

FRIDAY, NOVEMBER 17th

Using Your Passion to Fuel Change

Dr. Jeffrey Steynor is Principal Engineer in BELCO's Project Management Office. He is currently supporting the drafting of the next iteration of the island's Integrated Resource Plan and supporting the company with its initiatives to integrate renewable energy generation technology into the current energy mix with a goal of achieving Net Zero by 2050.



Dr. Jeffrey Steynor
Subject Matter Expert

Transition to Renewable Energy



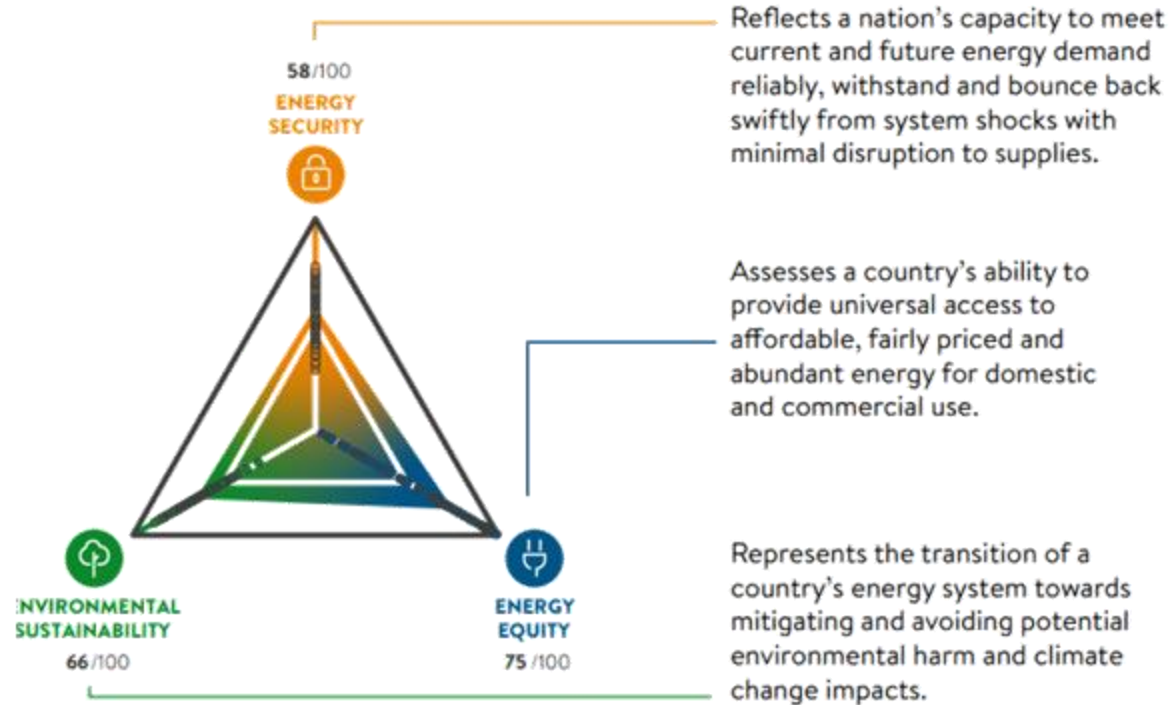
- What does a transition to green tech mean for Bermuda?
- How will this transition take place (e.g. timeframes)?
- What roles/job might be required to support this transition?
- How can Bermuda move forward towards sustainably?

We Need LOTS!

- **L**and (Solar and storage)
- **O**cean (Floating solar, wave)
- **T**echnology (Generation, transmission & distribution)
- **S**omeone (You)

