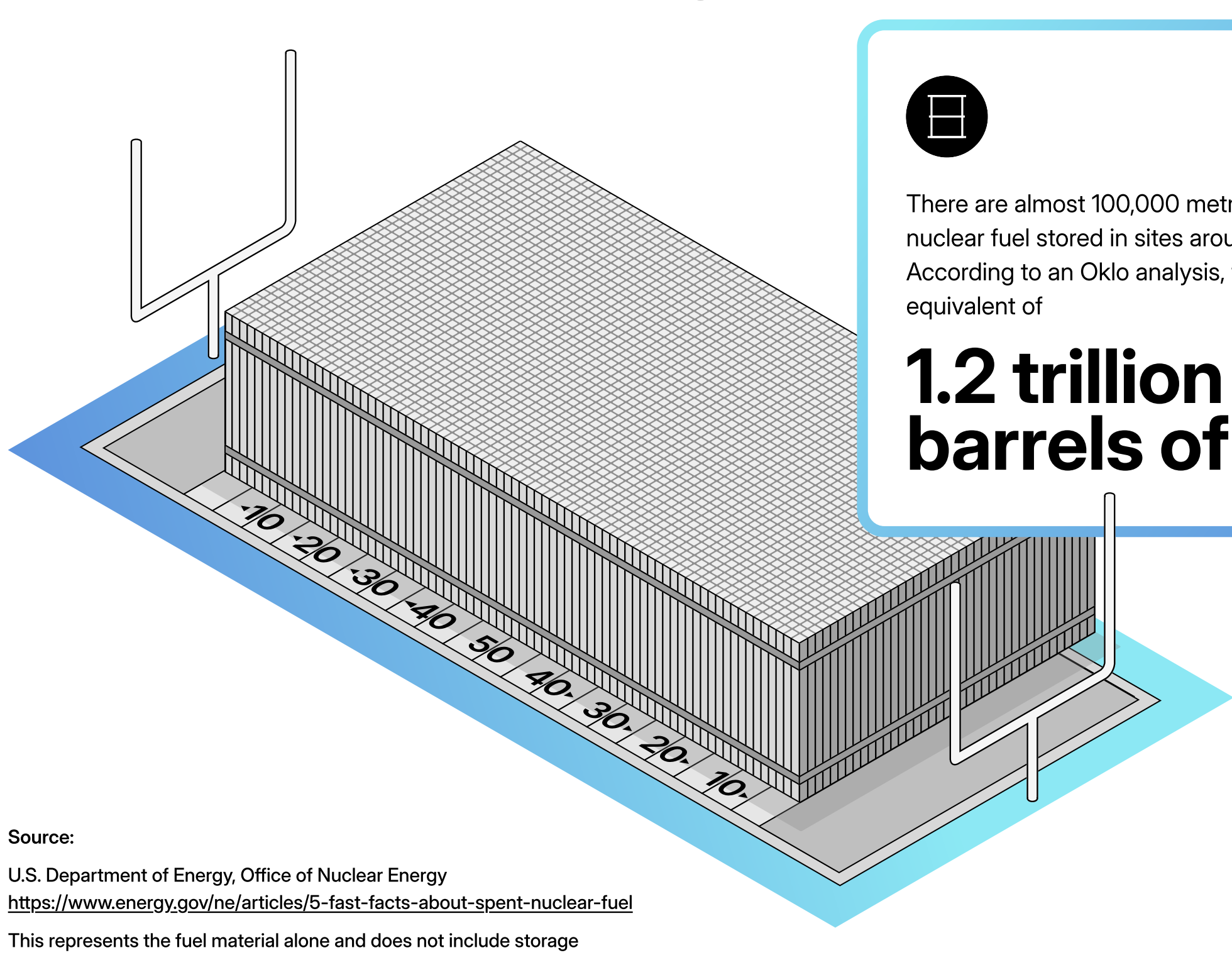
Oklo is recycling used nuclear fuel.

