

## CENTER OF EXCELLENCE FOR ENERGY

### Second Call for Joint Research Proposals

**UPDATE Dec 14-2023**

**Deadline Extended to Jan 20<sup>th</sup> 2024**

COE/E committee members are eligible to apply but will be excluded from participating in the evaluation and selection process.

#### Timeline:

- Call for Proposals: Oct 24, 2023
- **Deadline Extended to Jan 20<sup>th</sup> 2024**
- Submission web site: The link to submit proposals is:  
<https://airtable.com/apphNgNftEMAWaEP4/shrtng5jPbtwnKOcc>
- Reviews and final announcement: March 20, 2024

#### I. Program overview:

Arizona State University (ASU-US) established the Center of Excellence for Energy (COE/E) in Egypt with funding and support from the United States Agency for International Development (USAID/Egypt) in November 2021. COE/E is a partnership between ASU-US and three Egyptian partner universities (EPU): Ain Shams University (ASU-EG), Aswan University (AU), and Mansoura University (MU).

Energy is the defining challenge of the 21<sup>st</sup> century. As part of COE/E, ASU-US and EPUs aim to conduct research in areas that meet Egypt's most critical energy sector needs—such as developing renewable and sustainable energy sources, progressing new technologies to help curb energy demand, studying implications for climate change and the environment, and formulating appropriate and timely policy responses. Research will have a direct impact on Egypt's energy economy, industry, utilities, and workforce.

COE/E is launching a joint research grant program to support high-quality applied research projects in key energy-related areas. Faculty at EPUs are invited to submit proposals in key areas defined below.

All proposals are required to form partnerships and support from industry, utility companies, the government, and/or civil society for research support, matching funds, and project directions. The support can be in forms of financial support, in-kind, and/or direct technical engagement of industry in the project.

All joint research proposals should have one ASU-US faculty member designated as a Co-PI. Joint research proposals should have plans to develop transformative, multi-disciplinary approaches to energy solutions that will make a significant impact on Egypt's energy sector. For more details, please see **COE/E Research handbook**.

## II. Eligibility

The proposals must follow the requirements discussed in the “COE/E Research Handbook” and include all the sections and required forms in the proposal template available on the website.

**Team members:** Each proposal should have a team consisting of one PI, one ASU-US Co-PI; Co-PIs from EPU (Medium & Large projects only); and Student Researcher(s) (postgraduate or undergraduate). Number and composition of team members will vary by project size. Only faculty members from EPU (i.e., ASU-EG, MU, or AU) can submit joint research proposals. Each proposal must involve one Arizona State University faculty member as a Co-PI. Each proposal should have a team consisting of the following team members:

- **Principal Investigator (PI):** A designated EPU faculty member who will be responsible for the scientific or technical direction of the project. The PI is responsible for proposal submission and project reporting and will be responsible and accountable for the proper conduct of the project. There can be only one PI on a proposal, and the PI is required to be a faculty member at an EPU.
- **Co-Principal Investigator (Co-PI):** A designated faculty member working in partnership with the PI in the management, development, and/or execution of the project. Projects must have one faculty member at ASU-US serving as Co-PI; there can be only one ASU-US Co-PI. Involvement of other Co-PIs from EPU will be determined by project size.
  - Each faculty can be a PI only on one proposal, but can be a Co-PI on multiple proposals
  - A list of energy faculty at ASU-US and their areas of expertise is found on the COE/E website to assist PIs to find and contact potential Co-PIs; however, Co-PIs are not required to come from this list.
- **Student Researchers:** Designated postgraduate (PhD, MS) or undergraduate (BS) students who will participate in the research project under the direction of PIs and/or Co-PIs. Student(s) must be from EPU or ASU-US; the number of students will depend on project size.
- **Large Proposals:** Large proposals must include at least one faculty from the other EPU universities. Faculty members from Egyptian Universities may submit only one large collaborative proposal per grant cycle, as a PI.
- **Conflict of Interest:** COE/E and partnering universities are committed to upholding a fair and unbiased evaluation of research proposals and awarding of grant funds. Any faculty with conflict of interest will not be eligible to serve as PIs or team members on the research proposals. **COE/E committee members are eligible to**



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apply but will be excluded from participating in the evaluation and selection process.

