

ENERGY AND WATER BENCHMARKING REPORT

COOK COUNTY
BUREAU OF ASSET MANAGEMENT

20
24

Based on 2023 Calendar Year Data for County-Owned Facilities



COOK COUNTY
GOVERNMENT

LETTER

COOK COUNTY ENERGY AND WATER BENCHMARKING REPORT

ANNUAL UPDATE

Dear Cook County Resident,

Cook County continues to be a leader in promoting sustainable and efficient operations at its facilities. The Cook County Energy and Water Benchmarking Report is issued each year to track annual usage at County owned-and-operated facilities per a 2014 Benchmarking Ordinance.

This report provides valuable information to support President Toni Preckwinkle's goals for Cook County to be carbon neutral by 2050, to use 100% renewable electricity by 2030 and to support programs such as the Policy Roadmap.

The Bureau of Asset Management also introduced the Green Buildings Program to set a framework to ensure capital projects prioritize energy and water efficiency, which depends on benchmarking each year to reach performance targets. This benchmarking report helps support the Clean Energy Plan, introduced in 2020 and created as a framework to meet quantifiable energy and greenhouse gas reduction goals.

Highlights for the 2024 Energy and Water Benchmarking Report:

- 86% of the benchmarked properties reduced their energy usage over the last year
- 60% of sites reduced their greenhouse gas emissions among the benchmarked properties
- 47% of benchmarked properties reduced their water usage over the last year

Tracking these metrics each year is a step forward to meet energy, greenhouse gas emissions and water reduction goals as well as to target future renewable energy projects. We look forward to continuing to make progress in these areas for Cook County owned-and-operated buildings.

Sincerely,

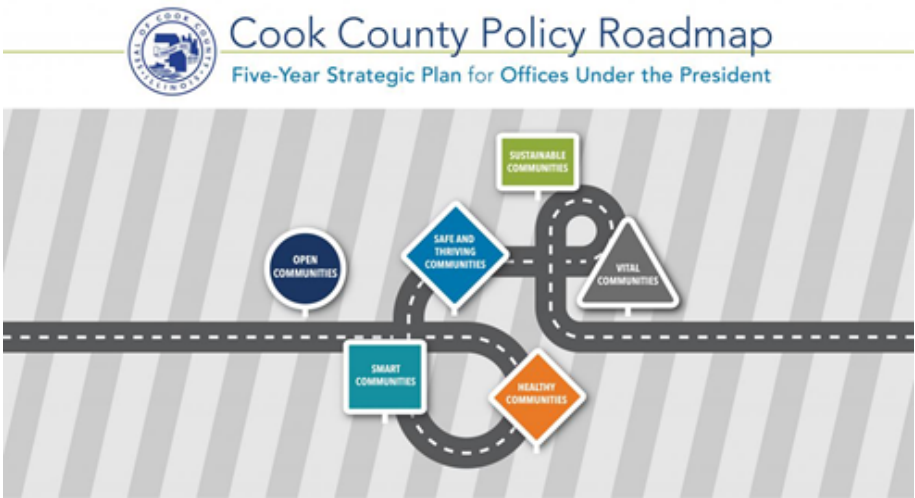
Elizabeth Granato
Bureau Chief

Kate Buczek
Energy Manager



POLICY
ROADMAP

Benchmarking helps reach and track policy roadmap goals, especially in the Sustainable Communities and Smart Communities Pillars













COOK COUNTY PROGRAMS BENEFIT FROM BENCHMARKING ENERGY AND WATER USAGE AND GREENHOUSE GAS EMISSIONS EACH YEAR. TRACKING THIS DATA IS NECESSARY TO MEET COUNTY-WIDE GOALS.

The 5 Pillars of the Green Buildings Program

Every change made to County properties should use these pillars and goals as part of the decision making process.

GREEN
BUILDINGS
PROGRAM

The 2023 Goals of the Green Buildings Program

Energy	Water	Waste	Technology	Community
				
Goal	Goal	Goal	Goal	Goal
Carbon neutral by 2050	Reduce water usage across all facilities	80% diversion rate by 2050	80% of buildings to incorporate smart building technology by 2025	Create a positive impact on County residents
Announce off-site renewable energy agreement that will cover about 25% of portfolio electricity use	Install new cooling tower on DOC Campus	Pilot composting at select buildings	Create roll out plan for Building Automation System upgrades	Use survey information to better understand and plan for EV adoption
				

2023 Annual Summary

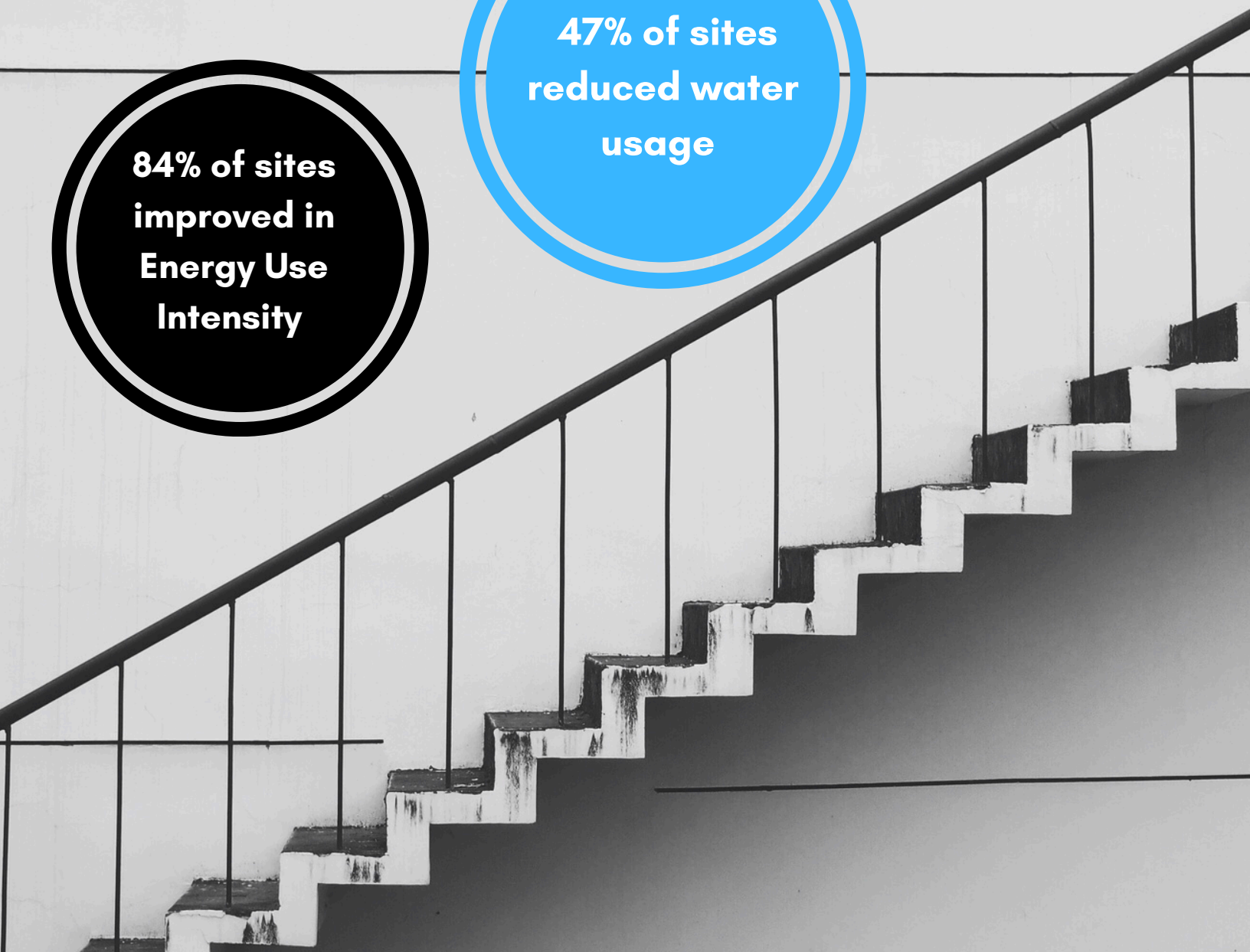
In 2023..

60%
of sites reduced
GHG Emissions

48% of buildings
improved
Energy Star Score

47% of sites
reduced water
usage

84% of sites
improved in
Energy Use
Intensity



STATISTICS

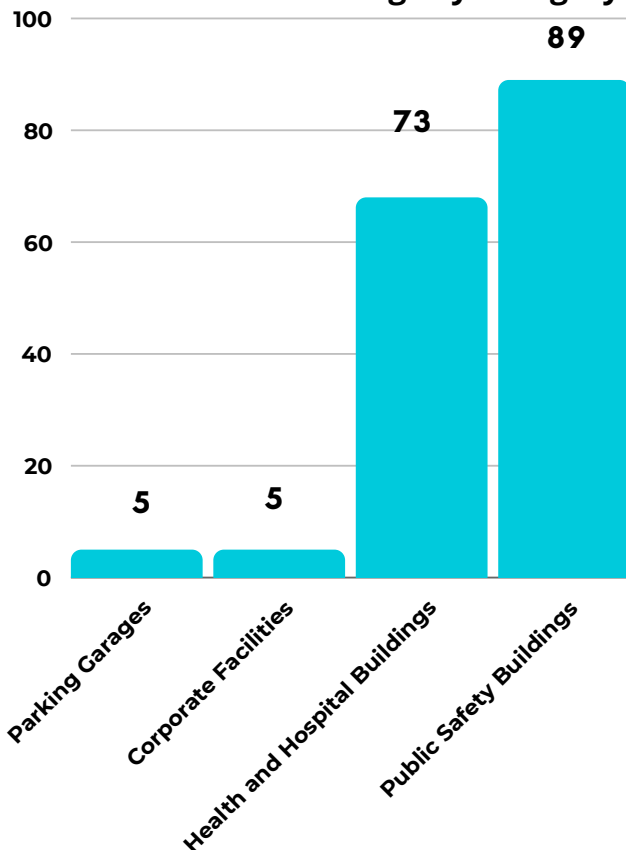
2023 ANNUAL UPDATES

COOK COUNTY'S BUILDING PORTFOLIO

Cook County's Energy and Water Benchmarking report helps to inform energy and water project decisions for increased savings, mark progress toward energy, water, and greenhouse gas reduction goals and track year to year changes. Cook County owned-and-operated facilities cover approximately 19 million square feet. Cook County's buildings aim to serve residents for County-supported needs from protecting citizens to promoting resilient and healthy communities.

