

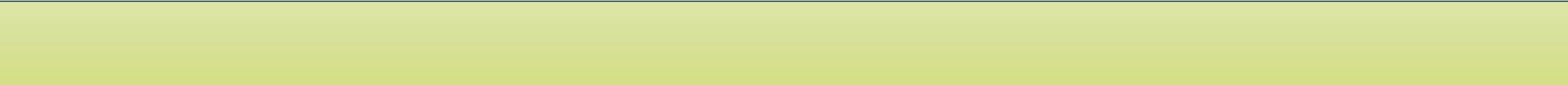


# Climate Conversations Renewable Energy

St Mark's Creation Care Ministry

2023

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# Agenda

- Land Acknowledgement
- Opening Prayer
- Framework
- Discussion
- Actions
- Sharing and Q&A
- Closing Prayer

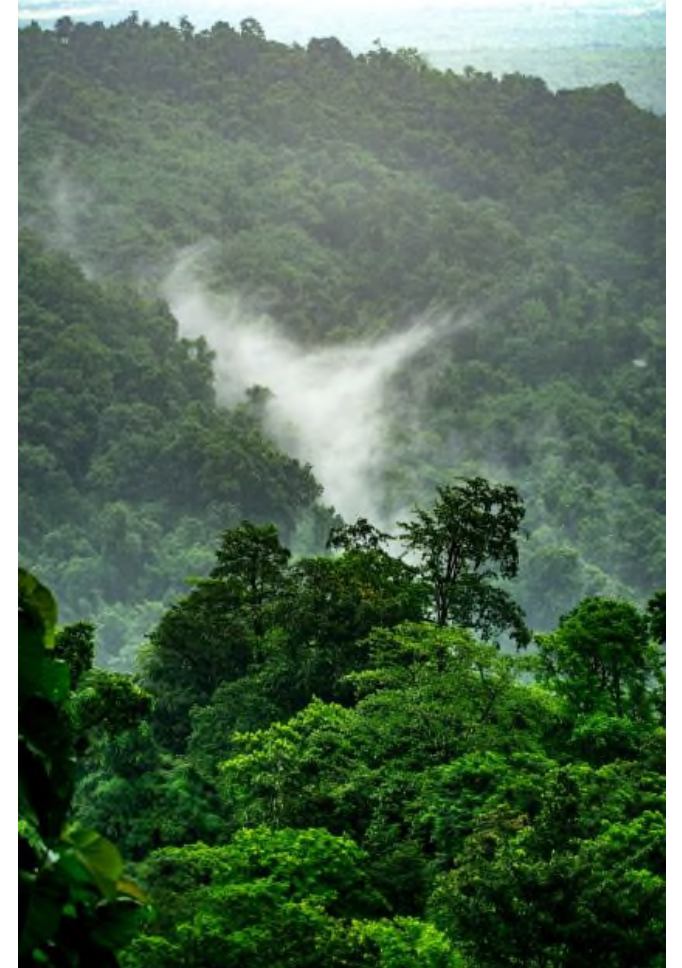
# Opening Prayer

Lord, grant us the grace to grow deeper in our respect of and care for your Creation.

Help us to recognize the sacredness of all of your Creatures as signs of your wondrous love.

