



Addressing Regulatory Challenges to Tribal Solar Deployment: Abbreviated Final Technical Report

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1 National Renewable Energy Laboratory

2 Midwest Tribal Energy Resources Association

3 Renewable Northwest

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**Technical Report
NREL/TP-7A40-86133
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Final Technical Report (FTR)

Cover Page

a. Federal Agency	U.S. Department of Energy	
b. Award Number	36471	
c. Project Title	Addressing Regulatory Challenges to Tribal Solar Deployment	
d. Recipient Organization	National Renewable Energy Laboratory	
e. Project Period	<i>Start:</i> 4/1/2020	<i>End:</i> 3/31/2023
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Laura A. Beshilas
Signature of Certifying Official

5/23/2023
Date

1. **Acknowledgement:** This material is based upon work supported by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) under DE-FOA-0002064 Number 2064-1638.
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3. **Project Summary:** Tribal land in the United States represents approximately 2% of the country's total landmass and holds more than 5% of the solar photovoltaic potential (Doris, Lopez, and Beckley 2013). Though many Tribes have explored options to install solar photovoltaic (PV) generation capacity on their land, regulatory hurdles have often prevented them from doing so. The National Renewable Energy Laboratory (NREL) and the Midwest Tribal Energy Resources Association (MTERA) partnered on this 3-year project, Addressing Regulatory Challenges to Tribal Solar Deployment. The project sought to unlock Tribal solar potential by bringing together Tribal, regulatory, utility, and other stakeholders to articulate key barriers to Tribal solar PV adoption and develop replicable solutions.
4. **Project Objectives and Outcomes:** This project brought Tribal, regulatory, utility, and other stakeholders together to identify the regulatory barriers that challenge Tribal solar projects and work together to develop solutions to address them.

Project Outcomes:

This project resulted in a guidebook ([available online](#)) consisting of three parts:

1. **Regulatory Barriers and Solutions:** thirteen barriers and associated short and long-term solutions identified during the project.
2. **Case Studies:** eleven case studies, with examples of tribal solar deployments of policy solutions.
3. **Issue Briefs:** six "issue briefs" developed for a non-tribal audience, with details on issues that are uniquely or specifically relevant to solar deployment on tribal land.

Stakeholder Engagement:

Stakeholder engagement was integral to the success of the project. More than 600 individuals from all targeted stakeholder groups participated. Stakeholder engagement throughout the project was conducted in three main phases:

1. **Information Gathering:** NREL and MTERA engaged with stakeholders to gather information and shape the guidebook content through a baseline questionnaire, 10 listening sessions, and 75 one-on-one conversations.
2. **Mid-Project Engagement and Guidebook Development:** Mid-project engagement focused on ensuring the project team accurately communicated the barriers and recommended solutions in the draft guidebook through presentations at five conferences, six listening sessions, reviews by four tribal experts, and a mid-project questionnaire.
3. **Guidebook Review and Training:** NREL and MTERA presented the project to the Seminole Tribe of Florida Renewable Energy Conference and the Just Energy Transitions working group and hosted one-on-one conversations to share information about the project. The significant amount of federal and state funding available for Tribal energy projects during the final stage of the project resulted in limited availability from many of the stakeholders who were actively engaged during earlier phases. Tribal energy practitioners understandably focused on funding opportunities rather than the project. The project team created summary documents to communicate findings more quickly with the stakeholders.

Project Milestones:

The project milestones, according to the Technical Work Plan, were as follows:

1. Commitment by tribal, regulatory, and utility partners to participate in the project
2. Engagement of mid-project working group and evaluation of capacity
3. Collection of case studies for analysis and inclusion in the guidebook
4. Development of tribal-specific material for solar permitting and interconnection capacity building
5. Development of materials for utility and regulatory stakeholders detailing tribal perspectives on permitting, land control, and sovereignty
6. Publication of draft guidebook review
7. Outreach and training for stakeholders
8. Final publication of the guidebook, training materials, and a case study on divergent stakeholder working groups
9. A final report on capacity building interviews will be produced for DOE. MTERA will deliver their strategy for long-term maintenance to DOE.

COVID-19 Pandemic Challenges:

The COVID-19 pandemic posed many challenges to the project including:

- Much of the planned engagement with Tribes, utilities, and regulators was meant to be conducted in person. The pandemic prevented any travel or in-person engagement for a majority of the project.
- Tribes were hit especially hard by the pandemic, reducing capacity for engagement.
- Many Tribal energy professionals and Tribal leaders did not have time to engage with the project because COVID-19 was more pressing.
- Pandemic-related stimulus funding also reduced Tribal staff availability to participate in the project.

The pandemic led to project modifications including:

- Virtual workshops, listening sessions, one-on-one calls, and in-depth interviews (rather than in-person workshops)
- Reduced cost share due to virtual workshops.

A positive result of the pandemic challenges was that the virtual nature of the project enabled nationwide participation in all events for those with the resources (broadband) to engage.

5. **Path Forward:** Stakeholder engagement with Tribes, regulators, and utilities emphasized that Tribes need to grow their energy-related technical capacity. Future work should focus on partnering with Tribes to grow internal capacity, which could help Tribes more easily understand (and therefore overcome) the other barriers identified in the project.

