STRATEGIC ENERGY MANAGEMENT PLAN FOR MIDDLESEX HOSPITAL ALLIANCE 2019 - 2023

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Introduction

The purpose of Middlesex Hospital Alliance's energy management plan and policies is to promote good stewardship of our environment and community resources. In keeping with our Strategic Pillar (Resources), Middlesex Hospital Alliances' energy management program will strive for a modern and efficient infrastructure, pursue operational efficiencies, and set a strong financial foundation.

The following data is an update for 2024 of the Energy Data for 2023 submitted as part of our requirements under the Green Energy Act. We have also included updates to our 2024 Strategic Energy Management Plan Timeline where applicable.

Background from the 2014-2018 Plan

- With energy management an integral part of business decisions, Middlesex Hospital Alliance can expect the following:
    - 3% reduction in energy consumption, with an overall reduction of 10% in utility costs
    - $200,000 in savings annually to the bottom line (2 million over 10 years) via ESCO ("Energy Savings Company")

- Recent activity associated with managing these costs include the following
    - Increased awareness and monitoring of energy use and costs
    - OHA Hospital Scorecard survey participation and benchmarking report
    - Completed RFP for an Energy Partner
    - Implementation of Energy Performance Review with Proposed Firm
    - Participation in Energy Star Portfolio Manager – Under Review
    - Participate in saveONenergy Programs with both Entegrus and Union Gas

- To further strengthen and obtain full value from energy management activities, a strategic approach will be taken: the organization will fully integrate energy management into its business decision-making, policies, and operating procedures.

- Active management of energy related costs and risks in this manner will provide a significant economic return to the organization and will support other key organizational objectives.

Energy Management Vision

The Middlesex Hospital Alliances' mission is "To provide the healthcare we would expect for our own families". This mission coupled with our vision of "Exceptional Care by Exceptional People" drive our commitment to energy management as a critical component of our success.

We at MHA consider our facilities to be an integral part of the patient experience and a direct link to successful patient outcomes. The efficient and effective operation of our

facilities allows the resources to be applied to patient care and promotes our ability to achieve our mission. Environmentally we are also able to reduce our waste, control our emissions, and effectively reduce our carbon footprint to ensure an improved patient experience and also to create a healthier environment for everyone in our community. It should be noted that the Utilities budget ($922,989) represented **55%** of the annual Facilities budget (2023-24) and is also a significant item in the overall operations budget for MHA.

The MHA energy management vision is to ***"Identify, Monitor and Reduce Waste, wherever possible, through education, infrastructure improvement, policy and process changes, and embrace a culture of sustained energy stewardship".***

Guiding Principles for Strategic Energy Management

Middlesex Hospital Alliance's energy management will be guided by these principles:

Taking a Strategic Approach: Middlesex Hospital Alliance actively manages energy costs by implementing opportunities as they are identified and within a limited budget envelope. By acting strategically, MHA can improve its energy-related performance. Internalizing energy management into our organization's day-to-day decision making, policies, and operating procedures will help ensure long lasting reductions in energy use throughout MHA.

Supporting Mission-Critical Goals: Strategic energy management supports the Middlesex Hospital Alliance's goals of delivering timely access to patient care services, meet or exceed established quality benchmarks, invest in our people in accordance with our principles and purpose, provide a safe environment for patients and people, and to ensure fiscal responsibility. The impacts of Middlesex Hospital Alliance's energy management efforts on those goals are reviewed using annual energy usage to determine positive outcomes.

Pursuing Long-Term Change to Core Business Practices: The core of a strategic approach is the consistent incorporation of energy management into our organization's strategic planning and budgeting processes. Change in energy-related business practice will cover all applications of energy management – new construction and major renovations, existing facility operations and upgrades, and the economic analysis and procurement practices underlying these practices.

Fostering Organizational Commitment and Involvement: Executive and organizational commitment and involvement is critical to successful strategic energy management. Senior management at Middlesex Hospital Alliance will work with facility managers and other key staff to ensure that adequate organizational support and resources are provided to maximize the benefits of energy management. Middlesex Hospital Alliance energy management will be integrated into the strategic planning and capital budgeting processes.

