Science & Technology Research Partnership (STRP)

MSRDC and DOE Promoting Pathways for Underrepresented Groups in Solar Energy Scientific and Technological Innovation

– Informational Webinar – *November 19, 2021*

SOLAR ENERGY TECHNOLOGIES OFFICE
U.S. Department Of Energy

MSI STEM Research & Development CONSORTIUM

Welcoming Remarks

Dr. Claudette M. Rosado-Reyes

Director
Fellowship Programs,
Science & Technology Research Partnership (STRP)

MSI STEM Research & Development Consortium

- This webinar will provide an overview of the Department of Energy's Solar Energy Technologies Office (SETO), the MSI STEM R&D Consortium (MSRDC), and our Science and Technology Research Partnership (STRP) Program initiative.
- All applicants are strongly encouraged to carefully read the Funding Opportunity and STRP portal, https://www.msrdconsortium.org/doe
- If there are any inconsistencies between the Funding Opportunity and this presentation or statements from any personnel, applicants must rely on the Funding Opportunity language for application submission. At any time, submit questions to Fellowships@msrdconsortium.org
- MSRDC will follow up with the Webinar Recording and Unanswered Questions. The STRP portal will be updated by December 1.

Agenda

- Welcoming Remarks: Dr. Claudette Rosado-Reyes & Dr. Marie Mapes
- Anticipated Schedule
- Introductions: MSRDC STRP Team
- MSI STEM R&D Consortium
- Science & Technology Research Partnership (STRP) Program Description
- DOE Solar Energy Technologies Office (SETO)
- Programmatic Research Areas / Calls for Submission
- Q&A Session
- STRP Structure
- Application Process
- Award & Finalists Selection
- Eligibility & Partnerships
- Wrap Up / Adjourn

Dr. Marie Mapes

Technology Manager

Solar Energy Technologies Office

Energy Efficiency & Renewable Energy Office

U.S. Department of Energy

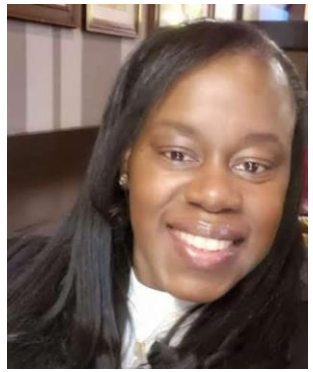
Anticipated Schedule

STRP Live, Open to receive applications	**November 1, 2021**
Webinar 1: STRP Program, Funding Announcement, Applications	**November 19, 2021**
Submission Deadline for Quad Charts & Abstracts *** Notifications will be sent by January 5, 2022**	**December 17, 2021**
Submission Deadline for Concept Papers	**January 21, 2022**
Expected Date for DOE Finalist Selections (Pre-Award) and Notifications	**February 4, 2022**
Expected Date to Start Sub-Award Negotiation Process, will require submission of Full Proposal	**February 11, 2022**

MSRDC STRP Team

Dr. Claudette M. Rosado-Reyes
Director, Fellowship Programs
Director, STRP

Dr. Alan Arnold
Senior Technical Advisor
Business Support



Dr. Geriel Ettienne-Ijezie
Senior Manager
Sponsored Research Development & Engagement

Ms. Halima Beshir
Project Associate
Marketing and
Information Systems

Dr. Joseph T. Bonivel
Consultant
Research and Curriculum
Development

Ms. Aisha Terrell
Project Associate
Outreach and Membership
Coordinator

Dr. Jay Valdez
Senior Technical Advisor
Technical Reporting
Support & Management

Who is the MSI STEM R&D Consortium?

Expanding the role of HBCUs and MSIs in Federal Research since 2015

- A rapidly **emerging ecosystem** of technological innovation driven by underutilized diverse talent
- The first and **only of its kind,** positioned to increase the involvement of HBCUs/MSIs in federal research
- Powered with its **own procurement vehicle** that immediately levels the playing field
- A **force multiplier** to help HBCUs & MSIs scale their research portfolio building strategies
- A **game changer**

Success Metrics

70
HBCUs and MSI Members

Our membership culminates in a wide variety of technical capabilities in a number of disciplines

$20M
Research Dollars Awarded to MSIs

Since 2015, MSRDC has issued 56 awards to HBCUs and MSIs through its unique funding vehicle

$1.3M
Funding Provided to Students

Both undergraduate and graduate students have been supported through stipends and tuition dollars

106
Students Funded Across the Nation

Students have benefited from their involvement in federally funded, cutting edge, mission-critical research projects