For more details, please see COE/E Research handbook.

- **Research Areas:** Proposals are required to be within the defined areas of research outlined below and have clearly identified the research area in the proposal.
- **Diversity:** COE/E encourages at least 30% of researchers and students be from underrepresented groups such as women, persons with disabilities, and those from financially disadvantaged backgrounds.
- **Format:** All the proposals should follow the proposal format, and resume format outlined in the COE/E Research handbook.
- **Industry and other partnership:** All the proposals should have partnership and support (financial, in-kind, and/or technical) from industry, utility companies, government, and/or Egyptian civil society.
- **Impact on the Egyptian energy sector:** All proposals must clearly discuss how the proposal will make an impact in the Egypt's energy sector.
- **Intellectual Property:** Project teams will be asked to comply with Intellectual Property and Research Guidelines Statements. Signatures on compliance statements will be required.
- **Environmental Impact:** Projects that incur large, substantial, and/or significant environmental impact must inform COE/E for further action.
- **Reporting:** Each project will submit bi-annual progress reports and presentation to COE/E committees. The continuation of selected projects will be contingent upon satisfactory progress and recommendations by the review committee, technical committees, and stakeholders bi-annually. If the project is not making satisfactory progress, it will be terminated.
- **Signed Agreement form:** All the proposals should have the COE RESEARCH AGREEMENT FORM submitted with the proposal.

Proposals that do not adhere to eligibility criteria above will not be considered for further evaluation. For more details, please see **COE/E Research handbook**.

### III. Research areas

One of our key goals will be the development of the National Energy Roadmap that can assist in Egypt's 2035 climate goals. Working with the stakeholders, government, industry, academic, and researchers, we have identified a set of the topics and areas of research. Proposals are required to be within the following areas based on the strategic roadmap and stakeholders' feedback are:

- I. **Analyzing pathways and technical requirements to achieve Egypt's 2035 goals for renewable penetration.**



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Modeling and developing tools for the analysis, forecasting, and policy decisions for the Energy generation, distribution, use, and future planning. Analyzing impacts of renewable resources on stability of power system of Egypt.

## **2. Energy Efficiency in Buildings**

Empowering Advanced Technologies and Energy Efficient Materials for Enhanced Efficiency in Buildings, Vehicles, Infrastructure Construction and Manufacturing. Smart Metering, High-Efficiency Lighting. Efficient, load-flexible buildings for high ambient temperatures. Smart Building.

## **3. Efficient and environmentally friendly waste-to-energy conversion.**

Decarbonizing industrial process heating, integration of Solar and Renewable Energy Sources for Chemical and Environmental Processing in Agriculture and Other Industries

## **4. Performance evaluation, reliability evaluation, and monitoring of solar PV modules, systems, and plants.**

Technologies for aging detection, and predictive maintenance of critical power system assets. Toxicity and end-of-life (EOL) evaluation of PV system components, including PV modules.

## **5. Electric vehicle battery chargers, new battery technologies and battery management systems.**

Bidirectional charging systems: Vehicle-to-Grid (V2G), G2V, Vehicle- to-Home. Vehicle-to-load (V2L). Wireless power transfer technologies. Battery recycling supply chain analysis.

## **6. Hydrogen economy as a pathway for decarbonization.**

The cycle includes hydrogen production (green, blue, etc.); hydrogen storage and transportation including different physical and chemical methods (solid state, ammonia, methanol, etc.); fuel cells (electric vehicles, handheld devices, stationary systems, etc.); use of hydrogen in thermal power generation and different chemical industries, etc.

#### IV. Funding Information:

COE/E will fund research projects of varying scopes and sizes according to the below plan. Total budget will depend on the faculty ranking, equipment, and other expenses.

