



Canadian Renewable
Energy Association
WIND. SOLAR. STORAGE.

Association canadienne
de l'énergie renouvelable
ÉOLIEN. SOLAIRE. STOCKAGE.



Renewable Energy 101



Presented by:

- Patricia Lightburn, CanREA
- Ryan Gander, Relay Education
- Rob van Adrichem, Community Energy Association





Renewable Energy and the BC Context



The Peace region has a long history of renewable energy

- About 98% of BC's electricity comes from renewable sources, including 10 operating large wind and 4 solar PV projects.
- The Peace region has 7 operating large wind projects and several community-scale solar projects



The next chapter for renewable energy in the Peace

- BC's electricity demand is projected to grow by 15% by 2030 and double by 2050
- To help meet that demand, BC Hydro launched a competitive procurement process and signed contracts with 9 wind and 1 solar project. Another set of projects is expected to be announced in May 2026.
- Two projects are in the Peace and three more applications have been submitted

Contracted new wind projects in Northern BC

Stewart Creek Wind

Innergex Renewable Energy
West Moberly First Nations
Fort St. John
200 MW

Taylor Wind

EDF Renewables
Saulteau First Nations
Taylor
200 MW

Nilhts'i Ecoener

Ecoener
Lheidli T'enneh First Nation
Prince George
140 MW

Ni Ti Mountain

Innergex Renewable Energy
Stellat'en First Nation
Fraser Lake
200 MW

Why wind and solar?

Renewable energy is well-positioned to meet BC's growing electricity demand:

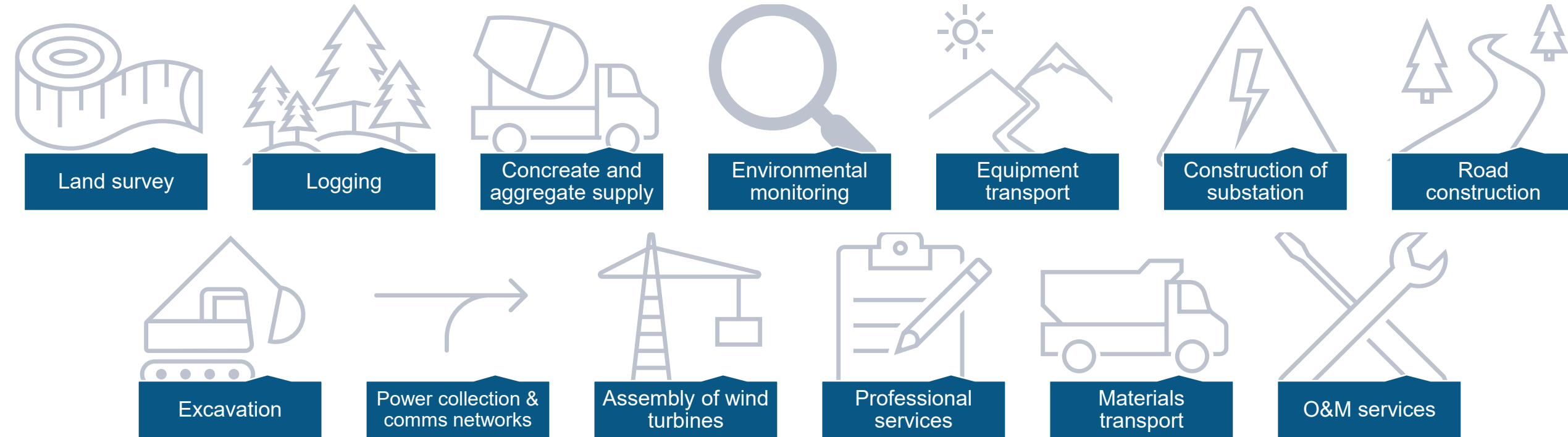
- ✓ Affordable
- ✓ Scalable
- ✓ Proven technology
- ✓ Price certainty
- ✓ Emissions-free
- ✓ First Nations partnerships
- ✓ Regional jobs, economic development and tax revenues

*“In terms of unit energy costs, onshore wind remains the **lowest-cost energy resource** available, followed closely by utility-scale solar”*

BC Hydro 2025 Integrated Resource Plan

Jobs opportunities

A large wind or solar project creates approximately 150 job opportunities during development, construction and operation phases



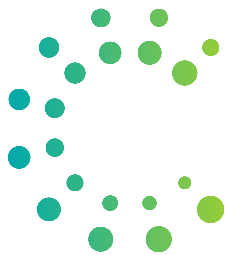
Where to find more information?