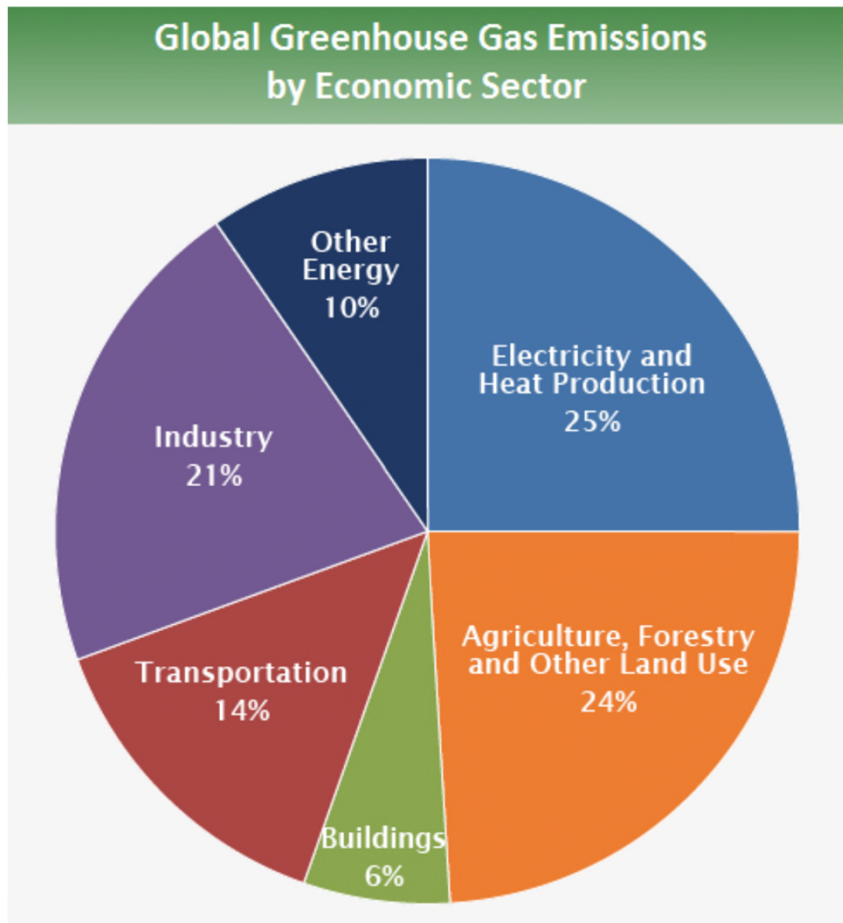
Help us turn from the selfish consumption of resources meant for all and to see the impacts of our choices on the poor and vulnerable.

