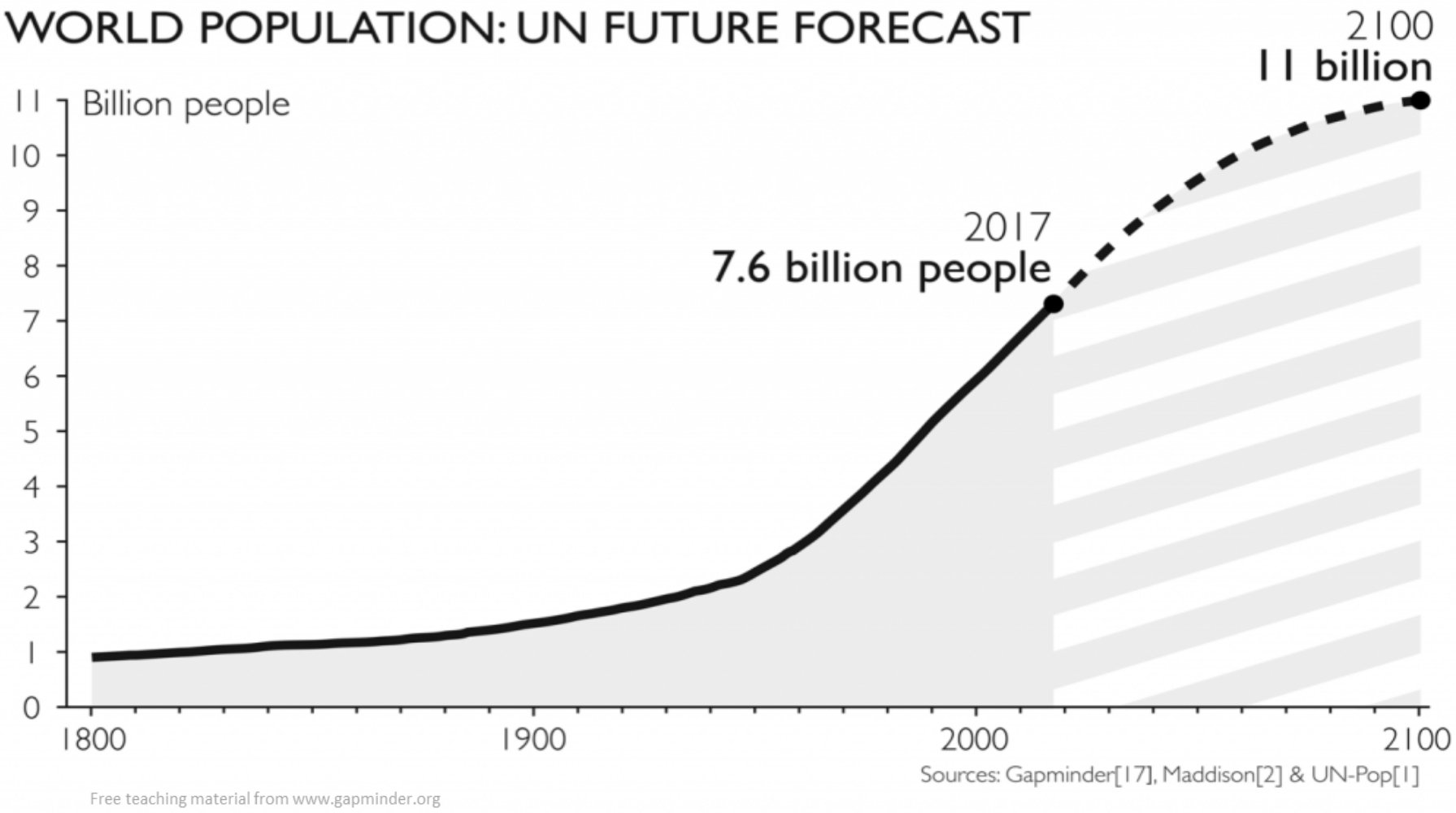
Overview of TerraPower and the Traveling Wave Reactor

September 24, 2019

Overview

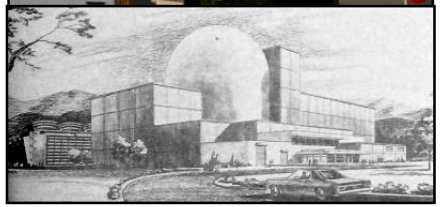
- Our Vision is to be a world leader in new technologies that bring the world sustainable, affordable, and safe energy and create high benefit products
- Our goal is planetary-scale sustainable energy
- At our core, we are an Innovation company and are continuously evaluating new ideas
- TerraPower is developing multiple advanced reactor technologies

Our Challenge



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



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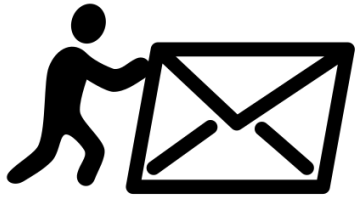
Core Competencies