Energy Trilemma

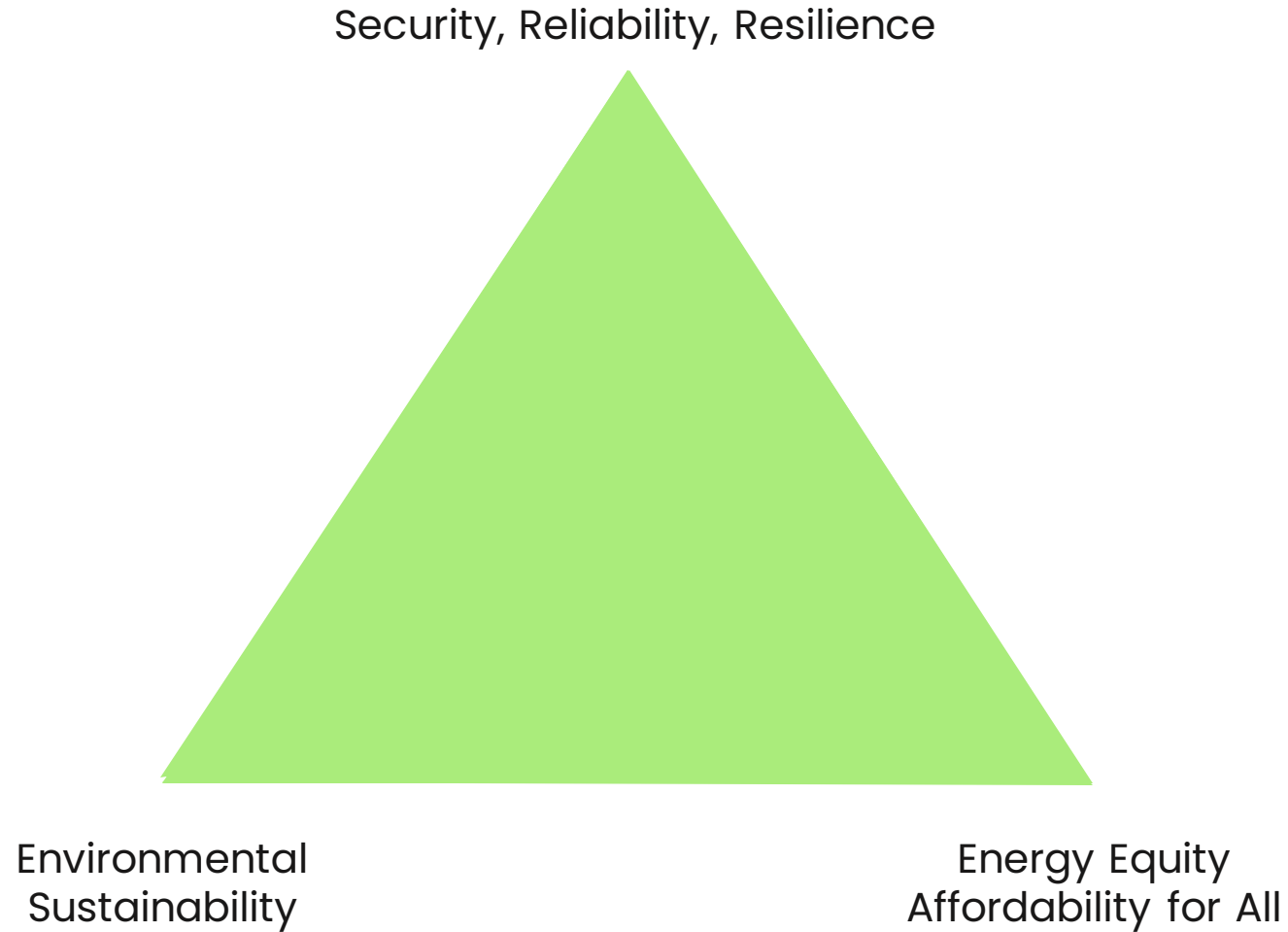
- Sustainability:
decarbonising energy
- Security:
ensuring the security
and reliability of energy
supplies
- Affordability:
minimising the cost of
energy to consumers



