



# End-of-life Management of Photovoltaic Systems

Stakeholder Workgroup

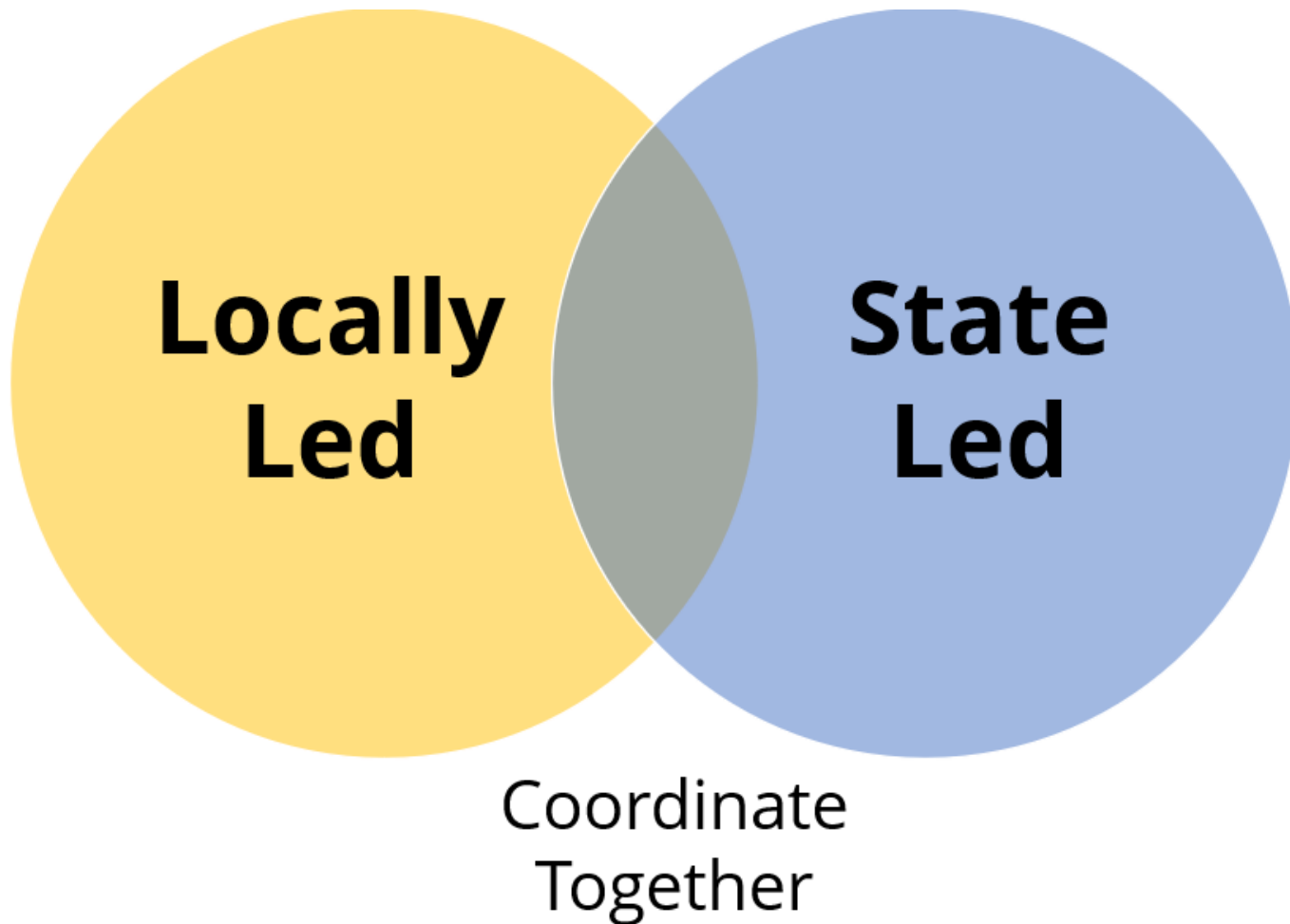
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South Carolina Department of Health and Environmental Control