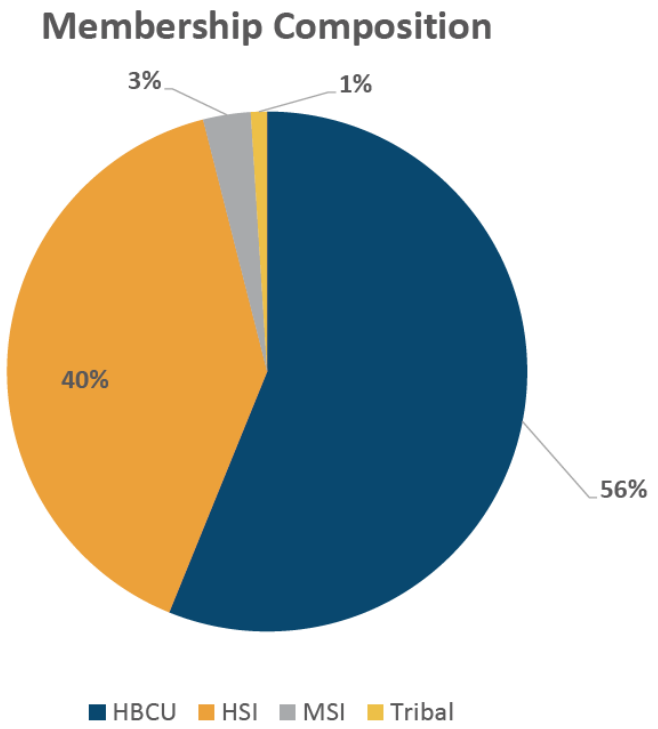
Our Members

Our membership includes over 70 institutions:

- 56%: Historically Black Colleges and Universities (HBCU)
- 40%: Hispanic Serving Institutions (HSI)
- 3%: Other Minority Serving Institutions (OMSI)
- 1%: Tribal Colleges and University (TCU)

Our **partners** are over 50 major universities and private sector entities.

Our **sponsors** include over 15 federal agencies.



Science & Technology Research Partnership (STRP) Program

- STRP is a scientific, technical and career development program.
- Consisting of MSIs and partners:
  - Engage in mission-critical research projects relevant to the SETO.
  - Participate in career and performance oriented professional development curricula.

National Goals

- STRP will contribute to the nation's goal of decarbonizing the electricity system by 2035 and achieving a 100% clean energy economy with net-zero emissions by 2050.
- The research projects funded will help reduce costs for solar energy technologies, enable long-duration solar energy storage, and develop technology for carbon-free electricity in the United States.

Program Goals

- Fund university research projects related to SETOs research mission and priorities.
  - Develop new or strengthen existing research capabilities at MSIs.
- Provide professional development to university teams so that they are adequately schooled in responding to federal solicitations, providing contract compliance, and research management.
  - Prepare and expose students at MSIs to research career pathways relevant to solar energy technologies.

11 Technology Offices within the Office of Energy Efficiency and Renewable Energy (EERE)

EERE's 2021 Budget of $2.86 Billion is nearly identical to FY20

DOE's 2021 Budget is $39.6 Billion

U.S. DEPARTMENT OF ENERGY
Energy Efficiency & Renewable Energy

ENERGY EFFICIENCY $1,103.5 Million		RENEWABLE ENERGY $646 Million		SUS. TRANSPORTATION $805 Million	
$396 Million	Advanced Manufacturing	**$106 Million**	Geothermal Technologies	**$255 Million**	Bioenergy Technologies
$290 Million	Building Technologies	**$280 Million**	**Solar Energy Technologies**	**$150 Million**	Fuel Cell Technologies
$40 Million	Federal Energy Management	**$110 Million**	Wind Energy Technologies	**$400 Million**	Vehicle Technologies
$377.5 Million	Weatherization & Intergovernmental	**$150 Million**	Water Power Technologies		

Solar Energy Technologies Office (SETO)

Mission Goals

1. Improve efficiency 2. Reduce costs 3. Enable long-term storage 4. Reduce carbon footprint

Programs

Photovoltaics

Concentrating Solar-thermal Power

System Integration

Soft Costs

Manufacturing & Competitiveness

Solar Energy Team, Technology Managers

SOLAR ENERGY TECHNOLOGIES OFFICE
U.S. Department Of Energy

Photovoltaics
Dr. Marie Mapes
marie.mapes@ee.doe.gov

Soft Costs
Ms. Tiffany Jones
tiffany.jones@ee.doe.gov

Strategic Analysis and Institutional Support
Ms. Chani Vines
chani.vines@ee.doe.gov

System Integration
Dr. Rodney Kizito
rodney.kizito@ee.doe.gov

Concentrating Solar-Thermal Power
Dr. Andru Prescod
andru.prescod@ee.doe.gov

Manufacturing and Competitiveness
Dr. Robert Meagley
robert.meagley@ee.doe.gov

SETO's Mission Critical Research Under STRP

Programmatic research areas funded under STRP:

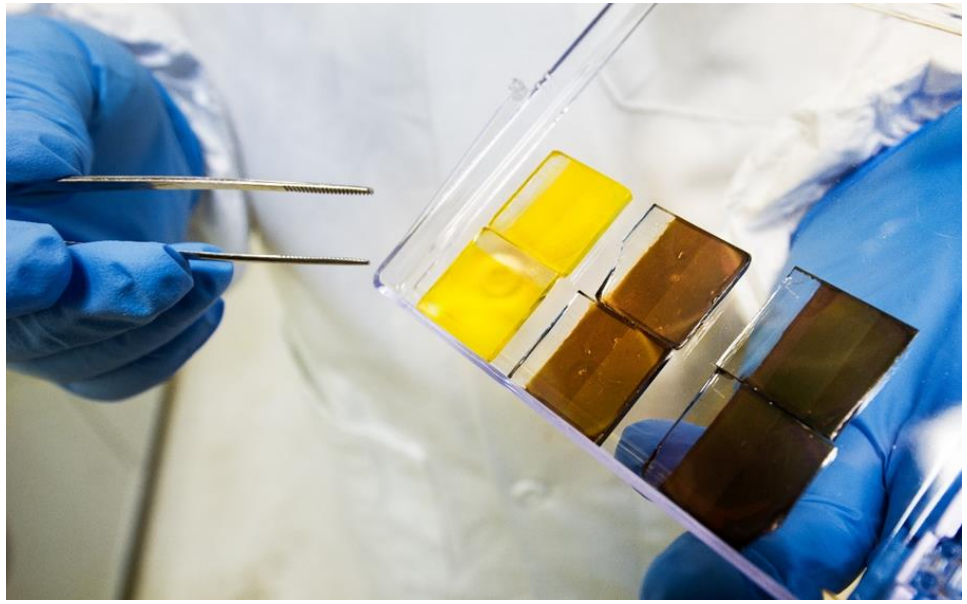
SETO	STRP
Photovoltaics	1. Photovoltaic Hardware Performance, Reliability, and Characterization
System Integration	2. Energy Resilience in Communities
Soft Costs	3. Reducing the Non-Hardware Costs of Solar – Analysis, Tools, and Data Resources and Supporting A Just Transition to 100% Renewable Energy Futures in Small Cities
Manufacturing and Competitiveness	4. Manufacturing and Competitiveness – Applied Solar Technology and Perovskite Benchmarking
Concentrating Solar-Thermal Power	5. Concentrating Solar-Thermal Power Technology and Cost Improvements

https://www.msrdconsortium.org/doe-seto-funding-opportunities

Manufacturing and Competitiveness – Applied Solar Technology and Perovskite Benchmarking

Objectives

1 Creative systems that integrate solar or solar plus storage technology as useful innovations.



2 Define the state of progress of the emerging perovskite-based photovoltaic industry, its funding, and its academic antecedents regionally world-wide, including the Americas, EU, APAC, and China.

Manufacturing and Competitiveness – Applied Solar Technology and Perovskite Benchmarking

Topic 1: Applied Solar Technology

Proposals associated with Building Integrated Photovoltaics ("BIPV"), floating solar ("floatovoltics"), agricultural solar ("agrivoltaics") and other application-oriented strategies to use and potentially store solar energy in useful, practical innovations that solve real needs based on US-sourced materials are sought.

Don'ts: Approaches that include consumer electronics, apparel/accessories, Internet of Things, and other "disposable" applications.

Potential research topic areas include (but are not limited to) the following, any of which can benefit from incorporating energy storage:

- Kits for new construction or building retrofit that provide LED indoor and/or outdoor (security) lighting.
- Self-contained systems that provide temporary power for emergencies suitable for an average family of 4 (4 to 36 hours).
- Practical approaches to integrating solar panels onto building facades, canopies, or balcony balustrades.
- Low cost, high durability, floating solar systems.
- Solar fencing (residential, industrial, or agricultural).
- Systems that limit sunlight exposure to sensitive plants and/or animals while extracting useful power (e.g., shading for greenhouses, animal husbandry, etc.).
- Solar powered heat-pumps.
- Passive solar heating solutions.

Manufacturing and Competitiveness – Applied Solar Technology and Perovskite Benchmarking

Topic 2: World-wide Benchmarking of Perovskite-based Photovoltaic Industry and Funding

SETO is interested in proposals to collect and integrate information on industrial, governmental, and academic efforts to the develop perovskite photovoltaics into practical energy producing technologies.

Result is intended to be a coherent picture of how perovskite photovoltaic technology is being incentivized, developed, and brought to market making comparisons across the major economic regions of the world. Proposals should discuss strategies, the source materials available and strategies to overcome potential barriers from the language diversity therein.

Factors of interest include commonalities and differences in regional approaches to and results from:

- Governmental and private organization-based incentives for academic and industrial research, development, and commercialization.
- Relationships between government, academic, and business entities.
- Funding scale and strategies for those entities.
- Scale of manufacturing effort and scaling plans for those entities—including raw and intermediate materials.

Photovoltaic Hardware Performance, Reliability, and Characterization

Objective

Improve the functions of photovoltaic (PV) hardware over the long term, maximizing energy yields, increasing efficiency, lowering the manufacturing cost of PV technologies, and improving PV system modeling to ensure reliable performance prediction to enable a carbon-free electric grid by the year 2035.

Research Projects

- Collect evidence and perform applied research through physical proofs of concept, modeling, or theoretical studies, and may address PV technologies at the plant, system, or component level.
- Explore material combinations, interface design, passivation, other post-treatment approaches or similar topics are critical to identifying and demonstrating high-performance, stable solar cells.
- Develop and apply new metrology and characterization techniques to accelerate cycles of learning on efficiency and stability are highly valuable.
- Improve understanding of performance and degradation, as well as those that present a reasonable approach to producing commercially competitive devices, will be considered.
- Access or a plan to access data and samples will be a necessary component.

