IBR Digital Supply Chain Gap Analysis and Recommendations

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S2G Solar Supply Chain Workshop

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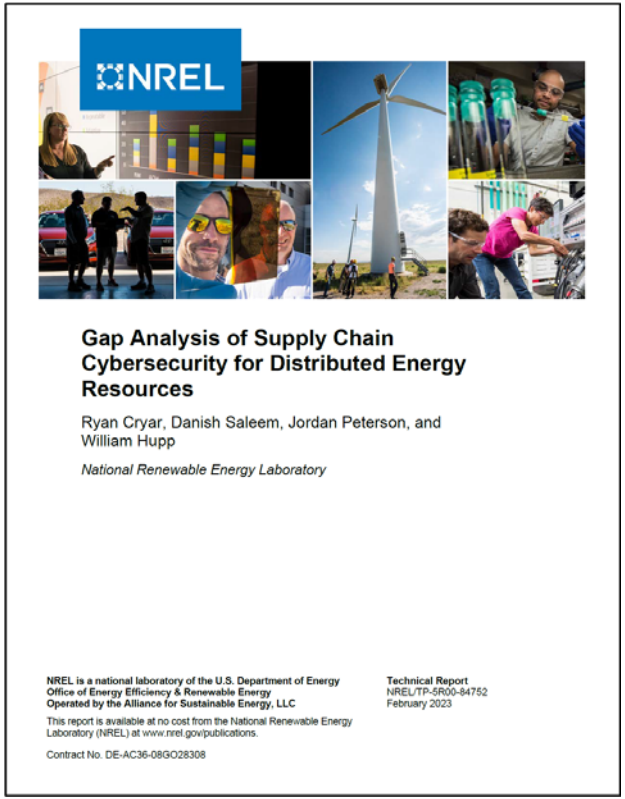
Introduction

- Presidential Executive Order 14017 for supply chain cybersecurity
- The Securing Solar for the Grid (S2G) project supported research for supply chain cybersecurity through:
  - Performing gap analysis of current cybersecurity landscape of distributed energy resources (DER)
  - Creating recommendations for the digital supply chain cybersecurity of solar photovoltaics
  - Engaging with academia, national laboratories, and industry to address and understand digital supply chain challenges

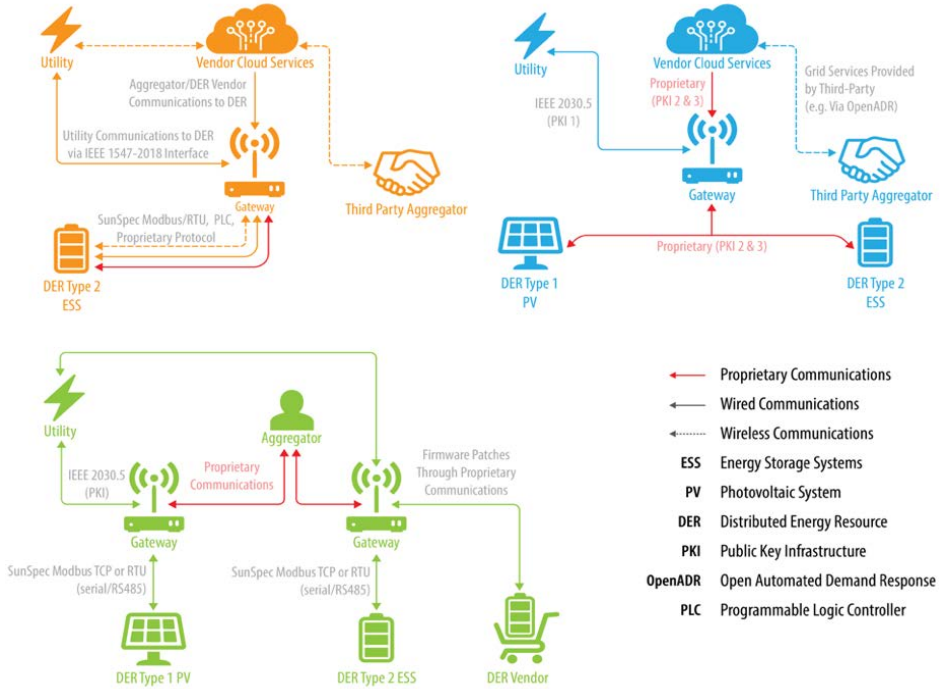
Gap Analysis

- *Gap Analysis of Supply Chain Cybersecurity:*
  - Addresses the landscape of the digital supply chain
  - Drafts the ideal state of the digital supply chain
  - Provides recommendations to bridge gaps between the current and ideal
- Primary gaps stem from challenges related to open-source software, standards, and where to apply best practices.



