

Grand Challenges for Engineering

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Goals

- Improve public understanding of how engineering can address current and emerging societal challenges.
- Excite young people about possibly solving such challenges through an engineering career.
- Uncover engineering research opportunities related to the challenges.



Process

- **Collect input from NAE members, Frontiers of Engineering (FOE) alumni, engineering societies, and the public**
- **Committee of NAE members and foreign associates will identify the greatest engineering challenges of the future**
- **Conduct a major outreach/dissemination effort**



Timeline

- **July 2006: 14-month project begins**
- **July-September 2006: Committee formed**
- **September-December 2006:**
 - » Website developed
 - » Outreach and media materials prepared



Timeline (cont.)

- **January 2007: Website launched**
 - » Requests for input sent to NAE members/FOE alumni/engineering societies
 - » Public announcement made
- **February 2007: Committee meeting to**
 - » Decide on principles for selecting challenges,
 - » Review public comments,
 - » Consider ways to engage public
- **Spring 2007: Possible challenges researched**



Timeline (cont.)

- **June 2007: Committee selects challenges**
- **Summer 2007:**
 - » Staff prepares written description of challenges
 - » Website updates are developed
 - » Staff develops media strategy
- **Fall 2007:**
 - » Challenges revealed at public event
 - » Website re-launched with new content
 - » Challenges disseminated



Committee

- William Perry (NAE) – chair
- Alec Broers (NAE)
- Farouk El-Baz (NAE)
- Calestous Juma (NAS)
- Wesley Harris (NAE)
- Bernadine Healy (IOM)
- Daniel Hillis (NAE)
- Dean Kamen (NAE)
- Ray Kurzweil (NAE)
- Robert Langer (NAE/NAS/IOM)
- Jaime Lerner
- Bindu Lohani (NAE)
- Jane Lubchenco (NAS)
- Mario Molina (NAS/IOM)
- Larry Page (NAE)
- Robert Socolow
- Craig Venter (NAS)
- Jackie Ying



Website

- www.engineeringchallenges.org
announced on Jan. 10
- **Website features include:**
 - » Committee member profiles
 - » Exclusive essays
 - » Online form/discussion area to submit ideas for Grand Challenges



Website Comments

Themes

- Sustainability
- Accessibility
- Efficiency
- Affordability

Technologies

- Fusion
- Desalination
- Space elevator
- Flying personal vehicles
- Colonization of planets
- Remote/virtual presence



Website Comments

“...viable and efficient alternatives to the internal combustion engine that offer acceptable private and public transport options. .”

“Augmented brains (for telepathy, memory storage, remote control, etc.) —somewhat scary, but plausible.”

“Developing cost effective high capacity energy storage technologies at a variety of scales will be critical...”

“...an economical, energy efficient process for recovering and reusing the contaminants we have produced such as heavy metals and hazardous and/or poisonous materials”

“... a way to transmit electrical power without wires is a big challenge...”

