

Rethinking Nuclear

Can We Change the World's Cumulative Carbon Emissions Soon Enough?

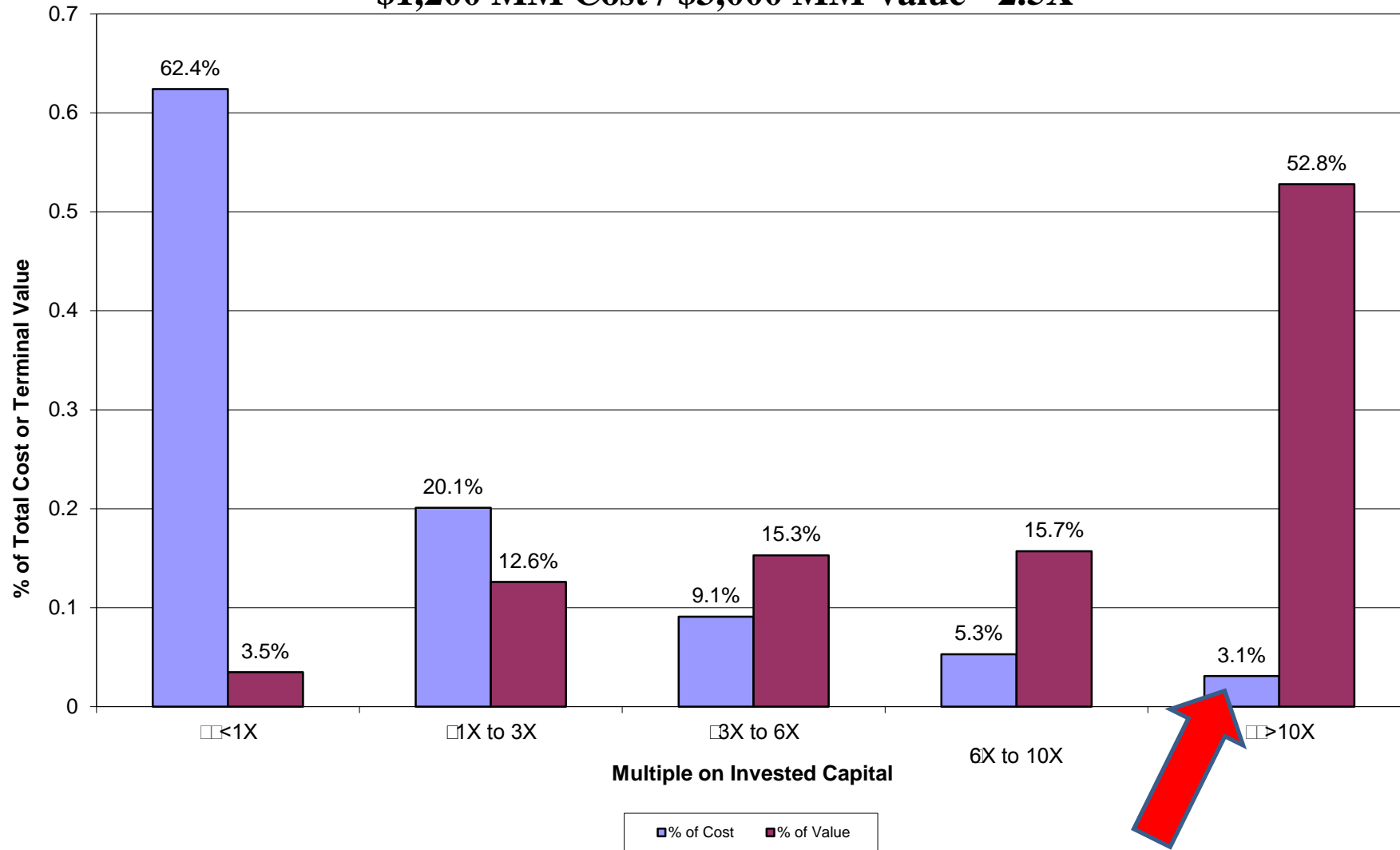
Joseph B. Lassiter, III

Senior Fellow

Senator John Heinz Professor of Management Practice
In Environmental Management, Retired
Harvard Business School

April 2016

Venture Capital Return Profile 1995 - 2009
636 Investments
\$1,200 MM Cost / \$3,000 MM Value - 2.5X



Can you get into the “Big” Ideas?

Private Capital Ecosystem for US and Canadian Privately Funded Nuclear Efforts

- **Approximately \$1.6+ billion invested in last 10 years**
- Professional Investors:
 - Venrock, NEA, RedPoint, Charles River, Lux Capital, Founders Fund, Braemar, Intellectual Ventures, Khosla Ventures, The Wellcome Trust, RussNano, Chrysalix, SDTC, Mithral, Y-Combinator
- High Net Worth Individuals – Gates, Bezos, Samberg
- SWF: Saudi, Russian
- Corporates – Lockheed, General Atomic, Fluor, Toshiba,
- Existing Industry Strategic Partners
 - Many are circling
 - Do they have the “innovators dilemma”
- Nuclear utilities engaged in discussions
- Prototype Testing Announced: TerraPower (China) , ThorCon (Indonesia) and Terrestrial (Canada)
- **Industrial MOUs signed in TerraPower (China) and ThorCon Power (Indonesia)**

Funded Nuclear Efforts: Advanced Reactor Nascent Industry



© 2015 Third Way. Free for re-use with attribution/link. Concept by Samuel Brinton. Infographic by Clare Jackson.



Nuclear Entrants

	Gen-III+ Passive LWRs	Gen-IV Passive SFRs	Gen-IV Passive HTGRs	Gen-IV Passive MSRs
Infrastructure Style Construction	Westinghouse AP-1000 GE-Hitachi/Areva (Korea/China/Russia)	TerraPower TWR	<i>Site Excavation Only</i>	<i>Site Excavation Only</i>
Factory Manufacture	NuScale (Reactor Module)	GE-PRISM <i>UPower</i> (Reactor Module and Whole Plant)	PBMR Areva NNGNP General Atomic EM ² (Reactor Module and Whole Plant?)	Terrestrial Energy ThorCon Transatomic Moltex (Reactor Module and Whole Plant)
Service and Fueling	Repair? Centralized Fuel Processing	Upgrade and Repair No Refueling	Upgrade and Repair Continuous Refueling	Upgrade and Repair By Swap Out Continuous Refueling Centralized Fuel Processing
Reactor Physics Impact	Hi P/Low Temp <i>Water</i>	Atm P/Hi Temp <i>Liquid Metal Sodium</i>	Hi P/Hi Temp <i>He Gas</i>	Atm P/Hi Temp <i>Na/Be/Li Salts</i>

Nuclear Must Be Cheaper Than Coal.. Maybe Even Natural Gas ($< \$0.05/\text{kWh}$ by 2025)

