Sideways sunspot
100 ton shot
In learning about the nuclear power of the sun, I want you to know about nuclear energy in general. Today’s lecture will be about the history of nuclear power and energy.
Before and after pictures of Nagasaki

Edward Teller
Hydrogen (Thermonuclear) Bomb

Project plowshare – 104ktom 635ft down –
320-ft x 1280ft crater
Nations with Nuclear Weapons

Hydrogen and Atomic
- United States
- Great Britain
- France
- Russia
- China
- Israel

Atomic only
- India
- Pakistan
- N. Korea

The two countries the United States government is most worried about are:
- N. Korea
- Iran
The most likely reason that terrorists have not used an atomic bomb is that they have not yet been able to get enough pure fissile material.

Nuclear Power plants use fissile material to heat water and make electricity from the steam.

3 Mile Island 1979

Chernobyl 1986
• 56 deaths directly attributed
• Over 300,000 people evacuated and resettled
• WHO estimates 9000 deaths due to cancers of heavily exposed people

Good and Bad of Nuclear Energy

**GOOD**
- Actually pretty safe
- No greenhouse emissions/pollution
- Reliable

**BAD**
- Fear of Meltdowns
- Radioactivity and Waste disposal

Radioisotope Thermoelectric generator
45" x 18" generates 230 watts using Plutonium 238
Robot probes to the outer planets are powered by fissile material.
SUN
Nuclear FUSION
Hydrogen → Helium

$E=mc^2$

4 million tons annihilated/second

3,850,000,000,000,000,000,000,000 watts