

**“COMPETITIVE FUNDING” INITIATIVE CALL FOR PROPOSALS:****APPLIED MATH, ECONOMIC, SOCIAL, LAW, AND POLITICAL SCIENCES TO  
ADDRESS CURRENT AND FUTURE ENERGY CHALLENGES**

Every year, I<sup>2</sup>CNER allocates resources to seed new interdisciplinary research projects that will lead to the creation of novel research fields. Continuing last year’s successful effort, I<sup>2</sup>CNER announces another “Competitive Funding” initiative to support relationships among faculty of Kyushu University applying mathematics, economic, social, law, and political sciences to i) solve fundamental problems underlying old and new energy technologies; and ii) understand and advance energy policy. Proposed research should address research objectives of I<sup>2</sup>CNER as stated in the division roadmaps (<http://i2cner.kyushu-u.ac.jp/en/team/index.php>) or other important energy problems listed on the next page. Example research areas include, but are not limited to: risk, uncertainty, cost, and security. **Faculty are asked to submit a short (no more than three pages, including a fourth page for references) proposal that clearly describes the planned research effort and goals.** Proposals should show: i) how the Competitive Funding will significantly advance the research (it must not simply supplement existing efforts); ii) how the synergism of math and natural, economic, social, law, or political sciences will uniquely contribute to solving energy challenges; and iii) the capabilities of the team to address the challenge, and plans for collaborative publications. Collaborations among Kyushu faculty and faculty at the University of Illinois or other partnering institutions are also welcome.<sup>1</sup>

It is expected that individual projects will be funded at a level of 0.5 to 1 million JPY in FY 2016. Continuation of the projects in FY 2017 is possible, provided that solid progress has been made in this first term, and that the prospects for obtaining additional funding from a national agency to continue the research in the longer term are evident.

The deadline for submission of such proposals is October 7, 2016.

Submit proposals to:

Shunichi Masuda: [masuda.shunichi.097@m.kyushu-u.ac.jp](mailto:masuda.shunichi.097@m.kyushu-u.ac.jp)

Administrative Director,

International Institute for Carbon-Neutral Energy Research

Kyushu University

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<sup>1</sup> The Director of I<sup>2</sup>CNER and EVP Wakayama can help establish connections with engineers, applied mathematicians or social or law or political or economics scientists at the University of Illinois.

### **Energy Problems for Applied Math**

Quantitative analysis, forecast, and recommendations related to:

- Management of the electricity grid of Japan, other infrastructure, and how to dramatically reduce carbon emissions through the use of renewable resources and energy storage to meet Japan's future power needs.
- How to achieve a low carbon emission energy infrastructure for Japan by 2050.
- The potential for Japan to import low carbon fuel or energy source such as biomass and how much energy demand this could meet.
- The needs, costs, and opportunities for deployment of a hydrogen infrastructure for Japan for fuel cell vehicles.
- The potential impact on energy, exergy, carbon emission, and cost of existing or new I<sup>2</sup>CNER research projects and other new emerging technologies to quantify their benefits and to guide future research directions for I<sup>2</sup>CNER.
- Technoeconomics of energy systems, societal perceptions and understanding.

Verifiable predictive mathematical or computational modeling of energy systems characterized by diverse phenomena and/or scales

- Energy from the viewpoint of social systems.
- Stochastic energy systems and energy systems with uncertainty.
- Big data-model fusion for complex energy systems.
- Interaction between sub-models in hierarchical energy systems.

### **Energy Problems for Social, Economic, Law, and Political Sciences**

- Politics of energy in view of the related current world trends and Japan's concerns for its future energy security, sustainability, internationalization of energy industries, activation of energy markets, and liberalization of the electricity grid and markets.