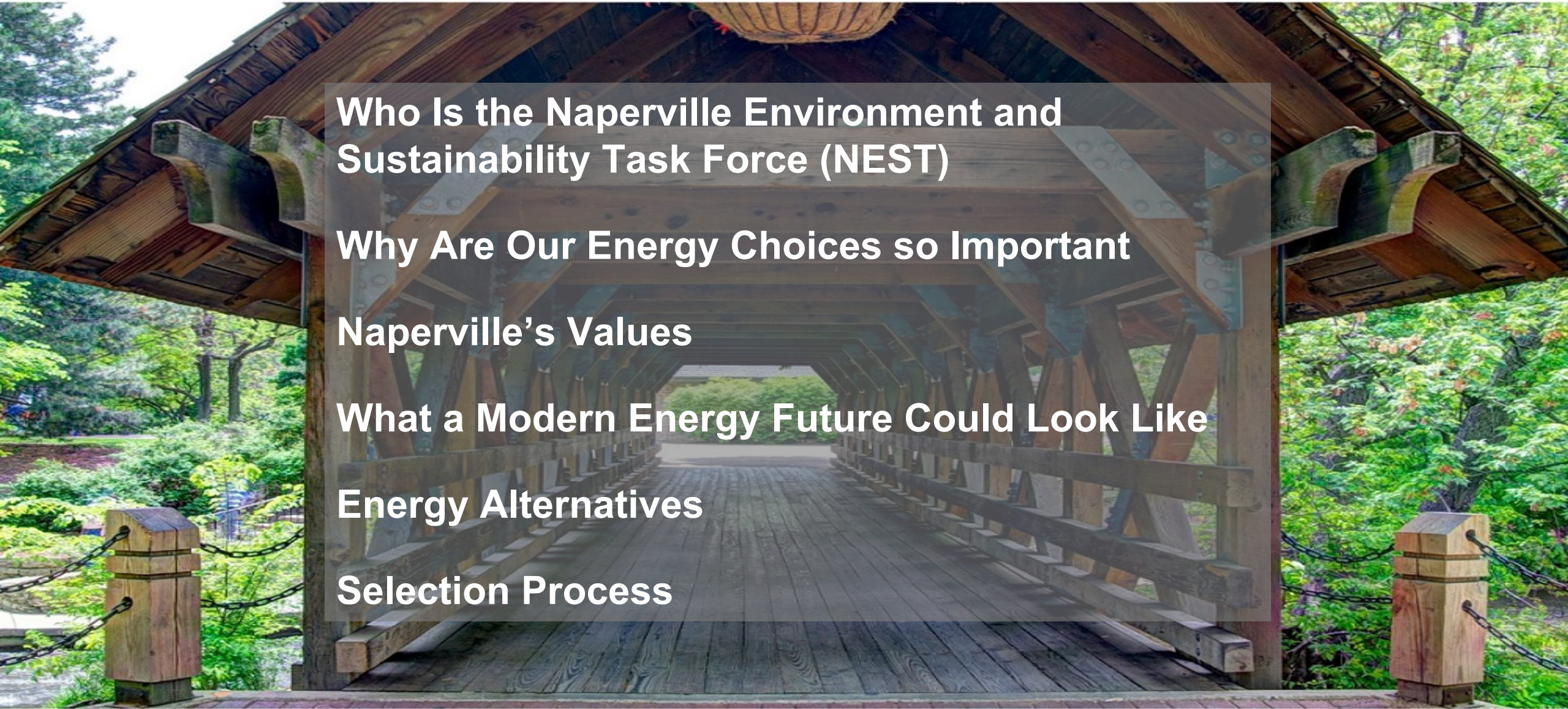

Naperville's Path to a Cost-Effective, Sustainable Energy Future

Agenda



- Who Is the Naperville Environment and Sustainability Task Force (NEST)
- Why Are Our Energy Choices so Important
- Naperville's Values
- What a Modern Energy Future Could Look Like
- Energy Alternatives
- Selection Process

Goals

Introduce NEST as a key partner to plan our energy future

Remind everyone that Naperville has both an obligation and an opportunity to address climate change

Shed light on opportunities that have not yet been addressed by IMEA or CES

Advocate for a transparent process that involves multiple stakeholders and experts before any recommendations are made

Who Is the Naperville Environment and Sustainability Task Force

NEST Mission

The Naperville Environment & Sustainability Task Force assists, informs, and advises city government, residents, and businesses to identify, prioritize, and implement sustainability initiatives and greenhouse gas reduction, with the goal of creating a sustainable, resilient, carbon-free future for Naperville.

Overview of the Task Force

Task Force Composition

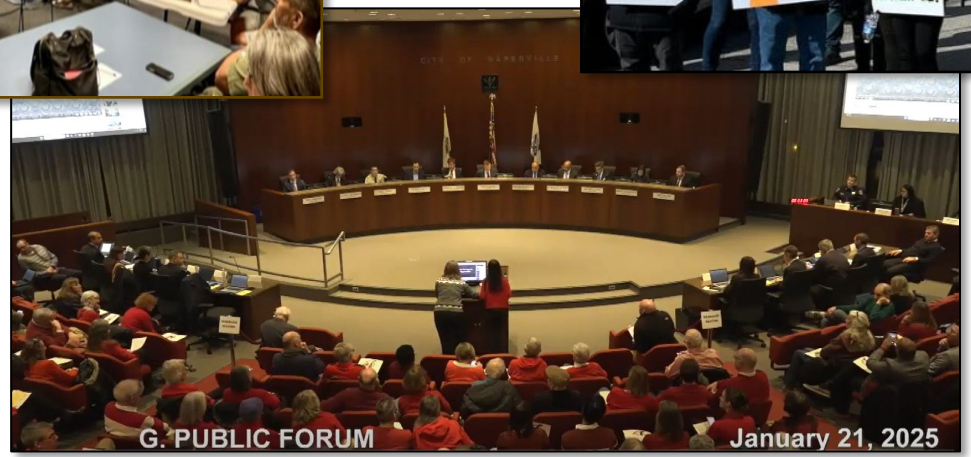
The task force **includes environmental experts**, **city officials**, and **community members**. Many members have energy, engineering, procurement, and science backgrounds and work in related fields.

Research-Based Advice

NEST are **advisors to the City** of Naperville. We bring expertise, do extensive research, back our advice with evidence, and have the **best interests of the community** at heart.

Sustainability Goals

The task force's focus is to enhance Naperville's environmental practices through effective sustainability strategies.

