



# What Can We Do About Climate Change?



A presentation by Leigh Pomeroy to the  
Adult Education group at Bethlehem  
Lutheran Church in Mankato, Minnesota



My title last year:

“How to save money and your  
grandchildren’s future at the  
same time”



## My reasons:

- It makes good economic sense
  - It makes good humanitarian sense
  - Because we all need to do something about climate change
  - And... we save money!
- 



But...

I've become more pessimistic since  
that presentation...





Why?


Because we are clearly not doing  
enough at this point to avoid  
societal collapse



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# What would be the causes for this?

- Climate change
  - Plastics and chemicals pollution
  - Loss of species diversification
  - Loss of ocean viability
  - Loss of clean water
  - Loss of agricultural soils
- 



Q: What has brought us to this point?

A: Human civilization overusing the planet's resources.

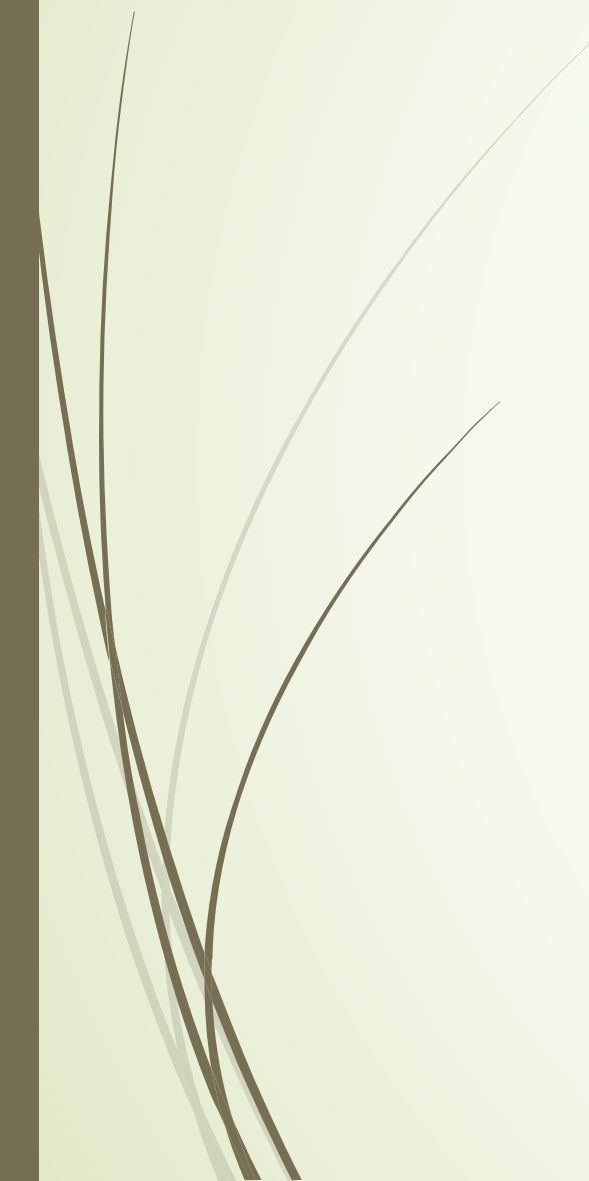

In reality, we have borrowed from our children's future to pay for our lavish lifestyle today.





# Look around you!

- Big honker SUVs and pickup trucks
- Throwaway plastic bags and plastic containers (only 5% is recycled)
- Cheap taxpayer-subsidized vehicle fuels
- Luxury cruises on giant ocean liners
- Food that is thrown away
- Taxpayer-subsidized farming practices that create climate change, pollute our waters, destroy our soils



# What would Jesus do?

Because I'm at a church, I can  
ask this question



# Would He approve of our lifestyle?

One that rewards people born in the right place at the right time while others in the world suffer from war, famine, repression, bias and bigotry?

Why are we so lucky? Why do we deserve a better life?



Think about  
this...



## Carbon dioxide is now more than 50% higher than pre-industrial levels

- Prior to the Industrial Revolution, CO<sub>2</sub> levels were consistently around 280 ppm for almost 6,000 years of human civilization.
- CO<sub>2</sub> in 1900: 296 ppm
- CO<sub>2</sub> in 1950: 311 ppm
- CO<sub>2</sub> in 2023: 420 ppm



# Carbon dioxide in the atmosphere: It's all about balance

- Example: Iron in the human body
- Example: CO<sub>2</sub> in the atmosphere

“For most of human history, people have lived within a surprisingly narrow range of temperatures, in the places where the climate supported abundant food production.”

