

# Powering Oklahoma's Future with Nuclear Energy

Sen. George Burns



*Imagine a future where clean, reliable, and sustainable electricity powers our homes, businesses, and industries, all while reducing our carbon footprint.*

Welcome to the world of nuclear power, a game-changer that can transform Oklahoma's energy sector - bringing nuclear power to Oklahoma is a smart choice for our state's future.

# Why Nuclear Power?

**1**

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Clean and Sustainable Energy

**2**

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Grid Reliability

**3**

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Energy Security and Diversity

**4**

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Addressing Future Energy Needs for Oklahomans

**5-7**

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Low Environment Impact

Job Creation for Oklahomans

Cutting Edge Technology

Are you ready to take  
Oklahoma's energy landscape to  
the next level?

## **Clean and Sustainable Energy**

Nuclear power offers a clean and sustainable energy solution. By introducing nuclear energy to Oklahoma, we can significantly reduce our reliance on fossil fuels, cutting greenhouse gas emissions and contributing to a cleaner environment.

## **Grid Reliability**

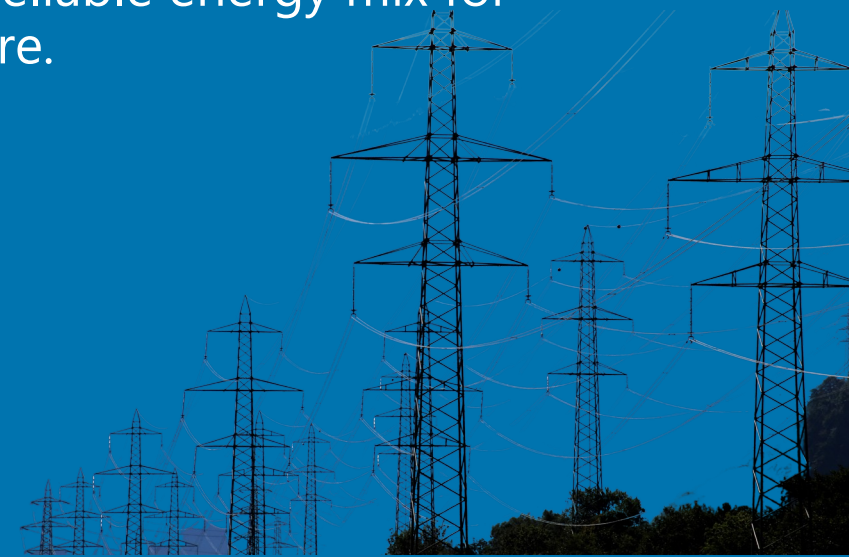
Nuclear power contributes to grid reliability. It provides a consistent source of baseload electricity, reducing the risk of blackouts and brownouts. Oklahoma can enjoy a reliable power supply, even during peak demand periods.

## **Energy Security**

Nuclear power plants provide a stable, continuous source of electricity, enhancing energy security in Oklahoma. With nuclear power, we can reduce vulnerability to energy supply disruptions and price fluctuations, ensuring that power is always available when we need it.

## **Energy Diversity**

A diversified energy portfolio is key to resilience. Nuclear power complements other renewable energy sources, such as wind and solar, ensuring a balanced and reliable energy mix for Oklahoma's future.



## Job Creation

The nuclear industry is a catalyst for economic growth. By bringing nuclear power to Oklahoma, we can create a multitude of jobs, from construction and operations to research and development. These jobs will support local communities and stimulate the state's economy.

## Cutting-Edge Technology

Embracing nuclear power means embracing cutting-edge technology. Modern nuclear reactors are designed with advanced safety features, including passive cooling systems, ensuring that the highest safety standards are met.