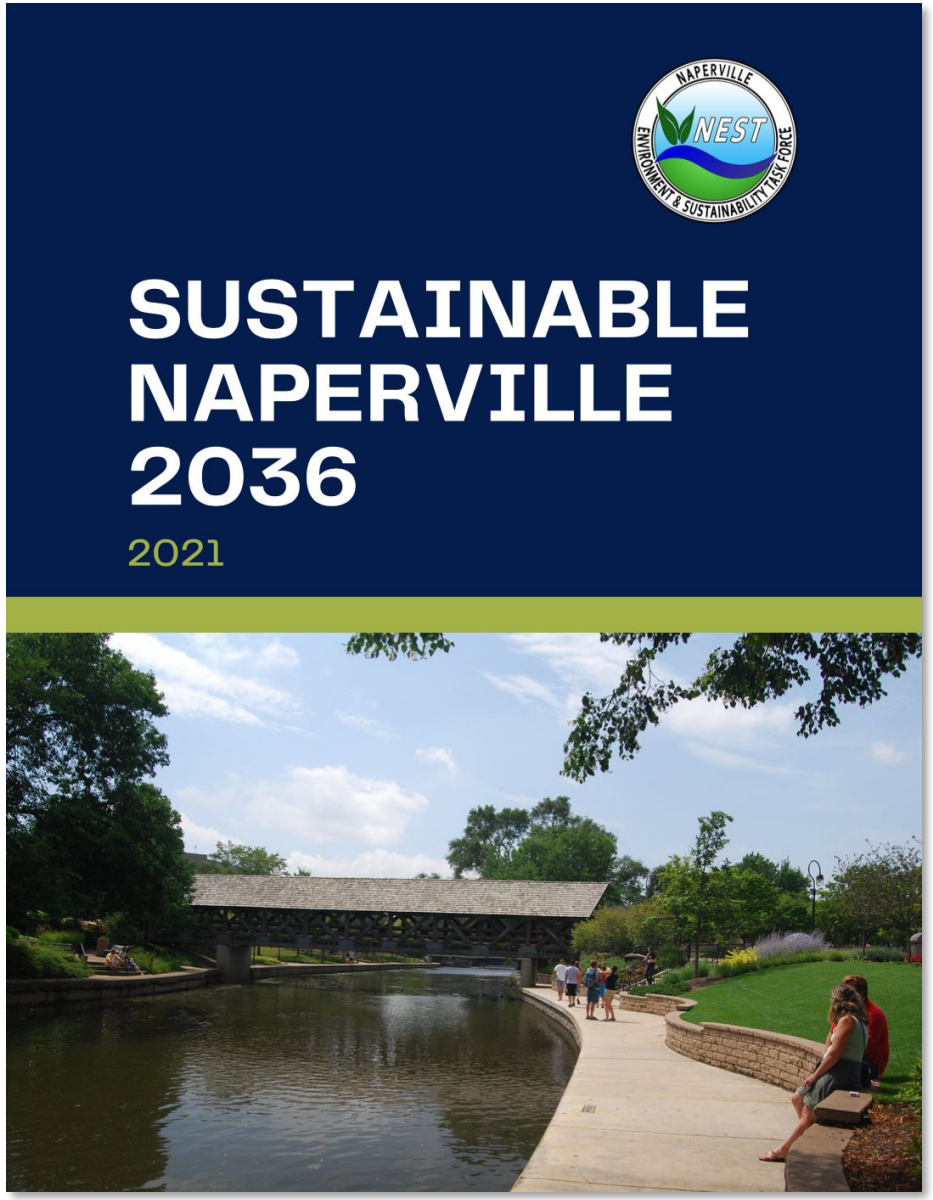


Sustainable Naperville 2036

Adopted at a City Council workshop in August 2021

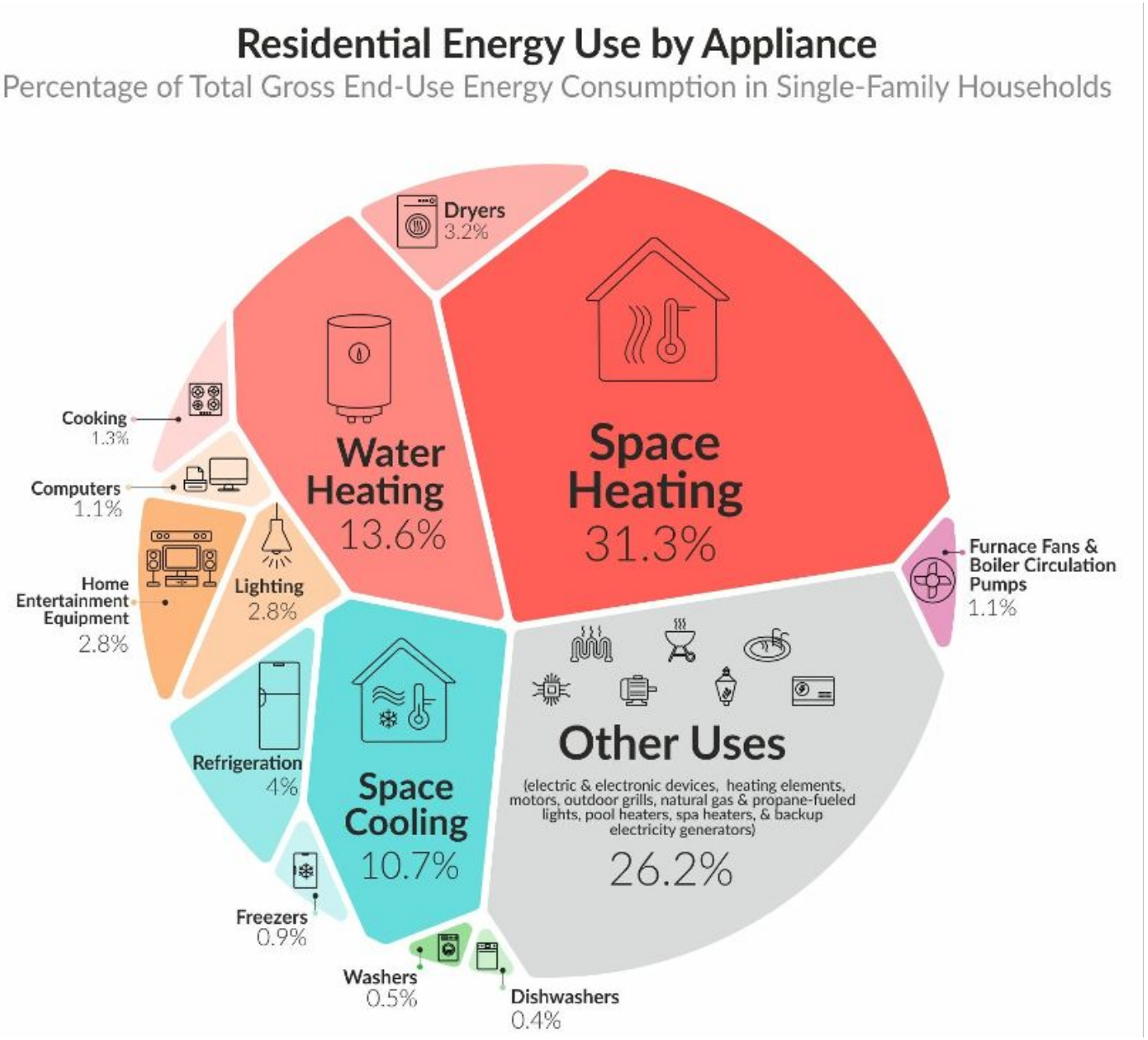
Establishes targets for greenhouse gas reduction, including 60% reduction by 2036 and 100% by 2050

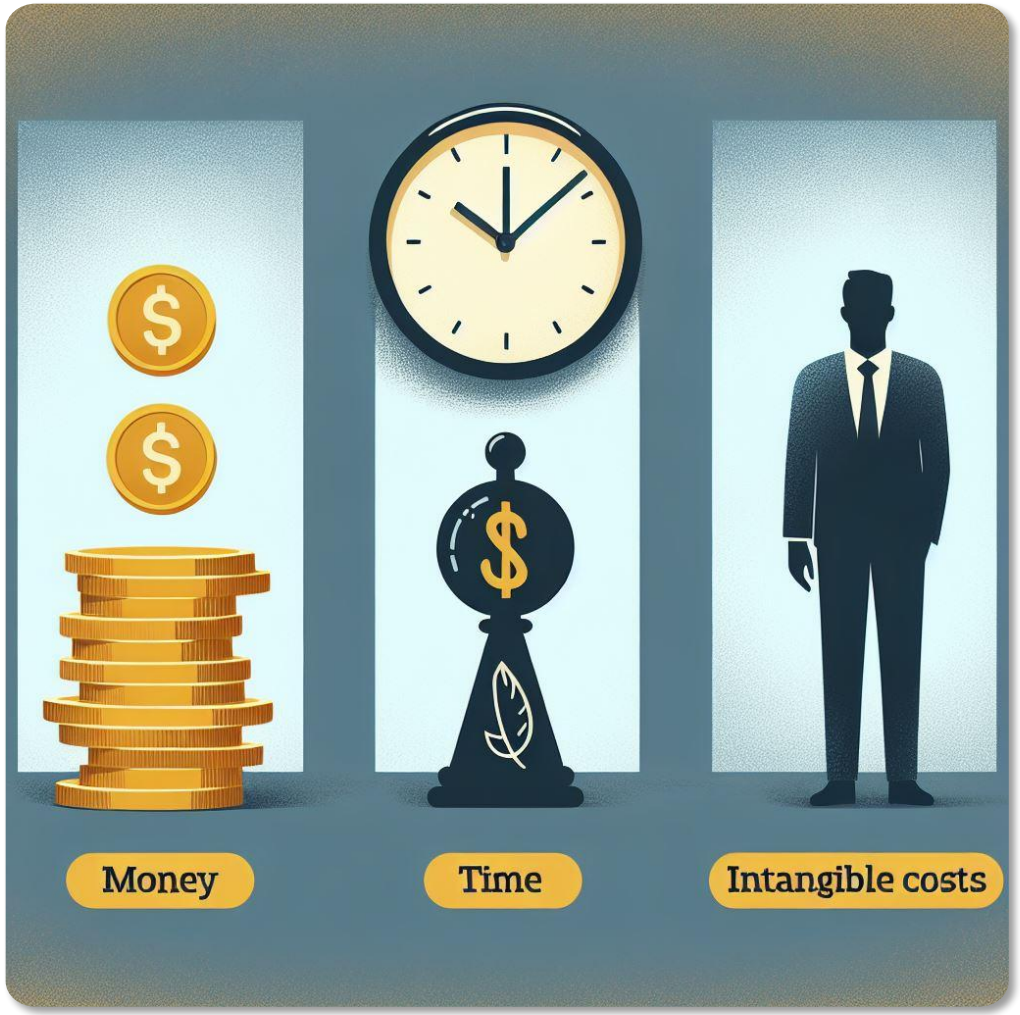
50 NEST members spent over 5,000 hours working with the City Council on the Sustainable Naperville 2036 plan



