You Can Fix the Planet

Three things you can do to address global warming

Presented by Louise Mezzatesta

Author's note

You'll notice that this presentation has no fancy background, no flashy logos and virtually no color. This was a conscious choice on the part of the author. A color printer uses five ink cartridges: Four color and one black. By reducing the use of color, the color cartridges have to be replaced much less often. Fewer big plastic objects to recycle. Black and white printing is more environmentally sound.

Acknowledgement

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Introduction

You don’t have to be a “warrior” in order to make a difference

Premise of this presentation:
Most Americans are, at best, reluctant climate warriors

- Most people either can't or won't "go to extremes" to fix global warming.
- Many may believe in climate change, but simply can't afford an electric car or solar panels on their roof, assuming they can afford their own home.
- Others are intimidated by the enormity of what seems to be required to fix global warming. It's too time consuming. Too many sacrifices required. It's frustrating! I can't manage it!
- This presentation will attempt to provide some manageable options that are feasible for most people living in this community*.

*The assumption being that people in this area have more disposable income than the average American. Median income for an individual in RF is twice that of the average American. Median income for an average RF household is three times that of an average American household.

You don't have to be a climate warrior to make a difference

Here are three things that ordinary folks can do to make a difference:

- Sign-up for a community solar program
  - It's free
  - It lowers your electric bill
  - You get some solar-sourced electricity without installing any equipment
- Buy an induction range
  - Works like gas but runs on electricity
  - 3 times more efficient than gas, 5% to 10% more efficient than conventional electric range
- Install a heat pump (in your HVAC system)
  - Reduce or eliminate use of gas
  - Reduce your heating and cooling bills

Community Solar Programs

There’s no downside to signing up for one, only upside

Community Solar: Good for you, good for the HOA

Community Solar is a program that supplies its customers with solar-generated electricity without requiring installation of equipment

- The CS company (CSC) providing the program builds the solar farms and provides the electricity to your electricity delivery service, Commonweath Edison.
- The CSC informs ComEd of your portion of the solar-generated power you used.
- Commonwealth Edison bills you for the electricity you consumed less the portion reported by the CSC
- The CSC bills you for the solar portion of you usage, BUT at a discount.
- You get credit for X dollars from ComEd but only pay (X – discount) to CSC

Community Solar: Good for you, good for the HOA

- Community Solar programs are free, no fees
- Both individuals and HOAs can sign up
- No requirement for the entire building to sign up
- No contract required (Note: Some CSC do require contracts)
- There is usually a waiting period to be activated
- Your savings may vary – number of sunny days a factor

Community Solar: Good for you, good for the HOA

Here is a real world example*. As the expression goes, your actual mileage may vary.

Note: The CSC allocates X number of solar panels to your account. That allocation is calculated off of you electricity usage at the time you sign up for the program. Variations in your monthly solar bill occur because the sun isn't always shining and making power.

ComEd Bill Date	ComEd Bill	Solar Credit on ComEd Bill	CSC Bill	Savings Due to 20% Discount	With 15% Discount	With 10% Discount
2023-01-31	167.24	34.96	27.97	6.99	5.24	3.50
2023-03-01	184.00	49.22	39.38	9.84	7.38	4.92
2023-03-30	111.30	76.86	61.49	15.37	11.53	7.69
2023-04-28	121.27	83.06	66.45	16.61	12.46	8.31
2023-06-02	104.68	149.25	119.40	29.85	22.39	14.93
2023-06-30	80.58	123.37	98.70	24.67	18.50	12.34
2023-08-02	104.72	101.58	81.26	20.32	15.24	10.16
2023-08-30	205.29	86.74	69.39	17.35	13.01	8.68
2023-09-29	98.77	96.72	77.38	19.34	14.51	9.67
2023-10-30	103.19	70.40	56.32	14.08	10.56	7.04
2023-11-30	142.70	47.72	38.18	9.54	7.16	4.77
2024-01-03	196.26	47.06	37.65	9.41	7.06	4.71
	1,620.00	**966.94**	**773.57**	**193.37**	**145.03**	**96.69**

Total Electric Bill for 2023 **2,393.57**

*20% discount was an introductory rate. Currently most CSCs are offering 10% or 15%. The gray columns in this example show what the savings would have been with 10% and 15% discount rates. The bill in this example is for a River Forest condo of 2265 sq ft.

