



11 employees
in Indiana

Energy Systems Network (ESN) is an Indianapolis-based nonprofit initiative focused on the development of the advanced energy technology and transportation sectors. ESN collaborates with industry, academia, and government partners to deliver sustainable energy and mobility solutions. ESN's mission is to leverage its network of global thought leaders to develop integrated energy solutions to increase quality of life for today and tomorrow. The company's focus is to: reduce costs, emissions and waste; influence policy; and advance technological innovation.

Why is data science/analytics important to your organization?

ESN is mission-driven to enhance cross-sector energy efficiency throughout Indiana by building an energy ecosystem. Data analytics are an essential part of that mission, especially as pertains to validating new technologies. Regardless of whether a new technology is used in transportation, the built environment, energy storage, or the grid, any pilot will need to compare performance measures for the status quo scenario and the scenario in which the new technology is implemented. Over time, performance metrics indicate whether and to what extent the technology's efficacy depreciates.

As the energy ecosystem becomes increasingly interconnected, data science techniques will improve system efficiency and allow sectors to share energy use data for advanced decision-making. Machine learning and other artificial intelligence techniques will be able to digest energy production and use data to optimize consumption behavior. In turn, these processes will minimize end-user costs and reduce energy consumption and associated externalities.

What programs at your organization focus on data science and analytics?

In partnership with the Toyota Mobility Foundation, ESN is running a series of pilot programs through the Together In Motion initiative. These include:

- An autonomous vehicle shuttle program, which relies heavily on machine learning and dynamic communications protocols;
- A contactless delivery program, which will use a version of the traveling salesman problem to optimize delivery efficiency; and
- Several traffic and curb management programs, which will include AI-powered sensors and automated communication.

Open FMB utilizes an in-house algorithm to allow various message bus protocols to seamlessly communicate with each other.

Hoosier Solar utilizes PVSYST that utilizes an algorithm to determine volume of electricity at a specific location through expected sunshine over the course of forecasted for a year.

The CHP program uses Options Theory (e.g., Kirk closed-form solution) in relation to asset valuations across the energy spectrum.

