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OPTIMAL SOLAR SITING FOR MARYLAND

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OPTIMAL SOLAR SITING FOR MARYLAND

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OPTIMAL SOLAR SITING FOR MARYLAND

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Determining Optimal Solar Siting Pilot for Baltimore County and City

Susan Minnemeyer, Vice President for Technology
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Supported by the Valleys Planning Council
Renewable Portfolio Goal

• 50% of electricity generated from renewable sources by 2030
  • 14.5% carve-out for solar energy

• By 2028, Maryland will produce 9,000 GWh/year of electricity from Solar
  • We need 6 times our current capacity in 8 years to meet the RPS goal

Source: EPA Greenhouse Gas Equivalencies Calculator
How much solar energy is needed?

- Baltimore County and City, estimated share
  - 1,967 GWh/year based on electricity consumption
  - 18% of statewide goal

- Are there enough optimal solar sites to reach this goal?
Land Use Tradeoffs

Ground-mounted solar competes with desirable land uses, for food production and environmental services.

Conversion of prime farmland for solar energy development competes with land needed for food production.

Loss of forest and ecologically sensitive lands undesirable for environmental protection and climate mitigation & resilience.
Solar in the built environment

Enhances commercial and residential properties

Reclaim degraded lands, landfills, industrial sites

Solar parking canopies: shade, cooling, charging

Equity: access to solar energy, employment opportunities
Workflow

• Potential sites
  • Pass legal screening (zoning, protected areas)
  • Pass technical screening (proximity to electrical grid)

• Scoring
  • Analyzed for environmental, equity and efficiency criteria
  • Identification of opportunities on degraded sites

• Optimal and preferred sites
  • Optimal sites are in the built environment or on already degraded lands
  • Among ground-mounted sites not on degraded lands, preferred sites solar avoid key tradeoffs
Results

Optimal solar sites for Baltimore County and City (acres)

<table>
<thead>
<tr>
<th>Type</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking</td>
<td>10,515</td>
</tr>
<tr>
<td>Rooftop</td>
<td>22,214</td>
</tr>
<tr>
<td>Degraded lands</td>
<td>1,116</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>33,845</strong></td>
</tr>
</tbody>
</table>

![Optimal solar sites](image)
What % of optimal sites must be viable to reach goal?

- Energy generation from optimal site
- Sites to meet goal

Energy generation potential from optimal sites

- Total: 22,789 GWh/year
- Baltimore County and City share: 1,997 GWh/year

...7.9% of optimal sites must prove viable to reach RPS goal
Recommendations

• Prioritize optimal sites

• Avoid prime farmland, forest and ecologically sensitive lands

• Incentives, policies are needed to encourage optimal siting
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