Photovoltaic Hardware Performance, Reliability, and Characterization

Potential Research Topic Areas (but are not limited to):

- **Characterizing and Mitigating Performance Degrading Defects in Silicon Photovoltaics:**
  In silicon modules, defects or impurities in the silicon absorber layer affect module performance degradation. Some of the challenges in this research area include developing characterization capabilities that can identify silicon photovoltaic cell defects in the bulk and at interfaces that affect degradation and tracking defects in the field and correlating them to observed degradations.
- **Characterizing and Mitigating Performance Degrading Defects in Cadmium Telluride Photovoltaics:**

  Structural, interfacial, and impurity-related bulk, interface, and surface defects in CdTe play a major role in limiting and/or degrading efficiency. Some of the challenges in this research area include the difficulty in conclusively attributing the presence of a given impurity to observed device behavior, and the change in the behavior of a defect with the change in material composition, such as doping, alloying, or processing conditions.
- **Correlation of Photovoltaic Module-Accelerated Performance Testing with Field Performance:**

  One of the biggest problems the solar industry faces is accurately predicting how solar panels perform over their entire lifetime. Some of the challenges in this research area are that the available performance data of photovoltaic systems does not sufficiently distinguish between the impacts of underperformance of modules and the other components of a PV system (like inverters or connectors), and there is little data on how extreme climate conditions change the performance of systems or result in system failure.

Energy Resilience in Communities

Objective

Design and develop case study-based research that identifies and assesses the impacts of major grid-disturbance events, such as natural disasters, and planned blackouts on the energy resilience of vulnerable US communities. SETO is interested in communities that historically experience energy resilience challenges when grid-disturbances and planned blackouts occur, with a particular interest in communities with predominantly marginalized or low-income populations.

Research Projects

- Portray what kind of support (technical and non-technical) the vulnerable communities need.
- Provide a community action plan and a roadmap for completing the plan.
- Propose, and justify, potential solar-related energy resilience solutions for the studied communities.
- Be published in a peer-reviewed journal.
- Propose additional areas of research for solar-centric solution development with the community.

Energy Resilience in Communities

Approach & Potential Projects

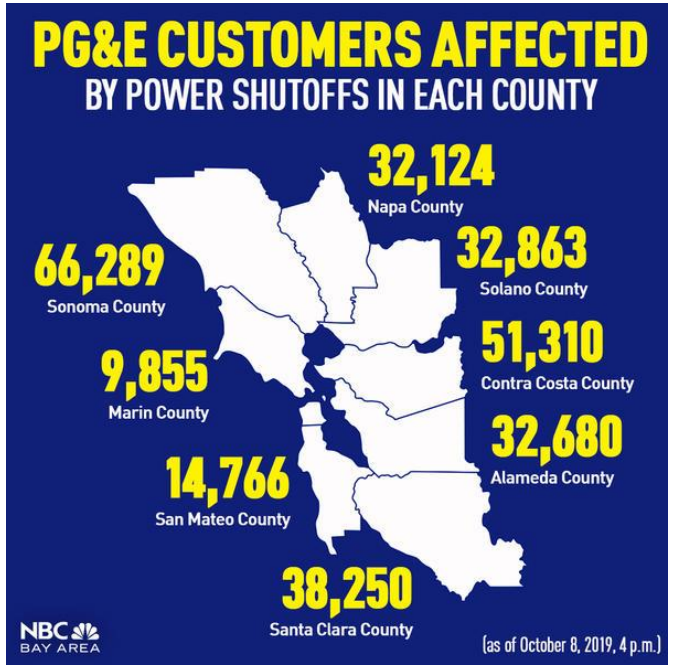
Case studies that detail the challenges communities face when struck by major grid-disturbances and planned blackouts are critical to the development of energy resilience solutions,

- Analyze how different energy resilience challenges impact a community and assess the severity of the impacts.
- Portray how these challenges may impact some communities in a worse manner than others.

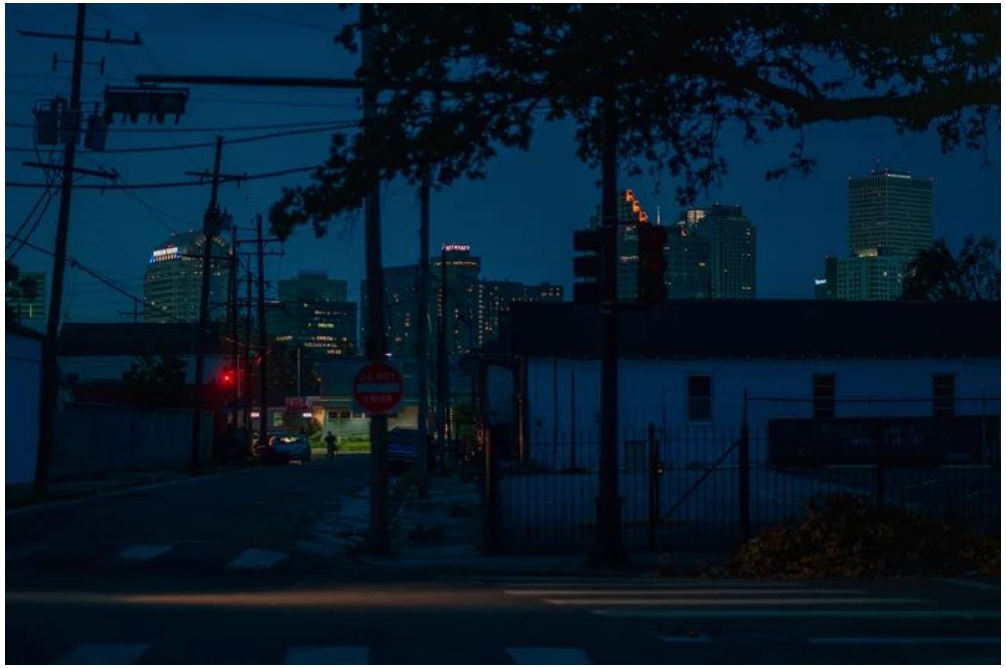
Through community engagement efforts and results from case studies, University Teams,

- Can help SETO develop an understanding of what causes the energy resilience challenges and what attempts, if any, have been taken by the community to remedy the challenges.
- May also explore potential solar-centric solutions to the communities' energy resilience challenges and propose additional areas of research to develop solar-centric solutions with the local community.