Wind and Solar BC is a new initiative of the Canadian Renewable Energy Association that is providing **clear**, **current**, and **accurate** information on clean-power projects planned for British Columbia and fostering **candid conversations** about their **impacts and opportunities**.

Visit our site (www.windandsolarbc.ca) to learn about planned projects and sign up for updates.

Questions?



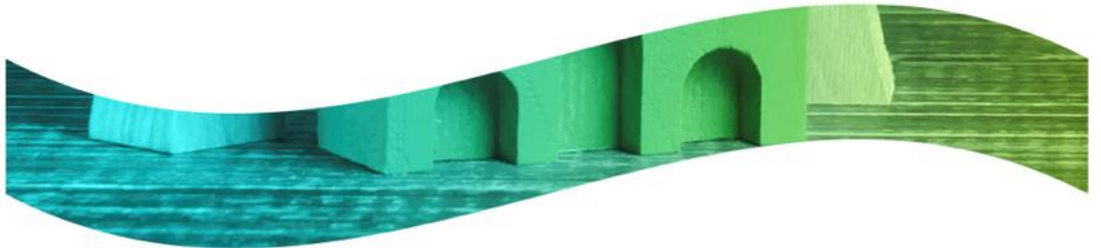
**Canadian Renewable
Energy Association**
WIND. SOLAR. STORAGE.

**Association canadienne
de l'énergie renouvelable**
ÉOLIEN. SOLAIRE. STOCKAGE.



Renewable Energy 101

Part I: Solar Energy



Solar - Technologies

Photovoltaic (PV)



Solar Thermal

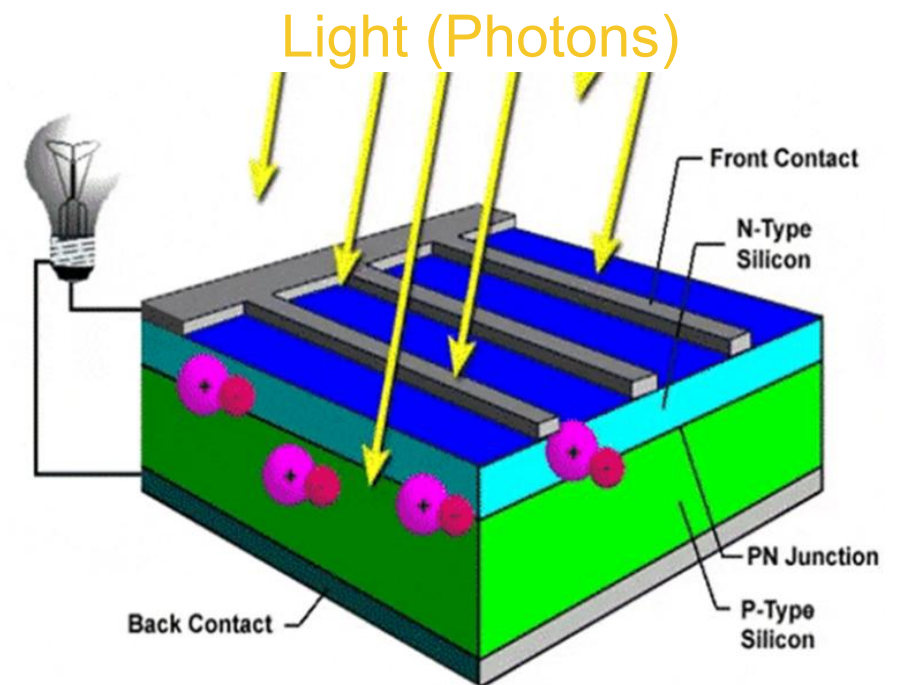
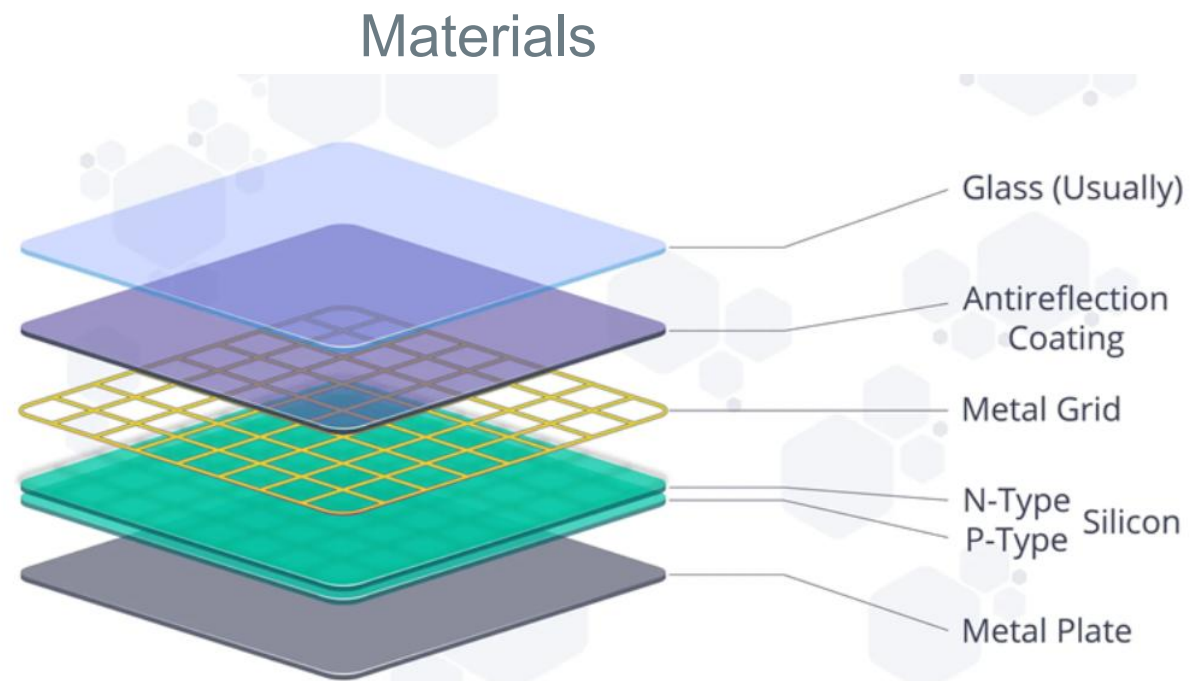


