

ENERGY AND WATER BENCHMARKING REPORT

COOK COUNTY
BUREAU OF ASSET MANAGEMENT

20
22



Based on 2021 Calendar Year Data for County-Owned Facilities



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 2022 Energy and Water Benchmarking Report:

- 54% of the benchmarked properties reduced their energy usage over the last year
- 11% reduction in greenhouse gas emissions among the benchmarked properties
- 40% 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 continue to make progress in these areas for Cook County owned-and-operated buildings.

Sincerely,

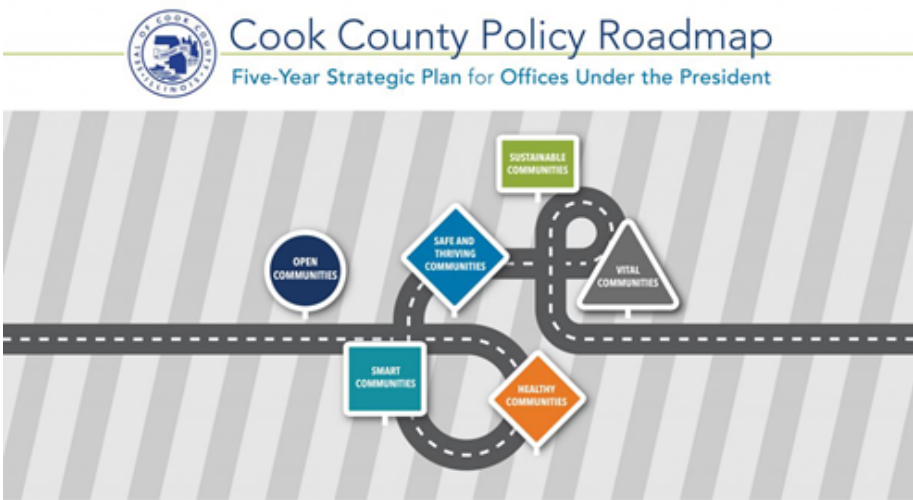
John Yonan
Bureau Chief

Jamie Meyers
Energy Manager



POLICY
ROADMAP
















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



COOK COUNTY PROGRAMS BENEFIT FROM
BENCHMARKING THE DATA FROM ENERGY, WATER ,
AND GREENHOUSE GAS EMISSIONS USAGE EACH YEAR
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.

Energy	Water	Waste	Technology	Community
				
Goal	Goal	Goal	Goal	Goal
Carbon Neutral by 2050	30% water usage reduction by 2025	80% diversion rate by 2050	Use technology to drive operating decisions for buildings	Create a positive impact on County residents
Pilot energy awareness and savings challenge at select facilities  	Perform audit on condensate return system at the Department of Corrections  	Identify properties to be included in diversion and recycling program  	Provide access to building energy data to building engineers  	Use survey information to better understand and plan for EV adoption  

GREEN
BUILDINGS
PROGRAM

The 2021 Goals of the Green Buildings Program

2021 Annual Summary

In 2021..

**70% of sites
reduced GHG
Emissions**

**48% of buildings
improved
Energy Star Score**

**40% of sites
reduced water
usage**

**40% of sites
improved in
Energy Use
Intensity**

Note about COVID-19 impacts: Overall, some buildings saw increased usage as health services expanded, while others reduced energy and water from fewer occupants at the facilities each day

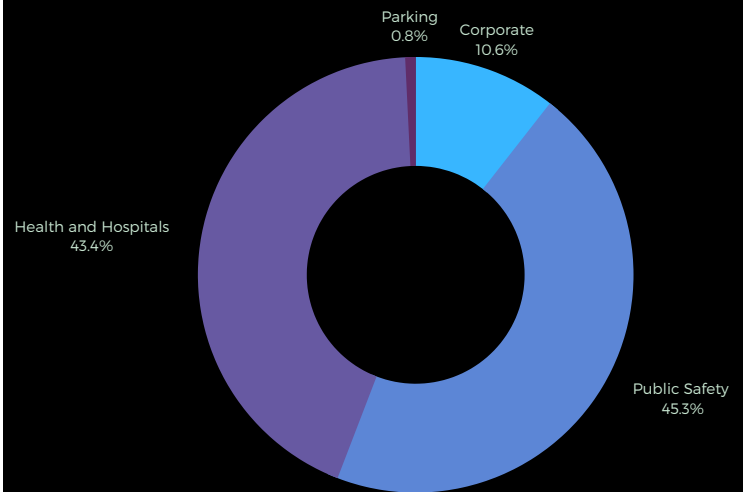
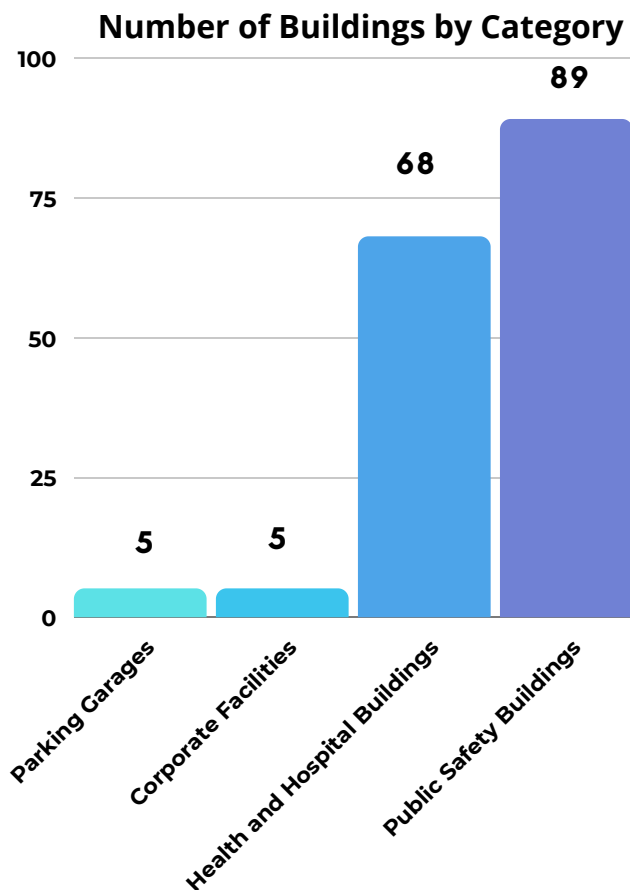
STATISTICS

2021 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.



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.

WHICH FACILITIES ARE BENCHMARKED?

COOK COUNTY TRACKS 40 SITES IN THE ENERGY STAR PORTFOLIO MANAGER TOOL. SOME OF THESE SITES HAVE MORE THAN ONE BUILDING ON EACH SITE, FOR A TOTAL OF 167 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.

Three examples of facilities with significant annual energy reductions from 2020 to 2021 include the Juvenile Temporary Detention Center (JTDC) West Building, Maywood Courthouse, and the Rockwell Warehouse.