Energy Resilience in Communities



- 2019 California planned blackouts for 8 days
- Low-income households faced hunger and financial crisis
- Blackouts were an inconvenience to some households but more severe to others



- 2021 outages in New Orleans after Hurricane Ida
- Power was knocked out for more than week in some areas
- At least 9 deaths were attributed to excessive heat during and extended power outage

Reducing the Non-Hardware Costs of Solar

Objectives

1 Reduce the non-hardware costs of solar electricity, also called “soft costs.” These costs relate to project development; financing; siting; customer acquisition; permitting; inspection and interconnection (PII); installation labor and business overhead and profit. Soft costs can also take the form of indirect barriers to deployment that derive from a variety of factors including, but not limited to access to capital and socioeconomic issues.

2 Support hundreds of small U.S. cities, with populations less than 250,000 people, in their pursuits of solar energy as part of their 100% renewable energy (RE) goals. Small cities that are committed or planning to commit to 100% renewable energy futures face multi-dimensional challenges to realize a just and equitable economic transformation in this decade and beyond.

Reducing the Non-Hardware Costs of Solar

Topic 1: Analysis, Tools, and Data Resources

Potential Research Topic Areas:

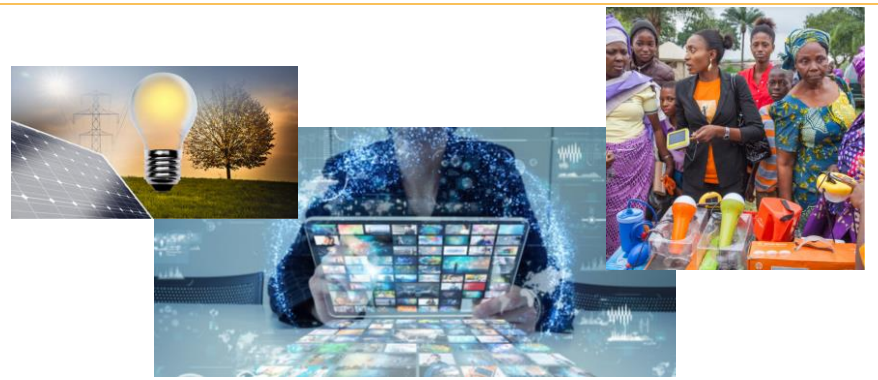
- Equitable Access to Solar Energy
- Behavioral Science of Solar Adoption
- Solar and Agriculture Co-Location.
- Solar Energy Market Analysis
- Solar Workforce Development
- End-of-Life Management for Solar Photovoltaics

Reducing the Non-Hardware Costs of Solar

Topic 2: Supporting A Just Transition to 100% Renewable Energy Futures in Small Cities

Potential research projects will address the following:

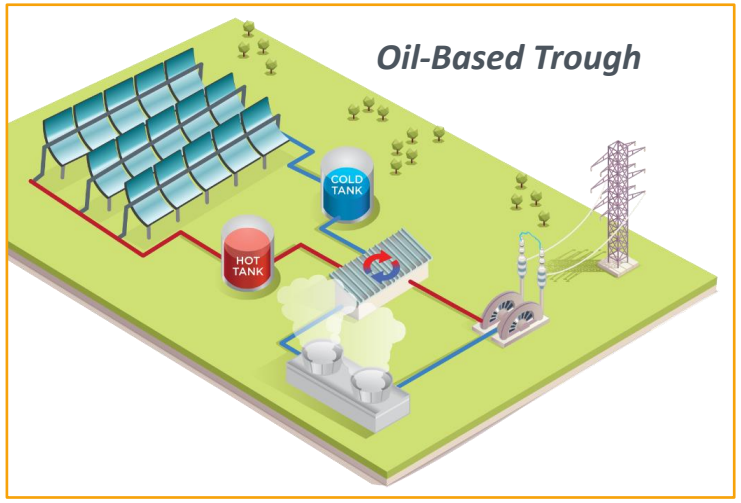
- Evaluate the landscape of challenges these cities face considering their resources and capabilities and develop locally innovative pathways to help these cities meet their aspirations and goals.
- The project is required to be data-grounded, including direct engagement with and surveying at least 150 U.S. small cities.
- Synthesize the landscape of opportunities and challenges that these communities face.
- Convene at least six virtual workshops, where representatives and other stakeholders from participating cities outline their strategies and action priorities for the next three years.
- Pilot a data framework for voluntary self-reporting progress and explore enduring city-to-city collaborations with reciprocal accountability, such as a Solar Sister City effort.