Not too hot, not too cold, just right!




# Other greenhouse gases in the atmosphere

- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Fluorinated gases



# Long-term causes of climate change

- Milankovitch cycles
  - Weathering from rocks
  - Plate tectonics
  - Asteroid and meteorite impacts
  - Evolutionary changes of flora and fauna. Examples:
    - More plants absorb carbon dioxide
    - Cattle and other ruminants belch methane
  - Albedo (reflectivity)
  - Ocean currents
- 






# Short-term causes and effects of climate change

- Solar cycles
- Volcanoes
- El Niño – La Niña
- Jet stream
- North Atlantic Oscillation
- Fire
- **Humans: THE BIG KAHUNA today**



# Primary sources of human-caused climate change

- Power generation
  - Manufacturing — particularly cement and steel
  - Deforestation
  - Transportation
  - Agriculture and food production
  - Constructing and powering buildings
  - Overconsumption
- 




All credible scientists agree: Man-made climate change is a scientific fact

But: “It is difficult to get a man to understand something when his salary depends upon his not understanding it.” — Upton Sinclair



# Who recognizes the science?

- The vast majority of the planet's population
  - Almost all politicians (but too many won't admit it)
  - The majority of Americans, including many to whom faith is important, e.g.:
    - Interfaith Power & Light
    - Climate scientist Katharine Hayhoe
  - The World Bank and the International Monetary Fund (IMF)
- 



The bottom line...

One does not “believe in climate change,” one accepts the science.



# Where are we now?

- We've known about the problem of human-caused climate change for a century or more
- Dr. James Hansen, then head of NASA Goddard Institute for Space Studies, warned Congress in 1988
- The longer we wait, the harder (and more expensive) it will be to change course
- The either-or choice: Prevent climate change or deal with its consequences
- Will technology save us?



Minnesota will be less affected than other areas of the world, but...

- By 2050, Minnesota's climate will be more like that of Kansas today, though wetter
- Because Minnesota will be less affected by climate change, it will experience an influx of climate refugees
- Recommended reading: On the Move: The Overheating Earth and the Uprooting of America by Abrahm Lustgarten



In the production of greenhouse gases, Minnesota is a small player on the world stage

- Good news! Minnesota does not mine fossil fuels
- Mixed news: Minnesota produces biofuels
- Agricultural practices: currently not climate friendly





# Yet Minnesota does play a role

- ▶ Minnesota energy use: 33% industrial, 23% transportation, 24% residential, 20% commercial
- ▶ Great news! Minnesota does produce energy from wind, solar and some hydropower
- ▶ A lot of research and work is being done to:
  - ▶ Make manufacturing less power intensive
  - ▶ Make farming practices more climate friendly
  - ▶ Make buildings more energy efficient
  - ▶ Make transportation more climate friendly



# How does Minnesota get its electricity?

- Coal: 30% (primarily from Wyoming)
- Renewables: 34% (primarily from Minnesota and South Dakota)
- Nuclear: 23% (from Minnesota)
- Natural gas: 13% (primarily from North Dakota)




# What can you do? Harvest the low-hanging fruit

- Get an energy audit — contact your energy utility
- Convert to [LED lighting](#)
- Install a [smart thermostat](#)
- Clean your refrigerator cooling coils. Or replace your old refrigerator with a [new energy-efficient one](#)
- Replace your water heater with an [air-source heat pump water heater](#) (If your water heater is 10 years old or older, replace it NOW.)
- Replace your [clothes washer](#) and [dryer](#) with more energy-efficient models



# What else can you do around your home?

- Plant trees
  - Remove lawn and create a natural garden with native plants and pollinators
  - Buy an electric mower
  - Buy an electric snowblower
- 



# What else can you do? Save money by saving energy

A little more costly and requiring planning:

- Add insulation to your home
- Replace your gas oven and stove with an electric oven and induction cooktop stove — much better for your family's health!
- Replace your existing heating and cooling (HVAC) system with an air-source heat pump heating and cooling system



# What can you do if I live in an apartment?

- Convert to LED lighting
- Replace your old refrigerator with a new energy-efficient one
- Inform your apartment building owner/manager that there are great financial incentives, rebates and low-interest loans to upgrade to energy efficient lighting, heating and cooling