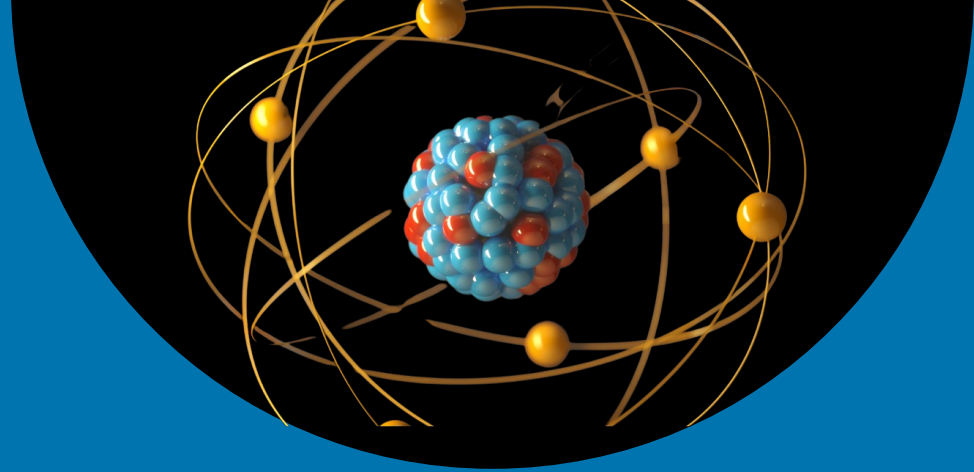
Let's join the Energy Revolution!

## Low Environmental Impact

Nuclear power plants produce minimal air pollutants, making them an environmentally friendly choice. Compared to the emissions from the oil and gas industry, nuclear power is a breath of fresh air for Oklahoma's environment.

## Addressing Future Energy Needs

Oklahoma's energy demand is growing, and nuclear power can help meet these needs sustainably. By investing in nuclear energy today, we ensure a prosperous and energy-secure future for generations to come.



# Leading the Future

Oklahoma has the opportunity to lead the way in clean energy innovation by embracing nuclear power. It's a chance to reduce emissions, create jobs, and ensure a reliable energy supply for all.



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**C**

**T**

**Nuclear power is known for its high energy density, which means a small amount of nuclear fuel can produce a substantial amount of electricity over an extended period.**

**This characteristic, along with its relatively low carbon emissions, has made nuclear power a significant contributor to electricity generation in many countries around the world.**

**However, it also comes with challenges related to safety, waste disposal, and public perception.**

# What is Nuclear Power?

## Nuclear Fuel

Nuclear fuel is primarily composed of fissile materials, such as uranium-235 (U-235) or plutonium-239 (Pu-239). These materials are carefully chosen for their ability to undergo nuclear fission, releasing immense amounts of heat energy.

## Converted to Power Source

Nuclear fuel is placed within a nuclear reactor. Here, controlled nuclear fission reactions occur, producing a tremendous amount of heat. This heat is then used to generate steam from water, which powers turbines connected to generators. The result? Clean and reliable electricity for Oklahoma.







# Reactor Types

While there are several types of nuclear reactors the primary focus of this Interim Study is on

## Small Modular Reactors (SMRs)

SMRs represent the next generation of nuclear technology. They are smaller, modular, and highly versatile. SMRs can be manufactured in factories and then transported to their operational site. This means reduced construction time and costs. The versatility of SMRs mean less prep time, more options, greater flexibility and are great attractants to new business opportunities.

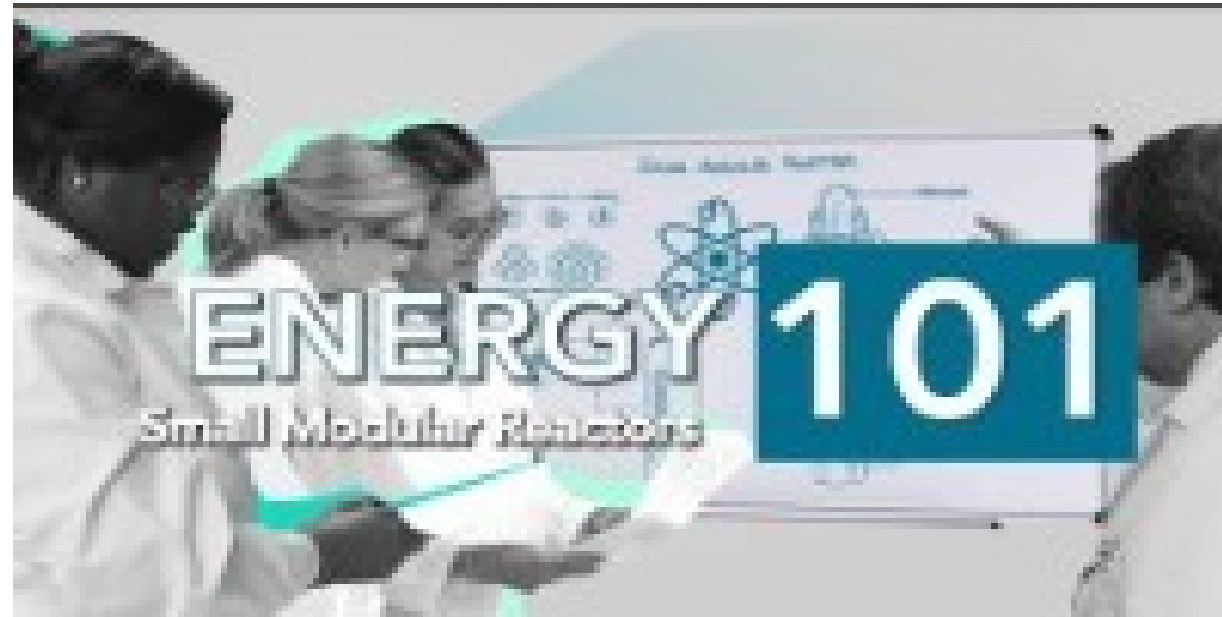
*According to the US Department of Energy one study "estimated deployment of a 100 megawatt SMR could create 7,000 jobs and generate more than \$1 billion in sales."*