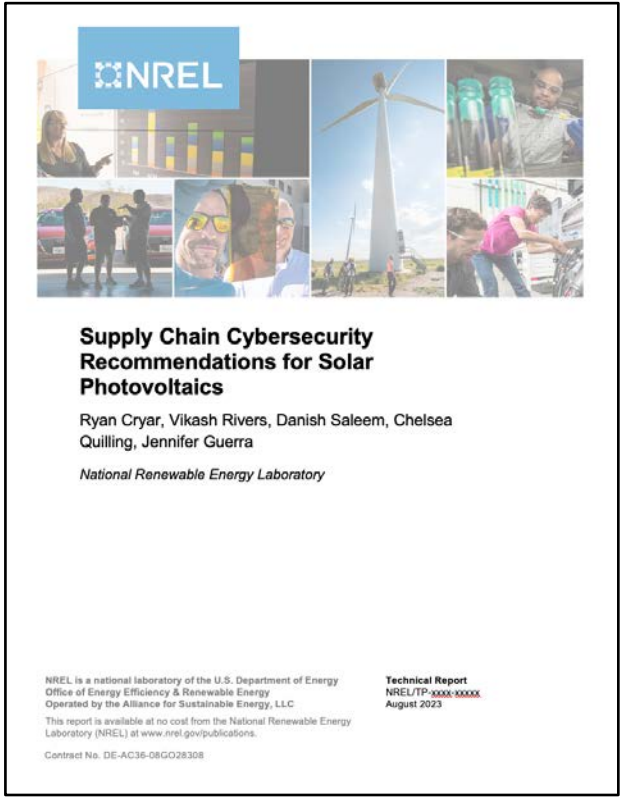
Gap Analysis cont.

- Software guidance:
  - Where to apply best practices
  - Continuous monitoring
  - Open source
- Legacy hardware:
  - Secure updates and lack of update support
- Standards and recommendations:
  - Interoperability
  - Role and responsibility delineation
- Distributed supply chains:
  - Heterogenous
  - Connected devices
- Who owns what part of the risks?



Synthesizing Recommendations

- *Supply Chain Cybersecurity Recommendations for Solar Photovoltaics:*
  - Follows prior work
  - Addresses practices found and adapted from NERC, NIST, and NATF
  - Provides down-selected recommendations that could apply to supply chain cybersecurity for solar photovoltaics
  - Focuses on short, clear language that can be testable and quantified
- Publication released on NREL's website.



Synthesizing Recommendations cont.

The report includes:

- Recommendations that range from governance to implementation
- Language on which stakeholders the recommendation apply to
- Acquisition practices informing ownership and supply chain traceability
- Guidance on managing risk throughout the supply chain lifecycle

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Example Recommendations

- **Recommendation 30**: Through a secure portal, vendors should provide customers with a vulnerability disclosure report, including the analysis and findings describing the impact that a reported vulnerability has on a product as well as plans to address the vulnerabilities. The vulnerability disclosure report should be signed with a trusted, verifiable, private key that includes a time stamp of the signature. (Adapted from NIST SP 800-161r1 RA-5; NATF Energy Sector Supply Chain Risk Questionnaire RISK-08)

- **Recommendation 31**: Vendors should establish a separate notification channel for customers in case a vulnerability arises that is not included in the vulnerability disclosure report. (Adapted from NIST SP 800-161r1 RA-5; NATF Energy Sector Supply Chain Risk Questionnaire VULN-06, VULN-07)

Concluding thoughts

- Strengthening supply chain cybersecurity is a large undertaking and an ever-evolving problem
- Continuously monitor and assess downstream suppliers and your own practices
- Leverage industry engagement through working groups to continue the conversation and improve visibility into challenges

Photo by Dennis Schroeder, NREL 22168

Thank You!

Let’s work together!

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