ARC-100 Advanced Reactor

Meeting the Near-term Deployment Challenge

February 2016
The ARC-100 SMR

What is it?

- 100 MWe Sodium-cooled Fast Reactor (SFR)
- Extrapolation of 20 MWe Argonne EBR-II
- 20-yr fuel cycle, using U-ZR metallic fuel
- Inherent “walk-away” safety performance

Why is it relevant?

1. **Competitive**: Breaks LCOE barrier
2. **Proven**: 30 years of prototype operation
3. **Secure**: Addresses fuel and proliferation
Competitive: ARC-100 Advantage

Simple = Competitive
- ~50% of ONC in NI
- # safety-systems = cost

ARC-100: “Back to Basics”
- Atmospheric reactor system
- No ECCS
- Fully passive DHRS
- ATWS self-protection
Proven: Technology Readiness

ARC-100: Fastest path, Lowest risk path to deployment?

45 transient tests conducted without damage to fuel or core structures:

- Pump coast-down without scram...

... causes transient temperature rise

Modeling and Simulation | Component Testing | Prototype Operation

Most Gen IV Designs

Most Gen III SMRs

ARC-100

Investment & Deployment Risk

Technology Maturity

$2B

$20B

$2B

$20B

Proprietary & Confidential
Secure: Robust Core and Fuel

Robust Fuel Performance
- Data base bounds normal ops and accidents
- Metallic fuel resolves challenges with oxides
- No fuel-coolant interaction issues

Secure Core Design
- 20-yr fuel cycle, 17% enrichment
- Very high burnup
- “Semi-closed” core design
- No on-site refuel equipment
- No separation of pure Pu
- Opportunity to burn LWR fuel

**Demonstrated** ability to address LWR fuel cycle challenges