1,164,916 KWH

electricity usage saved at the Juvenile Temporary Detention Center (JTDC) West Building

Upgrading the lighting to LED with the help of the Cook County trades for installation is estimated to save 1,164,916 kWh at the JTDC West Building (pictured to the right)

OTHER SITES

Energy Efficiency Projects

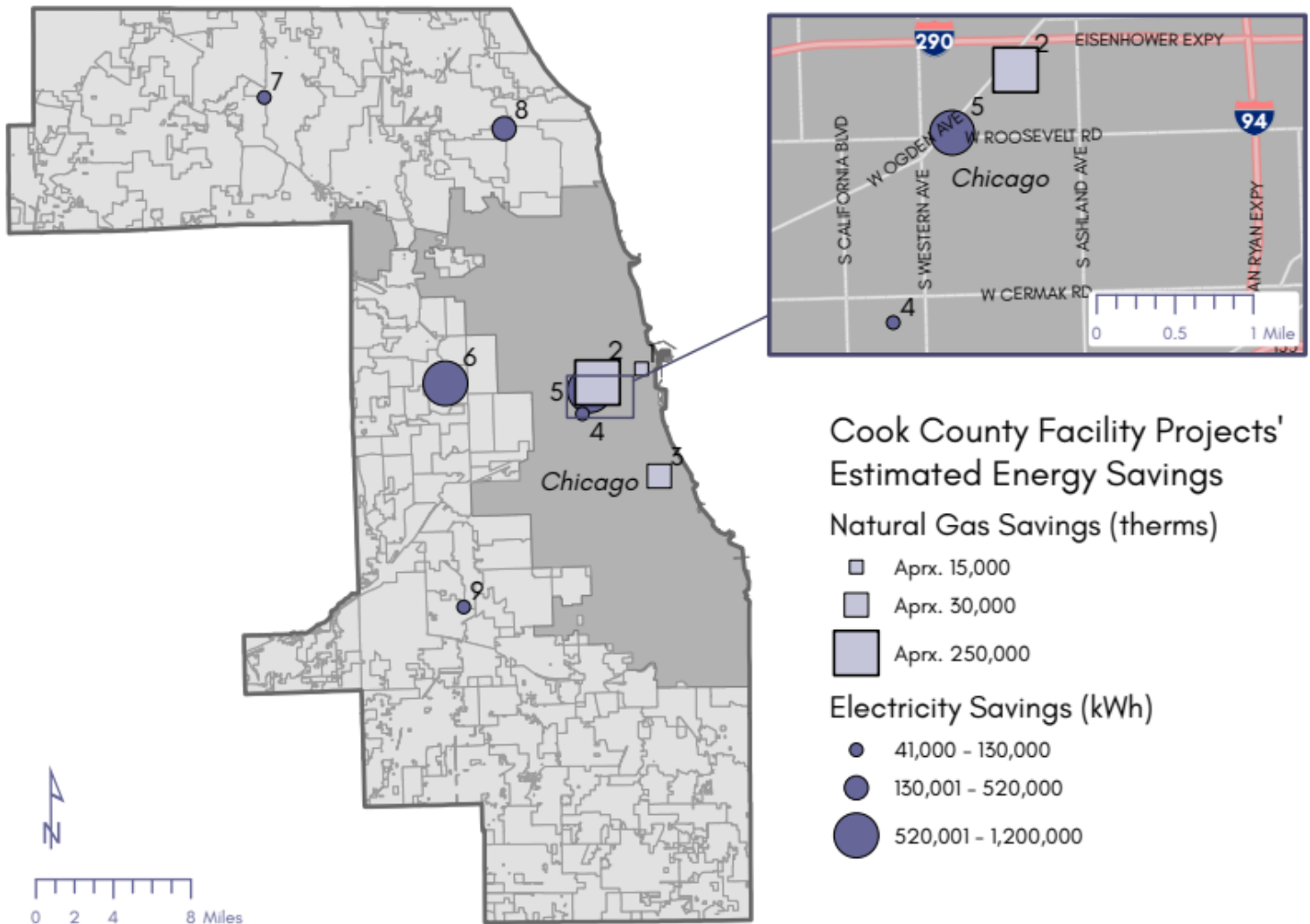
- Maywood Courthouse lighting upgrades and new chiller is estimated to save about 520,463 kWh
- Rockwell Warehouse exterior LED lighting upgrades is estimated to save 41,895 kWh



COVID-19 Impacts on Energy Use

Overall, some buildings increased energy usage to meet air quality standards, new cleaning procedures, and additional health and hospitals needs, but other buildings were able to reduce energy as some employees worked remotely and lowered building occupancy.

2021 Energy Efficiency Projects at Cook County Government Facilities



Map #	Building Name	Project Types
1	Dunne Admin. Building	Insulation, Controls, and Steam Traps
2	Stroger Hosiptal Campus	Steam traps, Insulation, and Boiler
3	Provident Hospital	Boiler and Ventilation
4	Rockwell Warehouse	Lighting
5	JTDC West Courthouse	Lighting
6	Maywood Courthouse	Lighting and HVAC
7	Rolling Meadows Courthouse	Variable Frequency Drive
8	Skokie Courthouse	Upgrade pumps
9	Bridgeview Courthouse	Variable Frequency Drive

Map prepared on Jun. 14, 2022; Department of Geographic Information Systems, Cook County Bureau of Technology; cook_eePrj2021_2022.pdf;
 ©2022 Cook County Government
 You are not permitted to repackage, resell, or distribute this map without the written permission of the Cook County Board of Commissioners

ENERGY CHALLENGE

COOLING SEASON
2021

The STIC With It: Energy Saving Challenges allowed Cook County building engineers in the public safety and corporate portfolios to creatively reduce energy from their baseline usage while maintaining occupant comfort.

RESULTS

9

buildings participated

3.2 million
gross square ft

406,248

kWh in energy savings
from June-October

\$36,152

in estimated savings
from June-October

THE PROCESS

STIC

With it: Energy Saving
Challenges.

A RECOGNITION PROGRAM TO REDUCE ENERGY FROM
YOUR BASELINE

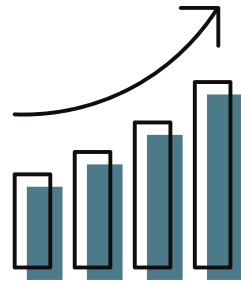


1.) SEE WHERE ENERGY IS USED- WITH AN ENERGY TREASURE HUNT

Note any areas for potential improvement on space plans and see where energy is being used in your building.

2.) TOOLS

Connect with Comed Energy Advisor to see interval data and apply insights to energy reductions. Login to Asset Planner to see energy trends and reports.



