# Feasibility Report: Traffic

April 14, 2024

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## Introduction

Several students have expressed concerns regarding excessive vehicular traffic in and surrounding the University of Alabama campus. According to student impact studies, many drivers feel that over-congestion of the roads leads to unpredictable and variable delays on their daily commute.

As such, a student has put forward the idea of reducing traffic congestion via doubling the number of buses servicing off-campus apartments, using state and federal grants and other public funding to do so.

This report will investigate the feasibility of this project, as well as make alternative proposals to address the key issue of traffic congestion, and finally make a recommendation for the university to undertake moving forwards.

## Methods & Criteria

It is important to note that university resources and issues are distinct from city resources. This report will only evaluate traffic that directly impedes students and staff from accessing the campus in a timely manner, and only during normal university operating hours. Critically, this report will not address traffic during times when campus is closed, during periods of reduced activity (e.g. summer break), or on game days.

The original proposal and suggested alternatives will be evaluated on the following criteria, on a scale of one to five, where one represents a poor evaluation, three a neutral evaluation, and five a positive evaluation.

|  |  |
| --- | --- |
| Criteria | Definition |
| Resources Required | The economic resources the university will need to commit to the project. This only includes the required resources needed while the project is in progress. Afterwards, continuous costs will fall under Operational Requirements. Note that this is *not* scaled to benefits provided. |
| Operational Requirements | The operational requirements are defined as the approximate daily requirements the planned project will require post-implementation. |
| Schedule | This is defined as the overall timeframe the proposed project will take to implement. Special consideration will be paid attention to the duration of any traffic disturbances that may majorly impact students. |
| Net Impact | The overall impact on traffic congestion on the University’s campus, as well as the general consensus of the student body regarding the initial project. |

## Alternative Options

### Option A – Comprehensive Traffic Analysis

An alternative to increasing the number of buses is to work in-house or engage with a consulting firm to procure a traffic impact analysis report. Said reports compile data over a fixed period of time and engage various personnel such as traffic engineers to produce a comprehensive and meticulous breakdown of traffic congestion, as well as providing recommendations for future development.

After procurement of a report, a committee would be established to review the results and make further decisions.

### Option B – Encourage Alternate Transportation

An alternative to adding more public transportation capacity is to instead encourage alternative options for commuting, such as biking and ride sharing. This would reduce congestion not by raising our infrastructure’s capacity for cars, but instead by reducing the number of cars on the streets.

This proposal would establish a committee to investigate potential options to encourage alternate forms of transportation and make recommendations based on the results found.

## Comparison

The following sections will compare both alternative options as well as the original proposal. To avoid bias, proposals are evaluated against each criterion individually and independently of their scores on other criteria.

### Resources Required

|  |  |  |
| --- | --- | --- |
| Option | Comments | Score |
| Original Proposal | The original proposal neglected two important financial costs. Firstly, the university is currently [transitioning to an electric bus fleet](https://www.transit.dot.gov/sites/fta.dot.gov/files/2023-03/UA-Crimson-Ride-Climate-Action-Plan.pdf). As part of their plan, the availability of current grid resources to support an electric fleet was in question. Additionally, the plan indicated that for the current number of buses (over 50), a dedicated team would need to be trained for maintenance and daily operation. It is currently unclear whether the team size would need scaling.  However, even neglecting these, the original proposal gives a rough estimate of five million for the buses alone, leading to the minimum score for resources required. | 1 |
| Traffic Analysis | The university has done a [traffic analysis project](https://framework.tuscaloosa.com/wp-content/uploads/2019/02/Tusc_AnalysisReport_Transportation_190214.pdf) in the past, though outdated by over five years, coordinated with the City of Tuscaloosa. Additionally, the university has taken effort to research traffic in the past as part of their [campus master plan](https://buildingbama.ua.edu/wp-content/uploads/2022/12/Master-Plan-17-min.pdf), and has conducted [surveys](https://universityofalabama.az1.qualtrics.com/results/public/dW5pdmVyc2l0eW9mYWxhYmFtYS1VUl8xWXdSUnRzTnRnUlIwdmItNjNmM2E5Y2QyMTdhZGUwMDA4NDAxNDNm#/pages/Page_dd28fd66-16f5-456b-87d9-61d6530a7c51) indicating our poor road quality.  As such, though this proposal would require a team of staff, due to the existing data and prior experience, I’ve assigned this option the maximum score. | 5 |
| Alternative Transportation | Currently, while the university does facilitate bike racks, sidewalks, and the like, we currently aren’t undertaking any active effort to encourage alternate transportation. As such, any committee would be starting effectively from scratch, leading to this proposal receiving a neutral score of 3 | 3 |