Why Are Our Energy Choices so Important

Necessity of Energy Usage





Costs associated with energy benefits

- Every benefit has a cost
  - Costs can be monetary
  - Costs can be time-related
  - Costs can be intangible, such as environmental damage or harm to people
- Quantifying intangible costs
  - Some costs are harder to quantify in dollars
  - Intangible costs are still very real

If you burn coal, there will ALWAYS be pollution

Fly Ash Production

- Prairie State alone creates 325,000+ tons of fly ash annually

Fly Ash Contains

- Sulfur
- Arsenic
- Lead
- Mercury
- Uranium
- …

IMEA's Coal Pollution Causes Serious Health Issues

Broad Range of Health Impacts

- Populations near the plant are especially affected
- Small amounts of mercury can cause **neurological issues**, especially in children.
- SO_2 and NOx contribute to **respiratory disease**
- Includes various follow-on health issues

Monetary Costs

- Challenging to assess due to **healthcare expenses**
- Lost productivity adds to the complexity

Human Suffering and Death

- Question of assigning a price to human suffering

Burning Coal Contributes to Climate Change

Coal is mostly carbon. When you burn it, you get mostly CO_2

The Role of CO_2
CO_2 molecules are particularly effective at absorbing infrared radiation, which enables them to trap heat.

Human Activity & Increased CO_2
Human activities, especially the burning of fossil fuels (coal, oil, and natural gas), release large amounts of CO_2 into the atmosphere.

Enhanced Greenhouse Effect
This increased concentration of CO_2, along with other greenhouse gases, amplifies the natural greenhouse effect, resulting in a warming of the planet.

Settled Science that CO_2 emissions cause climate change

Impact of Climate Change on Naperville

(Happening Now)

Increase in Severe Weather Events

- Higher frequency and severity of extreme weather
- Rapid and extreme temperature swings

Stress on Infrastructure

- Affects transportation systems
- Impacts energy networks
- Challenges water supply systems
- Disrupts data infrastructure

Associated Costs

- Damage repair expenses
- Higher insurance rates

The True Cost of Coal

Prairie State Coal Plant

Global Impact of Coal

Coal burning has cumulative effects that transcend borders, impacting everyone. Its consequences are felt worldwide.

Healthcare Financial Burden

Healthcare costs are escalating due to climate-related health issues.

Rising Infrastructure Costs

Infrastructure resilience is increasingly expensive as climate impacts worsen over time.

Insurance Expenditure Increases

Insurance costs rise due to heightened risk from climate-related disasters and impacts.

High Cleanup Costs

The financial burden for cleanup after coal pollution can escalate quickly and unpredictably.

Naperville's Values

We share similar concerns about the complexity and uncertainty of our future

Cost

Balance the drops in the cost of new technologies like solar and battery against the increases in demand from data centers, AI, electric vehicles, and heat pumps.

What Environment We Are Leaving Our Kids

2024 CO_2 emissions hit another record high. 2024 was the hottest year in human history. 2024 set a record for the most solar added to the U.S. grid. How will this mix of factors impact our kids' future?

Weather Disasters

In 2024, the U.S. had more billion-dollar weather disasters than any year in history. Illinois wasn't immune, as it also had more of those storms than any year in history. The heat is causing more droughts and wildfires. How much worse will this get? How much more will improving our infrastructure resiliency cost? What will be the impact of our electricity decision?

Naperville Values: What Does Our Community Want?

City of Naperville

"**Sustainable** approaches to providing local government services help ensure a higher **quality of life for future generations**."

It exhibits these values through our Sustainable Naperville 2036 plan

First Congregational Church of Naperville

"called to care for God's creation"

It exhibits this value through their call for divesting from fossil fuel companies

School District 203

The District has a value to be a good "**Global Citizen**" and "Responsibility to be ethical." It exhibits this value by creating a "**Carbon Action Plan** to Build a Sustainable Future"

Naperville Park District

One of the Park Districts core values is "**Promote sustainability** initiatives." It exhibits this value through its Dark Skies initiative

Naperville Values:
What Does our Business Community Want?

NOKIA

Sustainability goals:

- Achieve **net-zero** greenhouse gas emissions across its value chain **by 2040.**
- Commit to being a leader in energy efficiency and circular practices, reducing GHG emissions and promoting sustainable solutions.
- Aim for **100% renewable** electricity in its facilities **by 2025**.

Nokia is divesting from fossil fuel companies

ECOLAB

Sustainability goals:

- **Halve** absolute Scope 1 and 2 **emissions by 2030**, from a 2018 base year.
- Reduce absolute Scope 3 emissions by 25% from a 2022 base year.
- **Reach net-zero emissions** across its value chain while reducing absolute Scope 1, 2, and 3 emissions by 90% **by 2050.**

Mondelēz International

Sustainability Goal: To be **net-zero by 2050.**

Progress: In 2023, **48%** of electricity at its manufacturing sites came from **renewable energy** sources, up from 40% in 2022.

Will Corporations Want to do Business in Coal-Powered Cities?

We All Share Common Values

Care About the Quality of Life for Future Generations

Leverage Ingenuity and Innovation to Address the Crisis

Shield the Most Vulnerable from Global Warming and Higher Electricity Costs

What a Modern Energy Future Could Look Like

What is Possible?

Explore More Options

We have choices that are both fiscally and environmentally responsible, which have not been addressed by IMEA or CES.

Leverage What Others are Already Doing Today

Other communities have already transitioned to cleaner, less expensive power.

Reduce Risk

Address the uncertainty of increased data center demand, technology changes, 30-year lock-in, and the regulatory environment by exploring alternatives.

Salt Lake City, UT

PacifiCorp's 2023 plan advances a net-zero future

MARCH 31, 2023

PORTLAND, Ore. — PacifiCorp filed today its 2023 Integrated Resource Plan with the six state utility commissions in the company's service area, advancing its path to net-zero emissions.

Energy Options

Rocky Mountain Power/PacifiCorp offers customers the choice to continue with coal or switch to renewable energy sources.

Legislation Impact

Legislation in 2019 enabled towns and consumers to choose their energy mix, promoting the adoption of renewable energy.

Results and Adoption

The initiative establishes a framework for evaluating the adoption of renewables versus coal energy by consumers.