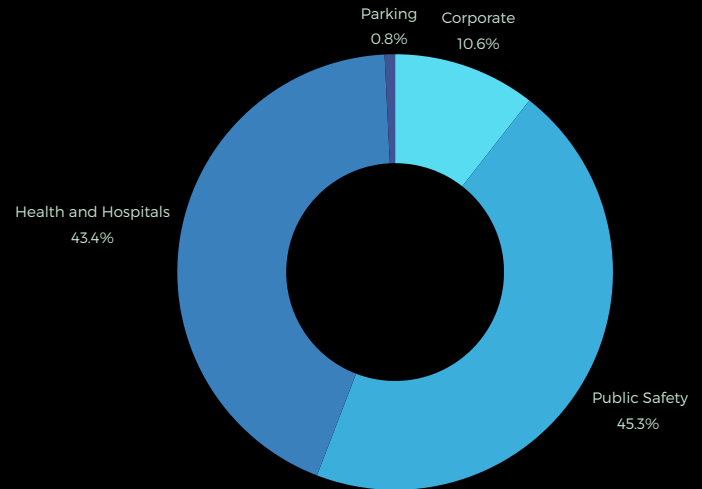
Changes to the portfolio: Hektoen, a former medical lab, was de-commissioned in 2019. Cicero Health Center's lease was terminated in February 2020. Near South Health clinic was vacated in early 2021. Five new health facilities were added: Arlington Heights Health Center(leased), Belmont-Cragin Health Center, Blue Island Health Center, N. Riverside Health Center(leased) and the CCHHS Professional Building.

Number of Buildings by Category



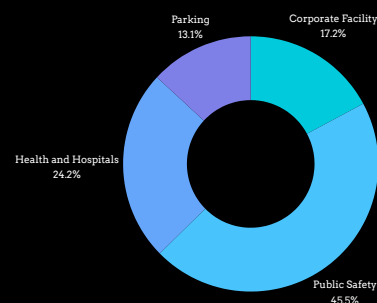
SOURCE ENERGY USE BY PORTFOLIO CATEGORY (IN KBTU)

Cook County has a wide range of buildings in its portfolio including Corporate Facilities, Public Safety buildings, Health and Hospital facilities and parking structures. Source Energy measures a weather-normalized use of energy for annual comparisons.



SQUARE FOOTAGE BY PORTFOLIO CATEGORY

Comparing the square footage by type (right) with the source energy used (above) can show how efficient buildings are across portfolio categories. For example, Health and Hospitals makes up 24% of the square footage but consumes 43% of Cook County's energy use.



WHICH FACILITIES ARE BENCHMARKED?

COOK COUNTY TRACKS 45 SITES IN THE ENERGY STAR PORTFOLIO MANAGER TOOL. SOME OF THESE SITES HAVE MORE THAN ONE BUILDING ON EACH SITE, FOR A TOTAL OF 172 BUILDINGS OVERALL.

SUCCESS STORIES

Energy efficiency projects and no-cost schedule changes save energy, reduce greenhouse gas emissions and reduce operational expenses for Cook County.

Examples of facilities with significant annual energy reductions from 2022 to 2023 include the Cook County Building and the Department of Corrections Campus.

1,437,000 KWH

estimated electricity usage saved at the Cook County Building

Upgrading variable frequency drives (VFDs) on all of the air handling units is estimated to save 1,437,000 kWh at the Cook County Building (pictured to the right)

OTHER SITES

Energy Efficiency Projects

- Department of Corrections' (DOC) new cooling tower is estimated to have significant energy and water savings which will be calculated next year
- DOC Division 11 lighting upgrade to LEDs is estimated to save approximately 798, 000 kWh



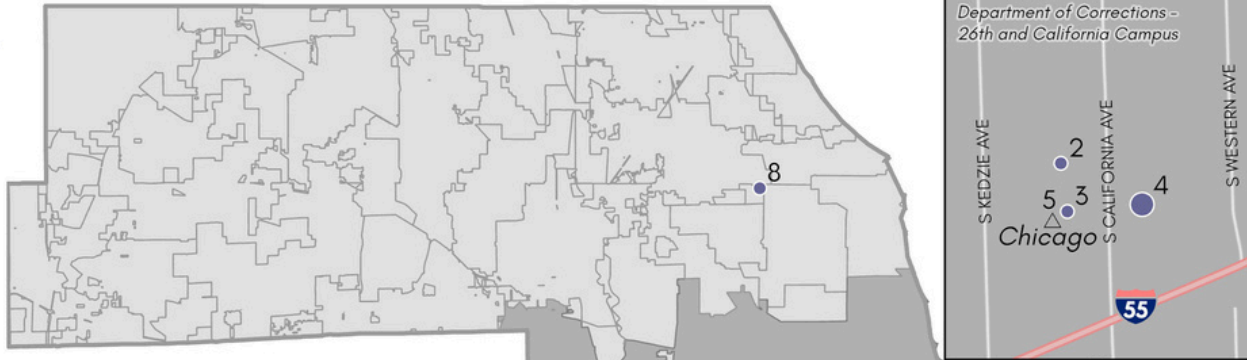
BETTER BUILDING GOAL ACHIEVER

One of the County's energy reduction goals is Cook County's participation in the Better Buildings Challenge, which involves a 20% reduction goal by 2025 from the 2013 baseline year data. 2022 marked achievement of that goal with a 25% reduction in portfolio energy use per square foot. The achievement of this goal was recognized at the 2023 Better Buildings Summit.

<https://betterbuildingssolutioncenter.energy.gov/partners/cook-county-il>



2023 Energy Efficiency Projects at Cook County Government Facilities



Map #	Project Type	Building Name
1	Variable Frequency Drive	County Building
2	Lighting Project	DOC Central Kitchen
3	Lighting Project	DOC Division IX
4	Lighting Project	DOC Division XI
5	Cooling Tower	DOC Powerhouse
6	Preheat Valves	Dunne Building
7	Lighting Project	Provident Hospital
8	Pumps and Motors	Skokie Courthouse
9	Insulation	Stroger Hospital
10	Lighting Project	Stroger Hospital

Cook County Facility Projects' Estimated Energy Savings

Natural Gas Energy Savings (therms)

■ 43,929

Electricity Savings (kWh)

● 82,227 - 362,069

● 362,070 - 798,000

● 798,001 - 1,437,000

△ Project Completed but Energy
Savings Unknown

Cook County Bureau of Technology
Geographic Information Systems (GIS) Division
Cook_eePrj2023_2024.pdf
7/12/2024

0 2 4 8 Miles

48%

**of properties
improved**

Over the last year, the
Energy Star Score improved
for 10 of the 21 sites that
qualify

75

**The minimum score
needed to achieve
Energy Star
Certification**

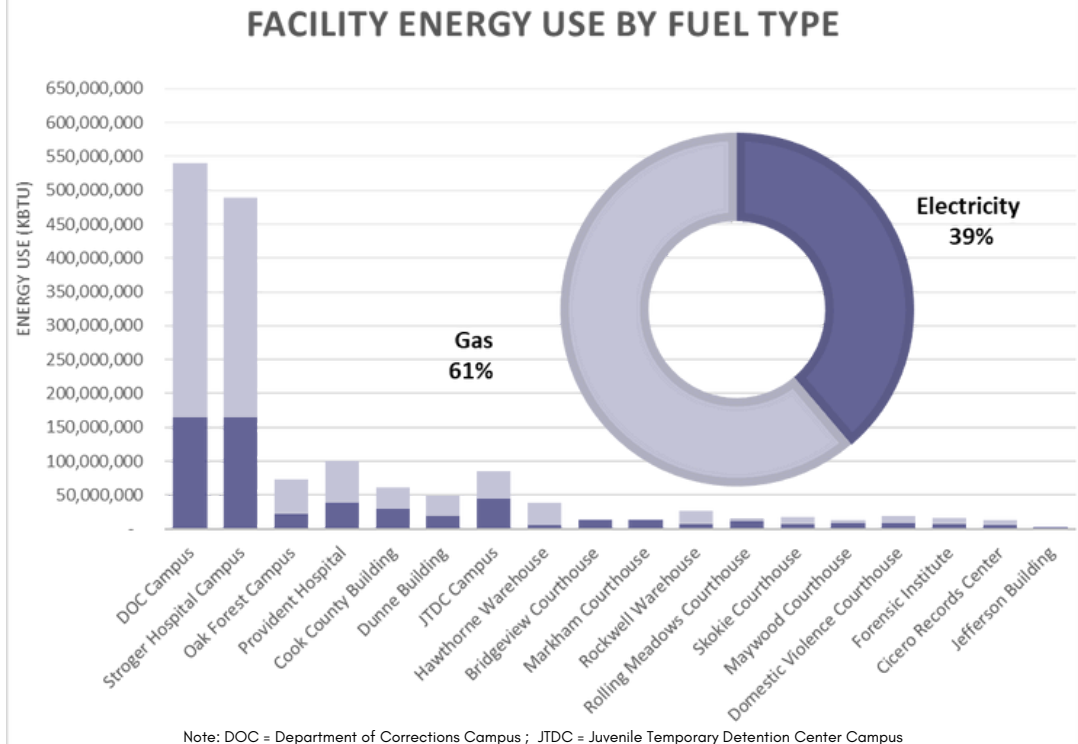
Top performers receiving an Energy Star Score above 75 (the certification threshold) include the George W. Dunne Administration Building, Skokie Courthouse, Markham Courthouse, Bridgeview Courthouse and Rolling Meadows Courthouse. Logan Square Health Center also improved due to occupancy changes.

