REPORT TO COUNTY COUNCIL

# 2024-2028 Energy Management Plan

**To:** **Warden and Members of County Council**

**From:** **Director of Public Works**

## RECOMMENDATIONS

1. **That County Council adopt the targets established within the updated Energy Management Plan, dated July 1, 2024, as attached to Report PW 2024-25 entitled "2024-2028 Energy Management Plan";**

2. **And further, that County Council supports in principle the related initiatives outlined within the updated Energy Management Plan, dated July 1, 2024, recognizing that implementation will be considered by Council as part of the annual Business Plan and Budget approval process;**

3. **And further, that County Council authorize staff to make the Plan available to the public on the County's website and in print form at the Oxford County Administration Building.**

## REPORT HIGHLIGHTS

- The purpose of this report is to obtain County Council endorsement of the updated Energy Management Plan (Attachment 1) prepared in accordance with O. Reg. 25/23 of the *Electricity Act*, 1998 containing goals and objective that will be subject to the annual Business Plan and Budget approval process.
- Oxford County has seen a net increase of 0.7% in overall energy consumption from 2015 levels for all buildings as of 2023 year end. While the total energy consumption by facilities has increased, the actual energy use intensity for facilities and process plants has reduced by 24.5% and 8.5% respectively. This illustrates significant energy consumption avoidance despite expanded provisions of municipal services to accommodate community growth over this period.
- Total Greenhouse Gas (GHG) emissions have been reduced by 6.4% as compared to 2015.
- The proposed 2024-2028 Energy Management Plan recommends 65 energy efficiency measures to be implemented over the life of the plan that will advance Oxford County's path towards 100% Renewable Energy by 2050.

- While GHG emission reductions and Renewable Energy Mix targets are on track to be achieved, energy reduction targets are not being met when taking into consideration service growth.

## IMPLEMENTATION POINTS

Upon approval of the updated Energy Management Plan (EMP), staff will make the plan publicly available on the County website and in print form at the Oxford County Administration Building in accordance with legislative requirement. Staff will proceed with the implementation of the identified energy management opportunities in order to meet the goals outlined in the Plan and as permitted through approved annual budgets.

## Financial Impact

The EMP scope covers a total of five annual budgets ranging from 2024 to 2028. All numbers listed within the EMP are projected budget values and will be subject to validation review and approval as part of each annual Business Plan and Budget approval process. Approval of this EMP does not approve the budget requests listed in the EMP. As part of the EMP implementation, staff will regularly review funding opportunities to support project execution.

Table 1 summarizes the projected budget requests for each fiscal year, along with potential incentive (grant funding) values and resulting operational savings. The incentives listed for 2024, 2025, and 2026 have already been secured in accordance with Report PW 2023-46. Operational savings associated with each annual investment provide approximately $190,000 in cumulative annual savings at the end of the 2024-2028 EMP, which results in a simple payback of approximately 15 years when taking into account inflation and carbon tax impacts. Securing additional funding opportunities will further improve the EMP's payback.

Table 1: Summary of Projected Annual Budget Requests

| Budget Year | Projected Capital Cost | Potential Incentives | Annual Operational Avoidance |
|---|---|---|---|
| 2024 | $419,400* | $19,200 | $4,420 |
| 2025 | 1,687,340 | 552,840 | 55,000 |
| 2026 | 1,914,460 | 451,520 | 58,380 |
| 2027 | 722,560 | 3,330 | 36,730 |
| 2028 | 513,260 | 330 | 37,690 |
| **Plan Total** | **$5,257,020** | **$1,027,220** | **$192,220** |

*amount approved as part of the 2024 Business Plan and Budget

## Communications

Following Council approval, Report PW 2024-25 will be shared with Area Municipalities and Smart Energy Oxford (SEO) as information outlining the County's EMP for the next five years. The EMP will also be promoted through the County's social media, and will be posted on the County's "Reports and Publications" web page as per the legislative requirements. A print copy of the plan will also be placed at the Customer Services desk at the Oxford County Administration Building, as per the legislative requirements.