Turning a national liability into an energy asset

Scale of U.S. used nuclear fuel

All the used nuclear fuel ever produced in the U.S. could fit on a single football field stacked just over 10 yards high.



There are almost 100,000 metric tons of U.S. used nuclear fuel stored in sites around the country. According to an Oklo analysis, that's the energy equivalent of

1.2 trillion barrels of oil

Source:
U.S. Department of Energy, Office of Nuclear Energy
https://www.energy.gov/ne/articles/5-fast-facts-about-spent-nuclear-fuel

This represents the fuel material alone and does not include storage containers used in practice.

Why volumes of used nuclear fuel are small

Uranium is one of the most energy-dense materials on Earth.

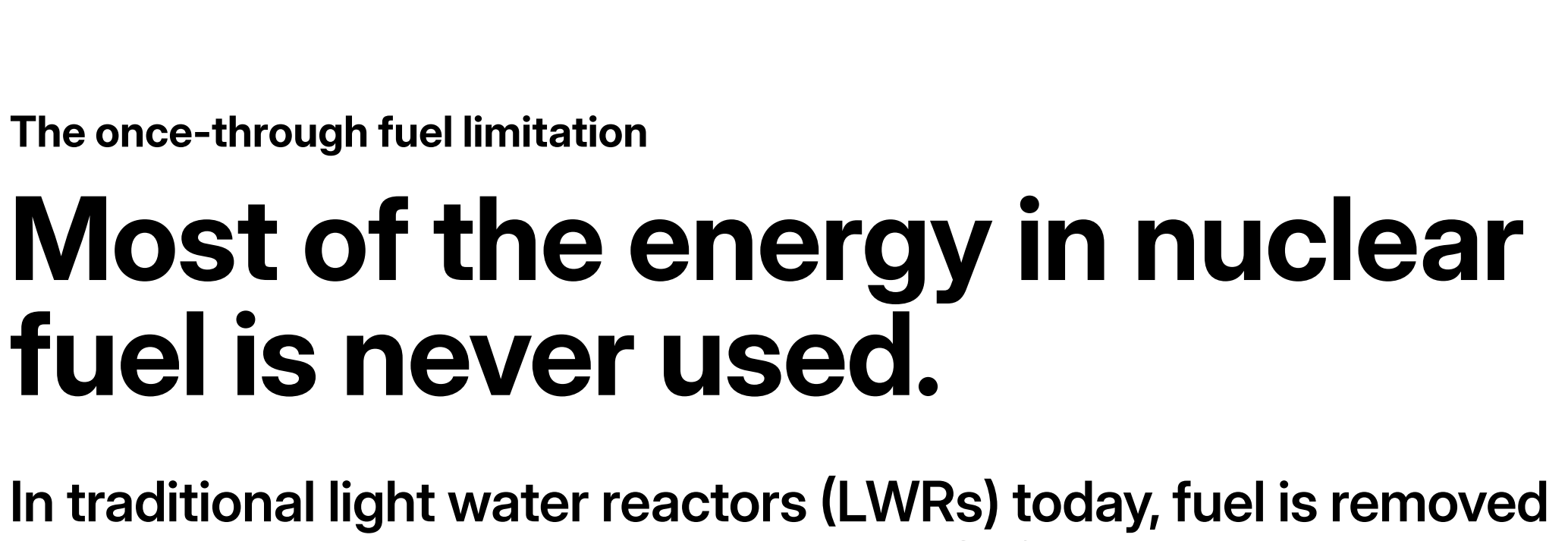
A uranium pellet about the size of a golf ball can supply the lifetime power needs of an average person.

A small amount of uranium produces an enormous amount of power, which is why nuclear waste volumes remain limited.

The once-through fuel limitation

Most of the energy in nuclear fuel is never used.

In traditional light water reactors (LWRs) today, fuel is removed after a single use even though around 95% of its energy remains.



This is like refilling the car with gas every five miles.

Source:
International Atomic Energy Agency
https://www-pub.iaea.org/MTCD/Publications/PDF Pub1754web-26894285.pdf

Nuclear management and disposal practices are highly regulated and safe.