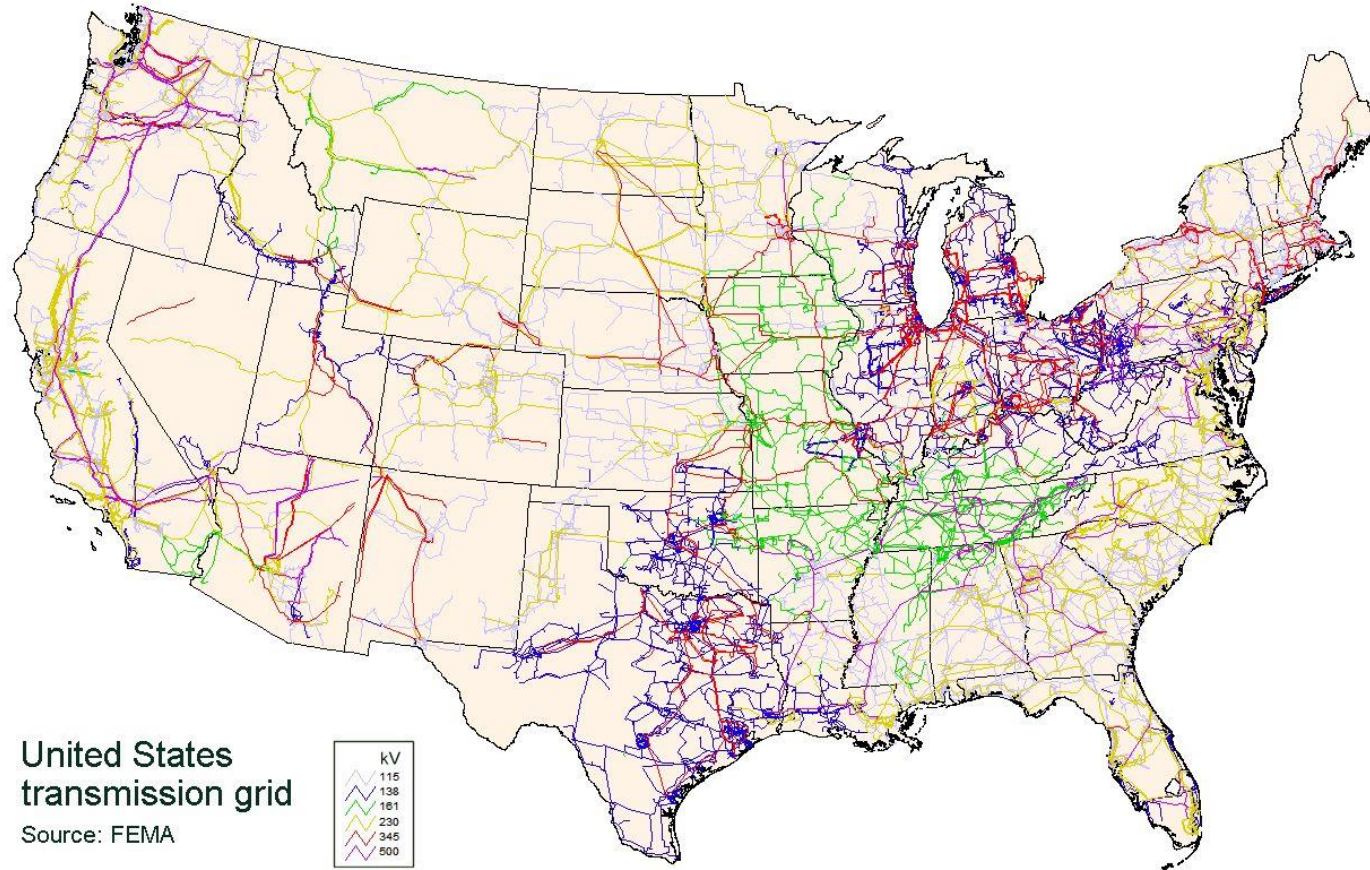
Source: World Energy Council

https://www.worldenergy.org/assets/downloads/World_Energy_Trilemma_Index_2022.pdf?v=1669839605

What Matters to You?

