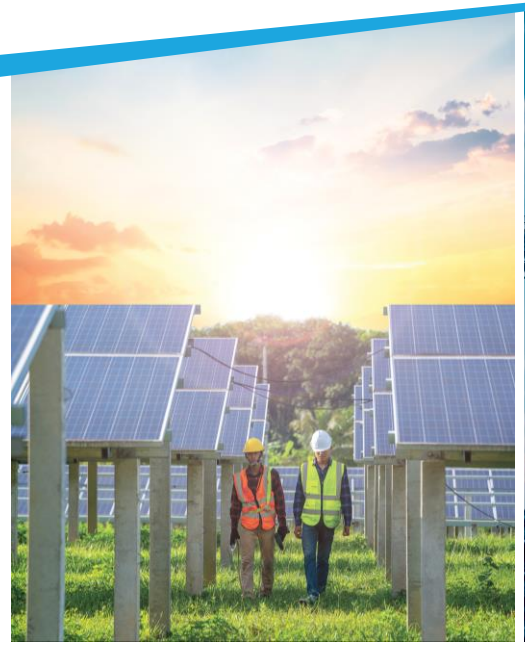
Office of Clean Energy Demonstrations






Clean Energy Demonstrations on Mine Land Workshop

Regina Galer
Program Manager, Clean Energy Demonstrations on Mine Land
Office of Clean Energy Demonstrations (OCED)
October 11, 2022

Program Vision

Community Benefits

Job Creation

GHG Reduction

Demonstrate innovative mine land conversion to replicable clean energy projects

Program Details

- **$500M**, available through 2026
- Up to **five (5) clean energy projects** total, with at least two (2) projects being solar
- Emphasis on **economic development** and **environmental justice**, lasting beyond chosen projects
- Recipients will be selected in competitive solicitation
- Estimated application opening date: **2023**

Program Details

"Clean Energy Project" demonstrates 1 *or more* of the following technologies:

- Solar
- Micro-grids
- Geothermal
- Direct air capture
- Fossil generation with carbon capture, utilization, and sequestration
- Energy storage, including (but not limited to) pumped-storage hydropower and compressed air
- Advanced nuclear

Mine Land is defined as:

- Land subject to SMCRA and Mining Law of 1872
- Includes:
  - Active, inactive, and abandoned
  - Public and private land
  - Coal and hard rock

Source: EPA.gov

Workshop Goals and Objectives

Stakeholders:

- Gain thorough understanding of the Clean Energy Demonstration Program on Current and Former Mine Land
- Opportunity to interact with each other and OCED staff to discuss ideas, challenges, and solutions

Office of Clean Energy Demonstrations:

- Feedback from stakeholders on opportunities, drivers, challenges, and potential impacts of clean energy development on mine land
- Forum for stakeholder networking
- Stakeholder input for program design

Source: Electrek

CLIMATE CHANGE STORIES

Mining the Sun: How Nevada and West Virginia are Reclaiming Former Mine Lands with Solar Panels

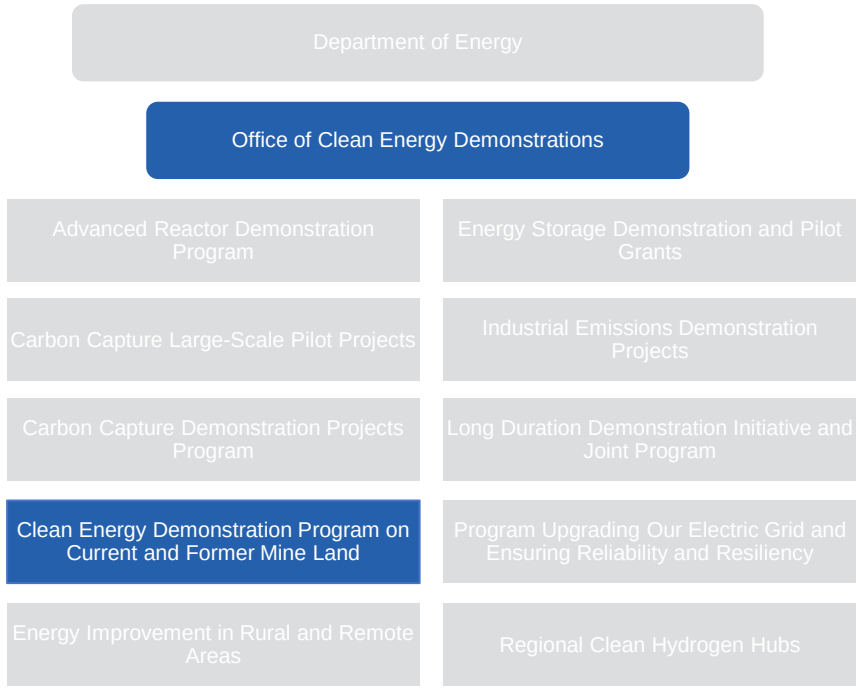
Source: The Nature Conservancy

Office of Clean Energy Demonstrations

Mission:

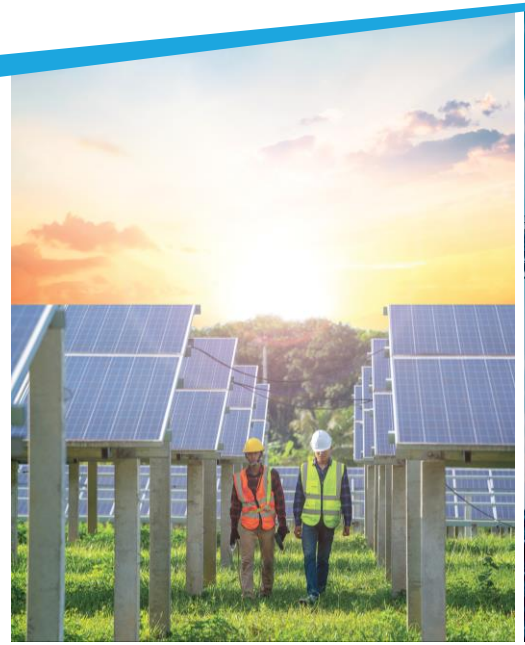
"Deliver clean energy technology demonstration projects at scale in partnership with the private sector to **accelerate deployment**, **market adoption**, and the **equitable transition to a decarbonized energy system.**"