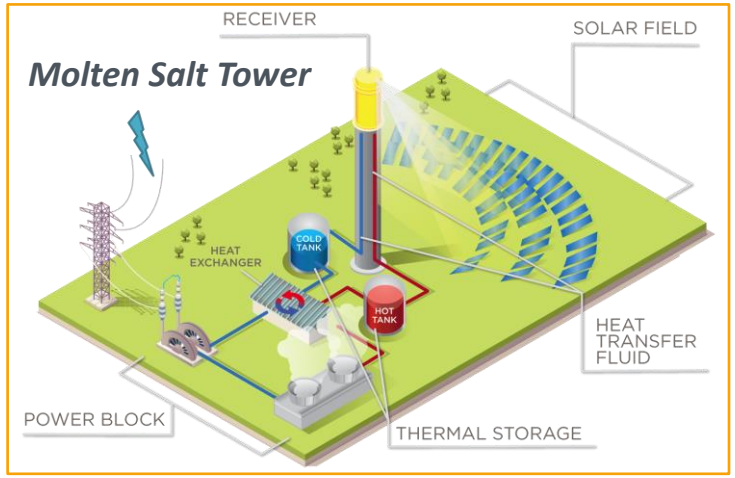


Project key deliverables should include, but are not limited to:

- A report synthesizing the landscape of opportunities and challenges.
- Reports of locally innovative pathways or strategies by participating cities.
- A website for tracking goals, sharing news and tools, and upkeeping a knowledge hub of solution pathways and peer-to-peer learning and exchange.

Concentrating Solar-Thermal Power Technology and Cost Improvements





Objective

- Reduce the levelized cost of electricity (LCOE) of Concentrating Solar-thermal Power (CSP) plants, integrated with > 12 hours of thermal energy storage (TES) to a target of $0.05 per kWh.
- Make solar thermal energy a cost-effective alternative to conventional fuels for industrial process heat, particularly high-temperature processes.

Oil-Based Troughs with steam rankine cycle (~400 °C) → ***Molten Salt Towers with steam rankine cycle (~565 °C)*** → ***'Gen 3 CSP': Novel Heat Transfer Media with advanced power cycle (>700 °C) @ 5¢/kWh***

Concentrating Solar-Thermal Power Technology and Cost Improvements

Potential Research Topic Areas

- Automation and controls solutions to improve the pointing accuracy of heliostat mirrors, while minimizing backlash and other optical errors.
- Solutions that will significantly reduce the cost of manufacturing CSP components, like heat exchangers and high temperature piping, to achieve the office's 2030 cost targets.
- Strategies to improve heat transfer in high-temperature solid particle systems, while minimizing capital cost and parasitic energy demands and maximizing system durability and reliability.
- Innovative thermal storage solutions for high-temperature particle-based systems.

Open Q&A Session

Fellowships@msrdconsortium.org

STRP Program Structure

Mission Critical Research

The awarded University Teams will perform and complete research projects that are critical to the mission of DOE SETO, aligned with the proposed programmatic research areas.

Professional Development

MSRDC will design and deliver a professional development curriculum based on learning objectives. The curriculum materials, courses, or seminars to the participating PIs and research associates will be delivered electronically. MSRDC will monitor the successful dissemination and completion.

Program Administration

MSRDC, as umbrella organization, will conduct a bi-annual solicitation to identify innovative proposals. As the financial fiscal agent our program administration will also include issuing subawards, budget management, technical monitoring, quarterly financial & technical reporting, and payment processing.

Professional & Career Development

- Our professional development curriculum is aimed at providing participants, both PIs and research associates, with key information for advancing their careers and implementing successful research projects in science and technological innovation.

- The strategically designed sessions will allow recipients to become more proficient leaders, project managers, apply their analytical skills to succeed in sponsored research and entrepreneurship.

Professional Development Curriculum Themes

Sponsored Research

Activities under this theme are designed to educate students regarding the federal research award process and give them hands on experience.

- Understanding & Navigating the Federal Research Enterprise
- Grants & Contracts: Comparison & Managing

Delivery:

- 6 Weeks
- 3 hrs/week
- June – Aug 2022

Project Management

Activities under this theme will provide students with a fundamental education in the tactical management of projects. Activities are largely project based to provide hands-on education in developing plans. Activities will involve participation in monthly project meetings with the sponsor.

- Project Budgeting: Cost Estimates & Justifications
- Schedules & Performance

Delivery:

- 5 Weeks
- 3 hrs/week
- Sept – Oct 2022

Leadership

Activities under the leadership theme are focused on providing students with the background and experience to understand the human dimension leading with the greatest positive impact.

Delivery:

- 8 Weeks
- 3 hrs/week
- Nov 2022

Entrepreneurship & Commercialization

Activities under this theme may include topics related to private industry partnerships and how to drive research from conceptualization to prototype.

- Critical Thinking in a Technological Space
- Develop a Winning Technological Product /Business Plan

Delivery:

- 5 Weeks
- 3 hrs/week
- Mar - April 2023

Science & Technology Research Partnership (STRP) - Solar Energy Scientific and Technological Innovation

Blue University

PHOTOVOLTAICS

Funding: Year 1- $ 200,000
Year 2- $ 200,000

Principal Investigator
Research Associate(s)

Research Outputs

- Applied R&D
- Literature Review
- Experimental Results
- Data Analytics
- Uncertainty Analysis
- Algorithms
- Models & Simulations
- Etc.