Why does this matter?

An Energy Star Score allows for direct annual usage comparisons with weather impacts taken out of the equation. Buildings with unique usage patterns and campuses do not qualify for this scoring metric, but are still able to use normalized data for annual comparison. Source Energy Use Intensity (EUI) is the metric used for properties that don't qualify for an Energy Star Score. Of the 172 buildings benchmarked, 84% improved in Source EUI. This metric tracks the efficiency of energy use per area occupied in a building.

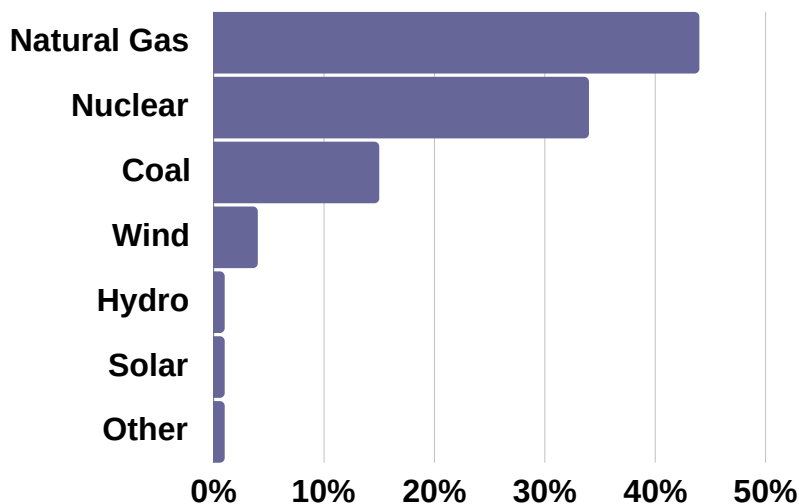
PORTFOLIO ENERGY USE

Cook County buildings have shifted to using more natural gas for energy needs with 61% of the energy use from natural gas and 39% from electricity in 2023. This energy distribution varies by building. Some facilities, such as the Jefferson building to the right of the graph, only use electricity. However, some other buildings, such as the Hawthorne Warehouse, use mostly gas to power operations.



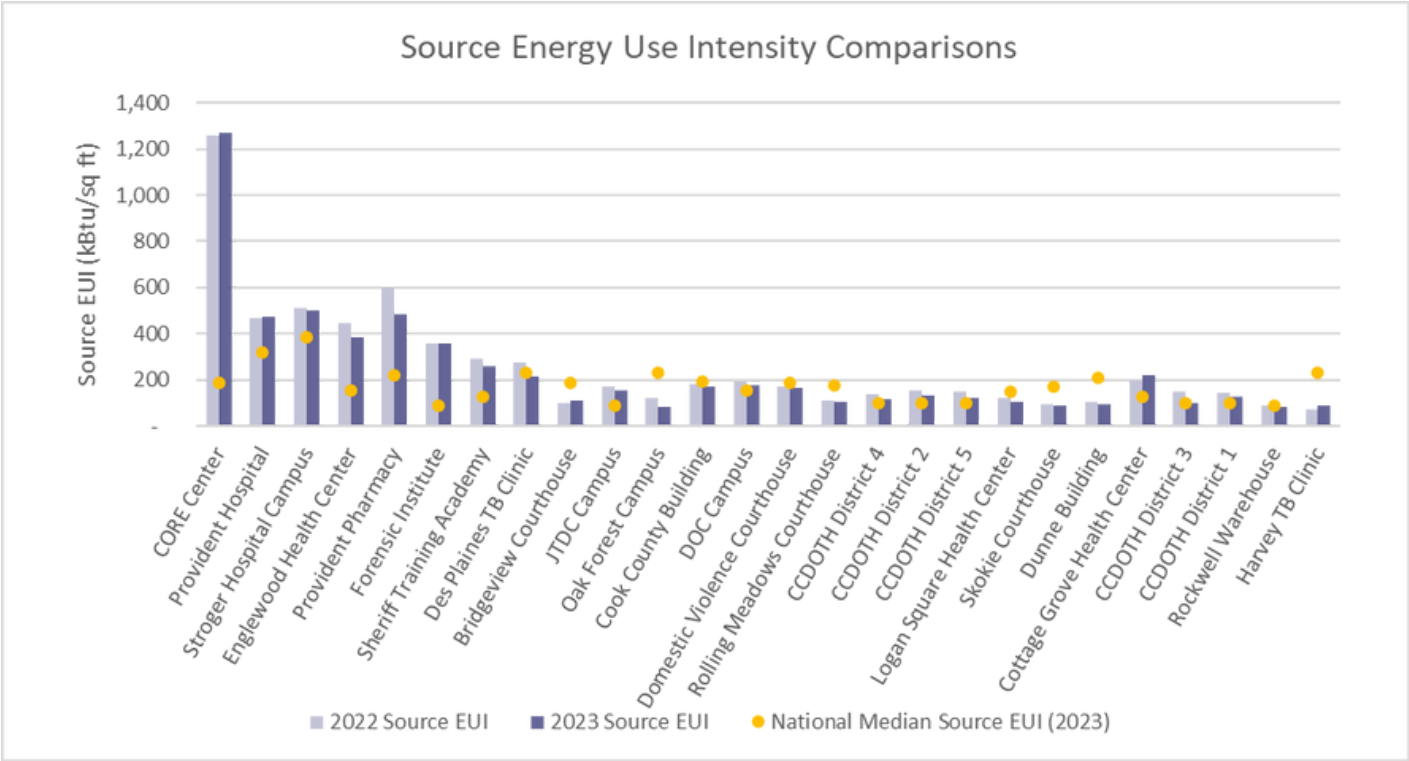
COOK COUNTY'S SOURCE ENERGY USAGE

Cook County's benchmarked buildings used **2,785,535,532 kBtu** in 2023, a 6% decrease compared to 2022. This was equivalent to a 4% reduction in electricity (kWh) and a 7% decrease in gas usage (therms). One new portion of the Better Climate Challenge goal is a 20% EUI reduction by 2034 across the County's portfolio. Overall, continued improvement in energy savings and project implementation will be needed for reaching energy reduction goals.



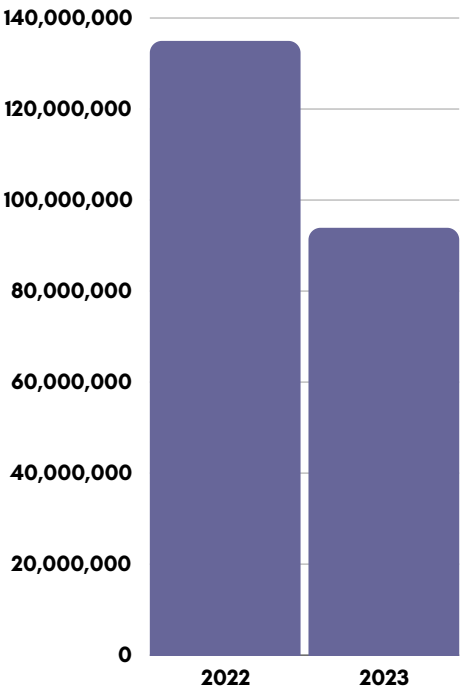
2023 ELECTRICITY GRID COMPOSITION (COMED)

The calendar year ending December 2023 had the following grid mix from ComEd, Cook County's electricity provider. Noteworthy points include that natural gas and nuclear make up the highest percentages of the total grid mix and both increased. Coal decreased compared to the previous year.



SOURCE ENERGY USE INTENSITY (EUI)

The graph above shows annual energy usage comparisons between 2022 and 2023. Source Energy Use Intensity (EUI) normalizes data to directly compare usage to indicate how efficiently buildings use energy per square foot of occupied space. Cook County buildings improved in Source EUI at 84% of the sites benchmarked in 2023. The yellow dots show the national median for a similar building type. About 44% of County sites performed better than the Median Source EUI in 2023.



SOURCE ENERGY USE (KBTU)

Source energy, measured in kBtu, includes both annual electricity and natural gas usage for a site. Specific values for each facility can be found in Appendix B. This chart highlights reductions in source energy use in kBtu for Oak Forest Campus, which reduced energy by 30% in 2023 compared to the previous year. Oak Forest Campus saved energy by optimizing the campus operations for occupancy and weather conditions. Other facilities that had significant reductions in total source energy usage include:

- LaGrange Vehicle Services (Highway Dist. 3) (-32%)
- Oak Forest Campus (-30%)
- Des Plaines TB Clinic (-22%)
- Sheriff Central Warrants (-19%)
- Provident Pharmacy (-19%)

Oak Forest Campus Annual Source Energy Use (kBtu)

GREENHOUSE GAS REDUCTION GOALS

- 45% reduction in greenhouse gas emissions by 2030 from a 2010 baseline
- 50% Scope 1 and Scope 2 reduction by 2034 from 2018 baseline
- Carbon neutral by 2050

60%

of benchmarked sites
reduced GHG emissions in
2023

CO₂E

139,829 metric tons

Greenhouse gas emissions are tracked in metric tons of carbon dioxide equivalent emissions or CO₂e. The total benchmarked emissions in 2023 were 139,829 metric tons of CO₂e.