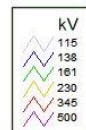


The U.S. Grid is Interconnected



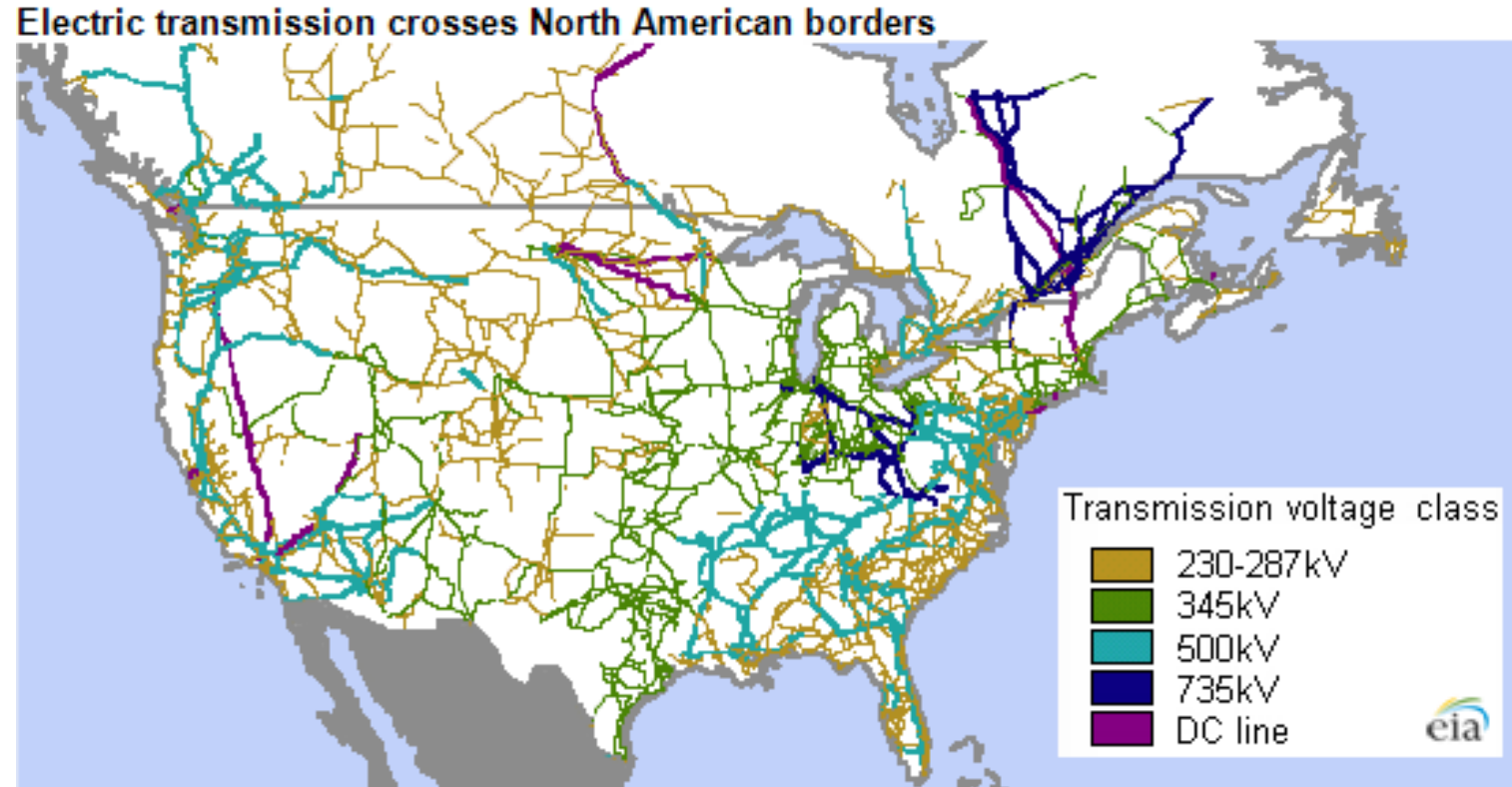
United States
transmission grid

Source: FEMA



Data source: FEMA via NREL. http://www.nrel.gov/gis/data_analysis.html

North American Grids Are Interconnected



Source: U.S. Energy Information Administration, based on Energy Velocity.

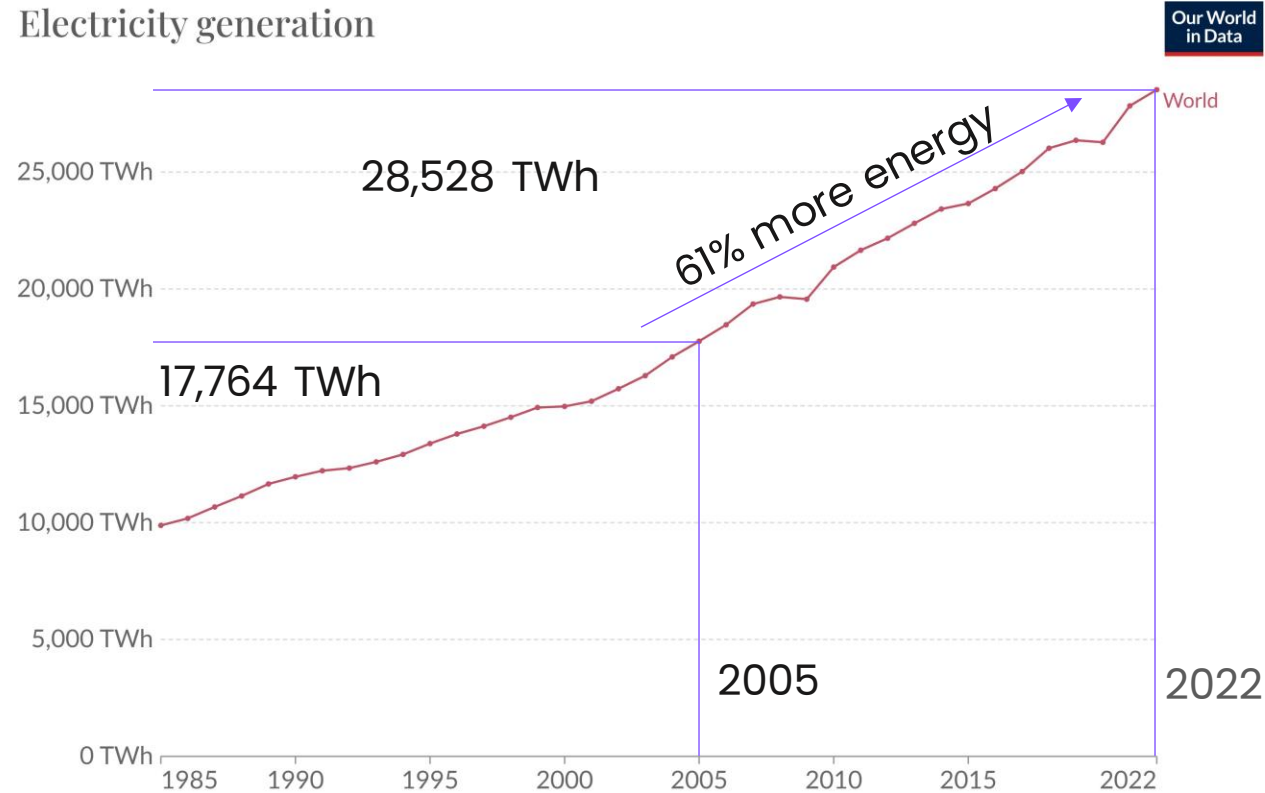
What Resource is Available?