*Amen*

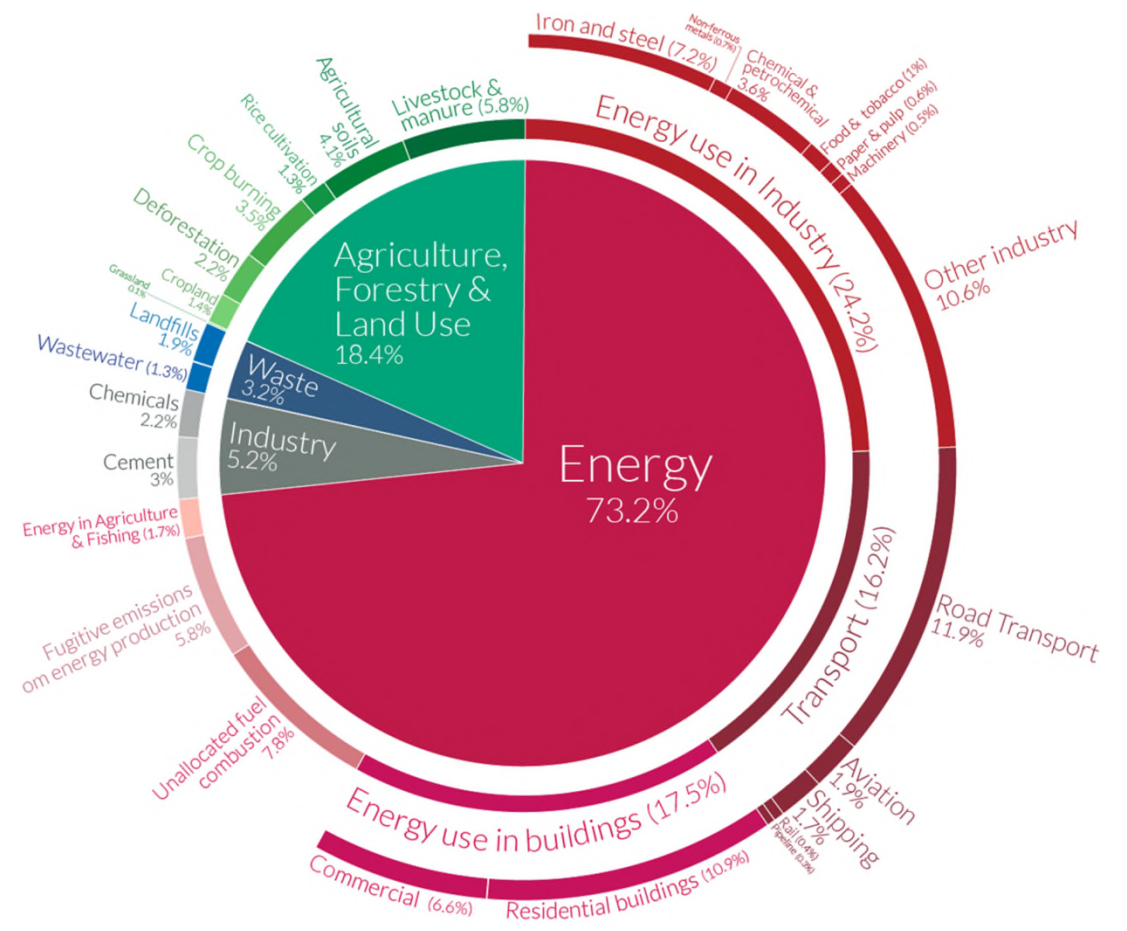


# Energy is a Key Cause of Climate Change

## Traditional View



## Energy-focused View



# A Framework for Personal Energy

- Energy is critical for most people's lifestyle and activities
- The energy system cannot change overnight
- Fossil fuels will diminish
- Renewable energy will expand
- By taking personal action, we can help to accelerate the shift



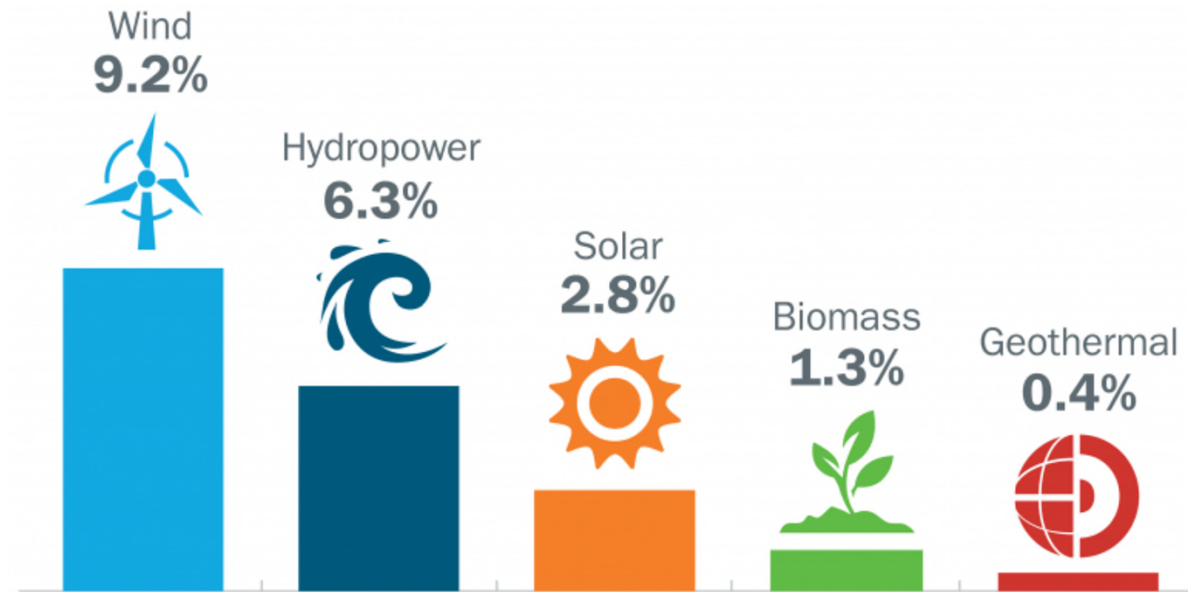
# Scripture and Energy

- Numbers 35: You shall not defile the land in which you live, in the midst of which I dwell, for I the LORD dwell in the midst of the people of Israel
- Proverbs 12: Whoever is righteous has regard for the life of his beast
- Exodus 23: Six days you are to do your work, but on the seventh day you shall cease from labor so that your ox and your donkey may rest
- Luke 14: Which of you shall have an ass or an ox fallen into a pit, and will not straightway pull him out on the sabbath day?