3.) IMPLEMENTATION

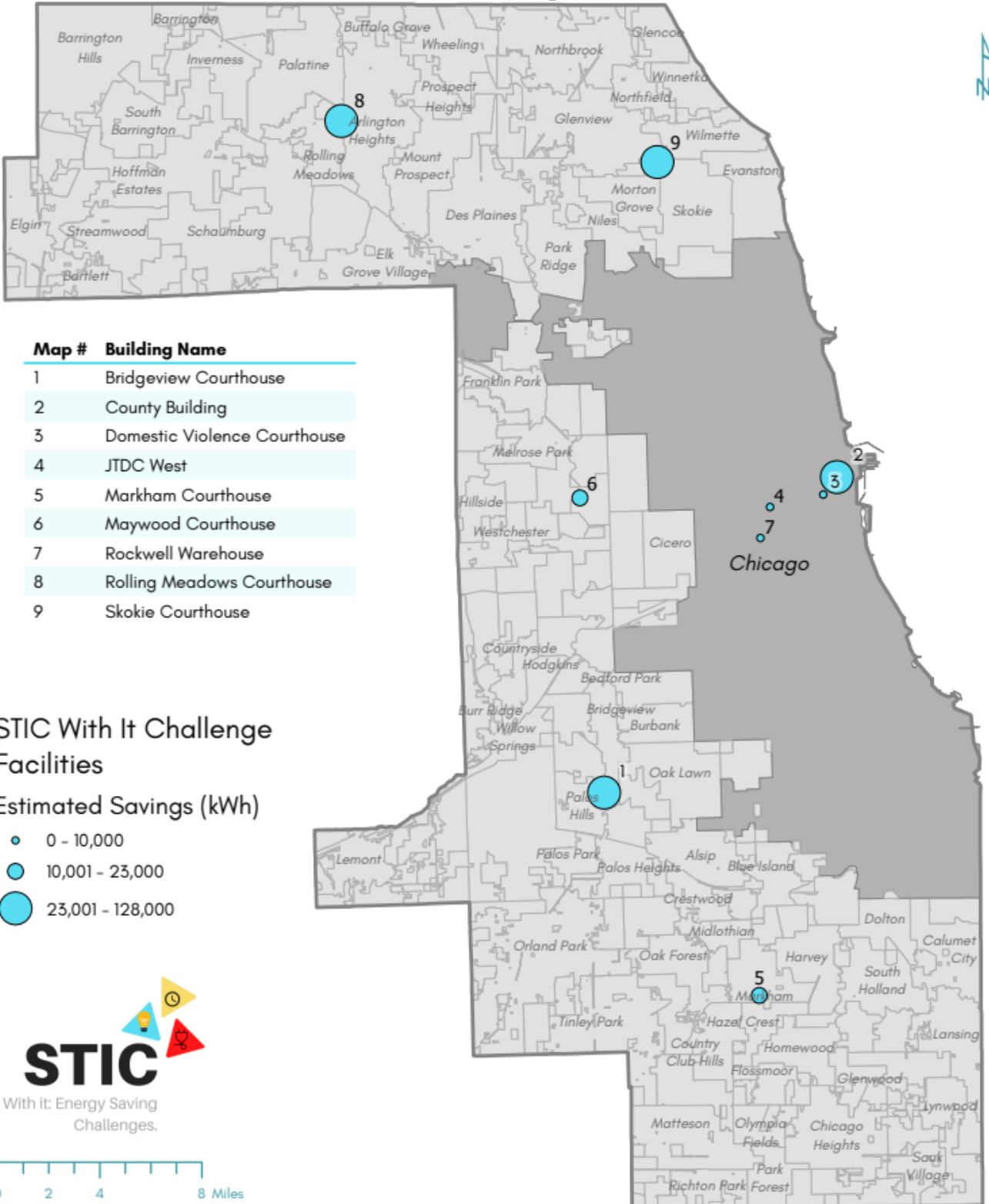
Implement suggestions with your own creative solutions or Energy Advisor suggestions one at a time to see savings from baseline energy use.

4.) CREATE A LASTING PLAN

Integrate additional findings that require a budget and plan for next year's STIC with it energy savings.



Estimated Energy Savings at Cook County Government STIC With It Challenge Facilities



ENERGY STAR SCORES

An Energy Star Score compares like facilities to a national database for standardized energy use comparisons.

Top performers receiving an Energy Star Score above 75 (the certification standard) include Skokie Courthouse, the George W. Dunne Administration Building, Bridgeview Courthouse, Rolling Meadows Courthouse, and Markham Courthouse.

48%

of properties improved

10 of the 21 sites able to be scored improved in Energy Star Score over the last year

75

The score needed to achieve Energy Star Certification Threshold

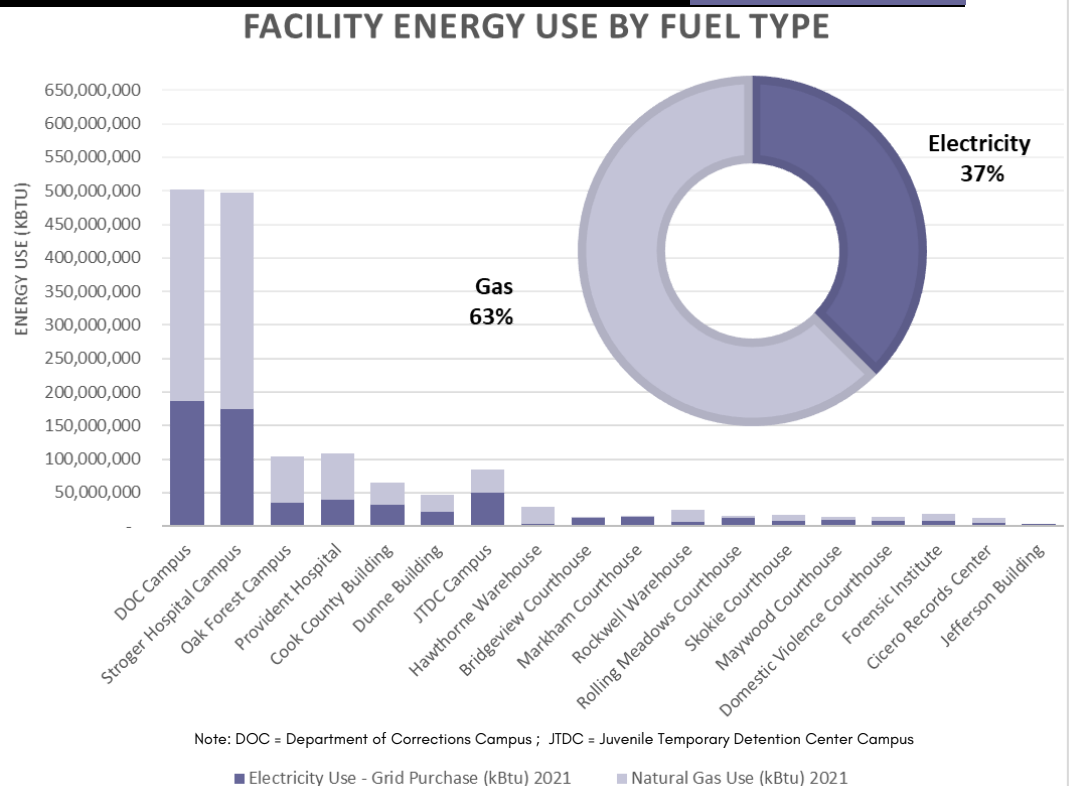
Property	2013	2014	2015	2016	2017	2018	2019	2020	2021
Skokie Courthouse (2nd District)	58	51	58	62	76	82	88	92	87
George W Dunne Administration Building	65	68	73	73	77	73	79	78	85
Bridgeview Courthouse (5th District)	35	24	24	32	45	44	78	80	84
Rolling Meadows Courthouse (3rd District)	49	43	43	56	69	70	78	82	81
Markham Courthouse (6th District)	31	27	33	32	47	43	68	77	79
Domestic Violence Courthouse	43	38	45	40	48	50	61	68	66
Jefferson Building	33	29	38	42	34	30	43	56	66
Maywood Courthouse (4th District)	17	16	23	26	28	32	49	53	63
Rockwell Warehouse	53	53	52	53	51	52	49	54	56
Whitcomb Building	27	29	36	36	39	47	49	54	52
Cook County Building	18	27	29	30	34	29	46	53	51
Logan Square Health Center	51	36	38	34	30	38	37	41	47
Hawthorne Warehouse	17	18	18	17	18	20	21	33	46
Cicero Records Center	N/A	46	36	40	39	38	36	43	33
Piszczek TB Clinic	16	19	20	25	27	31	33	37	26
Cottage Grove Health Center	20	22	27	6	1	1	1	2	17
Stroger Hospital Campus	7	12	16	13	12	6	8	9	11
Robbins Health Center	54	57	50	13	3	4	2	3	2
Provident Hospital	1	1	1	3	3	2	3	3	2
CORE Center	1	1	1	1	1	1	1	1	1
Englewood Health Center	1	1	1	1	1	1	1	1	1

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 167 buildings benchmarked, 40% improved in Source EUI. This metric tracks the efficiency of energy use per area occupied in a building.