Future Considerations

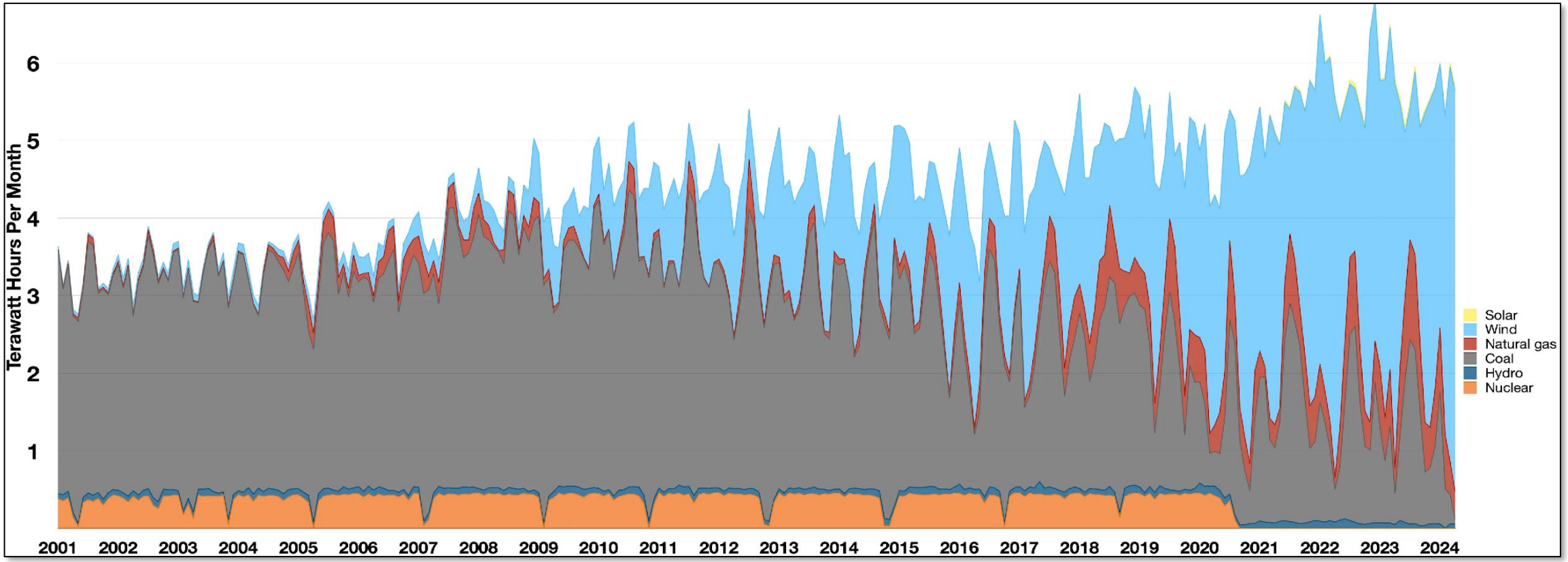
Give consumers control of their energy mix choice

Iowa

Local Control and Benefits

"Not only has Iowa's reliance on fossil fuels been decreased due to the commitment to wind energy, but it has also resulted in the creation of employment and promoted **economic development** in the area of renewable energy." – The Daily Iowan

In 2024, **Naperville's** electricity cost was **~20% more than** Iowa's



Aurora, IL

	Naperville	Aurora
Utility Company	Naperville Electric Utility	Com Ed
Electric Supplier(s)	IMEA	Constellation, Direct Energy, Green Mountain Energy, Smart Energy, Community Solar Platforms, etc.
Peak Shaving	No	Yes
Virtual Power Plants	No	Yes
Utility Scale Battery Storage	No	Yes
Incentives		
Air Source Heat Pump	$600	Up to $1,400
Geothermal Heat Pump	$600	Up to $6,000
Induction Cooktop	N/A	Up to $150
Smart Thermostat	$50	Up to $100
Window Replacements	$2,500*	N/A
Insulation	$2,500*	N/A
EV Charger Incentive	$500*	$3,750

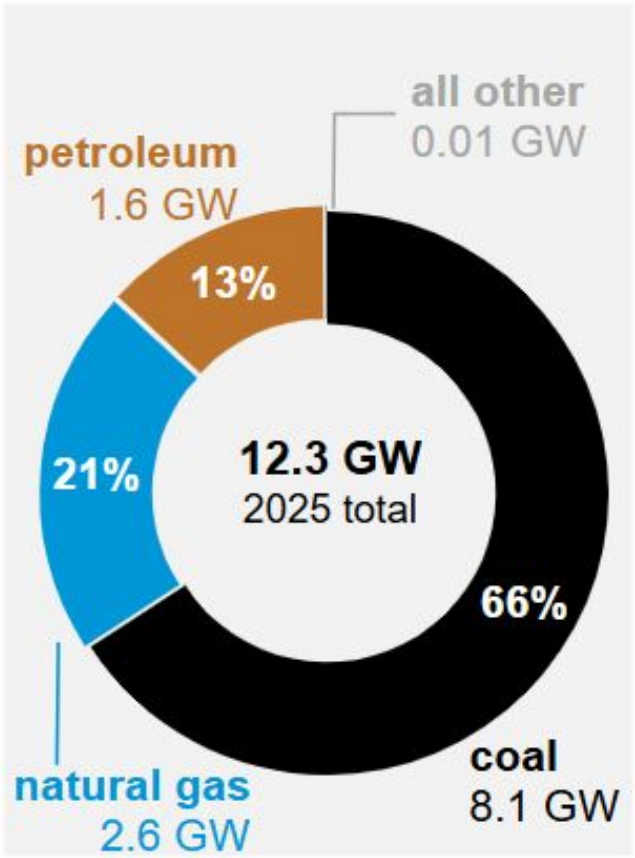
*Limited funds and availability each year. Only eligible if contributor to Renewable Energy Program for 5 years or more

Energy Alternatives

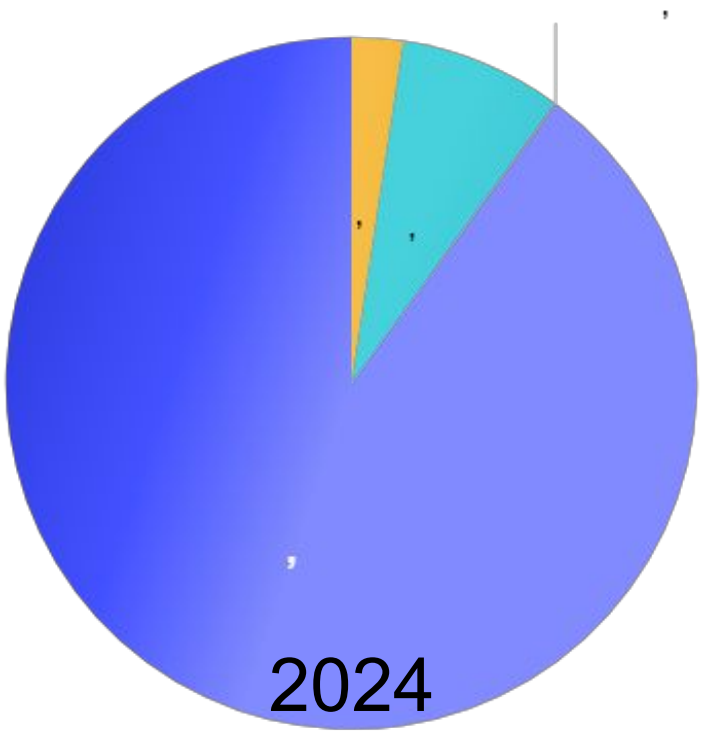
U.S. Grid Retirements in 2025

FEB 25, 2025

Planned retirements of U.S. coal-fired electric-generating capacity to increase in 2025



