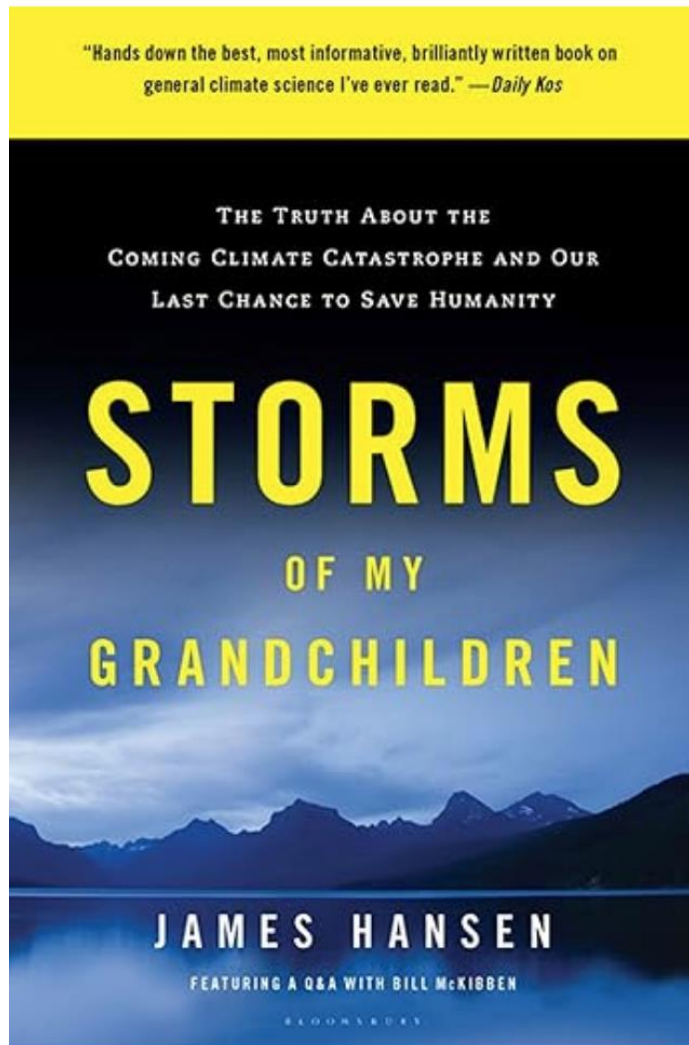


Our Green Journey

Oak Grove Presbyterian Church





2010 book by Dr. James Hansen, formerly Director of NASA Goddard Institute. He testified to US Congress in 1988 about catastrophic global warming and the need to cut CO2 emissions immediately.

NAOMI ORESKES
& ERIK M. CONWAY

"Anyone concerned about the state of democracy in America should read this book"

AL GORE

MERCHANTS OF DOUBT

HOW A HANDFUL OF SCIENTISTS
OBSURED THE TRUTH ON ISSUES
FROM TOBACCO SMOKE TO
GLOBAL WARMING

BLOOMSBURY

2010 book on how the Oil and Gas Monopoly used the Tobacco Industry Playbook to Employ a Few Scientists and "Trusted Figures" to Deny the Facts About Smoking and CO2e Emissions...

Sow doubt, confusion, denial, misinformation and inaction until it is too late!!!

Merchants of Doubt “Dialogue”

Scientists: Global warming is real!

Corporate Media: It's not real.

Scientists & Citizens: Global warming is getting worse!!

Corporate Media: It's not real! LOOK OVER THERE 

Scientists & Citizens & Youth: Global warming is here
and now and out of control!!

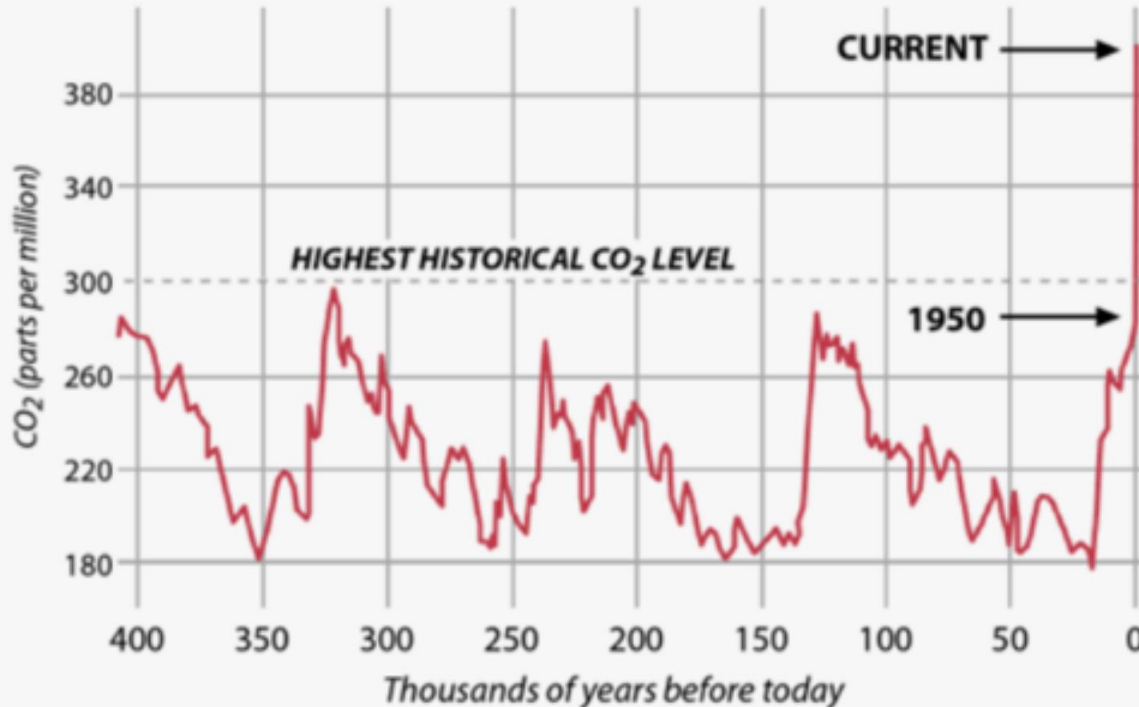
Corporate Media: Sorry, it's too late!!!

CO₂ Levels Are Off the Charts

Carbon dioxide concentrations in the atmosphere have risen and fallen over time, but the spike over the past 100 years is unprecedented.

ATMOSPHERIC CARBON DIOXIDE CONCENTRATIONS

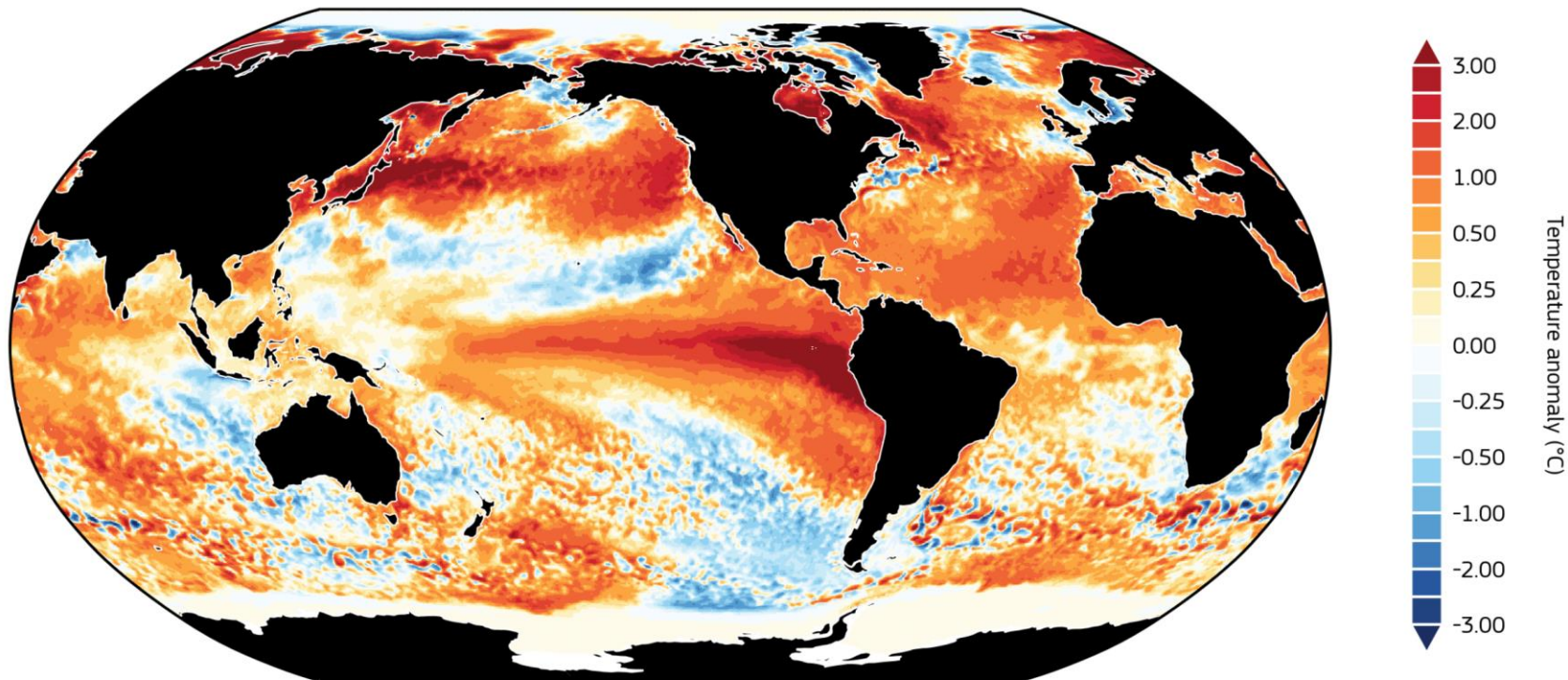
Parts permillion; data reconstructed from ice cores