Fellow Activities

- Technical Work
- Reporting
- Cross Team Conference
- Joint Per-Reviewed Manuscript
- Monthly Reviews with PM
- Joint Team Presentations

Red University

CONCENTRATING SOLAR-THERMAL POWER

Funding: Year 1- $ 200,000
Year 2- $ 200,000

Principal Investigator
Research Associate(s)

Research Outputs

- Applied R&D
- Literature Review
- Experimental Results
- Data Analytics
- Uncertainty Analysis
- Algorithms
- Models & Simulations
- Etc.

Fellow Activities

- Technical Work
- Reporting
- Cross Team Conference
- Joint Per-Reviewed Manuscript
- Monthly Reviews with PM
- Joint Team Presentations

Green University

SYSTEM INTEGRATION

Funding: Year 1- $ 200,000
Year 2- $ 200,000

Principal Investigator
Research Associate(s)

Research Outputs

- Applied R&D
- Literature Review
- Experimental Results
- Data Analytics
- Uncertainty Analysis
- Algorithms
- Models & Simulations
- Etc.

Fellow Activities

- Technical Work
- Reporting
- Cross Team Conference
- Joint Per-Reviewed Manuscript
- Monthly Reviews with PM
- Joint Team Presentations

Yellow University

SOFT COSTS

Funding: Year 1- $ 200,000
Year 2- $ 200,000

Principal Investigator
Research Associate(s)

Research Outputs

- Applied R&D
- Literature Review
- Experimental Results
- Data Analytics
- Uncertainty Analysis
- Algorithms
- Models & Simulations
- Etc.

Fellow Activities

- Technical Work
- Reporting
- Cross Team Conference
- Joint Per-Reviewed Manuscript
- Monthly Reviews with PM
- Joint Team Presentations

Orange University

MANUFACTURING & COMPETITIVENESS

Funding: Year 1- $ 200,000
Year 2- $ 200,000

Principal Investigator
Research Associate(s)

Research Outputs

- Applied R&D
- Literature Review
- Experimental Results
- Data Analytics
- Uncertainty Analysis
- Algorithms
- Models & Simulations
- Etc.

Fellow Activities

- Technical Work
- Reporting
- Cross Team Conference
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- Monthly Reviews with PM
- Joint Team Presentations

MSRDC

Science & Technology Research Partnership (STRP) Program

Program & Projects Integration

Research Development

- Recruitment & Outreach
- Application Process
- STRP Network & Community Building

Research Administration

- Technical Monitoring
- Technical Innovation Analysis
- Financial Oversight
- Research Convergence

Professional Development (PD) Program Plan

- Learning Objectives
- Content Design & Delivery
- Platform Dissemination

Program Outcome Evaluation & Monitoring

- Next Generation Leaders

Professional & Career Development Curriculum for PIs and Research Associates

Application Process

MSRDC has designed a 2-stage application process:

- Stage 1

Quad Charts (QC) and Abstract

- Opportunity for prospective applicants, especially non-traditional or first-time applicants to receive early feedback prior to submitting a short full application.
- Define and polish your research idea and project and verify alignment with Call for Submission.
- Instructions and QC template provided.
- *Deadline*: December 17, 2021

- Stage 2

Short Full Application; Concept Papers

- Brief but thorough description of the proposed research project and clear alignment with SETO's programmatic research area.
- 4 pages length.
- Instructions and CP template provided.
- *Deadline*: January 21, 2022

https://www.msrdconsortium.org/doe

Stage 1: Alignment with SETO

1. Quad Chart 2. Abstract, 250 words max 3. Key-words, five total

MSI STEM Research & Development CONSORTIUM

MSRDC Funding Vehicle: Cooperative Agreement No. W911SR-14-2-0001

Title

PI NAME / INSTITUTION / PROGRAMMATIC RESEARCH AREA

MSRDC SCIENCE & TECHNOLOGY RESEARCH PARTNERSHIP

PROBLEM STATEMENT / CURRENT STATE

Clearly identify the problem to be solved with the proposed project.

Explain the project's potential compared to existing or emerging technologies, and to the programmatic research area.

Bullet points are acceptable.

IMPACT

Describe how the proposed project will address the R&D requirements stated in the research focus area and advance the current state-of-the-art.

What long range impacts do you foresee this project having?

Bullet points are acceptable.

PROJECT/TECHNICAL APPROACH

Summarize the overall project goal, approach, and outcomes.

Please also describe your plan for disseminating research results and strategy for further technology development if successful.

Bullet points are acceptable.

COST & SCHEDULE Rough Order of Magnitude (ROM)

Project Personnel	Year 1 ($)	Year 2 ($)
Principal Investigator Undergraduate Student(s) Other(s)		

Key Milestones & Deliverables

Year 1:	Insert key milestones and deliverables for each year as appropriate.
Year 2:	

Stage 2: Concept Paper

Guidelines: Highlight Value!

Demonstrate science or technology, alignment with mission!

- How does it impact sponsor mission area?
- What problem are you trying to solve?
- If it works, will it matter?

Describe science and technology with as little jargon as you can luster.

- How does it work?
- What is new in your approach?
- Why do you think it will be successful?

Compare to state of the art.

