

Global and U.S. Nuclear Energy Perspective

September 2015

12th Brazil Energy and Power, Rio de Janeiro

Carlos Leipner

Vice President, Latin America

Westinghouse



AP1000 is a trademark or registered trademark of Westinghouse Electric Company LLC, its affiliates and/or its subsidiaries in the United States of America and may be registered in other countries throughout the world. All rights reserved. Unauthorized use is strictly prohibited. Other names may be trademarks of their respective owners.

Westinghouse: A Long Presence in Brazil



Actively supports the Brazilian nuclear community and partners with local partners to develop local capabilities, talent and leadership

© Eletrobrás



Why Nuclear Power

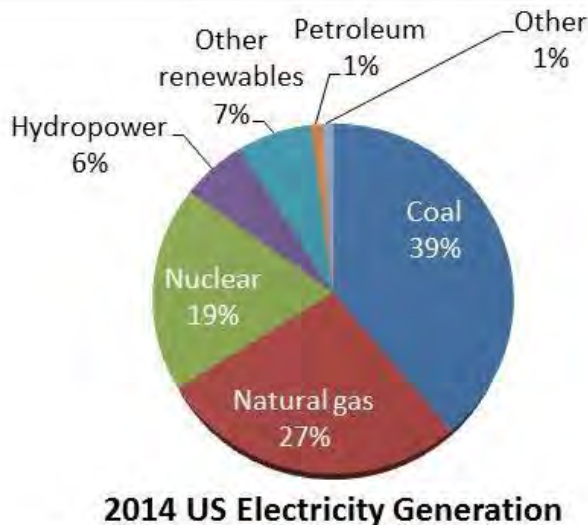
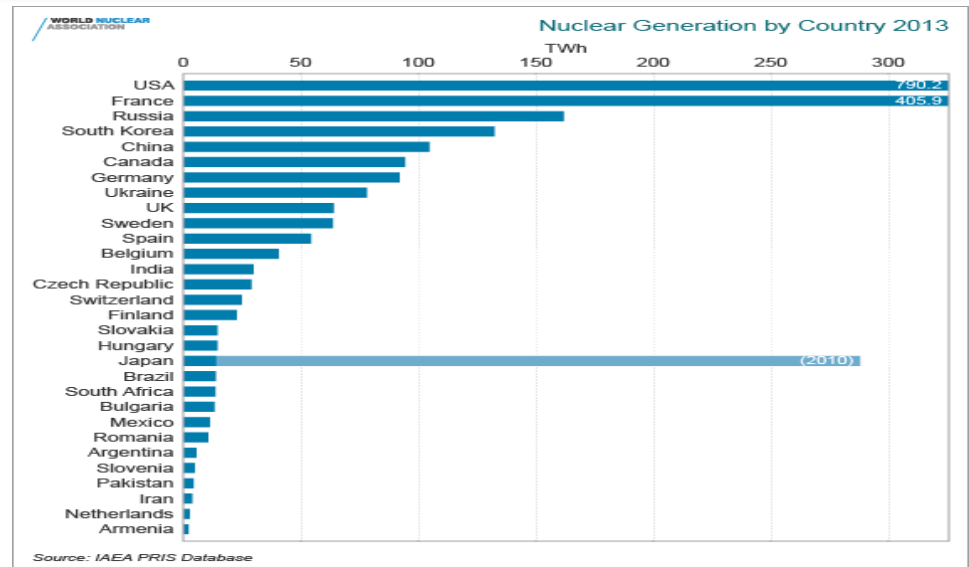
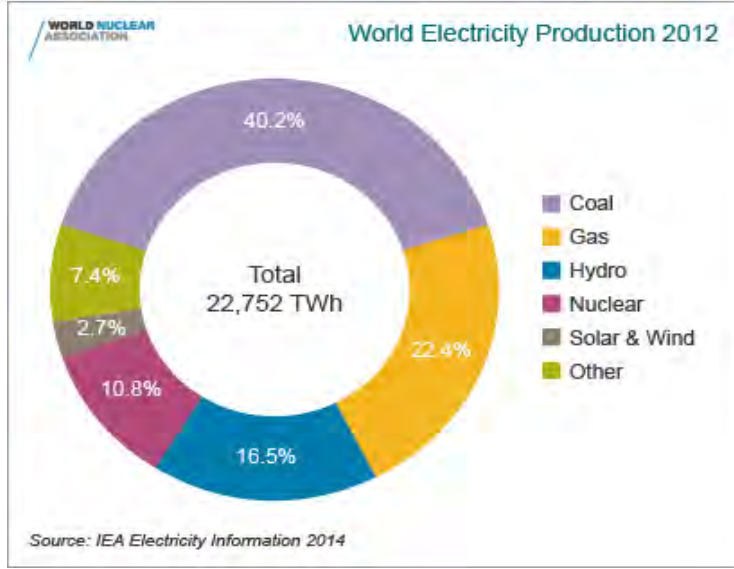
7.3 Billion 2015 World Population