Concentrated



Solar – Photovoltaic (PV) Solar Cell

Light activates the movement of electrons between silicon layers



Solar – Terminology



one solar **Cell**



Module
(multiple cells)



Panel
(multiple modules)



Solar Array
(multiple panels)

Solar – Electrical Components



Optimizers



Grounding



Wiring



Electrical Controls



Inverter



Panel

Solar – System Components



Mounting
Hardware

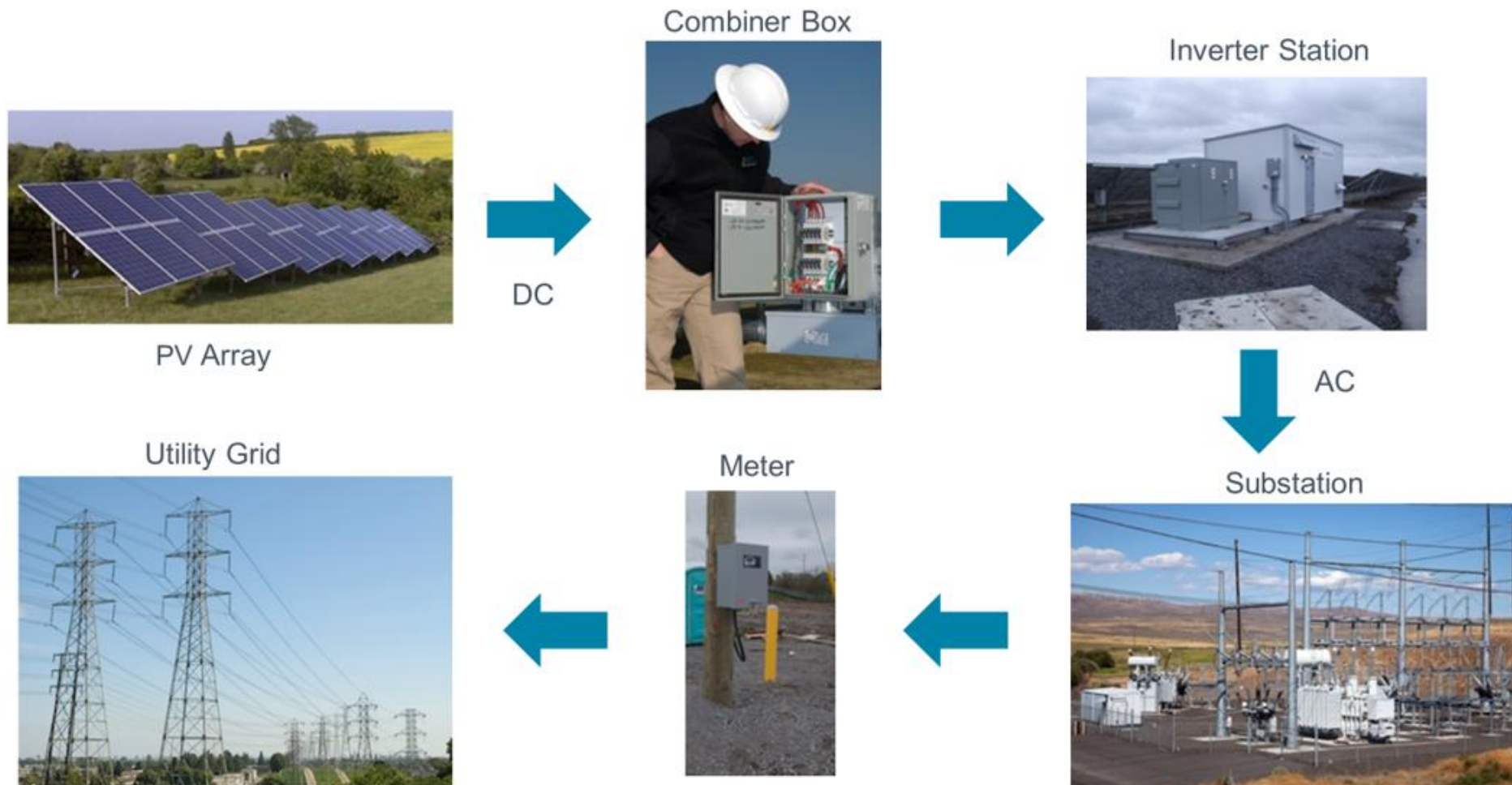


Racking



Cable Tray

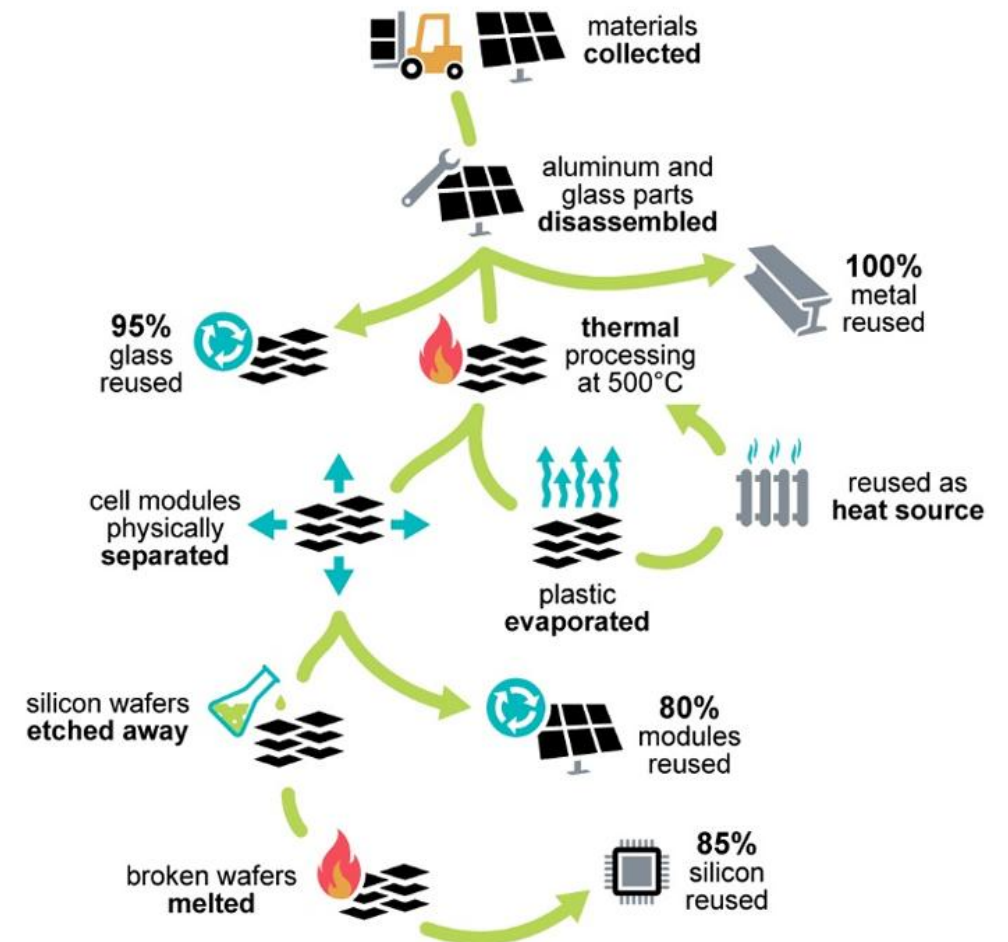
Solar – Energy Power Flow



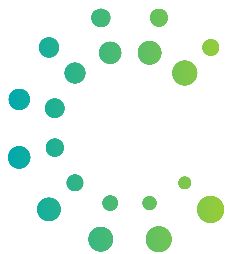
End of Life Decommissioning and Recycling

- Solar power systems consist of recyclable materials: Copper (cabling), aluminum (racking), steel (posts), glass and electronic components.
- Solar project components can be reused, refurbished or upcycled at the end of their life, and eventually, they can be recycled.
 - Solar panels are 90% recyclable by mass

Recycling process for solar panels (silicon based)



Questions?



**Canadian Renewable
Energy Association**
WIND. SOLAR. STORAGE.

**Association canadienne
de l'énergie renouvelable**
ÉOLIEN. SOLAIRE. STOCKAGE.





Part II: Wind Energy 101



Wind – Turbine Components



Base & Foundation



Tower



Nacelle



Rotor Hub &
Blades

Wind - Foundation

- Excavation
- Concrete Base



Wind - Tower

- Tubular Steel
- Sectional
- Height varies on rotor diameter
- 90-120m height (typical)



Wind – Rotor Hub

- Holds blades
- Converts kinetic (wind) energy
- Adjusts blade pitch



Wind - Blades

- Fiberglass and Carbon Fiber
- Balsa or Foam Core
- Reinforcing Resin
- Lightweight and durable



