# Risks Perceptions Associated with Solar Energy Installations: Survey Study

THE UNIVERSITY OF RHODE ISLAND

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### INTRODUCTION

The goal of this survey study is to capture and understand installers' perception of the occupational health and safety risks associated with solar photovoltaic installation work. Our research purpose is not to regulate or provide citations, but to understand installers conditions, and perspectives regarding solar installation safety. This survey includes questions about:

- 1. Installation type
- 2. Safety risk perceptions (severity and likelihood of risks)
- 3. The conditions that aggravate occupational injuries
- 4. Demographics Questions

# SIGNIFICANCE

Occupational injuries result in loss of income, productivity, discomfort, pain, and

death [1], [2]. There is a lack of formalized reporting and verification of solar worker accidents data

> The frequency and [3].

associated cause of injuries during PV installation work is unclear [3].

The demand for solar installers is increasing rapidly to meet national clean electricity goals [4].

# COMMON SOLAR SAFETY RISKS INCLUDE:

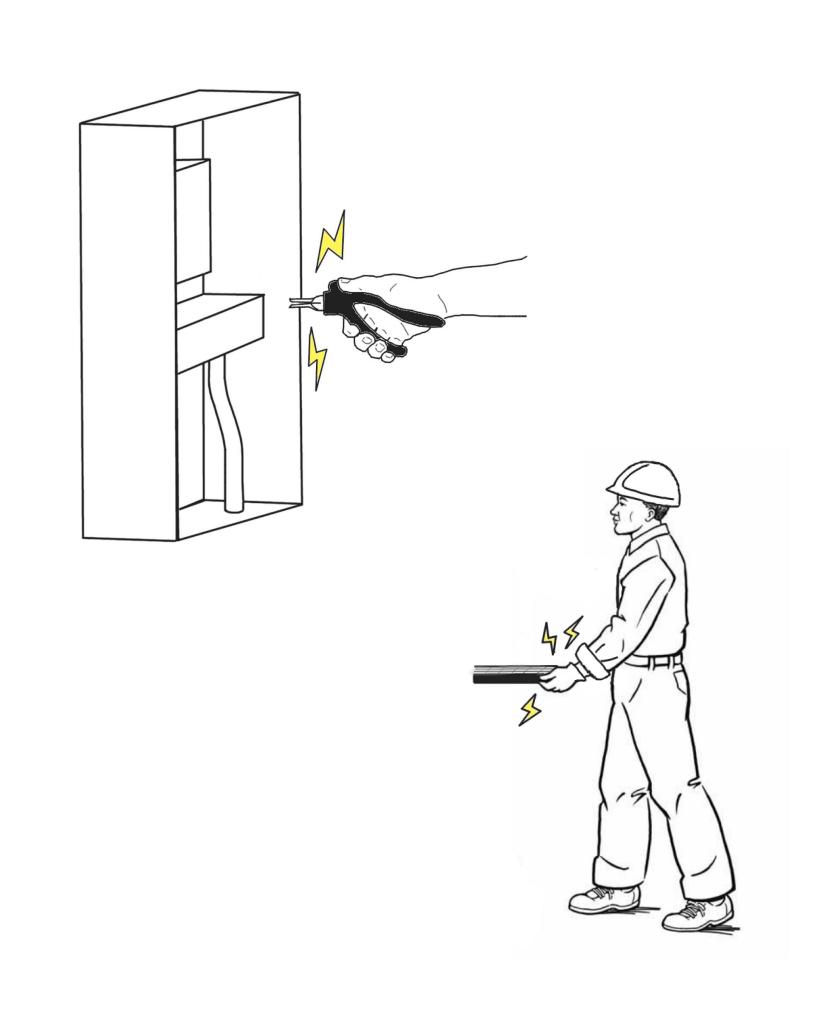
# Musculoskeletal Disorder (MSD) Risks

Sprains, strains, and soft tissue injuries [2],[4],[5].

Adapted from: [4], [5]

### **Electrical Risks and Hazards**

Exposure to shocks, burns and arc flash from electrical components and wiring [7].



Adapted from: [5]

Falls from Elevated Working Surfaces

75 % of fatal falls in construction involve ladders, roofs and scaffolding [6].



