 13087 • AUSTIN, TX 78711-3087

TCEQ is an equal opportunity employer. The agency does not allow discrimination on the basis of race, color, religion, national origin, sex, disability, age, sexual orientation, or veteran status. In compliance with the Americans with Disabilities Act, this document may be requested in alternate formats by contacting TCEQ at 512-239-0010, or 800-RELAY-TX (TDD), or by writing PO Box 13087, Austin TX 78711-3087. We authorize you to use or reproduce any original material contained in this publication—that is, any material we did not obtain from other sources. Please acknowledge TCEQ as your source. For more information on TCEQ publications, visit our website at: [tceq.texas.gov/publications](https://tceq.texas.gov/publications)

How is our customer service? [tceq.texas.gov/customersurvey](https://tceq.texas.gov/customersurvey)

- **Battery Energy Storage System (BESS):** An installation of batteries and associated equipment used to store electrical energy for later use, including battery cells, racks, containers, inverters, battery management systems, cables, cooling systems, and fire-suppression components.

## ***Reporting Requirements***

Each recycling facility covered by Chapter 376 must submit an annual report to TCEQ by Jan. 15 of each year by using the form.

If the facility has no unrecycled components to report for the period, the owner must still report to TCEQ by Jan. 15. The *Renewable Energy Component Recycling Reporting Form* (TCEQ-21031) has a section for the owner to confirm there are no unrecycled components stored at their recycling facility.

Facilities that have stored unrecycled components must calculate their inventory of unrecycled components before Jan. 15 to ensure adequate time for report preparation and to obtain the financial assurance mechanism.

## ***Required Report Elements***

- **Detailed Inventory:** A tabular summary of the unrecycled components on site, broken down by component type (e.g., wind blade count, solar panel count/mass, battery system mass/capacity). Quantify the unrecycled materials by weight (tons), volume (cubic yards), or count, as applicable. The inventory should include:
  - All components accepted by the facility (wind, solar, or battery) that have not yet been fully recycled. Not fully recycled means the material is still undergoing processing or is awaiting off-site shipment.
  - This includes all materials to which the facility has taken title or assumed control, regardless of whether the components are currently located at the physical recycling facility.

The table below provides guidance on how to **count unrecycled components** for inventory purposes. For each component type:

**Count (Unrecycled/Stored):** Include items that are unrecycled, and awaiting recycling, disposal, or further processing.

- **Do Not Count:** Exclude items that have already been sent off-site, sold, or used as a product/input material on-site.

**Table 1 – Example Inventory Counting for Unrecycled Components**

<i><b>Component Type</b></i>	<i><b>Count (Unrecycled/Stored)</b></i>	<i><b>Do not Count</b></i>
Solar Modules (Frames)	Aluminum frames waiting to be recycled or sized for further processing.	Aluminum frames sent off-site as scrap metal, as a product, or used as a product/input material on-site.
Cables	Cables that are yet to be segregated, chopped, or recycled.	Shredded metal sent off-site as a scrap metal, sold as a product, or used as a product/input material.
Turbine Motors or Generators	Whole turbine motors (or generators) waiting for disassembly and material separation (e.g., copper, steel).	Separated components from turbine motors sent off-site as scrap metal, or as a product, or used as product/input material on-site.
Blades (Wind Turbine)	Whole or cut wind blades or chopped fiberglass material awaiting compounding or further size reduction.	Fiberglass material sent off-site or used as a product/input material on-site.

1. **Estimated Timeline:** An estimated timeline for the final recycling or disposal of the components listed in the inventory. Timeline for the final recycling or disposal of inventory components should clearly address when the disposal or recycling will begin. This timeline must clearly reference the specific components from the inventory description it covers. It should specify the estimated timeline, for example the month when the disposal or recycling process is scheduled to begin.
2. **Cost Estimate:** The total estimated cost to recycle or dispose of those components, prepared by a licensed Texas professional engineer who is independent of the facility.
3. **Financial Assurance:** Facilities must secure and submit evidence of financial assurance equal to 100% of the calculated cost estimate amount with the report.

## ***Cost Estimate Preparation***

The cost estimate is the basis for the required financial assurance amount and should represent the cost TCEQ would incur to hire a third party to complete the required recycling or disposal activities in the event the facility owner fails to do so.

The cost estimate must be prepared and certified by an independent third-party professional engineer licensed in Texas. Independent professional engineer means that the engineer is not an employee of the facility, or is not affiliated with the facility, and is hired to provide an independent assessment. The professional engineer should

attest that the estimate is accurate and reflective of current market rates for third-party closure.

TCEQ recommends calculating or measuring the inventory of unrecycled components before Jan. 15 to give the owner enough time to have a cost estimate prepared by an independent third-party professional engineer and obtain financial assurance.

The cost estimate should be itemized and include costs associated with the proper and final disposition of the entire unrecycled inventory including:

- **Personnel Costs:** Labor required for final staging, cutting, dismantling, or loading or unloading of components.
- **Equipment Rental Cost:** Equipment necessary to load or unload all components for transport.
- **Transportation Costs:** Current market cost to transport all materials from the facility to an authorized recycling or final disposal destination.
- **Recycling/Disposal Fees:** Current tipping fees or processing costs charged by the final destination facilities (e.g., landfill, incinerator, specialized recycler).

All assumptions, unit costs (e.g., \$/ton, \$/mile), and calculations used to reach the final estimated amount should be clearly documented and submitted as part of the annual report. Third-party cost estimating tools may be used to prepare cost estimates. Cost estimating tools may include published trade journals (such as RS means), books, software, and contractor bids.