- 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



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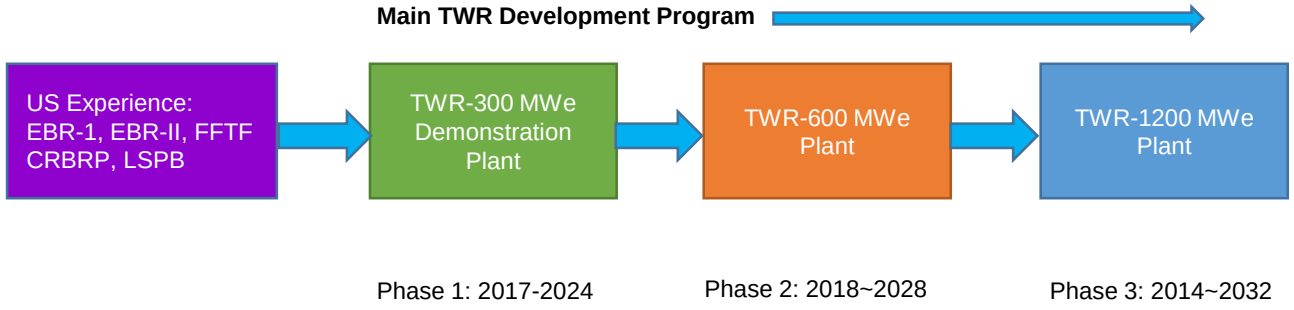
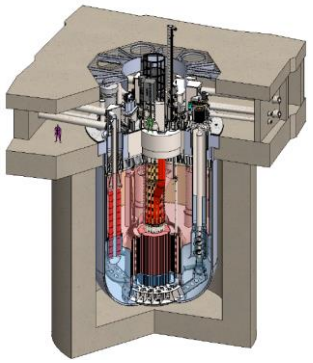
TWR Roadmap History

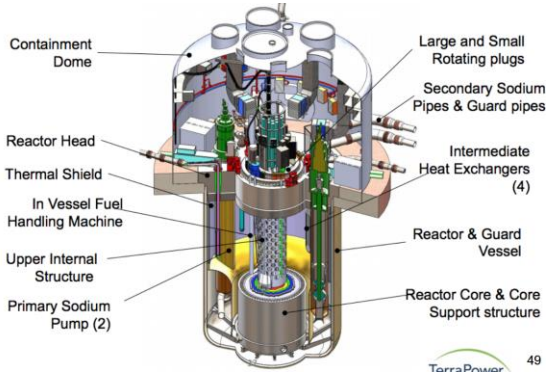
TWR Roadmap in China

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

TWR Development Program



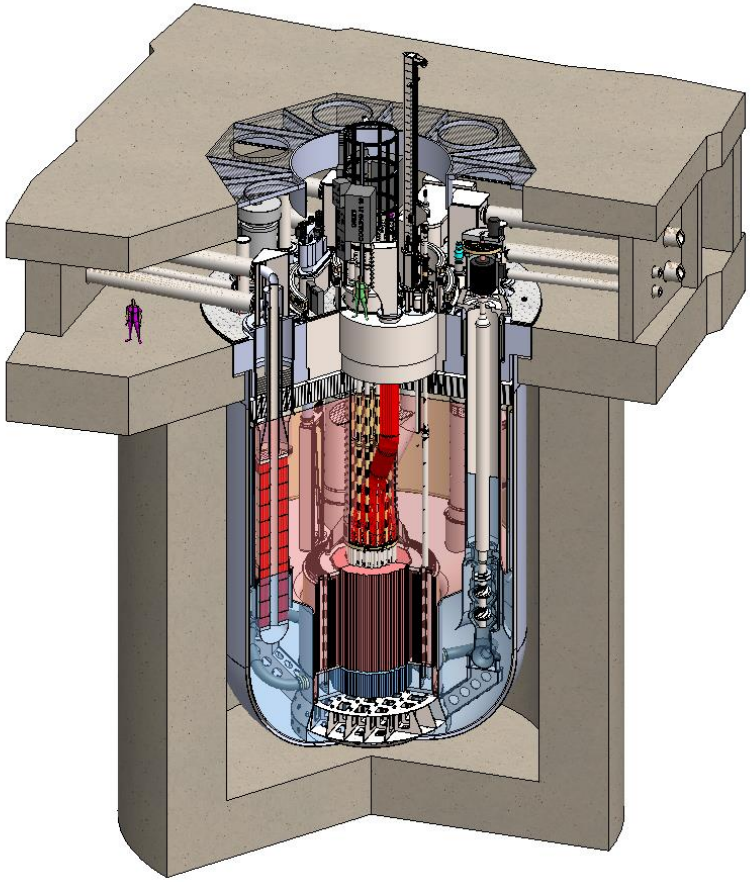




New TWR Roadmap is restructured with a post-China commercial focus

- 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

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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

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