



A top-down view of a desk workspace. In the top left, a white mug with a latte sits on a white surface. Below it, a white pen lies on a document. A yellow sticky note with handwritten text is placed on a document. To the right, a blue calculator sits on a document. A silver pen and a pair of glasses are also visible. In the bottom left, a white ruler and a white pen are on a document. A green bar chart with bars labeled A through I is visible. The bars have the following values: A (51-60), B (70), C (80), D (90), E (100), F (110), G (120), H (130), I (140). The background is a light gray wall.

ENERGY STRATEGIES

BRINGING A MASTER PLAN TO LIFE

BY DAVID VINSON, PHD

A growing number of colleges and universities across the country are incorporating renewable energy, energy efficiency, and environmental stewardship into actionable plans. This shift in institutional values reflects strategies for addressing ongoing ecological concerns just as it serves the connectivity, reliability, and efficiency of campus operations that play a critical role in providing a competitive and ideal learning environment. Strategic plans are foundational in terms of reaching institutional goals, and certainly they play a vital role in determining and satisfying environmental initiatives.



A strategic plan tailored towards sustainability and environmental stewardship demands that capital be raised. To do so requires a collective effort that is facilitated by the support of donors and the campus community. Local support, however, may not be enough. Many higher education institutions have had to get more creative about alternative sources of funding. For instance, power purchase agreements—covering solar, wind, or cogeneration—are a creative way of financing projects when access to capital is limited. Executing strategic plans also demand an extensive understanding of the campus' opportunities for growth in energy sufficiency. What follows are examples of how private universities are addressing these opportunities and meeting energy needs while improving environmental health.

The Duke University Energy Initiative

Despite its status as a heavily residential school, Duke University (Durham, North Carolina) recognized that nearly half of its environmental footprint derived from students commuting to and from campus. A task force was assembled; its objectives were to address sustainability and then articulate those visions within an overall plan. Following the plan's design, a plan for utilities was created. The two plans are separate, standalone documents. The utility plan determined the infrastructure and policies needed to build out the main plan in a sustainable manner. The Duke University Energy Initiative is one outcome of Duke's overall plan—a university-wide, interdisciplinary collaboration focused on advancing an accessible, affordable, reliable, and clean energy system. The Initiative extends across business, engineering, environment, law,

policy, and the arts and sciences to educate future energy innovators. Moreover, it sets out to develop innovative solutions through research and to improve energy decisions by engaging business and government leaders.

The Energy Initiative promotes a wide range of energy-related research across the university, from projects by individual investigators to activities that partner faculty, staff, and students with outside institutions, corporations, governments, and non-governmental organizations. Focal points for researchers at Duke include new energy materials and fuels; energy economics and modeling for improved energy policies; energy data analytics to inform energy production and use; and science and technologies that reduce the impact of energy on the environment. In fact, the Energy Initiative supports this research by providing seed funding for new investigations as well as access to other financial and human resources. The Initiative also sponsors workshops and seminars where research is shared, and it maintains a database of energy-focused faculty and staff that can be searched for collaborators and subject-matter experts.

Developing a Culture of Energy Solutions

The extensive support for research at Duke is but one aspect of the university's commitment to energy solutions. Its main campus has one of the largest utility networks in the Southeast, and the university manages heating, cooling, and electricity infrastructure for over twenty million square feet of buildings on campus. A significant portion of Duke's energy reduction has come from energy efficiency projects that range from LED lighting upgrades, HVAC scheduling, efficiency improvements in building mechanical systems, and district steam to hot water conversion. Phase One of Duke's energy efficient upgrades addressed LED lighting upgrades for fifteen buildings, generating a total lifetime cost savings of nearly \$700,000. In Phase Two, Duke completed LEED building upgrades and expects to save nearly \$350,000. Duke now has nearly fifty LEED-certified buildings that cover almost 5.3 million gross square feet (GSF), equivalent to 32% of the university's total GSF.

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In 2018, Duke developed the High Performance Building Framework, which was finalized the following year. The framework adopts a holistic view of green building by outlining an improved process for planning campus buildings, a rigorous sustainable design standard for all new buildings and major renovations, and a new tracking and rating system to determine how facilities perform following construction to ensure that buildings reduce energy and potable water use. Moreover, Duke will bolster its renewable energy capabilities via the purchase of 101 megawatts of solar capacity from three new solar facilities planned for North Carolina. New solar farms will be constructed and are expected to be operational before 2024.

Energy Efficiency Strategies at Emory University

Like Duke University, Emory University (Atlanta, Georgia) is at the forefront of

addressing energy efficiency and the increased use of renewable energy. With its newest strategic plan, 2025 Sustainability Vision, Emory has committed to reducing campus energy use per square foot by 50% and total energy use by 25%. The university has also committed to incorporating major building renovations into LEED silver commitment or higher; to adopting regenerative architectural standards such as net zero impact; and to reducing campus water consumption by 50%. Their goals are within reach, not least of all because of meticulous planning and turning ideas into action. In 2020, Emory began installing more than 15,000 solar panels across sixteen buildings on its Druid Hills campus, which will generate roughly 10% of its peak energy requirements while also reducing its greenhouse gas emissions by 4,300 metric tons. Since 2015, Emory has managed an overall energy use per square foot

(EUI) reduction of 15.3% and an overall total energy reduction of 14.1%.

Renewable energy is also on the rise at Emory. In 2021, the university's solar projects produced over 2,710 MWh of electricity, a 410% increase over the previous year. The Emory Student Center harnesses energy from solar panels to preheat potable water, and it uses a system of geothermal wells to aid in the heating and cooling of the facility. Emory is enrolled in the Department of Energy's Smart Lab Accelerator Program, which helps to advance strategies that improve energy efficiency in laboratory buildings. In fact, as recently as 2019, Emory was acknowledged for its outstanding participation in the program by surpassing the 5% reduction target with a 7.2% reduction in one lab building's energy use over two years. Emory's largest stationary source of energy use is that which is used to heat and cool its buildings. In response, Emory has implemented a temperature control policy for weekend, evening, and holiday building shutdowns. To further promote its campus-wide culture of energy solutions, the university also hosts an Energy Competition recognizing buildings that reduce the most energy throughout each month.

Strategy and Execution

Higher education in the U.S. accounts for over twenty million post-secondary students and about five billion square feet of floor-space. As civic, academic, and cultural stewards, institutions of higher education are in a unique position to transform lives and economies while safeguarding the planet. Strategic planning—and the execution of that planning—can make a profound difference both in the present and future. The examples of Duke University and Emory University are but two of many in which higher education institutions have demonstrated the desire and commitment needed to accomplish the work ahead.



ABOUT THE AUTHOR: Dr. David Vinson has a PhD in English with specializations in transatlantic literature and cultural studies.

He is a committed scholar, teacher, and dad. If you ever meet David, avoid the subject of soccer. His fandom borders on the truly obnoxious.

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