

# State Considerations for Solar Energy End-of-Life Management

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**I** ILLINOIS

Illinois Sustainable Technology Center

PRAIRIE RESEARCH INSTITUTE

Image: University of Illinois

# University of Illinois Prairie Research Institute

PRI is the home of the state's five scientific surveys, which collectively have served the state for more than 165 years.

- IL State Archeological Survey IL
- State Geological Survey
- IL State Natural History Survey
- IL State Water Survey
- **IL Sustainable Technology Center (ISTC)**



Image: University of Illinois

ISTC began its **Solar Module Recycling Initiative** in 2017 as we saw a need to address this issue after the passing of the 2016 Illinois Future Energy Jobs Act.

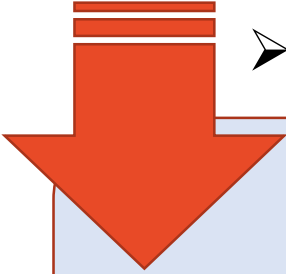
# 2016 Illinois Future Energy Jobs Act

25%  
Renewable  
Energy Goal  
by 2025

Currently  
~120 MW  
Solar Installed

By 2025  
~2,000 MW of  
Solar to be  
Installed

- Illinois has ~120 MW of solar = **~360,000 modules**
- **~6 million additional solar modules** installed by 2025
- **~120,000 Metric Tons** of solar modules installed by 2025

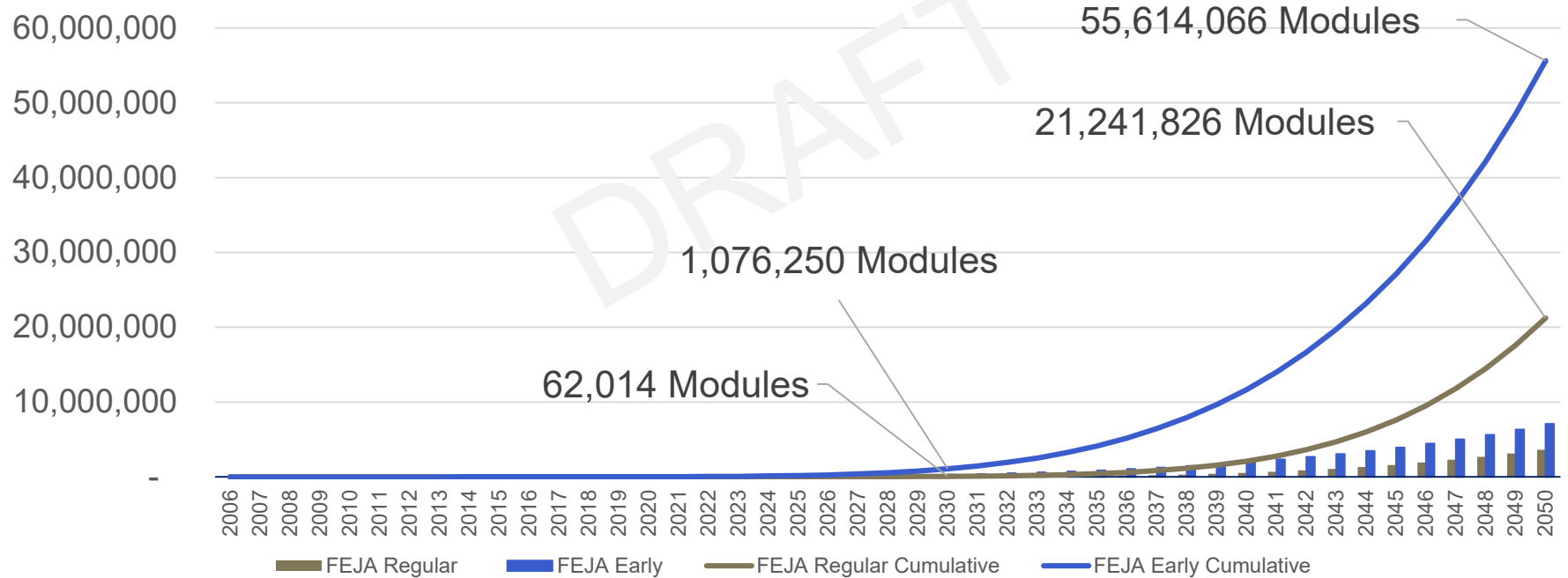


## 2019 IL SB2132/HB3624 Clean Energy Jobs Act

- Would expand IL Renewable Energy Mandate to 100% by 2050
- Will provide mechanism to install more than 40 million solar modules across the state

# Illinois PV End-of-Life Future Energy Jobs Act Projections

## EOL PV Modules



Source: ISTC. DRAFT estimates based on IRENA and IEA's waste model in [End-of-Life Management: Solar Photovoltaic Panels](#) & IL FEJA goals.

# State Concerns for End-of-Life Solar Management

- Many broken or damaged solar photovoltaic (PV) modules find their way to landfills rather than being recycled.
- One concern is modules will fill up limited landfill space.
- Some PV waste can include heavy metals such as silver, copper, lead, arsenic, cadmium, and selenium that at certain levels and may be classified as hazardous wastes.
- Finite resources in used in PV modules are slowly being depleted and will be lost in the future (e.g., gallium and indium).

Image: [down2earthmaterials.ie](https://www.down2earthmaterials.ie)

# State Challenges for End-of-Life Solar Management

- Ensuring recycling policy/interventions that do not impact solar deployment. Requirements of a program must not overburden one industry stakeholder or consumers of solar energy.
- Funding mechanisms are necessary in order to handle waste responsibly. Costs considerations must include:
  - Life-cycle assessments (e.g. changes in solar deployment projections, changes in technology materials, repowering, etc.)
  - Responsibilities of manufacturers & developers/installers, and the impacts on consumers
  - Infrastructure & collection logistics for recycling & reuse
  - Recycling/reuse program administration
  - Protection of funding for a long-term PV recycling & reuse program

# State Strategies for Creating a Circular Solar Energy Economy

- Early engagement of national and local stakeholders should include:
  - Installers
  - Manufacturers
  - Distributors
  - Recyclers
  - Energy & recycling market experts
  - State agencies
  - Educational institutions
  - State & community advocacy groups
  - Recycling & solar associations
- Impacts of policies, regulations, and landfill bans
- Preparing opportunities for a diverse workforce

Jennifer Martin

Illinois Sustainable Technology Center

[jm33@illinois.edu](mailto:jm33@illinois.edu)