Source: energycommunities.gov



Office of Clean Energy Demonstrations

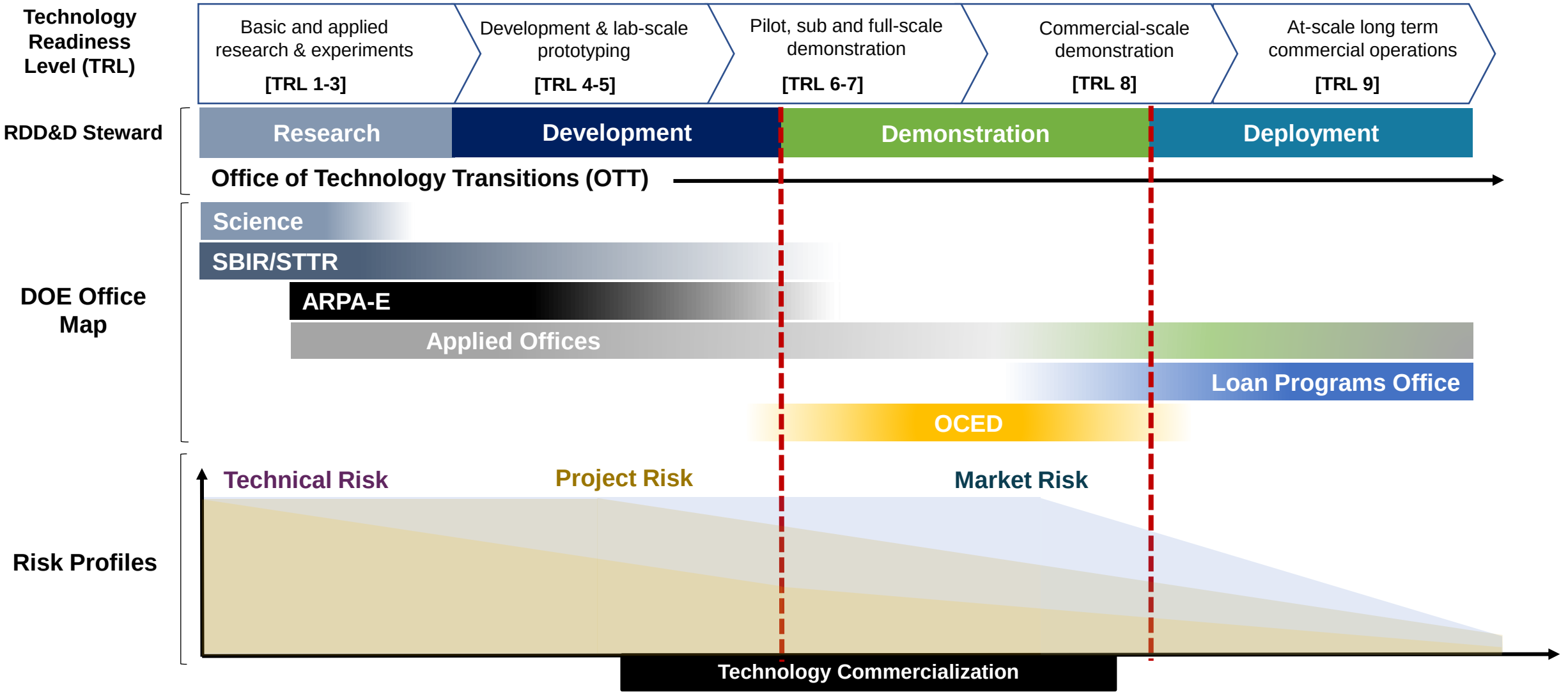





Office of Clean Energy Demonstrations

Melissa Klembara
Director, Portfolio Strategy
Office of Clean Energy Demonstrations (OCED)
October 11, 2022

OCED Role Across Research, Development, Demonstration & Deployment (RDD&D) Continuum




Initial Application


Go/No-Go Decisions

	Application Phase	Phase 1: Detailed Project Plan	Phase 2: Project Development	Phase 3: Construct & Integrate	Phase 4: Ramp-Up & Operate
	Pre - DOE funding	$[TBD] Funding, Up to 50% DOE Share, 12-18 Months	$[TBD] Funding, Up to 50% DOE Share, 2-3 Years	$[TBD] Funding, Up to 50% DOE Share, 3-4 Years	$[TBD] Funding, Up to 50% DOE Share, 2-4 Years
Engineering, Procurement, Construction	• Conceptual Design • Technical Readiness • Project Schedule • Total Project Cost Estimate	• Engineering & Design Documents • Technical Maturation Plans • Integrated Project Schedules	• Mature Engineering & Design • Technical Risk Management • Execution ready schedule & cost estimate, PM Tools	• Ongoing Execution Reporting • Interim Go/No-Go reviews	• Ongoing performance Reporting • Tech Risk Updates, Tracking • Final TPC accounting
Business Development & Management	• Business Strategy • Team Description • Workforce Plan • Finance Plan • Market potential analysis	• Project Management Plan • Risk Management Plan • Financial Modelling • Site Selection	• Finalized Project Structure, Management, Financing • Ongoing Risk Management • Final legal, workforce, procurement agreements	• Ongoing Execution Reporting • Ongoing Risk Management	• Updated financial analyses • Revised growth plans • Updated Risk Management
Permitting & Safety	• Safety Plan(s) • Regulatory Overview	• Safety Plan • Physical, Information, Cyber Security Plans • Environmental & Regulatory preparations	• Execution ready safety and security plans • Permits & Approvals in place for Construction	• Ongoing Permit and Environmental Reporting • Permits & Approvals in place for Operations	• Ongoing permit, safety, and security reporting
Community Engagement & Impacts	• Stakeholder Identification, • Communities Impact Analysis	• Community Development Analysis • Stakeholder Engagement	• Finalized DEI, EEJ, J40 Plans • Community Impact targets identified, tracking plans	• Ongoing reporting on community engagement activities	• Revised community engagement plans for operations • Ongoing impacts analysis
Technical Data & Analysis	• Lifecycle Emissions Analysis • Techno-economic Analyses	• Project Production Model • Updated Lifecycle Emissions and Technoeconomic Analysis	• Final Lifecycle Emissions & Technoeconomic Analyses • V&V and Project Completion Testing Plans	• Periodic analyses updates • V&V data collection • Project completion testing and performance ramp V&V	• Validated performance model • Finalize lifecycle and technoeconomic analyses • Dissemination of analyses, Lessons Learned

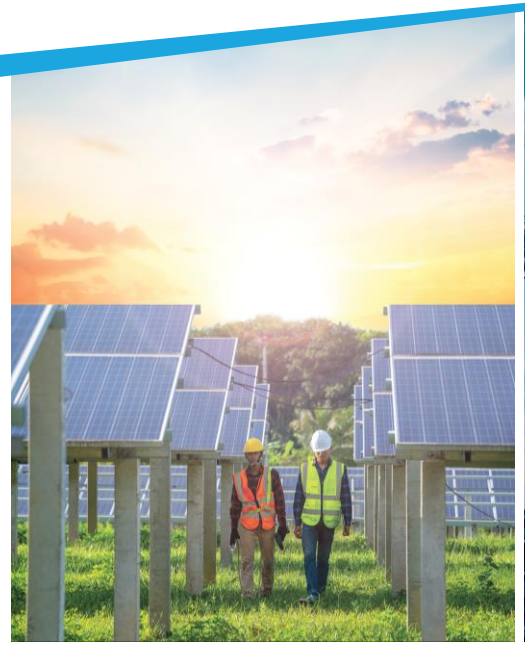
Thank You!

For additional updates and information, visit:
www.energy.gov/office-clean-energy-demonstrations

Email:
dl-oced-engagement@hq.doe.gov

Office of Clean Energy Demonstrations



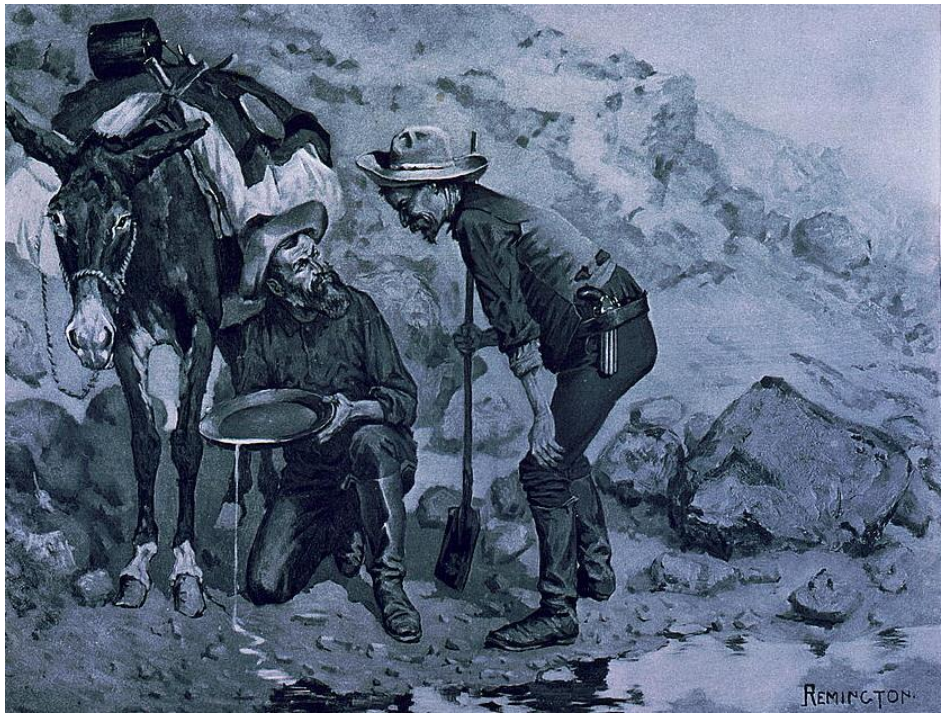



Clean Energy Demonstrations on Mine Land: Information Gathering and Planning

Chris Haas
Project Manager, Clean Energy Demonstrations on Mine Land
Office of Clean Energy Demonstrations (OCED)
October 11, 2022