6. **Inventions, Patents, Publications, and Other Results:**

Publications:

- **American Solar Energy Society Conference 2022 Proceedings:** Beshilas, Laura, Belding, Scott, Wadsack, Karin, Weber, Elizabeth, Anderson, M. J., Dillon, Kelsey, Drescher, Sara, Glavin, Jake, and Martinez, Reuben. 2022. “Addressing Regulatory Challenges to Tribal Solar Deployment: Preprint.” United States. <https://www.nrel.gov/docs/fy22osti/82725.pdf>. OSTI: 1874251
- **American Solar Energy Society Conference 2022 Presentation:** Beshilas, Laura, Glavin, Jake, and Weber, Liz. 2022. “Proposed Solutions to Regulatory Barriers to Tribal Solar Development.” United States. <https://www.nrel.gov/docs/fy23osti/82868.pdf>. OSTI: 1903184
- **National Tribal and Indigenous Climate Conference 2022 Presentation:** Beshilas, Laura, and Dillon, Kelsey. 2022. “Proposed Solutions to Regulatory Barriers to Tribal Solar Development.” United States. <https://www.nrel.gov/docs/fy23osti/83815.pdf>. OSTI: 1903179
- **Seminole of Florida Renewable Energy and Sustainability Conference:** Beshilas, Laura, Glavin, Jake, and Wiggins, Daniel Jr. 2023. “Potential Solutions to Regulatory Barriers to Tribal Solar Development.” United States. <https://www.nrel.gov/docs/fy23osti/84768.pdf>. OSTI: 1973100
- **Guidebook:** Beshilas, Laura, Belding, Scott, Wadsack, Karin, Weber, Elizabeth, Anderson, M. J., Dillon, Kelsey, Drescher, Sara, Glavin, Jake, and Martinez, Reuben. 2023. “Addressing Regulatory Challenges to Tribal Solar Deployment.” United States. <https://www.nrel.gov/docs/fy23osti/85741.pdf>. OSTI: 1968249

- **Key Findings Report:** Beshilas, Laura. 2023. “Addressing Regulatory Challenges to Tribal Solar Deployment: Key Findings.” United States. <https://www.nrel.gov/docs/fy23osti/85723.pdf>. OSTI: 1970733
- **Summary Slide Deck:** Beshilas, Laura. 2023. “Addressing Regulatory Challenges to Tribal Solar Deployment Summary Slides.” United States. <https://www.nrel.gov/docs/fy23osti/86047.pdf>. OSTI:1973211

Presentations and Workshops:

- NetRoots Nation Conference, “Energy Sovereignty through Renewable Energy” (August 2020)
- Renewable Northwest Annual Meeting Equity in Energy session, “Regulatory Barriers to Tribal Solar Deployment” (September 2020)
- Stakeholder listening sessions (November 2020)
- Midwest Tribal Energy Resources Association Conference (March 2021)
- Stakeholder listening sessions (July 2021)
- DOE Office of Indian Energy webinar (August 2021)
- Tribal Utility and Energy Infrastructure Legislation for Indigenous People working group (August 2021)
- Boise State Energy Policy Institute Conference, “Policy Solutions to Accelerate Deployment of Solar Projects on Tribal Land” (October 2021)
- New Mexico Tribal Solar Economic Forum, “What is Community Solar” presentation (October 2021)
- New Mexico Tribal Solar Economic Forum, “Financing Community Solar Projects” presentation (October 2021)
- Midwest Tribal Energy Resources Association Conference (March 2022)
- American Solar Energy Society Conference, “Proposed Solutions to Regulatory Barriers to Tribal Solar Deployment.” (June 2022)
- Just Energy Transitions Working Group Presentation, “Proposed Solutions to Regulatory Challenges to Tribal Solar Deployment” (July 2022)
- Tribal and Indigenous Climate Conference, “Proposed Solutions to Regulatory Barriers to Tribal Solar Deployment” (August 2022)
- Workshop series with Western Resource Advocates, “Regional Trends in Electricity Markets and Solar Development in Tribal Communities” (September 2022)
- Stakeholder Listening Sessions (November 2022)
- Affiliated Tribes of Northwest Indians Climate Change Summit, “A Just Transition for Tribal Nations” panel member (November 2022)
- Seminole Tribe of Florida Renewable Energy and Sustainability Conference, “Potential Solutions to Regulatory Barriers to Tribal Solar Development” (February 2023)

7. **Project Team:** As noted above, more than 600 people participated in the project. The table below lists team members and their roles.

Key Participant	Institution	Role
M.J. Anderson	MTERA	Conduct Tribal outreach, case study interviews, and MTERA board engagement.
Scott Belding	NREL	Manage stakeholder engagement, conduct research, and analyze questionnaires.
Laura Beshilas	NREL	Serve as lead author on guidebook, conduct stakeholder outreach, develop presentations, and manage MTERA relationship.
Carri Chapman	MTERA	Conduct Tribal outreach and MTERA board engagement.
Kelsey Dillon	MTERA	Manage Tribal outreach and MTERA board engagement, provide comments on guidebook content.
Sara Drescher	MTERA	Provide guidebook content.
Jake Glavin	MTERA	Manage Tribal outreach and MTERA board engagement, conduct other stakeholder engagement, and provide content for the guidebook.
Reuben Martinez	Renewable Northwest	Conduct Tribal outreach and case study interviews.
Sherry Stout	NREL	Review guidebook and provide project oversight.
Karin Wadsack	NREL	Serve as project PI, lead stakeholder engagement and the pivot of engagement due to COVID-19.
Elizabeth Weber	NREL	Conduct stakeholder outreach, provide comments on guidebook content, and manage budget and MTERA subcontract.

8. References

Doris, E, A Lopez, and D Beckley. 2013. "Geospatial Analysis of Renewable Energy Technical Potential on Tribal Lands." DOE/ IE-0013. National Renewable Energy Laboratory. [https:// www.nrel.gov/docs/fy13osti/56641.pdf](https://www.nrel.gov/docs/fy13osti/56641.pdf).