What has happened in past 70 years to send our CO₂e levels beyond the ability of the earth's natural systems to regulate?

SEA SURFACE TEMPERATURE ANOMALY • AUGUST 2023

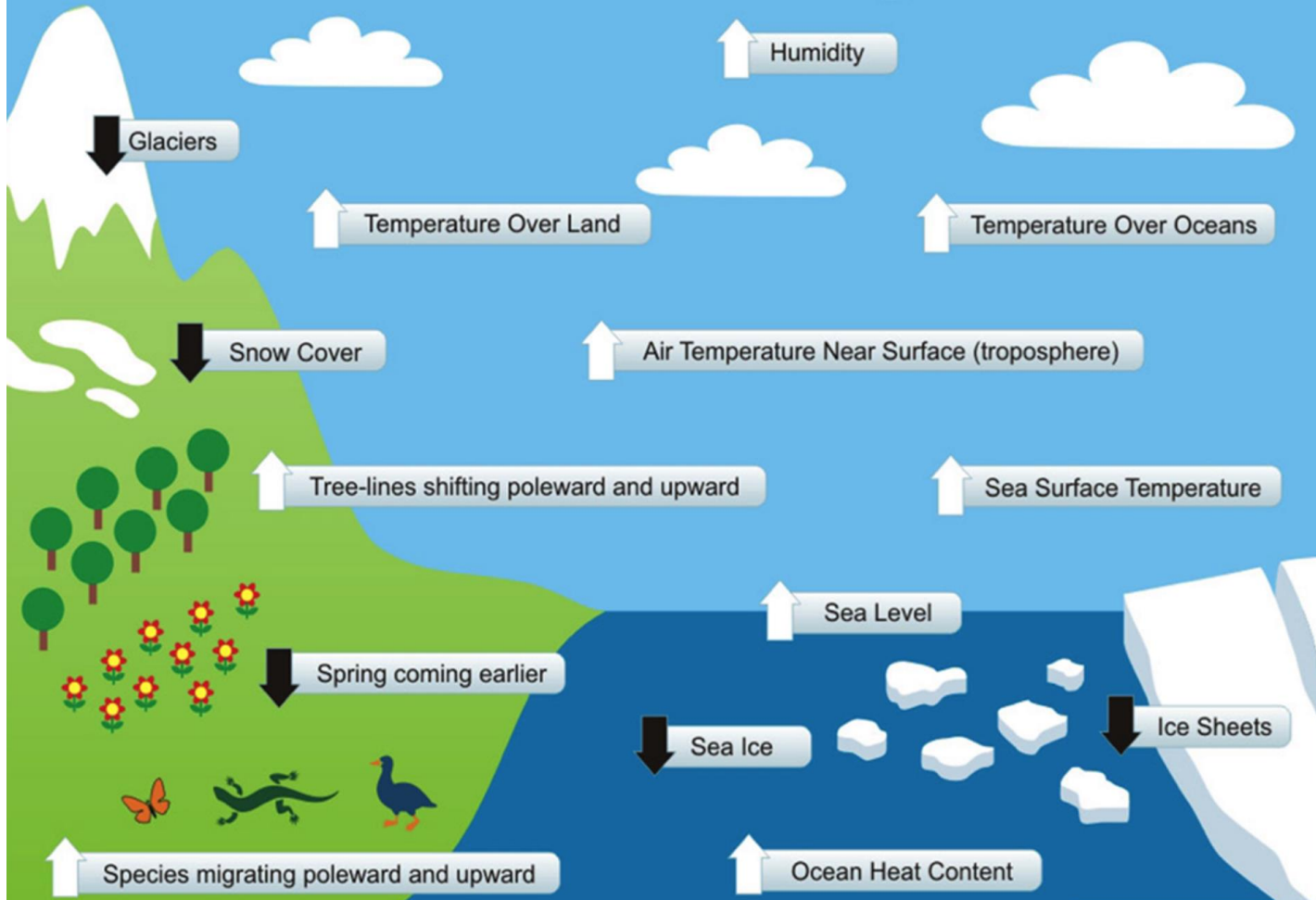
Reference period: 1991–2020 • Data: ERA5 • Credit C3S/ECMWF