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# Budget Proviso

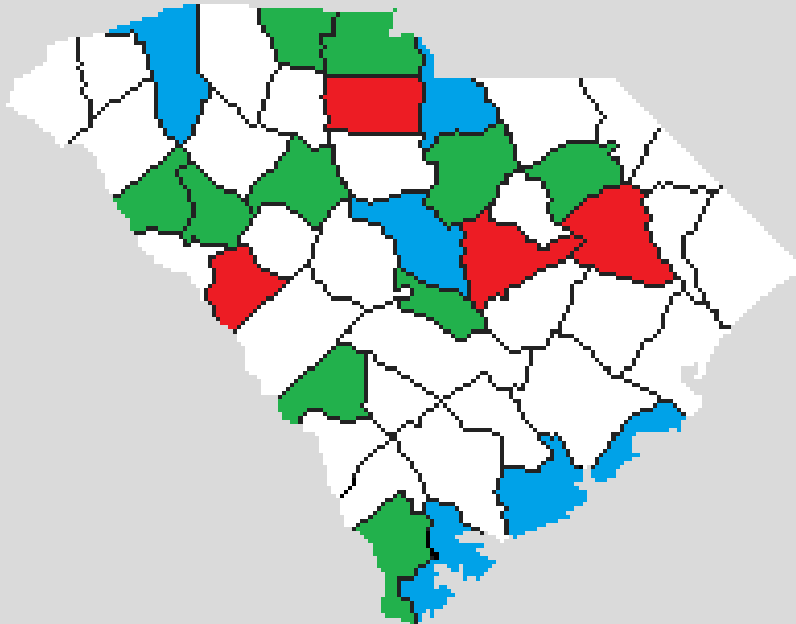
- The department shall submit regulations to guide in:
  - the management of end-of-life photovoltaic modules and energy storage system batteries on solar projects
  - the decommissioning of solar projects in excess of thirteen acres- to include partial refurbishing and complete decommissioning



# Decommissioning in SC

- 19 counties w. ordinances to regulate PVMs
- 14 counties w. decommissioning requirements for large-scale projects
- 10 ordinances require financial assurance
- No statewide requirements for decommissioning large-scale projects

# Decommissioning in SC



Counties with Solar Regulations:  
Charleston, Beaufort,  
Greenville, Richland, Lancaster

Counties with Decommissioning  
Requirements: Florence,  
Sumter, Edgefield, Chester

Counties with FA +  
Decommissioning Requirements:  
York, Cherokee, Abbeville,  
Greenwood, Newberry,  
Calhoun, Barnwell, Darlington,  
Jasper, Kershaw

# Decommissioning ordinance template

- Define decommissioning
- Specify whether requirements apply to all facilities, or certain size, type, etc.
- Specify when and to whom a decommissioning plan should be submitted (for example, submitted to planning office, filed with Register of Deeds, etc.)
- Specify financial assurance requirements
- Specify timeframe for completion of decommissioning

# Decommissioning ordinance template: (CONTINUED)

- Specify decommissioning plan requirements
- Identify elements that need removal and management
- Specify site restitution requirements
- Provide guidance for making cost estimates
- Specify allowable financial mechanisms
- Define what constitutes completed decommissioning
- Define abandonment and detail allowable actions upon abandonment; i.e. revocation of FA, initiating decommissioning, levying fines, liens, etc.

# Decommissioning plan components

- Specify when decommissioning is to be initiated
- Description of any landowner agreement (e.g., lease)
- ID the party responsible for decommissioning
- Description of removal, disposal, recycling activities
- Description of site restoration
- Cost estimates for decommissioning
- Proposed FA mechanism



# Financial assurance for decommissioning

- Specify in what instances FA will be required
- Outline how cost estimates are to be calculated
- Specify at what point in time FA is required, i.e. 100% at start-up or allowable phase-in?
- Specify allowable mechanisms
- Specify approval process for submitting FA proposal
- Specify by whom FA will be accessed if needed

# Nonfinancial mechanisms

- **Abandonment and Removal Clause.** Zoning enforcement via the imposition of civil penalties and fines, and/or by imposing a lien on the property to recover the associated costs
- **Special Permit Application.** Mandates through zoning code that decommissioning plan be submitted by the solar developer; allows the local government to place a lien on the property to pay for the costs of removal and remediation
- **Temporary Variance/Special Permit Process.** If not renewed, the site would no longer be in compliance with local zoning, and the locality could use zoning enforcement authority to require the removal of the facility

## What are the critical elements of a decommissioning ordinance?

- Texas ordinance to review
  - Estimated cost/FA
    - Reassess (or first assess) value 10 years and every 5 years
    - Method vs. value for FA
  - Decommissioning defined
  - State siting board holds plans
- PSC review 75 megawatts or over (Siting Act)
  - Gap for smaller facilities (5-10 acres per megawatt)

# Needs & Questions

- How do we help with education & outreach on this issue?
  - DHEC's role
  - Energy Office
  - Uniformity is key in sharing to private sector and public
  - Solar Energy Assn. with consistency