Strategy: Information Gathering and Planning

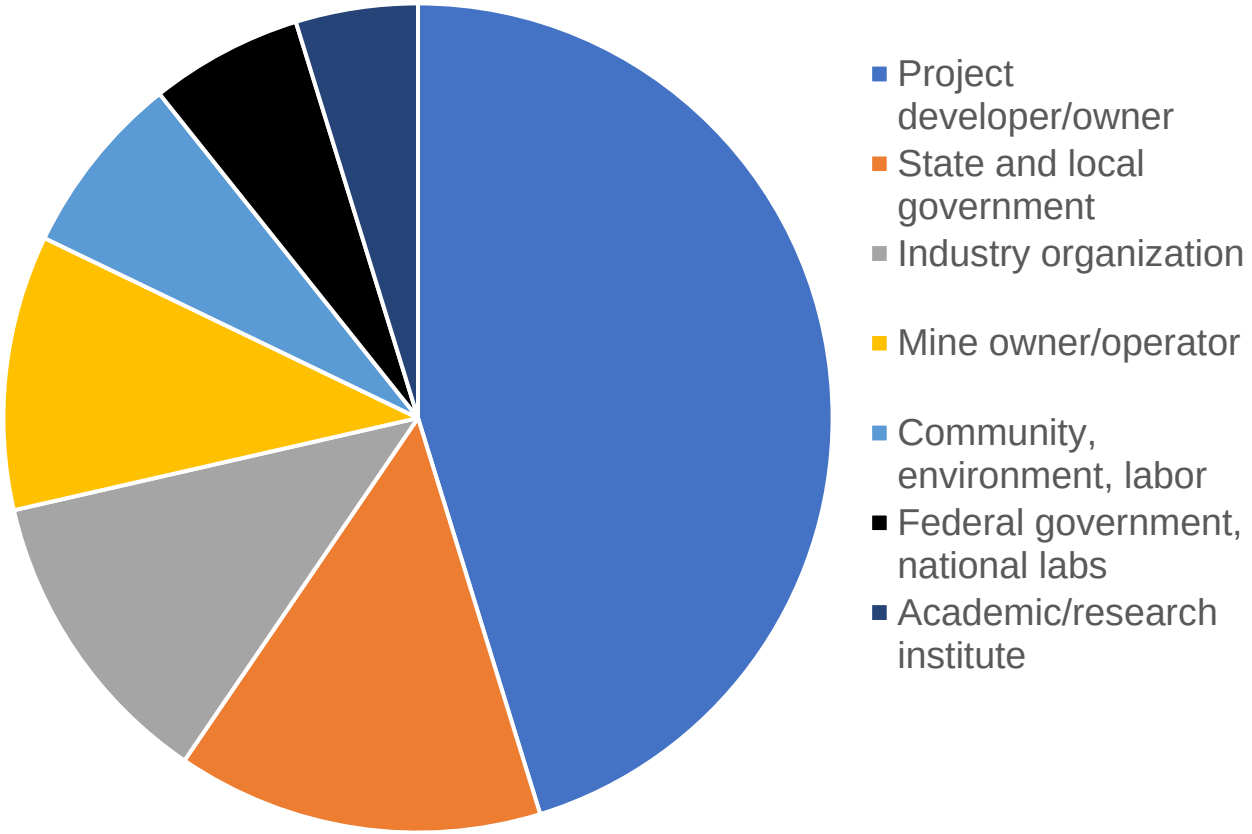
- Mine land development poses unique challenges with significant opportunities
- Successful demonstrations depend on information gathering and planning
- OCED's initial focus:
  - Engaging stakeholders with calls, presentations, and targeted outreach
  - Building connections with colleagues in state and federal government
  - Identifying success stories
  - Conducting Request For Information (RFI) with public and private stakeholders



"Miners Prospecting," Frederic Remington.
Source: Library of Congress.

RFI Process Details

- RFI was open for responses June - August 2022
- Question categories:
  - Mine Land Development
  - Mine Land Operations
  - Job Creation Potential and Challenges
  - Technology-Specific Concerns
  - Mine Land Program Implementation
  - Equity, Environmental and Energy Justice (EEEJ) Priorities
- 84 responses received



RFI Summary of Responses

Challenges For Development

- Complicated ownership, mineral rights, and multiple regulatory regimes
- Changing post mining land use (SMCRA requirements) to clean energy development
- Scale of project large enough for profitability (i.e., commercial vs utility scale)
- Lack of data describing sites, including environmental and regulatory status
- Impacted water quality and soil geotechnical (subsidence) conditions major challenge
- Job quality, consistency, and wages
- Landscape and area requirements, transmission access, and remoteness
- Unpredictability of these projects creates investment challenge

RFI Summary of Responses

Opportunities for Success

- Reclamation plans integrating future development (i.e., grading) with existing infrastructure
- Collaborate across entities to make economic case for CEML
- Large opportunities for job retraining and skills relevance
- Co-locating energy (i.e., generation + storage)
- Clean energy projects providing generation behind the meter or grid connected
- Clean energy co-located with data centers
- Increased coordination between DOE and other federal agencies
- Proactive engagement with local communities

RFI Summary of Responses

Demonstration Excellence

- Demonstrations that are scalable, replicable, and economically viable
- Well-informed and meaningful community input and outreach
- Understanding the roles that community ownership, benefit agreements, union labor, etc. to ensure a successful project
- Cultural sensitivity will be key, especially for development on Tribal land
- Utilize valuable land resource to advance clean energy technologies and reduce GHG emission's while building up our communities

What's Next for OCED?

- From listening to planning
- Efforts are evolving based on continued stakeholder feedback
- Gather information to assist potential applicants for successful projects
  - **Stakeholder Engagement Workshop(s)**
    - Virtual (Oct. 25-26, 2022)
  - **Technical Assistance (*Open!*)**
  - Datasets, tools, maps
- **Funding Opportunity Announcement (2023)**

Gold Mining in California, Currier & Ives, 1876.
Source: Library of Congress

Technical Assistance (*Now Open!*)

Assist stakeholders to evaluate viability and benefits of clean energy development on mine land

Who is Eligible:

- State and local governments
- Tribes
- Not-for-profit community-based organizations in current and former mining communities
- Industry representatives from (private or public) companies

Technical Assistance Categories:

- Job creation and economic development
- GHG reduction potential
- Development of lower-cost electricity generation

More information and to access the application

For Questions:

CEML.TA@nrel.gov

Thank You!

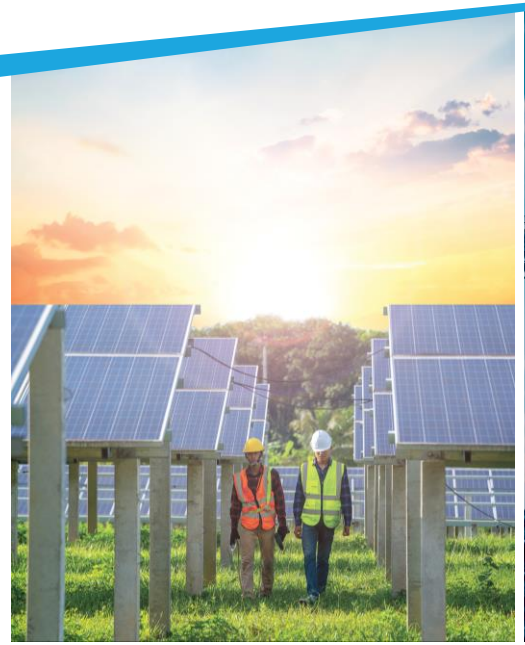
For more information, please visit:
energy.gov/OCED

Email:
mineland@hq.doe.gov

Find us today and tomorrow!