### Operational Requirements

|  |  |  |
| --- | --- | --- |
| Option | Comments | Score |
| Original Proposal | This proposal would require daily staffing of drivers for eleven additional buses. Internal rates show that hiring drivers for one apartment route, including wages and benefits, costs approximately $XX/day. Across 11 busses, over a year, staffing will cost $YY.  Additionally, additional maintenance and daily operational personnel are estimated to cost $ZZ/year, electricity $AA/year, parts and other components $BB/year, and miscellaneous costs such as cleaning $CC/year.  As such, as these costs are numerous and the duration indefinite, I’ve assigned this project the lowest possible score | 1 |
| Traffic Analysis | This proposal would begin the initial steps of data gathering before an informed decision can be made. As this would require numerous personnel yet have a finite duration, I’ve assigned this a score of 4. | 4 |
| Alternative Transportation | The rationale for this proposal is the same as the above, however, as this proposal would not have the benefit of established practices, I’ve assigned this a score of 3. | 3 |

### Schedule

|  |  |  |
| --- | --- | --- |
| Option | Comments | Score |
| Original Proposal | According to [current projects](https://www.transit.dot.gov/sites/fta.dot.gov/files/2023-03/UA-Crimson-Ride-Climate-Action-Plan.pdf), the University is capable of either acquiring or retrofitting the required amount of buses in a year or under. However, doing so immediately may delay the electrification project. As such, this project receives a score of 3 (neutral), as the timeframe will depend on whether external projects are willing to be disrupted. | 3 |
| Traffic Analysis | I’ve assigned this proposal a score of 4 as though it is a simple report, it does require empirical data gathered from the university’s campus. | 4 |
| Alternative Transportation | I’ve assigned this proposal a score of 5 as it is exclusively an investigatory proposal into future projects and requires no local data. | 5 |

### Net Impact

|  |  |  |
| --- | --- | --- |
| Option | Comments | Score |
| Original Proposal | This is indeterminate. We already have an over-congested bus hub for the apartments, and adding more buses may either increase congestion at that area (which, as a central point of campus, may spread rapidly), or it may instead have a net benefit. As further research is required, I’ve assigned this a neutral rating of 3. | 3 |
| Traffic Analysis | As both options generate reports that would recommend future proposals, acting more as research projects for future options instead of direct project proposals, I’ve assigned them a neutral score of 3. | 3 |
| Alternative Transportation | 3 |

## Conclusion

The alternatives along with the initial proposal are listed below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Resources Required | Operational Costs | Schedule | Net Impact |
| Original Proposal | 1 | 1 | 3 | 3 |
| Traffic Impact Analysis | 5 | 4 | 4 | 3 |
| Alternate Modes of Transit | 3 | 3 | 5 | 3 |

As such, my recommendation is for the university to move forward with both the Traffic Impact Analysis and Alternative Modes of Transportation proposals. Both relatively cheap and will provide a multitude of options and additional information regarding traffic reduction.

Note that this is not to say that the original proposal is invalid nor that it would not address the problem of traffic mitigation, but instead, that further research is required. It is entirely possible that the traffic impact report recommends an increased bus capacity. However, the excessive initial and ongoing costs make it unrealistic to commit to such a course of action without expert verification that it will be signifigantly beneficial.

# Appendix A – REDUCING CARS Sample

The following is an excerpt from a [report](https://web.williams.edu/wp-etc/ces/campus-cars.pdf) by Williams College regarding the alternative transportation options.

The proposals were then given a numerical score. Be mindful that solutions are not mutually exclusive and in fact, often have a synergistic relationship. More than one may be appropriate to implement at one time since they tend to address similar, but different issues, and the effectiveness of one solution might be enhanced by others. Figure 18. This is the scale that we used to evaluate the solutions. Zero is the worst while four is the best.
In our case, having more pine trees equals being a better solution

Figure 19. This chart shows the analysis of the various solutions. Bike sharing and Zipcar rewards tied for
best proposal, while the athletic field van ranked lowest. 