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ESTEP Research Project Spotlight: Virtual Smart Grid

Seals, Jamis

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Energy Academic Group **/** Research **/** ESTEP **/** Research Spotlight
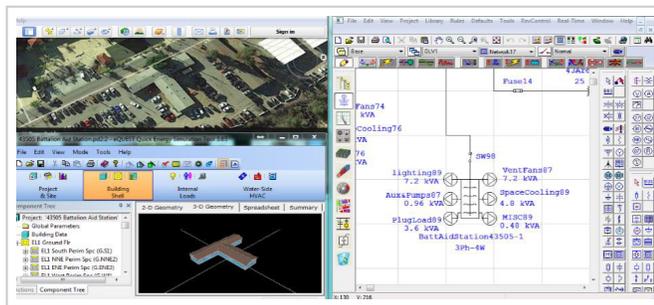
ESTEP Research Project Spotlight

Virtual Smart Grid

The Virtual Smart Grid (VSG) ESTEP project is an effort to create a computer model and simulation of the electrical grid and power infrastructure at Marine Core Base Camp Pendleton. The purpose of this model is to test energy infrastructure modeling software that would allow base energy managers to digitally recreate their bases' electrica

I grid for the purposes of identifying inefficiencies and planning future upgrades. These models would also have the benefits of identifying critical failure points and helping energy managers reduce utility costs.

One of the most significant findings of this effort was that the process of creating the model was often just as useful as the actual model itself. Going through the process of creating a digital representation of the electrical grid allowed energy managers to identify mistakes in previous records and create a centralized up to date record of their bases' power grids. Without a

ESTEP Research Spotlight

Project Spotlight: Virtual Smart Grid

Project Spotlight: NPS TurboProp Lab Microgrid

Interested in ESTEP or Energy-Related Thesis Research?

Over the past five years, NPS and the EAG supported a plethora of student thesis research in the area of energy. A compilation of abstracts on student thesis and other research is available on the EAG website. The EAG's extensive resources, intellectual capital, and connections with multi-disciplinary faculty and energy professionals provide students enhanced support for energy-related research. If interested in energy research, please reach out to Brandon

comprehensive digital record to document the grid, energy managers would have to waste time hunting down paper records scattered throughout different organizations on the base that may or may not even be up to date. The research that goes into the model can also identify problems that had previously gone unnoticed.

The VSG ESTEP project was also the topic of a thesis by NPS student Jamis Seals. In her thesis, she highlights several examples where the VSG was used to identify minor grid adjustments that could yield significant cost savings, where VSG modeling could have informed component selection in building upgrades, and other examples that formed a business case for VSG modeling. Power infrastructure modeling software is still in its infancy, but the examples in Seals' thesis demonstrate the technology's potential benefits from both a fiscal and resiliency perspective as the field matures.

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