PORTFOLIO ENERGY USE

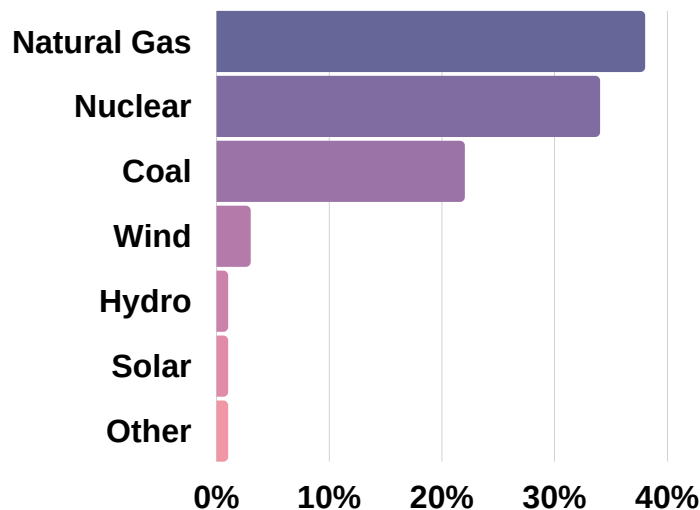
Cook County buildings have shifted to using more natural gas for energy needs with 63% of the energy use from natural gas, and 37% from electricity in 2021. This energy distribution varies by building. Some facilities, such as the Jefferson building to the right of the graph, only use electricity. However, 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 **2,888,616,751 kBtu** in 2021, a 7% reduction compared to 2020. This was equivalent to a 2% reduction in electricity (kWh) and a 14% reduction in gas usage (therms). This overall improvement is a step forward for reaching energy reduction goals. One of these 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. 2021 marked significant progress toward that goal with a 22% reduction, which will be confirmed with the next report after the results are verified.

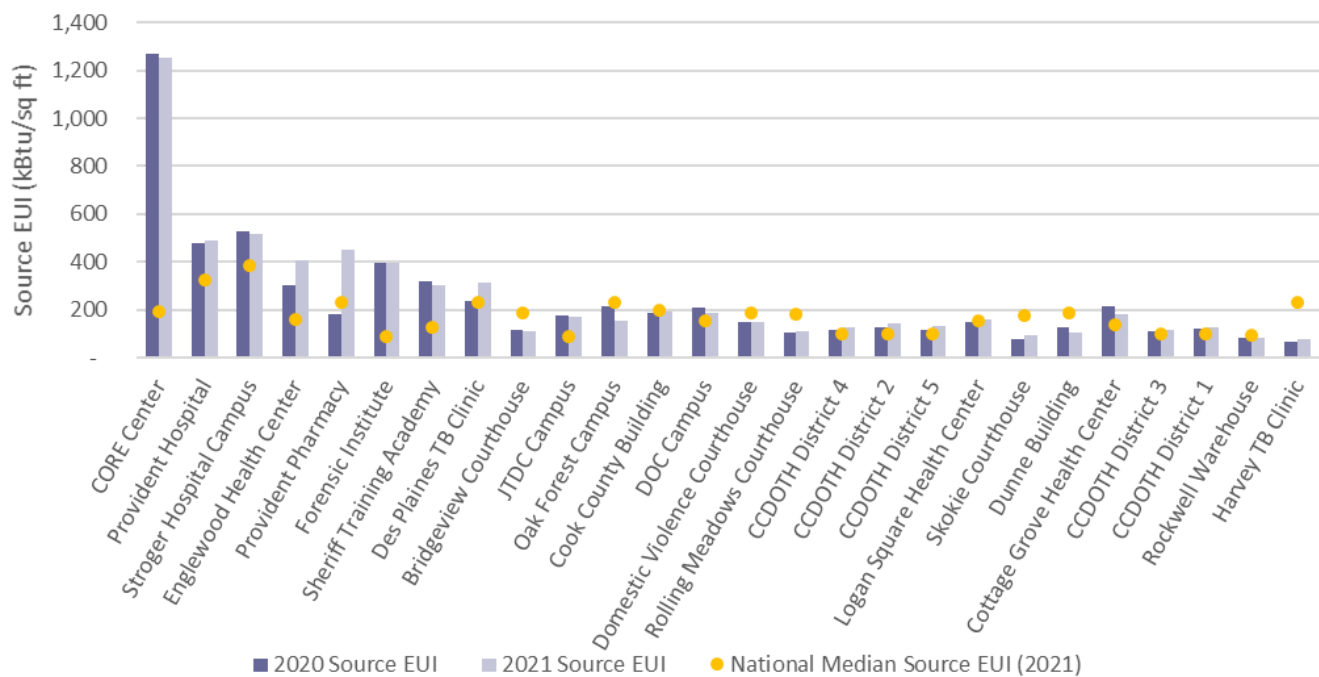
<https://betterbuildingssolutioncenter.energy.gov/partners/cook-county-il>



2021 ELECTRICITY GRID COMPOSITION (COMED)

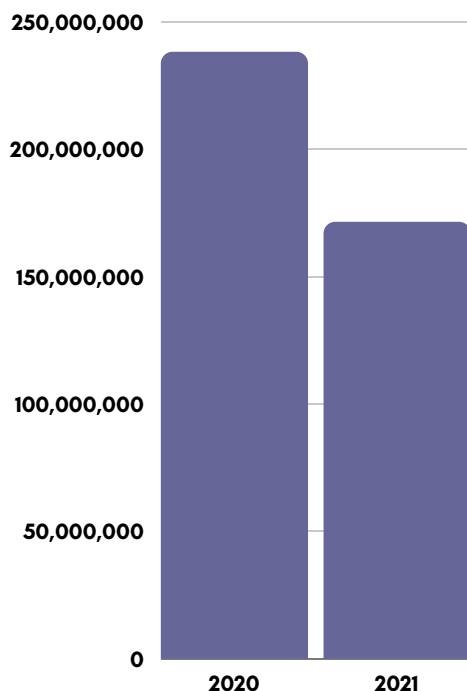
The calendar year ending December 2021 had the following grid mix from ComEd, Cook County's electricity provider. Noteworthy points include that nuclear and natural gas make up the highest percentages of the total grid mix.

Source Energy Use Intensity Comparisons



SOURCE ENERGY USE INTENSITY (EUI)

The graph above shows annual energy usage comparisons between 2020 and 2021. 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 40% of the sites benchmarked in 2021. The yellow dots show what the national median for a similar building type would be to indicate which facilities performed better than the median.



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 28% in 2021 compared to the previous year. Oak Forest Campus saved energy by optimizing the campus operations for occupancy and weather conditions. Other facilities that reduced more than 15% in total source energy usage include:

- Oak Forest Campus (-28%)
- Hawthorne Warehouse (-22%)
- Dunne Building (-16%)
- Cottage Grove Health Center (-16%)

Oak Forest Campus Annual Source Energy Use (kBtu)

GREENHOUSE GAS REDUCTIONS

Cook County has two greenhouse gas emission reduction goals:

- 45% reduction in greenhouse gas emissions by 2030
- Carbon neutral by 2050

11%

Greenhouse gas emissions reduced in 2021

among the 167 benchmarked buildings

CO₂E

146,884 metric tons

Greenhouse gas emissions are tracked in metric tons of carbon dioxide equivalent emissions or CO₂e. The total benchmarked emissions in 2021 were 146,884 metric tons of CO₂e.



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 2021, **Cook County reached its first goal to reduce greenhouse gas emissions 45% by 2030** from a 2010 baseline. 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, and lower emissions from the electricity grid mix in the Midwest.