How Do I Find a Community Solar Program

- The Citizens Utility Board of Illinois (CUB) is a nonprofit organization that works for clean energy, consumer protections, and lower utility bills.
- Review their article on community solar programs that includes a list of programs available in Illinois at: https://www.citizensutilityboard.org/community-solar-illinois
- Evaluate multiple programs to find the best one for you.

Natural Gas

Let’s talk about its dirty little secret

Let’s reduce our dependency on natural gas

Natural gas is a fossil fuel that when burned releases carbon dioxide, a greenhouse gas, into the air. All these devices contribute to global warming:

- Gas ranges
- Gas furnaces
- Gas hot water heaters
- Gas fireplaces

The solution: Go all electric!

Not saying this is a bad idea. Just saying that there are significant challenges which need to be addressed. Ask yourself these questions:

- Is your electricity produced cleanly? Coal-sourced electricity isn't clean.
- Can the electric grid support all of us going electric? In its present state it cannot. Is anybody working on this?
- How does the cost of all electric compare to a hybrid gas/electric home? If all electric is more expensive, who is willing to foot the bill? Am I?

(We can't ignore global warming, of course, but we need to be realistic about the steps needed to fix it. Reality check is needed in Springfield and in Washington D.C. That's where some of the stumbling blocks are coming from. See the Trib article on the next page.)

Chicago Tribune Article from Jan 29, 2024

Illinois needs to shore up its electrical grid. Lawmakers and the ICC can make it happen.

BY MICHAEL CLEMMONS

More than three years ago, Gov. J.B. Pritzker signed into law one of the nation's most aggressive state-level climate bills. The Climate and Equitable Jobs Act puts Illinois on the path to a 100% clean energy future by phasing out all fossil fuels by 2050.

As the state's biggest union of energy workers, the International Brotherhood of Electrical Workers was one of CEJA's strongest supporters, not just because we want to do our part in combating the climate crisis but because CEJA is a jobs bill that opens up opportunities for Illinois residents, especially those from disadvantaged communities, for middle-class jobs in the energy industry.

But big promises demand genuine follow-up.

Making our climate goals a reality requires a serious investment in 21st-century infrastructure that can ensure a steady supply of reliable, affordable and clean power to Illinois residents and communities.

But the longer it takes to make this new energy infrastructure a reality, the harder it will be to reach CEJA's ambitious objectives.

That is why we are alarmed about the recent decision by the Illinois Commerce Commission to reject Commonwealth Edison's and Ameren's grid investment plans.

The end effect of this decision is to put off the hard work required to meet the state's renewable energy goals to another day. It's a decision to continue policies that discourage outside investment in our state's climate and energy future.

Illinois policies discourage outside investment

Multiple independent analysts have cited Illinois as being one of the worst investing environments for energy projects in the country, and that means proposed projects here sit idle while neighboring states pass us by.

Failure to act means jeopardizing reliability and raising costs as fossil-fuel facilities go offline without the renewable infrastructure to get solar and wind power to the communities that need it.

We are already seeing electricity prices spike in many parts of the state.

The ICC also voted in Novembe to "pause" $265 million in natural gas pipeline replacement work, a troubling decision for both safety and reliability.

Transitioning to a 100% clean power mix means relying on an all-of-the-above energy strategy to get there, and postponing critical investments in any energy infrastructure puts Illinois that much further from its goal.

The question we have for lawmakers is this: If not now, when?

The IBEW has the skilled workforce to make the state's clear energy future a reality. What we d not have is time.

By putting the freeze on new energy infrastructure projects, the ICC's ruling will negatively impact thousands of energy jobs throughout Illinois.

With tens of billions of federal and state dollars going to infrastructure, skilled electrical workers are in high demand.

If my members can't find work here in Illinois, there are plenty of other opportunities in neighboring states. And once they leave, getting them back is tough.

If Illinois is not willing to move on building the infrastructure critical to CEJA's success now, it will not only jeopardize my members' jobs, it will put Illinois' ambitious climate goals at risk.

The Illinois Commerce Commission recently rejected ComEd's proposed rate hike and ordered it to return with a new plan. Critics say the decision makes it harder to invest in infrastructure. PAT NABONG/SUN-TIMES FILE

Lawmakers and regulators cannot allow side agendas to hold up long overdue investments in our aging transmission system.

