Vision 20/20 Committee Briefing

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University of Kansas
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KU TRI Origins

- Created in 2006
- Funded under Federal SAFETEA-LU*
- Goal: Become Nationally Recognized Transportation Research Center
- Well on our way
- Now at $35 million (6-year total)

*Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
KU TRI from Inception to Now

- Funded over 80 research projects
- Funded over 65 different investigators
- A wide variety of disciplines
  - Engineering – all departments
  - Psychology
  - Geography
  - Economics
  - Environmental Studies
  - Journalism
  - Biology
  - Physics
  - Public Administration
  - Biological Survey
  - School of Education
  - Chemistry
  - Mathematics
  - Urban Planning
  - Ecology
  - Design
- Over 500 publications with KU TRI credited
- Over 50 advanced degrees awarded
KU TRI Research Benefits Kansas

- Infrastructure Assurance Research
- Alternative Fuels & Vehicles Research
- Aging & Distracted Drivers Research
- Newer Initiatives
  - Electric Bus Route Augmentation
  - Supply-Chain Logistics
  - Aerospace Technologies (Algae fuels, fuel saving, etc.)
Infrastructure Research

- **Bridge Deck Longevity Research**
  - Outside funding - $2.3 M
  - Funding in the works - $1.0 M to $1.5 M
  - Pooled fund studies with 12 states – KU TRI is the lead
  - Combination of senior and junior investigators

- **Fracture Fatigue Research**
  - Outside funding - $1.75 M
  - Funding in the works - $750,000
  - Pooled fund studies with 18 states – KU TRI is the lead
  - Involves 4 investigators from 2 different departments
  - Combination of senior and junior investigators

- **Highway Roadbed Subsoil Stabilization**
  - Outside funding - $200,000
  - Funding in the works - $250,000
Feedstock to Tailpipe

- Outside funding - $2.8 M
- Funding proposed from outside sources – over $3.0 M
- Involves 12 investigators from 7 different departments
- Focus on Algae to Bio-fuels (Aviation fuel)
Distracted & Aging Drivers

- Research shows cell phone use while driving worse than legally drunk
- Texting and driving worse than talking on cell phone
- Elderly drivers on the rise: Can be helped with retraining
- Correct and smart technologies in vehicle can help
Aerospace Initiatives

- UAV
  - Cooperating with CReSIS
  - Potential for funding from domestic sources
  - Proprietary information already identified

- Aircraft lightning strike protection
  - Good preliminary data
  - Proprietary information already identified
  - Potential for outside funding

- New aerodynamic flow designs save fuel-burn
  - Good preliminary data
  - Proprietary information already identified
  - Potential for military enormous
Algae Focused on Aerospace

- Kansas aerospace industry future tied to affordable aviation fuel prices
- Algae only feedstock with adequate yield potential
- KU TRI among few focused on algae-to-bio-crude; only one using macro-algae
- Potential exists for other energy uses in developing countries

<table>
<thead>
<tr>
<th>Oil Yield /Acre Per Year (gallons/acre)</th>
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<tbody>
<tr>
<td>Algae*</td>
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<tr>
<td>Oil Palm</td>
</tr>
<tr>
<td>Coconut</td>
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<tr>
<td>Jatropha</td>
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<tr>
<td>Rapeseed/Canola</td>
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<tr>
<td>Peanut</td>
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<tr>
<td>Sunflower</td>
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<td>Soybean</td>
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<td>Hemp</td>
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<td>Corn</td>
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* Estimated US ton dry weight/acre/year 500 – 2,000
Thank You

Questions?