1 Billion Live on **750 Million Lack** **1.3 Billion lack**
Less than **access to** **access to**
US\$1.25/day **clean water** **electricity**

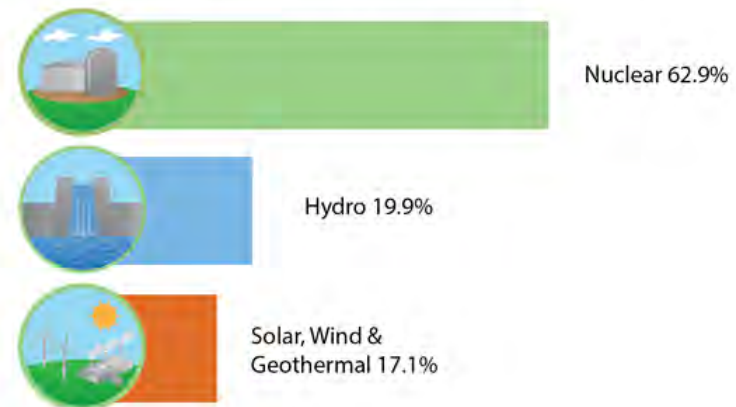
Access to reliable and clean electricity is an imperative to our future: Nuclear Power has a Important Role to Play



Status of Nuclear in the World and US Today

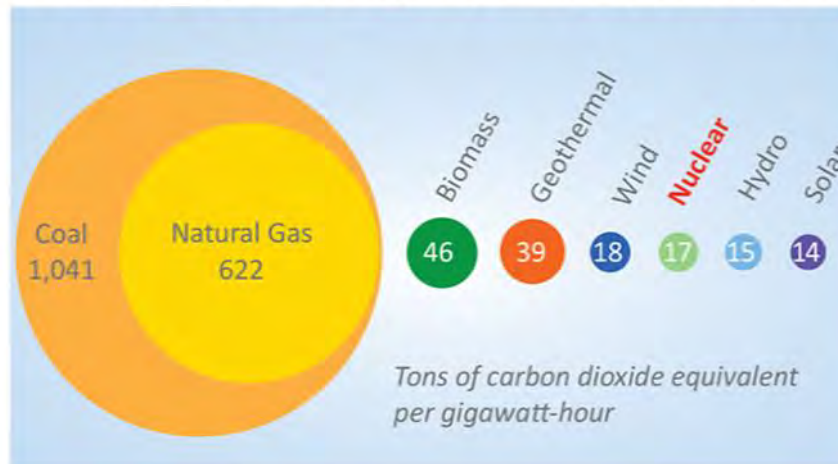


Sources of Emission-Free Electricity 2014



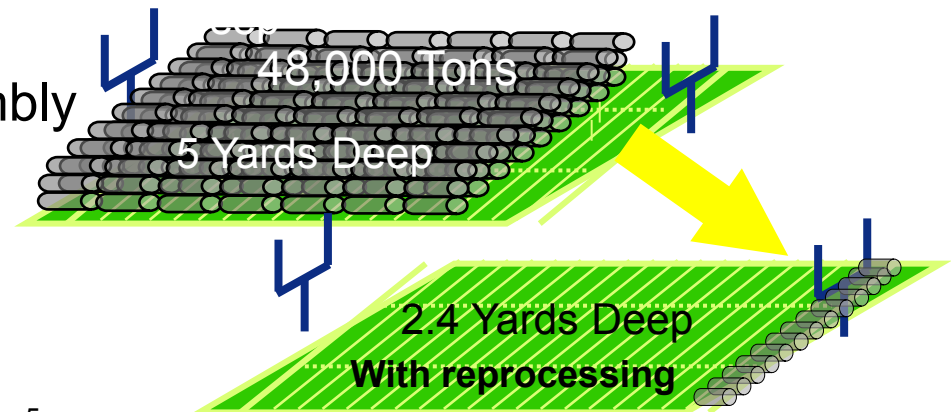
Nuclear Power: A Sustainable Alternative

Lifecycle CO2 Emissions from Electric Sources



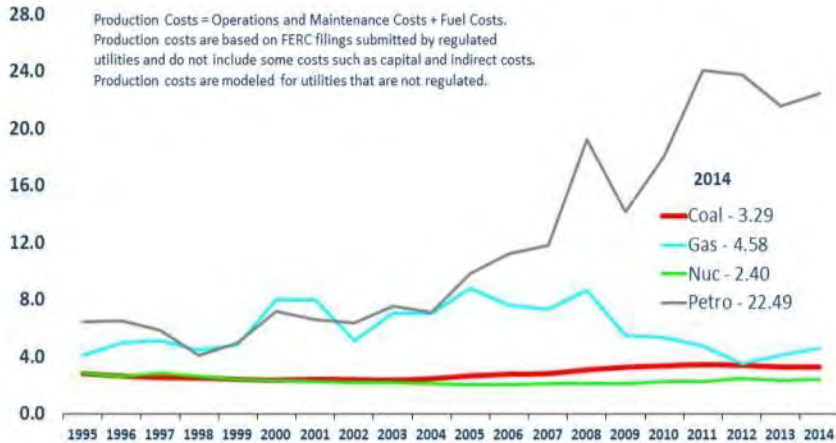
Current high-level waste volume after the plant's lifetime of operations would fill an area about the size of a football field five yards deep