# Renewable Energy Usage is Growing

- 4.243 trillion Kwh of electricity was produced in the US in 2022
  - 60% from fossil fuels
  - 18% nuclear energy
  - 22% renewable energy (912 billion Kwh) (up from 15% in 2012)
- Transmission is essential
- Renewable energy available in the US is 100x the need for electricity
  - Most solar and wind is unused



# Renewable Energy Opportunities

- Electric vehicles
- Solar panels
- Solar water heaters
- Solar outdoor lighting
- Wind energy
- Geothermal energy
- Battery storage
- Community solar
- Offsets using renewable energy
- Renewable energy investments





# Electric Cars (EV)

- EVs reduce carbon emissions
  - 12,594 lb/CO<sub>2</sub>/year for gasoline cars & 705 lb/year for EVs, in Washington
  - Even including car & battery production and fossil fuel for electricity, lifetime emissions are lower
- Easier maintenance
- Range anxiety
  - 300 miles, and increasing
- Cost
  - Nissan Leaf: Starting at \$28,040 (new)
- Smaller EVs work well



Source: Nissan Leaf, by Nissan

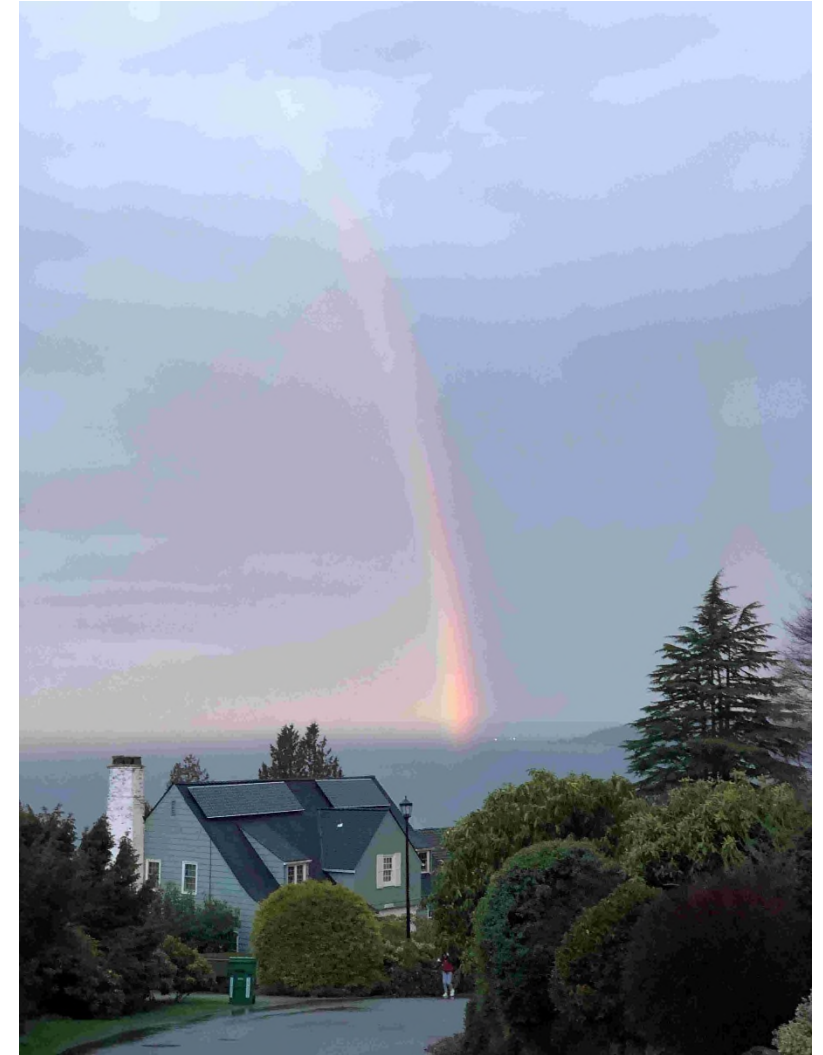
# Electric Motorcycles, Bikes and Scooters

- Motorcycles
  - Peak performance, saving the planet, and looking great
- Bicycles
  - Buy, share or rent
  - Bike share – Lime and Veo
  - Cyclists have 84% lower CO<sub>2</sub> emissions than drivers
- Scooters
  - Buy, share or rent



# Solar Power

- Solar panels can produce power even under cloudy skies, so it is viable even in Washington state
- The average payback period is about 16 years and panels can last 25 years or longer
- A solar installation in Washington of about 5 kilowatts (kW) will cost an average of \$15,400
- Process
  - Contact installers, analyze usage
  - Obtain proposals and decide
  - Install solar panels, per code
- Caveat: Panels usually need batteries to provide power during an electric outage



