

Georgia Southern University

**Digital Commons@Georgia Southern**

---

Engineering & Computing, Allen E. Paulson  
College of - News

College of Engineering and Computing  
Publications

---

9-2-2022

## College of Engineering News

Georgia Southern University

Follow this and additional works at: <https://digitalcommons.georgiasouthern.edu/cec-news>

---

This news article is brought to you for free and open access by the College of Engineering and Computing Publications at Digital Commons@Georgia Southern. It has been accepted for inclusion in Engineering & Computing, Allen E. Paulson College of - News by an authorized administrator of Digital Commons@Georgia Southern. For more information, please contact [digitalcommons@georgiasouthern.edu](mailto:digitalcommons@georgiasouthern.edu).

# U.S. Dept. of Energy Awards Two Grants to Dr. Prakash Bhoi

September 2, 2022

[Dr. Prakashbhai Bhoi](#), assistant professor of [Mechanical Engineering](#), received two awards from the U.S. [Department of Energy's Office of Fossil Energy and Carbon Management](#) to support university training and research for decarbonization and environmental remediation projects. These awards were two of only 18 projects funded nationally; Dr. Bhoi is Principal Investigator (PI) for one, and Co-PI for another.

” ‘As we transition to a net-zero greenhouse gas economy, it is critical to invest in the development of a highly skilled workforce — one that is focused on diversity and inclusion — to foster the innovative solutions needed to tackle climate change and ensure clean, affordable energy for our communities,’ said Brad Crabtree, Assistant Secretary for Fossil Energy and Carbon Management.”<sup>1</sup> The goals of sustainability, diversity and inclusion, and workforce development are embodied in [Georgia Southern's Strategic Pillars](#) #3 – Inclusive Excellence; #4 – Operational Efficiency, Effectiveness and Sustainability; and #1 – Student Success, respectively.

Dr. Bhoi will lead the project [Feasibility Study of Coal Refuse and Biomass/Torrefied Biomass Co-fired Power Plant](#). This \$400,000 project will to design and optimize coal refuse and biomass/torrefied biomass co-fired power plants of 100 and 600 MW capacity to accomplish carbon-neutral or carbon-negative power generation. More specifically, GSU will analyze the performance, techno-economic (TEA), and lifecycle (LCA) of varying co-firing ratios of biomass/torrefied biomass and coal refuse co-fired power plants. The research will provide the effects of biomass and coal refuse cost, capture levels, plant efficiencies, and plant capacities on levelized cost of electricity (LCOE). This project is beneficial for land reclamation of legacy coal stockpiles, and could improve the environment and health of the community. In addition, the project team will train and educate early-career scientists as well as graduate and undergraduate students to meet the goal of a diverse workforce prepared to address the technological challenges associated with climate change.

Dr. Bhoi will participate as Co-PI on a project with The Ohio State on another \$400,000 project *Co-firing switchgrass and waste coal in a power plant: A techno-economic and life cycle evaluation for the Ohio River Valley (SWITCH)*. This team will develop a modeling framework and identify scenarios with net-zero or net-negative greenhouse gas (GHG) emissions and lower LCOE production for a waste coal and switchgrass co-fired power plant equipped with carbon capture and storage in the Ohio River Valley. The modeling framework will integrate multiple types of models and tools, including watershed, machine learning (ML), feedstock production, logistics, power generation, CCS, TEA and LCA. The team envisions using the waste coal available in un-reclaimed mine lands and, after removal of the waste coal, establishing switchgrass to reclaim the mine land, reduce environmental impacts, and produce feedstocks for power plants. Furthermore, the modeling framework could be adopted in other regions with

waste coal on un-reclaimed mine land. The project will also train postdoctoral researchers and a graduate student in conducting modeling of the proposed system and educate undergraduate and graduate students on the potential of co-firing waste coal and biomass for power generation.

Posted in [CEC News](#)