Office of Clean Energy Demonstrations






Equity, Energy, and Environmental Justice

Catherine Clark
Energy Justice Liaison
Office of Clean Energy Demonstrations (OCED)
October 11, 2022

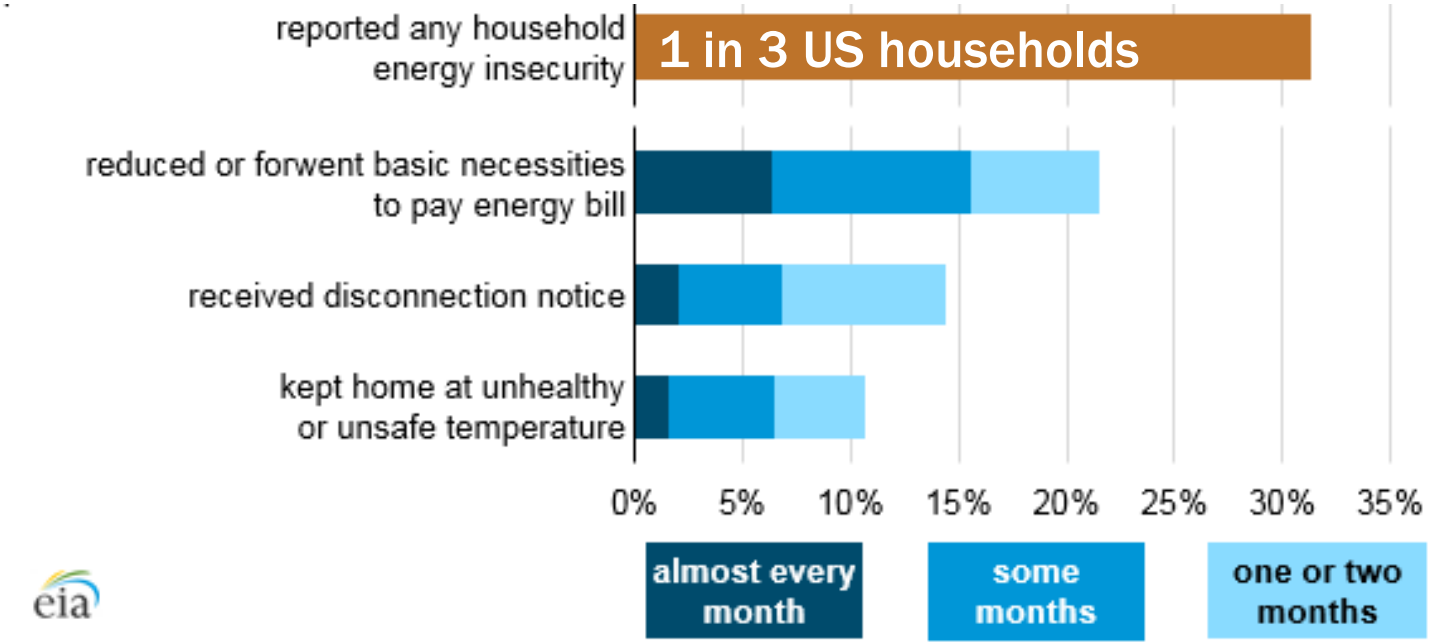
Our energy system is inequitable

Energy burden and energy insecurity

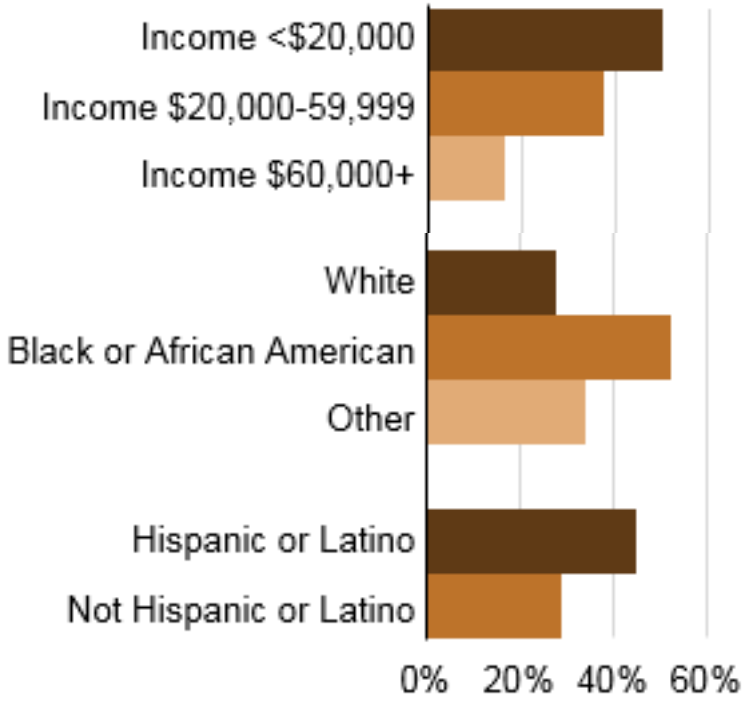
Energy burden: % of household income spent on home energy costs

Energy insecurity: an inability to pay for basic energy needs (heat, cooling, light)

Households that experienced energy insecure situations, 2015
(percent of households)

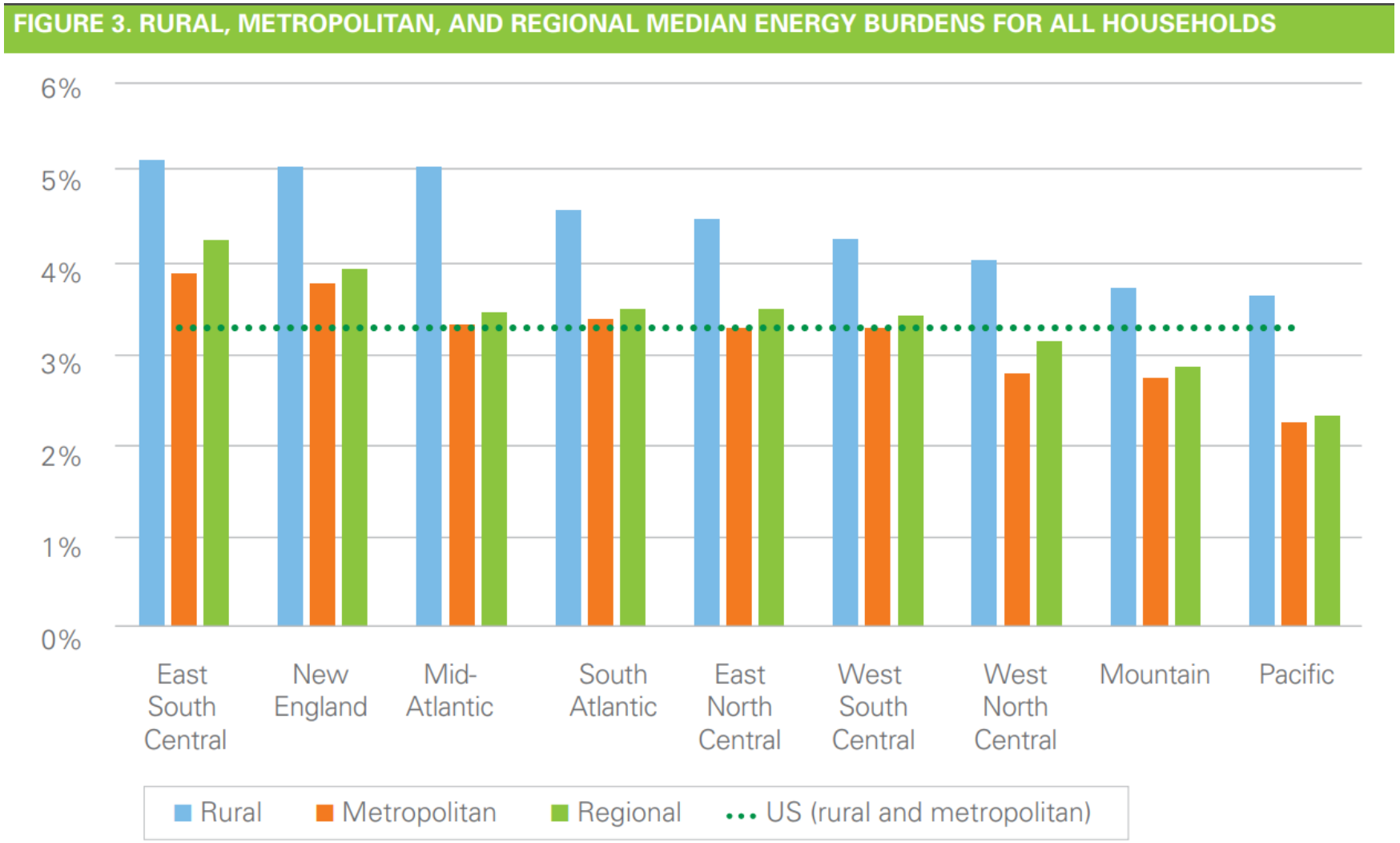


Household energy insecurity by household characteristics
(percent of households)