## 2023-2026 STRATEGIC PLAN

Oxford County Council approved the 2023-2026 Strategic Plan on September 13, 2023. The Plan outlines 39 goals across three strategic pillars that advance Council's vision of "Working together for a healthy, vibrant, and sustainable future." These pillars are: *(1) Promoting community vitality, (2) Enhancing environmental sustainability, and (3) Fostering progressive government*.

The recommendations in this report supports the following Strategic Plan pillars and goals:

|  |  |  |
|---|---|---|
| **Promoting community vitality** | **Enhancing environmental sustainability** | **Fostering progressive government** |
| Goal 1.2 – Sustainable infrastructure and development | Goal 2.1 – Climate change mitigation and adaptation | Goal 3.1 – Continuous improvement and results-driven solutions<br>Goal 3.4 – Financial sustainability |

See: Oxford County 2023-2026 Strategic Plan

## DISCUSSION

### Background

The first EMP was approved by County Council on June 11, 2014 (Report PW 2014-27) and implemented by July 1, 2014 as required through O. Reg. 397/11 under the *Green Energy Act*, 2009. Furthermore, a second Plan update was approved by County Council on August 14, 2019 (Report PW 2019-33). As of January 1, 2019, O. Reg. 397/11 was revoked by the provincial government along with the repeal of the *Green Energy Act*. However, O. Reg. 397/11 has since been rebranded as O. Reg. 507/18, and then again as O. Reg. 25/23 under the *Electricity Act*, 1998.

Through O. Reg. 25/23, all Ontario public agencies, including municipalities, are required to submit an annual energy and GHG emissions report to the Ministry of Energy, Northern Development and Mines and post the data on their respective website. In addition to annual reporting, each public agency must publish an updated energy management plan every five years following July 1, 2014. In order to remain compliant, the County must provide information on the following within each updated Plan:

- Annual energy and GHG emissions
- Goals and objectives
- Review of results from past plans
- Implemented and proposed measures
- Renewable energy

The EMP makes up an important part of the County organization's efforts to do its part to achieve the community-wide 100% Renewable Energy (RE) Plan. The EMP has a focus on energy conservation within County facilities and process plants, as the most effective way to reduce non-renewable energy consumption is to critically review what the organization requires and eliminate energy waste. This can be done through audits, energy waste reduction, conservation, technology upgrades and fuel switching. Energy related to the County's fleet operation is not included in the EMP, but is summarized as part of the County's Annual Energy Report.

As shown in Figure 1, the EMP is closely integrated with the County's Renewable Energy Action Plan, and the Green Fleet Plan, to offer a coordinated effort to progress the organization towards the same goals outlined in the 100% RE Plan.

