15 years ago, McHenry County Government buildings consumed 14.3 million kilowatt hours of electricity. Today, we have reduced this by 43% to 8.8 million. This equates to a 4,833-ton reduction every year in greenhouse gas emissions. Here is a look back, a look at the present, and a plan to move forward with our decarbonization plan.

Moving Forward

A plan to continue our decarbonization goals over the next 15 years

Tom Burroughs – Facilities Management

McHENRY Co. ILLINOIS

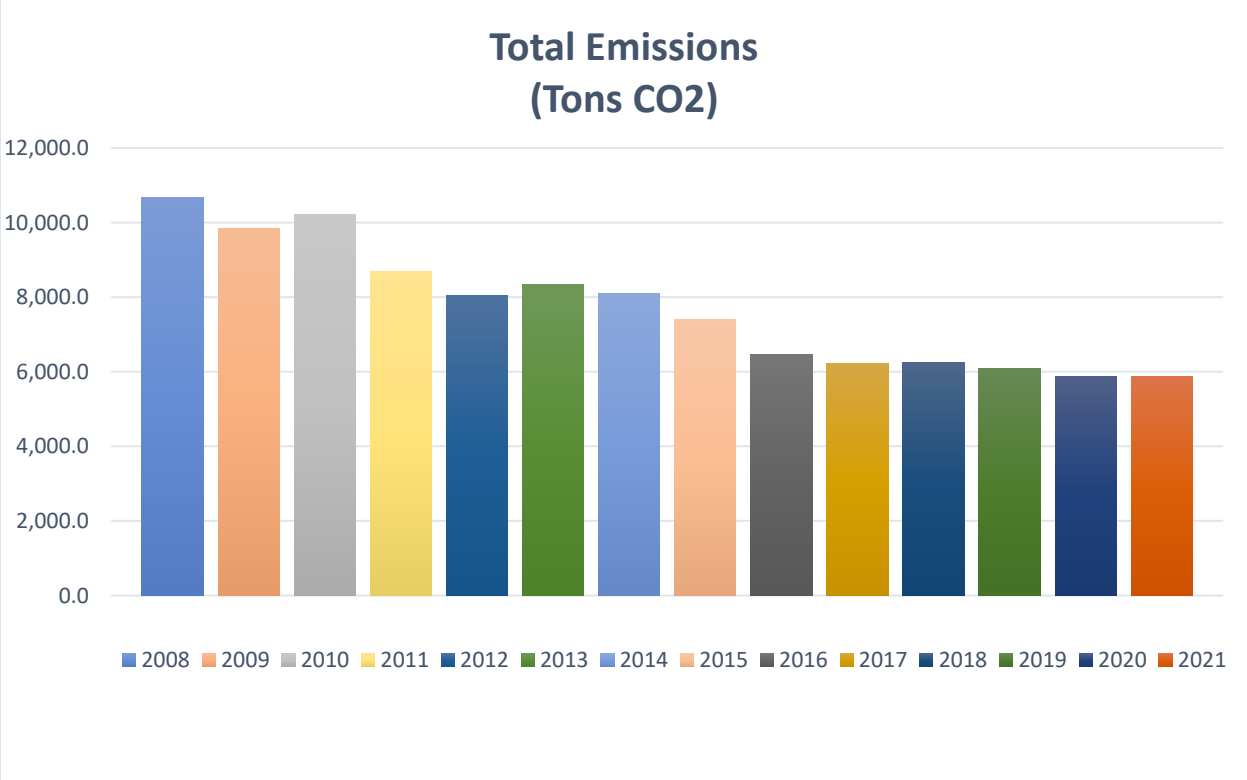
Where was the County in carbon emissions and utility usage 15 years ago?

In 2008, total emissions related to our energy consumption totaled 10,580 tons. We used 14,291,796 kilowatt hours of electricity and 459,703 therms of natural gas. At today's rates, the cost would be $1,179,073 and $330,986, respectively.

Where are we today?

In 2022, total emissions related to our energy consumption totaled 5,747 tons. This is a 43% reduction. We used 8,854,803 Kilowatt hours of electricity and 391,829 therms of natural gas which cost $730,342 and $276,548 respectfully.

By embracing continuous improvement, the County has an annual utility cost savings of $503,169 compared to our usage 15 years ago.



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What's Next for 2022-2023?

In Fiscal Year 2023, we are working on several significant energy projects and planning for more.

✪ ComEd offers no-cost third party advisors to review current building trends related to utility use and provide input on how to further lower consumption. We began a project in March of 2022 in which our advisor met with us bringing a template of possible changes we could make in the operations of our HVAC equipment. We implemented these changes and as a result, saw a reduction of consumption in the of approximately 292,000 KWh range through the cooling season. This converts to a reduction in emissions of 75 tons. We are now implementing the same programing changes to our heating systems. The changes relate to when the systems start up in the morning, how far we allow them to drift off setpoint during unoccupied periods, and what the temperature setpoints are restricted to. Our clients have been generally receptive to these changes, with some exceptions.