U.S. Energy Information Administration - EIA - Independent Statistics and Analysis
https://www.eia.gov/todayinenergy/detail.php?id=37072

Energy burden and energy insecurity in rural areas



The High Cost of Energy in Rural America: Household Energy Burdens and Opportunities for Energy Efficiency; Lauren Ross, Ariel Drehobl, and Brian Stickle, 2018

Air Toxics Exposure

Disproportionate Pollution Burdens Among Full 2018 RSEI Data

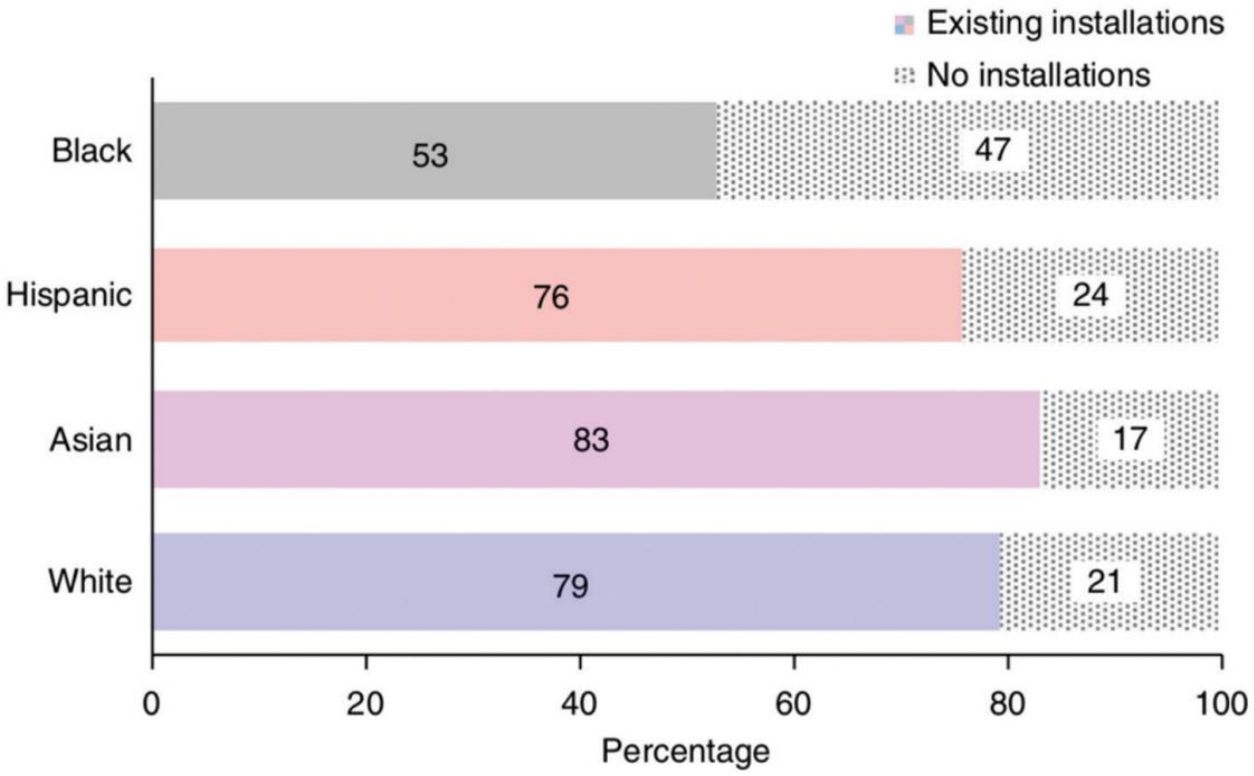
	Pollution Burden 2018 RSEI Data	Proportion of 2018 U.S. Population
Minority	47.8%	38.9%
Black or African-American	17.3%	12.3%
Hispanic	23.5%	17.8%
Poor (below poverty level)	17.6%	14.1%
Near Poor (below 200% of poverty level)	37.3%	31.9%

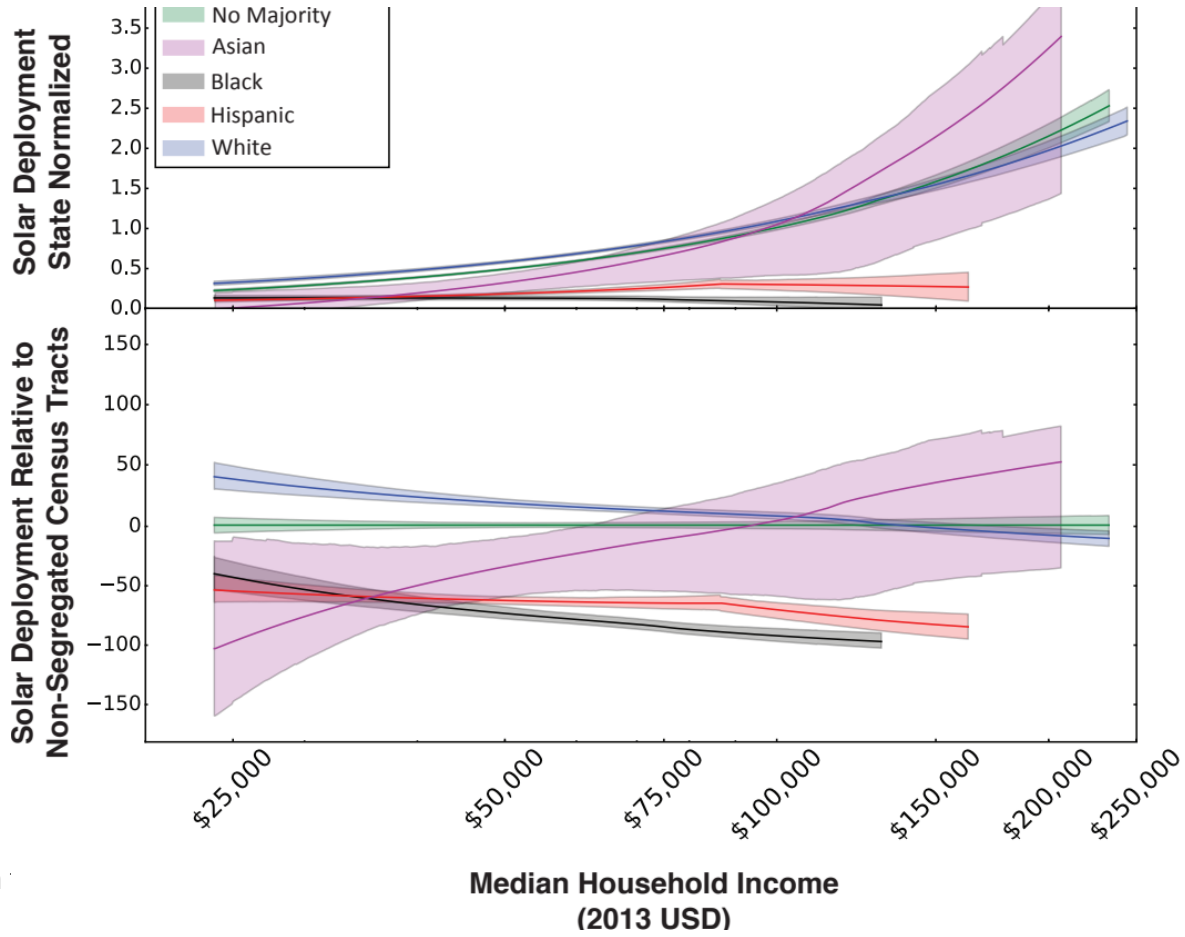
Share of 2018 RSEI pollution burden carried by 5 populations vs their proportions in 2018 US pop

Research Brief: Environmental Justice Across Industrial Sectors - Greenpeace USA
https://www.greenpeace.org/usa/research/environmental-justice-industrial-sectors/

Clean energy access

Percentages of Each Census Tract With and Without Existing Rooftop Photovoltaic Installations





Sunter, D.A., Castellanos, S. & Kammen, D.M. Disparities in rooftop photovoltaics deployment in United States by race and ethnicity. *Nat Sustain.* 71–76 (2019).