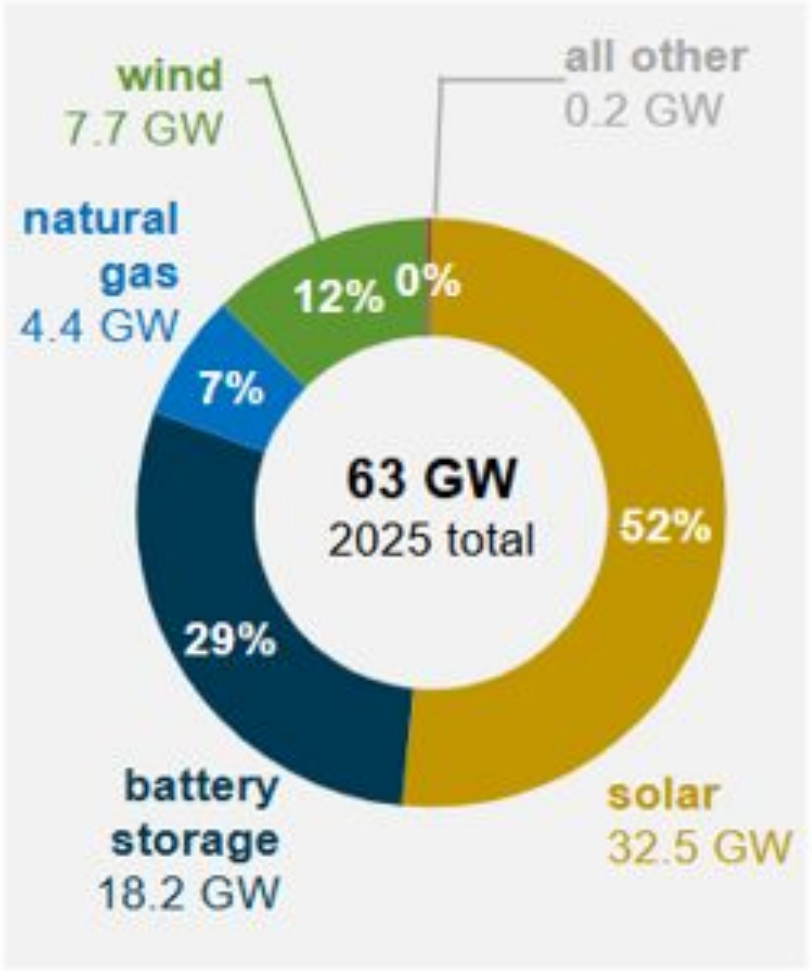
What Is Being Added to the Grid



FEBRUARY 24, 2025

eia

Solar, battery storage to lead new U.S. generating capacity additions in 2025



Fastest Growing Because It Is the Cheapest

The Guardian

US

News | Opinion | Sport | Culture | Lifestyle

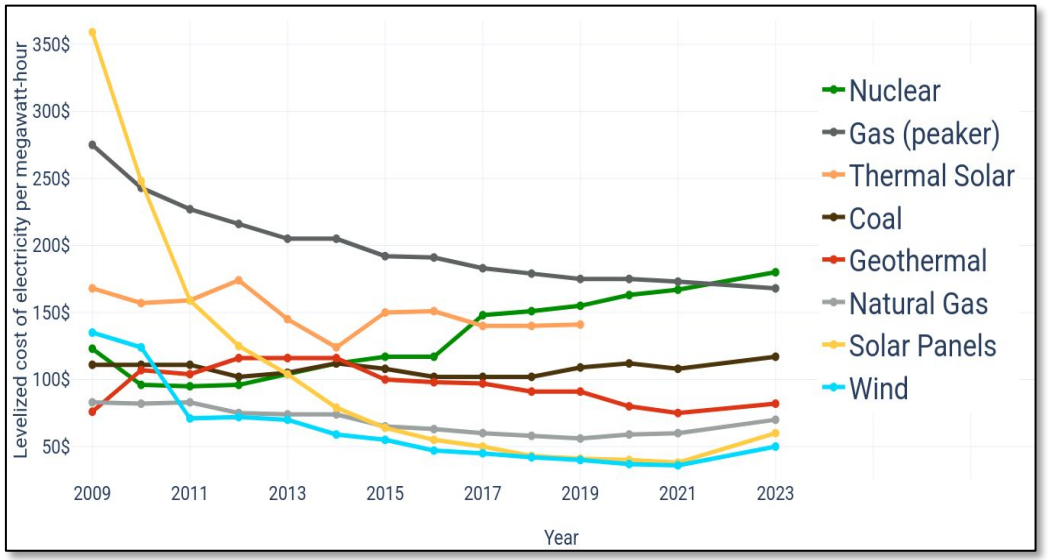
Environment | Climate crisis | Wildlife | Energy | Pollution | Green light

US news

This article is more than 2 years old

US renewable energy farms outstrip 99% of coal plants economically – study

It is cheaper to build solar panels or cluster of wind turbines and connect them to the grid than to keep operating coal plants



Levelized Cost of Electricity

Clean energy costs to continue to fall this year, report says

By Reuters

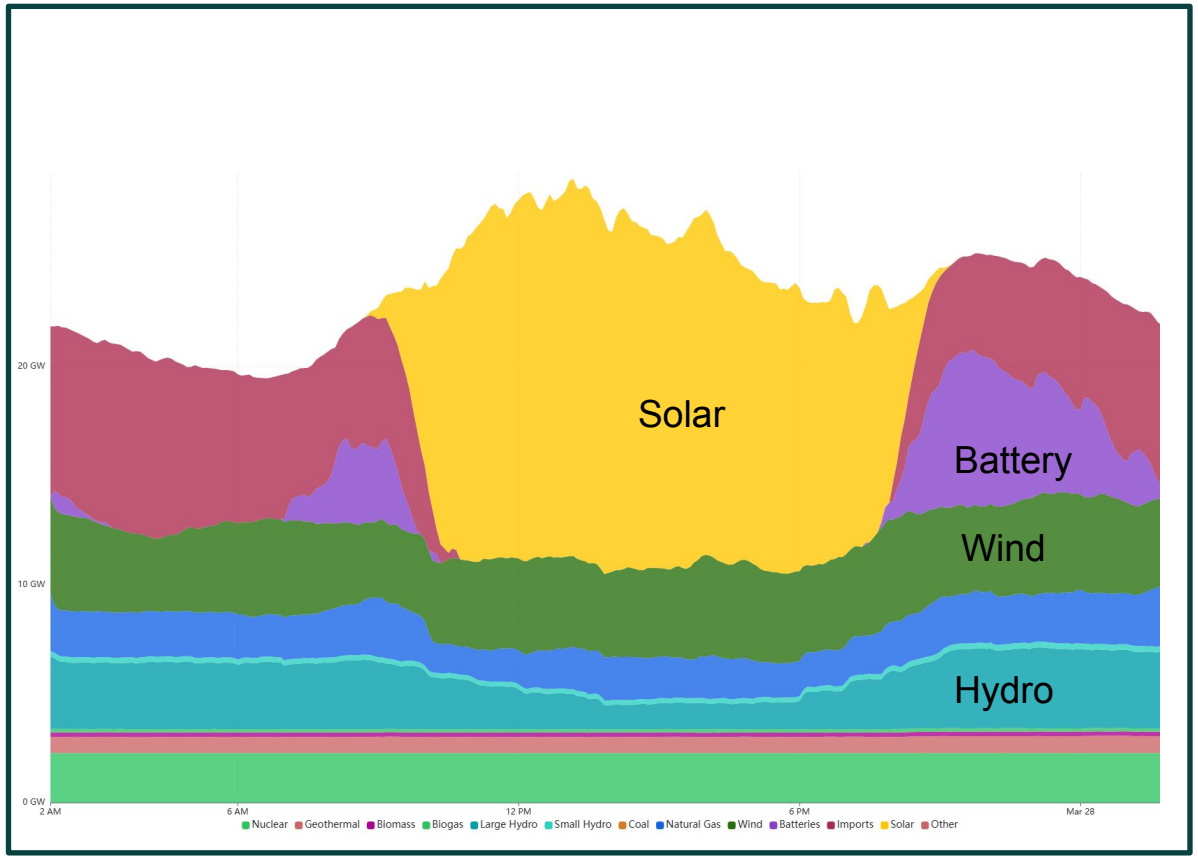
February 6, 2025 9:09 AM CST · Updated 23 days ago