45%

Greenhouse gas reductions since 2010

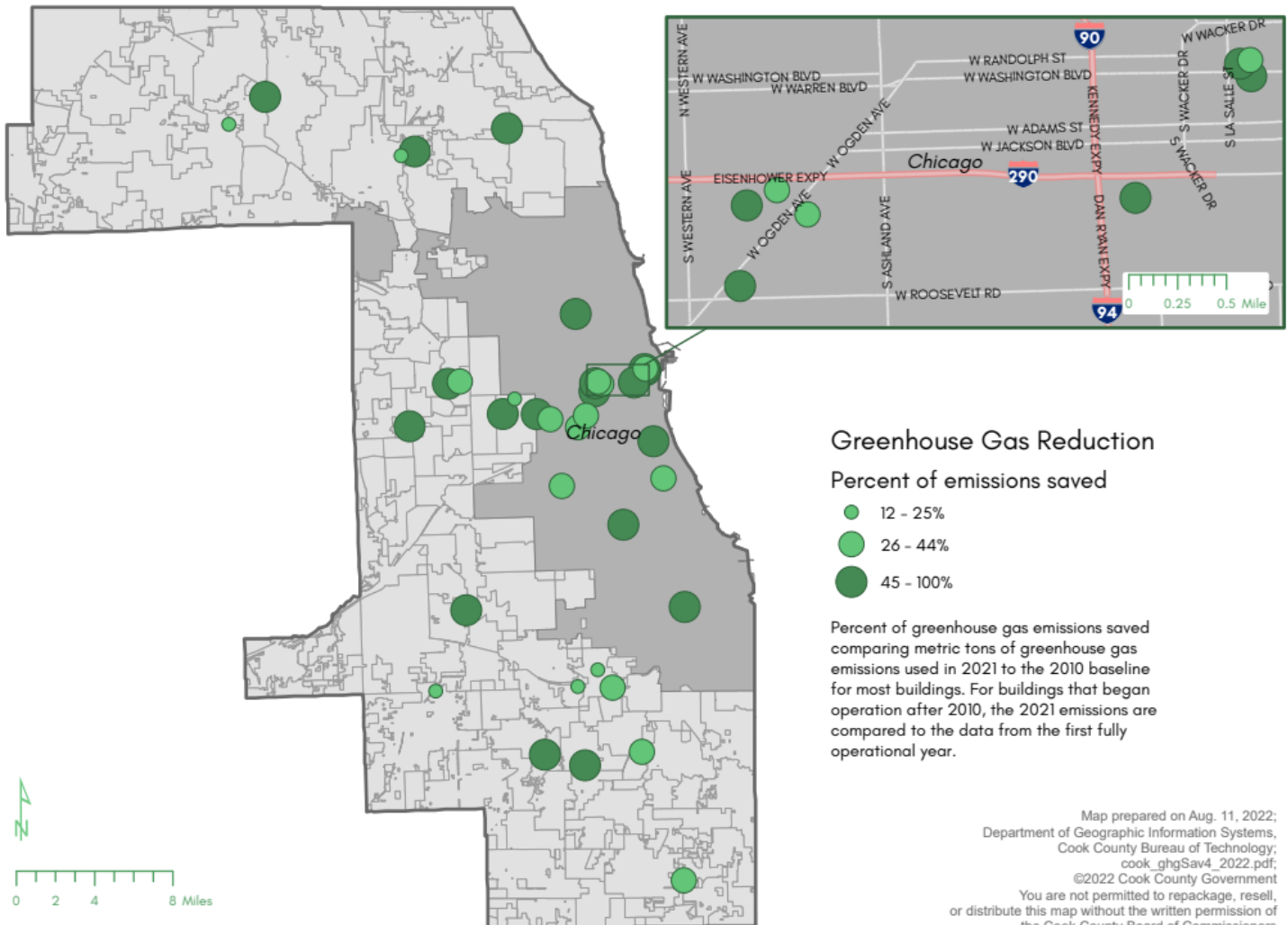
8.5%

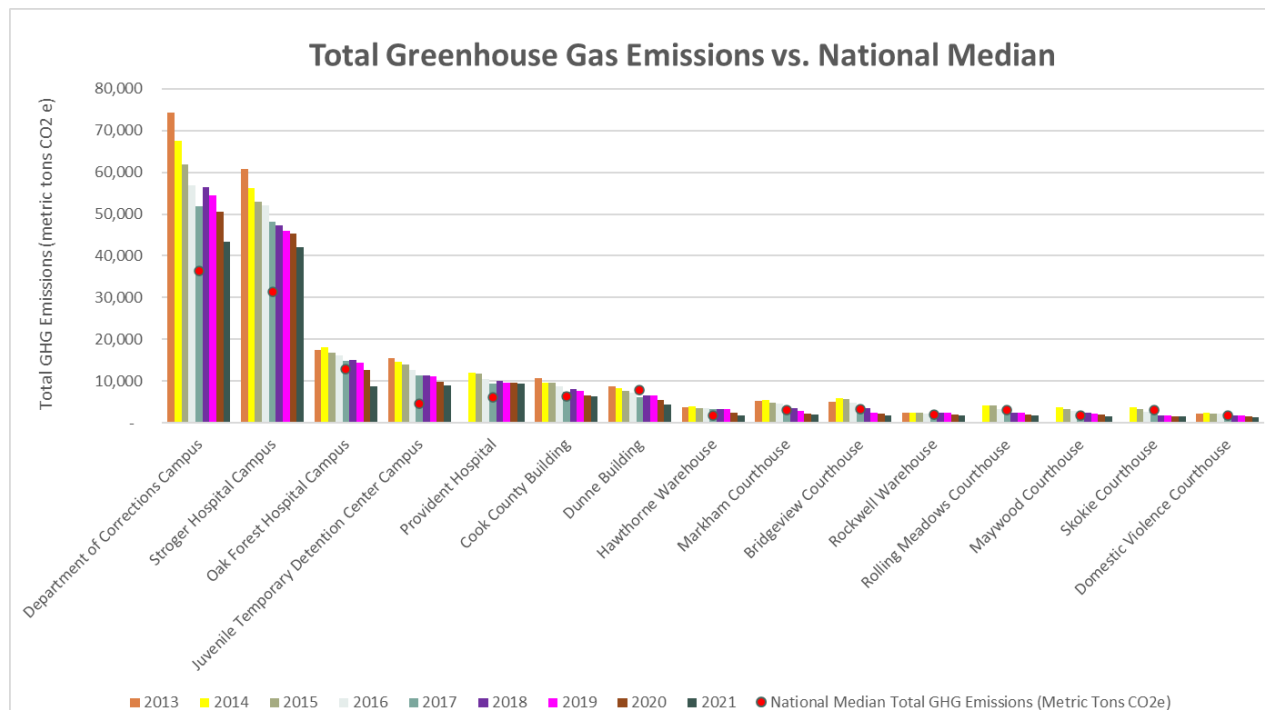
Annual portfolio reductions from 2020 to 2021

Cook County's Clean Energy Plan Progress Map

Cook County reached its first goal of a 45% greenhouse gas reduction from a 2010 baseline as of 2021 building operations data. Properties in darker green have achieved at least a 45% reduction, marking a significant impact toward the achievement of the reduction goal.