# Solar Water Heater

- Uses collectors on the roof to capture the sun's energy and storage tanks to maintain a supply of hot water
- Types
  - Passive: The sun warms water in large black storage tanks or thermosyphon systems heat small batches of water
  - Active: Uses circulating pumps and controls



Source: Puget Sound Plumbing

# Outdoor Solar Lighting

- Lamps for pathways, gardens and more
- Solar panels convert sunlight into electricity, which is stored in batteries for use at night
- Self-contained units or lights are separate from a solar panel



# Home Wind Power

- Reasons for wind
  - Abundant wind
  - Strong incentives for wind turbines and wind generator installation
- Small wind power devices exist
  - 10-14 feet high
  - Vertical axis wind turbines (VAWT) start at lower wind startup speeds and can capture wind from any direction
- Process
  - Analysis
  - Proposal
  - Installation
- Net metering



Source: Mother Earth News

# Discussion & Breakout Session

Questions:

- What is your experience with using renewable energy?
- Can you use renewable energy and, if so, how?
- What are the barriers to using renewable energy?



# Battery Storage

- If the grid shuts down, so will your solar panels (Sunrun)
  - Avoids danger to workers repairing the grid
- Diverting excess solar energy to a battery and backup panel can power essential appliances
  - Solar power system and inverters set-up to deliver power, including during outages
  - Switch energy from DC to AC and back so the power keeps flowing and the lights stay on



Source: Enphase

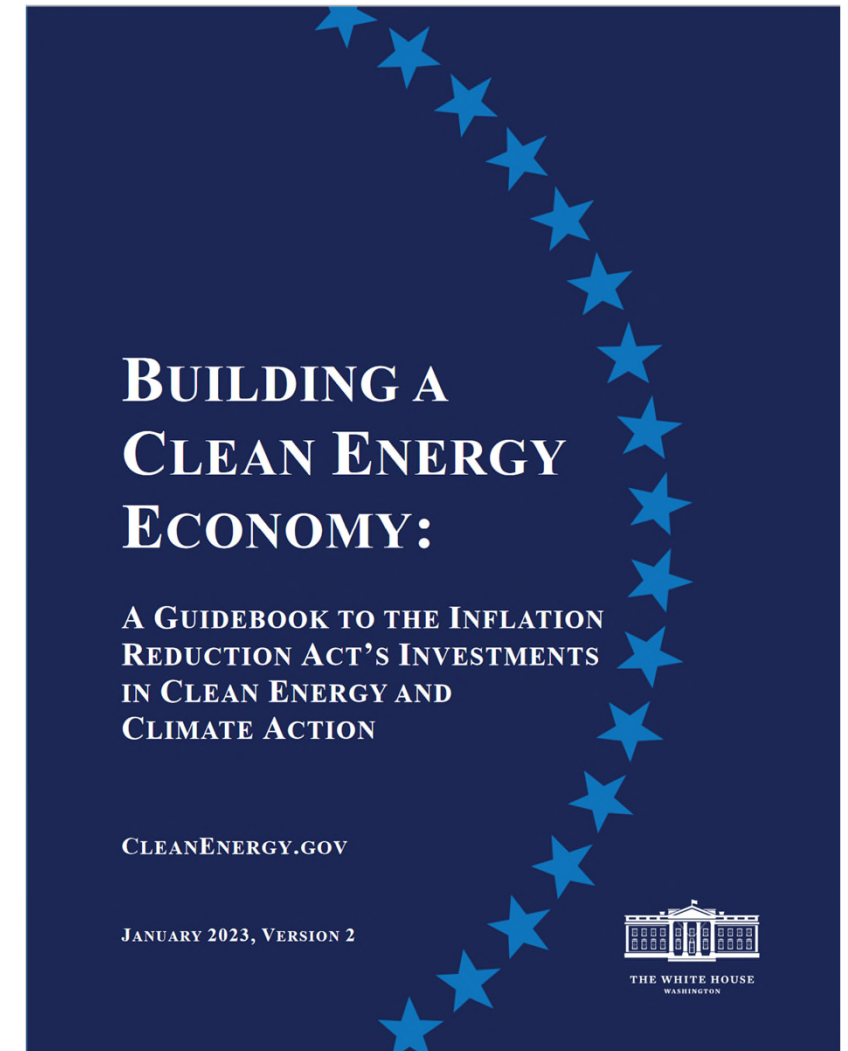


Source: Sunrun



# Rebates

- IRA
  - 30% in tax credits for making energy efficiency
  - Solar panel, wind, geothermal and battery rebates of 30%
  - Eligible EV owners can receive a tax credit up to \$7,500 for new cars and up to \$4,000 for used cars
- Washington sales tax exemption for solar
- Review IRA details for actual rebates or credits



