

The background features abstract, overlapping green geometric shapes in various shades, including light lime green, medium green, and dark forest green. These shapes are primarily located on the left and right sides of the slide, framing the central text.

Land and Resource Management

CITY OF MADISON GOLF ENTERPRISE PROGRAM

December 18, 2019

Land Management of Courses

- ▶ 749.78 Acres of Parks land dedicated to Golf Courses
 - ▶ Approximately 190 acres are intensively managed: Greens, Tees, Fairways
 - ▶ Remaining acres are managed as Natural areas
 - ▶ Prairie and Blue-Grass No-Mow Managed Meadows
 - ▶ Woodlands and Woodland Edges
 - ▶ Natural and man-made water features

Course	Total Acres	Acres Intensively managed
Yahara Hills	451.08	92
Odana Hills	171.27	48
Monona	85.45	32
Glenway	41.98	18
	749.78	190

Objectives of Land Management

- ▶ Balance competing needs and demands of customers, as well as diverse user groups constituents and policy makers
 - ▶ Quality of turf is critical to play and overall experience
- ▶ Ensuring safety of users
- ▶ Responsible stewardship practices to protect environment, including awareness and focus on pollinator protection



Integrated Pest Management

According to Environmental Protection Agency:

“Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.”

- ▶ All areas are maintained utilizing Integrated Pest Management Program
 - ▶ Set Action Thresholds
 - ▶ Monitor and Identify Pests
 - ▶ Prevention
 - ▶ Control

Integrated Pest Management

- ▶ Set Action Thresholds: (Lowest to highest tolerance in order)
 1. Putting greens
 2. Tee areas
 3. Fairways
 4. Regularly mowed areas
 5. Naturalized Areas

- ▶ Monitor and ID Pests
 - ▶ Regular monitoring by Greenskeepers
 - ▶ Direct monitoring (Japanese Beetle traps)
 - ▶ Scouting for visual damage
 - ▶ Predictive modeling tools (Degree Day Calendars)



Direct observation of course indicated animals feeding on grubs

Integrated Pest Management

- ▶ Prevention
 - ▶ Nutrient management program (fertilizer)
 - ▶ Applications adjusted based on needs of course
 - ▶ Leaves are mulched into turf to provide natural nutrients
 - ▶ Clippings on roughs and fairways are mulched
 - ▶ Introducing disease resistant cultivars when renovating areas
 - ▶ Mowing at highest desired height possible
 - ▶ Topdressing with sand
 - ▶ Rolling
 - ▶ Regular irrigation
 - ▶ Aerification



Yahara Hills

Integrated Pest Management

- ▶ Control
 - ▶ Fungicides as both preventative and curative
 - ▶ Dollar spot, anthracnose, brown patch, Pythium, control algae on greens
 - ▶ Crabgrass prevention once per year
 - ▶ Broadleaf applications as needed
 - ▶ Insecticide applications as needed to control grubs
 - ▶ Plant growth regulators

Measures Taken to Reduce Impacts

▶ Incorporation of Prairie Managed Meadows

▶ Odana Hills

- ▶ Volunteer-led and managed restoration of approximately 2.5 acres of prairie
- ▶ EAB mitigation resulted in creation of over 1.5 acres of prairie restoration

▶ Yahara Hills

- ▶ Over last 15 years, approximately 15 acres turf have been converted to meadows

