Overview of TerraPower and the Traveling Wave Reactor

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Overview

• Our Vision is to be a world leader in new technologies that bring the world sustainable, affordable, and safe energy and create high benefit products

• Our goal is planetary-scale sustainable energy

• At our core, we are an Innovation company and are continuously evaluating new ideas

• TerraPower is developing multiple advanced reactor technologies
Our Challenge

WORLD POPULATION: UN FUTURE FORECAST

- 2017: 7.6 billion people
- 2100: 11 billion people


Free teaching material from www.gapminder.org
TerraPower Profile

- TerraPower was founded by visionary private investors when they decided the private sector needed to take action in developing advanced nuclear answers.
- TerraPower is a leading nuclear innovation company that strives to improve the world through nuclear energy and science.
- Expert staff with experience on fast reactors (e.g., FFTF and EBR–II) and commercial nuclear power construction and operations.
- Contracts/agreements with national labs, universities, companies, government agencies and expert consultants since 2007.
- Developed state-of-the-art computer capabilities and software to support detailed core performance simulations.
Core Competencies

• Nuclear Reactor Design
• Nuclear Island Design
• Component Design and Qualification
• Medical Isotopes and Rad Chemistry
• Modeling and Simulation
• Software
• Safety Analyses
• Experimentation
• Technology Development and Integration
The TerraPower approach to reactor development

• Attract and retain cutting-edge talent
• Deep-dive into relevant historical work
  – Fund digitization and recovery of archives from national labs when appropriate
• Run simple yet powerful scoping studies to test viability; define an envelope
• Strategically push the envelope with sophisticated experimentation and revolutionary reactor design software
• Simultaneously, develop qualified supply chain and business partners
TWR Roadmap History

TWR Roadmap in China
• Performance-based roadmap
• Quickest path to full benefits of TWR
• Rapid deployment
• 300 → 600 → 1200
• Replacement of coal plants
• Maximize safety

New TWR Roadmap is restructured with a post-China commercial focus
• Minimize initial construction costs and LCOE
• Flexibility in size to accommodate needs
Improvements and Benefits

• Deep-burn open fuel cycle
• Strong inherent safety features and passive safety systems
• Flexible siting
• Production of high temperature heat
• Reduced waste
Path Forward for TWR

- Regulatory Information Summary (RIS) 2017-08 or equivalent
- TerraPower is developing a Regulatory Engagement Plan
- The RIS response and the REP inform each other and are being developed in parallel
- Information discussed today may provide information pertinent to the RIS and REP
Thank you