This is based on the Energy Star emission factors which have not been updated as frequently, and may differ from other County reports.



Progress Toward Carbon Neutral

Cook County released a Clean Energy Plan to form a pathway to reach greenhouse gas emissions reduction goals and 100% renewable electricity for County-owned buildings. As of 2023, **Cook County met its first goal to reduce greenhouse gas emissions 45% by 2030** from a 2010 baseline ahead of schedule with a 49% reduction.

Mechanisms that have contributed to greenhouse gas emissions reductions since 2010 include energy efficiency projects, building automation system upgrades, solar installations at the Domestic Violence Courthouse and Bridgeview Courthouse, decommissioning properties, the building engineer energy challenges, natural gas efficiency projects and lower emissions from the electricity grid mix in the Midwest.

49%

Greenhouse gas reductions since 2010

8.9%

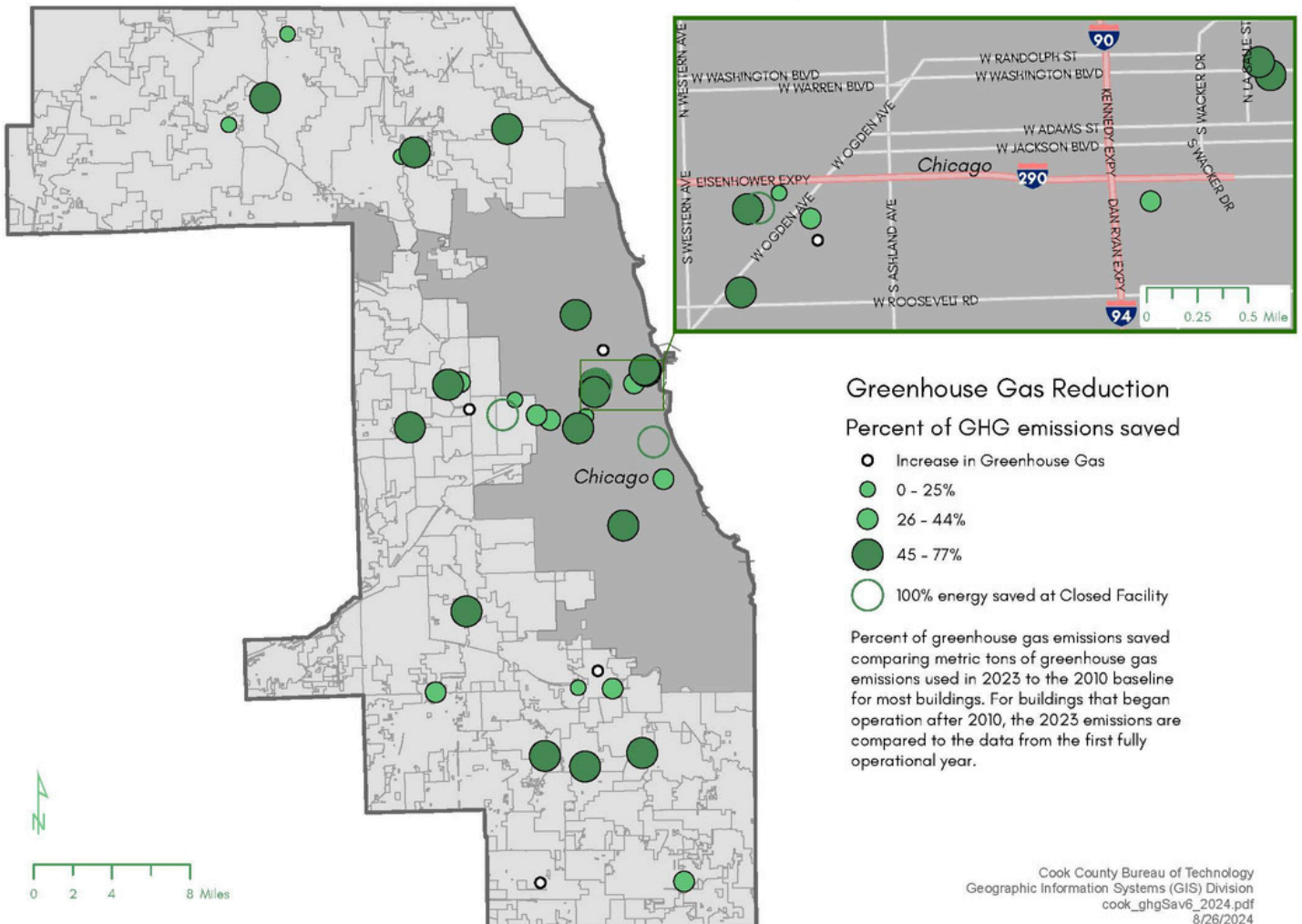
Annual portfolio decrease from 2022 to 2023

Cook County's Clean Energy Plan Progress Map

Cook County reached its first goal of a 45% greenhouse gas reduction from a 2010 baseline ahead of schedule (as of 2023 building operations data) with a 49% greenhouse gas reduction to date.

Properties in darker green have achieved at least a 45% reduction, marking a significant impact toward the achievement of the reduction goal.

Greenhouse Gas Reductions at Cook County Government Facilities

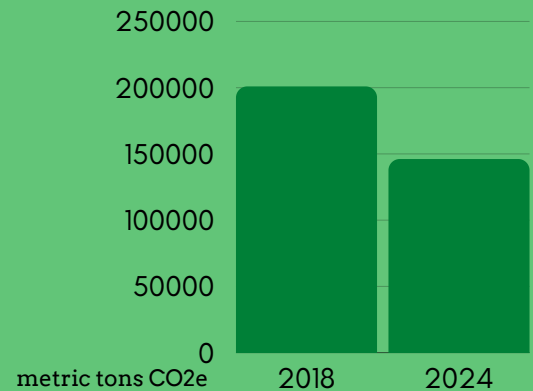


Cook County's GHG Inventory



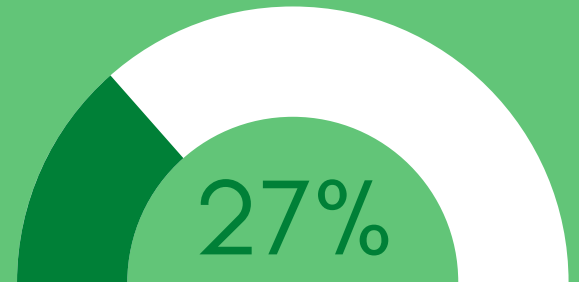
Cook County joined the Better Climate Challenge, which involves a new goal: 50% Scope 1 and Scope 2 GHG emissions reduction by 2034 from a 2018 baseline. To track progress toward this goal, we will be providing updates by scope to reflect additional transparency about Cook County's GHG reductions and progress toward this goal. We will still continue to track building, transportation, waste and water emissions, but will be reporting by scope for these metrics as well. Waste, water, commuting and leased buildings with no data transparency will be counted as Scope 3 emissions every few years.

