U-Battery Single Unit

Key to Layout
1. Turbine Generator
2. Heat Exchanger
3. Reactor
4. Maintenance Floor
5. Fuel Cartridge Store
6. Fuel Store Ventilation
7. Fuel Handling Facility
8. Control Room

At a Glance
- Single unit – U-Battery produces 10MWe which can be delivered in a CoGen configuration with up to 4MWe electricity or 750°C process heat.
- Gas cooled – Helium in primary circuit, nitrogen in secondary circuit.
- High integrity TRISO fuel – Enables simplicity of design.
- Construction – Adaptable configuration to meet local need. It can be installed above or below ground level.
- Flexible – Installation can be single or in multiple units.
U-Battery Fuelling Route
Applications

Initial Strategic Markets

Remote Locations  Heavy Industry  Nuclear Backup  Specific Purposes
Why Canada?

Opportunity
- 300+ remote communities
- Remote heavy industry & mining
- Carbon intensive & logistically challenging
- Need secure low-carbon embedded power
- Interest in early deployment at Chalk River Laboratories
- Application for early phase funding under Clean Growth Program

Demand
- U-Battery recommended to Natural Resources Canada and Ontario Energy Ministry
- Specific interest in micro-scale (2-20MW)
- Potential deployment, development & supply chain
- Interest in global potential for micro-nuclear
A recent CNL study found that the potential market for off-grid SMRs in Canada consists of over 600 power plants, with a total power demand of 35 GWe. Another important finding was that most of these power plants require an installed capacity of less than 5 MWe.

Moving Forward in 2018

**Strengthened investment in Canada**
- Established Canadian subsidiary company in 2018
- Formally establish project management and licensing support in Canada
- Regular relationship-building with government and industry stakeholders
- Focus on UK and Canada as top market opportunities

**Launch and advance in regulatory process**
- Phase 1 Vendor Design Review with CNSC
- Initial submission to CNSC vendor design process
- Leverage relationship with Kinectrics, Wood, Bruce Power and CNL for support

**Advance planning and design activities**
- Develop Strategic Deployment Plan - basic design to operating demonstration unit; overall project execution plan
- Basic or Front-End Engineering Design
- Site ranking and evaluation process; prepare for environmental assessment
Moving Forward in 2018

Potential collaboration/partnership with utilities
- Early phase investor
- Site licensee
- Owner/operator for First-Of-A-Kind reactor
- Fleet deployment

Raise awareness and build confidence
- Regular meetings and correspondence with key departments/ministries and industry stakeholders
- Participation at key industry events and conferences
- Competitive differentiation and market development
- Engage with Canadian supply chain

Seek funding and investment opportunities
- Funding for short, medium and long-term activities
- Industry partners and financial investors
- Government grants
U-Battery: Compared to large reactors

**Low Risk**
- Simple Design – TRISO Fuel
- Passive safety
- Modular construction
- Factory testing

**Low Cost**
- Lower absolute cost
- Lower financing cost
- Quicker construction
Insurance Requirements

- **CAR** – cover the modular build, assembly on site
- **Material Damage** – small physical footprint, lower risk, fleet basis
- **General Liability** – a group or fleet, similar to wind power
- **Nuclear Liability** – Legal frameworks and Limits may need to be lower
- **Business Interruption** – where remote communities are off-grid, diesel back-up
- **Insurance Surveys** – every five years, aligned with refuelling outages? Ideally sample of the fleet