Low-level waste, which includes everyday materials from medicine, research, and industry, has proven disposal pathways at licensed facilities across the United States.

Examples

Radioactivity can range from just above natural background levels to higher levels in specific cases — all handled under established and rigorous safety standards.

Key fact

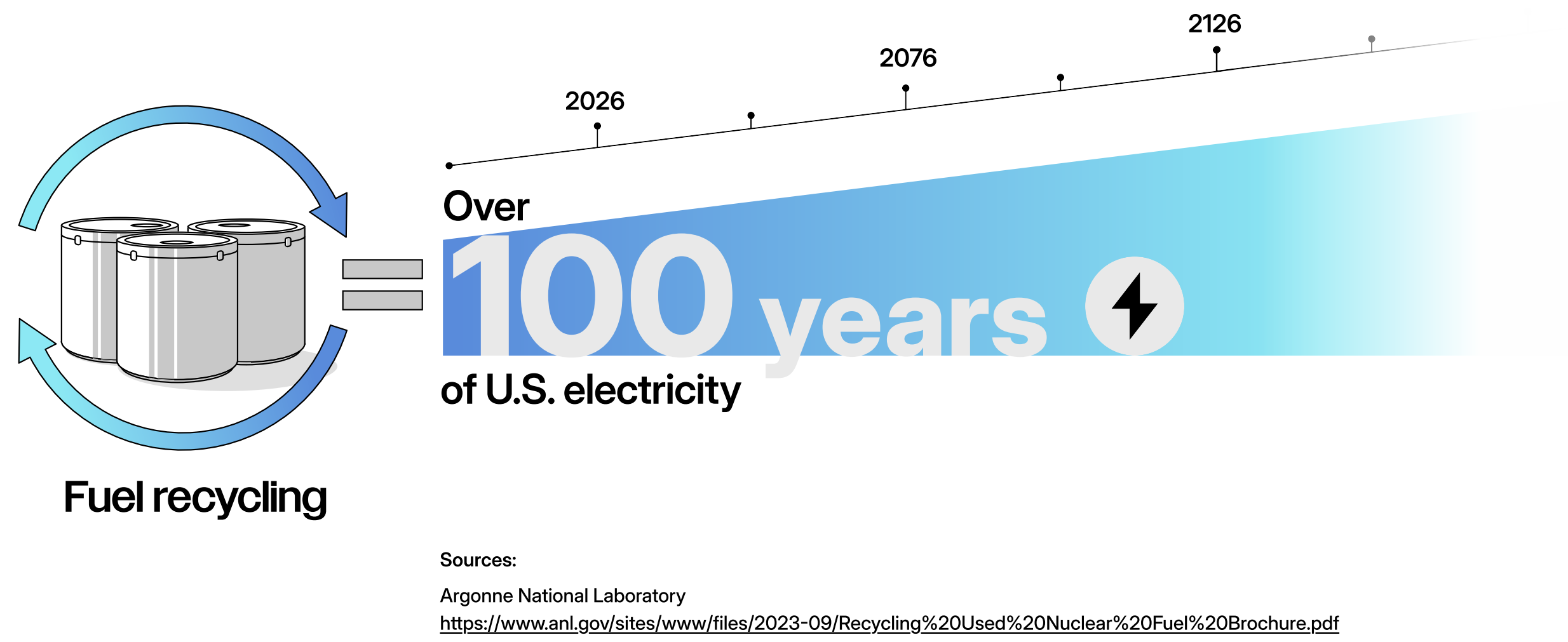
Low-level radioactive waste is compacted and disposed of in commercial, near-surface disposal facilities that operate today.

Source:
U.S. Nuclear Regulatory Commission — Low-Level Waste
https://www.nrc.gov/waste/low-level-waste.html

The opportunity in existing used fuel

America's used nuclear fuel is a long-term energy resource.

With fast reactors and fuel recycling, current inventories of used fuel could power the U.S. for generations at today's demand levels.