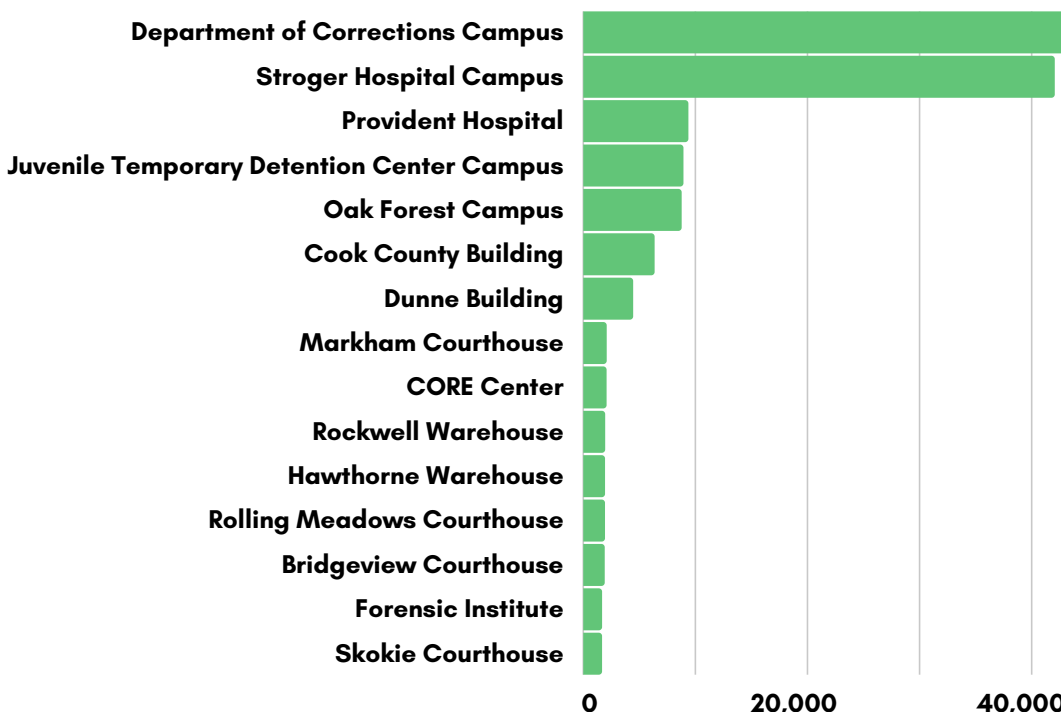
Greenhouse Gas Reductions at Cook County Government Facilities





WHAT CHANGED FOR GHG REDUCTIONS

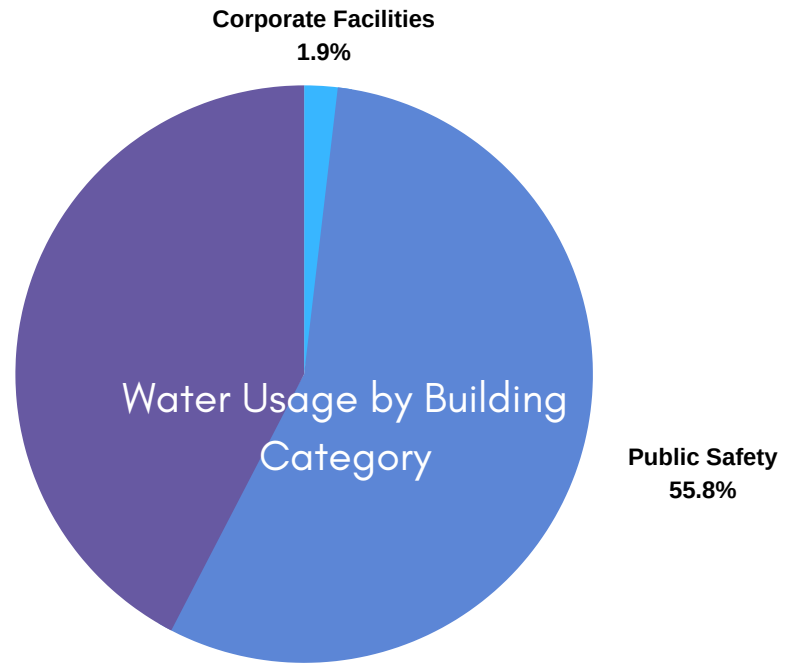
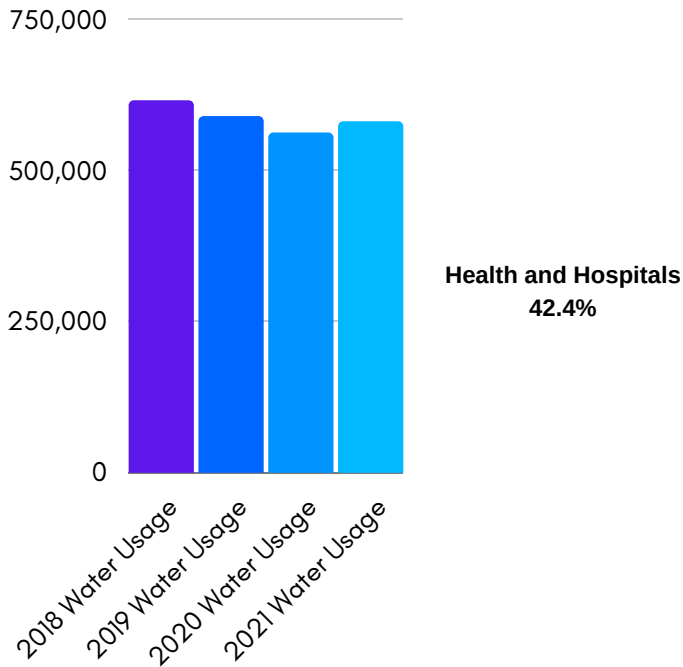
Of the benchmarking buildings, there was an 11% decrease in total greenhouse gas emissions over the last year, with 70% of sites reducing annual emissions. The chart above shows a snapshot of the portfolio since benchmarking began in 2013. The emissions values are compared to the red dot values, which represent the 2021 national median emissions for similar sized buildings. Most sites reduced GHG emissions between 2020 and 2021. Buildings with significant annual GHG reductions over 20% included: Dunne Building, Hawthorne Warehouse, Jefferson Building, Oak Forest Campus, and Cottage Grove Health Center.



GHG EMISSIONS BY BUILDING 2021

This chart shows emissions by building in metric tons of CO₂e for the 15 highest emitting sites. The remaining sites make up about 7% of total portfolio emissions. The Department of Corrections Campus continues to have the largest greenhouse gas emissions footprint at about 29% of portfolio emissions.

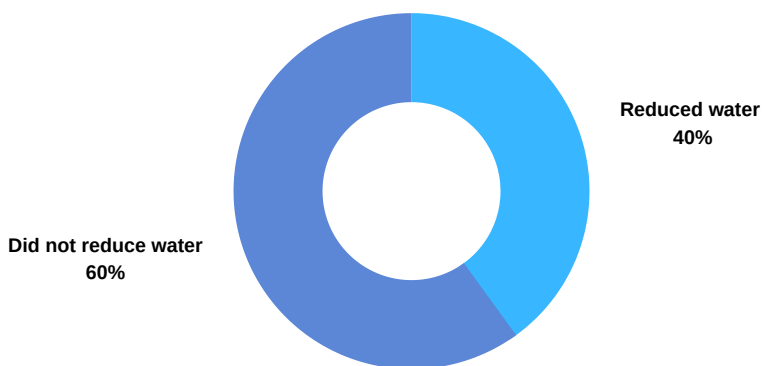
Annual Water Usage in 1,000 gallons



WATER CHANGES

In 2021, Cook County used about 579,420,000 gallons of water across the portfolio of benchmarked buildings, which was a 3% increase 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. This was the first year that Stroger Hospital Campus had more accurate meter reads and this amount was added to the total annual water usage. To account for this, the year-to-year reduction looked at the comparison by adding estimates for Stroger Hospital Campus for 2018-2020.