29 Oct 2023 20:00Z - NOAA/NESDIS/STAR - GOES-East - GEOCOLOR Composite

Energy Demand

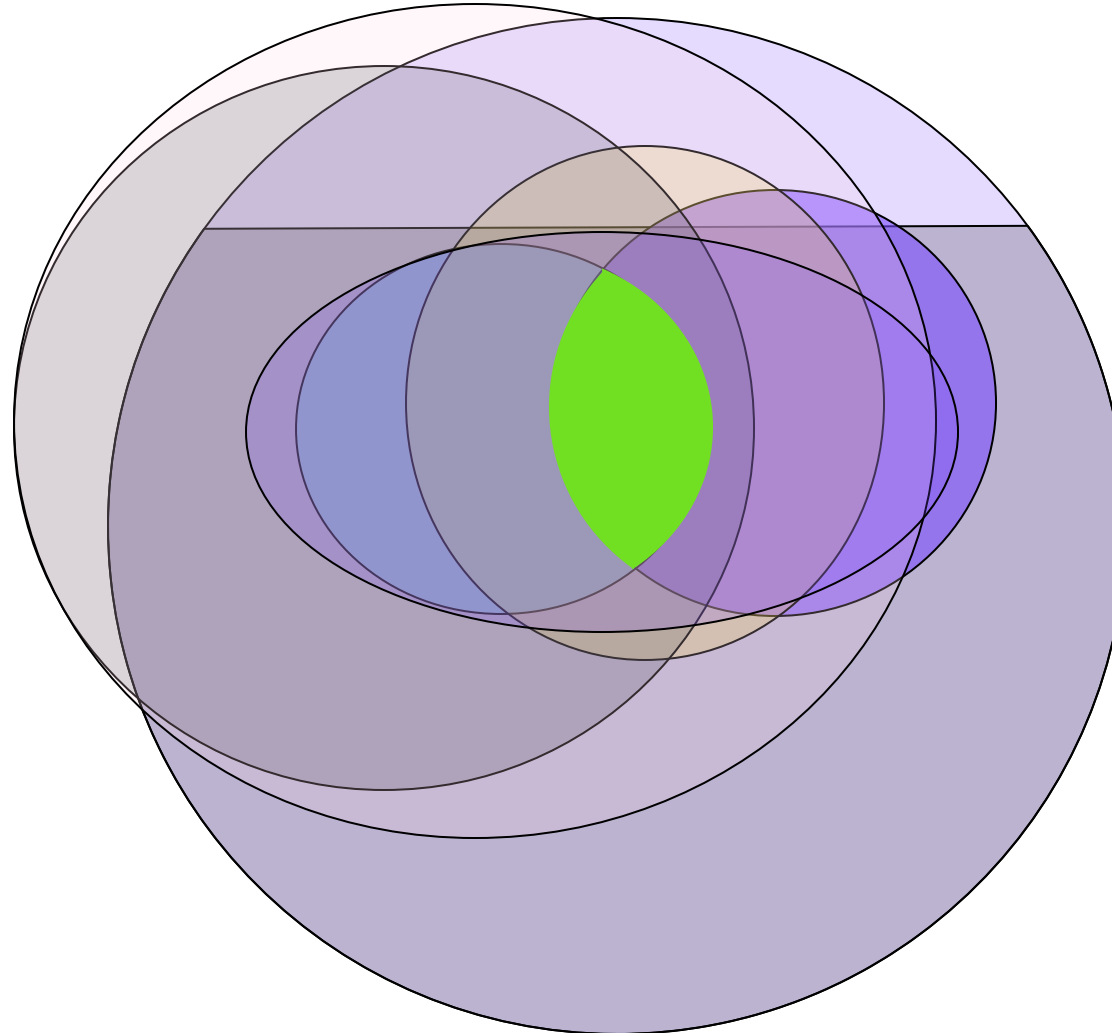
In the last 18 years the worlds energy demand has increased by 61%