Scope 1 and 2 Emissions



Reduction since 2018

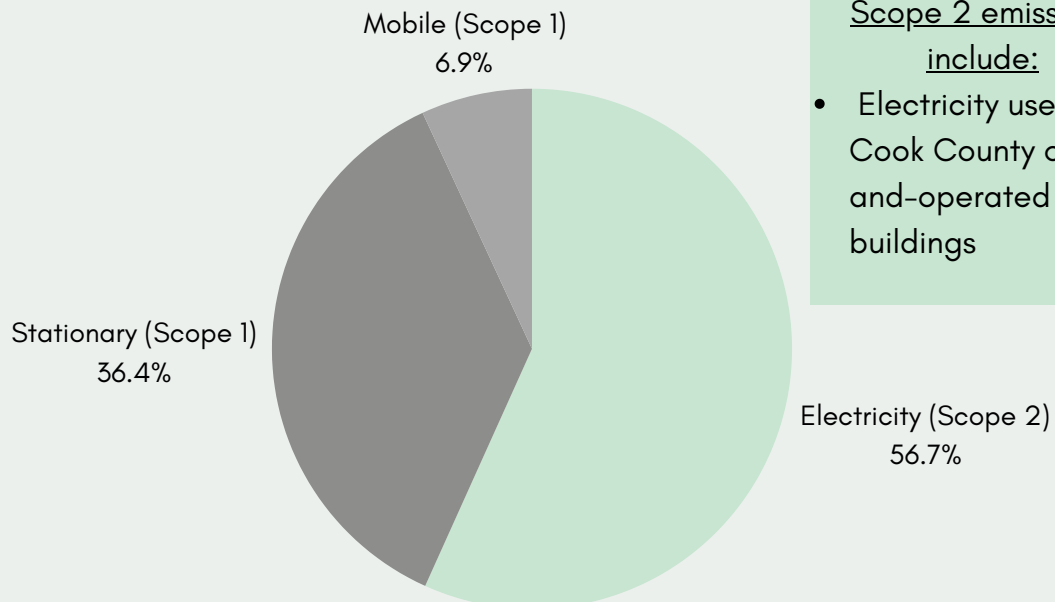
Goal 50% by 2034



2023 GHG Emissions by Scope (metric tons CO₂e)

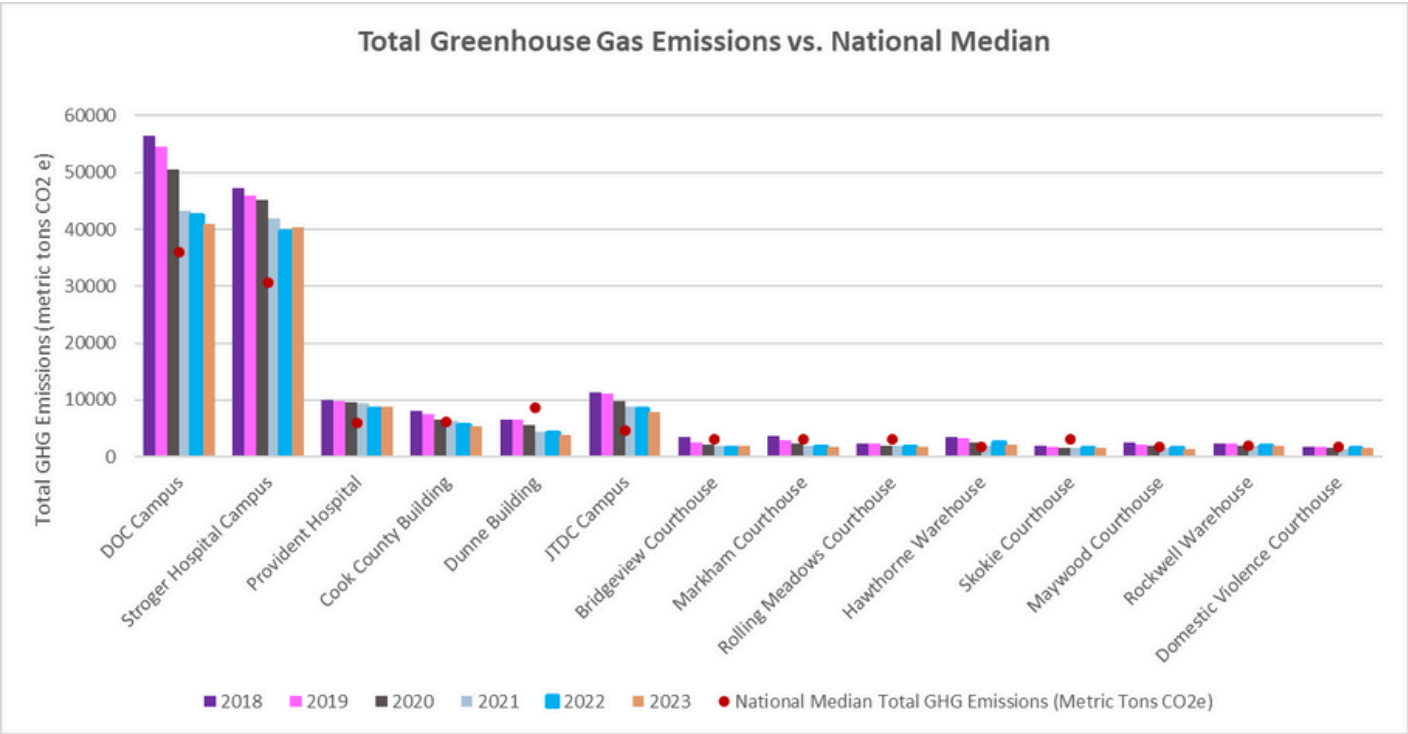
Scope 1 Emissions include:

- Natural gas use at County-owned and operated buildings (stationary)
- County Fleet fuel usage (mobile)
- Employee fuel usage (calculated from reimbursement mileage for work trips; mobile)



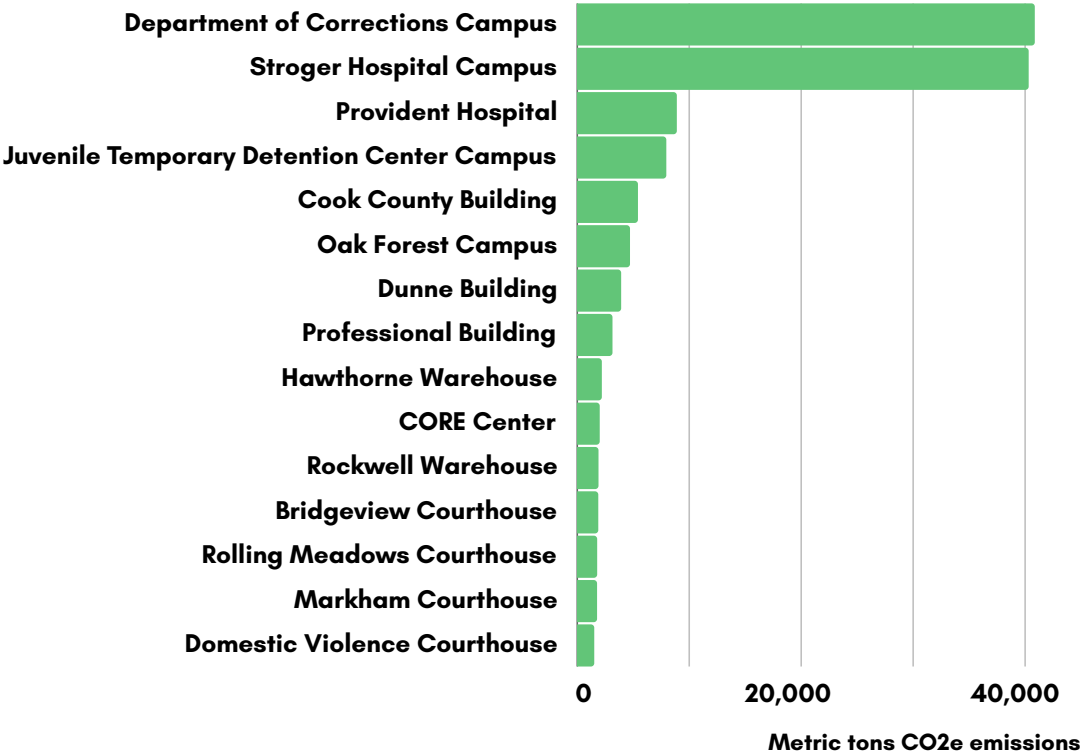
Scope 2 emissions include:

- Electricity used at Cook County owned-and-operated buildings



WHAT CHANGED FOR GHG REDUCTIONS

Of the benchmarked buildings, about 60% of sites reduced annual emissions compared to the previous year. The chart above uses Energy Star data and shows a snapshot of the portfolio for the last 6 years. The emissions values are compared to the red dot values, which represent the 2023 national median emissions for similar sized buildings. About 44% of benchmarked sites performed better than the national median in terms of GHG emitted. Buildings with an annual GHG reduction over 15% include LaGrange Vehicle Services (CCDOH Dist. 3) (-30%), Oak Forest Campus (-28%), Des Plaines TB Clinic (-19%), Sheriff Central Warrants (17%), CCDOH Dist. 5 Riverdale (17%) and CCDOH Dist. 4 Orland Park (16%).



GHG EMISSIONS BY BUILDING 2023

This chart shows emissions by building in metric tons of CO₂e for the 15 highest emitting sites. The remaining sites make up about 8% of total portfolio emissions. The Department of Corrections Campus continues to have the largest greenhouse gas emissions footprint at about 29% of portfolio emissions, with Stroger Hospital Campus close behind.

Cook County's First Off-Site Power Purchase Agreement to use 100% renewable electricity at 18 County-owned-and-operated facilities

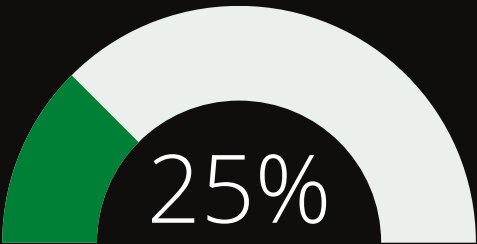


COOK COUNTY SOLAR PPA

Cook County-electricity buyer

Constellation-retail energy supplier

Swift Current-solar developer



Progress toward
100% renewable electricity goal
Starting in 2025

Cook County has signed its first off-site renewable energy supply agreement, which will cover about 25% of its current building portfolio electricity use starting in March 2025. This project goes beyond energy to incorporate community co-benefits including the creation of jobs, investment in training programs and development of a pollinator friendly habitat.

Cook County's First Power Purchase Agreement (PPA) for renewable energy was reached as part of a broader transaction with Constellation and Swift Current Energy

CO-BENEFITS: ~\$432,000 OVER 12 YEARS

- Constellation and Swift Current will both contribute annual donations for solar and energy job training programs
- Habitat protection (pollinator friendly habitat) and CEJA workforce requirements for local prevailing wage jobs will be met

**RELIABLE AND RESILIENT:
100% OF ELECTRICITY USE AT 18
COOK COUNTY BUILDINGS**

These accounts are from health clinics, office buildings, warehouses and highway maintenance facilities

**COST CONSCIOUS:
12 YEAR FIXED PRICE TERM**

Starting in March 2025, includes a fixed energy rate for 12 years during a time when energy prices have traditionally been volatile

