

Careers In Nuclear Science & Technology

ANS Teacher Workshop

Reno, NV

June 2014

What is nuclear engineering?



ANS

What people think nuclear engineers do:



Blow ourselves up!



Wear Hazmat suits to work.



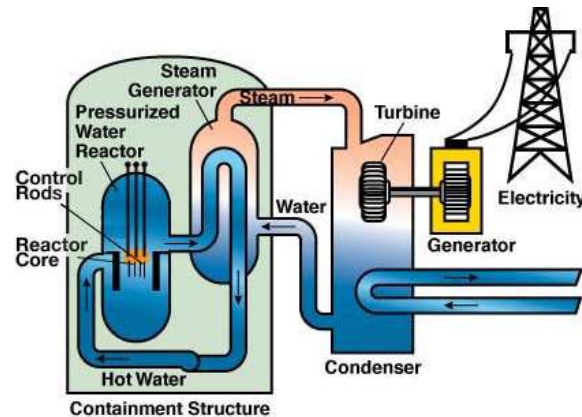
Glow green in the dark.

What is nuclear engineering?



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- What they actually do:
 - Nuclear engineers harness the power of the atom to help solve large and difficult problems facing humanity.
- Problems such as:
 - Pollution
 - Diseases
 - Medical diagnostics
 - Security for radioactive materials
 - Clean energy

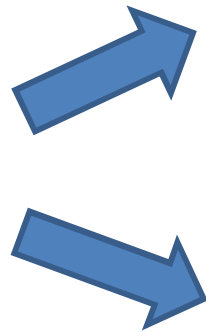


How do you get there?



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Prepare with math and physics courses in high school



Accredited college programs



Many naval programs pay for further schooling as well

The "Nuclear" Navy



Accredited Universities



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- Most companies require at least a bachelor's degree in Nuclear Engineering from an accredited university.
- Universities that offer accredited (ABET) nuclear engineering programs:
 - Penn State University!
 - Michigan University
 - North Carolina State University
 - Oregon State University
 - Georgia Tech University
 - University of New Mexico



Engineering: Research, design, and operation



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- Design power plants that create a greener form of energy compared to other energy sources
- The design, production, handling, and use of nuclear fuel
- Safe disposal of waste produced by the generation of nuclear energy
- New nuclear applications and detecting radioactive materials



Non-weaponry military applications



- The Nuclear Navy
 - A global force for good! The Navy protects our country using nuclear technology
 - Nuclear Aircraft Carriers
 - Nuclear Submarines



Medicine



- Develop machines that image the human body
- Radiation therapy to treat different types of cancer
- Sterilize medical equipment such as rubber gloves, gauze, and bandages



33% of net electricity generated in PA came from Nuclear Power (Energy information Administration, July 2012).

Map of Operating Power Reactors in Pennsylvania



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Three Mile Island Nuclear Station
(Middletown, PA)
EST: 1974
Type: PWR
Output: 786 MWe

Susquehanna Steam Electric Station
(Luzerne County, PA)
EST: 1982
Type: BWR
Output: 1149 MWe



Beaver Valley Power Station
(Shippingport, PA)
EST: 1976
Type: PWR
Output: 892 MWe



Peach Bottom Atomic Power Station
(Delta, PA)
EST: 1973
Type: BWR
Output: 1112 MWe



Limerick Generating Station
(Limerick, PA)
EST: 1985
Type: BWR
Output: 1134 MWe

Nuclear Energy & Research



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**Bechtel Marine
Propulsion Corporation**

