

Partners in Promoting Mindful Driving at the University of Virginia Facilities Management

Institutional Benefit

UVA FM's mission is:

Creating and caring for the physical environment in which those who seek enlightenment, knowledge, health, and productive lives can flourish.

In the UVA FM Annual Report; Serving the Greater Good: Facilities Management highlights this collaborate work with UVA professors and students in the classroom, benefitting students' learning and assisting with the department's operations.

[UVA Facilities Management Annual Report](#)

According to UVA Professor Park:

"With a strong emphasis on sustainability and community engagement by the President of the University of Virginia, a capstone team in the engineering school conducted a joint research project with Facilities Management. The main purpose of this project, in terms of engineering education, was to allow a capstone team (four 4th year students) in the engineering systems & environment department to work on a real-world problem using the knowledge they accumulated throughout their undergraduate education. The real-world problem dealt with by the capstone team was to further improve FM vehicles' energy consumption through advanced data analytics and education.

According to the National Association of Fleet Administrators (NAFA)

The University of Virginia wanted to start using an eco-driving training program but was unable to find one which served its needs. This began a fascinating, multi-level project which brought together Facilities Management and students at the University's School of Engineering. As a capstone 4th year student project, students examined real-life data of driver behavior at UVA collected from its telemetric system.

This data evaluation enabled UVA to develop and pilot a customized Mindful Driver training program that was populated by UVA's own driver behavior, identifying specific areas to address. The effort also kept a control group who received no training. Findings were a 45.9% decrease in idling time per mile driven compared to the control group. They are also working on a route analysis that should result in decreased trips and lower fuel consumption. They believe this is the first agency specific, data driven sustainable driver training program developed from intra-institution-based statistics. UVA also foresees this program will reduce risk and increase overall safety.

As an institution of higher learning, this reply from then 4-th year student displays how beneficial this project was to the student community:

Statement From 4th year student Josh Kim "The Capstone Project collaboration with UVA's FM team was a unique experience that I will never forget. There was a lot to learn from understanding the vehicle devices to discussing optimal training methods to analyzing overall fleet data in order to position the FM team for success. There were also opportunities for personal growth in understanding how I prefer to function in a team setting and what team dynamics might look and feel like in a professional setting. On top of that, it was interesting to get a taste of what it's like to work with an external client as well. Although this project had its ups-and-downs, it was a meaningful experience and an absolute pleasure to work alongside Mr. Duffy and the other FM members we met along the way."

ABSTRACT

Finding no acceptable off-the-shelf driver training programs, UVA's FM Fleet set out to craft an Eco-Safe driver training program.

With a strong emphasis on sustainability and community engagement by the President of the University of Virginia, a capstone team in the engineering school conducted a joint research project with Facilities Management. The main purpose of this project, in terms of engineering education, was to allow a capstone team (four 4th year students) in the engineering systems & environment department to work on a real-world problem using the knowledge they accumulated throughout their undergraduate education. The real-world problem addressed ways to further improve FM vehicles' energy consumption through advanced data analytics and education.

The capstone project developed an agency-specific training program based on the agency's extensive telematic data. Our training program was developed using that data. Based on the before and after study, we found that the training group experienced a 45.9% decrease in idling time per mile driven when compared to the control group. This was truly win-win joint research for both the facilities management and academic education unit.

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Management Commitment and Employee Involvement

In my orientation meeting with the University of Virginia Facilities Management over 5 years ago our Associate Vice President and Chief Facilities Officer charged me to “deliver a high-value fleet that would be a role model of efficiency for all institutions of higher learning”. That charge by Don Sundgren has led to the deployment of what we believe was the first-ever “agency-specific, data-driven, safe and sustainable driver training program”. This is a summation of how we did that.

After that charge, the University of Virginia Facilities Management (UVA FM) Fleet team sought to implement sustainable practices. UVA FM’s Transportation Operations and Fleet Manager received training in sustainable fleet practices by completing the National Association of Fleet Administrator’s (NAFA) Sustainable Fleet Certificate. The certificate program was created to teach fleet professionals the latest, most authoritative practices and helping you turn ideas into action. This program which defines objective, meaningful standards, and guidelines to reduce the environmental impact of fleet vehicles.

There have been staff from all different organizations within FM assisting with the refinement of this program. The focus is one of continuous improvement, seeking to act as stewards of environmental resources and champions of safe driving practices.

To continue to develop sustainable fleet practices, UVA FM needed to develop an eco-driving program. Duffy wanted to combine safe driver training and eco-driver trainer. The FM fleet team sought a partner to collaborate on this project. They found it with the University of Virginia School of Engineering and Applied Sciences. The partnership allowed UVA Facilities Management to embrace UVA President Ryan’s “Great and Good Plan”. Specifically, it helped prepare students to be servant-leaders in a diverse, globally connected world. It also enabled discoveries that enrich and improve lives, by enabling faculty and students to work across traditional boundaries. This Mindful Driver Program is highlighted in this years FM Annual report under “Serving the Greater Good”

Statement from PhD candidate Mostafavi: “Working on this project has been the highlight of my time here at UVA.”

