



CITY OF ASTORIA

Our Strategic Energy Management Story



Strategic Energy Management

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What is Strategic Energy Management

SEM is an Energy Trust of Oregon program available to businesses and municipalities that provides the tools and education to start saving energy today and continue saving over time by developing strategic energy management strategies. The SEM program is not a capital investment, it's designed to be a deliberate process focusing on no and low-cost operations and maintenance improvements that deliver energy savings.

Energy Trust established a local cohort in order to focus on a shared learning experience throughout the program which included workshops, tools and support from energy coaches. The local cohort consisted of the City of Astoria, City of Warrenton, Warrenton Fiber, Da Yang Seafood's, and Pacific Seafood.

Energy Trust also offers cash incentives based on progress from our energy management improvements and behavioral changes.

Establishing a Strategic Energy Management Program

- ▶ Public Works Operations, Engineering and Administrative staff developed an Energy Team with the objective to reduce energy costs at select facilities such as our Wastewater Treatment Plant (WWTP) and pump and lift stations.
- ▶ As a SEM participant, we learned how our organization uses energy and identified where inefficiencies were occurring by analyzing data, conducting a treasure hunt for savings opportunities and participating in six workshops with the Energy Trust experts and our local cohort.
- ▶ We learned how to increase employee engagement and to monitor the progress of our energy savings work by tracking power bills and production data.
- ▶ We also have access to Energy Trust experts who provide us with the knowledge and guidance needed to become leaders in energy management.



Where did we start?

- ▶ We were interested in participating in the SEM program a few years ago, however, there was no local cohort (team of businesses and municipalities) available. In 2019 there was increased interest in the northwest; Energy Trust formed a local Northwest Cohort and we joined! We would like to extend a special “thanks” to the Northwest Cohort and Energy Trust for making this possible.
- ▶ Prior to SEM, the City of Astoria had energy efficiency in mind when it came to lighting upgrades, occupancy sensors and new equipment purchases, however, we did not analyze how energy savings practices could be applied to day-to-day operations with any regularity.
- ▶ We set a goal to achieve 3% or more kWh savings.
- ▶ By conducting a Treasure Hunt with our Energy Team and Energy Trust experts, we identified locations to focus on for energy savings opportunities. We then assessed these opportunities through a value graphing exercise to prioritize each idea based on an estimate of energy savings and associated costs/efforts.
- ▶ These were the main areas of focus:
 - ▶ Wastewater Treatment Plant (WWTP)
 - ▶ Pump Stations #1 & #6
 - ▶ Lift Stations #3 - #5
 - ▶ Denver Storage Tank
- ▶ Prior to the start of this program, we used an average of 128,710 kWh per month and 1,544,516 kWh annually.



Where are we now?

- ▶ **The primary opportunities for energy savings were:**
 - ▶ **Adjusting/programming thermostat temperature set points**
 - ▶ *Some heaters at pump/lift stations did not need to be on at all; these were turned off*
 - ▶ *Temperature set points for heating were turned down a few degrees*
 - ▶ *Temperature set points for cooling were turned up a few degrees*
 - ▶ *Thermostats were programmed to “fail-safe” changes*
 - ▶ **Completing LED lighting upgrades at all locations**
 - ▶ *Changed bulbs/fixtures from incandescent lights to LED lights*
 - ▶ **Installing occupancy sensors at most locations (where it was safe to do so)**
 - ▶ *Fail-safe measure implemented so that lights will turn on/off with motion detection*
 - ▶ **Wastewater Treatment Plant aerator optimization**
 - ▶ Using production data to drive operations such as:
 - ▶ **Biochemical Oxygen Demand (BOD):** A quantitative measure of the oxygen needed by bacteria and micro-organisms for the biological oxidation of organic wastes in a unit volume of waste water.
 - ▶ **Dissolved Oxygen (DO):** The oxygen dissolved in water, wastewater, or other liquid.

What did we achieve?

- ▶ We have a much better understanding of data and how it relates to energy consumption.
- ▶ We have determined our energy drivers which include:
 - ▶ *Weather*
 - ▶ *Tourism*
 - ▶ *Industry (ex. Breweries & Fisheries)*
- ▶ We analyze processes by asking, “Why are we doing things this way?” and “What do we need to operate these facilities?”
- ▶ We completed a Treasure Hunt in February, 2020 and identified 74 different opportunities for energy savings.
- ▶ To-date, we have completed 47 of the 74 identified energy savings opportunities.
- ▶ After our efforts, we now use an average of 83,710 kWh per month and 1,004,520 annually. That’s an average savings of 45,000 kWh per month and 540,000 kWh annually.
- ▶ **We achieved an estimated 34.96% savings!**



What did we achieve? (cont.)

Because of Chris Gramson and Bryce Majors' exceptional efforts, they were honored by the Association of Energy Engineers, Columbia River Chapter and were awarded the Wrench of the Year award.



This award is given to individuals that best exemplify the spirit of hard work, hands-on responsibility, and determination that resulted in the successful implementation of an energy efficiency project. Specifically the award targets on-site facility personnel that are often overlooked in major efficiency projects but whose hard work and attention are key to the successful implementation and persistence of the project.

How did we perform?

SEM Goal:		Projected Results to Date:	
Energy Savings (kWh/year):	42,000	Energy Savings (kWh/year):	539,995
Energy Cost Savings (\$/year):	\$3,108	Energy Cost Savings (\$/year):	\$40,651
Homes Powered:	3	Homes Powered:	46
CO2 Reduced (lbs./year)	50,400	CO2 Reduced (lbs./year)	655,504



The City also received a one-time Energy Trust incentive check in the amount of \$24,600 for milestones met and total kWh savings achieved!

How will we maintain success?

- ▶ Continue to implement persistence strategies to avoid backsliding
- ▶ “Fail-safe” implemented changes
- ▶ Reinvest our Energy Trust incentives and energy savings into additional efficiency upgrades
- ▶ Expand our Energy Team to include all City of Astoria facilities
- ▶ Continue with monthly energy team meetings that will focus on:
 - ▶ Discussion of energy project updates, barriers to project completion and next steps
 - ▶ Identifying and acting upon new energy saving opportunities
 - ▶ Analyzing and using data to drive operations
 - ▶ Continuous evaluation of processes to ensure there is a focus on energy efficiency
 - ▶ Encourage implementation of Energy Policy at all City facilities
 - ▶ Employee and community outreach and education



TEAMWORK

What does the future hold?

- We will be participating in Continuous SEM with Energy Trust of Oregon and will expand our scope across Public Works with an emphasis on the drinking water side.
- We plan to reinvest our incentives and savings into new energy efficiency opportunities.
- Complete capital projects that were identified as budget allows.
- Continuously seek ways to increase energy efficiency.



Special Thank You to our Energy Team



Jim Hatcher



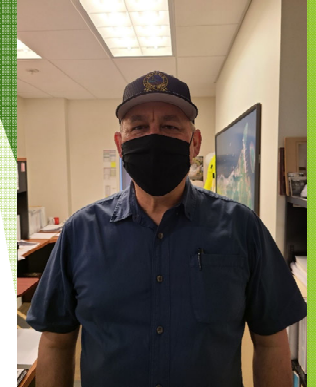
Nathan Crater



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Thank you for your time!