- How is it done today?
- Why are today's solutions insufficient?
- How does your solution represent a dramatic improvement?

Identify challenges and solutions.

- What is the challenge to developing your specific scientific approach or technology? Why the challenge is a 'challenge'? Why should you be funded?
- Provide key insight/unique approach to solve problem.

Concept Paper Template, 4 pages max

Page 1 of 4

I. COVER PAGE

PROJECT TITLE

- Principal Investigator Name (applicant):
- Institution/Organization (applicant):
- Street Address/City/State/ZIP:
- Postal Address:
- PI telephone number, email:
- Administrative Point of Contact name, telephone number, email:
- Programmatic Research Area:

Note: For Multi-Institutional Teams, include the name for each additional institution/organization. Only submitting applicants will get funded.

II. ABSTRACT (250 words max)

- Describe the proposed project with minimal jargon and explain how it addresses the Programmatic Research Area.

Page 2 & 3 of 4

III. PROBLEM STATEMENT/CURRENT STATE

- Clearly identify the problem to be solved with the proposed project.
- Explain the project's potential compared to existing or emerging technologies.
- To the extent possible, provide quantitative metrics in a table that compares the proposed project to current and emerging technologies and to the Programmatic Research Area.
- Describe why the proposed project is a significant technical challenge and the key technical risks to the project.

IV. PROJECT/TECHNICAL APPROACH

- Describe the overall technical approach used to achieve project objectives.
- Discuss alternative approaches considered, if any, and why the proposed approach is most appropriate for the project objectives.
- Describe the background, theory, simulation, modeling, experimental data, or other sound engineering and scientific practices or principles that support the proposed approach. Provide specific examples of supporting data and/or appropriate citations to the scientific and technical literature.
- Describe your plan for disseminating research results and strategy for further technology development if successful.

V. INNOVATION AND IMPACT

- Describe how the proposed effort represents an innovative and potentially transformational solution to the technical challenges posed by the Programmatic Research Area.
- What long range impacts do you foresee this project having?

VI. COST & SCHEDULE

- Describe the anticipated cost, key milestones, and deliverable(s) for the project, for a 24-month performance period. Consider the following tables to summarize the information,

Project Personnel	Year 1 ($)	Year 2 ($)
Principal Investigator Undergraduate Student(s) Other(s)		

Key Milestones & Deliverables	
Year 1	Insert key milestones and deliverables for each year as appropriate.
Year 2	

VII. TEAM ORGANIZATION AND CAPABILITIES

- Describe in 1-2 sentences the skills and experience that PI brings to the team.
- Identify key capabilities provided by the institutions(s) and/or organization(s) comprising the University Team and how those key capabilities will be used in the proposed effort.

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VIII. REFERENCES

Award & Finalists Selection

Award

- Five University Teams,
  one under each Call for Submission
- $400,000/per award
- 24 months period of performance

- The University Team must include a Principal Investigator (PI) from the university and at least one undergraduate student, along with any additional graduate students and/or postdoctoral staff.

Selection pre-Awards

- The selection will proceed through a merit-application process that includes a thorough review of eligibility and scientific/technical readiness.
- Each application will undergo a merit review process by which it will be scored (1=Poor; 2=Average; 3=Good; 4=Excellent) according to the merit review criteria provided below, but not limited to,
  - Clear Alignment of the Proposed Research to the SETO's Calls for Submission.
  - Appropriateness of the Proposed Method or Approach.
  - Competency of Applicant's Personnel and Adequacy of Proposed Resources.
  - Reasonableness and Appropriateness of the Proposed Budget.

Eligibility & Partnerships

Eligibility

- Applications must be submitted from MSIs that are members of MSRDC.
- If you are from an MSI, you can join the consortium here, https://www.msrdconsortium.org/join
- If you are a non-MSI college or university or a private entity, you can become a partner of the consortium to collaborate with these institutions on projects.

Partnerships

- Collaborations on research projects are strongly encouraged.
- Non-MSI institutions can be included as sub-awardees to the MSI applicant.

Get In Touch

Learn More About the STRP: https://www.msrdconsortium.org/doe

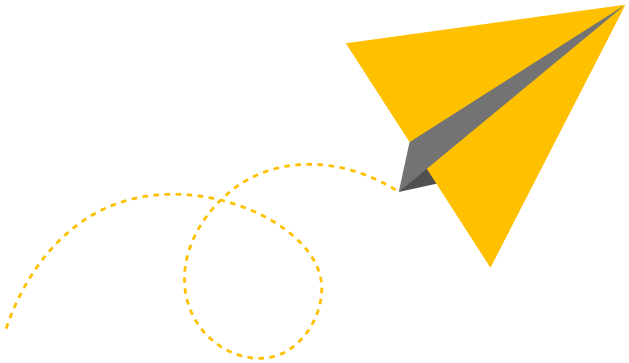
Research Focus Areas: https://www.msrdconsortium.org/doe-seto-funding-opportunities

Find Out How to Join MSRDC: https://www.energy.gov/sites/default/files/2021-11/How-to-Join-MSRDC.pdf

Meet the MSRDC Members: https://www.msrdconsortium.org/members

Browse SETO's Research Area: https://www.energy.gov/eere/solar/solar-energy-research-areas

Email Us: Fellowships@msrdconsortium.org



Thank You

Wrap Up / Adjourn