Obtaining Solid Economic Returns: Energy management investments will yield economic returns that meet Middlesex Hospital Alliance's standard requirements applied through the hospital's capital budgeting process. Middlesex Hospital Alliance will apply

consistent financial analysis methods that consider life-cycle to reduce total cost of facility ownership and operation

Using Available Resources and Assistance: Middlesex Hospital Alliance will use all available sources of strategic, technical, and financial assistance to help achieve our energy management goals. These include programs through local distribution companies, the Ontario Power Authority, ENERGYSTAR, saveONenergy, the Canadian Coalition for Green Health Care, The Canadian Healthcare Engineering Society and EnerCan.

The Business Case for Strategic Energy Management

Below are the central business arguments for Middlesex Hospital Alliance's pursuit of strategic energy management. Section VI then presents the business proposition – the results of analysis of the energy efficiency opportunities and their associated costs and internal rate of return.

Strengthened Community Leadership and Environmental Stewardship

Energy management is a visible, public commitment to the community and environment. Through aggressive energy management, Middlesex Hospital Alliance can provide leadership in promoting sustainable communities, efficient business practices, and environmental stewardship. This is an excellent opportunity to provide leadership and reduce costs at the same time.

Enhanced Healing and Working Environment

In existing facilities, efficient operating practices improve patient as well as employee comfort with more stable air temperature, and better indoor air quality and lighting.

Improved Financial Health and Operating Cost Reduction

Strategic energy management presents an opportunity to reduce operating costs and positively impact Middlesex Hospital Alliance's bottom line.

Operating cost savings directly improve the hospital's operating position. Further, investments in energy projects typically have a lower risk of performance over time relative to other investments and savings from energy projects are easier to forecast than savings or revenue increases expected from more variable types of investment.

Optimization of Capacity to Meet Current and Expanding Operational Needs

Energy efficiency optimizes inefficient or poorly designed and operated equipment/systems so wasted energy system capacity can be reclaimed for current and expanding operational needs. This "free capacity" can eliminate the need to add major new energy capacity and be much less expensive.

Historical work

Refer to 2019 report for 2014 thru 2019 data.

HIRF/HEEP Projects that have impacted Energy 2019 thru 2020

1) Replacement of Inverted Roof Covering - Section 1.2B and 3.1 at FCHS
2) Replace Domestic Hot Water pumping system using VFD and new control technology - SMGH
3) Replace Domestic Hot Water heaters with new system – SMGH
4) Steam Boiler replacement = FCHS
5) AHU Replacement at FCHS
6) AHU#2 Replacement – FCHS
7) Replacement of Inverted Roof Covering - Section 1.2A at FCHS
8) Window replacement at FCHS

HIRF/HEEP Projects that have impacted Energy 2020 thru 2024

Fiscal year 2020/2021

- SMGH Elevator modernization (VFD drives and energy efficient motors)
- SMGH Domestic Water Booster Pump Replacement (VFD controls for pumps)
- SMGH Domestic Hot Water heater replacement (removal of Aerco tanks and utilize PK heating boilers to provide domestic hot water)
- FCHS AHU #2 replacement (VFD drives and energy efficient motors)
- FCHS Roof Replacement sections 1.1, 1.2A, 1.3 (increased insulation)
- FCHS Window Replacement – improved thermal efficiency

Fiscal year 2021/22

- FCHS Exterior Door Replacement – improved thermal efficiency
- FCHS Roof Replacement Sections 3.2, 3.3 (increased insulation)

Fiscal Year 2022/23/24

- SMGH Chiller Replacement - (VFD drives and energy efficient motors)
- FCHS Exhaust Fans Replacement - (VFD drives and energy efficient motors)

Energy Awareness/Awards Programs 2018-2024

- In 2018 FCHS was the TOP Performer in Small Hospitals for Water usage in 2017 and was recognized with this award certificate at the annual OHA conference.
- In 2019 FCHS was awarded the Top Performer for Small Hospitals for Water usage.
- In 2019 SMGH was awarded the Top Performer for Small Hospitals in Energy usage.
- In 2021 FCHS was awarded the Top Performer for Small Hospitals in Energy usage
- In 2021 FCHS was awarded the Green Hospital of the Year for Small Hospitals
- In 2021 FCHS was awarded the Green Hospital Leadership for Small Hospitals
- In 2021 FCHS was awarded the Top Performer for Small Hospitals for Water usage.
- In 2021 SMGH was awarded the Top Performer for Small Hospitals in Energy usage
- In 2022 FCH was awarded Top Performer for Small Hospitals for Water usage
- In 2022 FCHS was awarded the Top Performer for Small Hospitals in Energy usage