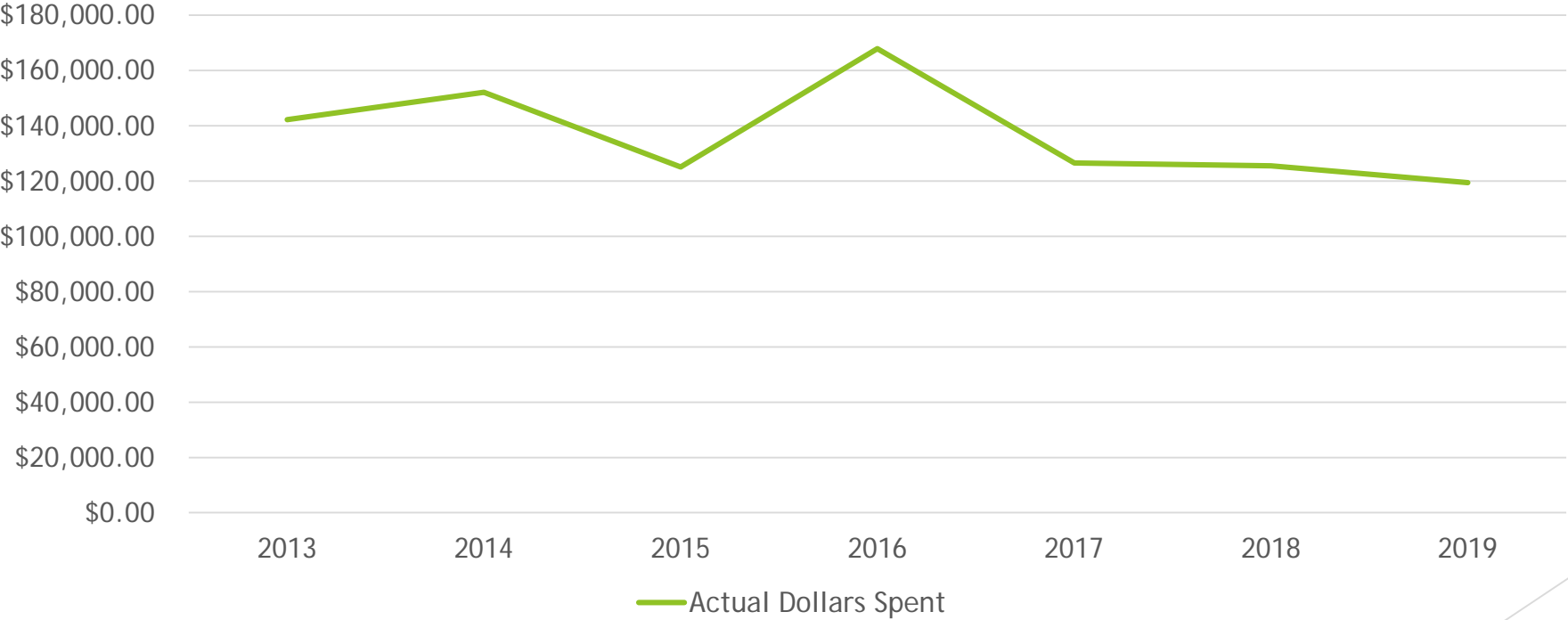
▶ Alternative formulations and products to protect pollinators

- ▶ Acelepryn (chlorantraniliprole) as alternative to neonicotinoids and Imidicloprid
- ▶ Granular formulations of insecticides to reduce particle drift to flying insects
 - ▶ Applications are immediately followed by irrigation to keep product in place



Chemical & Fertilizer Usage

Chemical & Fertilizer Expense (entire GEP)



Actual Dollars Spent	Year
\$142,212.14	2013
\$152,171.00	2014
\$125,118.10	2015
\$167,953.27	2016
\$126,558.08	2017
\$125,568.44	2018
\$119,473.29	2019

Chemical & Fertilizer Usage

Location	Acreage Managed	2019 Budget
Madison	749	\$140,000
Cedar Rapids	560	\$100,000
Lincoln Nebraska	778	\$258,337 - (actual)
Austin Texas	1082	\$287,837 (Year-round)
National Polled Average	150-200 per 18 hole*	\$108,000**

*Industry Average acres per hole compiled by Golf Course Superintendent Association of America

**Figure provided by Golf Course Industry Online

Chemical & Fertilizer Usage

- ▶ In 2016 the average budget expense for an 18-hole golf course, chemical and fertilizer budget was \$108,000.
 - ▶ According to Golf Course Industry Online yearly golf course management poll
 - ▶ <https://www.golfcourseindustry.com/article/budget/>
 - ▶ Poll survey results polled from all golf course types, public, private, municipal, and resort

	2015	2016
AVERAGE TOTAL	\$697,000	\$750,000
Water	\$22,800	\$17,300
Fuel	\$29,200	\$25,100
Mowing/cultivating equipment	\$31,300	\$42,800
Handheld equipment	\$2,410	\$2,470
Course accessories	\$4,410	\$5,060
Energy	\$21,300	\$21,800
Shop tools	\$2,860	\$3,220
Irrigation parts, heads & maintenance	\$8,410	\$7,870
Fungicides	\$34,100	\$34,200
Herbicides-preemergent	\$6,370	\$6,700
Herbicides-postemergent	\$4,260	\$4,590
Insecticides	\$6,190	\$6,770
Granular fertilizers	\$20,300	\$22,300
Liquid fertilizers-biostimulants/foiliars	\$12,100	\$13,500
Wetting agents	\$6,150	\$5,180
Plant Growth Regulators	\$4,570	\$4,640
Seed	\$7,390	\$6,350
Aquatic weed control	\$2,570	\$2,220