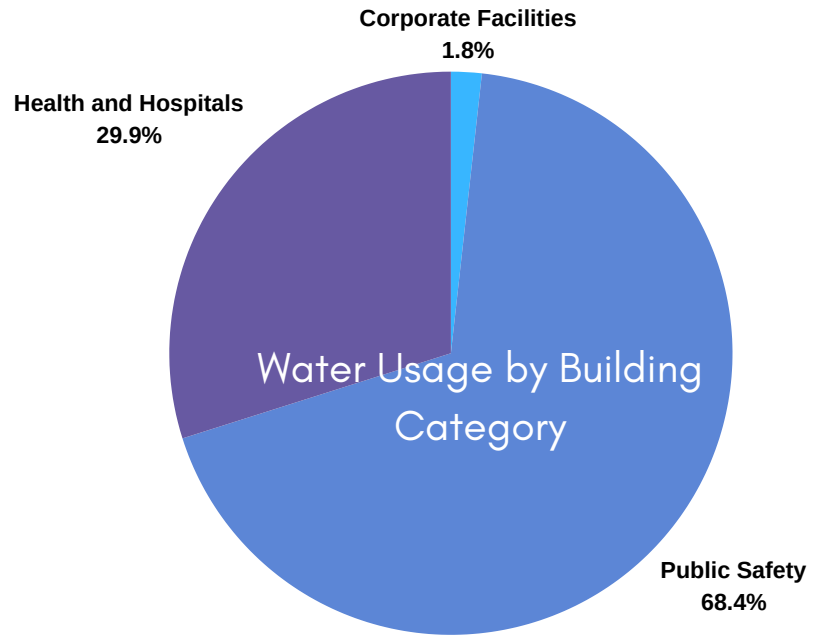
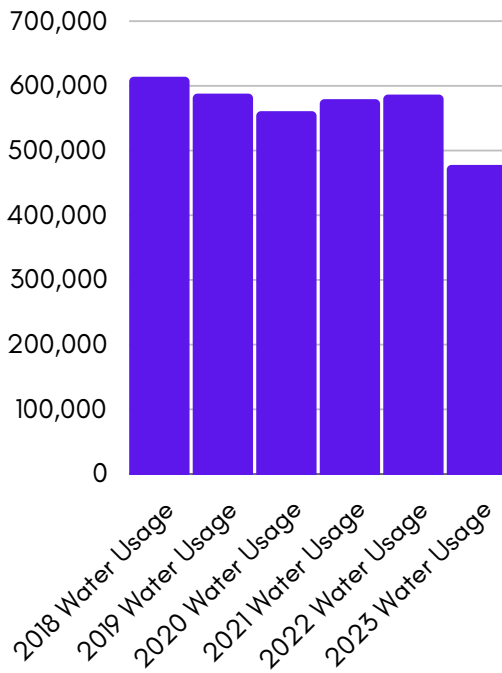
ADDITIONAL: 23.75 MW SOLAR

- This is equal to about 49,000 MWH of electricity usage each year
- Annual Greenhouse Gas savings in IL are equivalent to approximately 4,377 homes' energy use for one year

LOCAL: ILLINOIS

- Located in Morgan County and Sangamon County, IL near Cook County, IL
- Around 450 local jobs (about 18 of which are directly tied to Cook County's portion of the project)

Annual Water Usage in 1,000 gallons



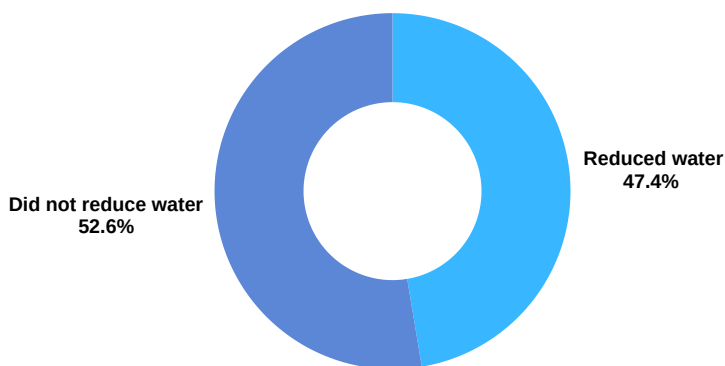
WATER CHANGES

In 2023, Cook County used about 477,771,000 gallons of water across the portfolio of benchmarked buildings, which was a 19% decrease in usage compared to the previous year. Water data continues to get more accurate over time as meters are read more frequently and actual reads increase. This year's water data shows the majority of water use occurring at public safety and health and hospitals facilities. Robbins Health Clinic did not have data for most of the year and appeared lower as a result. The Maywood Campus buildings (Maywood Courthouse, Whitcomb, Jefferson and Sheriff Training buildings) did not have data for most of the year and appeared lower also.

WATER SAVING SPOTLIGHT

Significant water savings of 81% occurred at Oak Forest Campus as leaks were detected and resolved, and decommissioning of buildings is underway. These savings were only possible with insightful data analysis, innovation and support from our Facilities Management team to reduce water where unnecessary, our capital team to think through innovative solutions for temporary boilers and chillers instead of large powerhouse operations, our real estate team to move people where most efficient, and policies to cap water lines and leaks where unneeded.

Percentage of Benchmarked Sites with Water Reductions



During 2023, some employees were able to work remotely part-time, which led to reduced water usage at about 47% of benchmarked sites.

WATER USAGE IMPROVEMENTS

Water usage data can help highlight infrastructure upgrades, detect potential leaks and target efficiency measures (as some energy equipment relies on water to function properly). Continued hybrid work opportunities for some employees led to reduced water usage at a portion of sites while other sites increased water usage for health needs. The top four facilities with significant reductions in water use were:

- Oak Forest Campus (-81%): -79,330,000 gallons
- Stroger Hospital (-20%): -23,344,000 gallons
- Provident Hospital (-17%): -5,553,000 gallons
- County Building (-19%): -1,118,000 gallons

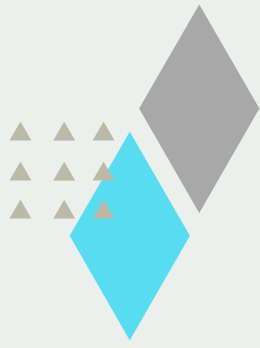
Next Steps

Use results from specific buildings' decarbonization studies to inform how to meet new 50% Scope 1 and 2 GHG reduction goal by 2034

Power Purchase Agreement implementation in 2025 to get about 25% of the way to 100% renewable electricity goal

Smart water meter pilot at Riverdale Highway Maintenance Facility (Dist. 5) will help inform how water is used to find reduction opportunities at this and other sites

Selected for Clean energy to Communities (C2C) NREL Expert Match analysis to inform building electrification and resilience at pilot County Buildings



Appendix A: 2023 County-Owned Properties Benchmarked

Corporate Facilities

George W. Dunne Office Building

*69 W. Washington St., Chicago, IL 60602
Size: 787,888 square feet*

Cook County Building

*118 N. Clark St., Chicago, IL 60602
Size: 638,592 square feet*

Rockwell Warehouse

*2323 S. Rockwell St., Chicago, IL 60608
Size: 447,418 square feet*

Hawthorne Warehouse

*4545 W. Cermak Rd., Chicago, IL 60623
Size: 354,672 square feet*

Cicero Records Center

*1330 S. 54th Avenue, Cicero, IL 60804
Size: 260,725 square feet*

Parking Garages

Skokie Courthouse Parking

*5600 Old Orchard Rd., Skokie, IL 60077
Size: 483,451 square feet*

Provident Hospital Parking

*5010 South Forestville Ave., Chicago, IL 60615
Size: 245,541 square feet*

Rolling Meadows Courthouse Parking

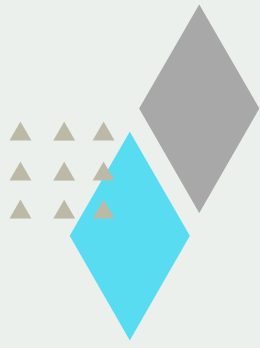
*2121 Euclid Ave., Rolling Meadows, IL 60008
Size: 554,767 square feet*

JTDC Parking

*1101 S. Hamilton Ave., Chicago, IL 60612
Size: 788,777 square feet*

Rockwell Warehouse Garage

*2323 S. Rockwell St., Chicago, IL 60608
Size: 4,788 square feet*



Appendix A: 2023 County-Owned Properties Benchmarked

Public Safety

Department of Corrections Campus

26th/S. California, Chicago, IL 60608

Size: 4,468,310 square feet

Domestic Violence Courthouse

555 W. Harrison St., Chicago, IL 60607

Size: 187,268 square feet

Skokie Courthouse (2nd District)

5600 Old Orchard Rd., Skokie, IL 60077

Size: 345,743 square feet

Maywood Courthouse Campus (4th District)

Includes Maywood Courthouse, Jefferson, Whitcomb and Sheriff Training Buildings

1500 Maybrook Dr., Maywood, IL 60153

Size: 276,999 square feet

Markham Courthouse (6th District)

16501 S. Kedzie Ave., Markham, IL 60428

Size: 317,652 square feet

CCDOTH Maintenance Facility (District 2)

9801 Ballard Rd., Des Plaines, IL 60016

Size: 61,911 square feet

CCDOTH Maintenance Facility (District 4)

8900 W. 135th St., Orland Park, IL 60462

Size: 68,444 square feet

Sheriff Central Warrants

937 Wood St., Chicago, IL

Size: 19,436 square feet

Juvenile Detention Center

1100 S. Hamilton Ave., Chicago, IL 60612

Size: 611,255 square feet

Juvenile West Courthouse

1100 S. Hamilton Ave., Chicago, IL 60612

Size: 412,596 square feet

Rolling Meadows Courthouse (3rd District)

2121 Euclid Ave., Rolling Meadows, IL 60008

Size: 335,205 square feet

Bridgeview Courthouse (5th District)

10220 S. 76th St., Bridgeview, IL 60455

Size: 335,205 square feet

CCDOTH Maintenance Facility (District 1)

2325 N. Meacham Rd., Schaumburg, IL 60173

Size: 56,568 square feet

CCDOTH Maintenance Facility (District 3)

901 W. 26th St., LaGrange, IL 60526

Size: 46,323 square feet

CCDOTH Maintenance Facility (District 5)

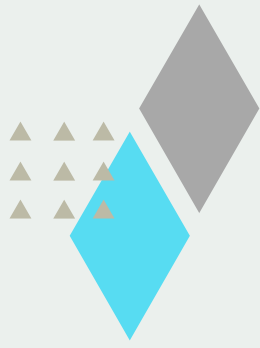
13600 S. Ashland Ave., Riverdale, IL 60827