Energy Management Goals 2019 - 2023

The following outlines some of the Strategic Energy Management Plan new and continuing goals that are used by the Middlesex Hospital Alliance. They include, but are not limited to, the following:

Goal: SEMP Approval, Resources to Implement

- Executive approval, process adjustments and resource allocation to support initiatives.
- Support from key staff (financial management, purchasing/procurement, construction, building operations, etc.).
- Review of mechanisms/processes to make resources available.
- Clarification and communication of staff roles and responsibilities, performance goals, and energy management reporting.

Goal: Implement Financial Practices and Decision-Making Processes

- Money spent to achieve energy efficiency is viewed as an investment, not a cost.
- Financial decision makers consistently use life cycle cost analysis (LCCA) on all new construction, major renovations, and equipment replacements in addition to lowest cost option.
- Staff are trained on life cycle cost analysis, financial requirements and the decision-making process.
- Decisions about energy management investments are part of Middlesex Hospital Alliance's high-level, long-range process of budgeting for capital and operations.

Goal: Implement Strategic Energy Management Practices

Establish Purchasing Specifications for Energy Efficient Equipment and Services

- Establish new and consistently use existing purchasing specifications that minimize life-cycle costs for energy efficient equipment and services.

- Use/Establish efficiency specifications for standard equipment routinely replaced (e.g. lights, motors, and unitary HVAC equipment).
- Use/Establish efficiency guidelines that apply LCCA for custom equipment purchases (e.g. chillers).
- Use/Establish efficiency standards for design and construction, and for building operations and maintenance services.

Enhanced Design & Construction (D&C) Practices

- Use improved new construction practices in all capital projects that specify early team collaboration and "integrated design" (ID).
- Integrated design required for funding.
- RFPs, contract terms & conditions, & fee structures will support ID.
- Apply LCCA and financial hurdle rates described above to design decisions.
- Apply established purchasing procedures and specifications.
- Include incentives and tax credits wherever available.
- Educate all MHA project managers or construction managers and contractors on integrated design and their respective roles in master planning pre-design, design, construction, testing, commissioning, and monitoring.

Enhanced Facility Operating Practices

- Set and meet clear energy performance targets for new build projects; measure and improve over time.
- Establish baseline for measuring performance goals (e.g., code, or national reference standards like ASHRAE 90.1).
- Set targets, measure performance and strive for improvements over time.
- Specify commissioning as a standard procedure.
- Ensure that all building systems and elements will be designed, installed, and calibrated to operate as designed.
- All involved contractors will work closely throughout the design process and occupancy to ensure good transition.
- Improve Building Operating Performance thru Facilities Staff use of Controls and ongoing efforts to optimize operation of HVAC systems
- Equipment tune-up and improved operations and maintenance (O&M) will achieve the following results while supporting patient care, and facility comfort and safety.
- Achieve reductions in operating costs for existing facilities and continue to improve these metrics.
- Use Building recommissioning to continue to improve operations and reduce energy usage
- Improve OHA Green Scorecard rating to the Silver level by 2024 in its Peer Group.

Cost-Effective Facility Upgrades

- Implement equipment and system upgrades were justified by life-cycle cost analysis.
- Expand use of qualified service providers as needed. Develop standard RFP documents, contract terms, and reporting standards.