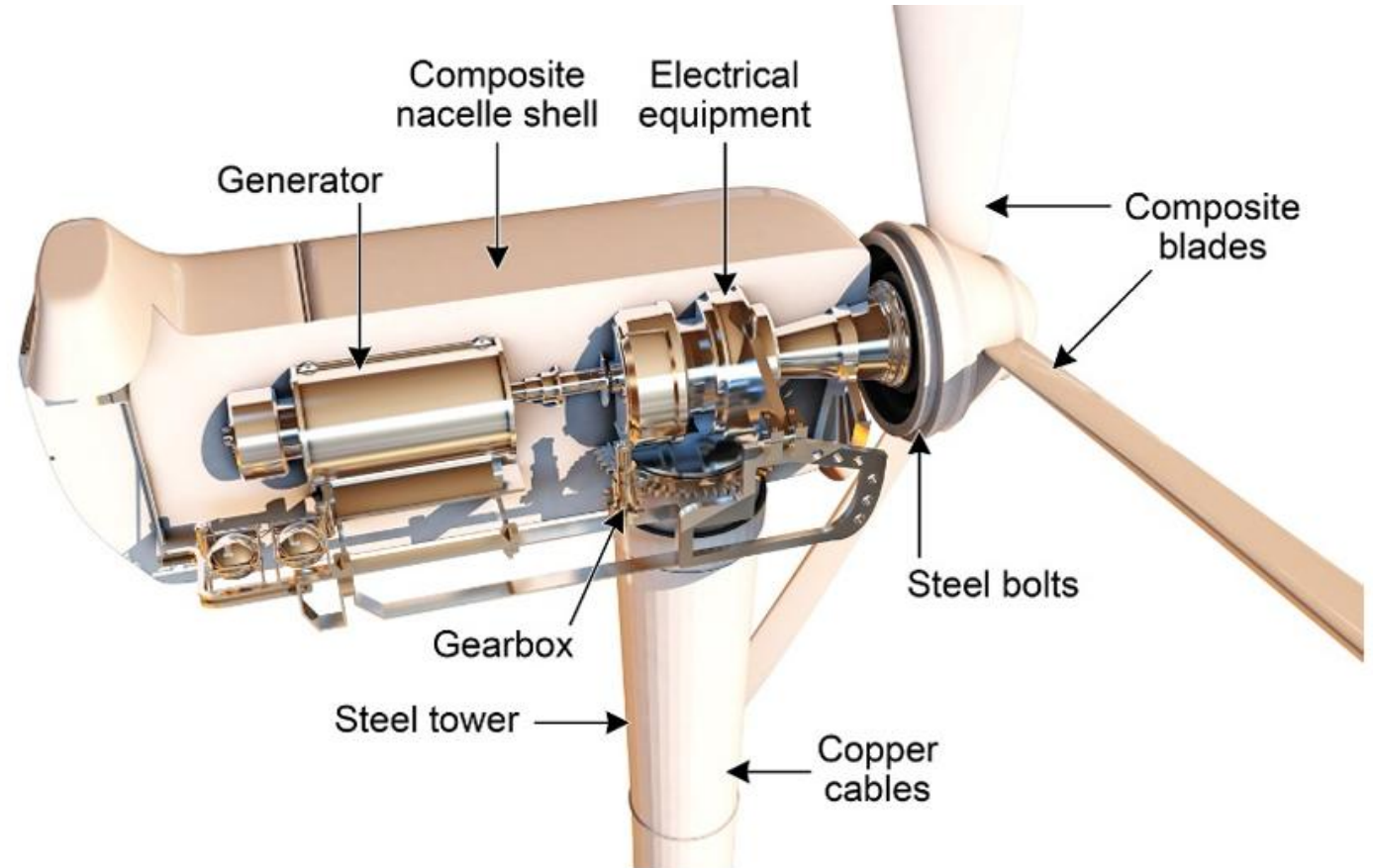
Wind - Nacelle

- Control Centre Housing
- Shaft & Gearbox
- Generator
- Maintenance

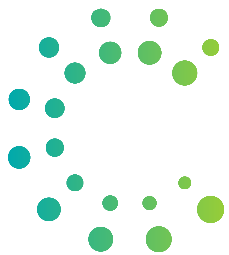


End of Life Decommissioning and Recycling

- Turbines are 85-90% recyclable
- Many parts retain a high value at the end of the wind turbine's life.
- Steel towers, copper cables and electrical equipment can be disassembled and recycled.
- Turbine blades made of composite materials are harder to recycle, but more options are being developed (e.g., filler in construction materials)



Questions?



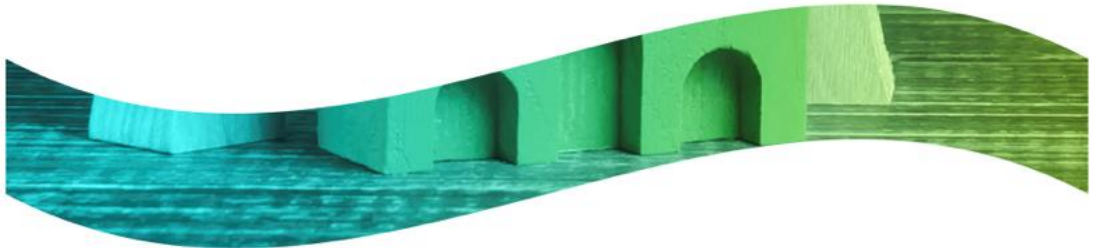
**Canadian Renewable
Energy Association**
WIND. SOLAR. STORAGE.

**Association canadienne
de l'énergie renouvelable**
ÉOLIEN. SOLAIRE. STOCKAGE.



Group Activities

30 minutes



Solar

1. Do solar panels produce power without sun?
2. How does angle affect efficiency?
3. Which light color will produce the most energy?
4. What will happen to the volts when heating up a solar panel?



Wind

1. How many blades do you think will produce the most electricity?
 - 2, 3 or 4?
2. What size of blade do you think will produce the most electricity?
 - Small, Medium or Large?
3. What is the most amount of electricity your group can produce?
 - Competition time!



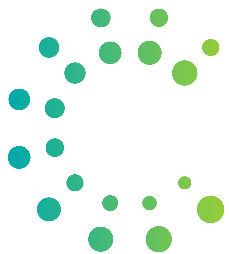
Report Back

Share something that you learned or that surprised you from the experiments.



Thank you!

If you want to learn more, or if you'd like someone to come and speak with your community about wind and solar power, let us know via info@windandsolarbc.ca.



Canadian Renewable
Energy Association
WIND. SOLAR. STORAGE.

Association canadienne
de l'énergie renouvelable
ÉOLIEN. SOLAIRE. STOCKAGE.