DOE cite: <https://www.energy.gov/ne/articles/4-key-benefits-advanced-small-modular-reactors>

Study cite:

[www.uxc.com/smr/Library%5CImpact on National Economy/2010 – Paper on the Economic and Employment Impacts of SMRs.pdf](http://www.uxc.com/smr/Library%5CImpact%20on%20National%20Economy/2010%20-%20Paper%20on%20the%20Economic%20and%20Employment%20Impacts%20of%20SMRs.pdf)

# Energy 101: Small Modular Reactors



# HOW DO SMRS WORK?

1

**Nuclear power plants generate heat through nuclear fission.** The process begins in the reactor core. Atoms are split apart – releasing energy and producing heat as they separate into smaller atoms. The process repeats again and again through a fully controlled chain reaction.

2

**Control rods made of neutron-absorbing material are inserted into the core to regulate the amount of heat generated by the chain reaction.**

3

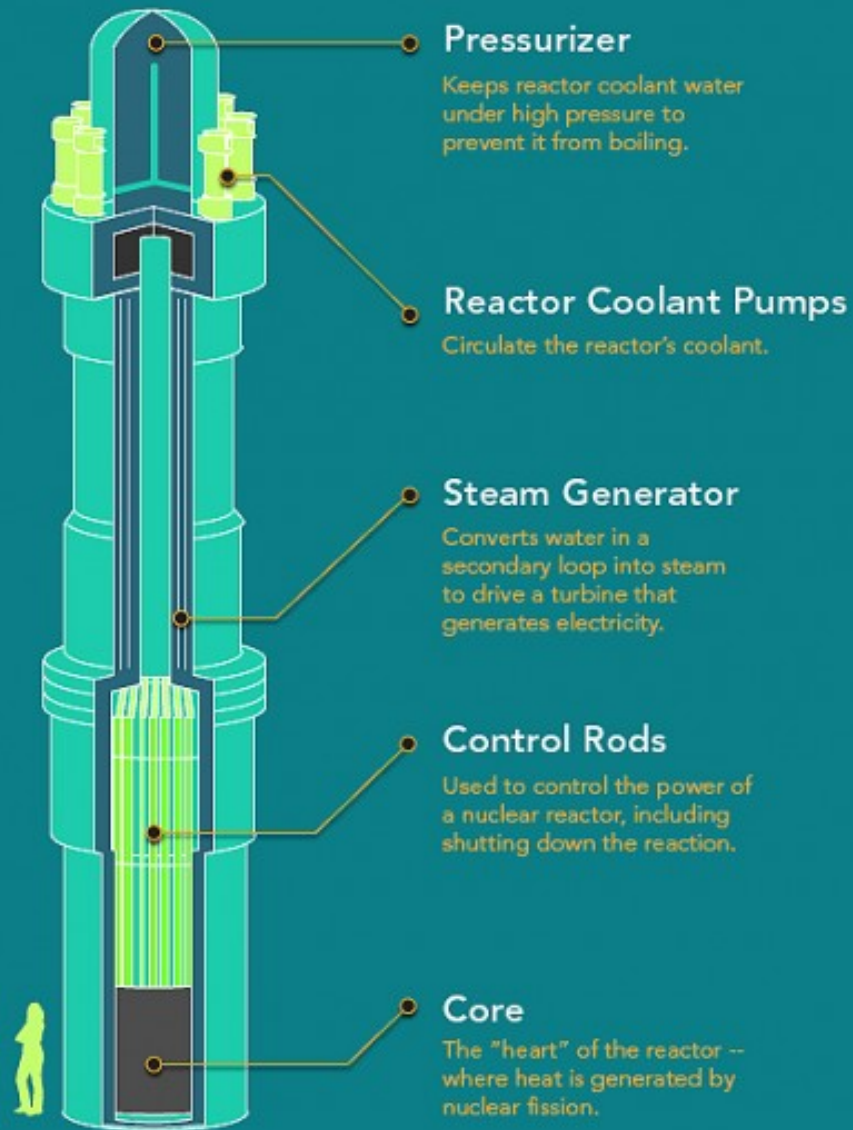
**Reactor coolant water picks up heat from the reactor core.** Reactor coolant pumps circulate this hot water through a steam generator, which converts water in a secondary loop into steam.