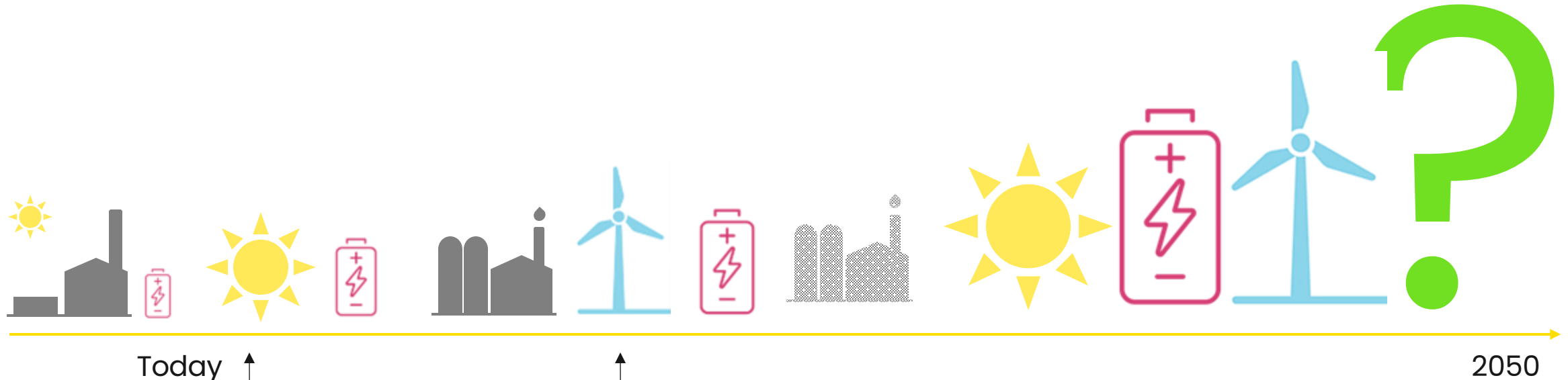
Data source: Ember's Yearly Electricity Data; Ember's European Electricity Review; Energy Institute Statistical Review of World Energy
OurWorldInData.org/energy/ | [CC BY](https://creativecommons.org/licenses/by/4.0/)

Possible Solutions to Bermuda's Net Zero

- What resource is available?
- What demand is required?
- What technology is capable?
- What technology will be viable?
- What is sustainable?
- What ensures security of supply?
- What is cost effective?
- What is & WILL BE socially & politically acceptable?



Energy Roadmap to Net Zero

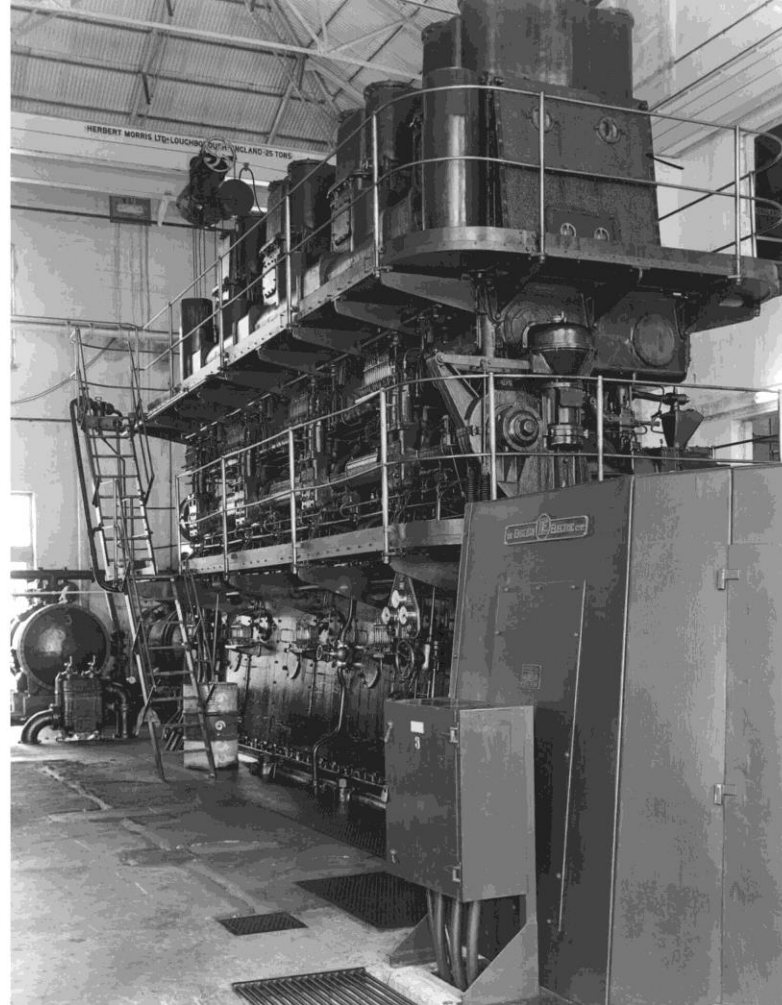


Today ↑
We need to start measuring the sun, wind and waves now.

