PURDUE INNOVATES | Office of Technology Commercialization

The American-Atlantic Energy-Water Corridor (AEWC): A Continental Energy Grid to Power the Next AI Revolution

American Energy-Water Corridor links the Americas in a continental supergrid for resilient clean power, water security, and AI-era infrastructure.

Researchers at Purdue University designed the American Energy-Water Corridor (AEWC), a massive electrical network that connects North, Central, South American, and Carribean countries in a synchronized clean power grid. As electric demand increases due to population growth, the need for a reliable energy supply across countries, access to clean water for sustainable agriculture, and robust infrastructure is needed to support the upcoming industrial-data revolution. The AEWC utilizes the vast, renewable resources in the region and leverages advanced technologies such as AI to guarantee resilient and affordable access to electricity for all consumers, even during times of peak demand and extreme weather events. Similarly proposed grids which only account for the sharing of a single resource, are limited by complex topographies, political disagreements, and techno-economic constraints. This super grid developed at Purdue establishes links into a shared power grid that will connect previously fragmented electrical-gas-fuel networks, previously considered infeasible due to geopolitical constraints.

Technology Validation: A thorough, dataâ€“driven, renewable resources analysis was performed to assess renewable energy potentials subject to today's technological limitations, revealing energy densities of âˆ¼300 W/m2 and âˆ¼200 W/m2 for offshore wind and onshore solar.

Advantages:

-Constant energy supply via connection of existing shared grids

-Enhances societal development

-Robust infrastructure

-Facilitates informed discussions and policy action on critical challenges facing the Americas, such as clean energy, water resource management,

Technology ID
2025-CAST-71030

Category
Agriculture, Nutrition, & AgTech/Livestock & Animal Health Solutions
Artificial Intelligence & Machine Learning/Computer Vision & Image Recognition

Authors
Diego Aguilar
Luciano Castillo

Further information
Aaron Taggart
adtaggart@prf.org

View online

mass migration, and regional stability.

Applications:

-Energy-water security

-Renewable energy

-Societal development

-Governmental policy

Related Publications:

Castillo, Luciano; George, William K.; Gore, Jay P.; Adrian, Ronald; Bocanegra Evans, Humberto; Gutierrez, Walter; Coimbra, Carlos FM; Wosnik, Martin; Warsinger, David M.; Castillo-Chavez, Carlos; Chamorro, Leonardo P.; Barthelmie, Rebecca J.; Pryor, Sara C.; Dabiri, John O.; McKeon, Beverly; Christensen, Kenneth T.; Hussain, Fazzle; Fernando, Harindra J.; Oran, Elaine; Riley, James J.; and Tapia, Richard, "An Energy-Water Corridor Along the US/Mexico Border: Changing the 'Conversation'" (2021). School of Mechanical Engineering Working Papers. Paper 3, https://docs.lib.purdue.edu/mewp/3

Aguilar, D., CastaÃ±o, V., QuiÃ±ones, J., Castillo, L. (2025). The Caribbean Energy Corridor: On Energy-Water Security and Prosperity for the Region. Submitted to Nature Energy (under review).

TRL: 2

Intellectual Property:

Provisional-Patent, 2025-02-25, United States

Keywords: AI, Artificial Intelligence, Electrical Engineering, energy security, Green Technology, Renewable Energy, water security