



Colorado Technology Primer for Economists and Social Scientists

Cooperative Research and Development Final Report

CRADA Number: CRD-17-00682

NREL Technical Contacts: Barbara O'Neill, Michael Coddington and Doug Arent

**NREL is a national laboratory of the U.S. Department of Energy
Office of Energy Efficiency & Renewable Energy
Operated under Contract No. DE-AC36-08GO28308**

**Technical Report
NREL/TP-7A40-96545
September 2025**

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Cooperative Research and Development Final Report

Report Date: August 8, 2025

In accordance with requirements set forth in the terms of the CRADA agreement, this document is the CRADA final report, including a list of subject inventions, to be forwarded to the DOE Office of Scientific and Technical Information as part of the commitment to the public to demonstrate results of federally funded research.

Parties to the Agreement: The Board of Trustees of the Colorado School of Mines

CRADA Number: CRD-17-00682

CRADA Title: Colorado Technology Primer for Economists and Social Scientists

Responsible Technical Contacts at NREL:

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Sponsoring DOE Program Office(s):

Office of Energy Efficiency and Renewable Energy (EERE), Strategic Programs Office

Joint Work Statement Funding Table showing DOE commitment:

No Shared Resources.

Estimated Costs	NREL Shared Resources a/k/a Government In-Kind
Year 1	\$.00
Year 2, Modification #1	\$.00
Year 3, Modification #2	\$.00
Year 4, Modification #3	\$.00
TOTALS	\$.00

Executive Summary of CRADA Work:

NREL will assist the Colorado School of Mines (Mines) in supporting a series of one-week training workshops. This proposed training program will be two, week-long summer school sessions in each of the next two years to help give early career economists and social scientists a solid introduction and grounding on the technical components of the electrical distribution system.

CRADA benefit to DOE, Participant, and US Taxpayer:

- Assists laboratory in achieving programmatic scope, and/or
- Enhances the laboratory's core competencies, and/or
- Uses the laboratory's core competencies, and/or
- Enhances U.S. competitiveness by utilizing DOE developed intellectual property and/or capabilities.

Summary of Research Results:

Colorado School of Mines, in close collaboration with NREL, hosted 28 PhD students and recent graduates during two one-week sessions held in July and August 2017. The Phase I primer classes were ultimately successful according to feedback by the participants; the program came in under budget; and the number of participants was greater than initially proposed. CSM and NREL leads learned from the experience, and noted areas that will be improved for the 2018 sessions. The Principal Investigator from CSM and co-lead from NREL noted that the participants interacted with each other not only during the classroom time, but also during extracurricular activities, which is seen as a metric of success in that it may lead to future collaboration.

Task 1: NREL will provide advice and guidance on the training workshop agenda

The Colorado School of Mines (CSM) and the National Renewable Energy Laboratory (NREL) jointly developed an agenda for a technology primer for economists and social scientists. The agenda was iterated multiple times to convey great detail to the students about issues related to the electricity grid, renewable energy systems, integration of distributed energy resources and larger alternative energy resource systems, as well as many related subjects.

Task 2: NREL will organize and provide staff experts to provide lectures during the workshops. Exact lectures and timing to be agreed upon with CSM in advance of finalizing the workshop agenda.

This program leveraged the expertise within CSM and NREL and also brought in regional experts in electricity and related sectors. The primer objective was to bring doctoral students and recent graduates of doctoral programs into CSM and NREL and to immerse them in technology-based topics for a more in-depth knowledge of electricity and renewable energy systems. These topics were finalized in Task 1 and Task 2 lined up speakers to cover the material. Speakers from CSM and NREL made up the bulk of the sessions in the primer, but additional speakers from several industry organizations also spoke and interacted with the participants.

Task 3: NREL will provide tours of the NREL facilities, in particular the Energy Systems Integration Facility (ESIF), and offer case study overviews to four participants.

Classroom activities took place at the CSM campus, and the participants participated in a detailed tour of the NREL laboratories, in particular the ESIF Facility.

Task 4: NREL will advise and make introductions and help secure outside speakers for the workshop, as needed, and in mutual agreement with CSM.

NREL provided its own staff as subject matter experts and leveraged its industry network to bring in multiple speakers from local utilities and national academic institutions.

This report serves to meet the requirement for the CRADA Final Report with preparation and submission in accordance with the agreement.

References: None

Subject Inventions Listing: No subject inventions under this CRADA

ROI#: None