Environmental injustice on mine land

Justice

‘We’re Losing Our People’

Covid-19 ravaged Indigenous tribes in New Mexico. State and federal data reveal how a long legacy of uranium exposure may have made them uniquely vulnerable.

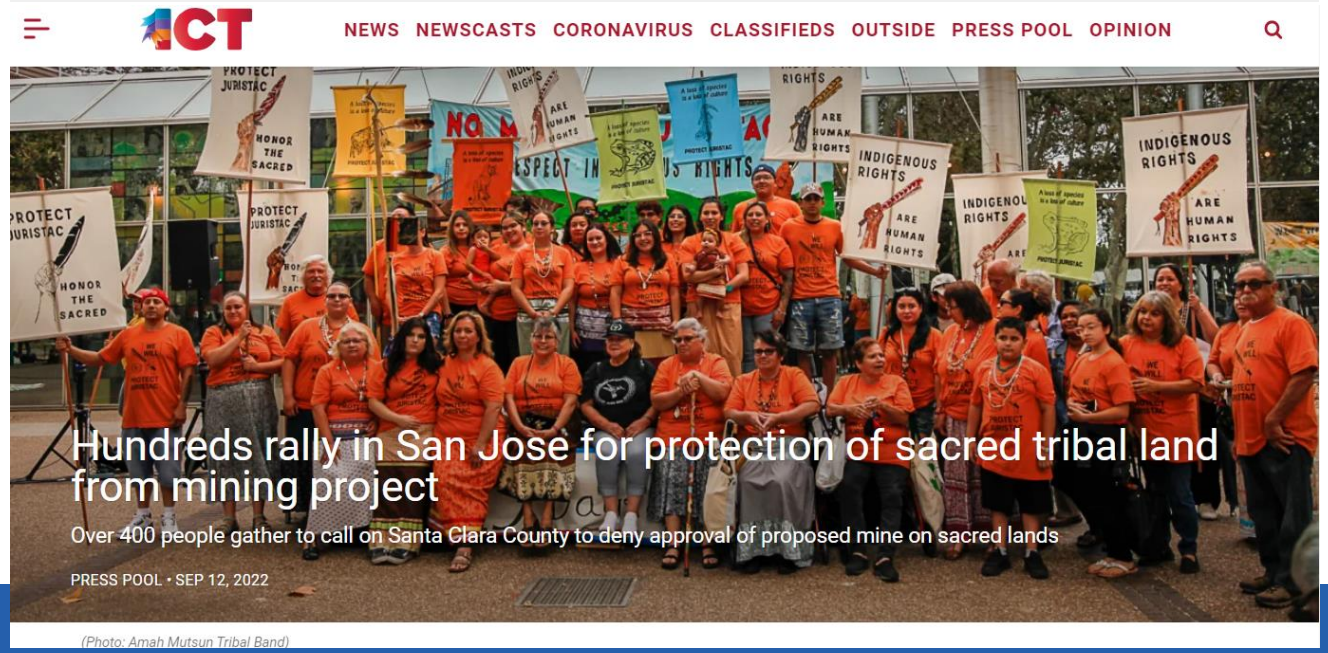
By Eli Cahan, Capital & Main
September 13, 2022

https://insideclimatenews.org/news/13092022/were-losing-our-people/

Extreme weather is making mining waste a major problem

New report calls for revamped safety standards as companies race to meet demand for clean energy minerals.

Lina Tran · Climate & Energy · June 2, 2022



(Photo: Amah Mutsun Tribal Band)

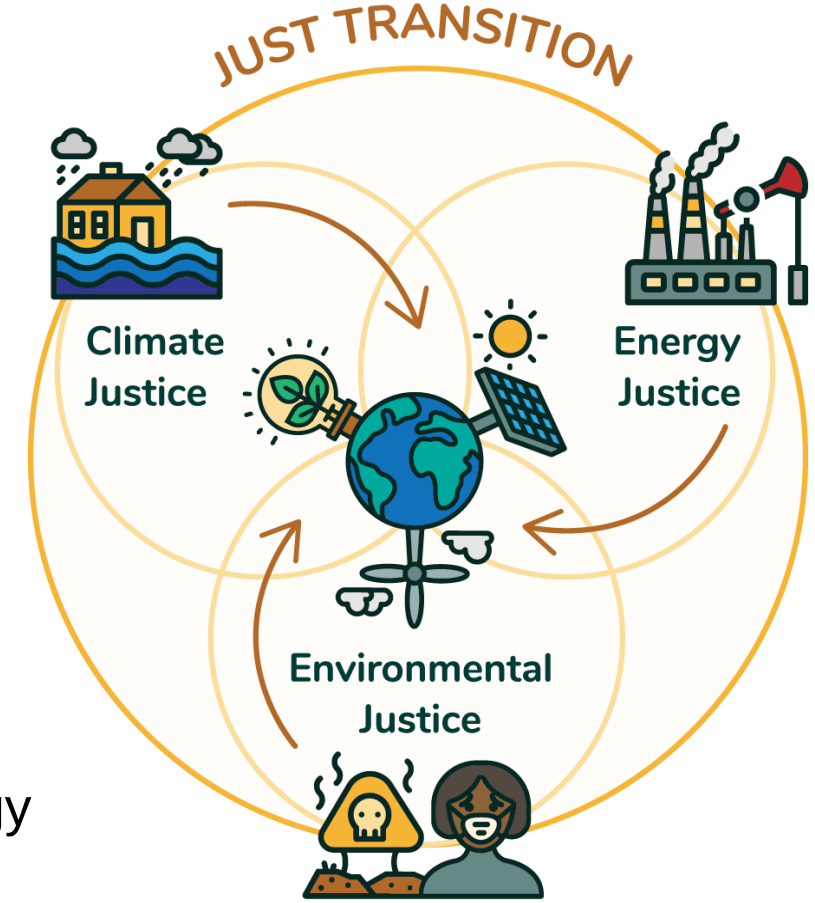
What are environmental and energy justice?

Environmental justice

- Fair treatment and meaningful involvement of all people (race, national origin, income)
- Development, implementation, and enforcement
- Ensure everyone the same degree of protection and access to decision-making

Energy Justice

- Social and economic participation in the energy system
- Remediation of social, economic, and health burdens on frontline communities, centering their concerns
- Accessible, affordable, clean, and democratically managed energy



Initiative for Energy Justice Defining Energy Justice: Connections to Environmental Justice, Climate Justice, and the Just Transition

Justice40

EO 14008 Sec 223 – Justice40 – how Federal investments might be made for **40% of the overall benefits** of certain federal investments to flow to disadvantaged communities

What does Justice40 cover?