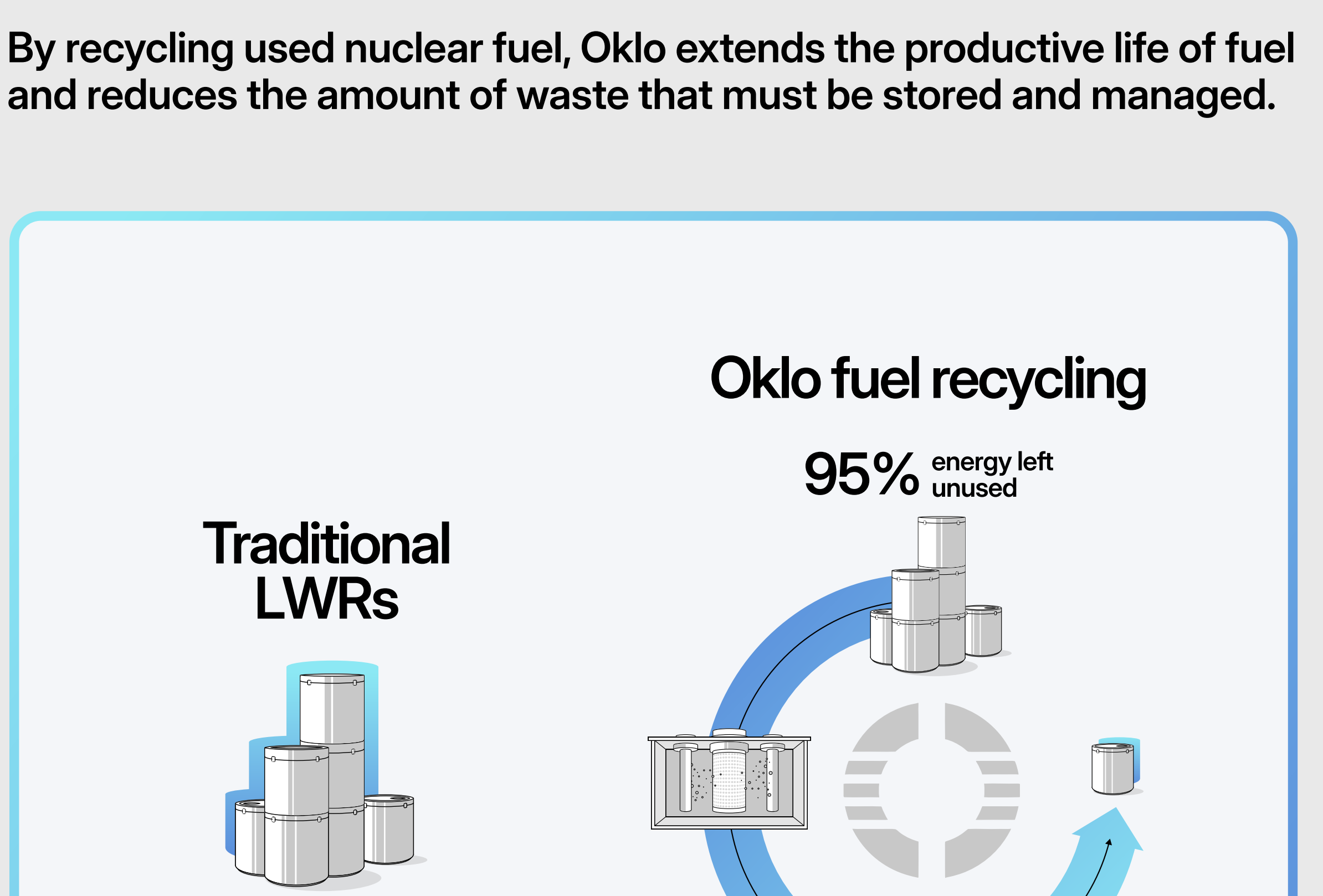
Over **100 years** of U.S. electricity

Sources:
Argonne National Laboratory
https://www.anl.gov/sites/www/files/2023-09/Recycling%20Used%20Nuclear%20Fuel%20Brochure.pdf
U.S. Department of Energy
https://www.energy.gov/ne/advanced-reactor-technologies