Size: 78,092 square feet

Institute of Forensic Medicine

2121 W. Harrison St., Chicago, IL 60612

Size: 79,368 square feet



Appendix A: 2023 County-Owned Properties Benchmarked

Health and Hospitals

Oak Forest Hospital Campus

15900 S. Cicero Ave., Oak Forest, IL 60452
Size: 1,097,997 square feet

Stroger Hospital Campus

1901 W. Harrison St., Chicago, IL 60612
Size: 1,596,300 square feet

Provident Hospital

500 E. 51st St., Chicago, IL 60615
Size: 341,042 square feet

Provident Outpatient Pharmacy

430 E. 50th Pl., Chicago, IL 60615
Size: 6,577 square feet

Ruth M. Rothstein Core Center

2020 W. Harrison St., Chicago, IL 60612
Size: 79,368 square feet

Cottage Grove Health Center

1645 Cottage Grove Ave., Ford Heights, IL 60411
Size: 13,370 square feet

Blue Island Health Center

12757 S. Western Avenue, Blue Island, IL 60406
Size: 42,276 square feet

N. Riverside Health Center-Leased

1800 S. Harlem, N. Riverside, IL 60546
Size: 20,676 square feet

CCHHS Professional Building

1950 W. Polk St, Chicago, IL 60612
Size: 282,000 square feet

Near South Health Clinic

3525 S. Michigan Ave., Chicago, IL 60653
Size: 11,394 square feet
Vacated early 2021

Edward Piszczek TB Clinic

7556 W. Jackson Blvd., Forest Park, IL 60130
Size: 19,352 square feet

Des Plaines TB Clinic

9325 Church St., Des Plaines, IL 60016
Size: 2,489 square feet

Belmont- Cragin Health Center

5501 W. Fullerton Ave., Chicago, IL 60639
Size: 25,000 square feet

Englewood Health Center

1135 W. 69th St., Chicago, IL 60621
Size: 10,770 square feet

Harvey TB Clinic/Cook County Assistance Center

15948 S. Halsted St., Harvey, IL 60426
Size: 2,723 square feet

Robbins Health Center

13450 S. Kedzie Ave., Robbins, IL 60472
Size: 14,306 square feet

Prieto Health Center

2424 S. Pulaski Rd., Chicago, IL 60623
Size: 16,972 square feet

Arlington Heights Health Center-Leased

3250 Arlington Heights Road, Arlington Heights, IL 60074
Size: 24,948 square feet

Logan Square Health Center

2840 W. Fullerton Ave., Chicago, IL 60647
Size: 8,169 square feet
Decommissioned 2022

Energy Star Portfolio Manager

Technical Information

- Energy Star Portfolio Manager updates its conversion factors frequently, with only the most recent technical guides available on the webpage
- This year's methodology was updated as of August 2024
- The following tables from Energy Star's Technical Guides explain their methodology used in the database calculations for the August 2024 update
- Energy Star tends to lag a year behind the most recent eGrid updates for greenhouse gas emissions calculations, but the recent update will change its guidance to reflect historical conversion factors to align better with protocol standards and make greenhouse gas inventories more comparable
- Note this technical guidance was updated after all calculations were already completed for this report and is included here for reference only.

Greenhouse Gas Inventory and Tracking in Portfolio Manager (energystar.gov)

Figure 1 – Source-Site Ratios for all Portfolio Manager Energy Meter Types

Energy Type	U.S. Ratio	Canadian Ratio
Electricity (Grid Purchase)	2.80	1.96
Electricity (Onsite Solar or Wind - regardless of REC ownership)	1.00	1.00
Natural Gas	1.05	1.01
Fuel Oil (No. 1,2,4,5,6, Diesel, Kerosene)	1.01	1.01
Propane & Liquid Propane	1.01	1.04
Steam	1.20	1.33
Hot Water	1.20	1.33
Chilled Water	0.91	0.57
Wood	1.00	1.00
Coal/Coke	1.00	1.00
Other	1.00	1.00

Greenhouse Gas Emissions Factor



Figure 1 – Direct GHG Emissions Factors for the U.S. and Canada

Fuel Type	CO _{2eq} Emissions			
	United States	Canada		
	(kg/MMBtu)	(kg/MMBtu)	(g/L)	(kg/tonne)
Natural Gas	53.11	By Province		
Propane	64.25	64.52	1,548	-
Fuel Oil (No. 1)	73.50	75.13	2,763	-
Fuel Oil (No. 2)	74.21	75.13	2,763	-
Fuel Oil (No. 4)	75.29	75.13	2,763	-
Fuel Oil (No. 5,6)	75.35	78.86	3,176	-
Diesel Oil	74.21	74.09	2690	-
Kerosene	77.69	71.96	2,570	-
Coal (anthracite)	104.44	94.76	-	2,488
Coal (bituminous)	94.03	100.36	-	2378
Coke	114.42	116.36	-	3,180

ACKNOWLEDGEMENTS

COOK COUNTY
ENERGY AND WATER
BENCHMARKING REPORT

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Appendix B: 2023 Energy Benchmarking Results of County-Owned Properties

The following table summarizes the 2023 benchmarking results for each building. Data has been downloaded from Energy Star Portfolio Manager.

Green indicates an improvement/reduction in emissions and red indicates an increase in annual emissions.

Property Name	Primary Property Type	Year Built	No. of Bldgs	ENERGY STAR Score	Site EUI (kBtu/ft ²)	Source EUI (kBtu/ft ²)	Source Energy Use (kBtu)	Site Energy Use (kBtu)	Electricity Use - Grid Purchase (kWh)	Natural Gas Use (therms)	GHG Emissions (Metric Tons CO ₂ e)	GHG Emissions Intensity (kgCO ₂ e/ft ²)
George W Dunne Office Building	Office	1965	1	91	52	95	78,172,779	42,420,975	5,632,348	232,034	3,921	4.8
Cook County Building	Office	1906	1	61	85	169	108,167,740	54,093,775	8,603,127	247,399	5,421	8.5
Rockwell Warehouse	Non-Refrigerated Warehouse	1927	1	51	57	84	37,723,477	25,280,908	1,872,136	188,932	1,897	4.2
Hawthorne Warehouse	Non-Refrigerated Warehouse	1905	1	34	68	88	43,556,810	33,669,878	1,373,880	289,822	2,195	4.4
Cicero Records Center	Non-Refrigerated Warehouse	2008	1	29	48	85	22,119,629	12,477,203	1,510,394	73,237	1,110	4.3
2nd District Courthouse Complex - Skokie	Courthouse	1980	1	77	56	115	39,586,155	19,221,199	3,249,689	81,333	1,983	5.7
2nd District Courthouse (Skokie)	Courthouse	1980	1	89	46	86	29,797,200	15,725,144	2,225,054	81,333	1,494	4.3
2nd District Courthouse (Skokie) Parking Structure	Parking	2002	1	NA	7	20	9,709,444	3,467,659	1,016,313	NA	485	1.0
3rd District Courthouse Complex - Rolling Meadows	Courthouse	1987	1	79	45	114	38,044,146	15,050,212	3,724,907	23,408	1,903	5.7
3rd District Courthouse (Rolling Meadows)	Courthouse	1987	1	82	42	106	35,575,530	14,168,564	3,466,511	23,408	1,779	5.3
3rd District Courthouse (Rolling Meadows) Parking Structure	Parking	1987	1	NA	2	5	2,523,274	901,169	264,118	NA	126	0.2

Property Name	Primary Property Type	Year Built	No. of Bldgs.	ENERGY STAR Score	Site EUI (kBtu /ft²)	Source EUI (kBtu /ft²)	Source Energy Use (kBtu)	Site Energy Use (kBtu)	Electricity Use - Grid Purchase (kWh)	Natural Gas Use (therms)	GHG Emissions (Metric Tons CO2e)	GHG Emissions Intensity (kgCO2e/ft²)
4th District Courthouse Campus - Maywood	Courthouse	1975	4	NA	68	166	46,071,391	18,814,264	4,407,371	37,763	2,305	8.3
Jefferson Building	Office	1965	1	69	60	167	7,879,223	2,814,008	824,739	NA	394	8.3
Whitcomb Building	Office	1965	1	54	59	166	3,861,535	1,379,120	404,197	NA	193	8.3
Sheriff Training Academy	Other - Public Services	1967	1	NA	118	258	5,590,861	2,563,092	485,616	9,062	280	12.9
4th District Courthouse (Maywood)	Courthouse	1975	1	66	65	154	28,514,063	11,977,434	2,669,194	28,701	1,427	7.7
5th District Courthouse - Bridgeview	Courthouse	1989	1	82	45	112	37,579,479	15,130,086	3,633,041	27,342	1,880	5.6
Domestic Violence Courthouse	Courthouse	1890	1	60	84	164	30,644,121	15,715,761	2,371,590	72,600	1,518	8.1
6th District Courthouse - Markham	Courthouse	1980	1	83	41	111	35,389,392	13,163,088	3,612,150	8,384	1,769	5.6
Juvenile Temporary Detention Center Campus	Prison/ Incarceration	1973	3	NA	75	155	158,756,436	76,699,088	13,100,383	320,006	7,954	7.8
JTDC Parking Structure	Parking	1993	1	NA	3	9	7,162,506	2,558,038	749,718	NA	358	0.5
Institute of Forensic Medicine	Other - Public Services	1982	1	NA	212	360	28,588,622	16,856,560	1,823,687	106,341	1,436	18.1
Cook County Department of Corrections Campus	Prison/ Incarceration	1926	57	NA	110	178	813,258,779	501,029,406	48,097,292	3,366,449	40,863	8.9