Federal investments

- Federal grant & procurements
- Financing (credit, loans, guarantees)
- Provision of goods & services
- Staffing costs
- Others per OMB

In these areas

- Climate change
- Clean energy, energy efficiency
- Clean transportation
- Affordable and sustainable housing
- Training/workforce development
- Remediation of legacy pollution
- Clean water/waste infrastructure

DOE definition for Disadvantaged Communities

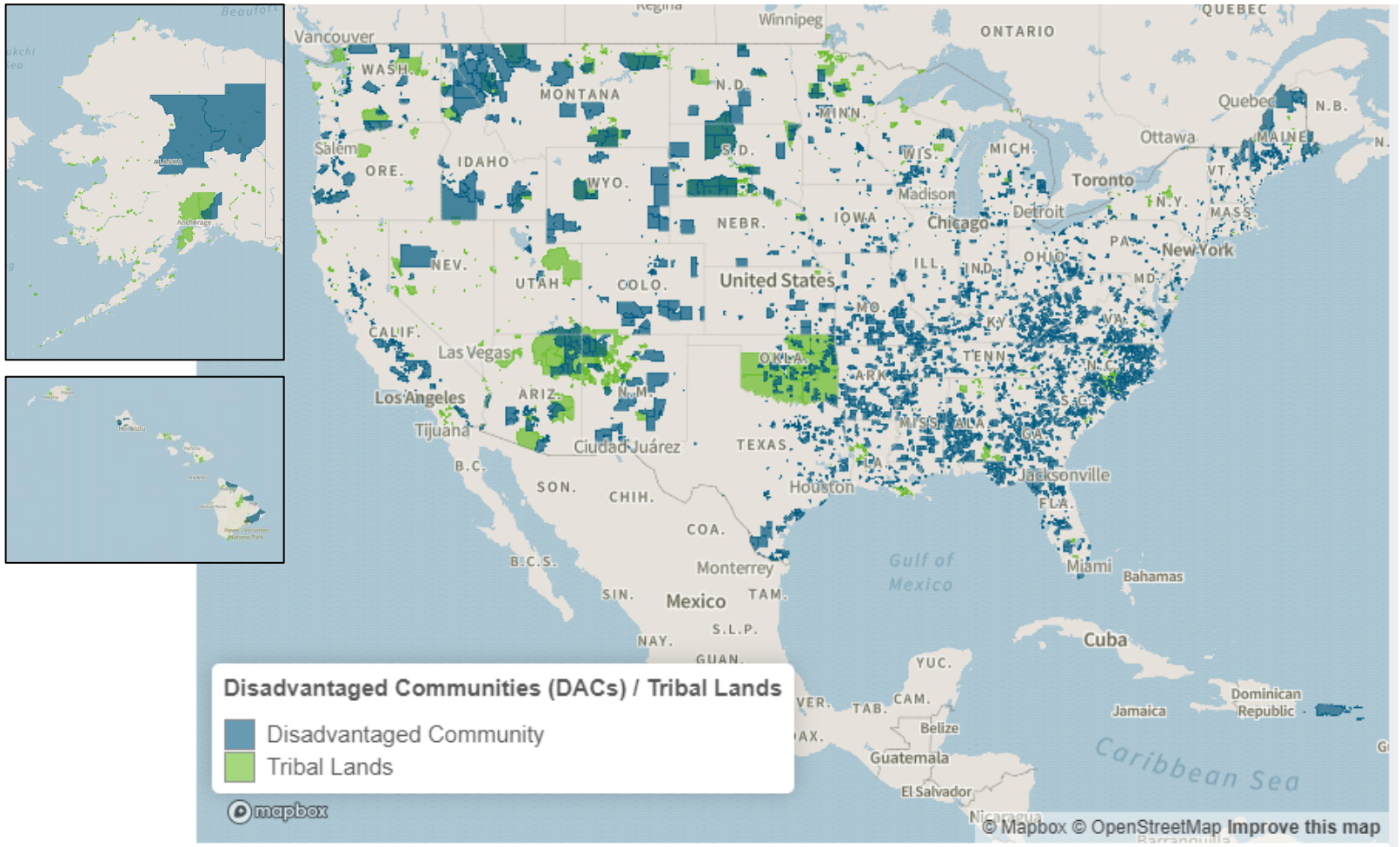
Qualifying census tracts:
13,581 (18.6%)

Additional native lands:

703 native populations in 858 locations

U.S. territories:

Virgin Islands, Northern Marianas, Guam, American Samoa, Puerto Rico



https://www.energy.gov/diversity/justice40-initiative

DOE Justice40 Policy Priorities

In disadvantaged communities:

1. Decrease energy burden
2. Decrease environmental exposure and burdens
3. Increase parity in clean energy technology access and adoption
4. Increase access to low-cost capital
5. Increase clean energy enterprise creation (Minority/Disadvantaged Business Enterprise)
6. Increase the clean energy job pipeline and job training
7. Increase energy resiliency
8. Increase energy democracy

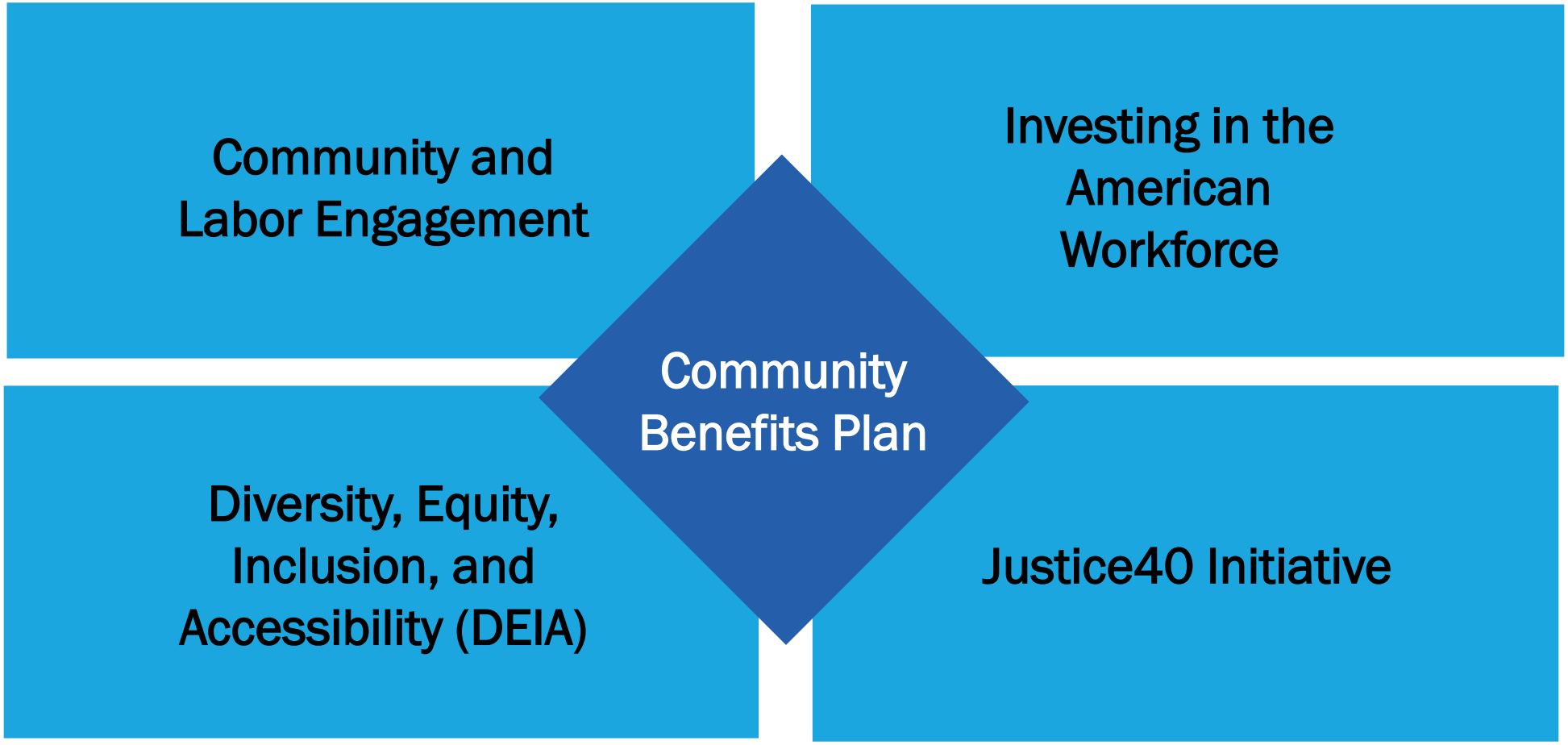
Equity, Energy, and Environmental Justice at OCED

- Collaborating across DOE to support the Justice40 Initiative
- OCED-funded programs are incorporating requirements related to
  - **Energy and environmental justice** and **Justice40 Initiative**
  - Community and labor **engagement**
  - **Diversity, equity, inclusion, and accessibility**
  - **Quality jobs** and **workforce development**

  → recent example includes Hydrogen Hubs FOA

- Supporting EJ TCTACs (applications due November 1)

Community Benefits Plan



Priorities into action-oriented plans

Vision: We affirm we care about justice / engagement / DEIA / quality jobs

Assessment: We mapped or assessed underserved communities / stakeholders / DEIA

Goals: From our assessment and engagement, we know X is lacking, so we want to improve in X