✪ We conducted an energy audit on the Regional Training Center in 2022 and used this information to identify an energy/emissions improvement project. This project was approved as part of the RTC project that will soon be underway. This decarbonization project has a $174K cost and qualifies for $35K in utility rebates. It will also save the County $30K annually on utility costs and lower carbon emissions by 300 tons annually.

✪ We will be going out to bid this year to purchase a replacement chiller for the jail. This is the largest piece of cooling equipment that the County operates. Rather than a typical bid scope, we will be asking each competing manufacturer to provide:

- Cost to purchase the equipment
- Cost to operate the equipment in kilowatt hours given a specified load
- Annual emission reduction against a competitor and the existing chiller
- Expected useful operating life of the equipment
- Expected lead time from contract to delivery

This data will allow us to evaluate and decide based on a complete life cycle analysis rather than against initial first cost only.

What's Next for Fiscal Year 2023 continued…

✪ For Fiscal Year 2023, McHenry County will secure bids for engineering services related to electric both at the County's main campus and at the Division of Transportation facilities. Have ready engineering services to design for bidding, Electric Vehicle Charging stations at our Main Campus and Infrastructure assessment and possible infrastructure improvements at the Department of Transportation. We would like to expand this engineering to include cost/benefit comparisons on different EV siting options at the facilities most likely to receive EV charging.

Where do we go from here?

Using the Board approved 2022-2024 Strategic Plan and aligning it with best practices as outlined by the EPA and the US Department of Energy, we recommend the following strategy.

Conduct a greenhouse gas inventory which will identify and benchmark the County's emission sources and establish an emission baseline. The inventory will be broken into three scopes.

Scope 1 identifies the County's direct emission sources such as natural gas fired boilers, generators, furnaces, as well as our vehicle fleet.

Scope 2 identifies the County's purchased electricity stream. (complete)

Scope 3 identifies our emissions related to the purchase of goods and services, business travel, employee commuting, investments, and waste generated in operations. – Not Part of Current Work

McHenry County should establish target reduction goals in addition to an emission baseline. Currently, the Federal Sustainability Plan has set the following goals.

- Use 100 percent carbon pollution-free electricity by 2035
- Achieve 100 percent zero emission vehicle acquisitions by 2035
- Achieve net-zero emission buildings by 2045

- Achieve net-zero emissions procurement by 2050

Our targets should include

- The base year and the target year.
    - The base year is the year against which greenhouse gas (GHG) reductions are tracked (2022)
    - The year in which the target will be met should be 5 to 10 years from the base year. (2027 or 2032)
- Targets should be for an absolute reduction in GHG emissions.
    - e.g. 25% reduction over 10 years
- Targets should address all three emission scopes.
- Targets should be publicly declared.
    - "McHenry County Commits to a 25% reduction of scope 1,2, and 3 global emissions by 2032" or whatever target the County Board wishes to establish.Establishing our GHG reduction plan will require

1. Demand reduction. Identify demand reduction opportunities. These measures will likely be a mix of capital investments, phased replacements, such as moving from internal combustion engines (ICE) to electric vehicles (EV), moving to more efficient equipment, and operational changes.
2. Once these reduction measures are underway and nearing completion, transformational measures such as heat pumps, geothermal and photovoltaics can be considered.
3. Finally, once these capital-intensive decisions and investments have been made, the remaining gap in emissions can be closed using financial tools such as renewable energy credits (REC) and carbon offsets.

By delaying the use of capital for RECs and offsets, we will have narrowed our emission gap, which will make the purchase of these tools less expensive while having the benefit of these funds to supplement revenue required to decarbonize our operations.

that we focus our efforts strategically. This way we can leverage available grants and manage capital outlay.

Once developed, the greenhouse gas reduction plan, will help us identify what other consulting services may be needed so that scopes can then be tailored, and Requests for Proposals published.

Challenges

Because the collection and inputting of data will span multiple departments, gaining cooperation and assistance from the mix of elected and non-elected departments will be crucial. Selecting easy-to-use data collection tools coupled with consultants when needed, will be invaluable to this effort.

Once a commitment to the process is made, it will be crucial for the effort to be normalized within our culture so that this becomes business as usual. If our effort looks anything like the Federal effort of others, it will span then next 27 years!

As we look at our capital planning, items such as equipment replacements, interior LED lighting retrofits, EV charging stations and vehicles will be tagged with a carbon reduction note so that these projects can be tracked in our financial software at a high level.