# And did I mention “rebates”?

- Xcel Energy
- CenterPoint Energy
- BENCO Electric
- Saint Peter Public Utilities



# What about federal government incentives?

- The Inflation Reduction Act: what you need to know from Clean Energy Resource Teams
- How much money will you get with the Inflation Reduction Act? from Rewiring America
- Manufacturers and Models for New Qualified Clean Vehicles Purchased in 2023 or After
- Tax incentives for used electric vehicles (check out GS Motors in Hopkins)





# Gee, I keep hearing about heat pumps. What is that all about?

- [“Why You \(and the Planet\) Really Need a Heat Pump”](#)
- [How Does a Heat Pump Work?](#)
- [Heat Pump Systems](#) from the U.S. Department of Energy
- [Transforming the way we heat and cool our homes](#) from the Air Source Heat Pump Collaborative (ASHPC)
- [Substantial resources are available to assist in financing heat pump installations](#)
- [Advice on buying a heat pump HVAC](#) from Consumer Reports



# What more can I do?

Produce your own renewable energy by installing solar panels!


How do I know if my house is suitable for solar?

➤ [MN Solar App](#)

➤ [Google Project Sunroof](#)



# I need more information!

- “Simple Steps to Solar” from Clean Energy Resource Teams
  - Find a professional, qualified solar installer from MnSEIA
  - Guidance for planning and installing your own solar energy system from the Minnesota Department of Commerce
- 



# What if solar won't work for my house or I live in an apartment?

## Buy into community solar

- [Go Solar Without Installing Panels](#) from Clean Energy Resource Teams
- [Tips About Community Solar](#) from Minnesota Department of Commerce
- [About Community Solar Gardens](#) from the Minnesota Attorney General's Office
- [Solar\\*Rewards® Community](#) from Xcel



What more can I do?

## Invest responsibly!

Are your investments and retirement plans invested in fossil fuels?

To check out your mutual fund and ETF investments, go to [Fossil Free Funds](#) to learn about their environmental impact.

Otherwise, ask your financial planner: Are my investments supporting fossil fuel companies? Odds are that he or she has no clue.



# Am I banking responsibly?

- Many large banks (e.g. Wells Fargo, Goldman Sachs, Bank of America) provide funds to oil and coal producers
- Credit unions are probably the most responsible
- Community banks in Minnesota are good as well
- Most regional banks (e.g. US Bank) are okay



# More incentives to save energy

- Xcel energy
  - Home incentives
  - Business incentives
- CenterPoint Energy
- Southern Minnesota Municipal Power Agency
- Benco
  - Rebates
  - Renewable energy programs
  - Water heater program



# Trade in your gas guzzler for a more fuel-efficient vehicle

- Electric vehicle types
- Best available electric vehicles, according to U.S. News
- Affordable plug-in hybrid vehicles, according to PC Magazine
- New EV and PHEV rebates
- Previously owned EV federal tax incentives






# What are Minnesota electric utilities doing towards reducing CO2 emissions?

- Xcel Energy: 100% carbon free by 2050 and 80% less carbon by 2030
- Great River Energy
  - Supplies electricity to many Minnesota electric co-ops
  - 50% renewable energy by 2030
- Southern Minnesota Municipal Power Agency
  - Supplies electricity to many southern Minnesota cities
  - 80% carbon-free energy on an annual basis by 2030



# What are our local governments and schools doing?

- Replacing lighting — City of Mankato; Minnesota State University, Mankato; Mankato West High School via its student-run [YES! Team](#)
- Installing solar panels — City of Mankato; Blue Earth County; Minnesota State University, Mankato; Mankato Schools
- Investing in community solar — Cities of Mankato and North Mankato, Blue Earth County, Mankato Schools



The bottom line: It's all about saving money and saving the planet! Payback time:

- Replacing old lightbulbs with LEDs: less than a year
- Installing solar panels: 6-8 years
- Community solar pays off right away



# More sources

- [Clean Energy Resource Teams](#)
- [Minnesota Home Energy Guide](#)
- [Center for Energy and Environment](#)
- Southcentral Minnesota Clean Energy Council
  - [Clean Energy Resources](#)
  - [Electric Vehicles \(EVs\) and Plug-in Hybrid Electric Vehicles \(PHEVs\)](#)



Will we survive?  
What can we do?

Yell! Scream!

Contact our local, state and  
federal representatives!

**VOTE!**





# Questions?

## Contact me:

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