1. General Outlook – Rob Davis
2. Education – Brian Argrow
3. Inclusive Excellence – Jackie Sullivan
4. Research – Marty Dunn
5. Rankings & What We do Best – Rob Davis

Presentation to the CU Engineering Advisory Council on 4/23/10
General Outlook: Warm & Sunny!

• Enrollments up
  +10% undergraduates in 3 yrs
  +20% graduate students in 3 yrs
  Quality and diversity also increasing

• Research also up
  +66% new grant dollars in 3 yrs
  Aerospace, biotechnology, energy,…
General Outlook: A Few Clouds?

- **Cramped for space**
  Classrooms, labs, offices
  State funding on hold

- **State budget cuts**
  58% state cut → 3% cut in college general fund
  7 faculty lines cut → 14 incentive retirements

- **Private fundraising has slowed**

**Biotech Building:**
First phase under construction
• First-Year Experience
  Purpose
  Pedagogy
  Persistence
  Policy

• Managed Growth
  Matriculation
  Resources

• Sp10 Education Retreat
  Creating Consensus: Rethinking the First-Year Experience

Increase the size of our undergraduate student population by 15%...
• Engineering Honors Program
  208 students
  Class of 2010
  New curriculum

• Andrews Hall
  30% returning students
  Faculty in Residence Program
Inclusive Excellence

- **BOLD reorganization behind us** (first who then what; right people on the bus)
  - Culture shifting to one of *inclusion* and *excellence*
  - **Student Success Center** a huge success (free, drop in tutoring)
  - **Student Leadership Council** formed
  - College-wide **Diversity Action Committee** buzzing
  - **BOLD Advisory Council** formed
  - First (annual) **Celebration of Excellence** highly successful (April)
  - **Andrews Hall Living and Learning Community**
  - **Journal Club** (learn from the literature; benchmark everything)

- **Obsessed by data**: measure everything we do; design for outcomes

- **Fall 2010 First Year cohort bucking national trends**:
  - Whole new meaning to partnership with **Admissions**
  - URM admits up 7% (9.3%)
  - Women admits up 5% (26.9%)
  - URM confirms to date up markedly (9.2%)
  - Women confirms to date up 3% (24%)
  - Full court press; engage our students in recruitment

*Engineering... Because Dreams Need Doing!*
GoldShirt Engineering Program pilot
- 15/16 expected to return next year; average fall GPA = 3.4
- Fall 2010 expansion: invited 35 highly diverse students
- Informing URM recruiting practices college-wide (high touch; families)
- Surprise: shortage of women with lower level of preparation

Summer Bridge program benchmarking (37 programs)
- Overhaul for summer 2010: ASPIRE
- New desired outcomes (not remedial; how to achieve)
- Goal: quadruple participation in 2011 (21 → 80)

K-12 Engineering Education
- $2.8M NSF grant enables Longmont TEAMS program
- $300K Gates Frontiers Fund sustains Lafayette & DSST
- TeachEngineering Digital Library: 50,000 monthly users; 853 lessons ($110K/yr NSF)
- Take risks; try new things — Manual High

Scholarship limited: little need-based aid from college; URM scholarships not competitive
• Growing Research Programs
  ➢ Infrastructure investments
  ➢ Strengthening faculty
  ➢ ARRA: ~$11M in FY10
  ➢ Professional recognition

• Interdisciplinary Initiatives
  ➢ CIMB
  ➢ AS3E
  ➢ RASEI

• New and Renewed Centers
  ➢ iMINT – DARPA
  ➢ RERC – ACT
  ➢ CNL – NSF NNIN
  ➢ Hypersonic Matls/Structures – NASA/AF
• ADR Office Strategy
  - Formulate RFPs
  - Identify funding opportunities
  - Develop faculty teams
  - Create competitive proposals
  - Contract and grant negotiation
  - High-quality research
  - Effective research administration

• High-Impact Research
  - Bob McLeod (ECEE) and Chris Bowman (CHBE)
  - Two beams squeeze lithography feature size
  - Seed grant – Science paper – CAREER award
• College-wide Graduate Rankings

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Reputational Survey</th>
<th>Student Quality &amp; Quantity</th>
<th>Research Expenditures</th>
<th>Nat. Acad. Membership</th>
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</thead>
<tbody>
<tr>
<td>Weighting</td>
<td>40%</td>
<td>27.5%</td>
<td>25%</td>
<td>7.5%</td>
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<tr>
<td>CU Score</td>
<td>3.4/5</td>
<td>65</td>
<td>$65M</td>
<td>4.5%</td>
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<tr>
<td>Peer Group</td>
<td>3.6/5</td>
<td>136</td>
<td>$106M</td>
<td>3.5%</td>
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</tbody>
</table>

• College-wide Undergraduate Rankings:
  100% reputational, 3.4/5 CU, 3.5/5 peers

• Departmental Rankings:  100% reputational

• Strategies for Improvement
  ➢ Marketing, marketing, marketing
  ➢ Grow PhD program
  ➢ Grow research funding
Six Things We Can Do Best

1. Active Learning
   • Discovery learning
   • Integrated learning
   • Professional learning
   • Service learning
2. Aerospace Engineering & Science

- Colorado space industry
- Dept Aerospace Engineering Sciences
- Laboratory Atmospheric & Space Physics
- Space science departments
Six Things We Can Do Best

3. Biotechnology

- Colorado biotech/biomed industry
- Dept. Chem. & Bio Engineering
- Other engineering & science depts
- CO Inst. Molecular Biotech. (CIMB)
- CU Anschutz Medical Campus
4. Energy & Environmental Sustainability

• Colorado’s “green” economy

• Nat. Renewable Energy Lab (NREL)

• Ren. and Sust. Energy Inst. (RASEI)
  - Technology, business, policy
  - Broad engineering engagement

• CU “greenest” university by Sierra magazine
5. Engineering for Global Society

- Engineers Without Borders
- Mortenson Center in Engineering for Developing Communities
- Research & education on global issues
- International partnerships
Six Things We Can Do Best

6. K-12 Engineering Education & Inclusion

• Integrated Teaching and Learning Program

• GK-12 and TEAMS (recent $2.8M NSF grant for new Longmont partnership)

• TeachEngineering digital library (50,000+ users/mo)

• Broadening participation — promoting interest and access for engineering study for girls and other underrepresented students through targeted partnerships