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PV-SMaRT Solar Farm Runoff Calculator Version 3.1

An innovative spreadsheet-based runoff calculator to estimate stormwater runoff from ground-mounted solar photovoltaic sites for pre-construction as well as post-construction site-specific conditions.

Soil Texture	Clay Loam	***BLUE CELLS REQUIRE USER INPUT***	
Soil Depth (inches)	36	***MAROON CELLS REPRESENT TOOL OUTPUTS***	
Bulk Density (g/cm^3)	1.4		
Vegetation Present	Newly Established Pollinator	Runoff Curve Number	66.0
Are Solar Panels Present?	YES	24-Hr Precip Event (inches)	10.00
Panel Width (feet)	10	Expected Runoff (inches)	5.70
Panel Spacing (feet)	25		
Array Orientation	Follows slope contours		
Percent Slope	5		

This tool has been updated to Version 3.1!

There is a demo of the tool freely available to download on the bottom of the page.

IP Status: Copyrighted

Applications

- Estimation of stormwater runoff CN and runoff for the purposes of obtaining general construction or operating and management permits for solar PV development.

Technology Overview

A runoff curve number (CN) and runoff calculator has been developed to estimate stormwater CN and runoff at ground solar photovoltaic (PV) sites by accounting for: 1) Soil and topographic characteristics (soil texture, soil depth, soil bulk density, slope); 2) Surface cover (row crop, turf, pollinator habitat, etc); 3) Disconnected impervious surfaces associated with solar panel design (panel spacing and orientation); and 4) Climatic factors (precipitation).

Phase of Development

TRL: 8-9
Software has been developed and is ready to be used.

Technology ID
2023-053

Category
Express License
Engineering & Physical Sciences/Design Specifications
Software & IT/Simulation & Modeling

View online page

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

Please contact our office to share your business' needs and learn more. For technical inquiries, please reach out to David Mulla (mulla003@umn.edu).

Researchers

- **David Mulla** Professor, Department of Soil, Water, and Climate