Aa

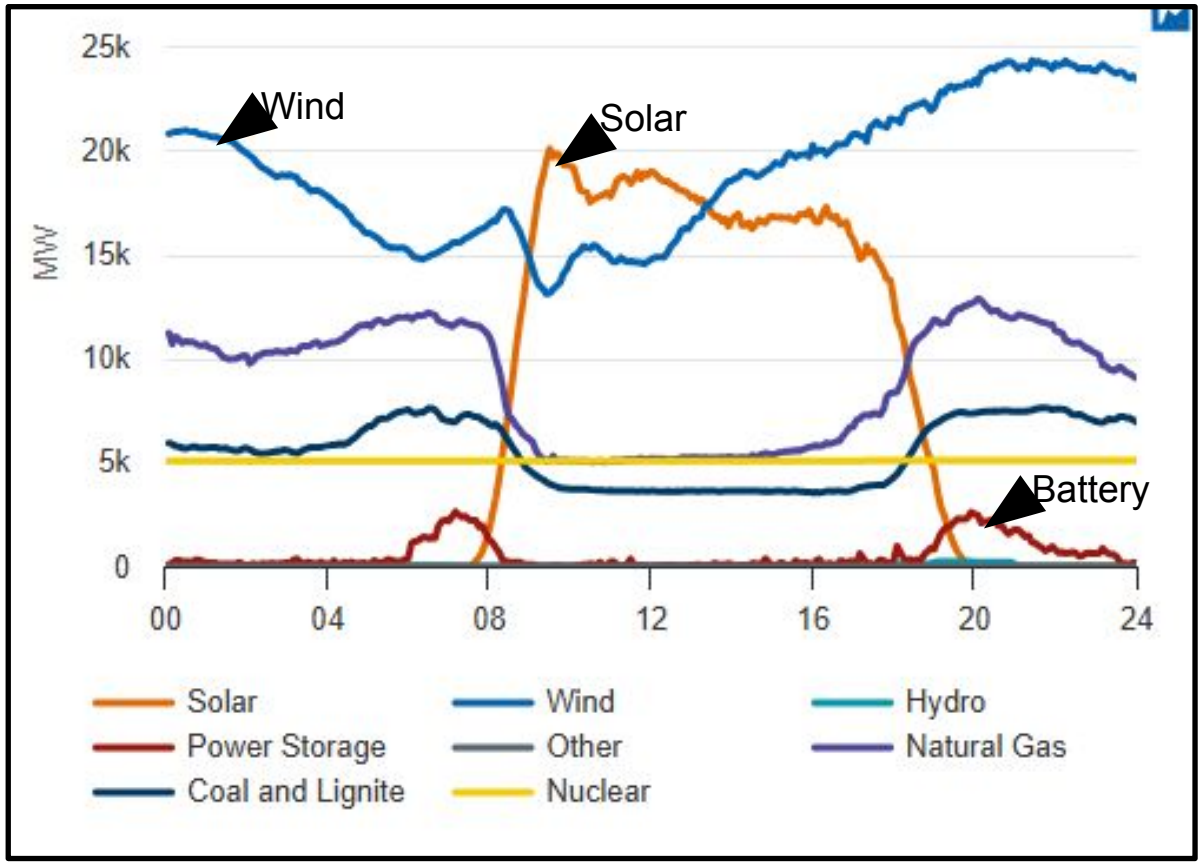
Bloomberg New Energy Finance forecasts **clean** electricity costs to fall by **22% to 49%** by **2035**

The Technology Is Available Today

California



Texas



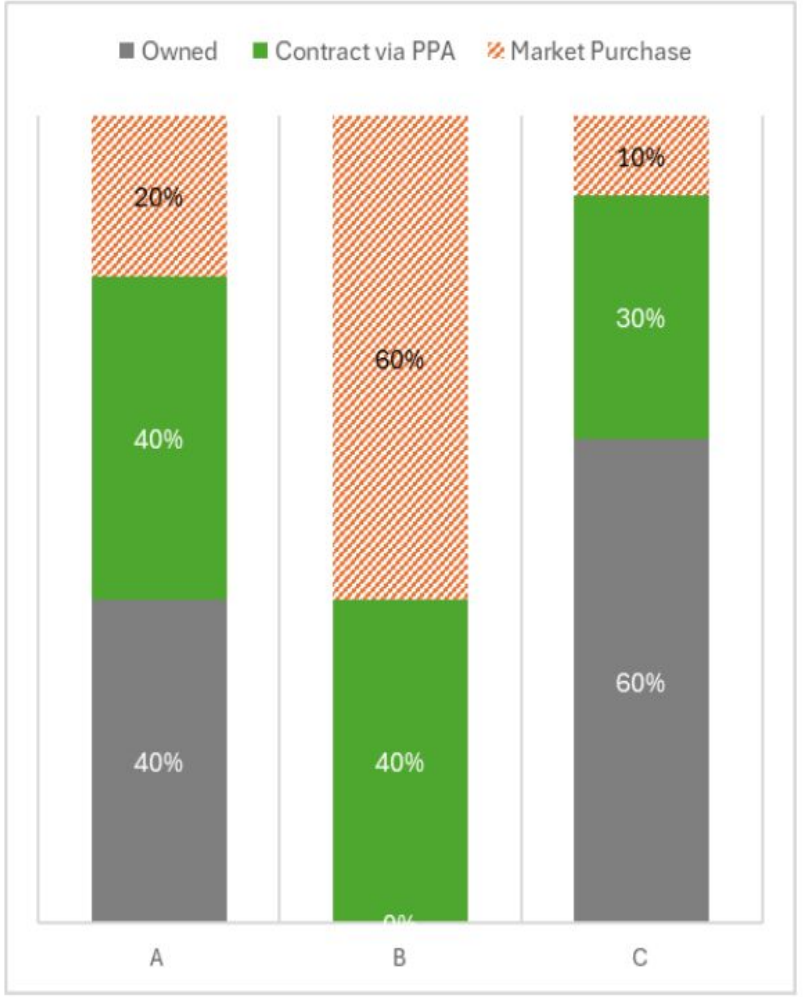
March 2025

We Have Countless Options

Market Purchase with PJM
The wholesale market is flexible and the energy is ready when demanded. But the market price fluctuates, making rate unstable.

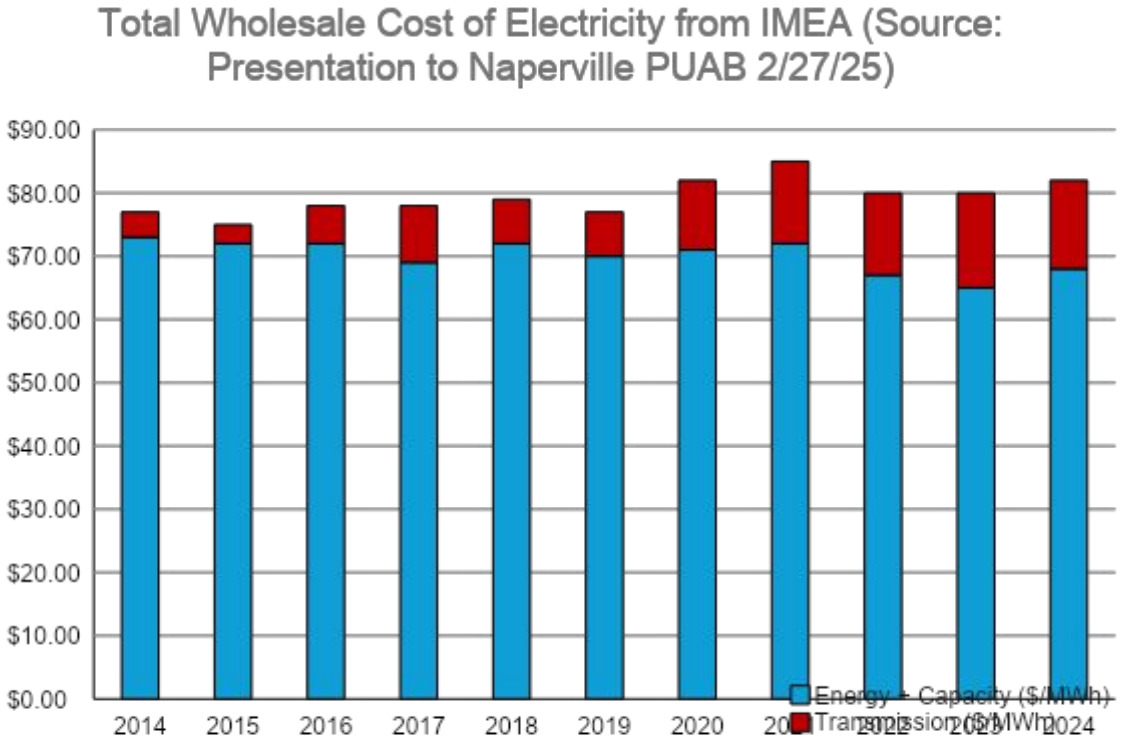
Contracted, e.g. Power Purchase Agreements
Prices are stable throughout the contracted years, but need to manage both contracting and execution of the projects.