Property Name	Primary Property Type	Year Built	No. of Bldg s.	ENERGY STAR Score	Site EUI (kBtu/ft²)	Source EUI (kBtu/ft²)	Source Energy Use (kBtu)	Site Energy Use (kBtu)	Electricity Use - Grid Purchase (kWh)	Natural Gas Use (therms)	GHG Emissions (Metric Tons CO2e)	GHG Emissions Intensity (kgCO2e /ft²)
CCDOTH Maintenance Facility District 1	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1954	4	NA	105	125	7,071,344	5,954,829	137,125	54,870	357	6.3
CCDOTH Maintenance Facility District 3	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1950	3	NA	66	100	4,633,500	3,041,188	241,208	22,182	233	5.0
CCDOTH Maintenance Facility District 2	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1990	4	NA	103	132	8,195,095	6,379,378	250,670	55,241	413	6.7
CCDOTH Maintenance Facility District 4	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1969	5	NA	94	116	7,952,808	6,463,584	195,285	57,973	401	5.9
CCDOTH Maintenance Facility District 5	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1987	3	NA	99	123	9,632,721	7,729,125	254,085	68,622	486	6.2
Oak Forest Hospital Campus	Medical Office	1910	52	NA	47	86	93,906,289	51,734,031	6,629,635	291,137	4,711	4.3
CORE Center	Medical Office	1998	1	1	721	1,268	39,997,015	22,742,386	2,699,298	135,324	2,007	63.6
Provident Hospital Campus	Hospital (General Medical & Surgical)	1981	2	5	286	482	180,084,553	106,843,455	11,371,448	680,441	9,043	24.2
Provident Hospital	Hospital (General Medical & Surgical)	1981	2	3	283	474	177,085,660	105,772,421	11,057,546	680,441	8,893	23.8
Provident Hospital Parking Structure	Parking	1991	1	NA	4	12	2,990,517	1,068,042	313,025	NA	149	0.6
Stroger Hospital Campus	Hospital (General Medical & Surgical)	2002	4	12	307	503	802,601,974	490,077,013	48,236,656	3,254,935	40,317	25.3
Cottage Grove Health Center	Medical Office	2000	1	3	138	221	2,956,945	1,845,786	170,637	12,636	149	11.1

Property Name	Primary Property Type	Year Built	No. of Bldgs.	ENERGY STAR Score	Site EUI (kBtu/ft ²)	Source EUI (kBtu/ft ²)	Source Energy Use (kBtu)	Site Energy Use (kBtu)	Electricity Use - Grid Purchase (kWh)	Natural Gas Use (therms)	GHG Emissions (Metric Tons CO ₂ e)	GHG Emissions Intensity (kgCO ₂ e/ft ²)
Piszczek TB Clinic	Medical Office	1957	1	25	141	221	4,272,449	2,735,654	234,469	19,357	215	11.1
Des Plaines TB Clinic	Medical Office	1991	1	NA	103	214	531,693	255,060	44,194	1,043	27	10.7
Logan Square Health Center	Medical Office	1962	1	86	51	104	852,491	418,855	69,116	1,830	43	5.2
Englewood Health Center	Medical Office	2000	1	1	196	383	4,123,762	2,114,460	318,804	10,267	207	19.2
Harvey TB Clinic	Medical Office	1962	1	NA	49	90	244,044	133,280	17,434	738	12	4.5
Robbins Health Center	Medical Office	2000	1	3	152	239	3,418,484	2,173,705	190,269	15,245	172	12.0
Prieto Health Center	Medical Office	1994	1	23	96	189	3,211,119	1,628,153	251,475	7,701	161	9.5
Provident Hospital Pharmacy	Medical Office	2005	1	1	223	485	3,192,493	1,465,026	277,042	5,198	160	24.3
Rockwell Warehouse Garage	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1927	1	NA	227	295	1,413,068	1,087,673	45,388	9,328	71	14.9
Sheriff Central Warrants	Police Station	1955	1	NA	80	129	2,503,776	1,559,425	145,098	10,644	126	6.5
Professional Building	Clinic/Office	2018	1	NA	113	223	62,752,108	31,880,267	4,903,337	151,501	3,146	11.2
Blue Island Health Center	Clinic	2018	1	NA	109	289	12,218,405	4,616,292	1,234,517	4,041	611	14.4
Arlington Heights Health Center	Clinic	2018	1	NA	75	140	3,500,339	1,873,859	256,705	9,980	176	7.0
Belmont Cragin Health Center	Clinic	2021	1	NA	111	204	5,091,788	2,779,011	364,064	15,368	255	10.2
North Riverside Health Center	Clinic	2017	1	NA	91	183	3,777,254	1,889,057	300,409	8,641	189	9.2

NOTE: NO. OF BLDGS. IN () INDICATE CAMPUS PORTFOLIOS WHERE THE BUILDINGS ARE COUNTED ELSEWHERE TO AVOID DOUBLE COUNTING

Appendix C: 2023 Water Benchmarking Results

Water data from billing usage data sets and water use intensity calculations.

Building name	Type	City	Building square ft	Usage in TGAL (1000 gallons)	Water Use Intensity (gallons/sq ft)
Dunne Building	CF	Chicago	821,526	2,185	2.7
Cook County Building	CF	Chicago	638,592	4,786	7.5
Rockwell Warehouse	CF	Chicago	447,418	329	0.7
Hawthorne Warehouse	CF	Chicago	494,672	404	0.8
Cicero Records Center	CF	Cicero	260,728	711	2.7
Skokie Courthouse	PS	Skokie	345,743	1,025	3.0
Rolling Meadows Courthouse	PS	Rolling Meadows	335,205	1,427	4.3
Jefferson Building*	PS	Maywood	47,254	181	3.8
Whitcomb Building*	PS	Maywood	23,217	95	4.1
Maywood Courthouse*	PS	Maywood	184,841	882	4.8
Bridgeview Courthouse	PS	Bridgeview	335,205	1,146	3.4
Markham Courthouse	PS	Markham	317,652	2,100	6.6
Domestic Violence Courthouse	PS	Chicago	187,268	1,401	7.5
JTDC Campus	PS	Chicago	1,812,628	19,104	10.5
DOC	PS	Chicago	4,468,310	294,176	65.8
Forensic Institute	PS	Chicago	79,368	3,860	48.6
CCDOH District 1	CF	Schaumburg	56,568	134	2.4
CCDOH District 3	CF	LaGrange	46,323	257	5.5
CCDOH District 2	CF	Des Plaines	61,911	507	8.2
CCDOH District 4	CF	Orland Park	68,444	158	2.3
CCDOH District 5	CF	Blue Island	78,092	572	7.3
Oak Forest Campus	HH	Oak Forest	1,097,997	18,150	16.5
Provident Hospital	HH	Chicago	341,042	26,374	77.3
Stroger Hospital Campus	HH	Chicago	1,780,835	93,066	52.3
CORE Center	HH	Chicago	79,368	912	11.5
Cottage Grove Health Center	HH	Chicago Heights	13,370	120	9.0
Piszczek TB Clinic	HH	Forest Park	19,352	230	11.9
Des Plaines TB Clinic	HH	Des Plaines	2,489	20	8.0
Logan Square Health Center	HH	Chicago	8,169	98	12.0
Englewood Health Center	HH	Chicago	10,770	144	13.4
Cook County Assistance Center (Harvey Clinic)	PS	Harvey	2,723	31	11.3
Robbins Health Center*	HH	Robbins	14,306	1	0.1
Prieto Health Center	HH	Chicago	16,972	230	13.6
Provident Pharmacy	HH	Chicago	6,577	55	8.4
Blue Island Health Center	HH	Blue Island	42,276	665	15.7
Professional Building	HH	Chicago	282,000	2602	9.2
Belmont Cragin Health Center	HH	Chicago	25,000	298	11.9

All Water data was based on available billing information. A few of these sites are undergoing further analysis to ensure usage accuracy. Last 3 accounts are new as of the 2023 report.

Notes: *Robbins Health Center, Maywood Courthouse, Jefferson Building, Whitcomb Building, and the Sheriff Training Center were missing bills meaning the usage could not be accounted for. These accounts will look lower in water use as a result.

Appendix D: Assumptions for Calculations

- **Energy:**

Source energy is used for all performance metrics in Cook County's portfolio for the 2024 Benchmarking Report. Source energy accounts for losses that are incurred in the storage, transport and delivery of fuel to the building. Source Energy data involves a scale factor, which was most recently updated for 2018 data and beyond. For this reason, source energy data was compared over the last few years instead of the full duration of benchmarking to aid in comparison with the same underlying conditions. Portfolio type in this report is categorized by originally designed/mechanical purpose to match Energy Star reporting methods, therefore, the square footage and energy by portfolio may differ from Capital Planning Metrics as some building uses changed over time.

- **GHG Emissions:**

This report looks only at building greenhouse gas Scope 2 emissions from electricity and Scope 1 natural gas use. Greenhouse gas percentage values may differ from 2010 reduction goals to achieve the 100% reduction by 2050 as not all buildings are benchmarked, and the baseline years differ. The first Benchmarking Report was issued in 2013, and additional facilities were phased in during subsequent years based on square footage brackets determined in the Benchmarking Ordinance. Therefore, benchmarking uses year to year comparisons for GHG emissions as the most accurate method. The emissions factor used for GHG calculations in this Benchmarking Report comes directly from Energy Star Portfolio Manager and may not be updated as frequently as the eGrid value.

- **Water:**

Water usage data was compared on a building-by-building basis to get a full year of data. As water billing happens at different frequencies rather than monthly, annual totals were calculated based on a full year coherent with the facility's billing cycle. Outlying values are in progress of being understood, and for the time being are assumed to be different than expected due to billing differences, infrastructure leaks, etc. This was the third year for more consistent data for Stroger Campus. For this reason, Stroger Hospital consumption was estimated for the years 2018, 2019, and 2020 during annual comparisons. Hektoen (now unoccupied) and Cicero Health Center were left off this year's totals as they were vacated in 2019 and early 2020, respectively. The Near South Health Center was vacated at the beginning of 2021 and removed as well. Robbins Health Clinic did not have water usage data for most of the year and appeared lower as a result. The Maywood Campus buildings (Maywood Courthouse, Whitcomb, Jefferson and Sheriff Training buildings) did not have data for most of the year and appeared lower also.