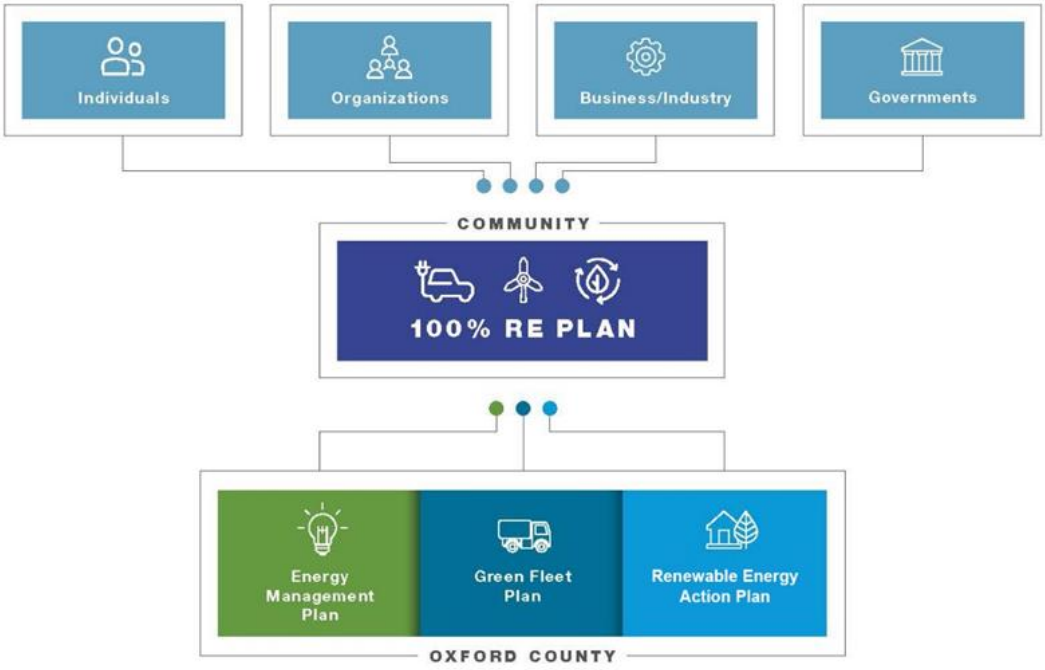


Figure 1: 100% RE Plan Contributors

## Comments

### Corporate-Wide Energy Consumption

As of December 31, 2023, projects completed as part of the EMP-2019 are projected to have avoided approximately 360 eMWh (equivalent megawatt-hour) annually in total net-energy. The measure with the largest energy avoidance came from the interior lighting retrofit project at the Oxford County Administration Building (OCAB), with annual energy consumption avoidances of nearly 135 eMWh. A total of 12 projects contributed to these annual avoidances. Further to what has been successfully implemented to date, there are an additional 10 projects still in progress from the previous plan, which are expected to add an additional 874 eMWh in annual energy avoidances.

Annual energy consumption actually increased by 0.7% in 2023 from the 2015 level (46,307 eMWh) following a 15% increase in additional facilities area and water/wastewater system capacity which was required to service growth during this timeframe. The level of conservation has been significant in limiting the growth impact on energy consumption to less than 1%. Energy consumption avoidances of approximately 12.5% (6,676 eMWh of annual energy avoided comparing 2023 with adjusted 2015 baseline) were achieved over the same period. This is due to overall improvements to the organization's Energy Use Intensity (EUI). Despite service growth, the actual EUI for facilities, as well as process plants, has reduced by 24.5% and 8.5% respectively. These avoidances have been achieved through the implementation of initiatives as part of the prior Energy Management Plan and Renewable Energy Action Plan.

As part of the updated EMP, a total of 65 energy efficiency measures are planned to be implemented. The full listing of measures is included in the plan document in Attachment 1 – Appendix B. Table 2 identified the various measure types as well as their projected impact on energy and GHG emissions;

Table 2: Energy and GHG Impact by Measure Type

| Measure Type | Energy Reduction (eMWh) | RE Harvested (eMWh) | Net-Energy (eMWh) | GHG Reduction (tCO2e) |
|---|---|---|---|---|
| Air Source Heat Pump (ASHP) | 203 | 587 | 790 | 135 |
| Existing Building Cx (EBCx) | 749 | 0 | 749 | 53 |
| Water Conservation | 210 | 0 | 210 | 36 |
| Bioenergy Harvesting | 25 | 173 | 198 | 32 |
| Building Envelop Upgrades | 164 | 0 | 164 | 25 |
| Monitoring Based Cx (MBCx) | 151 | 0 | 151 | 7 |
| Lighting Upgrades | 76 | 0 | 76 | (1) |
| Demand Control | 61 | 0 | 61 | 4 |
| Electrification Fuel Switching | 14 | 0 | 14 | 42 |
| Process and Equipment Optimization | 11 | 0 | 11 | - |
| HVAC Upgrades | 5 | 0 | 5 | 1 |
| Grand Total | 1,670 | 760 | 2,430 | 334 |

Following the implementation of the energy efficiency initiatives identified in the updated EMP, the annual energy consumption is expected to be at 47,337 eMWh by year-end 2028. Using an assumption of 1% year-over-year growth commencing in 2023 to support increasing community service, this would result in an overall energy increase of 2.2% over the 2015 level of 46,307 eMWh. Despite the overall increase, energy conservation measures implemented through the various iterations of the EMP, including this 2024 version, are expected to represent an energy avoidance of 15.5% (8,687 eMWh) over 2015 adjusted baseline projections by the year 2028. Furthermore, 2.9% (1,670 eMWh) of this reduction is directly related to the 2024 Plan as compared to proceeding with the current Business As Usual (BAU) with no further action implementation post 2023. Refer to Figure 2 below for details.