How Oklo changes the fuel cycle

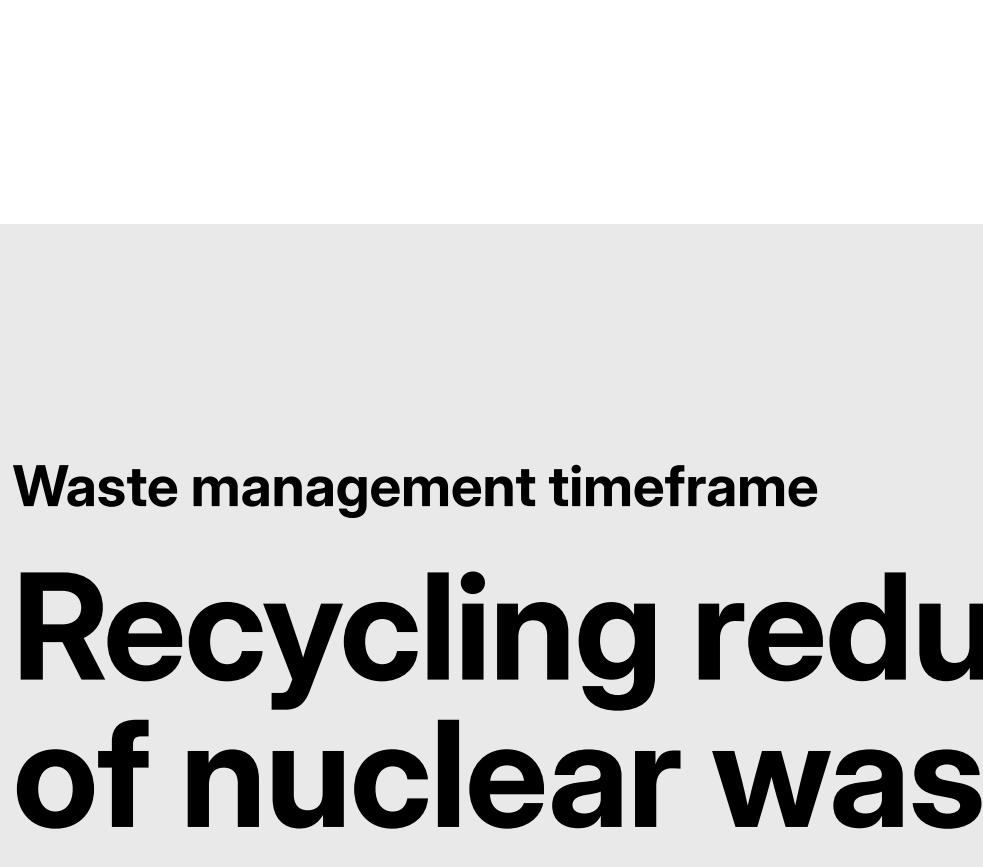
Oklo recovers energy instead of discarding it.

By recycling used nuclear fuel, Oklo extends the productive life of fuel and reduces the amount of waste that must be stored and managed.



Waste volume comparison

Recycling dramatically reduces the amount of material requiring long-term disposal.


Waste after one pass through a LWR (no recycling)
Waste remaining after recycling