WWW? ↑
Will wind work?

Decommission

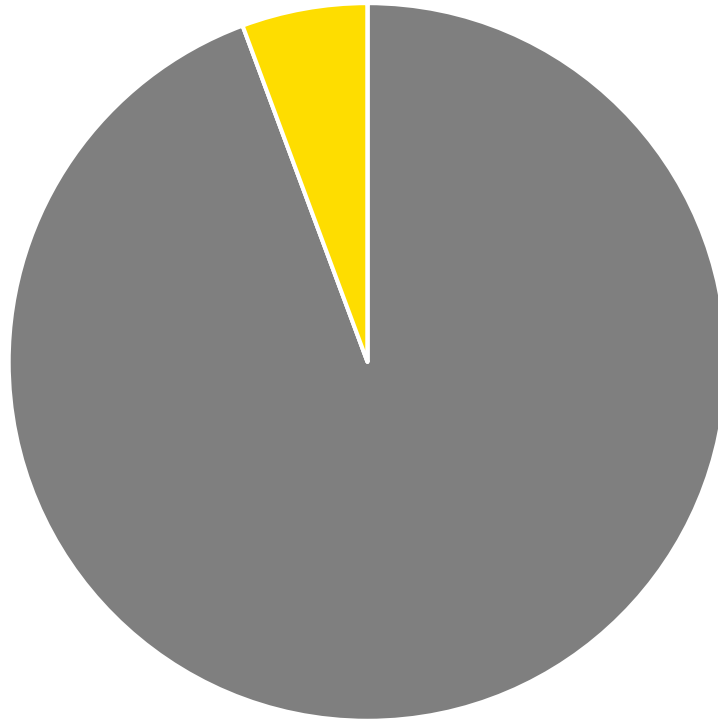
“Old Faithful”, an English electric air-injected diesel engine that went into service in 1931 and was still running 40 years later.