PROGRAMME OF
THE EUROPEAN UNION



Indicators of a Warming World

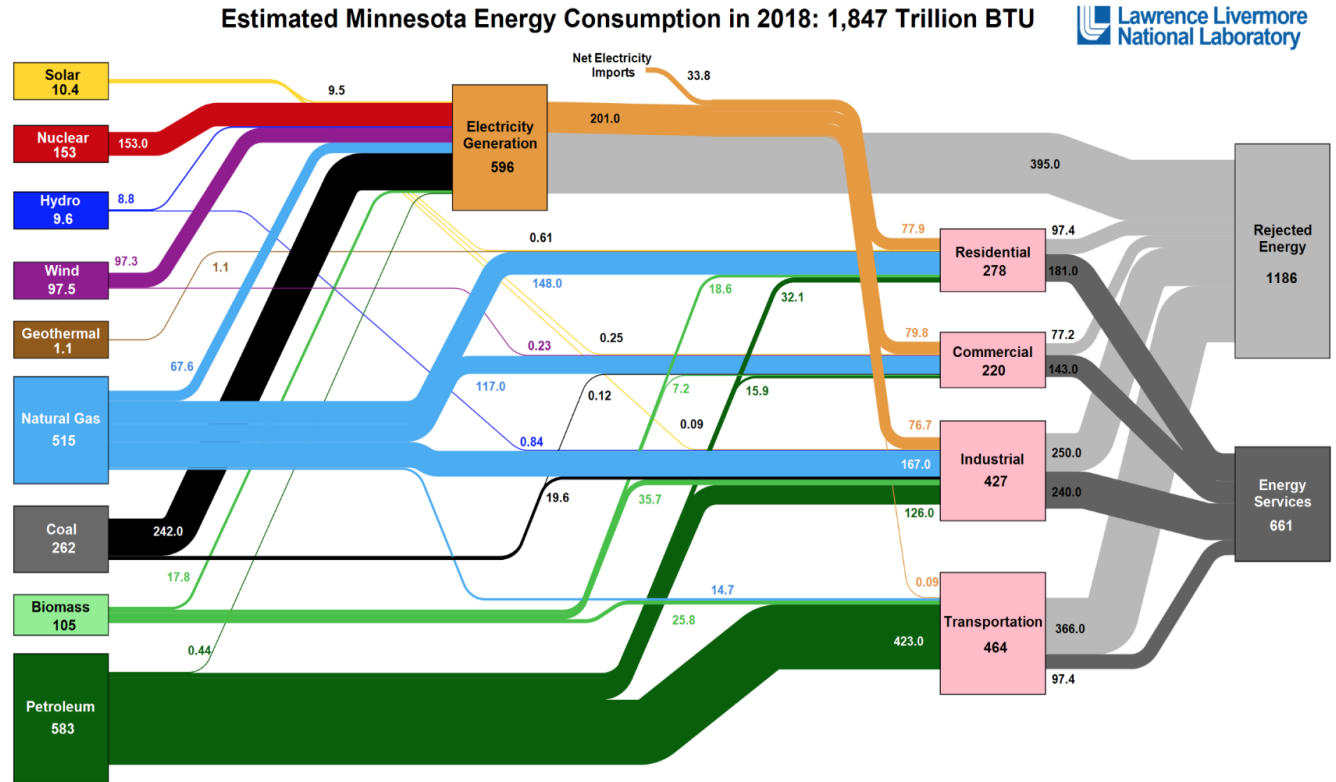


**Have you
seen any of
these
indicators
of global
warming?**

64% is
Rejected

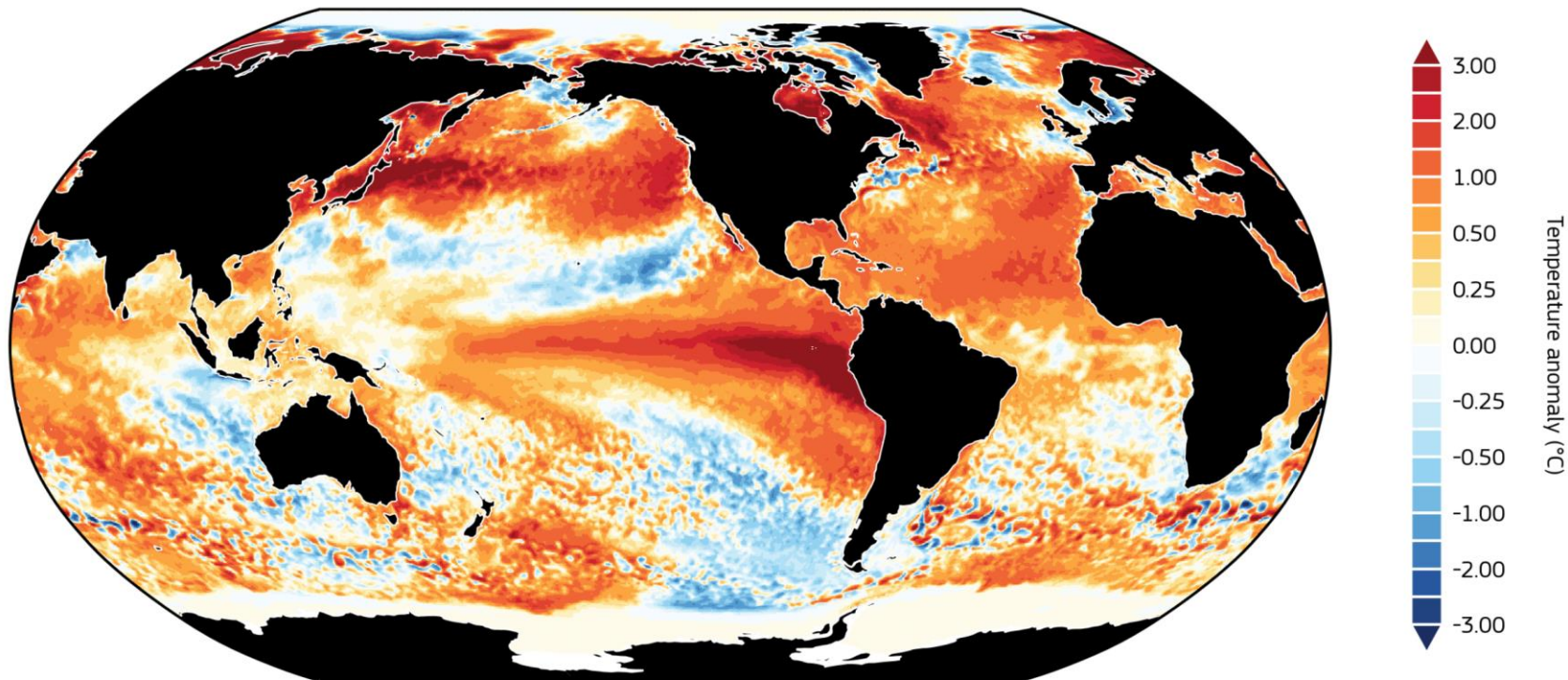
Only 36% is
Used...

What
happens to
the “Rejected
Energy?”