Staff across all sectors of UVA FM have been involved with the development of this program. The results were so rewarding that AVP Don Sundgren approved a second Capstone project for UVA FM with UVA SEAS to continue to support this truly unique program. This effort has demonstrated the ability to break down silos across UVA grounds and connects students, their professors and FM staff while addressing a real-world problem.

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Innovativeness, Creativity, and Originality

This was truly a unique project which crossed over many silos. The University of Virginia (UVA) School of Engineering and Applied Sciences (SEAS) and the UVA Facilities Management collaborated on a unique special project, building bridges across grounds despite a pandemic.

This project concluded in the spring of 2021 after semesters of research by students, numerous collaborative efforts by various FM stakeholder, and the development of the pilot training program by UVA FM's professional trainer. This was submitted to NAFA in the 2021 Green Fleet Awards. The work of these numerous individuals was recognized with 2 awards:

- **#31 (OUT OF 50) Green Fleet in North America.** The Green Fleet Award is a comprehensive set of criteria tailored to the challenges and requirements of fleet professionals. This year's ranking at 31 out of 50 is FM Fleet's highest ranking to date and represents a gain of 12 spots over their 2020 award position.
- **Best Special Project: Mindful Driver Training.** This award recognizes FM Fleet's Mindful Driver Training program for its innovation and effectiveness in promoting safe and sustainable driver behaviors.

According to NAFA:

"In some years, the judges are so impressed by certain fleets that although they are not the winner of the contest, the judges want to make a special award. In addition to recognizing above-and-beyond accomplishments, another goal of special awards is to inspire other fleets to attempt something that no one has done.

It takes leadership and courage to step out of the traditional ways of doing things. Innovation is taking the path that has not before been walked. NAFA special awards honor those who forge their own path and create unique solutions to their challenges."

According to UVA Professor Park:

"The capstone project decided to develop an agency-specific training program based on the agency's extensive data obtained from sensors installed on each vehicle including fuel consumption, speed, acceleration, cornering, etc. One of the key reasons was the team found that existing training programs are generic programs to improve drivers' behaviors without informing the status of the agency at all. Our training program was developed using the agency's data and was implemented in the training group. We also kept a control group, that did not receive any training for comparison purposes. Based on the before and after study, we found that the training group experienced a 45.9% decrease in idling time per mile driven when compared to the control group. This was truly win-win joint research for both the academic education unit and the facilities management unit."

This project checks all the boxes when it comes to being innovative, creative, and original.

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Documentation, Analysis, Customer Input, Benchmarking

Extensive research for 2 semesters went into the research of this project. UVA FM's trainer worked to craft the material into a successful program demonstrated by the results which were documented by the 4-th engineering students. The value of the collaborative effort has resulted in a second Capstone Project between UVA SEAS and UVA FM.

The development of the training program was led by Sandra Smith, Quality Assurance and Staff Development Manager at UVA FM. Her efforts organized training objectives, which highlighted safety, stewardship, and sustainability. Best practices for training development were used, and when coupled with the findings from the research supplied by the Capstone group, a pilot training was conducted.

According to Sandra Smith:

"The power of this training program lies in two words: be mindful. If drivers grasp this concept and apply it to every driving circumstance, all our driver performance goals will be met. This includes everything that emanates from always making the safe choice and understanding their vital role in executing on sustainable measures at every opportunity.

In these two action-oriented words, being mindful says it all. As a result, UVA FM has the confidence and comfort to know that our expectations for driver performance success will be met."

Statement from Professor Porter: "Successful academic-industry projects are very difficult to achieve. This really is a crowning accomplishment!"

The initial meeting with UVA SEAS Professor Park and FM leadership occurred by zoom meeting. This entire project occurred why the pandemic was ongoing. There was not a single meeting where all the Capstone members and FM leadership met face to face. Despite this barrier, a significant work was accomplished.

In summary, Facilities Management teams partnered with the [School of Engineering](#) to develop a new training course for Facilities Management employees that combines eco driving and safe driving behaviors. These behaviors improve air quality through emission reduction by increasing fuel economy and reducing fuel usage. Four UVA systems engineering students from the [Department of Engineering Systems and Environment](#) analyzed actual GPS data from a selection of Facilities Management fleet vehicles as well as anonymous accident data from [UVA Risk Management](#) to help develop the training program. The students worked directly with Transportation Operations and Fleet Manager Mike Duffy and Quality Assurance and Development Manager Sandra Smith to translate the data-driven training tips into the training program, "FM Fleet & UVA Engineering: Partners in Promoting Mindful Driving at FM."



Gresham et al Safe and Sustainable Fleet Management
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This project is more than a directive from senior leadership or another training program or another research project, but rather a symphony of the academic education unit and the facilities management unit across the University of Virginia collaborating to develop solutions to real-world problems in a truly innovative manner that are replicable across other universities. UVA is developing a "high-value fleet that can be a role model of efficiency for all institutions of higher learning".