Pritzker and members of the General Assembly from both parties worked hard to pass CEJA. There was a lot of hope in 2021 that Illinois would set the standard for combating climate change and serve as a model for a successful transition to a clean energy future.

But wishful thinking will not get Illinois to where it needs to be when it comes to making CEJA's promises a reality.

Only a serious commitment by lawmakers and the ICC to making a massive investment in modernizing our electrical infrastructure will meet the demands of tomorrow's clean-energy economy.

Business and labor are ready to get to work.

We have the workforce and the resources to make Illinois carbon-free by 2050. What we need is the will from Springfield and the ICC to get the job done.

Michael Clemmons is Sixth District vice president of the International Brotherhood of Electrical Workers.

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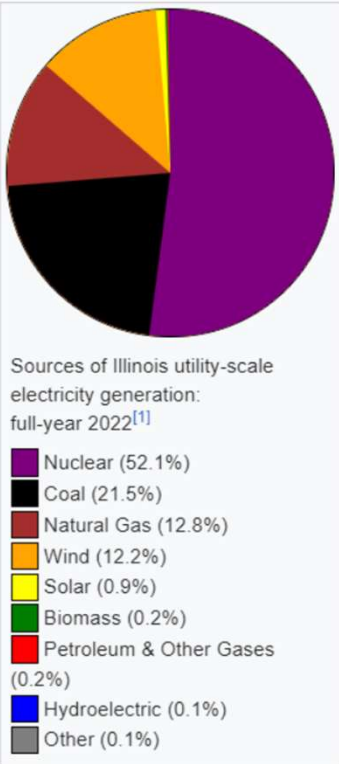
Sources of Illlinois' Electricity

In 2022:



Cost of gas vs. electricity in Illinois

- Natural gas is measured in therms
- Electricity is measured in kilowatt hours (kWh)
- One therm = 29.3 kWh
- Average prices to Illinois consumers in Feb 2024
  - Gas = $1.04 per therm
  - Electricity = 29.3 cents per kWh times 29.3 = $5.07 “per therm”
  - Caution! Can’t do a straight comparison.
    For example, electric ranges are more energy efficient than gas ranges.

Induction Cooking

Healthier, safer, better for the planet

Gas ranges: Bad for the climate & bad for your health

- Gas ranges produce nitrogen oxides (NOx), significant components of air pollution
- Range hoods that vent outside do not sufficiently rid the indoors of the pollutants.
- Recirculating range hoods merely push pollutants around the room.
- There are no health-based safety standards, either voluntary or mandatory, for gas ranges.
- Studies have linked childhood asthma to gas ranges in homes: Children have a 42% increased risk of developing asthma.
- And don’t forget: natural gas is bad for the climate.

Induction: Not your mother's electric range

- Induction ranges run on electricity but do not work like a conventional electric range.
- Conventional electric ranges are slow to heat up and slow to cool down – you can't make quick changes in heat level as you can with gas. But induction is as responsive as gas.
- Induction uses electricity to generate magnetic energy which interacts directly with the magnetic cookware on the top of the range.
- An induction range is three times more energy-efficient than gas and 5% to 10% more energy-efficient than a conventional electric range. E.g, boils water twice as fast as gas.
- It is safer than gas –
  - There is no open flame.
  - The burners shut off if there is no pan on the burner.
  - Though the cooktop is not totally cold, the level of heat from the hot pan on the glass top is considerably cooler then a gas range grate or cooktop on a conventional electric range after you turn it off.
  - Much less danger of a burn.
  - No NOx.

Induction: The disadvantages

- Induction ranges are more expensive than gas or conventional electric. (However Commonwealth Edison rebates may be available.)
- A 220-volt outlet is required – electrical work required if switching from gas. (Note: Must be on its own circuit breaker in your electrical panel.)
- Requires magnetic cookware*
  - As induction gains in popularity, more cookware manufacturers are producing induction compatible cookware.
  - On the high-end, LeCreuset, Staub, All-Clad, Zwilling – all magnetic.
  - On the low-end a $40 Lodge cast iron pan and your grandmother's old cast iron – magnetic.
  - Your old aluminum stockpot like your mother used to make spaghetti sauce in – no
  - How to know? Take a magnetic to the store with you. If it sticks, the pan will work on induction.

* Magnetic converter disks can be purchased for about $20 to enable the use of non-magnetic cookware. However, you lose the benefits of induction cooking. You put the disk on the cooktop and the pan on the disk. The disk gets hot and in turn heats the pan. In effect, the stove then operates like a conventional electric range. OK if you have one favorite pan you want to use but not at all recommended if none of your pans are magnetic. In that case, treat yourself to some new cookware.

Induction prices: Some examples

Price differences between induction and gas vary, depending upon the model:

- Differential is greater for high-end ranges with lots of features.
- Differential can run between $500 and $1000. (From low-end to high-end models.)
- For example, here are prices for comparable high-end GE Profile ranges courtesy of Abt Electronics in Glenview.
- Note: A typical discount during Abt's customer appreciation sale on Induction model is $300.

	Model #	March 2024 Price
Induction	CHS950P2MS1	$4,139
Gas	CGS750P2MS1	$3,419
Electric	CES750P2MS1	$2,994

Other electric cooking methods:
All healthy & energy efficient options

- Microwave – not just for warming up leftovers.
- Instant Pot – combines the features of both a slow cooker and pressure cooker.
- Toaster oven – it costs about $0.03 an hour to run compared to a gas oven for $0.07 or an electric oven for $0.16.
- Slow cooker – it uses 1/3 the energy of a conventional electric oven.
- Air fryer – or consider a toaster oven/air fryer combo and save space.
- Single burner induction unit – for about $60-$80 you can try induction without a big financial commitment.

Heat Pumps

Not just for heating but would you believe, cooling as well?

Heat Pumps: For cooling and heating

Despite the name, heat pumps can both cool and heat your home.

- There are two types –
  - Air source – above ground
  - Geothermal* – below ground
- Very efficient device that runs on electricity but more efficient than either a conventional furnace (gas or electric) or a conventional air conditioner (a.k.a. air handler)
- Can be used in climates where the temperature falls below zero – Alaska, Canada, etc.

* Very expensive, needs a big hole in your front lawn, we won't discuss here.

Heat pumps: For heating and cooling

- It’s called a heat pump, but it both cools and heats.
- In the winter it extracts heat out of the air to heat your home (Huh?)
- In the summer it works much like a conventional air conditioner.
- Heat pumps work more efficiently (in both in heating and cooling modes) than gas or conventional electric furnaces, or conventional air handlers.
- Both your heating and cooling bills are lower.
- It is not necessary to replace your entire HVAC system to benefit.

Heat pumps: My River Forest condo

- All electric 2 bedroom condo with all new HVAC installed in Fall 2020
  - Bosch electric furnace
  - Bosch heat pump on the roof, replacing conventional air handler
  - Aprilaire humidifier
  - Honeywell thermostat (with wireless connection to heat pump)
- Heat pump cools and heats when the temperature is above zero.
- Below zero, conventional electric furnace kicks in.
- Conventional furnace came on for the first time in 2024. The electric bill reflected that – about a $100 increase over same time period the previous year. Before that, we heated only via the heat pump.

Heat Pumps: My Oak Park home

- Split level 1950s house with zoned HVAC – 2 zones, one gas and one electric furnace. Separate air for each.
- Replaced entire system about seven years ago. Bosch furnaces (gas and electric), Bosch heat pumps and one Aprilaire humidifier with Ecobee thermostats.
- Heat pumps run down to 40 degrees, then furnaces kicked in.
- Electric bills typically ran $300 year around before new system.
  - High in the winter because of the electric furnace on the upper floors.
  - High in the summer due to two air conditioner running (we didn't open windows even in "nice" weather due to asthma and allergies).
- Electric bills dropped by about 1/3 with the install of the new system.

Heat Pumps: Some additional thoughts

- Sizing of unit affects how low a temperature for heating – “oversize” the unit for operation “way down low” because unit loses efficiency as the temperature drops.
- Maximum efficiency when you replace your entire HVAC system but incremental upgrades work, too. You can replace your air handler and your thermostat, and get benefits.
- Heat pumps can be installed with gas or electric furnaces, radiators or forced air.
- But be aware: There are many different existing HVAC configurations. Not every situation is a good candidate for a heat pump. A knowledgeable contractor can evaluate your individual situation and make the right recommendation.

Heat Pumps: The future in River Forest

- It is still somewhat challenging to find contractors who are experienced in this technology, but Triton's HVAC technician's training programs now include training on both air source and geothermal technologies.
- Candidly, from my personal experience back in 2017, some of the HVAC outfits have been less willing to embrace heat pumps. I was told by two of three firms that I got bids from that heat pumps weren't suitable for our climate. Not true, obviously. But the times, they are a-changing and more HVAC contractors are offering heat pump installs.
- Note: Rebates from Commonwealth Edison are available for residential installs but not commercial ones.

In conclusion

What next?

Let's go electric!

Despite the apparent roadblocks, going electric is a good bet. But the equation is complicated:

- In Illinois only a minority of our electricity comes from "dirty" sources but this is not the case everywhere.
- Interestingly enough, Illinois currently produces more electricity than it consumes, so we export the excess.
- The bulk of our electricity production comes from nuclear power which isn't what most people want to hear.
- But we also mine coal and export ¼ of it to other countries.
- 15 states receive coal from Illinois primarily to produce electricity with Kentucky and Florida receiving the most coal.

Let's go electric!

More food for thought –

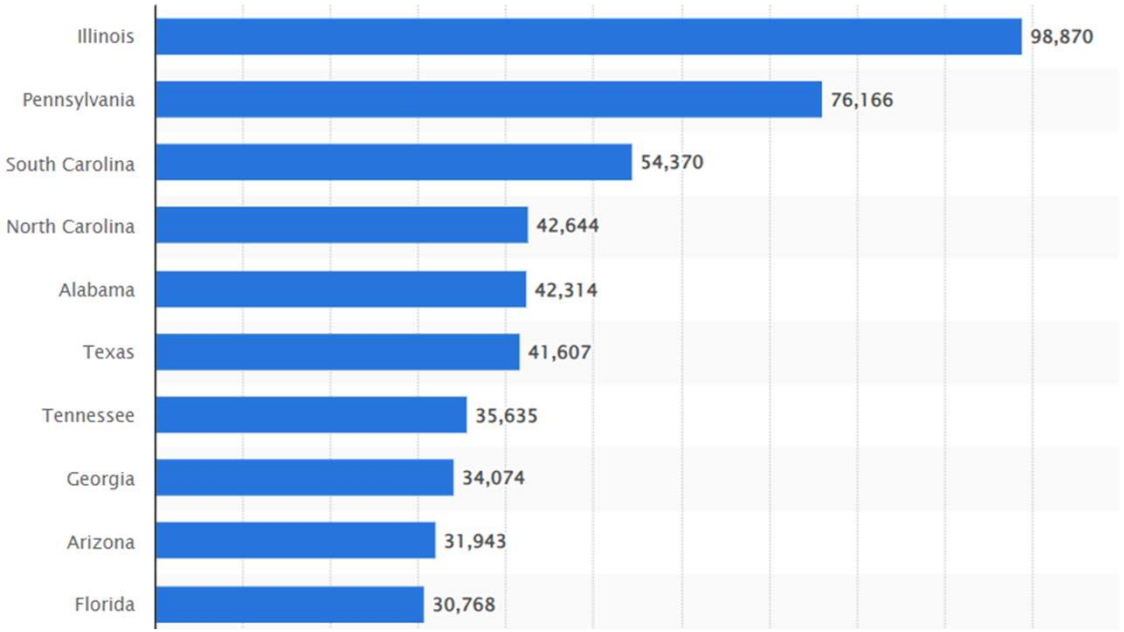
- Illinois produces more electricity than it can use.
  - Why not stop exporting power?
  - Eliminate the dirty sources of power and keep the clean sources for ourselves?
  - (Hint: Powerful, well funded lobbies)
- What about those pesky nuclear plants that make people nervous?
  - They are aging, but nobody wants us to build new ones.
  - The shadow of Three Mile Island, Chernobyl and most recently Fukishima, casts a pall over that alternative.
  - New plants are much safer, but the average person doesn't believe that.
  - New methods of generating nuclear power are in the offing, but the average person doesn't want to hear that.

Final Thought

It ain’t easy but what’s the alternative?

Top 10 leading nuclear power producing states in 2022

In gigawatt hours



Number of coal-fired power plants in 2023 by state

Top 10 States: