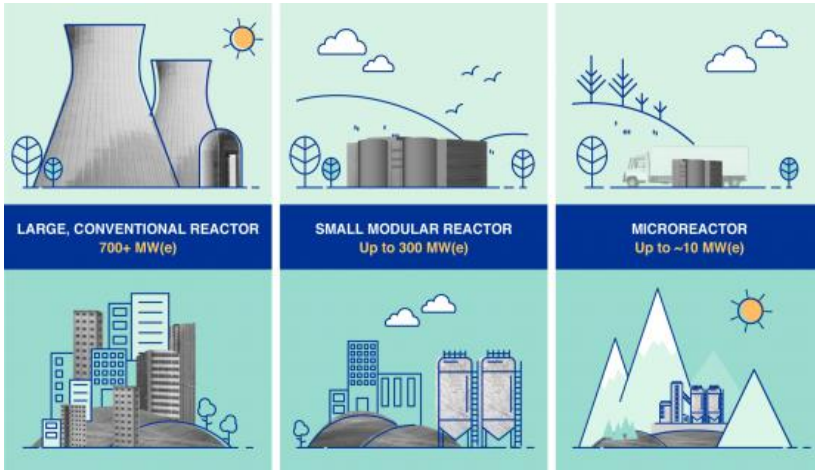


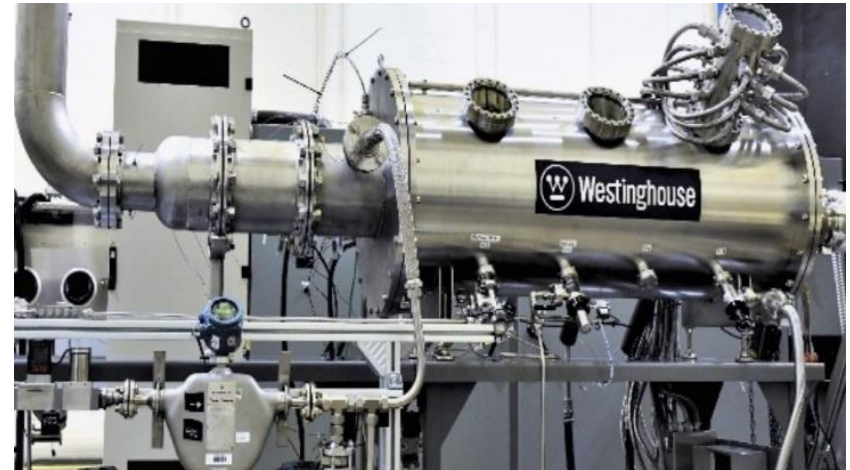
Nuclear Microreactor Feasibility

► Derek Baker, Leonardo Coelho
Maxwell Dargie, Patrick Hagearty,
and Declan Williams

► Advised by David Medich and Derren
Rosbach



What are Small Modular Reactors (SMRs)?, Joanne Liou,
International Atomic Energy Agency 2021



Study Concludes eVinci Micro-Reactors A Real Solution For Clean Energy in
Canada, Westinghouse Electric Company 2021

AIR POLLUTION – THE SILENT KILLER

Every year, around **7 MILLION DEATHS** are due to exposure from both outdoor and household air pollution.

Air pollution is a major environmental risk to health. By reducing air pollution levels, countries can reduce:



Stroke



Heart disease



Lung cancer, and both chronic and acute respiratory diseases, including asthma

REGIONAL ESTIMATES ACCORDING TO WHO REGIONAL GROUPINGS:



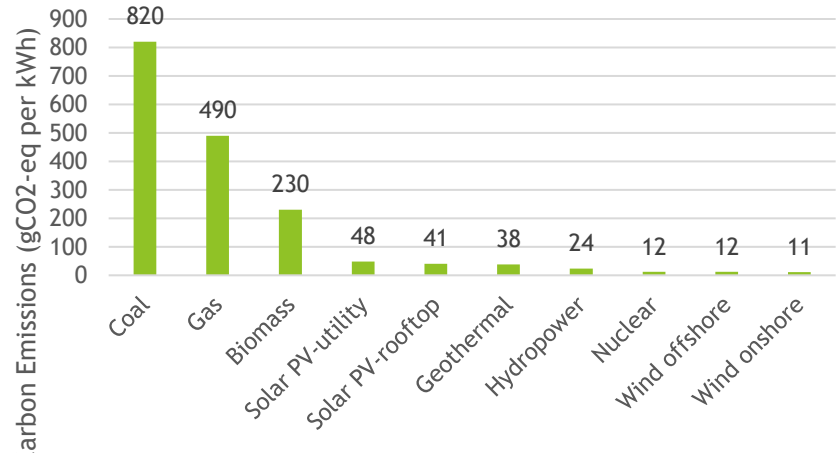
CLEAN AIR FOR HEALTH

#AirPollution



Air Pollution-the silent killer, World Health Organization Europe

Life-cycle Carbon Emissions for Energy Sources





1.) RESEARCH
MICROREACTORS



2.) RESEARCH WPI'S
INFRASTRUCTURE



3.) CONDUCT
INTERVIEWS



4.) CONSTRUCT A
SURVEY



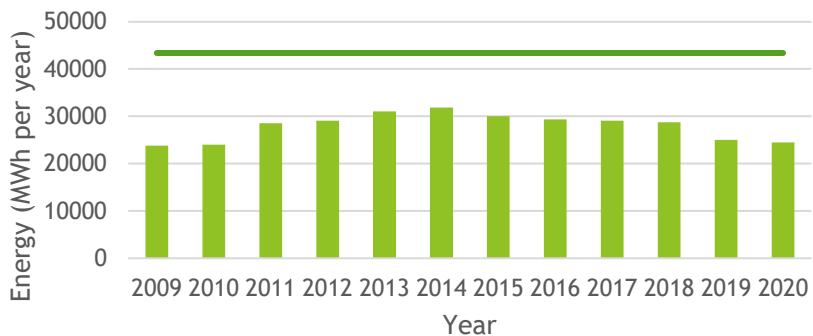
5.) MAKE
RECOMMENDATIONS

Methods



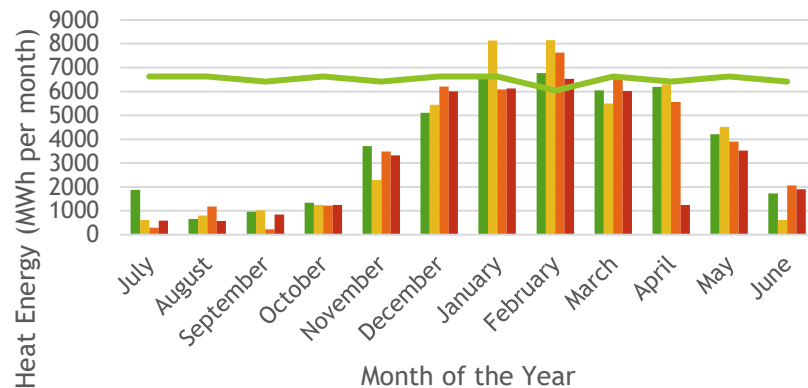
- ▶ Materials Irradiation
- ▶ Medical Isotope Production
- ▶ Both In-core and Peripheral Experiments