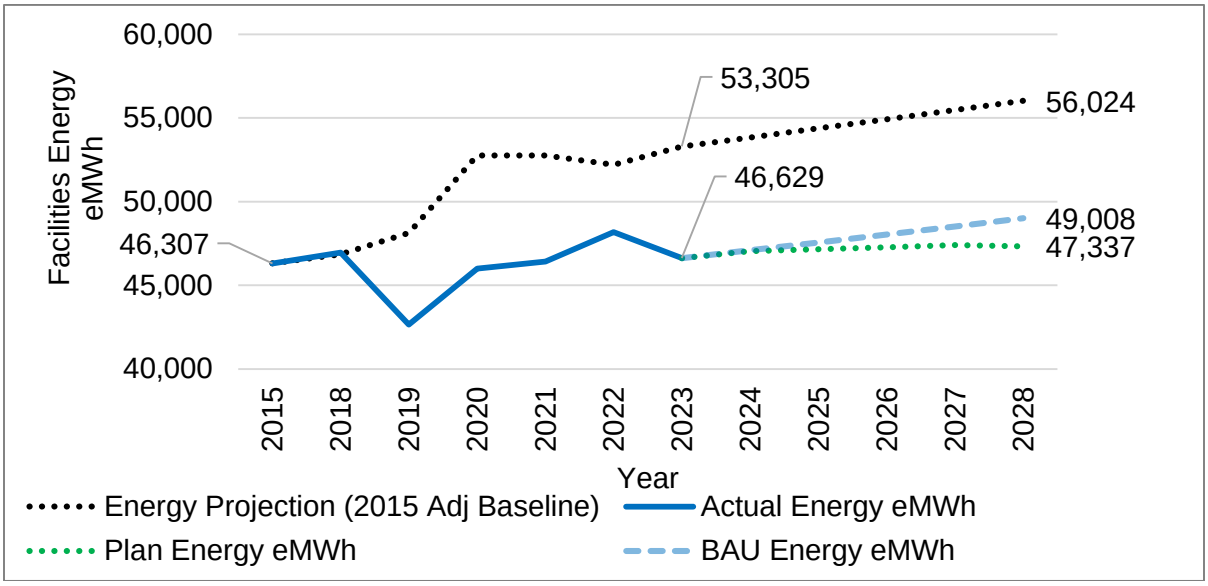


Figure 2: County Facilities Energy Consumption Trending

## Corporate-Wide Greenhouse Gas Emissions

GHG emissions have been reduced by 7.3% (291 tCO2e) in 2023 from the 2015 level of 3,985 tCO2e. Considering service growth as noted above, GHG emissions avoidances achieved are around 14% (594 tCO2e of annual GHG emissions comparing 2023 with adjusted 2015 baseline). These avoidances have been achieved through the implementation of initiatives as part of the prior Energy Management Plan and Renewable Energy Action Plan.

By end of year 2028, following the implementation of the initiatives proposed in the 2024 EMP, the annual GHG emissions are projected to reach approximately 3,570 tCO2e as shown in Figure 3. Despite ongoing growth related energy needs, overall GHG emissions are projected to decrease by approximately 21% (937 tCO2e) over 2015 adjusted baseline projections by the year 2028. Furthermore, 7.3% (334 tCO2e) of this reduction is directly related to the 2024 Plan as compared to proceeding with the current Business As Usual (BAU) with no further action implementation post 2023.

