

UTCA Annual Research/Training Plan

(For Projects Starting January 1, 2010 or later)

Theme: Management and Safety of Transportation Systems

- The list shown below represents the UTCA Advisory Board's compilation of the topics most important to the transportation future of the *nation* and this *state*.
- Proposals will be accepted on any topic; however, highest priority will be given to projects that directly support items I.1 and I.2 from the list below.
- Second highest priority will be given to projects in transportation education, diversity, research and technology transfer.
- Proposals will be accepted for other projects shown in the 2010 Annual Research/Training Plan, with priority given to those that directly support the UTCA theme.
- Proposals will be accepted for other projects not shown in the 2010 Annual Research/Training Plan and will be judged on individual merit and support of the UTCA theme.

I. High Level Topics to Support National Surface Transportation Research: (It is probable that UTCA will fund one or more proposals that directly address Items I.1 and I.2.)

Faculty desiring to conduct UTCA research on maximizing traffic efficiency and mitigating congestion should select projects from I.1 and I.2 below or specific national projects identified in the "Operations and Mobility" theme from the R&T Partnership Report entitled *Highway Research and Technology: The Need for Greater Investment* (<http://gulliver.trb.org/publications/rtforum/HwyRandT.pdf>), or the "Traffic Management Research" portion of the FHWA Highway Operations section of the 2005 *USDOT Research, Development and Technology Plan*. (<http://www.volpe.dot.gov/infosrc/strtplns/index.html>).

1) Mobility/Capacity – Road use continues to grow faster than the ability to provide additional roadways and roadway improvements.

- Investigate capacity enhancements to offset increasing traffic demands and to maintain future mobility on the Alabama roadway system.
- Investigate the role of access management (implementation case studies, implementation tools, and short courses)
- Investigate more efficient signals, signs, etc.
- Communicating with drivers
 - Emerging technologies
- Identifying candidate roads for managed lanes in Alabama.
- A complete assessment of the ability of different revenue systems to provide funding for Alabama's transportation network

2) Freight Mobility/Capacity: The use of heavy vehicles (18 wheelers) is the backbone of logistics and economic success, and national projections are that freight shipments will double in the next ten years.

- Investigate the impact that doubling of trucks will have on the Alabama road system.
- Investigate potential effects of intermodal facilities (examples: Norfolk Southern proposed facility near Birmingham; Mobile shipyard)
- Investigate cost-effective ways to provide truck capacity to underwrite the state's economy and to ensure overall mobility for Alabama drivers.
- Determine how much cost road congestion adds to highway user costs in the long run.
- Investigate truck safety

- Alabama is designated a “focused state” for truck issues. How can this benefit the state?

3) FTA Projects – *(It is probable that UTCA will fund one or more transit projects)* – The UTCA Advisory Board lists three potential topics below, but other pertinent research proposals are encouraged.

- How to prepare for transit-oriented development in the future.
- Considering/integrating transit in the “complete street” environment.
- Connectivity of transit and transportation systems.

4) Infrastructure Sustainability – Identify methods to maintain transportation infrastructure to an acceptable level over the long term.

- Investigate methods to improve the durability and cost-effectiveness of pavements
 - Investigate feasibility of revised oversize/overweight permit fee structure
- Investigate methods to improve the durability and cost-effectiveness of bridges.
 - Investigate effects of using LRFR rating method
- Investigate impact of proposed legislation (example: increase axle limits)
- Investigate new materials and designs that would enhance the transportation infrastructure.

II. Topics Important to UTCA’s Future - *(It is probable that UTCA will fund one or more projects in this area.)*

(1) **Diversity**: Create programs to enhance diversity among incoming students, undergraduates, graduate students, faculty members, and staff members. This might include the development of promotional materials, identification of incentives for students and faculty, and special educational program. A team approach (UA, UAB and UAH representatives) is recommended.

(2) **Human Resources**: Develop means to increase the number of students, faculty, and staff that are attracted to and participate in programs of UTCA. It might be aimed at K-12 outreach, recruiting materials, scholarships, or other recruitment techniques. A team approach (UA, UAB and UAH representatives) is recommended.

(3) **Technology Transfer**: Develop and teach short courses for transportation professionals in Alabama. Subject areas are open, as long as they meet significant and marketable needs in the transportation field and fit the UTC theme. Enhance the infrastructure of the ITS lab on the Tuscaloosa campus through innovative projects, connections to State camera systems, etc.

III. Other Topics Identified by UTCA’s Advisory Board - *(Funding is possible but not assured for the following projects)*

ALDOT Research Needs:

1) ALDOT Project Scheduling/Delivery Methodology

- Investigate methodologies to prioritize projects
 - What are statewide vs. local needs in safety, bridge deterioration, etc?
 - What percent of budgets should be spent on preserving existing vs. building new facilities?

2) Traffic Control Devices: Investigate whether the change in traffic stripe widths contributed to better traffic operations and better traffic safety. This project could possibly include investigation of the effectiveness of other traffic control devices like delineators and chevrons.

3) Human Resources: Develop a model program to enhance ALDOT recruiting, hiring and retention of young engineers. Development of the program should consider issues like the roles of scholarships, internships and part time/summer employment for students, career choices among civil engineering discipline areas, salary, promotion, retroactive acknowledgement of passing the FE Exam, acknowledgement of passing the PE Exam, and other pertinent factors.

4) Emergency Evacuation: Assess when contra-flow should be triggered on I-65 during emergency evacuation and how that affects people and supplies traveling toward the coast.

Specific Needs of Other Stakeholders:

1) Cities

- How and when to install Intelligent Transportation Systems
 - Installation of appropriate systems
 - Benefits vs. cost
 - Revisit statewide architecture

2) Counties

- Funding shortage
 - Identify and quantify needs
- Tech transfer, training
- Determine cost-effective safety treatments

3) Consulting engineers

- Education
 - K-12, attract the best and brightest
 - College grads, need to be more applications oriented