# Community Solar

- Community homeowners share power from a large solar array
- Recent examples in Washington (2022)
  - Bonney Lake (near Puyallup)
  - Thurgood Marshall School (Olympia)
- Previously at Phinney Ridge


Manastash Ridge	Bonney Lake	Kittitas	Olympia	Pine Lake
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## Manastash Ridge

The 4.99-MW Manastash Ridge Community Solar project offers 3,145 shares for subscription and is located near Manastash Ridge, a 50-mile mountain ridge that runs between Ellensburg and Yakima. According to the Kittitas County Historical Museum, “manastash” is an indigenous word from the K’ti’tas peoples, who are now recognized as part of the Yakama Nation. While the word has a few historical meanings, its connotation of “gathering place” resonates with the goal of Community Solar to make 100% locally produced solar energy accessible to all.

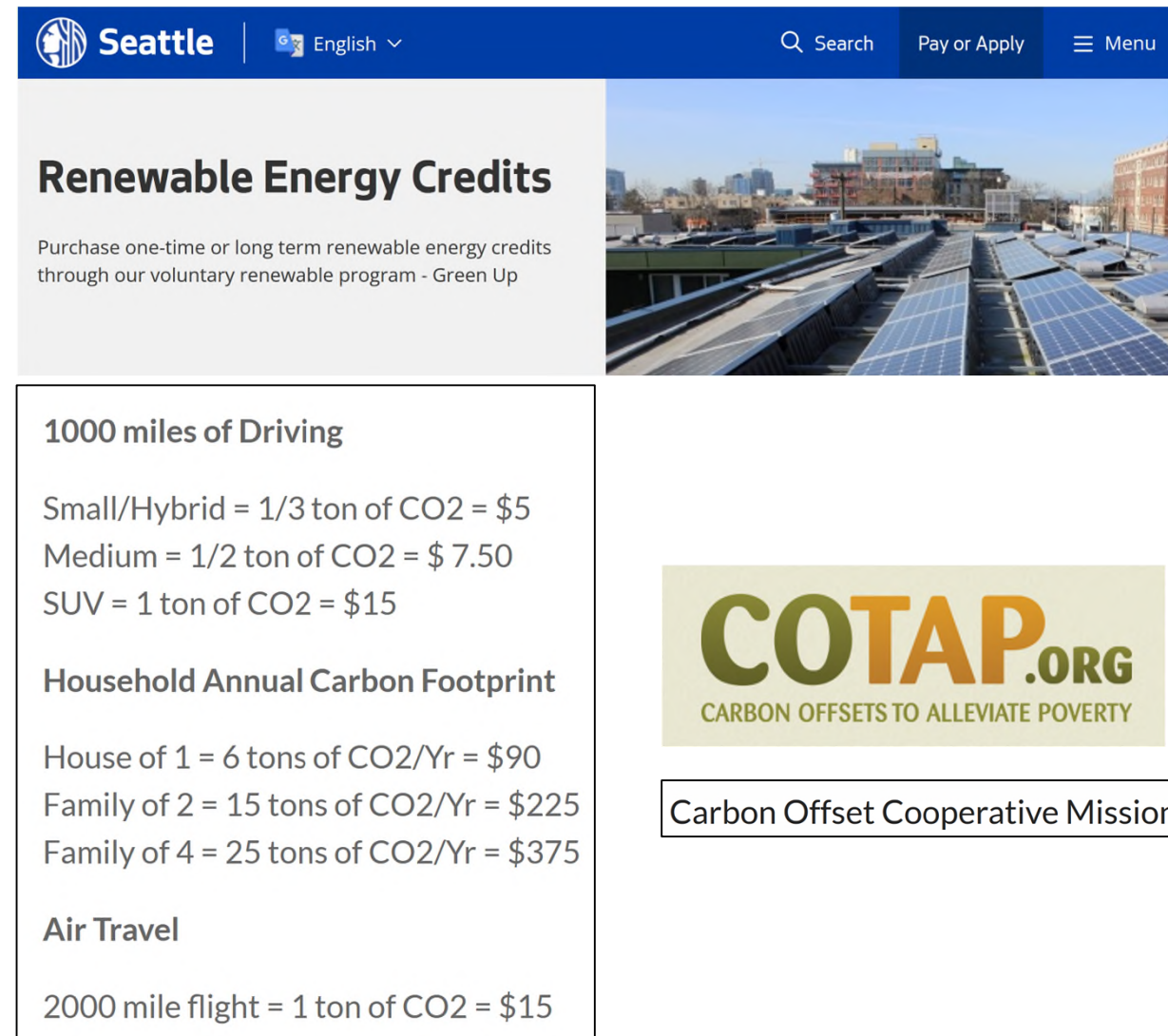
This site is currently available for subscription.

