Engineering in New Mexico

- What put NM on the engineering map in the first place
  - Mining industry was probably here first, beginning in earnest in the mid-1800s
  - State engineer's office established in 1907 – for "general supervision over the measurement, appropriation and distribution of New Mexico's water" (Elephant Butte Reservoir completed in 1916)
  - the Manhattan project and subsequent development of LANL and Sandia National Laboratories was the first (and continuing) large-scale attractor for engineering and science skills to New Mexico
    - Evolution from 1946 to today (Reference the slide in Paul Hommert's Sandia overview that shows the changes decade by decade)
    - Served as the "critical mass" (pun intended) for establishing the workforce for allowing engineering & science to take root here
- The presence of this skill and technology base enabled the growth of high-tech industries and allowed the regional business community to flourish
  - Large - e.g. GE, Intel, Signetics/Philips, LockMart, Northrup Grumman
  - Small and mid-sized, e.g. Emcore, Eclipse
  - Start-ups (including Microsoft!!)
  - SS&TP - early '90's to today
    - tech transfer from the labs to industry
    - CERL/CERI
    - Created nearly 2500 direct and >6500 total jobs; >$3B in wages cumulatively
    - Home to 33 companies
    - Average salary >$30K higher than metro average
- And the combination of the Labs and Industry encouraged the growth of engineering and science programs at the regional universities
  - UNM School of Engineering growth in size and diversity of facilities and programs ranging from biomedical engineering to transportation and traffic engineering, with a total enrollment of more than 2000 and more than 45% of the undergraduates coming from underrepresented groups.

        - Total expenditures of >$30M
        - 203 patents since 1995
        - 27 start-up companies
    - NM Tech takes advantage of its unique location with areas of specialization that include the energetic materials research testing center, atmospheric and seismic studies, and astronomical research
    - NMSU – initiatives in water, energy, aerospace, transportation, and information sciences
    - Collaborative entities, e.g., CINT, AML, …
- Today and tomorrow
    - Provide some statistics - number of engineers employed in NM, number and type of businesses, etc.
        - >49K tech workers in 2010 (5th highest percentage of the private sector workforce in the US)
        - High tech payroll of $3.7B (27th nationwide)
        - 9th in semiconductor manufacturing employment
        - 11th in R&D and testing labs employment
    - Number & role of professional society chapters etc.
    - How governments near & far help build the engineering climate in NM today
        - What's going on in Washington, DC & how it affects New Mexico
            - Reinvigoration of tech transfer as a mission of DOE
            - Strong Congressional support for tech transfer, particularly from the New Mexico delegation
        - Mayor's cyber tech initiative
        - State level
            - NMSBA
                - Tax credit of $2.4M/year to assist small businesses
                    - ~2ooo businesses in all 33 counties; >2300 jobs created/retained
    - Vision – bring the high tech research institutions in the state together (Sandia, LANL, UNM, NM Tech, and NMSU), perhaps even under one roof, to facilitate tech transfer and other interactions with the private sector