GE around the world

Europe
US$29B

Middle East, Africa & Others
US$12B

Asia Pacific
US$23B

U.S
US$70B

Canada & The Americas
US$13B

Power & Water - $25B
Energy Management - $5B
Oil & Gas - $13B
Healthcare - $18B
Aviation - $19B
Transportation - $5B
GE Capital - $46B
Home & Business Solutions - $9B

2011 revenues of ~$147 billion; ~300,000 employees
GE’s energy-related businesses

- 30% of GE revenue
- Technology partner for customers

**Oil & Gas**
- Drilling & Surface
- Global Services
- Measurement & Control
- PII Pipeline Solutions
- Subsea Systems
- Turbomachinery

**Power & Water**
- Aeroderivative Gas Turbines
- Gas Engines
- **Nuclear Energy**
- Power Generation Services
- Renewable Energy
- Thermal Products
- Water & Process Technologies

**Energy Management**
- Digital Energy
- Industrial Solutions
- Power Conversion

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GEH nuclear energy HQ - Wilmington

- 1,650 acres (300 developed)
- Over 2 million manuf. square feet

1967 - Ground breaking
1980 - GE Aircraft Engines
1994 - Fuel collocation
1997 - Dry powder conversion
2000 - GNF JV formation
2003 - GENE HQ relocation
2007 - GEH JV formation
2008 - GEH, Cameco Reda venture
2010 - GEH nuclear energy HQ - Wilmington

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Nuclear product lines

- ESBWR
- ABWR
- PRISM
- Engineering Svcs

- Field services
- Outage support
- Asset mgt services
- Parts

- Fuel Products
- Engineering services
- Uranium support
- Enrichment services

Operating globally ... 2,800+ employees
GEH licensed nuclear activities

**Wilmington**
(SNM-1097)
UF6 Conversion
UO2 Powder and BWR Fuel Fabrication & LEU transport
GLE Test Loop Classified Technology

**Kurihama**
Nuclear Material and Fuel Fabrication

**Vallecitos**
(SNM-960)
Spent Fuel Storage
Operating Nuclear Test Reactor
Hot Cell / Lab Facilities

**Morris**
(SNM-2500)
Spent Fuel Storage Facility
(Picture does not depict fuel stored at Morris)

**Canada**
Natural Uranium Processing and Fuel Fabrication / LEU
License 2010

**GLE**
(SNM-2019)
Laser Enrichment Technology
GLE Commercial Facility
ESBWR
1520 MWe Generation III+

Passively Safe
• Passive cooling using gravity and condensation
• Passive cooling for >7 days without AC power or operator action

Elegantly Simple
• Proven natural circulation technology during normal operations
• Lowest projected operations, maintenance, and staffing costs*

Smart

* Claims based on the U.S. DOE commissioned ‘Study of Construction Technologies and Schedules, O&M Staffing and Cost, and Decommissioning Costs and Funding Requirements for Advanced Reactor Designs’
What is PRISM?

A reactor to address nuclear power’s key challenges

A fuel cycle solution

• Reactor designed to work integrally with a fuel fabrication and used fuel recycling facility

• Waste returns to natural levels in 300–500 years (300,000 years with today’s used fuel)

• Reduces used fuel repository size by ~4X

Fuel efficiency, Energy security, and economics

• Uses the “spent” fuel from other reactors as its fuel supply

• Extracts 90% of the energy in uranium (Only 5% with water-cooled reactors)

Safety

• Probability of accidental releases: $1 \times 10^{-10}$
GLE PLEF
Paducah Opportunity Overview

• DOE seeking offers for the purchase of depleted UF₆
• 15 yr. term with two 5 yr. extensions possible
• Accelerated timing to respond to DOE
• GLE proposes to “re-enrich” DUF₆ to “natural”

Economic benefit to U.S.

• Payment to USG for DUF₆
• Economic benefits from activity
• Reduction in DUF₆ liability for USG

Utilization of Paducah site

• Amount of enrichment on the site
• Benefits of reuse of site facilities
• Benefits of new facilities

National security

• Usability of Natural U for defense
• Support of non-proliferation goals
• Reduced foreign reliance for energy
• Enhances domestic nuclear industry
The call to action ...
Raise the Bar (RTB)

Program Core

- Simplify procedures and improve flow-down
- Strengthen process oversight + HU observations
- Improve training program
- Engage employees to assure organizational learning

- Nuclear Safety & Security Culture
- ISA program
- Procedures
  - Requirements flow-down
  - Simplified procedure format
- HU Observation Program
  - Staffed program – peer group
  - Added Management Observations
- Training
  - Implementing SAT -based program
  - OJT trainer/evaluator qualification program
- Employee engagement ... ongoing
  - Procedures, training and observations
  - OE/LL feedback to IROFS training
RTB - moving beyond compliance

ISA Analysis

Verifications

Dependent

Improved Procedures & Training
Observation Program: Peer and Management
Integrate Human Performance Tools

Beyond Compliance

Compliance

Standardization of Improvement
GEH NCS Programs

Defined in SNM License Commitments

- 10CFR70 or equivalent
- Applicable ANSI/ANS-8 series national consensus standards
- NRC Reg Guide 3.74 exceptions to those standards
- Pro-active involvement with regulator and industry
- Active participation in consensus standards maint & development

GEH NCS Risk Assessment

- Must be balanced against other EHS safety and security disciplines
- Culture, ISA, procedures, training, HU, OE/LL, are all key element
- Is a continuous process