[ENROLL](#)



# Offsets for Non-Renewable Energy Usage

- Reducing or eliminating fossil fuel use is preferable
- For usage that cannot be eliminated yet, offsets can be an alternative
- Offsets include trees, changes in activities, and renewable energy usage by others
- Examples of offsets
  - Seattle City Light Green Up (company)
    - 1 MWH or 1 event
  - Travel
    - Cotap or COCM



The screenshot shows the Seattle City Light Green Up website. The header includes the Seattle logo, a language dropdown set to English, a search bar, and a 'Pay or Apply' button. The main content area is titled 'Renewable Energy Credits' and describes a voluntary program. A table lists carbon offset costs for driving and air travel. The COTAP.ORG logo is visible on the right, with the tagline 'CARBON OFFSETS TO ALLEVIATE POVERTY'. A box at the bottom right contains the text 'Carbon Offset Cooperative Mission'.

**Seattle** | English ▾ | Search | Pay or Apply | Menu

## Renewable Energy Credits

Purchase one-time or long term renewable energy credits through our voluntary renewable program - Green Up

**1000 miles of Driving**

Small/Hybrid = 1/3 ton of CO2 = \$5  
Medium = 1/2 ton of CO2 = \$ 7.50  
SUV = 1 ton of CO2 = \$15

**Household Annual Carbon Footprint**

House of 1 = 6 tons of CO2/Yr = \$90  
Family of 2 = 15 tons of CO2/Yr = \$225  
Family of 4 = 25 tons of CO2/Yr = \$375

**Air Travel**

2000 mile flight = 1 ton of CO2 = \$15

**COTAP.ORG**  
CARBON OFFSETS TO ALLEVIATE POVERTY

Carbon Offset Cooperative Mission

# Investing in Renewable Energy

- Stocks and ETFs
  - Example: Enphase
- Startups
  - Example: Vroom Solar on StartEngine or PowerPanel on WeFunder
- Loans
  - Example: Re-Volv



# Biofuel

- Biofuels burn cleaner than gasoline and are biodegradable
- Cellulosic ethanol from crop residue may cut GHG emissions by up to 86%
  - Grasses, trees, sawdust and paper
  - Not available in the US yet
- Waste or used cooking oil for biofuel
- Pure biofuels generally produce less sulfur dioxide and air toxics than fossil-fuel counterparts
- Considerations: Crop or waste sources and land use change



# Reducing Energy Usage

- Increase efficiency of devices and appliances to reduce energy usage
  - Heat Pump
    - Solar-assisted heat pump
  - Induction range for cooking
  - Efficient appliances
  - LED lights
- Insulation
- Actions to reduce energy usage
  - Air dry clothing
  - Lower temperature



# Sharing, Discussion and Q&A

## Questions

- Would you offset your energy usage?
- Would you invest in renewable energy, and why or why not?
- What can you do to reduce energy usage?



# Make a Difference

“We'd find more energy in the attics of American homes (through energy conservation measures) than in all the oil buried in Alaska” – Amory Lovins

“Earth provides enough to satisfy every man's needs, but not every man's greed” – Mahatma Gandhi



# Closing Prayer

Lord, grant us the wisdom to care for the earth  
and till it.

Help us to act now for the good of future  
generations and all your creatures.  
Help us to become instruments of a new  
creation,

Founded on the covenant of your love.

*Amen*