SEA SURFACE TEMPERATURE ANOMALY • AUGUST 2023

Reference period: 1991–2020 • Data: ERA5 • Credit C3S/ECMWF



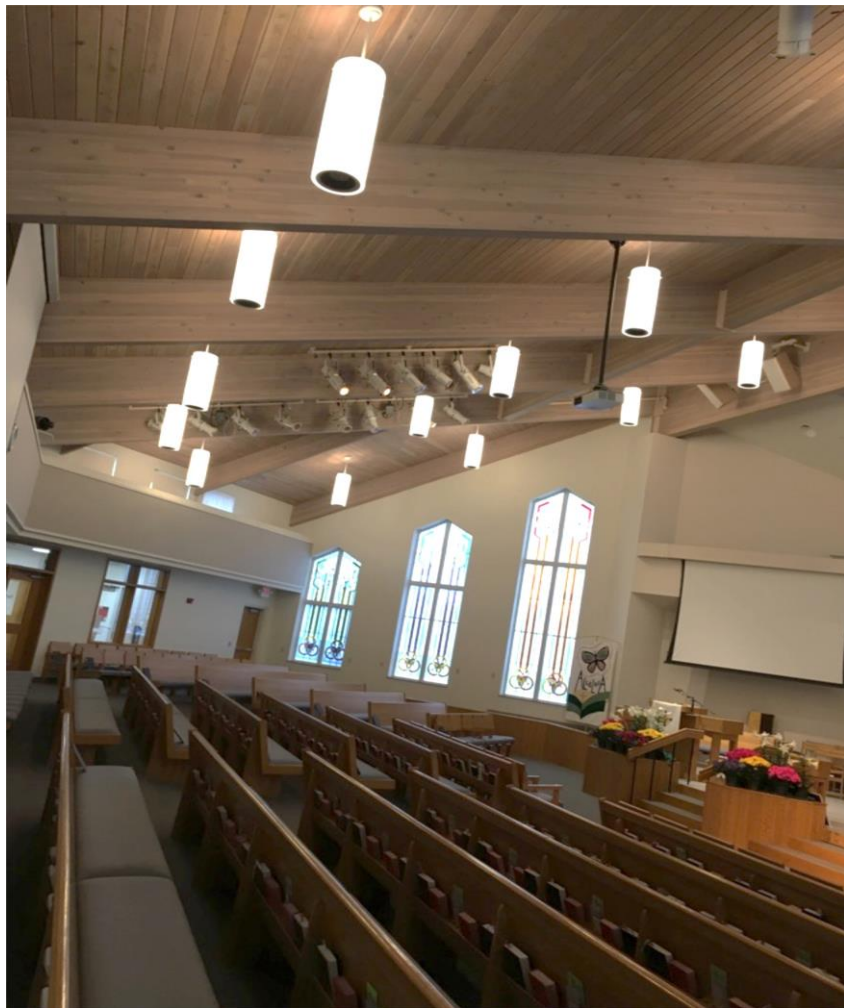
PROGRAMME OF
THE EUROPEAN UNION



Our Green Journey

Oak Grove Presbyterian Church





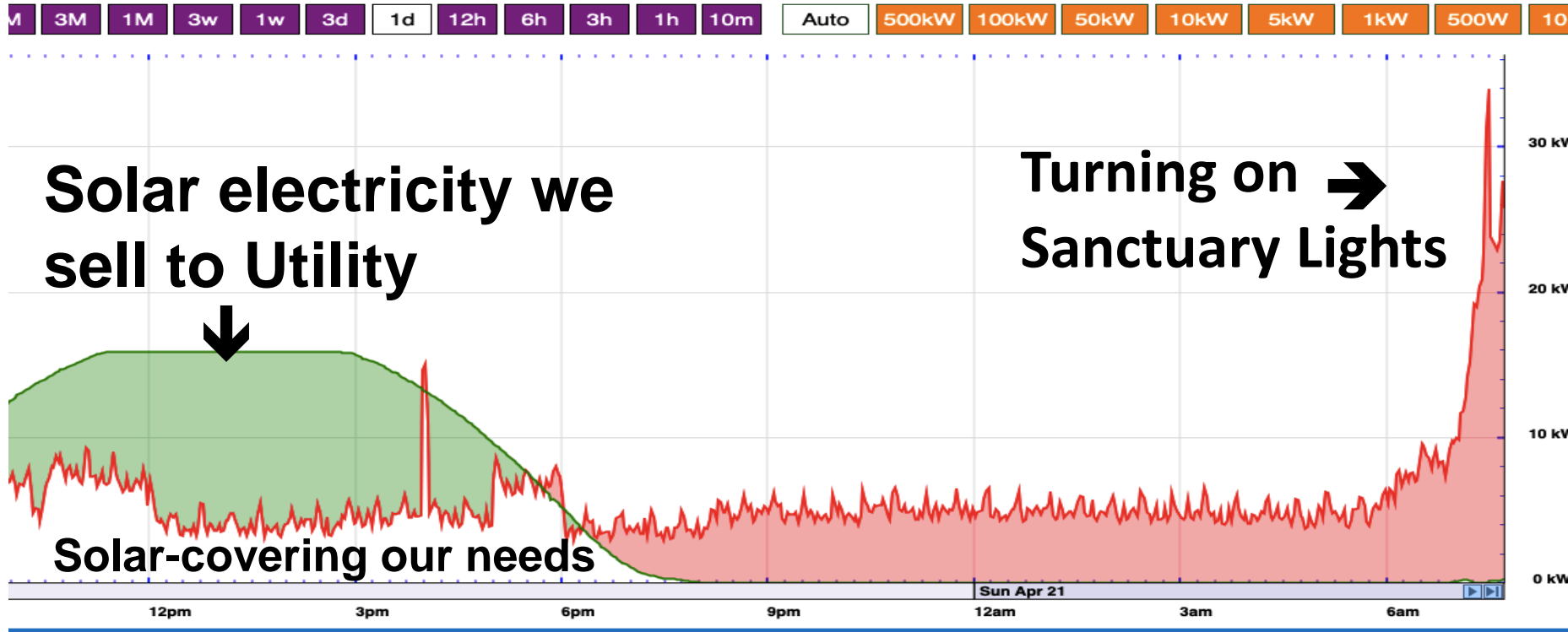
LED Lighting Retrofit

- Entire Church and Parking Lot
- LEDs Reduced our overall Electrical Usage by 33%... 45,000 kWh per year
- Cost was approx. \$1/watt
- Payback 6-7 years on lamps that last 15-20 years
- Saves \$ on labor, liability, and HVAC costs

20 kW of Rooftop Solar Reduces our CO₂e and provides 25-35% of our Electricity



Online Monitoring-Solar Panels



Rooftop Solar

- Net metering... Utility has to take all solar we produce
- We get a solar rewards “rebate” for that solar based on production for 10 years
- Payoff with rebate= 17 years
- Life expectancy of panels = 30 years
- 13 years of free electricity!
- ... Next Step: go to battery storage /conserve/cut demand charges/add more panels as we switch2 electric

Community Solar Garden

Located near St. Cloud Reformatory



Approx.... 55 kWh/yr. (42 kW) of solar in huge garden

Community Solar Garden

Located near St. Cloud Reformatory



Approx.... 55 kWh/yr. (42 kW) of solar in huge garden

Community Solar Garden

- No money down
- We subscribe to buy the solar energy it produces which goes into the grid
- Solar garden electricity is used to offset electricity we use...bill credits
- 20 year subscription
- Residential Community Solar Gardens are offered to public through *Clean Choice Solar Gardens* from Xcel

WindSource



Pay a 10% premium to buy wind energy produced in Minnesota... up to 100% of our electrical usage

Certified-It forces Xcel buy/build more wind power than they are planning to

Re-Powering Wind Turbines to double and triple their output from same footprint

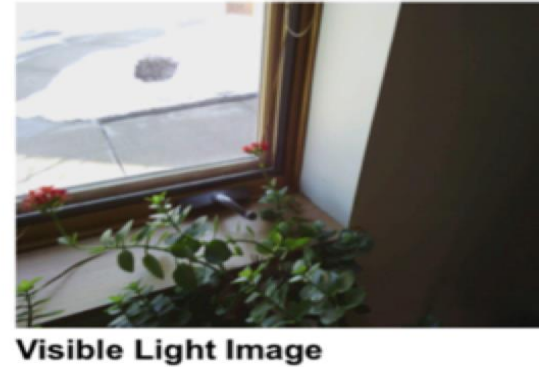
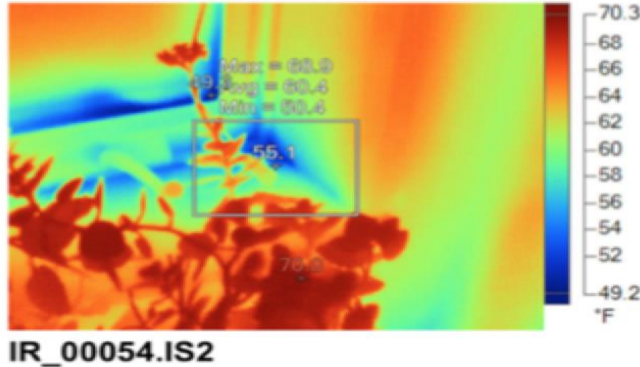
Clean Energy



- We produce 160% more clean electricity than we consume....
... for the same cost we used to pay for 100% conventional electricity

- We advocated for Community Solar Gardens and 100% Carbon-Free Electricity by 2040 in the MN Legislature.... 2015 to 2023

Reduce/Eliminate Natural Gas



Window's air leakage- Upstairs office windows

- Ben found window air leakage in office Workroom, Brita's office, Mac's office, Heidi's office, Anne's office, and Mary's office
- For comfort and energy efficiency they need to seal better with caulk
- Pg 17 of report.... Minor to moderate

2020 – Paid for a complete thermography and natural gas analysis of church

Reduce/Eliminate Natural Gas

- **Plug holes and leaks**
- **Insulate hot water pipes**
- **Put in proper dampers**
- **Insulated Ed Wing attic with 8-10" more insulation**
- **Replace/supplement natural gas boiler with Heat Pumps**
- **Did the work with volunteers**

Reduce/Eliminate Natural Gas



**Thermally sealing by plugging holes,
esp Ed Wing**





Switching to Electric Heat Pumps

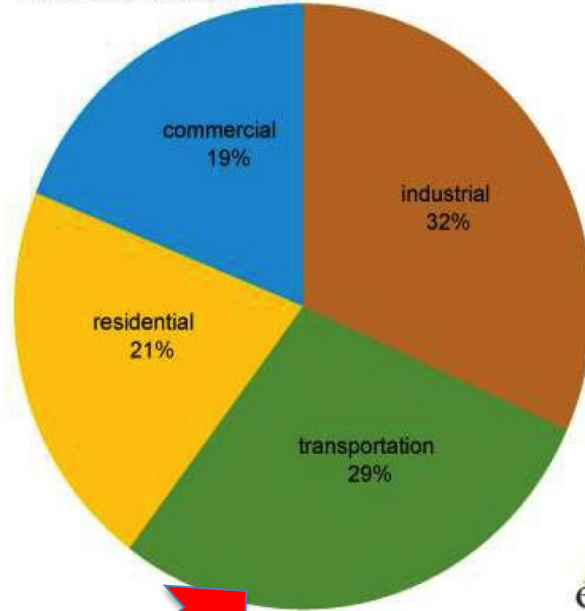


- Heating and cooling 1 large room with Heat Pump
- Evaluation
- Setup More Areas of Building with Heat Pumps as “Memorials”

**Petroleum is
36-40% of
Total US
Energy
Consumption..
mostly for
transportation**

Share of total U.S. energy consumed by end-use sector
in the United States, 2016

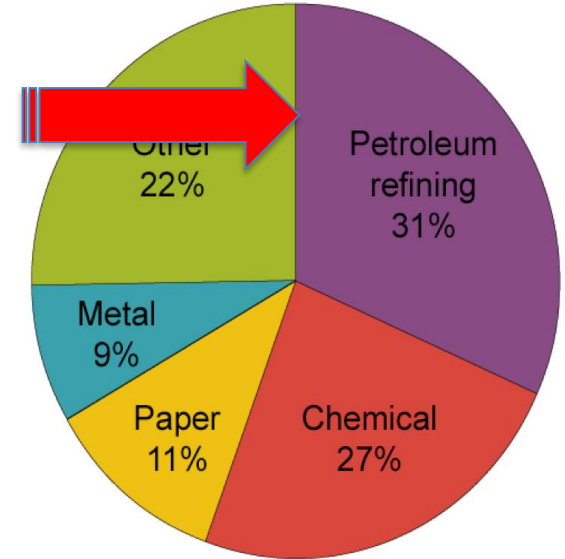
Total = 97.4 quadrillion British thermal units



Note: Sum of individual percentages may not equal 100 because of independent rounding.

Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 2.1, April 2017, p. 10.

Energy use by type of industry,
2010¹

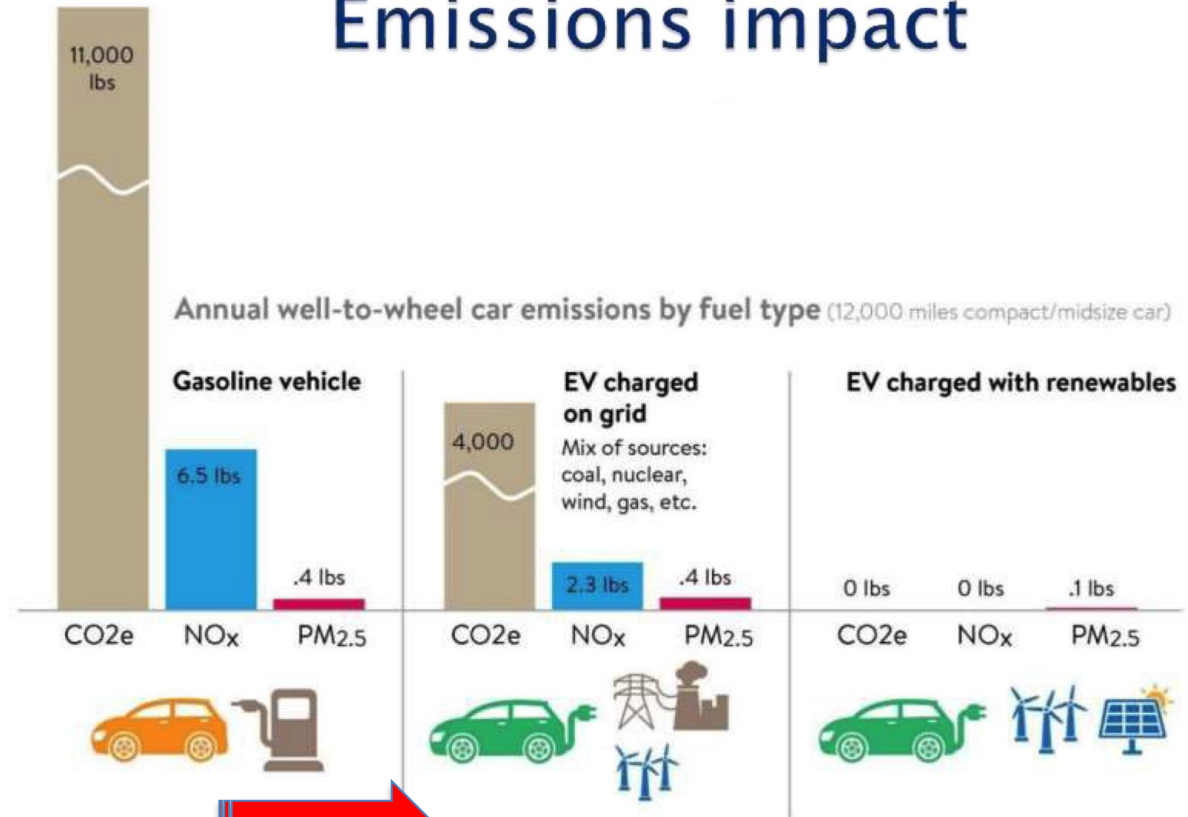


Source: U.S. Energy Information Administration, *Manufacturing Energy Consumption Survey 2010*, Table 1.2 (March 2013)

¹Includes all use of energy and fuels; excludes shipments of energy sources produced onsite.

**EVs charged by
conventional
grid are
almost 3 times
less polluting
than gas-
powered cars**

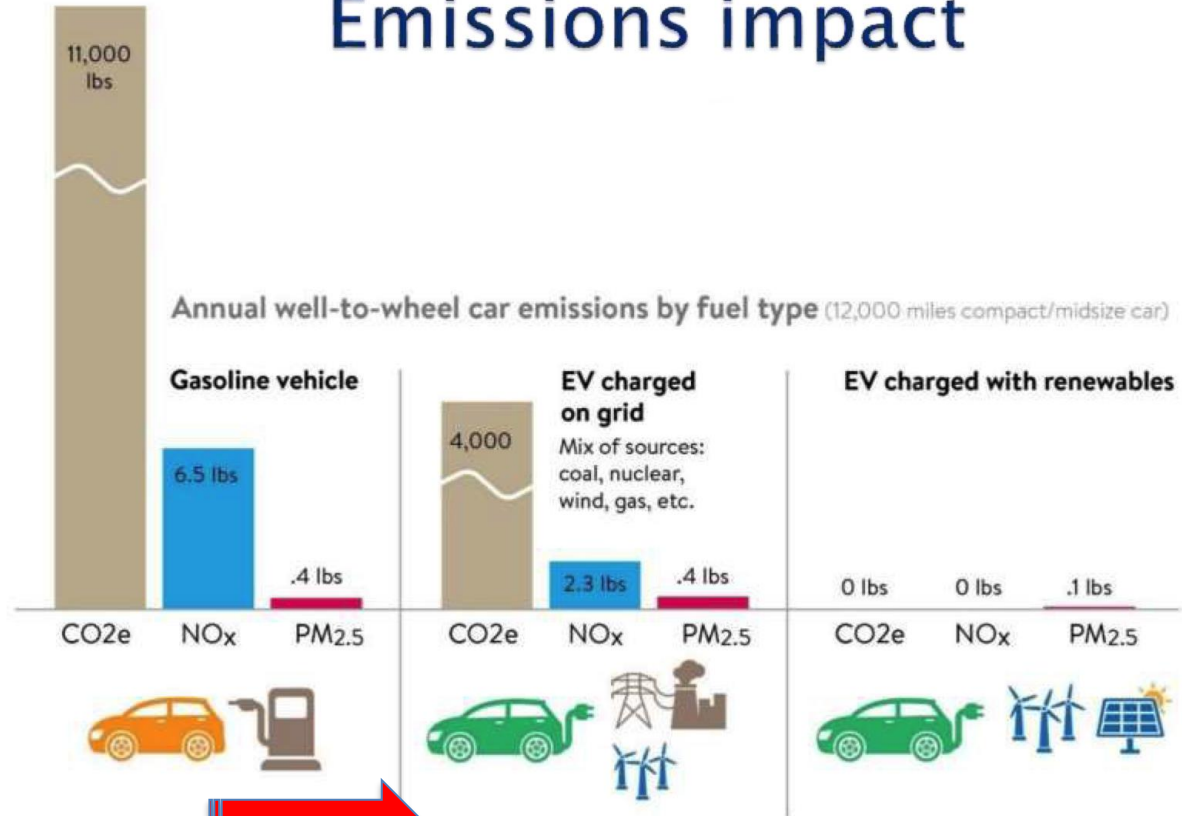
Emissions impact



Source: MOVES2014a and 2014 EPA National Emissions Inventory Database

**EVs charged by
conventional grid
produce only
1/3rd as much
CO₂e, and NO_x
(smog)
...Causes of
global warming
and severe
heart/respiratory
diseases**