Utilities

CITY OF MADISON GOLF ENTERPRISE PROGRAM

December 18, 2019

Explanation of Water Utility Billing

- ▶ The City of Madison Water Utility charges are comprised of three primary charges and three special charges (Other).
- ▶ All City of Madison residents and businesses are subject to these charges to provide funding for the overall services.
 - ▶ Water
 - ▶ Storm Water
 - ▶ Sewer
 - ▶ Landfill Remediation (Other)
 - ▶ Urban Forestry (Other)
 - ▶ Public Fire Protection (Other)

Explanation of Water Utility Billing

▶ Water

- ▶ Madison Water Utility provides water for consumption and fire protection.
 - ▶ <https://www.cityofmadison.com/water/about>
- ▶ Billed as a meter rate (base) plus consumption per gallon
 - ▶ \$.00467 per gallon

Meter size	Monthly Rate
5/8"	\$11.74
3/4"	\$16.23
1"	\$22.60
4"	\$160.40
6"	\$292.31

Explanation of Water Utility Billing

▶ Storm Water

- ▶ The Storm Water Utility refers to the City's infrastructure to manage rain water. Fees fund operations and maintenance of facilities and provide for Capital Improvements.
 - ▶ Charges calculated by individual property based on:
 - ▶ Pervious by sq. ft. (\$0.00020/sq. ft.)
 - ▶ Impervious by sq. ft. (\$0.00261/sq. ft.)
 - ▶ <https://www.cityofmadison.com/engineering/sewerUtility.cfm>

▶ Sewer

- ▶ Sanitary Sewer fees cover cost of upkeep and repair of City's 665 miles of sewer infrastructure.
 - ▶ Three different Components to this billing, varies by account
 - ▶ Base charge (meter charge)
 - ▶ Use
 - ▶ Flat Rate
 - ▶ Irrigation systems include Sewer Deduct
 - ▶ <https://www.cityofmadison.com/engineering/sewerSanitary.cfm>

Explanation of Water Utility Billing

▶ Urban Forestry (Other)

- ▶ Urban Forestry Special charge provides funding services to manage the City's urban forest, primarily pruning and planting of trees in Right of Way and other city owned properties.
- ▶ Golf courses are billed according to parcel classification category
 - ▶ "Government" or "Stormwater"
 - ▶ <https://www.cityofmadison.com/parks/forestry/urbanForestry.cfm>

▶ Landfill Remediation (Other)

- ▶ The Landfill Agency is responsible for the maintenance of the City's five closed landfill sites at Mineral Point, Greentree, Demetral, Sycamore, and Olin. The special charge's goal is to control and eliminate gas and groundwater contamination to maintain a clean environment in the City.
 - ▶ Monthly charged is either \$.65 or \$2 for parcels that are eligible for charge, determined based on size of sewer service to property
 - ▶ <https://www.cityofmadison.com/engineering/EnvironmentalLandfills.cfm>

Explanation of Water Utility Billing

- ▶ Public Fire Protection (Other)

- ▶ Public Fire Protection service includes the use of hydrants for fire protection service, and water for testing equipment and training personnel.

- ▶ <https://www.cityofmadison.com/water/documents/2018%20rate%20sched%20for%20website.pdf>