**Table 2 – Example Worksheet for Cost Estimates**

<i>Activities</i>	<i>Unit Cost (Rate)</i>	<i>Quantity (Hours/Loads/Tons)</i>	<i>Cost Estimate</i>
Labor for Final Staging, Cutting, Dismantling, and Loading			\$
Equipment Rental			\$
Transportation of Components to Recycling or Disposal Facility			\$
Specialized Recycling Fees (per ton/unit)			\$
Landfill Tipping Fees (per ton/cubic yard)			\$
Estimated Total			\$

## ***Financial Assurance Requirements***

The purpose of financial assurance is to guarantee that funds are available to cover the proper cleanup and removal of unrecycled components at an off-site recycling or disposal facility if the facility stops operating. This requirement protects the environment and the public from improper disposal or abandoned materials.

The required amount of financial assurance must be equal to 100% of the cost estimate. Evidence of the financial assurance mechanism must be submitted with the facility's first annual report. TCEQ will review the cost estimate to ensure it includes reasonable recycling and disposal costs, and the financial assurance instrument to confirm it matches the cost estimate. Financial assurance is adequate if it is an approved mechanism as described below in this guidance document, the mechanism wording is correct, and it matches or exceeds the dollar amount of the certified cost estimate.

In subsequent years, submit evidence of the updated financial assurance mechanism when the cost estimate changes.

### ***Allowable Financial Assurance Mechanisms***

Owners may use one or a combination of the following acceptable financial assurance mechanisms:

1. **Parent Company Guaranty:** Must be from a parent company with a minimum investment-grade credit rating issued by a major domestic credit rating agency.
2. **Letter of Credit:** An irrevocable standby letter of credit in favor of TCEQ.
3. **Bond:** A surety bond, performance bond, or payment bond in favor of TCEQ.

A facility owner is not required to establish a separate, entirely new financial assurance mechanism if the facility already maintains a financial assurance mechanism for a different authorized recycling program or activity. If utilizing an existing mechanism, it must be revised or amended to guarantee coverage for the recycling or disposal costs of renewable energy components outlined in this new reporting requirement.

### ***Proper Financial Assurance Documentation***

The required wording of the mechanisms can be reviewed and downloaded from [30 TAC Chapter 37, Subchapter D](#). The applicable rule citations detailing the exact wording for various mechanisms include: 30 TAC 37.311 (Payment Bond), 30 TAC 37.321 (Performance Bond), 30 TAC 37.331 (Irrevocable Standby Letter of Credit), and 30 TAC 37.361 (Corporate Guarantee). The mechanism is listed as the "attached graphic" in each section. Download, print, or copy text for the mechanism and do not change any wording in the mechanism, except to replace the instructions in parenthesis with relevant information and then delete the parenthesis. Inform financial institutions not to add or delete language.

Please be advised that TCEQ cannot accept the financial assurance mechanism if it does not incorporate the exact language as set out in the rules.

All required financial assurance documentation must be submitted with the report which is due by Jan. 15. Facilities should follow all requirements for continuous coverage and mechanism wording as specified in [30 Texas Administrative Code Chapter 37](#).

## ***Record Keeping***

Facilities should maintain records for a minimum of three years in addition to any local, state, or federal recordkeeping requirements. Records include manifests, bills of lading, quantities of components recycled on-site or off-site, and waste disposal records. These records help demonstrate a facility is properly recycling its renewable energy components.

## ***Notification Requirements for Recycling***

Complying with these reporting requirements does not exempt recycling facilities from complying with other rules, including those found in 30 TAC Chapters 37, 327, 328 330, 335 and 350.

In addition to the new reporting requirements, facilities that receive and recycle industrial waste or hazardous waste must notify TCEQ 90 days before their recycling operation starts. Notification is made by completing and submitting form [TCEQ-0524, Receiver Notification Form for Recycling Hazardous or Industrial Waste](#), by email to [ihwper@tceq.texas.gov](mailto:ihwper@tceq.texas.gov) or by using the STEERS reporting system. It is necessary to re-notify TCEQ if there are substantial changes in the composition of the wastes being recycled, the method of recycling, or the end products resulting from recycling activities. This requirement applies to hazardous waste generators, industrial waste generators, and facility operators that recycle industrial or hazardous wastes.

More details can be found in the [regulatory guidance document RG-240, Can I Recycle Some of My Industrial or Hazardous Wastes?](#)

Facilities that receive and recycle material from municipal sources must notify TCEQ 90 days before their recycling operation starts. Notification is made by completing and submitting form TCEQ-20049, “Notice of Intent (NOI) to Operate a Municipal Solid Waste Recycling Facility,” by email to [MSWPER@tceq.texas.gov](mailto:MSWPER@tceq.texas.gov). If facilities make substantial changes to the NOI—which include the change in feedstocks and materials received, the method of recycling, or the amount of materials stored—then they must re-notify TCEQ to address those changes.

More details for recycling from municipal sources can be found at [Recycling: Am I Regulated?](#)

## ***Penalty for Noncompliance***

A person may not accept, process, or repurpose components for compensation unless they are in compliance with Chapter 376. TCEQ may impose an administrative penalty of up to \$500 a day for each violation.

## ***Contact***

For further guidance or clarification on these requirements, please contact the TCEQ Waste Permits Division at (512) 239-2335 or [IHWPER@tceq.texas.gov](mailto:IHWPER@tceq.texas.gov).