##### Funding Timeline: 2024-2026

- **Duration:** Two years
- **Total number:** TBD based on the budget.
- **Reporting:** Each project will be reviewed twice a year (every 6 months) by COE/E committee and ASU-US (Written report and PPT presentation to the committee)
- **Total Salary Budget:** Less than 30% of the total budget. Guidelines will be provided.
- **Total Equipment Budget:** Less than 30% of the total budget
- For more information, please see the COE/E Research Handbook.

##### A. Large Projects:

- **Team members: 4-6 EPU, One ASU-US**
  - One PI (EPU only)
  - 3-5 EPU Co-PIs (with at least one faculty from a different EPU than the PI)
  - 4-6 EPU Student Researchers (graduate or undergraduate)
  - One ASU-US Co-PI; Two ASU-US graduate students
- **Total Salary Budget:** Less than 30% of the total budget,
- **Total Equipment Budget:** Less than 30% of the total budget
- **Graduate student internship:**
  - Two from EPU to ASU-US for one term (5 months)
  - Two student per project once for one term ( $\$20,000 \times 2 = \$40,000$ )
- **Faculty Travel to US:**
  - Two EPU PI per project traveling to ASU-US for two weeks
  - Two trip once per project ( $\$7500 \times 2 = \$15000$ )
- **Faculty Domestic Travel**
- **Publication**
- **Other Costs**
- **Total: Maximum of \$160,000 Direct Costs for two years for each large project (No Overheads)**

##### B. Medium Projects:

- **Team members: 3-4 EPU, One ASU-US**
  - One PI (EPU only);
  - 2-3 EPU Co-PIs)
  - 3-5 EPU Student Researchers (graduate or undergraduate)
  - One ASU-US Co-PI; Two ASU-US graduate students
- **Total Salary Budget:** Less than 30% of the total budget ,

- **Total Equipment Budget** : Less than 30% of the total budget
- **Graduate student internship:**
  - One from EPU to ASU-US for one term (5 months)
  - one student per project once for one term (\$20,000)
- **Faculty Travel to US:**
  - One EPU PI per project traveling to ASU-US for two weeks
  - One trip once per project (\$7500)
- **Faculty Domestic Travel**
- **Publication**
- **Other Costs**
- **Total: Maximum of \$125,000 Direct Costs for two years for each large project** (No Overheads)

**Note:** Exact Number of large and medium projects and the amount maybe modified anytime based on the budget. The COE/E will fund research projects of varying scopes and sizes according to the below plan. Total budget will depend on the faculty ranking, equipment, and other expenses. Final budgets are contingent upon approval from COE/E. For more details, please see the **COE/E Research Handbook**.

#### **V. Proposal format:**

The proposals must follow the required format given in the proposal template, available on COE's website.

#### **VI. Proposal Evaluation**

See the **COE/E Research Handbook** document for details on the evaluation and selection process.

#### **VII. Proposal submission**

Submission web site: The link to submit proposals is:

<https://airtable.com/apphNgNftEMAwaEP4/shrtng5jPbtwnKOcc>

#### **VIII. Biannual presentation review:**

The funded research projects will be evaluated biannually based on the milestones indicated in the proposals. Deliverables such as research products and/or publications, presentations and/or posters at national and international scientific meetings, and patents will be considered for milestone completion. The specifics of the biannual review criteria will be developed and communicated to PIs.

For any further questions, please email [COE-Egypt@asu.edu](mailto:COE-Egypt@asu.edu).



**Disclaimer:** COE/E, ASU-US, EPU, and the individuals employed by and representing the above accept no liability of any nature whether resulting from negligence or otherwise caused arising from reliance of any applicant upon the statements contained in any call for proposals (CFP) or other digital or physical materials.

COE/E may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this document, including reporting requirements, for example the content, form, and timing of financial reporting.

The issue of an CFP does not imply that COE/E is bound to select an applicant or to award the funds related to the CFP. COE/E reserves the right to reject all or any of the proposals. The applicant shall bear all its costs associated with or relating to the preparation and submission of its proposal. All such costs and expenses will remain with the applicant and COE/E shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by an applicant in preparation or submission of the proposal, regardless of the conduct or outcome of the selection process.

For more information, please see the COE/E Research Handbook.