Outcomes: We know we have succeeded when Y (specific target) is reached

Implementation: To achieve Y, [specific actor] has to do Z [in specific timeframe]

Community and Labor Engagement

- **Social Characterization Assessment** (social, economic, historical, political context for affected area)
- **Stakeholders Analysis,** especially traditionally excluded groups
- **Engagement methods and timelines**
- **Two-way engagement Statement**
- **Workforce and Community Agreements Statement**
- **Engagement Evaluation Strategy**
- **Resource Summary**

Investing in the American Workforce

- Quality jobs
- Workforce development
- Worker rights
- Implementation Strategies
- Resource summary

Electric Power Generation Demographics by Sub-technology, 2019

	Solar Generation	Nuclear Generation	Natural Gas Generation	Wind Generation	National Workforce Demographics[VIII]	EPG Overall
Male	70%	64%	64%	69%	53%	68%
Female	30%	36%	36%	31%	47%	32%
Hispanic or Latinx	20%	15%	18%	20%	18%	18%
Not Hispanic or Latinx	80%	85%	82%	80%	82%	82%
American Indian or Alaska Native	1%	1%	1%	1%	1%	1%
Asian	9%	10%	10%	10%	6%	10%
Black or African American	8%	12%	10%	8%	12%	9%
Native Hawaiian or other Pacific Islander	1%	1%	1%	1%	1%	1%
White	71%	66%	64%	69%	78%	69%
Two or more races	9%	10%	14%	11%	2%	10%

2020 U.S. Energy and Employment Report (USEER) (usenergyjobs.org)

Diversity, equity, inclusion, accessibility

- **Assessment of** current state of DEIA in your project/company and prior and ongoing DEIA efforts
- **Implementation strategies**, milestones, and timelines based on goals and desired outcomes
- **Resource Summary**

Justice40 Initiative

Assessment

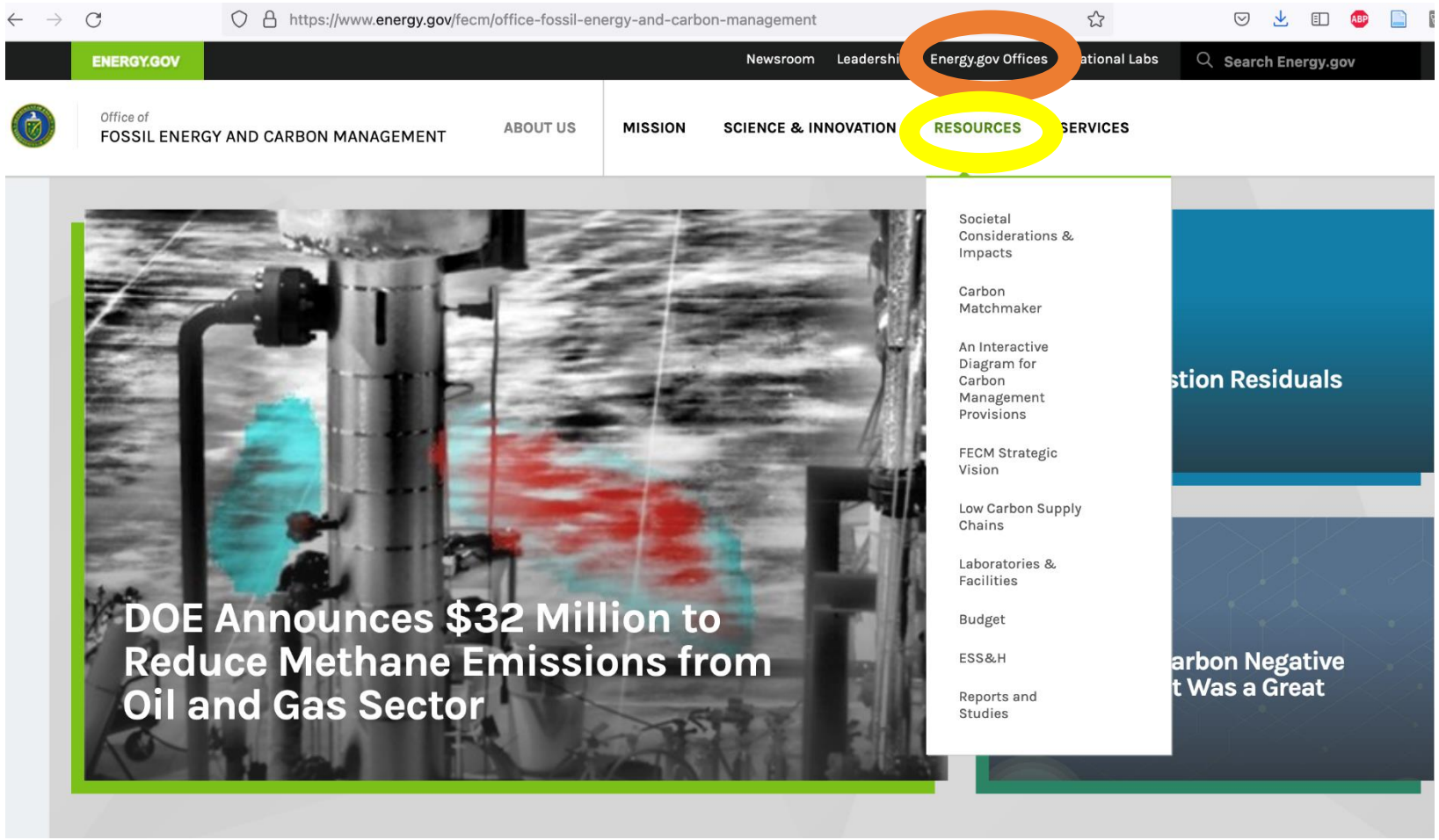
- Who is impacted, and the burdens they already experience
- Benefits, where they flow
- Harms, where they flow
- Information gaps

Implementation Strategy

- EEJ opportunities and risks
- Strategies, milestones, timelines
- Barriers and risks
- Resources

Guidance documents

- **Process:** Steps for creating a plan and advice on how to go about it
- **Content:** A walk-through of required elements, with details about what they might look like
- **Frequently asked questions** and **resources**

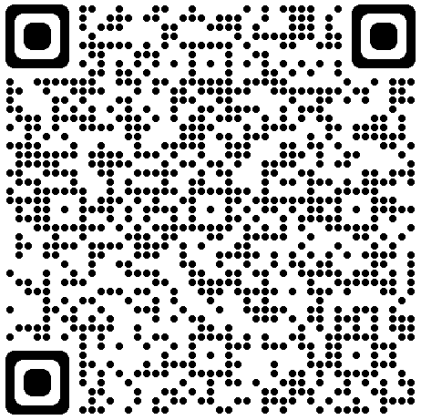


EJ Thriving Communities Technical Assistance Centers (EJ TCTACs)

- DOE is partnering with the Environmental Protection Agency (EPA) to create the new *Environmental Justice Thriving Communities Technical Assistance Centers* (EJ TCTAC):
  - up to $100M ($10M per award) to establish 5-10 TA centers across the U.S. to serve communities with EJ concerns and their partners
- TCTACs will provide:
  - training, assistance, and capacity building on writing grant proposals, navigating federal systems, and effectively managing grant funding;
  - guidance on community engagement, meeting facilitation, and translation and interpretation services for limited English-speaking participants.
- Eligible entities include:
  - Public and private universities and colleges
  - Public and private nonprofit institutions/organizations (includes institutions of higher education such as community colleges, and philanthropic organizations),
  - Intertribal Consortia

Applications open!
due November 1, 2022

For more information and to access the application:



Thank You!

For more information, please visit: energy.gov/OCED

Email: OCED@hq.doe.gov

Thank You! Stay in Touch!

Next Steps and Resources:

- Stakeholder Engagement Workshops
  - Virtual (Oct. 25-26, 2022)
- Technical Assistance (*Open today!*)
  - Email: CEML.TA@nrel.gov
- EJ Thriving Communities Technical Assistance Centers (EJ TCTACs – Due Nov. 1, 2022)

For more information, please visit:

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