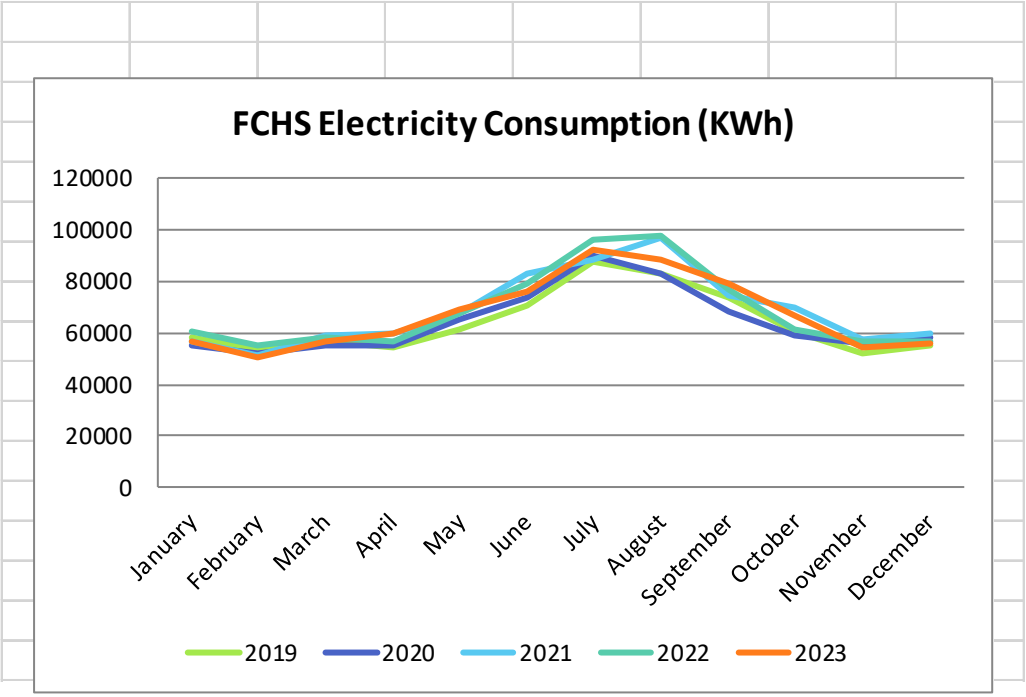
Actively Manage Energy Commodity

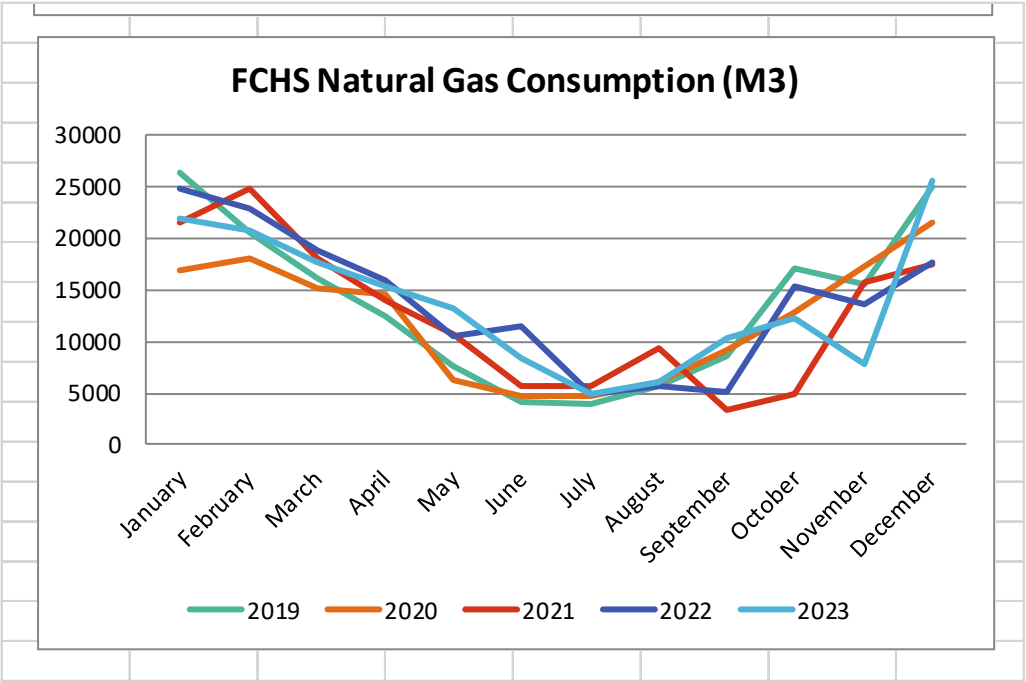
- Minimize utility costs and exposure to market risks. Utility costs include natural gas, electricity, water, and sewer.
- Participate in the energy/utility regulatory process.

