About the WLEA

Our Story began in 2014 when two retired scientists, David Earnshaw and David Copeland, having grumbled about the global energy situation for years, founded the Wyoming LFTR Energy Alliance (WLEA).

*"My personal vision? To hasten the day that LFTRs have replaced all fossil-fuel fired power plants and all solid-uranium fueled, boiling water and pressurized water reactors in the world. This devolves from my understanding that the **L**iquid **F**luoride **T**horium **R**eactor is superior in every way I can think of to the solid-uranium fueled, water-cooled nuclear reactors used today. Once I understood the LFTR and thought about its potential, I realized that it will be utterly world changing in its use to generate electricity, provide high-temperature process heat, desalinate water, and do multiple other things more efficiently than coal or oil without producing greenhouse gases."* – David Earnshaw

"My personal vision is a 95-percent or greater reduction in global anthropogenic greenhouse gas emissions through a balanced LFTR/renewables energy platform." – David Copeland

THE WYOMING LFTR ENERGY ALLIANCE (WLEA)

Our Mission is to promote the development, manufacture, and deployment of the Liquid Fluoride Thorium Reactor (LFTR, "lifter").

Our Focus is LFTRs.

[Wind and solar sources of electric power are on-line today and increasing in use world-wide. The LFTR requires final development of several engineering and material elements to be an economically and socially viable investment. Thus, while the WLEA argues for a global LFTR/renewables energy platform, our focus is LFTR development, manufacture, and deployment.

Our Vision is the LFTR accepted and adopted worldwide in energy platforms comprising LFTRs for continual, large-scale applications and for backing renewables, and renewables for intermittent, and appropriate small-scale applications.

Our Belief is that a 95-percent or greater reduction in global anthropogenic greenhouse gas emissions can be realized through the judicious complementary deployment of LFTRs and renewable energy sources to replace hydrocarbon energy sources, and that this is the magnitude of change necessary for the survival of human beings and of life as we know it on this planet.

Our Argument:

- Our future global energy platform must meet the dual challenge of providing for greatly increased electric power *use* while eliminating emissions of CO_2, methane, and other pollutants from electric power *generation* as well as greatly reducing these emissions from other sources.

- With our present knowledge and *at the scale envisioned*, this dual challenge can be met effectively only with an energy platform comprising renewable energy sources and electric power generation fired by nuclear reactors.

- The LFTR is the reactor of choice.

[There are two kinds of nuclear reactor, the kind we have and the kind we could have. The kind we have, the conventional reactor, uses solid uranium in fuel rods, is moderated and cooled by water under high pressure, and operates at moderate temperature: the inefficiency, high cost, abundant radioactive waste, and occasional catastrophic failure associated with the conventional reactor arise from these attributes – and make it increasingly unacceptable. The kind of reactor we could have, the LFTR, is fueled with thorium in a molten salt, operates at atmospheric pressure and at far higher temperature, and produces scant waste: these attributes make for efficient, safe, economical operation.]

[A sampling of projected benefits: with respect to our national economy, a LFTR-based energy platform supporting greatly increased use of electric power, especially in transportation, will shrink oil imports, our balance of payments deficit, and our energy costs. For Wyoming these benefits will be augmented by converting coal to carbon-fiber products, transportation fuels, plastics, asphalts, alcohols, and other chemicals using LFTR-produced hydrogen and LFTR process heat, with no CO_2 emissions and with far greater taxable added value to the coal we produce.]

Our Goal is a LFTR-fired power plant on line, providing low-cost electric power and process heat, with no GHG emissions, in an initial **L**FTR **D**evelopment **A**rea (LDA): a geographically bounded area whose natural and human resources can be beneficially integrated in a sustainable economic system served by energy from LFTRs and renewables.

[With one LFTR on line, we see economic, social, and political forces converging on further LFTR deployment within the initial LDA, then nationally and throughout the world.]

Our Objectives:

- Promote LFTR awareness and development.
- Identify and promote LDAs.
- Identify ways to bring an initial LFTR on line in an initial LDA.

[We have initially focused on Wyoming as an LDA, and are concurrently looking at the Indus river valley in India and Pakistan (fresh water from sea water, dependable electric power), at Germany (replacement of conventional nuclear reactors), at California (fresh water from sea water; dependable electric power; air pollution abatement), and at our arid West as potential LDAs.]

[In the short term, existing renewable energy sources (wind and solar) will be backed up by LFTR-fired electric power generation in some LDAs. In the long term, LFTRs will serve major loads, and renewables will serve minor, isolated, and mobile loads and appropriate intermittent loads such as water heaters. Technology and economics will determine an optimum balance and distribution of energy from LFTRs and renewables. And, some LDAs will include hydro or tidal energy sources.]

- Establish working relationships with other LFTR organizations [Thorium Energy Alliance, FLIBE Energy Inc., Farnsworth Nuclear LLC, et al.], and explore potential cooperative arrangements.

Our Heroes:

- Kirk Sorensen of FLIBE Energy Inc., who has occupied the forefront of LFTR development and promotion for many years.
- Conrad Farnsworth and others at Farnsworth Nuclear LLC, who are deep into the design, testing, proving, and manufacture of a LFTR.
- Siouxanna Downs, who is engaged in LFTR design and development.

Our Inspiration:

Books:

Bryce R (2010) Power Hungry. USA, Public affairs
Crane HD, Kinderman EM, Malhotra R (2010) A Cubic Mile of Oil. New York, Oxford U.P.
Fox MH (2014) Why We Need Nuclear Power. New York, Oxford U.P.
Hargraves R (2012) Thorium – Energy Cheaper Than Coal. USA, Robert Hargraves

Luzzi L, DiMarcello V, Cammi A (2011) Multi-physics Approach to the Modeling and Analysis of Molten Salt Reactors. New York, Nova Science Publishers (Novinka)
Martin R (2012) Super Fuel USA. New York, Palgrave Macmillan

Presentations:

Kirk Sorensen on youtube, TEDxYYC: www.youtube.com/watch?v=N2vzolavvkw

Our Papers:

File name	Description
About WLEA	WLEA overview and vision statement [this paper]
Coal Focus 102616	LFTRs and coal – Wyoming
Coal to diesel calculations	Coal–to-diesel conversion calculations
Combined paper 102616	Position paper – LFTRs, Wyoming
Environment org ltr	LFTR promotion to environmentalists
Fission is the future pdf	Full rebuttal to anti-nuclear New Scientist article
Full scan 2.jpg, *and*	New Scientist opinion article depreciating nukes
Letter to editor 5th annual.jpg	Rebuttal letter to editor, New Scientist
LFTR – Water 103114	Clean water using LFTR and reverse osmosis
LFTR questions 022015	Some questions we have about developing LFTRs
Merkel ltr 011514	Ltr to chancelorin Merkel about LFTR
New introduction 102616	Intro. to Combined paper
NRC regs modified 092514	Modifications to NRC regs to fit LFTR
Understanding LFTR	Layman's guide to how LFTRs work
LFTRs *vs.* Renewables or LFTRs *and* Renewables?	Rebuttal to Sierra Club nuclear stance

Our Contacts:

(Robert Hargraves) www.thoriumenergycheaperthancoal.com
(Thorium Energy Alliance, John Kutsch) www.thoriumenergyalliance.com
(Kirk Sorensen) www.energyfromthorium.com
(FLIBE Energy Inc., Kirk Sorensen) www.flibe-energy.com
(Farnsworth Nuclear LLC) conrad.farnsworth@mines.sdsmt.edu

Our website is www.wyominglftrenergy.org

Our email is wyolftr@gmail.com