Using Prevention through Design to Improve Worker Safety During Installation of Solar Systems on Solar-Ready Houses

Prevention through Design (PtD) to Make Solar-Ready Houses Safe for Solar Workers

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Overview

Solar-ready designs have become a standard in new construction, and installations of residential rooftop solar systems have increased exponentially over recent years, surpassing 1 million by 2019. This kind of construction often exposes solar installers to hazards involving roofing, electrical and mechanical work, yet current research has rarely considered the safety of these workers.
To help address those hazards, a previous Small Study by this research team identified seven key Prevention through Design (PtD) attributes: roofing material, roof slope, roof accessories, panel layout, fall protection system, lifting method, and electrical system. As an extension of the previous study, this new study used interviews and a survey with industry professionals, as well as case studies of existing solar-ready houses, to develop a PtD design checklist and Building Information Modeling models, which will help make solar-ready houses safer for solar workers.

Key Findings

- Current solar-ready codes and requirements focus on optimizing energy production by securing zones for the future installation of a solar system but lack sufficient consideration of the safety of those who will install the system.
- There are seven key Prevention through Design (PtD) elements, divided into one of three categories, that can improve safety for workers:
  - ***Solar Zone Features***: Solar Zone Area, Solar Zone Material, and Solar Zone Pitch
  - ***Installation Features***: Fall Protection and Roof Access
  - ***Electrical Features***: Conduit and Inverter
- The study developed a PtD design checklist that includes recommendations for each of these three categories, as well as three Building Information Modeling models that provide examples of solar-ready houses with design components included in the checklist.
- This study provides evidence that PtD can improve solar installer safety by proactively eliminating safety hazards and mitigating risk.

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