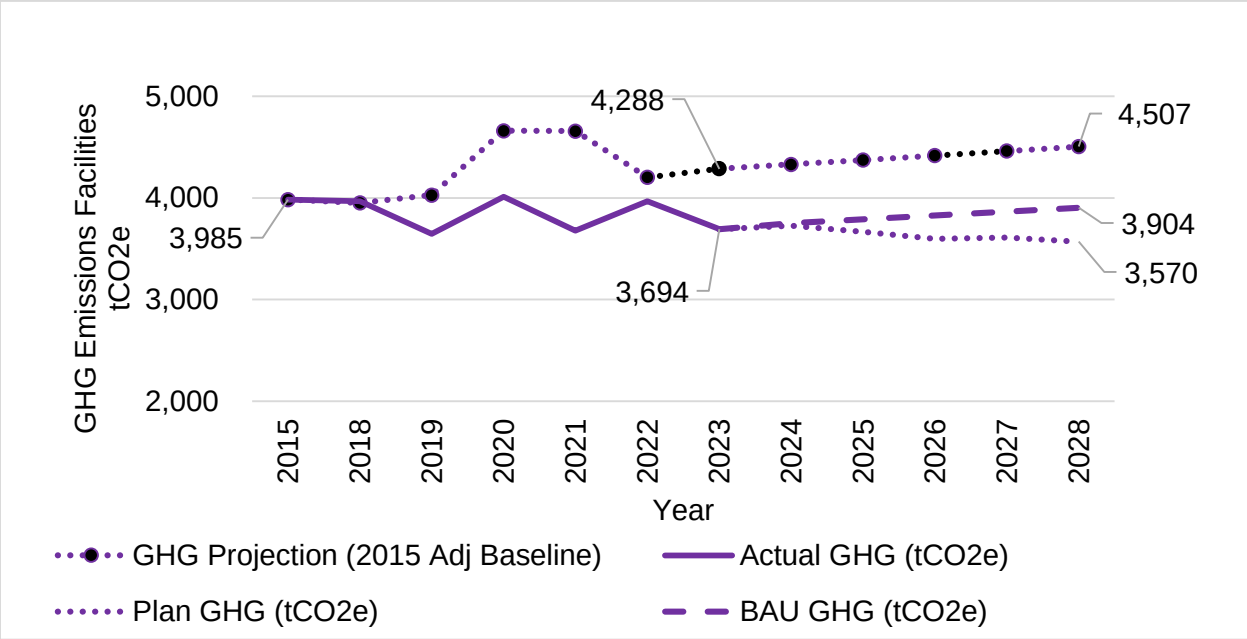


Figure 3: County Facilities GHG Emissions Trending

### 2024-2028 Energy Management Plan Targets and Projections

A summary of short term targets and projections associated with the proposed implementation of the 2024 EMP are shown in Table 3. As noted, more resources need to be dedicated to reducing energy consumption, which achieves the goal when factoring in growth using the 2015 adjusted baseline, however still comes well short of the initial plan target of a 15.4% reduction from 2015 consumption.

Table 3: 2024-2028 Summary of Targets and Projections

| Description | Projected Plan Target by 2028 | Projected | | Final Target by 2050 |
|---|---|---|---|---|
| | | Reduction (Over 2015) | Avoidance (Over 2015 Adjusted) | |
| Energy Reduction from 2015 baseline (46,307 eMWh) | **15.4%**<br>7,131 eMWh | **-2.2%**<br>-1,018 eMWh | **15.5%**<br>8,687 eMWh | **54%** |
| GHG Emissions Reduction from 2015 baseline (3,985 $tCO^2e$) | **11.9%**<br>474 tCO2e | **10%**<br>415 tCO2 | **21%**<br>937 tCO2e | **47%** |
| Renewable Energy Mix | **16.38%** | **22%**<br>(including REAP initiatives) | | **80.3%** |

## CONCLUSIONS

Oxford County is dedicated to reaching its 100% RE targets by 2050, and the 2024-2028 Energy Management Plan reinforces this commitment. Through the conservation measures being proposed by this updated EMP, in conjunction with the Renewable Energy Action Plan and Green Fleet Plan, the County organization will continue to progress its goals in accordance with the community 100% RE Plan.

With County Council's approval, staff will publish the EMP on the County's website and make available to the public in print form at the Oxford County Administration Building, in accordance with regulation. Subsequently, staff will begin preparation for implementing the EMP over the next five year period through upcoming annual budget submissions.

## SIGNATURES

### Report author:

Original signed by

Nathan Gerber, A.Sc.T., CEM, CMVP
Coordinator of Energy Management

### Departmental approval:

Original signed by

Melissa Abercrombie, P.Eng., PMP
Acting Director of Public Works

### Approved for submission:

Original signed by

Benjamin R. Addley
Chief Administrative Officer

## ATTACHMENT

Attachment 1: 2024-2028 Energy Management Plan