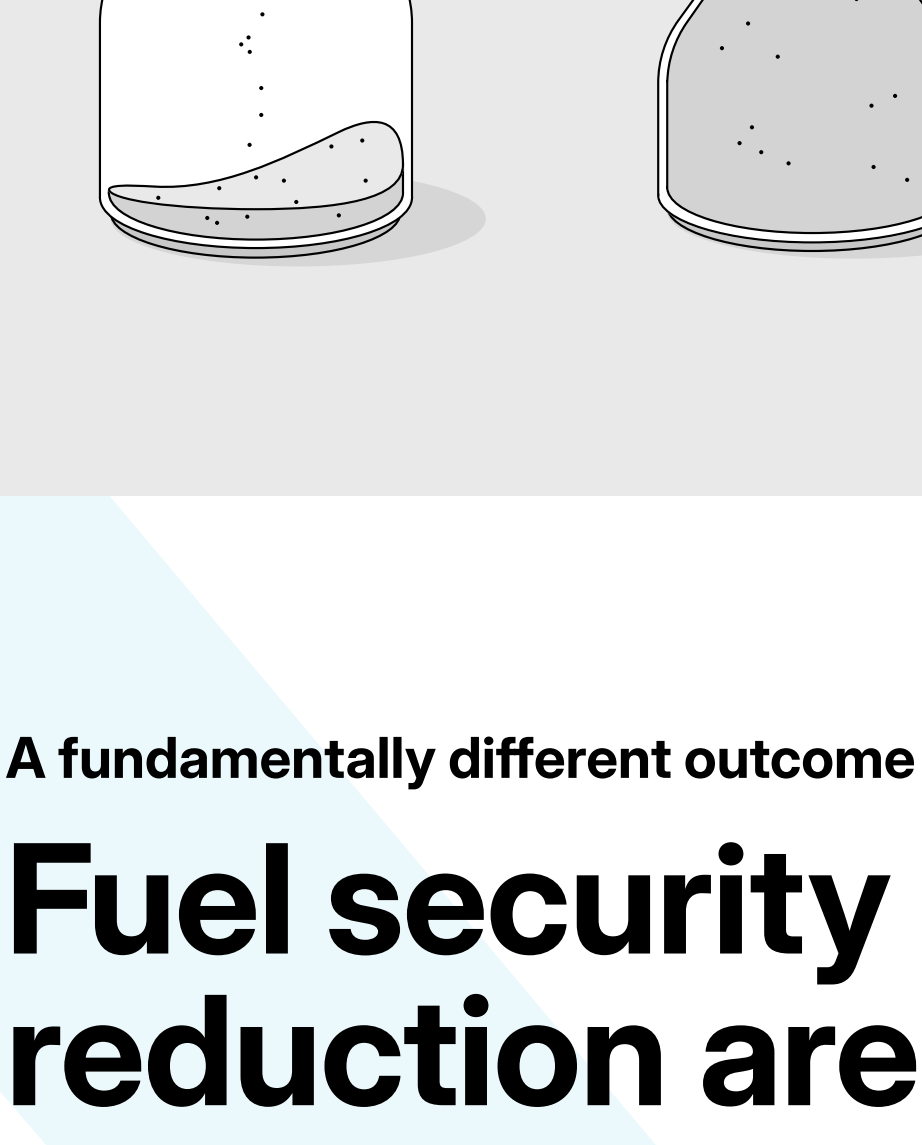
Oklo's fuel recycling

Fuel recycling reduces the volume of what is currently stored as long-term waste by converting most of it into new fuel for the fast-fission power plants like the Aurora powerhouse.

Waste management timeframe

Recycling reduces the radioactivity of nuclear waste from 100,000+ years to less than 300 years.

By reusing the long-lived portions of used nuclear fuel, recycling leaves a much smaller final waste stream and reduces the long-term burden of waste management.



Key comparison:

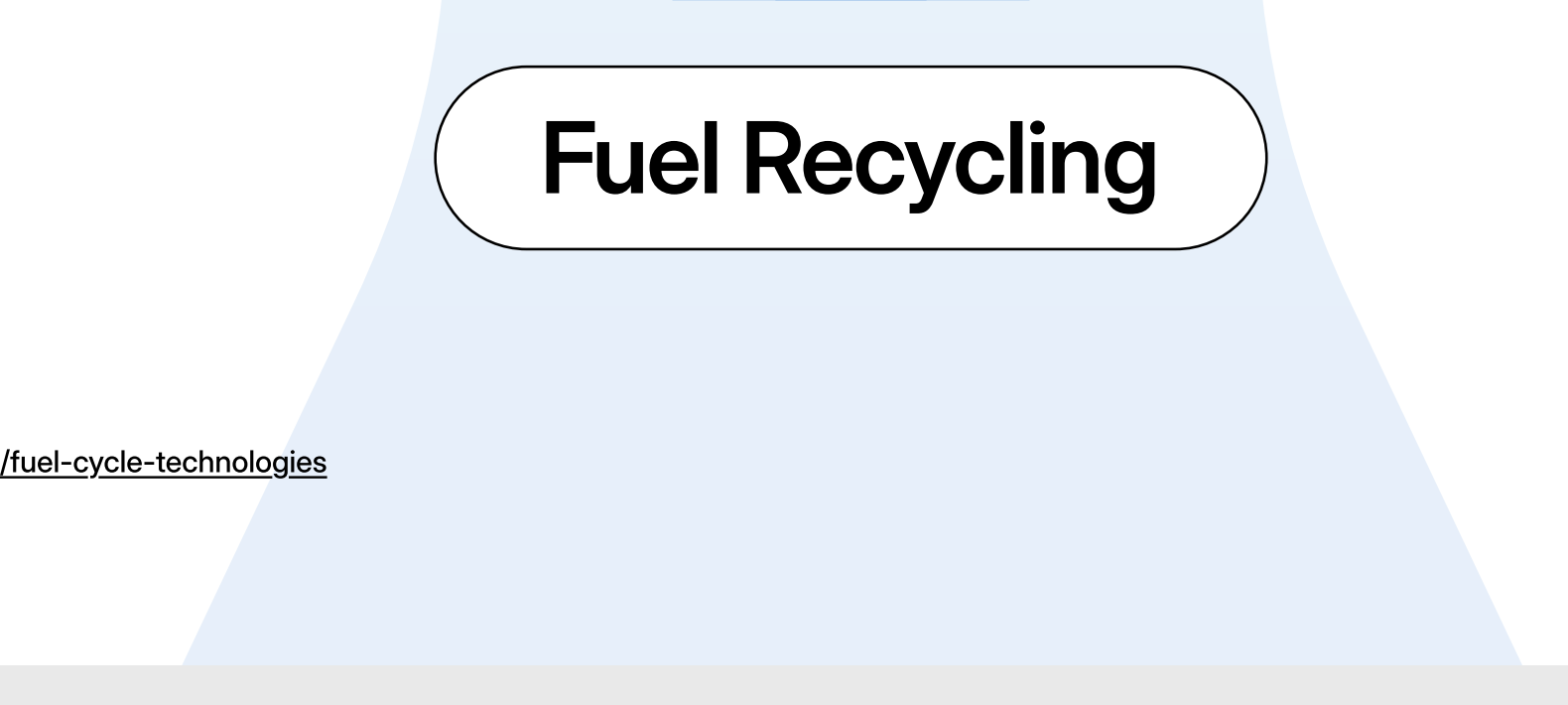
From hundreds of thousands of years to hundreds of years before reaching background radiation levels.

Source:
U.S. Department of Energy Office of Scientific and Technical Information
https://www.osti.gov/biblio/1007248
World Nuclear Association
https://world-nuclear.org/information-library/nuclear-fuel-cycle/fuel-recycling/processing-of-used-nuclear-fuel

A fundamentally different outcome

Fuel security and waste reduction are part of the same solution.

Recycling turns used fuel into a domestic energy resource for advanced reactors, strengthening energy security and reducing a long-term waste burden.



Source:
U.S. Department of Energy
https://www.energy.gov/ne/fuel-cycle-technologies

The takeaway

Nuclear waste is manageable. Recycling makes it more so.

Oklo's fuel recycling approach turns existing material into decades of clean energy, reduces the long-term waste burden, and addresses nonproliferation concerns because it does not produce a separate plutonium stream.

Conventional way

Long radioactive life	Energy from fuel

Oklo's way

Short radioactive life	Energy from recycled fuel

Source:
International Atomic Energy Agency
https://www-pub.iaea.org/MTCD/publications/PDF/PUB2111web.pdf