Adapted from: [6]

### HOW TO PARTICIPATE

- ★ Any solar installer or professional is invited to participate in this online survey.
- ★ Survey is available from June 22nd July 20th.
- ★ Chance to win \$100 Amazon gift card (online raffle).
- **\*** Participate in the survey using this link or QR code: https://uri.co1.qualtrics.com/jfe/form/SV ebcGllGthHMVrJs

### **Survey Details**

- 4 The survey will take less than 15 minutes to complete.
- All the information you provide will be confidential.
- Any published results will be summaries in which no individuals' answers can be identified.

This research has been approved by the University of Rhode Island Institutional Review Board. Please contact Dr. Gretchen A. Macht: macht@uri.edu with any questions.

# CONCLUSION

As the demand solar installers continues to increase, the results of this research can provide a deeper understanding of the occupational safety risks, and aggravating factors installations (from the installers during perspective). This research can further inform solar safety professionals, as they implement safety protocols to ensure safety and productivity on-site.

### ACKNOWLEDGMENTS

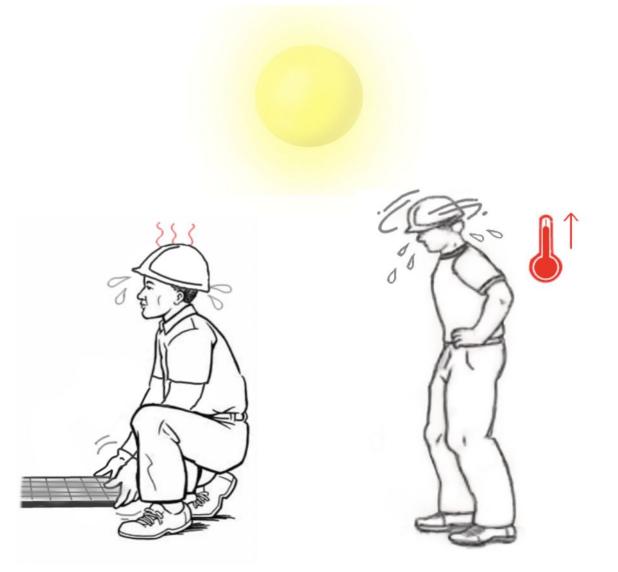
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### REFERENCES

- [1] Oregon Solar Energy Industries Association. (2006). Solar Construction Safety. https://www.coshnetwork.org/sites/default/files/OSEIA\_Solar\_Safety\_12-06.pdf
- [2] The National Institute for Occupational Safety and Health. (2013). Simple solutions for home building workers. https://www.cdc.gov/niosh/docs/2013-111/default.html
- [3] Sovacool, B. K., Kryman, M., & Laine, E. (2015). Profiling technological failure and disaster in the energy sector: A comparative analysis
- of historical energy accidents. *Energy*, 90, 2016–2027. https://doi.org/10.1016/j.energy.2015.07.043 [4] Interstate Renewable Energy Council. (2021). National Solar Jobs Census
- 2020.https://irecusa.org/wp-content/uploads/2021/07/National-Solar-Jobs-Census-2020-FINAL.pdf [5] Albers, J.T. & Estill, C.F. (2007). Simple solutions: Ergonomics for construction workers (NIOSH Publication No. 2007-122) [6] Dong, X. S., Jackson, R., Varda, D., Betit, E., & Bunting, J. (2019). Trends of Fall Injuries and Prevention in the Construction Industry.
- [7] White, J. R., & Mike Doherty (2017). Hazards in the Installation and Maintenance of Solar Panels. IEEE. 10.1109/ESW.2017.7914834 [8] Samaniego-Rascón, D., Silva, M. C. G. da, Ferreira, A. D., & Cabanillas-Lopez, R. E. (2019). Solar energy industry workers under climate change: A risk assessment of the level of heat stress experienced by a worker based on measured data. Safety Science, 118, 33–47. https://doi.org/10.1016/j.ssci.2019.04.042



Heat stress can result in heat related illnesses such as cramps, exhaustion, and strokes [8].



Adapted from: [5]