Percentage of Benchmarked Sites with Water Reductions



During 2021, many employees were able to work remotely part-time, which led to reduced water usage at about 40% 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). COVID-19 impacted water use with reduced occupancy in some of the County's facilities leading to some sites reducing water usage while other sites increased water usage for health needs. The top 4 facilities with significant reductions in water use were:

- Oak Forest Campus: -5,000,000 gallons
- Maywood Courthouse: -4,220,000 gallons
- JTDC Campus: -4,430,000 gallons
- Forensics: -1,387,000 gallons

Next Steps

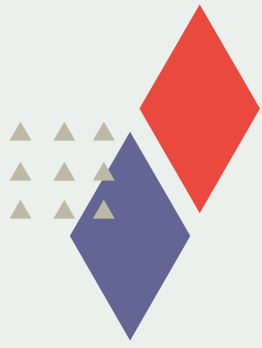
**Implement 2nd year of
STIC* with it energy
saving challenges for
building engineers
cooling season 2022**

**Energy Efficiency
Projects and deep
energy audits**

**Water Project at the
Department of
Corrections**

**Use
Clean Energy Plan to
track and inform
reductions
in energy and
emissions**

***STIC=**
See Where Energy is Used
Tools
Implementation
Create a Lasting Plan



Appendix A: 2021 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

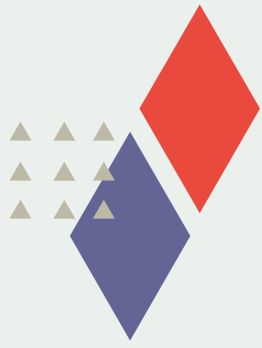
*2121 Euclid Ave., Rolling Meadows, IL 60008
Size: 554,767 square feet*

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: 2021 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)

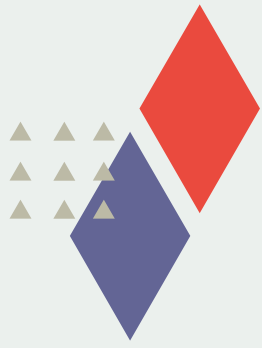
13600 S. Ashland Ave., Riverdale, IL 60827

Size: 78,092 square feet

Institute of Forensic Medicine

2121 W. Harrison St., Chicago, IL 60612

Size: 79,368 square feet



Appendix A: 2021 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

~~**Near South Health Clinic**~~

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

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

Logan Square Health Center

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

Englewood Health Center

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

Harvey TB Clinic

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

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 October 2020
- The following tables from Energy Star's Technical Guides explain their methodology used in the database calculations for the October 2020 update
- Energy Star tends to lag a year behind the most recent eGrid updates for greenhouse gas emissions calculations

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/MBtu)	(kg/MBtu)	(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

Bureau of Asset Management

John Yonan	Bureau Chief
Elizabeth Granato	Deputy Bureau Chief
Jamie Meyers	Energy Manager
Kate Buczek	Energy Analyst

Department of Capital Planning

Earl Manning	Director
--------------	----------

Department of Facilities Management

Bilqis Jacobs-El	Director
Pat Nolan	Operating Engineer IV
Bob Rassano	Electrical Foreman

Bureau of Administration

Department of Environment and Sustainability

Deborah Stone	Director
Sarah Edwards	Program Manager

Office of Research, Operations, and Innovation

Sam Molaro	Industrial Engineer III
------------	-------------------------

Department of Geographic Information Systems

David Arfa	System Analyst III
------------	--------------------

ACKNOWLEDGEMENTS

STIC WITH IT ENERGY
COMPETITION 2021

***Thank you to the Department of Facilities Management
Director, supervisors, project leads, and all team members!***

Bridgeview Courthouse

Joe Washington

Nominated energy saver: Sean Connelly

County Building

Jim O'Shea

Nominated energy saver: John Kevin

Domestic Violence Courthouse

Mike Dennehy

Nominated energy saver: Mauro Franzese

Juvenile Temporary Detention Center

Lee Broomfield

Nominated energy saver: Building Staff

Markham Courthouse

Pat Nolan

Nominated energy saver: Kevin Koss

Maywood Courthouse

Mike Simental

Nominated energy saver: Victor Burgos

Rockwell Warehouse

Brian Barron

Nominated energy saver: Larry Guy

Rolling Meadows Courthouse

Rosario Cannatello

Nominated energy savers: Barrett/Godley

Skokie Courthouse

Pat McCarthy

Nominated energy savers:

John Heneghan,
Michael O'Donnell,
Michael Heany, Pat Bordes,
Robert Pellegrino,
and Bernard Finnegan



Appendix B: 2021 Energy Benchmarking Results of County-Owned Properties

The following table summarizes the 2021 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	84	56	104.7	86,077,606	46,046,627	6,318,647	244,874	4,379.9	5.3
Cook County Building	Office	1906	1	51	102	193.6	123,653,099	65,108,321	9,259,648	335,144	6,292.6	9.9
Rockwell Warehouse	Non-Refrigerated Warehouse	1927	1	56	54.2	82.9	37,078,713	24,265,701	1,942,677	176,373	1,883.5	4.2
Hawthorne Warehouse	Non-Refrigerated Warehouse	1905	1	46	59	74.6	36,892,511	29,172,728	1,048,593	255,949	1,870.5	3.8
Cicero Records Center	Non-Refrigerated Warehouse	2008	1	33	47.9	82.9	21,621,486	12,484,065	1,425,761	76,194	1,099.5	4.2
2nd District Courthouse Complex - Skokie	Courthouse	1980	1	76	58.1	119.3	41,244,226	20,073,495	3,377,500	85,495	2,100	6.1
2nd District Courthouse (Skokie)	Courthouse	1980	1	87	48	91.3	31,549,092	16,610,947	2,362,686	85,495	1,606	4.6
2nd District Courthouse (Skokie) Parking Structure	Parking	2002	1	N/A	7.2	20	9,679,024	3,456,794	1,013,128	N/A	494	1
3rd District Courthouse Complex - Rolling Meadows	Courthouse	1987	1	78	47.5	117.6	39,407,292	15,919,096	3,800,408	29,521	2,009	6
3rd District Courthouse (Rolling Meadows)	Courthouse	1987	1	81	44.5	109.3	36,642,802	14,931,778	3,511,042	29,521	1,868	5.6
3rd District Courthouse (Rolling Meadows) Parking Structure	Parking	1987	1	N/A	1.7	4.8	2,687,392	959,783	281,296	Not Available	137	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	N/A	73.7	179.1	49,615,724	20,421,641	4,718,305	43,228	2,529	9.1
Jefferson Building	Office	1965	1	66	63.1	176.6	8,345,058	2,980,378	873,499	N/A	426	9
Whitcomb Building	Office	1965	1	52	61.6	172.6	4,007,167	1,431,131	419,441	N/A	204	8.8
Sheriff Training Academy	Other - Public Services	1967	1	N/A	127.2	303.6	6,584,744	2,758,782	617,656	6,513	336	15.5
4th District Courthouse (Maywood)	Courthouse	1975	1	63	70.9	163.8	30,282,204	13,109,537	2,766,235	36,711	1,543	8.3
5th District Courthouse - Bridgeview	Courthouse	1989	1	84	42.4	107.9	36,156,683	14,201,190	3,558,103	20,609	1,843	5.5
Domestic Violence Courthouse	Courthouse	1890	1	66	79.2	150.9	28,250,304	14,830,748	2,126,701	71,642	1,417	7.6
6th District Courthouse - Markham	Courthouse	1980	1	79	47.4	124.7	39,616,943	15,065,462	3,985,631	14,665	2,020	6.4
Juvenile Temporary Detention Center Campus	Prison/Incarceration	1973	3	N/A	81.8	170.1	174,118,264	83,734,750	14,435,901	344,794	8,866	8.7
JTDC Parking Structure	Parking	1993	1	N/A	2.5	7	5,535,065	1,976,809	579,370	N/A	282	0.4
Institute of Forensic Medicine	Other - Public Services	1982	1	N/A	223.8	398.3	31,615,480	17,766,481	2,170,604	103,604	1,608	20.3
Cook County Department of Corrections Campus	Prison/Incarceration	1926	57	N/A	109.9	186.5	852,318,438	502,057,361	54,458,175	3,159,562	43,342	9.5