4

**The steam is used to drive a turbine, which generates electricity.**

5

**Throughout the process, the pressurizer keeps the reactor coolant water under high pressure to prevent it from boiling.**



# Safety Advantages

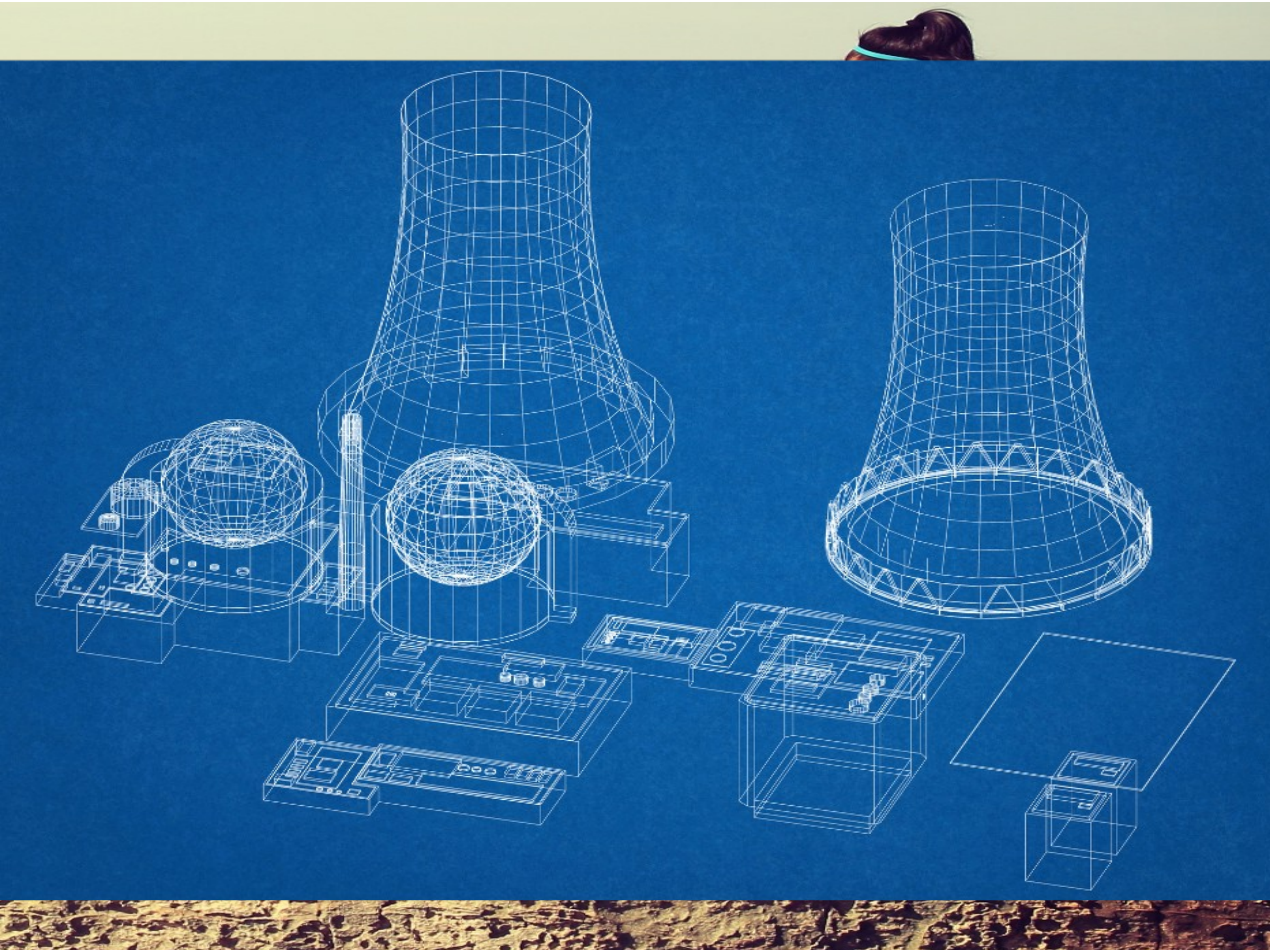
SMRs are smaller in size and designed with passive safety features. In the event of a malfunction, they are designed to shut down automatically, minimizing the risk of a catastrophic event. Additionally, they produce less radioactive waste and can use alternative coolants, reducing the risk of coolant-related accidents.