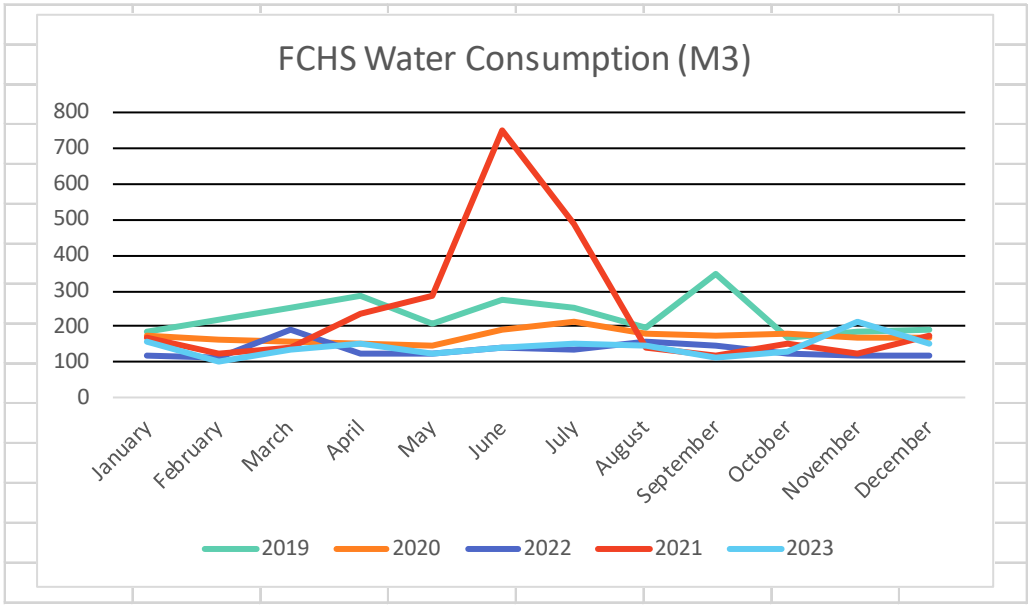
Goal: Monitor, Track, and Reward Progress

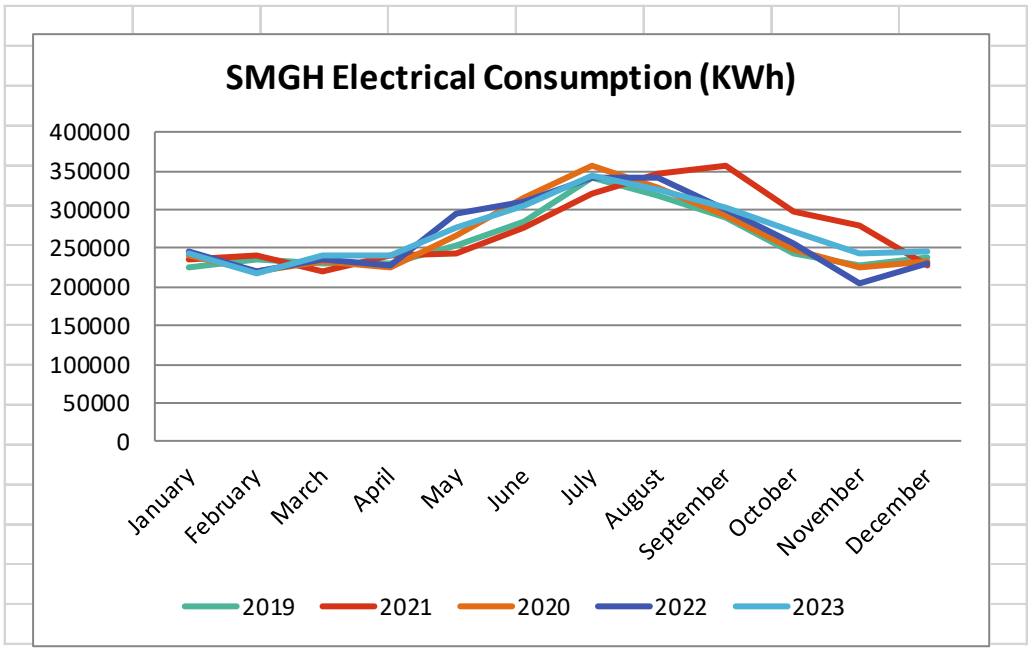
- Track progress on Strategic Energy Master Plan
- Track energy reductions monthly and report annually
- Participate in Award/Recognition and monitoring programs such as Green Hospital Scorecard
- Provide energy monitoring information to Government and Public thru online support of the Energy Reporting requirements.
- Reward staff for successes.