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	N/A	105.8	127.8	7,231,389	5,984,979	158,627	54,437	366	6.5
CCDOTH Maintenance Facility District 3	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1950	3	N/A	75	116	5,372,401	3,472,154	289,171	24,855	273	5.9
CCDOTH Maintenance Facility District 2	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1990	4	N/A	114	145.4	8,998,800	7,058,739	265,806	61,518	456	7.4
CCDOTH Maintenance Facility District 4	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1969	5	N/A	103.2	125.7	8,603,594	7,061,214	199,183	63,816	436	6.4
CCDOTH Maintenance Facility District 5	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1987	3	N/A	105.2	133.9	10,456,549	8,211,982	307,146	71,640	530	6.8
Oak Forest Hospital Campus	Medical Office	1910	52	N/A	95.2	156	171,269,649	104,557,632	10,297,124	694,238	8,706	7.9
CORE Center	Medical Office	1998	1	1	677.6	1251.6	39,489,256	21,378,243	2,854,145	116,399	2,009	63.7
Provident Hospital Campus	Hospital (General Medical & Surgical)	1981	2	4	291	498.2	186,307,352	108,818,949	12,066,228	676,490	9,473	25.3
Provident Hospital	Hospital (General Medical & Surgical)	1981	2	2	287.8	489.4	183,045,166	107,653,882	11,724,767	676,490	9,307	24.9
Provident Hospital Parking Structure	Parking	1991	1	N/A	4.3	12.2	2,986,565	1,066,630	312,611	N/A	152	0.6
Stroger Hospital Campus	Hospital (General Medical & Surgical)	2002	4	11	311.3	517.4	825,955,573	496,895,421	50,948,810	3,230,581	41,988	26.3
Cottage Grove Health Center	Medical Office	2000	1	17	106.8	181.9	2,431,570	1,427,947	156,125	8,952	124	9.2

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	26	146.8	226.3	4,378,449	2,839,994	233,873	20,420	222	11.5
Des Plaines TB Clinic	Medical Office	1991	1	N/A	178.1	312.1	776,829	443,265	52,152	2,653	40	15.9
Logan Square Health Center	Medical Office	1962	1	47	74.9	159.9	1,305,840	611,945	111,087	2,329	67	8.1
Englewood Health Center	Medical Office	2000	1	1	225.6	404.4	4,355,659	2,429,531	302,236	13,983	222	20.6
Harvey TB Clinic	Medical Office	1962	1	N/A	56.5	77.3	210,394	153,801	8,190	1,259	11	3.9
Robbins Health Center	Medical Office	2000	1	2	166.8	265.5	3,798,350	2,385,999	216,555	16,471	193	13.5
Prieto Health Center	Medical Office	1994	1	23	96.8	197.9	3,359,162	1,642,911	273,674	7,091	171	10.1
Provident Hospital Pharmacy	Medical Office	2005	1	1	237.2	453.5	2,982,809	1,560,197	225,189	7,919	152	23.1
Rockwell Warehouse Garage	Repair Services (Vehicle, Shoe, Locksmith, etc.)	1927	1	N/A	243.8	300.3	1,438,059	1,167,258	35,578	10,459	73	15.2
Sheriff Central Warrants	Police Station	1955	1	N/A	102.1	154	2,993,680	1,984,997	152,308	14,653	152	7.8

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

Appendix C: 2021 Water Benchmarking Results

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

Facility Name	Type	City	TGAL Consumption	UOM	Water Intensity (gal/sq. ft)	UOM
DOC	PS	Chicago	289,231	1,000 Gallons	64.7	Gallons/sq. ft
Oak Forest Campus	HH	Oak Forest	89,010	1,000 Gallons	81.1	Gallons/sq. ft
JTDC Campus	PS	Chicago	17,351	1,000 Gallons	9.6	Gallons/sq. ft
Provident Hospital	HH	Chicago	35,209	1,000 Gallons	103.2	Gallons/sq. ft
Cook County Building	CF	Chicago	6,070	1,000 Gallons	9.5	Gallons/sq. ft
Forensic Institute	PS	Chicago	6,551	1,000 Gallons	82.5	Gallons/sq. ft
Maywood Courthouse	PS	Maywood	1,566	1,000 Gallons	8.5	Gallons/sq. ft
Dunne Building	CF	Chicago	2,580	1,000 Gallons	3.1	Gallons/sq. ft
Rolling Meadows Courthouse	PS	Rolling Meadows	1,395	1,000 Gallons	4.2	Gallons/sq. ft
Rockwell Warehouse	CF	Chicago	757	1,000 Gallons	1.7	Gallons/sq. ft
Markham Courthouse	PS	Markham	2,410	1,000 Gallons	7.6	Gallons/sq. ft
Bridgeview Courthouse	PS	Bridgeview	827	1,000 Gallons	2.5	Gallons/sq. ft
Skokie Courthouse	PS	Skokie	965	1,000 Gallons	2.8	Gallons/sq. ft
Domestic Violence Courthouse	PS	Chicago	1,472	1,000 Gallons	7.9	Gallons/sq. ft
Hawthorne Warehouse	CF	Chicago	1,152	1,000 Gallons	2.3	Gallons/sq. ft
CORE Center	HH	Chicago	606	1,000 Gallons	7.6	Gallons/sq. ft
Jefferson Building	PS	Maywood	47	1,000 Gallons	1.0	Gallons/sq. ft
Provident Pharmacy	HH	Chicago	80	1,000 Gallons	12.2	Gallons/sq. ft
Piszczek TB Clinic	HH	Forest Park	819	1,000 Gallons	42.3	Gallons/sq. ft
CCDOH District 5	PS	Blue Island	250	1,000 Gallons	3.2	Gallons/sq. ft
Des Plaines TB Clinic	HH	Des Plaines	50	1,000 Gallons	19.9	Gallons/sq. ft
CCDOH District 3	PS	LaGrange Park	281	1,000 Gallons	6.1	Gallons/sq. ft
Whitcomb Building	PS	Maywood	197	1,000 Gallons	8.5	Gallons/sq. ft
Robbins Health Center	HH	Robbins	203	1,000 Gallons	14.2	Gallons/sq. ft
Prieto Health Center	HH	Chicago	175	1,000 Gallons	10.3	Gallons/sq. ft
Cottage Grove Health Center	HH	Chicago Heights	152	1,000 Gallons	11.4	Gallons/sq. ft
CCDOH District 4	PS	Orland Park	123	1,000 Gallons	1.8	Gallons/sq. ft
CCDOH District 1	PS	Schaumburg	159	1,000 Gallons	2.8	Gallons/sq. ft
Cicero Records Center	CF	Cicero	230	1,000 Gallons	0.9	Gallons/sq. ft
Englewood Health Center	HH	Chicago	95	1,000 Gallons	8.8	Gallons/sq. ft
Logan Square Health Center	HH	Chicago	118	1,000 Gallons	14.4	Gallons/sq. ft
CCDOH District 2	PS	Des Plaines	204	1,000 Gallons	3.3	Gallons/sq. ft
Provident Parking Structure	PK	Chicago	44	1,000 Gallons	0.2	Gallons/sq. ft
Harvey TB Clinic	HH	Harvey	0.007	1,000 Gallons	0.003	Gallons/sq. ft
Stroger Hospital Campus	HH	Chicago	119,042	1,000 Gallons	66.8	Gallons/sq. ft

*Note: Water data was based on available billing information. A few of these sites are undergoing further analysis to ensure usage accuracy.

Appendix D: Assumptions for Calculations

- **Energy:**

Source energy is used for all performance metrics in Cook County's portfolio for the 2022 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 past three years instead of the full duration of benchmarking to aid in comparison with the same underlying conditions.

- **GHG Emissions:**

This report looks only at building greenhouse gas Scope 2 emissions from electricity and 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 comes directly from Energy Star Portfolio Manager and may not be updated as frequently as the eGrid value. A few new properties to the portfolio will be added to next year's report when two full years of data become available to compare.

- **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. Since this is only the sixth full year of water data, 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 first 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.