# Reliability

A nuclear power plant can provide a stable and consistent source of electricity, contributing to grid reliability and reducing dependence on fossil fuels. While Nuclear Power can impact the oil and gas industry, both industries can coexist and even benefit from diversification.

# Jobs

Nuclear power plants create jobs in construction, operation, maintenance, and support services, contributing to local employment and economic growth.



Wait ... there is more

## Micro Reactors

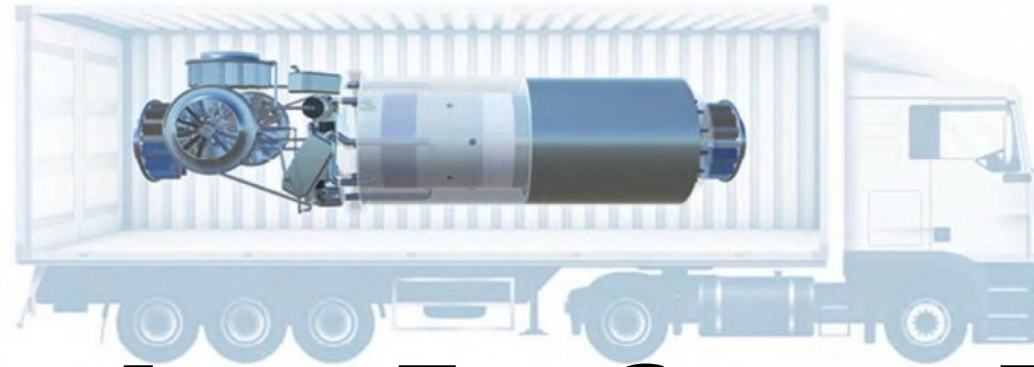
What are they and how are they different?





**Micro Reactors ability to be rapidly deployed and customized for various applications makes these reactors a valuable addition to the nuclear energy landscape, providing access to clean and sustainable energy where it was previously challenging or impossible to achieve.**

# Advantages of Micro Reactors Recap



**1 & 2**

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Portability  
&  
Rapid  
Deployment

**3 & 4**

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Reduced  
Infrastructure  
&  
Customization

**5 & 6**

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Enhanced Safety  
&  
Low Environment  
Impact

**7**


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Energy Access  
*in remote and  
underserved  
communities*

**8**

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Modular Design  
*Potential cost savings*

The background image shows the interior of a space station, likely the International Space Station, with a large circular hatch in the center. The hatch is surrounded by complex machinery and structural elements. A yellow dot is positioned on the hatch, and a blue rectangular box with the text "Thank you!" is overlaid on the right side of the image. The text "Let's bring Oklahoma into the future" is overlaid on the left side of the image.

**Let's bring  
Oklahoma into  
the future!**

**Thank you!**