

CHARLOTTE WATER SEAP INITIATIVES

The Strategic Energy Action Plan (SEAP) outlines the goals of the Council Resolution in support of a Sustainable and Resilient Charlotte by the year 2050.

The City SEAP focuses on three areas of City operations where there is opportunity for reduction in emissions. They are buildings, transportation and energy generation.

Management and operation of Charlotte Water's facilities can have a significant impact on meeting the goals of the resolution. This includes recovering resources from our wastewater treatment plants, workforce development within our community, fleet utilization and building management.

SHORT TERM STRATEGY (1-3 YEARS):

There are some basic areas that Charlotte Water has the potential to make an impact on "carbon footprint", the use of carbon sources and produce energy.

1. Add a second Combined Heat and Power (CHP) system at McAlpine – currently generating 1MW power but can double that amount with a second engine. (2021)
2. Nutrient harvesting project that will reduce side-stream loading recycle and lower energy chemical use. (2020)
3. Evaluation of methane gas options at Mallard to fuel. Potential collaboration with CATS to fuel buses from gas produced at Mallard, McAlpine and Irwin (temp) - Evaluation ongoing.
4. Vehicle utilization evaluation. Pilot to evaluate alternative fuels for vehicles and equipment.
5. Implement AVL – telematics system
6. Implement additional EV stations for electric vehicles
7. Solar pilot at Irwin to include Duke Energy micro grid/battery project
8. Continue use of instrumentation to optimize wastewater process operation. This helped us to reduce both power and chemical use. (on-going)
9. Continue lighting replacement program of high sodium lighting with inductive lighting throughout all the wastewater treatment plants (last five years and continuing)
10. Complete Aeration System improvements at Sugar Creek WWTP and Irwin Creek WWTP. Will optimize use of power and chemicals. Both Sugar Creek and Irwin Creek will be completed at the end of calendar year 2019.
11. Major process improvement upgrades at the McAlpine Wastewater Management Facility including potential process change which will minimize chemical use and optimize power use. Will first construct a major full scale demonstration pilot to collect data evaluate potential benefits. (ongoing – 2022 for completion of full project)
12. Biogas Utilization/ Food Waste Pilot - Looking at building a gas cleaning and compressing station to enable transport and use of digester gas for vehicle fueling purposes.



CITY OF CHARLOTTE STRATEGIC ENERGY ACTION PLAN

13. Irwin Solar Pilot - Considering a 1 MW trial of solar at Irwin in the old drying beds.
14. ISO 14001 Corporate Certification implementation at Irwin. Already certified at Mallard, McDowell, Sugar and the Biosolids program. Energy optimization is one of the main goals. (2020/2021)
15. Disinfection upgrades at the Mallard Water Reclamation Facility to implement new Ultra Violet Disinfection that utilizes significantly less power than the existing system (25%) (2019). Plan is to upgrade Ultra Violet Disinfection at Irwin, Sugar and McDowell in future years.
16. Rehabilitation and upgrade program provides for replacement or upgrades of existing equipment that is no longer efficient. Replacements and upgrades provide more efficiency reducing our energy use overall. This includes replacement of pumps, motors, major mechanical and electrical equipment, rehabilitation of digesters to improve efficiency and gas production. (on going)
17. Minimal use of highway vehicles at the wastewater treatment plants. Continue to utilize “golf carts” or campus type vehicles that require less fuel. (on going)
18. Evaluation of work schedules and utilization of building space for office employees.
19. Continuation of R&D/pilots of new technologies to reduce energy and chemical use, optimization of operations.
20. The McDowell Forestry program is an on-going project located on the McDowell Farm behind the McDowell Wastewater Treatment Plant.

LONGER TERM STRATEGY (4-7 YEARS):

1. Biosolids Masterplan Implementation of operation – Regionalization of solids treatment to McAlpine from four plants to produce Class A Biosolids. Optimization of treatment, energy, chemicals. Potential for energy production, potential products for community utilization.
2. Evaluation of geothermal systems or other high efficiency HVAC for implementation in Charlotte Water facilities as HVAC systems are replaced.
3. Digester improvements at McAlpine, Mallard and McDowell to receive organic wastes for enhanced methane production.
4. Implementation of the Long Creek WWTP. Employ new low energy technologies. Consideration for alternative power such as solar.
5. Implementation of more solar projects at Water Plants and McDowell
6. Implementation of solar drying solids system at McDowell