Emissions impact

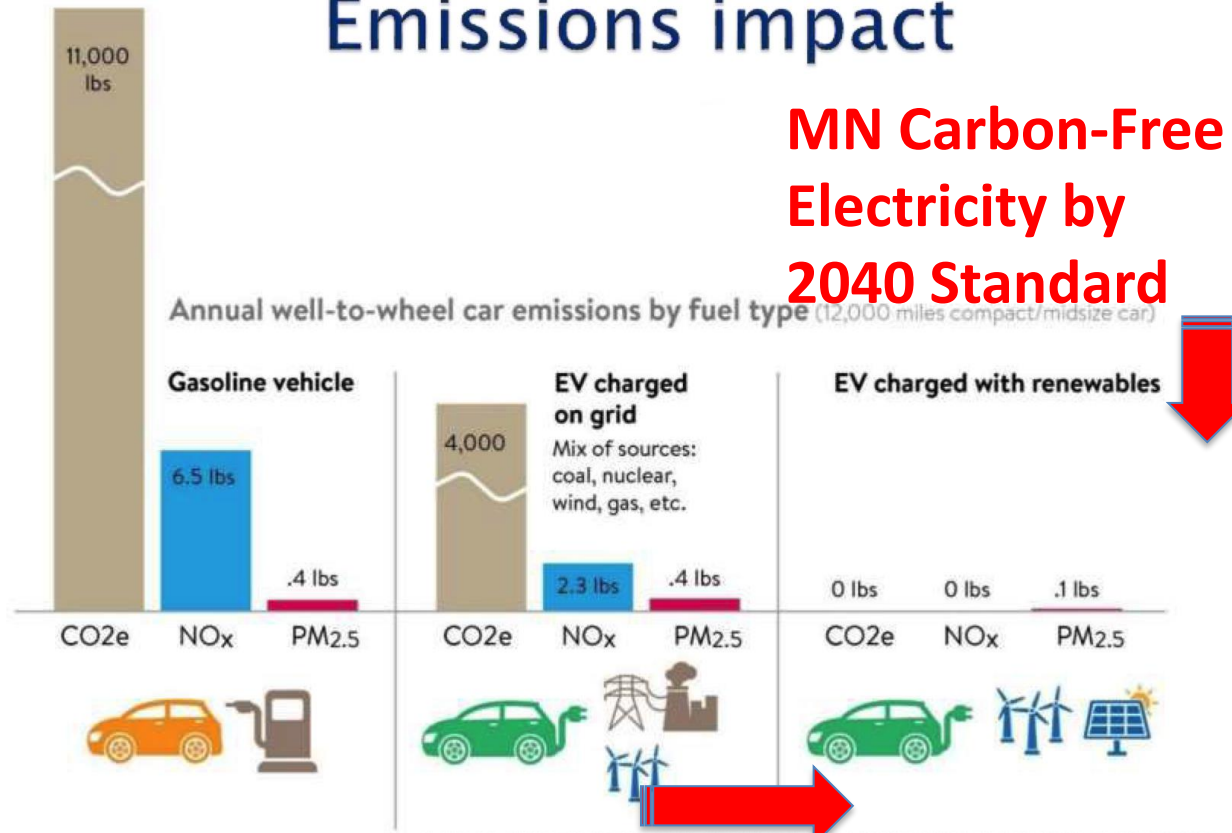


Source: MOVES2014a and 2014 EPA National Emissions Inventory Database

**EVs charged
by 100%
carbon-free
electricity
totally
eliminate all
CO₂e, NO_x,
and almost all
PM_{2.5}**

Emissions impact

**MN Carbon-Free
Electricity by
2040 Standard**

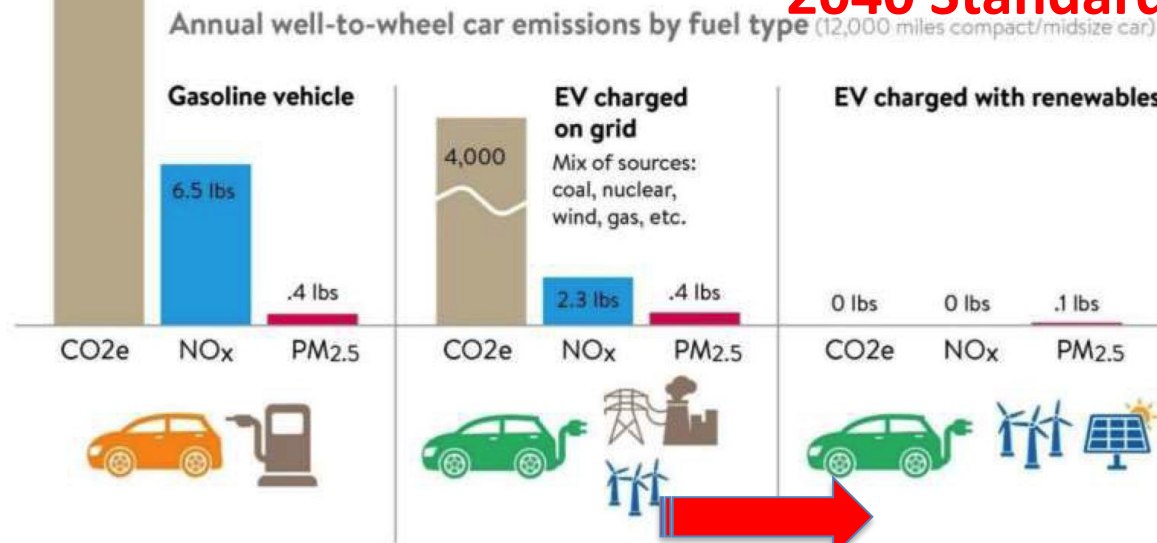


Racing Against Time:

**We Must All
Stop Burning
Fossil Fuels
Now and over
the Next 20
Years**

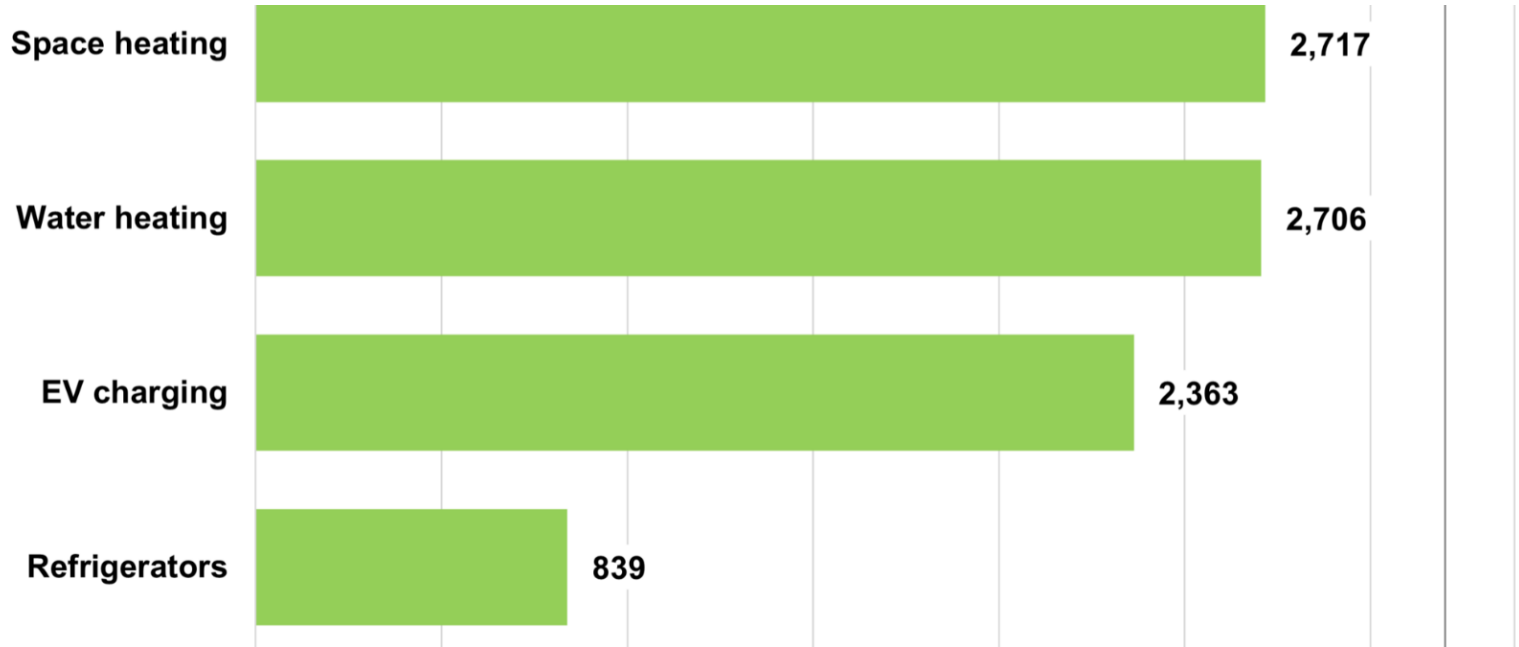
Emissions impact

**MN Carbon-Free
Electricity by
2040 Standard**



Source: MOVES2014a and 2014 EPA National Emissions Inventory Database

Bottom Line: EVs are Cheaper to Fuel



Home Charging Costs for EVs Range from approx. \$0.50 to \$0.90 per gallon equivalent

EVs are Cheaper to Maintain

Analysis: cleantechnica.com/2019/09/27/tesla-model-3-vs-toyota-camry-5-year-cost-to-own/



Assumptions: 15,000 miles/year, \$3.10/gallon for gasoline, \$0.13/kWh for electricity, \$1,875 tax credit for Model 3, \$5,000 down payment and 4.5% interest on 5-year loan, Kelley Blue Book estimates for 5-year resale value.

Clean Energy and Clean Transportation...

- Stops the flow of \$\$\$ Billions to authoritarian, 1-Party countries and states such as Saudi Arabia, Russia, Texas, Oklahoma, Alberta Tar Sands
- Stop/slow down global warming
- Stop the cascade of major environmental disasters-oil spills, polluted rivers, breached aquifers
- Reduces noise, air pollution and chronic disease, esp in urban freeway corridors

Grid Is Important

- **Must incorporate Battery Storage**
- **Mini-grids**
- **Bi-Directional Charging....**
- **V2G !!!**

Why Do We Do These Things?





To Stop Blowing CREATION Out Our Tailpipes !



**Rapidly Move to 100% Clean Transportation
Fueled by 100% Clean Energy**

EV Expos at Oak Grove, 2018-2023



EV EXPO 2023



Saturday, Sept. 23rd
11:00 am – 3:00 pm

**Oak Grove
Presbyterian Church**

2200 W Old Shakopee Rd, Bloomington 55431
952.888.4621

*This event is free and open to the public.
Information will include federal Inflation
Reduction Act (IRA), and state tax credits
& rebates.*

[HTTPS://BIT.LY/3DUXE3S](https://bit.ly/3DUXE3S)

**ELECTRIC
VEHICLES
IMPROVE
OUR LIVES!**

TEST DRIVES

*of the best-selling
EV models, provided
by dealers and the
American Lung
Association*

TALK TO EV OWNERS

*about their driving
experiences*

PLUS!

E-Bikes

E-Mowers & Yard Tools

Electric School Bus

Electric Mass Transit

**Charging for Long-Distance
Travel**

Tax Credits & Rebates

Climate Benefits

FOOD & FUN FOR KIDS

For more information



SCAN ME!

Owners Talk About Their EVs



Owners Talk About Their EVs







In 2023 we'll have 15-20 EV Owners ... Some of them have been with Expo since 2018



Tesla Model Y
Tesla Model 3
Mits Outlander PHEV
VW ID.4
Ford Mustang Mach E
Nissan Leaf
Nissan Ariya
Chevy Bolt EUV
Toyota RAV4 PHEV

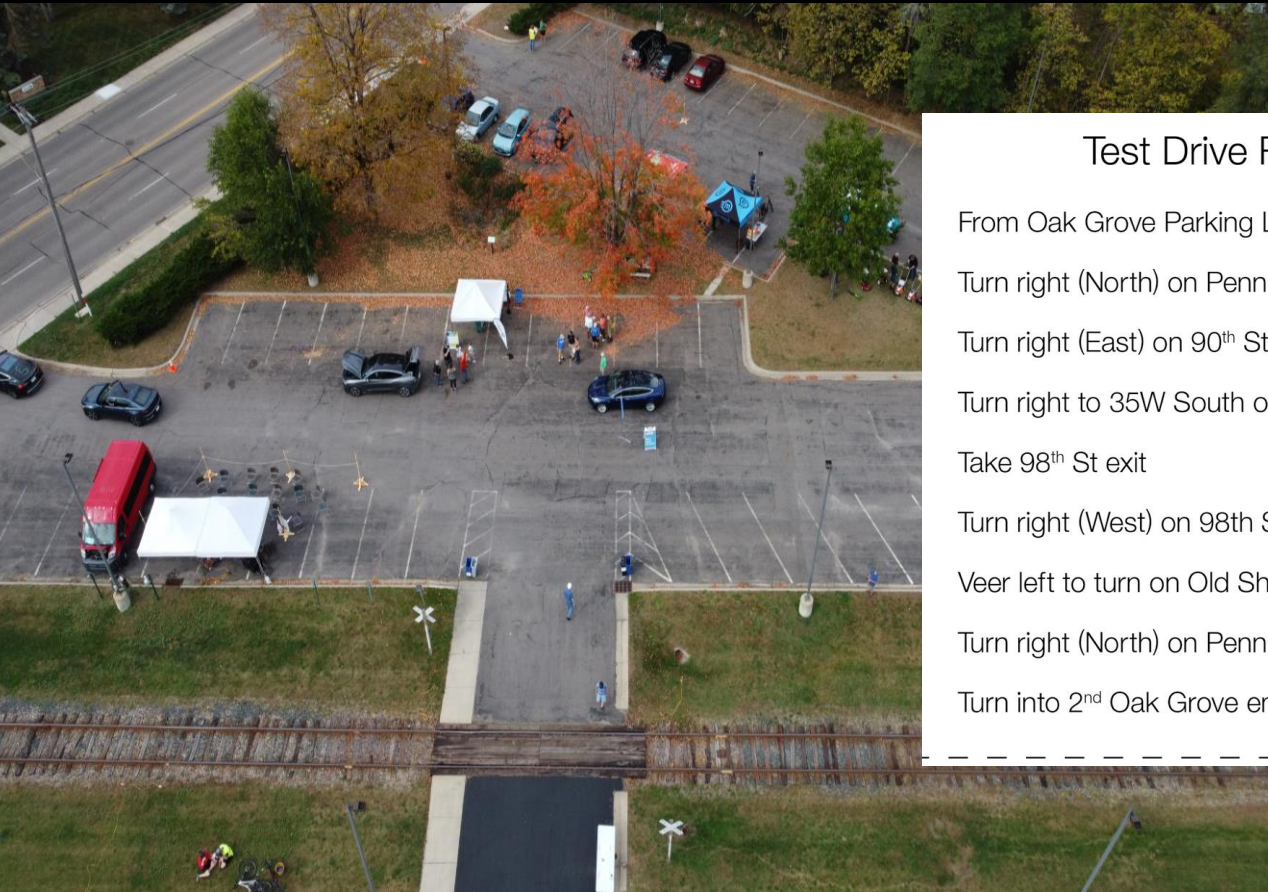
EV Test Drives with Dealers





**2023 Goal = 100 + EV Test Drives By 6-8 Dealers....
Sponsored by American Lung Association-Minnesota**

EV Test Drives with Dealers



Test Drive Route

From Oak Grove Parking Lot
Turn right (North) on Penn Ave
Turn right (East) on 90th St
Turn right to 35W South onramp
Take 98th St exit
Turn right (West) on 98th St
Veer left to turn on Old Shakopee Rd
Turn right (North) on Penn Ave
Turn into 2nd Oak Grove entrance

















EV Test Drives with Dealers



Tesla Model Y
Tesla Model 3
KIA Nero
Nissan Ariya
Polestar 2
Ford Mustang
Mach E
BMW i5
Chevy Bolt EUV ?

Buyers Guide of all EVs

Manufacturer									Range		Charging speed (miles/hr)			Performance					
Make	Model	Photo	Seating	EV Type	FWD/ RWD/ AWD	Base MSRP	Federal tax credit	Battery size (kWh)	Electric Range (miles)	Total Range (miles)	Charging rates (kW) L2/DCFC	Level 1 120V	Level 2 240V	DCFC 400+V	MPGe/ MPG	Top Spd (mph)	0-60 mph (sec)	Towing capacity (lbs)	Safety Ratings by IIHS
Audi	Q4 e-tron		5	BEV	AWD	\$49,800	FuelEconomy.gov	82	241	241	11/125	3	31	282	95	112	5.8	2600	Top Safety Pick +
Audi	Q4 Sportback e-tron		5	BEV	AWD	\$58,200	FuelEconomy.gov	82	241	241	11/125	3	31	282	95	112	5.8	2600	Top Safety Pick +
Audi	Q8 e-tron (S)		5	BEV	AWD	\$74,400	FuelEconomy.gov	106	285	285	9.6-19.2/170	3	44	315	78	124-130	4.3-5.6	4000	Top Safety Pick +
Audi	Q8 e-tron Sportback (S)		5	BEV	AWD	\$77,800	FuelEconomy.gov	106	300	300	9.6-19.2/170	3	44	311	77	124-131	4.3-5.4	4000	Top Safety Pick +
Audi	e-tron GT		5	BEV	AWD	\$106,500	FuelEconomy.gov	93	238	238	9.6/270	3	23	292	82	155	3.1-3.9	0	Not Rated
Audi	Q5 TFSI e		5	PHEV	AWD	\$57,400	FuelEconomy.gov	17.9	20	390	7.4	2	14	N/A	61/26	130	5	4400	Top Safety Pick +
BMW	i4		5	BEV	RWD/ AWD	\$52,200	FuelEconomy.gov	81	227-301	227-301	11/195	4	33	462.908	80-109	140	3.7-5.5	0	Not Rated
BMW	i5		5	BEV	RWD/ AWD	\$66,800	FuelEconomy.gov	81	240-295	240-295	11/195	4	33	462.908	85-105	120-130	3.7-5.7	0	Not Rated
BMW	i7		5	BEV	AWD	\$124,200	FuelEconomy.gov	106	318	318	11/195	4	33	411.9881	89	130	4.5	0	Not Rated
BMW	iX		5	BEV	AWD	\$87,100	FuelEconomy.gov	112	315-324	315-324	11/195	3	28	393.4718	83-86	124	3.6-4.4	0	Not Rated
BMW	330e		5	PHEV	WD/ AWD	\$45,600	FuelEconomy.gov	12	23	320	3.7	3	8	N/A	75/28	130-142	5.6	0	Good
BMW	750 xDrive		5	PHEV	AWD	\$107,000	FuelEconomy.gov	12	16	290	3.7	2	6	N/A	56/22	127	4.6	0	Top Safety Pick +
BMW	X5 xDrive50e		5	PHEV	AWD	\$72,500	FuelEconomy.gov	24	39	440	7.4	2	11	N/A	58/20	130	4.6	0	Top Safety Pick
BMW	The XM		5	PHEV	AWD	\$159,000	FuelEconomy.gov	25.7	31	300	7.4	2	11	N/A	73/14	168	3.7	0	Top Safety Pick

E-Lawn Tools



E-Lawn Tools



Mark has been with Expo since 2018.

Reports that in 2022, 85% of his sales were for electric lawn tools

E-Bikes



**E-Bike Dealers Not
Coming in 2023**

Electric School Bus from Eastern Carver County



Info on:

- **Climate Benefits**
- **Health Benefits for Students and Drivers**
- **Learning Benefits**
- **Cost Benefits**

Talks About EV Charging

85-90% of EV Charging is Done at Home



Level 1

5 miles of charge per
hour of charging
120 Volt AC
Home Charging



Level 2

20 miles of charge per hour
of charging
240 Volt AC
Home/Commercial
Charging



DC Fast Chargers
Charges battery
fully in less than
35-45 minutes
Commercial
Charging Stations

Supercharger Networks for Long Distance Travel



CARS

**How GM & Ford Joining The
Tesla Charging Network
Accelerate Electric Vehicle
Adoption**

Inflation Reduction Act

Tax Credits and Rebates, and Direct Pay for EVs and EV Chargers

Electric Vehicle Credits Updated 7/23/2023

Income Limits for Purchase	Limit (New Car)	Limit (Used Car)
<input type="checkbox"/> Married filing jointly	\$300,000	\$150,000
<input type="checkbox"/> Head of Household	\$225,000	\$112,500
<input type="checkbox"/> Single/Married Filing Separately	\$150,000	\$75,000

EV Purchase (New): Apr 18, 2023 and after	Rebate
<input type="checkbox"/> Vehicle Meets Critical Minerals Requirement	\$3750
<input type="checkbox"/> Vehicle Meets Battery Components Requirement	\$3750
MAXIMUM PERMITTED TOTAL CREDIT per household:	\$7500
Price Caps	SUV/Truck: \$80,000 Car: \$55,000

EV Purchase (Used)	Rebate
<input type="checkbox"/> Eligible FCV or plug-in EV	30% of sales price, up to \$4000
Qualifications:	
<ul style="list-style-type: none"> - Purchase price under \$25,000 - Can only claim once every three years - Car must be 2 years older than calendar year of purchase date - Vehicle must be purchased from dealer 	

EV Lease	Rebate
<input type="checkbox"/> Eligible FCV or plug-in EV	\$7500 for vehicles under 14000 GVWR, part of lease
Note:	
<ul style="list-style-type: none"> - Dealers can use this to reduce the cost of leases to customers – credit is built into the price - May allow greater flexibility for EV choices - Watch the fine print – lease buyout may be canceled for some EVs 	Rebate is part of the lease agreement, so no separate tax credit available at tax filing

Additional Info:

- Updated list of Current Eligible Vehicles: <https://fueleconomy.gov>
- Beginning in 2024, taxpayers will have the option to transfer the credit to the dealer at the point of sale to directly lower the price of the vehicle by the corresponding credit amount
- Rules for EVs purchased between 1/1/2023 and 4/17/2023 can be found at:
 - o <https://www.irs.gov/credits-deductions/credits-for-new-clean-vehicles-purchased-in-2023-or-after>
- The EV must undergo final assembly in North America to qualify for the new purchase credit.

Car Make and Model	Year	Vehicle Type	Tax Credit Amount
BMW			
X5 xDrive50e	2024.	PHEV.	\$3,750.
Cadillac			
Lyriq	2003–2024.	EV.	\$7,500.
Chevrolet			
Bolt Bolt EUV	2022–2023.	EV.	\$7,500.
Blazer	2024.	EV.	\$7,500.
Equinox	2024.	EV.	\$7,500.
Silverado	2024.	EV.	\$7,500.
Chrysler			
Pacifica	2022–2023.	PHEV.	\$7,500.
Ford			
Escape	2022–2023.	PHEV.	\$3,750.
E-Transit	2022–2023.	EV.	\$3,750.
F-150 Lightning (standard and extended range battery)	2022–2023.	EV.	\$7,500.
Mustang Mach-E (standard and extended range battery)	2022–2023.	EV.	\$3,750.
Jeep			
Grand Cherokee PHEV 4xe	2022–2023.	PHEV.	\$3,750.
Wrangler PHEV 4xe	2022–2023.	PHEV.	\$3,750.
Lincoln			
Aviator Grand Touring	2022–2023.	PHEV.	\$7,500.
Corsair Grand Touring	2022–2023.	PHEV.	\$3,750.
Rivian			
R1S R1T	2023.	EV.	\$3,750.
Tesla			
Model 3 Standard Range RWD	2022–2023.	EV.	\$7,500.
Model 3 Performance	2022–2023.	EV.	\$7,500.
Model Y Performance Model Y AWD Model Y Long Range AWD	2022–2023.	EV.	\$7,500.
Model 3 Long Range AWD	2023.	EV.	\$7,500.
Volkswagen			

KidWind for the Kids



Self-Guided Tour of Oak Grove's Green Projects

SCAN THE QR CODES
FOR INFORMATION ON
EACH IMPROVEMENT

EVs & EV CHARGERS



EV 101



EV 201

INSULATION & WEATHERIZATION



RAIN GARDEN



SOLAR PANELS



HEAT PUMP



LED LIGHTING



RECYCLING & COMPOSTING



Eastern Carver
County Schools

Exceptional, personalized learning



Partners



.... In the Interest of Bi-Partisanship

... a few words from a former Republican Governor of California...on “Kicking Gas”



https://www.youtube.com/watch?v=UGrE_I3OzRY