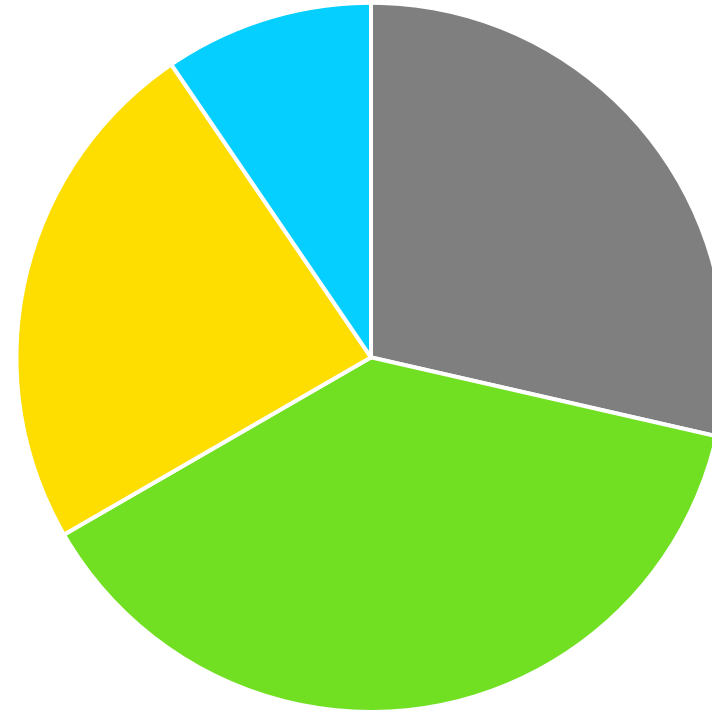
Energy Mix



Energy Mix



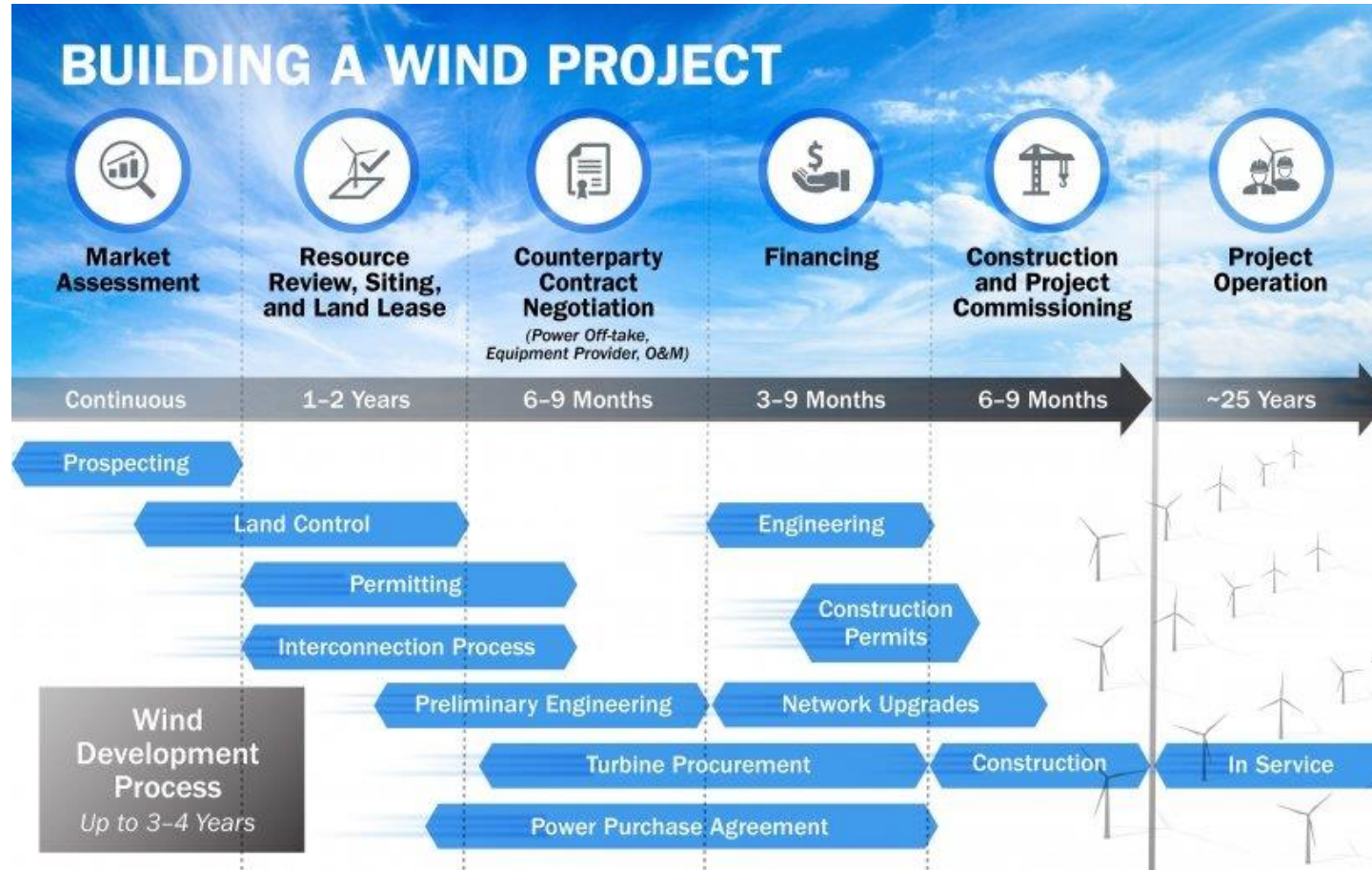
■ Fuel ■ Solar



■ Fuel ■ Wind ■ Solar ■ Wave

How Long Does a Wind Turbine Project Take?

More than 4 years.



<https://www.energy.gov/eere/articles/planning-wind-energy-project-new-windexchange-resources-can-help>

Technology Advancement



GETTY IMAGES

Potential Job Opportunities

Current vacancies

TITLE	LOCATION	
Process Engineer	New Orleans, LA	View
Senior Rotor Technologist	New Orleans, LA	View
Rotor Technologist	New Orleans, LA	View
Aerodynamics and Loads Engineer	New Orleans, LA	View
Composite Structural Engineer	New Orleans, LA	View
Wind Turbine Blade Aerodynamics Engineer	New Orleans, LA	View
Loads Engineer	New Orleans, LA	View
Engineering Internship	New Orleans, LA	View



According to the latest data from the International Renewable Energy Agency (IRENA), there are at least **12.7 million jobs in the global renewable energy sector**, covering areas such as solar, wind, nuclear, hydroelectric, and bioenergy.

We Need LOTS!

- **L**and (Solar and storage)
- **O**cean (Floating solar, wave)
- **T**echnology (Generation, transmission & distribution)
- **S**omeone (You)

We Need LOTS!

- Land (Solar and storage)
- Ocean (Floating solar, wave)
- Technology (Generation, transmission & distribution)
- **Somebody (Else)**

Because Then We Will All Be LOST!



- Land (Solar and storage)
- Ocean (Floating solar, wave)
- **Somebody (Else)**
- Technology (Generation, transmission & distribution)

Questions?