Government
Contractor



Utility Provider and
Research Company



Utility Provider and
Research Company



Utility
Company



Utility Provider and
Research Company



Utility
Company



Utility
Company



Utility
Company

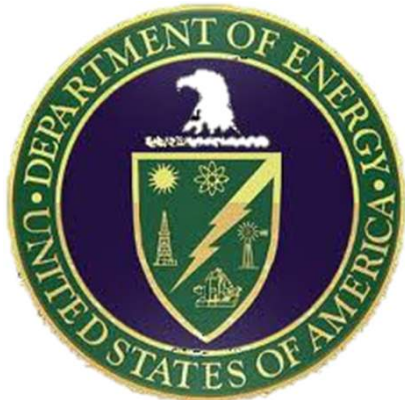


Utility
Company

Government agencies



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National
Labs



Monitor and control
safety regulations



Foreign
Intelligence



Provide Military
Forces



National Intelligence

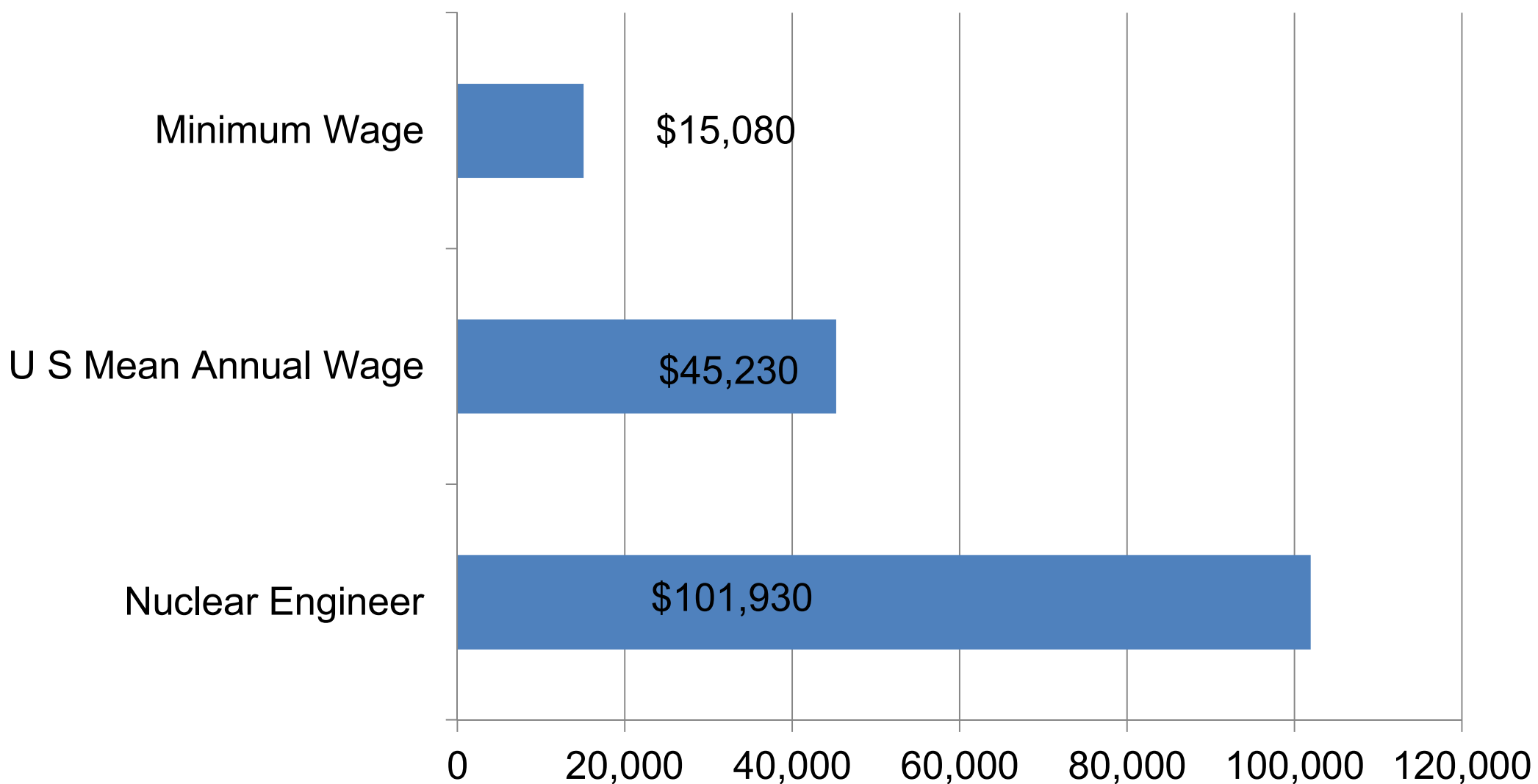


Protect against
terrorism and other
hazards



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Median Salary as of 2010





American Nuclear Society