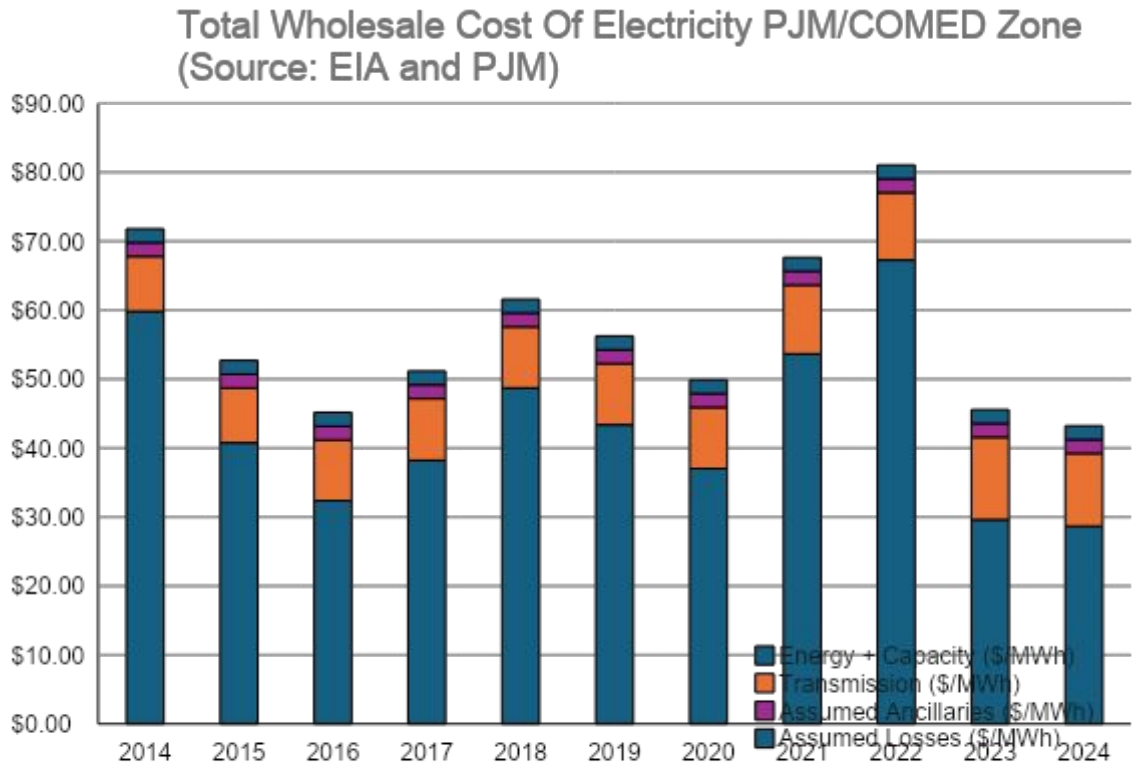
Owned, e.g. city-owned generation
Prices are stable if fuel and operational risks are well managed, but the need to manage ownership and operation of the assets.



Wholesale Market Purchase

Ratepayers could have saved ~$300 million, but prices would have been less consistent





City-Owned Generation

Lower Transmission Costs

Local generation has lower transition costs.

Economic Impact Closer to Home

Dollars spent on electricity stay in the community, creating jobs right here. Contributes to economic vitality.

Stable Pricing

We have 3% of the vote at IMEA but 35% of the risk. City-owned generation gives us freedom from JAA’s decisions and the wholesale market.

Commercial Power Providers (CPPs)

Prices are fixed in the contract

Contracts have shorter durations, providing more flexibility

Flexibility in Generating Assets

CPPs have large portfolios of options that cater to different energy needs and preferences.

Resource Acquisition

Power marketers have large fleets of energy resources, providing substantial leverage for acquiring new resources.

Flexibility in Contracts

The contracts also don't prevent us from doing PPAs or Peak Shaving.

Additional Services

CPPs offer the same full-provider services as IMEA, so **no need for additional staffing** in the Electricity department.

wnn world nuclear news

Home · Energy & Environment · New Nuclear · Regulation & Safety · Nuclear Policies · Corporate · Uranium

HOME / NEW NUCLEAR / CONSTRUCTION PERMIT GRANTED FOR MOLTEN SALT RESEARCH REACTOR

Construction permit granted for molten salt research reactor

Tuesday, 17 September 2024

TESLA

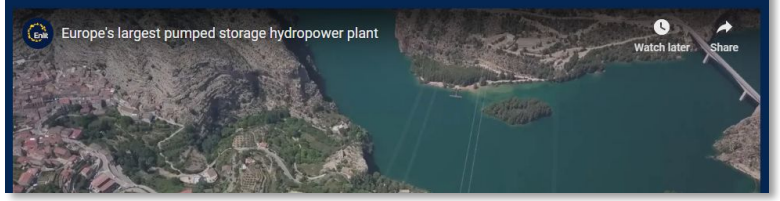
Tesla's California virtual power plant delivers 100 MW to help the grid

Fred Lambert | Jul 12 2024 - 9:35 am PT 54 Comments

Inside La Muela: Europe's largest pumped storage hydropower plant

Julia Kramer
24 March 2025

Hydropower | Decarbonisation | Europe & UK | Generation | Renewable Energy

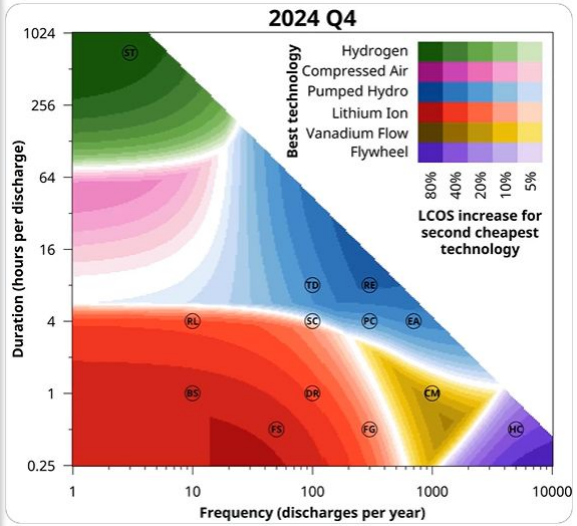


V2G law could grow California battery capacity 119 GWh in 2027: ClearView Energy

The new law gives the California Energy Commission more discretion to mandate bidirectional EV charging capabilities than a stricter version that failed last year, the independent research firm said.

Published Sept. 6, 2024

Energy Storage Options



Green Hydrogen Market Size Poised to Surge USD 165.84 Billion by 2033

According to Precedence Research, the global green hydrogen market size is calculated at USD 8.78 billion in 2024 and is expected to reach around USD 165.84 billion by 2033, growing at a CAGR of 38.77% from 2024 to 2033. The green hydrogen market is driven by government initiatives to promote a hydrogen economy and increased awareness about the benefits of using green hydrogen.

