2019 City of Alexandria Green Building Forum
Alexandria Renew Enterprises
Environmental Center
The Environmental Center is the new main administrative facility for Alexandria Renew Enterprises (AlexRenew), one of the most advanced wastewater reclamation facilities in the United States. AlexRenew is now a showcase and resource for the community with its new sustainable administration building and 18 million gallon nutrient management facility topped with an athletic field for the City of Alexandria Parks and Recreation.
Technology & Sustainable Design

- Solar panels shade southern façade
- Solar panels at three sides of the mechanical penthouse and on the roof
- 97% reduction in potable water consumption
- 46% reduction in energy cost
- Optimized daylighting design and controls
- Heat recovery chiller preheats domestic hot water
The design is projected to reduce CO2 emissions by nearly 55 metric tons, and reduce energy cost by 46%. This is enough energy savings to power 35 typical Virginia homes.

- Use of reclaimed water for toilets, cooling tower, irrigation, and architectural fountain result in over 97 percent potable water use reduction.
- 138 kW solar panel array on shading devices and penthouse facades.
- A 16 ton heat recovery chiller makes use of rejected building heat for free pre-heating of the domestic hot water.
Sustainable Design & Community

- A **Living Wall** in the lobby, watered by reclaimed water from the wastewater treatment plant, is tied to a ventilation system that delivers oxygen to the public spaces on the first two floors of the building.

- An **Educational Lobby** featuring a 6,000 gallon Aquarium containing Reclaimed Water from Alex Renew with Fish Indigenous to the Potomac River.
Collaborative design process and analysis between architect and engineer informed the strategic design, orientation, and shading of glazing systems that optimize day lighting while reducing heating and cooling equipment capacities, cost, and energy consumption; and maximize insulation.
Sustainable Design in Lighting

- Philosophy of **minimizing energy consumption** with the maximization of daylighting strategies and the incorporation of energy-efficient light fixtures.

- Daylight modeling informed a **stepped ceiling design**, allowing **pendant lighting** and taller exterior glass facades for **greater daylight penetration** to the floor plate.

- **Daylight modeling informed the façade design.** Interior partitions are glass to allow natural light to penetrate the floor plate.

- **LED lighting** controlled with **daylight dimming control** and occupancy sensors reduced lighting power density to **30%**, and overall lighting power consumption by **49%** below ASHRAE 90.1-2007.
Sustainable Design in Future Renovation

- Movable wall system that can be revised as the organization changes
- Movable walls are floor-to-ceiling partitions that can be repositioned without creating construction dust or material waste.
- Light fixtures are designed to easily be relocated along with office reconfiguration