# Example 1 – Barnwell County

An applicant must include a decommissioning plan that describes the anticipated life of the solar farm, the estimated decommissioning costs in current dollars, the method for ensuring that funds will be available for decommissioning and restoration, and the anticipated manner in which the solar farm project will be decommissioned and the site restored. Following a continuous six-month period in which no electricity is generated, the permit holder will have six months to complete decommissioning of the solar farm. Decommissioning includes removal of solar panels, buildings, cabling, electrical components, and any other associated facilities below grade as described in the decommissioning plan. Prior to issuance of a Building Permit, the applicant must provide the County with a performance guarantee (surety or performance bond, certified check or irrevocable letter of credit) in the amount of \$50,000 or 125% of the estimated decommission cost minus the salvageable value, whichever is greater. Estimates shall be determined by an engineer licensed to practice in South Carolina. If the salvage value is determined to be greater than the cost of decommissioning then the performance guarantee will be deemed unnecessary. If the developer can provide proof in the form of a notarized statement or like document that a performance guarantee for decommissioning is part of the land lease or purchase agreement, then the performance guarantee will be unnecessary.

## Example 2 – Chester County

it is the responsibility of the company managing and/or owning the Solar Farm, whether the property is outright owned by the company managing or owning the Solar Farm or whether property is being leased, to remove within twelve months all obsolete or unused systems to include the concrete pads, solar panels, wiring and all related equipment necessary for the operation of the Solar Farm;

## Example 3 – KY Model Template

(i) Decommissioning. Other than as specifically approved by the Board of Adjustment or other authority having jurisdiction upon application and notice, decommissioning shall begin no later than twelve (12) months after a Ground Mounted SES has ceased to generate electricity or thermal energy:

1. If the Ground Mounted SES was a permitted use without a conditional use permit, all structures and facilities associated with the SES shall be removed within six (6) months of the beginning of decommissioning. All materials shall be recycled or otherwise reused to the extent reasonably practicable and the disturbed areas shall be reclaimed, revegetated, and restored consistent with the zoning classification of the property.
2. If the Ground Mounted SES was allowed under a conditional use permit, the SES shall be decommissioned according to the decommissioning plan approved in the Conditional Use Permit.



# Example 3 – KY Model Template

9. A decommissioning plan prepared by a registered professional engineer, and updated every seven (7) years, containing the following:

- a. The anticipated life of the project and defined conditions upon which decommissioning will be initiated;
- b. The estimated decommissioning cost, including removal of the SES and related foundations, pads, underground collector lines and roads, and the salvage value of any equipment in current dollars and the calculations supporting the decommissioning estimate. The estimated salvage value of the material using current, publicly available material indices and/or firm quotes from a decommissioning or recycling company experienced in the decommissioning of SES, shall be provided. The Board of Adjustment or other authority having jurisdiction shall consider the salvage value identified in computing the amount, if any, of financial assurance required under subsection e.
- c. The manner in which the project will be decommissioned, including provision and a timetable for the removal of all structures and foundations, and for the revegetation and restoration of the property to its original condition or a condition compatible with the zoning of the parcel(s);
- d. The party responsible for decommissioning;
- e. A performance bond, letter of credit, or other financial assurance payable to [Board of Adjustment or applicable governmental unit], sufficient to cover the net costs identified in subsection 9b and to assure that decommissioning of the site can be achieved by a third party in the event that a permittee defaults in that obligation, which financial assurance shall be provided prior to commencement of construction;
- f. A copy of any lease containing specific agreements regarding decommissioning with the landowner;



# Comparative Overview

Barnwell	Chester	Kentucky
Decommission: Removal and Site Restoration	Decommission: All Solar Equipment Removed	Conditional Use submit a Decommissioning Plan
		Permitted Use: Removal Required
Financial Assurance Required	No Financial Assurance	Conditional Use Financial Assurance Required;
		Permitted Use—No Financial Assurance

# Additional questions, needs & next steps

- Marlboro zoning and setback
- SC-APA updates on additional counties and zoning
- Arrange a site visit
- DHEC draft model template for group to review
- Webpage updates for solar stakeholder groups
  - Legislative report



Questions?

South Carolina Department of Health and Environmental Control  
Healthy People. Healthy Communities.



# CONTACT US

Jana White – Section Manager - (803) 898-1346 - [whitejm@dhec.sc.gov](mailto:whitejm@dhec.sc.gov)

Tim Wilbur – Reg Writer – (803) 898-2375 – [wilburtd@dhec.sc.gov](mailto:wilburtd@dhec.sc.gov)

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