NOTES FOR GEORGIA TECH PRESIDENT G. WAYNE CLOUGH
NAE Symposium on Energy, March 14, 2007

- Welcome to Georgia Tech
  - Top 5 engineering program; all disciplines in top 10.
  - Graduate more engineers than any other university.
  - No. 2 in nation in engineering R&D.
  - Recognized leader in technology transfer.

- As president of this Institute, my job to look broadly at how our 3 engineering roles – education, research, tech transfer – serve the nation and the world.
  - Find that engineering has much to do with addressing the pressing global issues of the day:
    - Climate change
    - Energy, sustainability
    - Fresh water supply
  - Engineering also has much to do with emerging new discoveries and technologies:
    - Nanotechnology
    - Biotechnology

- Clearly a time when engineering has much to contribute to the well-being of the world.

- Also clearly a time when we as engineers need to look at our own profession; acknowledge changes in what the world needs from us:
  - Cannot just invent technology and put it out there; must consider social impact, effective policies to promote efficient usage, prevent mis-use.
  - Important role for engineers in policy arena:
    - Policy-makers make decisions involving engineering and technology with too little understanding.
    - Policy makers, public-opinion makers, news media unable to evaluate whether options are realistic, or what their consequences might be.
    - Need for a clear, calm voice from engineering – not taking sides in a partisan debate, but explaining realistic options, consequences.

- Energy is a good example. At GT engineers are:
  - Creating next generation of solar cells – smaller, more powerful, less costly, flexible so they can be worn on clothing or put on a backpack to power an iPod or Blackberry.
  - Engineering new materials for the rigors of producing nuclear energy, shielding radiation sources.
  - Working on flameless combustion to make furnaces, incinerators more efficient.
  - Crafting tiny, high-powered fuel cells for wireless communication devices.
  - Building airplanes powered by hydrogen fuel.
  - Developing efficient ways to make biofuels from source materials like pine trees.

- But engineers must go beyond working on these things in the lab to engage in the policy debate that is heating up as nation grapples with its reliance fossil fuels in the face of escalating global warming. Much ignorance, many misconceptions:
    - Some in denial that global warming exists.
    - Most define conservation in terms of reducing usage, but a diagram of energy flows in latest issue of *Science* indicates more than half of energy is lost along the way between its generation and its point of use.
    - Unrealistic ideas and policy proposals emerging relative to alternative fuels, given how advanced we are in the developing them or the volume we are capable of producing.

- Nation needs the expertise, logical thinking, and systems approach of engineers if we are to design do-able, effective energy strategies, policies for the future.