- ~48,000 metric tons
- ~½ ton per fuel assembly
- ~ 100,000 assemblies
- Only ~5% is waste

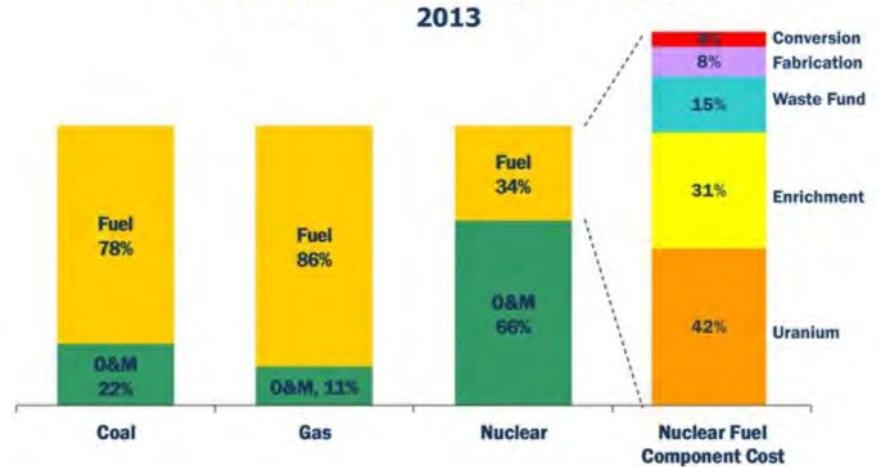


Nuclear Power: A Competitive Source

U.S. Electricity Production Costs
1995-2014, In 2014 cents per kilowatt-hour



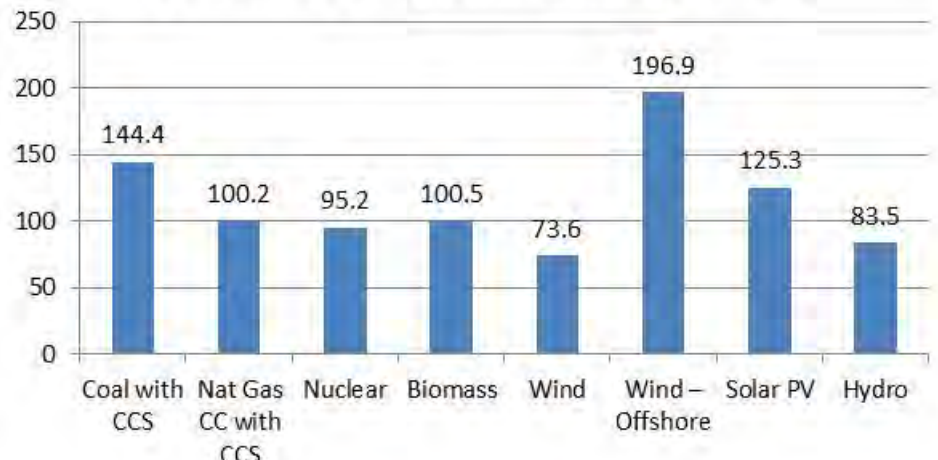
Fuel as a Percentage of Electric Power Production Costs
2013



U.S. Capacity Factors by Fuel Type
2014

| Fuel Type | Average Capacity Factors (%) |
|----------------------|------------------------------|
| Nuclear | 91.7 |
| Geothermal | 68.8 |
| Coal (Steam Turbine) | 60.9 |
| Gas (Combined Cycle) | 47.8 |
| Hydro | 37.5 |
| Wind | 33.9 |
| Solar | 27.8 |
| Oil (Steam Turbine) | 12.8 |
| Gas (Steam Turbine) | 10.0 |

Levelized Cost of Electricity (USD)



Ref: Nuclear Energy Institute (NEI), World Nuclear Association (WNA)

Westinghouse AP1000™ Plant Global Project

- Eight **AP1000** units under construction worldwide
 - Four units in China
 - Four units in the United States



CA20 Module – V.C. Summer



Sanmen Site Progress: Time Lapse View

2009 to 2015



Summary

- Nuclear energy continues to provide multiple benefits as a source of electricity generation and will play an increasing role in meeting world energy needs.
- A worldwide fleet approach for standard nuclear design provides maximum efficiencies for long-term, competitive electricity generation
- The **Westinghouse AP1000** plant technology is being deployed globally and is passive, standardized and licensed
 - Environmentally responsible source of electricity
 - Unmatched licensing pedigree
 - Provides certainty of schedule and cost; reduced project risk

Westinghouse: Partnering with Brazil to provide clean, safe, reliable, competitive nuclear generation for years to come!



<http://www.westinghousenuclear.com/>



© Sanmen Nuclear Power Company, Ltd. All rights reserved.