Electricity Usage on Campus compared to Microreactor Production



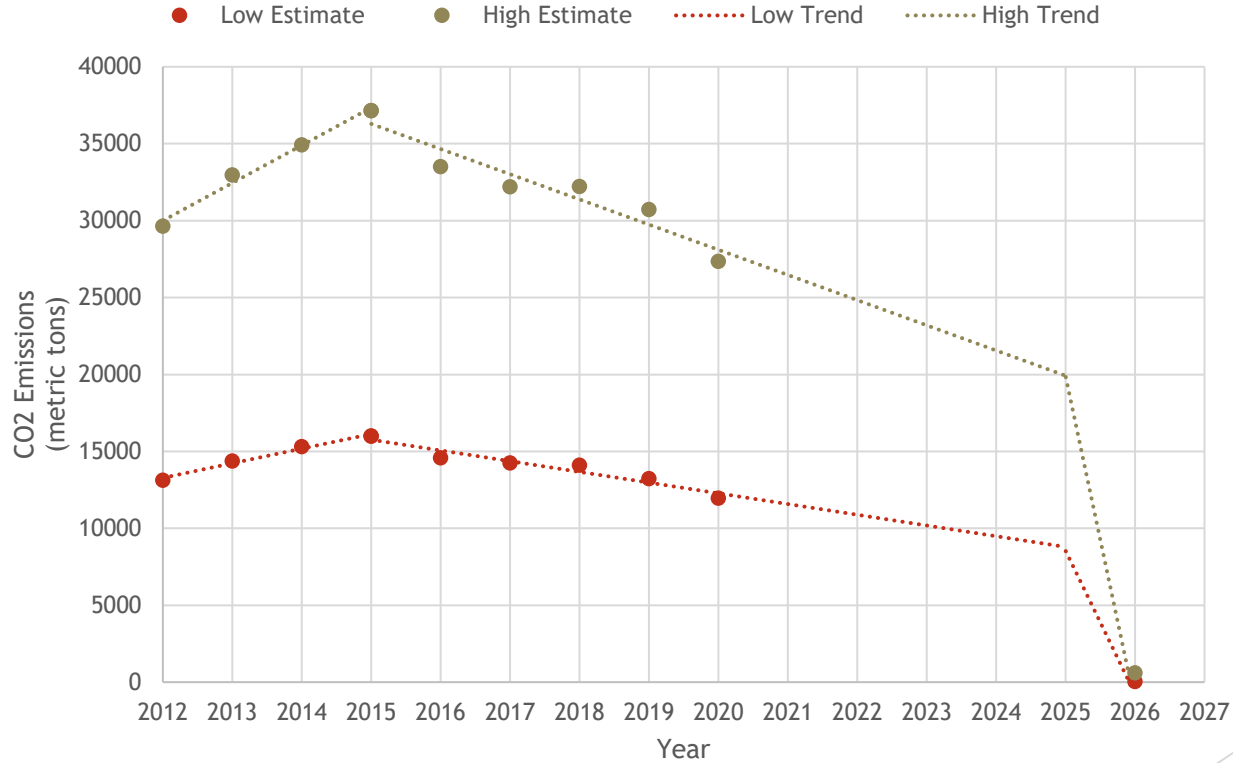
Energy Usage Microreactor Production

Heat Usage on Campus compared to Microreactor Production

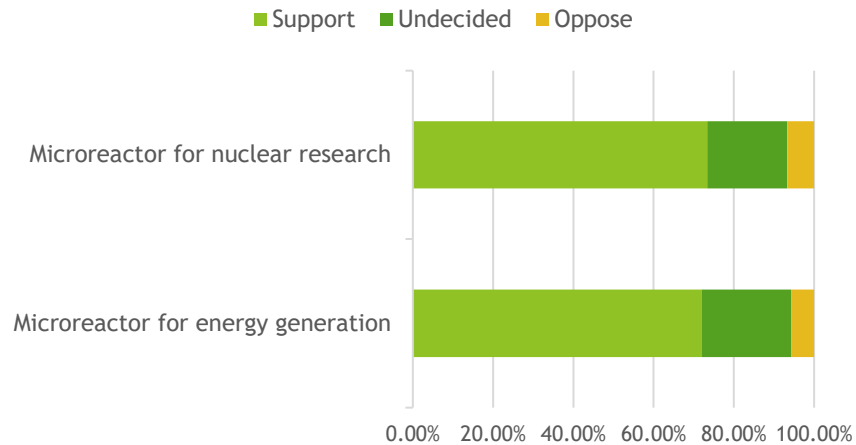


2017 2018 2019 2020 Microreactor Production

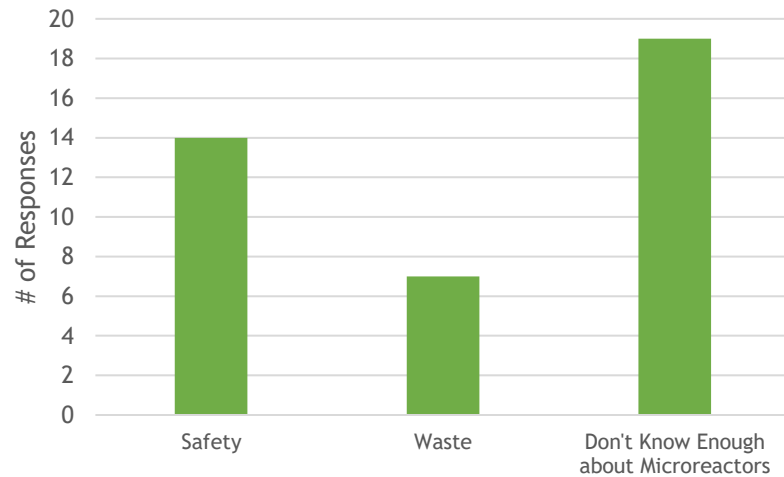
Predicted Campus Energy Emissions For Implementing Microreactor in 2026

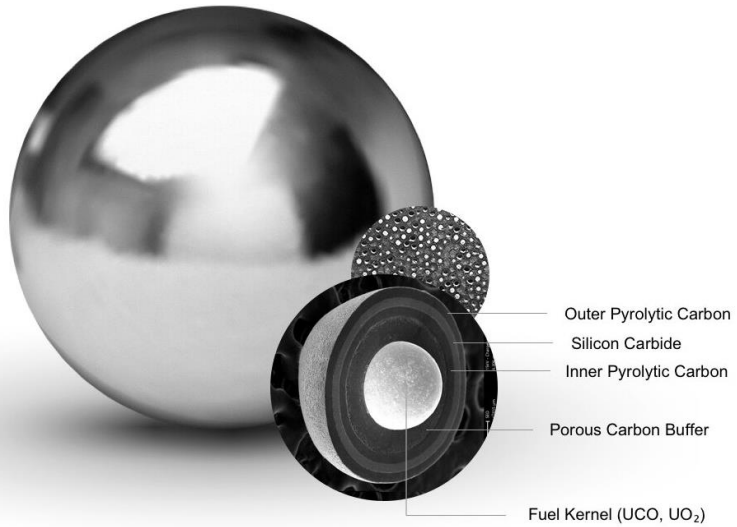


Community Opinions on Microreactor Usage

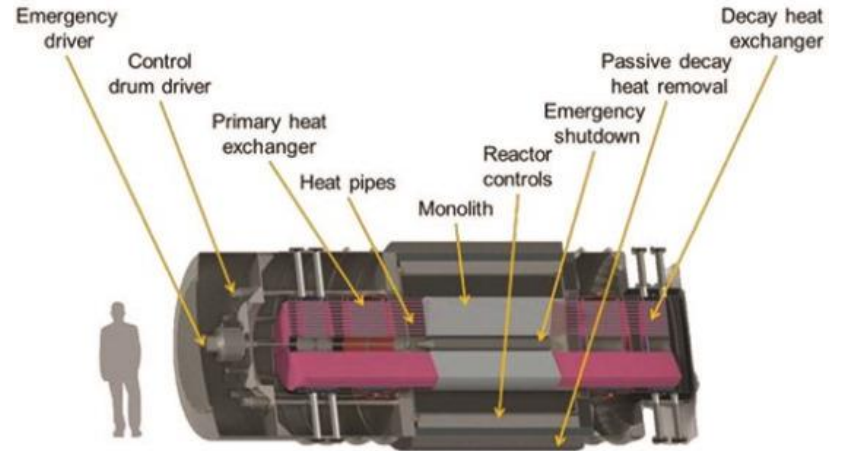


Themes From Free Response Answers





NRL collaborating with X-energy for TRISO-X fuel irradiation
 | MIT Nuclear Reactor Laboratory. (2020). Mit.edu.



US SMR Firms Mark Progress Milestones in US and
 Canada, Dan Yurman, Neutro Bytes 2019



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Nuclear Waste Storage *Fuel Storage.* (n.d.). www.connyankee.com. Retrieved April 6, 2022



national**grid**

Moving Forward...

- ▶ Establish Leadership Board.
- ▶ Conduct detailed survey of WPI and Worcester communities.
- ▶ Identifying reactor location performing basic assessment.
- ▶ Develop an installation and integration plan.