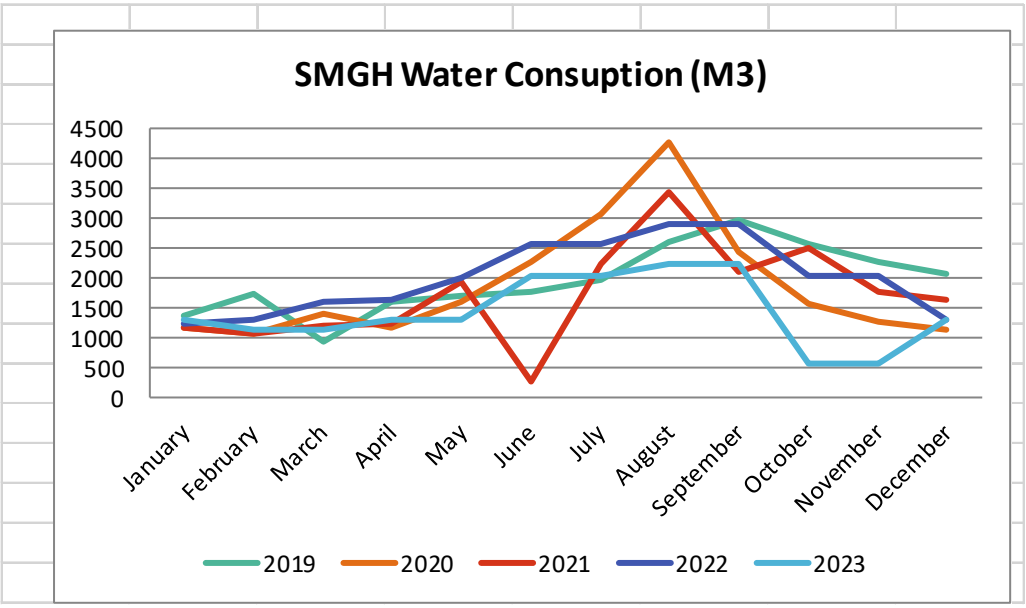
Annual Energy Consumption Data 2019 – 2023






FCHS Water Consumption (M3)
800
700
600
500
400
300
200
100
0
January
February
March
April
May
June
July
August
September
October
November
December
2019
2020
2022
2021
2023


SMGH Electrical Consumption (KWh)
400000
350000
300000
250000
200000
150000
100000
50000
0
January
February
March
April
May
June
July
August
September
October
November
December
2019
2021
2020
2022
2023



2022 and 2023 Water Volumes subject to adjustment due to Meter issues

Consumption values are shown as a gauge of operation from year to year. As improvements to equipment and facilities operational processes have been implemented consumption can be used to indicate an energy improvement and its sustainability. When reviewing consumption other factors such as Clinical changes, number of procedures and weather all impact the overall consumption and are reviewed when determining final success of facility changes

2019-2024 Future Plan

MHA will continue to update the infrastructure of the facility using the best Energy Efficient methods and equipment possible. MHA has reviewed potential Infrastructure upgrades that would meet the funding criteria for HIRF, which is the most likely funding source. Upgrades in the following areas are under consideration as MHA receives funding support as they impact both energy usage and operational needs.

SMGH

- Elevators
- Remainder of all roof areas
- Distribution Systems – steam piping and condensate systems
- Remainder of interior lighting
- Walk in coolers (kitchen)
- Remainder of Air Handling Units

FCHS

- Remainder of roof areas
- Walk in coolers(kitchen)
- Remainder of Air Handling Units
- Remainder of Roof Top Units
- Remainder of Windows

Timeline and Responsibilities for Plan Adoption and Implementation

Measure	2019	2020	2021	2022	2023
Report energy consumption as per O.Reg 397/11	Complete	Complete	Complete	Complete	Complete
Complete an Energy Conservation and Demand Management Plan			Complete		
Obtain approval of SEMP				Pending	Pending
Ongoing monitoring and verification of energy conservation measures	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Improved awareness and communication of energy conservation	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Monitor energy commodity cost	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Track and report on SEMP	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing