



Chapter 2 – Parks and outdoor areas

Metro Parks Tacoma manages a variety of outdoor areas, including natural habitat, developed parks, sports complexes, and a few community gardens. Primary environmental issues in these outdoor areas are water conservation, stormwater management, waste and the use of hazardous materials in landscaping. Also included in this chapter are short sections on urban forestry and outdoor energy use, and air pollution.



2.1 Water use

Current practices: MPT has more than 100 water meters. The water irrigates hundreds of acres of maintained turf and landscapes, fills indoor and outdoor pools, and is used in multiuse facilities and office buildings. There has been an overall decline in overall use over the past 10 years, with a 28 percent decline from 2006 to 2010. However, the last five years have been somewhat static. Over the past five years, MPT has spent an average of \$1,712,000 per year on water, including domestic water used in buildings.

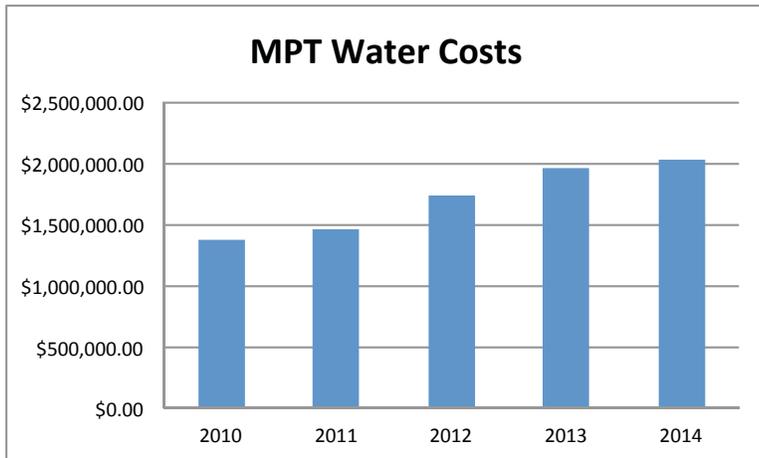


Figure 2.1. Metro Parks water expenses over the last five years.

Past efforts to reduce water use include using Calsense Irrigation Controls and upgrading interior water fixtures through the Johnson Controls projects. Reduced water usage also has resulted from conversions of turf to more drought-resistant landscaping. For example, following the turf replacement at the main entrance to Point Defiance Park (the embankment on the south side of the bowl) in 2009 and 2010, water savings were estimated at nearly 99 percent using drip irrigation.

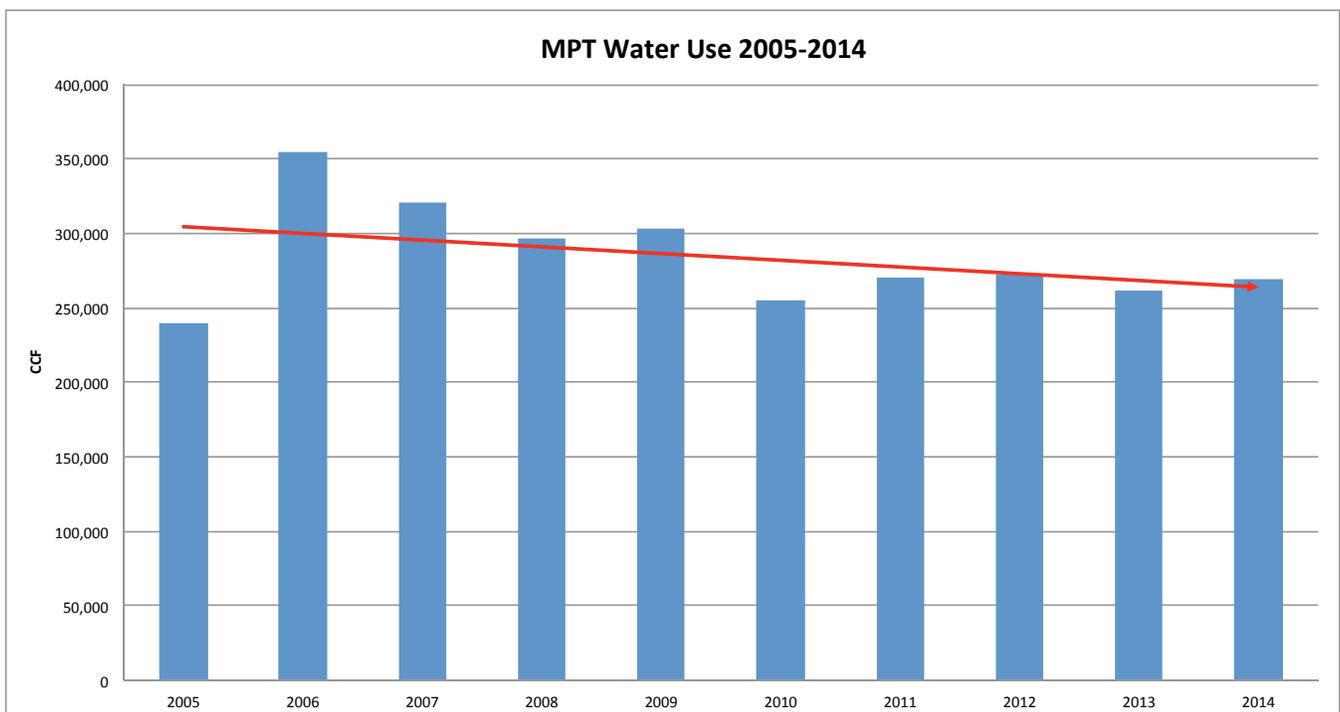


Figure 2.2. Total MPT water use over the last 10 years. CCF stands for one hundred cubic feet.

Landscape Irrigation:

MPT currently uses Calsense⁴ irrigation systems in more than 20 parks to ensure proper irrigation using automated settings. MPT staff members are encouraged to be conscientious about water use but typically do not receive regular feedback about water usage on a park-by-park basis.

By looking at water use in more granular detail, individual sites and areas can be evaluated for potential opportunities to save water. Neighborhood and community parks account for the largest share of water use at 36 percent. There are only two main meters that measure Point Defiance Park, including PDZA. Their combined water consumption adds up to 28 percent of district water use. The third largest user is Meadow Park Golf Course, which uses 20 percent of water. However, the course has a well and does not purchase water for irrigation.

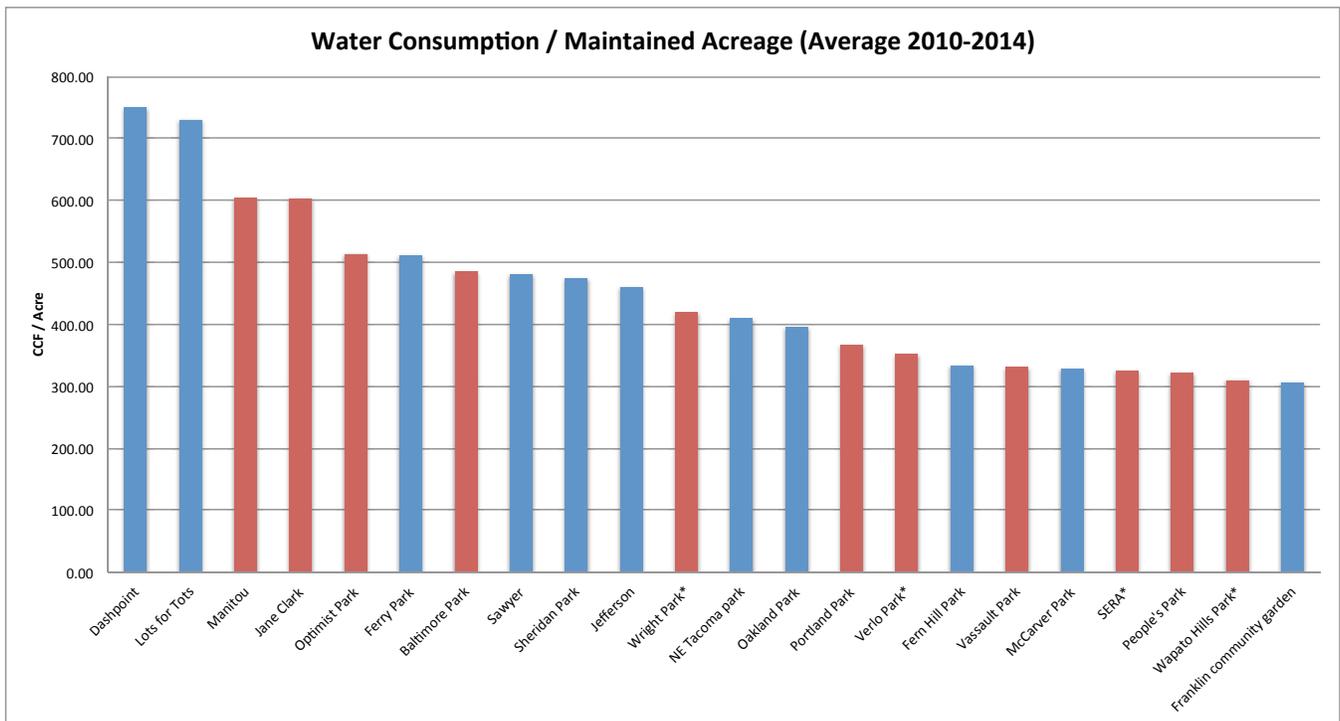


Figure 2.3. Only parks using more than 300 CCF (hundred cubic feet) of water per acre are shown. Parks in red currently have Calsense. Parks with asterisks include spraygrounds. Jefferson and Wright park water meters both include domestic water for small buildings.

Baseline: The District’s total average water use between 2010 and 2014 was 266,000 CCF (hundred cubic feet). The baseline should be calculated per acre to account for growth, but it’s unknown how many acres of lawn and landscaping is currently maintained.

Target: Reduce overall water use per by 9 percent over three years. This will be achieved by a 3 percent reduction per year. Once achieved, this will result in approximate savings of \$154,080 annually.

Recommendation: Prioritize the measurement of irrigated lawn and landscaped areas district wide by a geographic information systems specialist, so that water use can be measured by area.

4 By using rain sensors and automatic controls, this system helps to minimize excess irrigation.

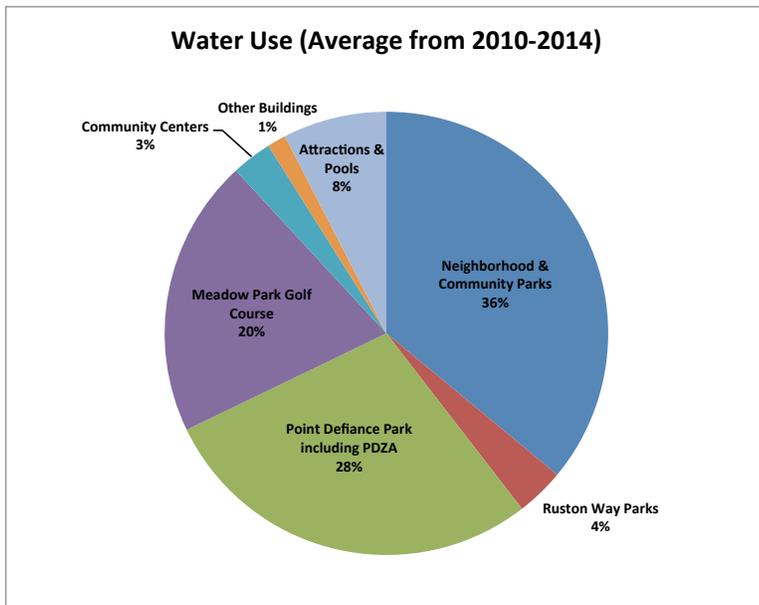


Figure 2.4. Where water is used, based on the average from 2010-2014.

OUTDOOR TARGET AREAS FOR WATER:

Point Defiance Zoo & Aquarium and Point Defiance Park

- *Why it's a target: Point Defiance Park is the single largest consumer of water, at 28 percent of the District's total consumption. PDZA currently assumes responsibility for 65 percent of the water consumed within Point Defiance, but it is estimated that the zoo is responsible for an even greater percentage. Therefore, water conservation for the area should focus on PDZA. PDZA has set goals to reduce water consumption by 10 percent by 2017, 12 percent by 2019, 15 percent by 2021, and by 30 percent by 2025 (from the PDZA 2015-2025 Sustainability Plan). The baseline data for PDZA is the average water use from 2006-2009.*
- *Recommendations:*
 - » *Utilize information from new PDZA water meters, which were installed in 2015, to better understand water use in Point Defiance Park. Consider additional meters throughout the park if necessary.*
 - » *Conduct a thorough water analysis in 2017 and 2018 to identify conservation measures.*
 - » *Implement recommendations from Tacoma Water's February 2015 audit of PDZA. This includes upgrading the irrigation management system to include rain sensors.*
 - » *Encourage staff members to seek and find ways to save water. Veterinary and zoological staff could revise hosing practices to limit power washing except when absolutely necessary. Consider installation of pumps to use salt water rather than fresh water to clean pools.*

Meadow Park Golf Course

- *Why it's a target: Meadow Park Golf Course is the second largest consumer of water in the district. Irrigation water is provided by an on-site well, which draws about 130 acre-feet annually. (An acre-foot is the volume needed to cover an acre with a foot of water.)*
- *Recommendation: Utilize newly installed Rainbird irrigation management system to maximize water-savings. Estimated saving are 20 percent or between 20 and 26 acre-feet annually.*



Neighborhood and community parks

- *Why it's a target: Neighborhood and community parks combined represent the largest portion of water usage at 36 percent.*
- *Recommendations:*
 - » *Calsense:*
 - *Purchase remaining items needed to effectively use the Calsense system.*
 - *Evaluate the use of current Calsense settings and provide training if necessary.*
- *Identify potential areas for turf conversions. In order to keep turf in good health, it typically needs a minimum of 1 inch of irrigation water weekly, although this depends on the type of soil and grass. After establishment, native or climate-adapted plants thrive with little supplemental irrigation.*
 - » *Evaluate areas that could be converted by Dec 2016*
- *Use native and climate-adapted plants where appropriate when renovating or creating new landscaped areas*
- *Irrigation best management practices:*
 - » *Mulch landscaped areas*
 - » *Aerate turf and adjust mowing heights*
 - » *Irrigate deeply, infrequently and only at night*
 - » *Monitor fertilizer application*
- *Consider limited hours for non-recirculating water fountains and spraygrounds*
- *Regularly report to park leads about water usage and compare to other sites*

2.2 Stormwater management

Current practices: Tacoma's typically heavy rainfall makes it important to manage stormwater, meaning runoff from developed or paved areas. The most environmentally sound approach is through low-impact development methods or green infrastructure. Options include rain gardens⁵, bioswales, permeable pavement, green roofs⁶, and rain barrels or rainwater collection systems. Currently, when a new project is under development, the planning department incorporates low-impact development features into the design.

Target: Metro Parks Tacoma will be a leader in low-impact development and in using green infrastructure at our facilities.

Recommendations: Continue to incorporate low-impact development into all new construction or renovation of facilities or parks. Partner with local groups such as Citizens for a Healthy Bay to install "No Dumping Drains to the Sound" stickers and educate the public about stormwater issues. Consider working with Depave, a non-profit that works to reduce impervious surfaces, to identify potential areas on MPT property that could be transformed into rain gardens or bioswales.

5 Rain gardens and bioswales are both ways to reduce runoff and trap pollutants that otherwise could overwhelm storm drains and contaminate water bodies, such as Puget Sound.

6 Green roofs are covered with vegetation that absorbs rain, provides insulation, lowers city air temperatures and offers wildlife habitat.



SPOTLIGHT: DESTINATION POINT DEFIANCE

Part of the Destination Point Defiance project is an innovative water treatment system, built in partnership with the City of Tacoma, which has been designed to improve Puget Sound water quality. The 5,500-square-foot project features a series of six cascading pools that will channel runoff from streets and properties as far south as North 30th Street. Currently, polluted stormwater from the 754-acre watershed flows untreated before it empties into the Sound near Point Defiance Marina. After this facility is finished in winter of 2015-16, most of this runoff will be treated.

2.3 Landscape management

Current practices:

MPT uses various methods to control pests such as invasive weeds and insects. In general, pesticides are used as a last resort but use varies from employee to employee. No pre-emergent herbicides are used in annual beds. No insecticides containing neonicotinoids, an insecticide banned in some European countries are applied. Fertilizers, both synthetic and organic, are used on a case-by-case basis. A Horticulture Summit was held in the spring of 2015 to discuss landscape management strategies, including organic land care methods and proper care of soils. Staff discussed issues related to pests and ways to reduce pesticide use, especially the weed killer glyphosate, sold commercially as Roundup. The summit emphasized weed control through creation of a healthy, dense landscape and using mulch to limit weed germination.

A 2015 pilot project tested “pesticide-free parks” at several sites. No pesticides were applied for about five months at Old Town, McCarver, Sawyer and Lots for Tots parks to determine feasibility and how much extra manual-labor time was needed. The pilot was judged a success and concluded with the estimate that each park would require at least an extra hour of work weekly. Also, during the trial, little or no fertilizer was applied and only organic fertilizer was used.

A related component of properly taking care of natural areas is conservation of wildlife and habitat. Natural areas managed by MPT include;

- Nearly 800 forested acres in Point Defiance Park
- More than 700 acres in Northwest Trek Wildlife Park
- Hundreds of acres in Swan Creek Park
- Gulches and creeks that run into Commencement Bay
- Numerous wetlands and five lakes and
- Beaches covering 10 miles of coastline.

Several areas, including PDZA and the Point Defiance Marina, are certified by the Tacoma-Pierce County Health Department’s EnviroStars program, which helps businesses and organizations to reduce the use of hazardous materials and limit waste.

Targets: Limit irrigation and application of chemical pesticides and fertilizers to the minimum while maintaining functionality and aesthetic standards. Increase the number of parks or landscaped sites that are free of pesticides or managed organically from four to eight by the end of 2018.

Manage property in a way to protect wildlife and biodiversity by adding 30 acres of restored habitat by the end of 2018.

Recommendations:

- If significantly reducing herbicides is a priority, more seasonal staff or a larger volunteer base will be needed to remove weeds
- Consider tracking pesticides and fertilizers by volume, or using geographic information systems to track areas that use such chemicals, and setting an explicit goal for reduction
- Provide staff training about organic land-care options and encourage feedback about alternatives to pesticides and synthetic fertilizers
- Consider how to alter current landscapes or practices to reduce dependence on pesticides
- For future projects, ask landscape architects for sustainable designs that don't require chemical maintenance
- Work with EnviroStars when appropriate to certify additional areas

2.4 Waste management

Current Practices: A pilot for recycling in parks was conducted in summer of 2015 in several parks on Ruston Way. Through a partnership with the City of Tacoma's Environmental Services department, Big Belly dual recycle-garbage bins were placed along the waterfront. The bins use solar energy to compact the garbage side of the bin. So they hold two to four times the volume of traditional containers and permit fewer collection trips per bin.

The pilot has not been fully evaluated, but at the time of this report, the pilot was still being evaluated, however, early results showed an extremely high percentage of contaminated bags, nearly 100% despite multiple efforts to encourage park visitors to recycle properly. Diapers and pet waste were common contaminants. For success, approximately 25 percent of the waste would be diverted to recycling.

Multiple factors may have contributed to the difficulty of recycling on Ruston Way. The waterfront attracts visitors from the entire South Sound region. A focus on smaller neighborhood parks that regular visitors call their own may reduce contamination rates. Along Ruston Way, the City of Tacoma took charge of waste collection and MPT staff members found it difficult to get regular feedback about results. Piloting a similar program in an area where MPT staff can regularly report back and measure success is recommended.

Recommendations: Move Big Belly bins for follow-up pilot programs in 2016. One possibility is focusing on large neighborhood parks such as Wright, Titlow or Wapato Park. If those are successful, consider piloting in smaller neighborhood parks such as Jefferson or Kandle Park. Another option would be testing the program at an athletic complex such as Heidelberg or Peck fields.

Targets: Increase the availability of recycling for park visitors where appropriate. Continue to pilot recycling opportunities in outdoor spaces to determine whether contamination persists. Also continue to measure the impact of using solar-powered, compacting garbage bins to reduce trips. Evaluate whether the program should be expanded.

2.5 Urban forestry

Trees provide lots of environmental benefits. They help keep air and water clean, contain carbon, reduce stormwater runoff, and lower city temperatures. They also help slow traffic and cut crime, social scientists say. The City of Tacoma aims to increase Tacoma's tree canopy, meaning the proportion of land covered by trees as viewed from above. Specifically, the goal is to increase the canopy from the 2009 level of 19 percent to 30 percent in 2030. Since Metro Parks owns or manages the largest part of Tacoma's urban forest, MPT has a large role to play.

Current Practices: MPT implemented an urban forestry program canopy coverage plan in January 2014. Using canopy cover estimates from a 2009 University of Washington study, MPT's current canopy coverage is about 1,232 acres, or approximately 60 percent, excluding Northwest Trek. In this plan, each park has a canopy cover goal that depends on the individual site factors.

Targets: In accordance with the current MPT canopy coverage plan, continue to add at least 30 trees per year in order to achieve the target of 63 percent canopy cover.

2.6 Energy

Current Practices: While MPT buildings and facilities account for most natural gas and electricity use, there are opportunities for energy conservation in parks and outdoor spaces. One is to increase the efficiency of outdoor lighting. Though many upgrades were made with the Johnson Controls improvements, there are still opportunities for improvement especially for athletic complexes (see sidebar on athletic fields). Also, several parks are lit throughout the night.

Another way to save energy outdoors is to reduce fuel consumption in fleet vehicles and equipment (see Chapter 4). (More information about energy conservation is in Chapter 3, buildings and facilities.)

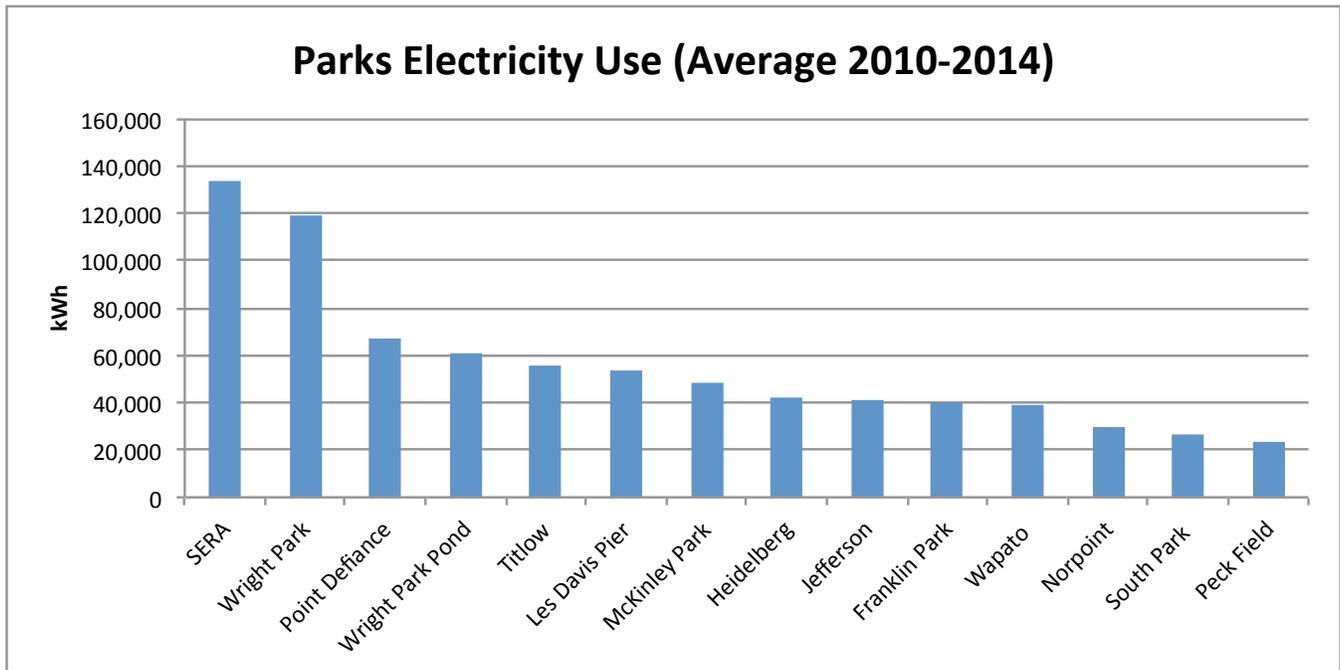


Figure 2.5. Chart only includes the top 14 electricity consumers, using an average of more than 20,000 kWh between 2010 and 2014.

Recommendations: Evaluate use of lighting in outdoor areas, including possibility of upgrading to more efficient options and turning off some lights in closed parks at night, dependent on safety concerns.

Target: Reduce electricity use by 3 percent by December 2018.



OUTDOOR TARGET AREAS FOR ENERGY:

Athletic fields

As noted in the Figure 2.5, SERA is the largest user of electricity for parks. SERA Baseball field, Peck and Heidelberg athletic fields have 300 1,000-watt lights on a grouping of circuit breaker controlled infield / outfield layout. Because a lot of power is drawn at once when the lights are switched on, MPT pays an extra fee.

MPT recently received a grant for new LED lights at the SERA complex. The grant is for Youth Athletic Facilities) with the Washington State Recreation and Conservation Office. MPT was given for \$250,000 to match \$750,000, for a total of \$1 million, which should be enough to purchase 10 new LED light poles for two fields out of the six at the SERA complex. LED lighting will also be installed at the new multipurpose field currently under construction at SERA. The multipurpose field will save MPT approximately \$6,650 a year with the TPU incentives program.

Recommendations: Replacing the existing high-intensity discharge fixtures with light-emitting diode (LED) lighting would conserve energy. We also would also save on the extra fees. More efficient transformers could be installed to save money, particularly in the off season.

Wright Park Pond

Wright Park's pond's use of electricity has doubled in the last seven years. The power drives a fountain and a filtration system. The pond requires two aerator fountain pumps. One runs continuously and the other runs daily from 9:00 a.m. until 10:00 p.m. Filtering and aeration motors within the mechanical enclosure run continuously to prevent undesirable surface vegetation and algae.

Recommendations: Better ventilation could reduce excessive heat inside the enclosure that contains pump and filter controls. This cooling should improve motor efficiencies and prolong life of the equipment. A test should be performed to determine whether operating hours could be shortened while still preventing algae growth.

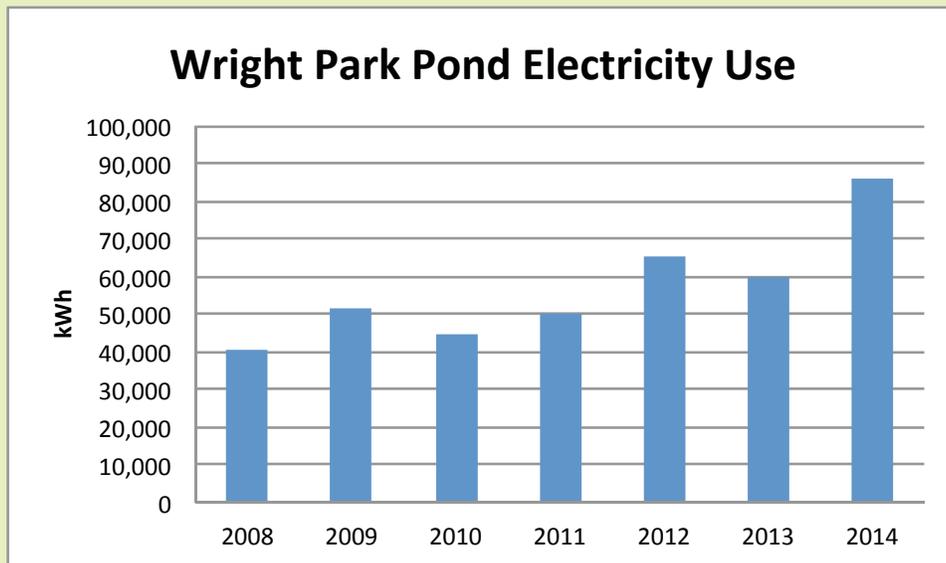


Figure 2.6. Electricity use for the pond in Wright Park.

2.7 Air Pollution

Current Practices: The Parks and Natural Resources staff currently use gas leaf blowers, which cause air pollution in the form of nitrous oxides, gaseous hydrocarbons and carbon monoxide. MPT primarily uses leaf blowers with 4-stroke engines, which are more efficient and less-polluting than 2-stroke engines.

Recommendations: Implement a pilot project to try electric leaf blowers in appropriate situations. These should be used in areas and at times where demand is low. The goal of the pilot is to determine if electric blowers are powerful enough to replace gas without losing efficiency, and in what situations. Also, remaining 2-stroke engines should be phased-out as soon as possible.