September 27, 2024 09:39 ET | Source: Precedence Research Follow

Metatron raises $2M to revolutionize energy with desktop-sized nuclear fusion

The Israeli startup claims its plasmoid-based technology could make traditional energy sources obsolete.

CTech 12:00, 25.03.25

Let's Not Repeat the Mistakes in Our Current Contract

Contract With No Defined Price

Towns pay a high price for power

By CHICAGO TRIBUNE
UPDATED: August 24, 2021 at 7:53 PM CDT

"five Chicago suburbs and more than 200 other Midwestern towns that made a big bet on coal."

"Naperville has been paying a monthly average of $75.04 a megawatt hour this year, for example. By contrast, Chicago pays about $56 a megawatt hour "

Locked into Long Term Contract

Clean coal dream a costly nightmare

By MICHAEL HAWTHORNE | mhawthorne@chicagotribune.com
UPDATED: June 18, 2018 at 6:51 AM CDT

"Sold on a promise of cheap, clean electricity, dozens of communities in Illinois and eight other Midwest states instead are facing more expensive utility bills after bankrolling a new coal-fired power plant that will be one of the nation's largest sources of climate-change pollution."

"The communities are locked into 28-year contracts that will require higher electricity rates to cover the construction overruns"

Can't Take Advantage of New Technologies

Prairie State coal-fired plant to cap costs

By CHICAGO TRIBUNE
UPDATED: August 23, 2021 at 3:39 AM CDT

"The Prairie State Energy Campus already has more than doubled in cost to $4.4 billion"

"cities are facing the prospect of higher rates to cover the plant's soaring cost overruns"

"Beware of a coal company promising you low-cost power"

Selection Process

Selection Process

- Transparent
- Competitive
- Inclusive of Stakeholders
- Best Timeline for Naperville

Use Best Practices and Our Municipal Code

Competitive Bidding

City contracts should generally be awarded by **competitive bidding** unless it is a small contract, sole-sourced, or an emergency situation.
(Naperville Code1-9B-4)

Market Conditions

- Keep **informed of current developments** in the field of purchasing trends, prices, market conditions, and new products.
- **Leverage research** done by other governmental jurisdictions, nationally recognized technical societies, and trade associations.
- **Utilize industry insights** from private businesses and organizations to benefit the city.

(Naperville Code 1-9B-3)

How Has Naperville Done This in the past?

Land Use Master Plan

- **6/2019** City Council/Board/Commission Workshop
- **3/2020** Public Hearing
- **1/2021** City Council Review, changes requested
- **12/2021** The PZC voted to continue review of the plan to 1/22
- **1/2022** The PZC reviewed and approved the plan
- **2/2022** City Council had the 1st reading of the plan
- **3/2022** City Council finally approved the plan

Affordable Housing Incentive Program

- **6/2021** City Council workshop
- **11/2021** Consultant has recommendation
- **4/2022** Presentation to Human Rights and Fair Housing Commission
- **7/2022** Presentation to PZC
- **10/2022** Presentation to council
- **1/2023** City Council approved plan, directed staff to draft ordinance
- **11/2023** Ordinance presented at Council

Key Steps to a Transparent & Competitive Process

Community Engagement

Importance of Early Stakeholder Engagement

Ensures public interests are represented

Involves identifying key stakeholders

Identify Engagement Approaches

Ensure transparency and inclusivity, especially for traditionally excluded stakeholders

Engagement Goals

Set measurable (SMART) engagement goals

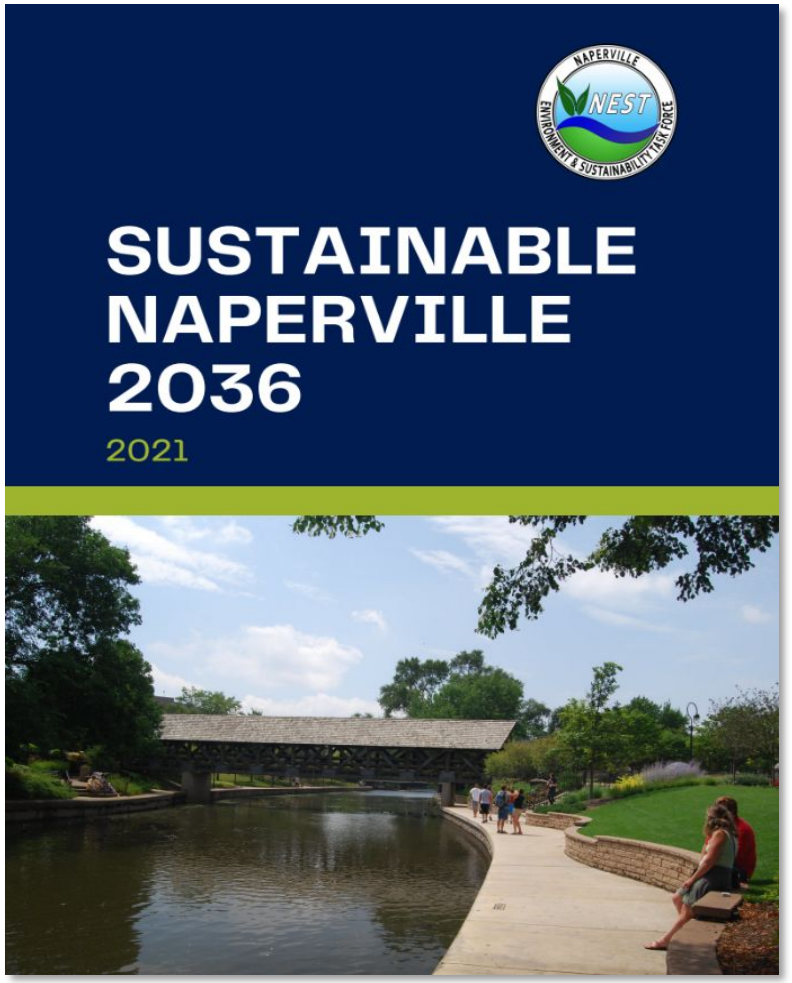
Validate Sustainability Goals

Naperville's 2036 Sustainability Goals

- Approved in 2021
- Need revisiting for alignment with next energy contract

Develop a Climate Action Plan

- Include renewable energy targets
- Provide a roadmap for reducing emissions



City Council Workshops

Importance of City Council Workshops

- Informed choices
- Connected to **long-term goals**

Workshops Process

- **In-depth analysis** of energy options
- Learn from **energy experts**
- Opportunity to ask questions & challenge assumptions

Identify Key Criteria

- Flexibility to control costs
- Clearly **specify costs**
- **Flexibility** in contract **duration**
- Flexibility for ratepayers to choose their energy sources
- **Innovative vendor** who can partner with us through the energy transition

Develop a Comprehensive Energy Strategy

1. Identify an energy specification team
2. Draft a strategy based on city council workshops' direction and engagement insights
3. Validate strategy with stakeholders including city council
4. Identify available energy options, including mixed-provider solutions

Rigorous Evaluation Process

Create RFPs with Clear Selection Criteria

- Based on strategy and input from public forums
- Consider cost, sustainability, flexibility…

Obtain and Evaluate Proposals

- Issue RFPs to multiple vendors for competitive proposals
- Foster public trust by being transparent and frequently communicating
- Score proposals against criteria

~~Select a Path~~ Forward

Create a combination of proposals that works best for Naperville

Engage with the city council and community to gather feedback and adjust the proposed approach

Select the optimal path forward to achieve a sustainable and cost-effective energy future

Conclusion

Honor Naperville's Values

Commit to an Open and Transparent Process

Avoid Another Disastrous Deal

Questions and Conversation

Fernando Arriola
Dr. Paul Bloom
Ted Bourlard
Cathy Clarkin
Paul Deffenbaugh
Joe Hus
Theresa Hus