Regulatory and Policy Considerations for the Reuse and End-of-Life Management of Solar and Batteries

Taylor L. Curtis, Esq.
Regulatory & Policy Analyst
National Renewable Energy Laboratory

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## Reuse Regulatory Considerations

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Interconnection Regulations</strong></td>
<td>State and local regulations that govern how PV and BES systems connect to the electric grid, which may restrict the reuse of PV equipment and LiBs in certain grid-tied applications</td>
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<tr>
<td><strong>Fire and Building Regulations</strong></td>
<td>State and local regulations that govern the design, materials, and quality of buildings and structures that connect to PV systems and stationary BES systems, which may restrict the reuse of PV equipment in certain grid-tied and off-grid applications</td>
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<tr>
<td><strong>Electrical Regulations</strong></td>
<td>State and local regulations that govern electrical safety, design, installation, and inspection of PV systems, PV equipment, BES systems, and LiBs, which may restrict the reuse of PV equipment and LiBs in certain grid-tied and off-grid applications</td>
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<tr>
<td><strong>Industry Certification Standards</strong></td>
<td>Voluntary international industry standards that provide safety and reliability guidance for the reuse of LiBs</td>
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### Consideration Description Application

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<td><strong>Solid and Hazardous Waste Laws and Regulations</strong></td>
<td>Mandatory requirements that vary across jurisdictions, which govern the generation, handling, storage, transport, treatment, recycling, and disposal of non-hazardous and hazardous solid wastes, which may include PV equipment, large-format LiBs, and manufacturing scrap accumulated or stored before recycling, or disposal and those being recycled or disposed of</td>
<td>Recycle, Disposal</td>
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<tr>
<td><strong>Hazardous Materials Transport Regulations</strong></td>
<td>Mandatory federal requirements that govern the transportation of hazardous materials in interstate commerce (i.e., across state lines), which may include PV equipment (e.g., modules) and large-format LiBs</td>
<td>Reuse, Recycle, Disposal</td>
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<tr>
<td><strong>Hazardous Waste Export Regulations</strong></td>
<td>Mandatory requirements that govern U.S. interstate commerce shipping and transport of hazardous materials, which may include PV equipment (e.g., modules) and large-format LiBs being shipped or transported across state lines</td>
<td>Reuse, Recycle, Disposal</td>
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<td><strong>Penalties for Non-Compliance</strong></td>
<td>Civil and criminal penalties administered for violating a jurisdiction’s hazardous waste and/or hazardous materials regulations</td>
<td>Reuse, Recycle, Disposal</td>
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</tbody>
</table>

NREL reports: [A Circular Economy for Lithium-Ion Batteries Used in Mobile and Stationary Energy Storage](https://www.nrel.gov/docs/fy21osti/69617.pdf), and [A Circular Economy for Photovoltaic System Materials](https://www.nrel.gov/docs/fy21osti/69727.pdf)
PV Reuse and End-of-Life Management Policies


Enacted Policies
- PV Module Manufacturer Takeback
- Commission to Study PV System Decommissioning, PV Module Reuse, and PV Module End-of-Life Management Options
- Commission to Study PV Module End-of-Life Management Options
- PV Module Universal Waste Classification

Proposed (Pending) Legislation
- Proposed Legislation – Commission to Study PV Module Reuse and PV Module End-of-Life Management Options
- Proposed Legislation – Commission to Study PV Module and BOS Equipment End-of-Life Management Options
- Proposed Legislation – PV Module Manufacturer Takeback

State-Led Initiatives
- Working Group to Study PV Module and BOS Equipment Reuse and End-of-Life Management Options
LiB Reuse and End-of-Life Management Policies

NREL reports: A Circular Economy for Lithium-Ion Batteries Used in Mobile and Stationary Energy Storage

Enacted Policies
- Commission to Study EV Battery Reuse and EoL Management Options
- Commission to Study Stationary Battery Reuse and EoL Management Options

Proposed (Pending) Legislation
- Commission to Study Stationary Battery Reuse and EoL Management Options

State-Led Initiatives
- Commission to Study EV and Stationary Battery Reuse and EoL Management Options


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