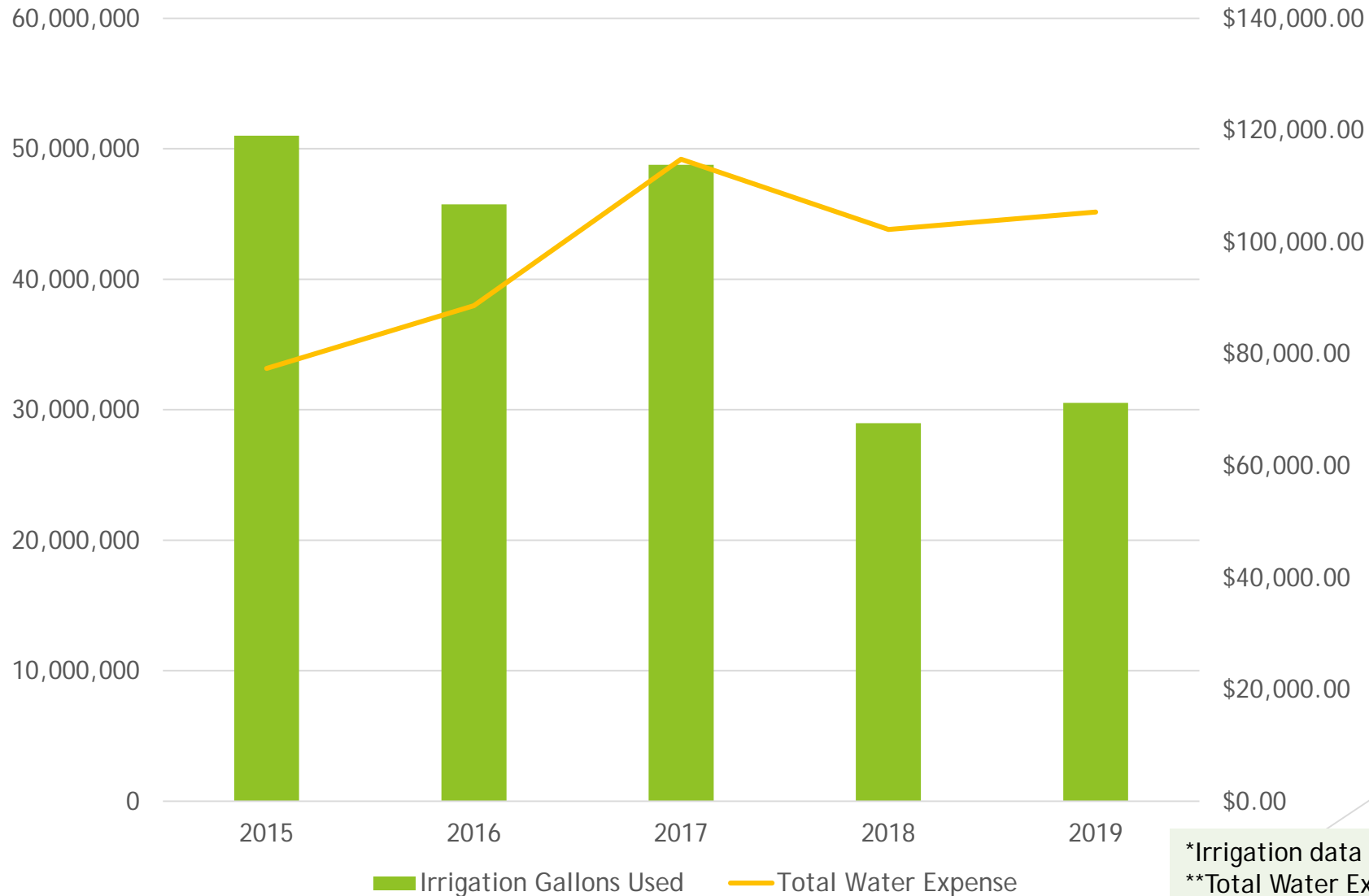
Description of Water Charges

Course	Address	Water	Sewer	Storm Water	Storm Impervious Sq. Ft	Storm Pervious Sq. Ft	Urban Forestry	Landfill Remediation	Public Fire Protection
Glenway	3747 Speedway Rd.	4" meter, base + use	n/a	No			No	No	No
Glenway	3747 Speedway Rd.	1" meter, Access	n/a	Yes	28,490	1,800,308	Yes	No	No
Monona	4718 Monona Dr.	4" meter , base + use	4" meter, deduct	Yes	64,195	3,983,188	Yes	No	No
Monona	111 E. Dean Ave.	3/4" meter, base + use	3/4" meter, use	No			No	Yes	No
Monona	111 E. Dean Ave.	5/8" meter, base + use	5/8" meter, base + use	No			No	Yes	No
Odana	4635 Odana Rd.	1", use	1", use (Tier 2)	Yes	116,458	2,929,819	Yes	Yes	Yes
Odana	4635 Odana Rd.	Water Flat Rate		No			No	No	No
Odana	4635 Odana Rd.		Sewer Flat Rate	No			No	Yes	No
Odana	4635 Odana Rd.	6" meter + base		No			No	No	No
Odana	850 Cabot Ln			Yes	1,721	3,515,177	Yes	No	Yes
Odana	5103 Milward Dr.			Yes	0	897,421	Yes	No	Yes
Odana	4635 Odana Rd.	Water Flat Rate		No			No	No	No
Odana	4635 Odana Rd.		Sewer Flat Rate	No			No	Yes	No
Yahara	6701 US Hwy 12 & 18		Use	Yes	204,878	1,833,462	Yes	Yes	No
Yahara	6901 US Hwy 12 & 18			Yes	20,899	7,167,710	Yes	No	Yes
Yahara	7101 US Hwy 12 & 18			Yes	123,232	6,681,663	Yes	No	Yes
Yahara	4502 Brandt Rd.			Yes	35,376	3,128,997	Yes	No	Yes
Yahara	4550 Brandt Rd.			Yes	42,641	1,736,733	Yes	No	Yes

Current Water Rates

Water use:	\$0.00467/gal
Water: Access Charge:	\$12.50
Sewer: Use	\$0.00337/gal
Storm Impervious:	\$0.00020/sq. ft.
Storm Pervious:	\$0.00261/sq. ft.

Water Utility Charges

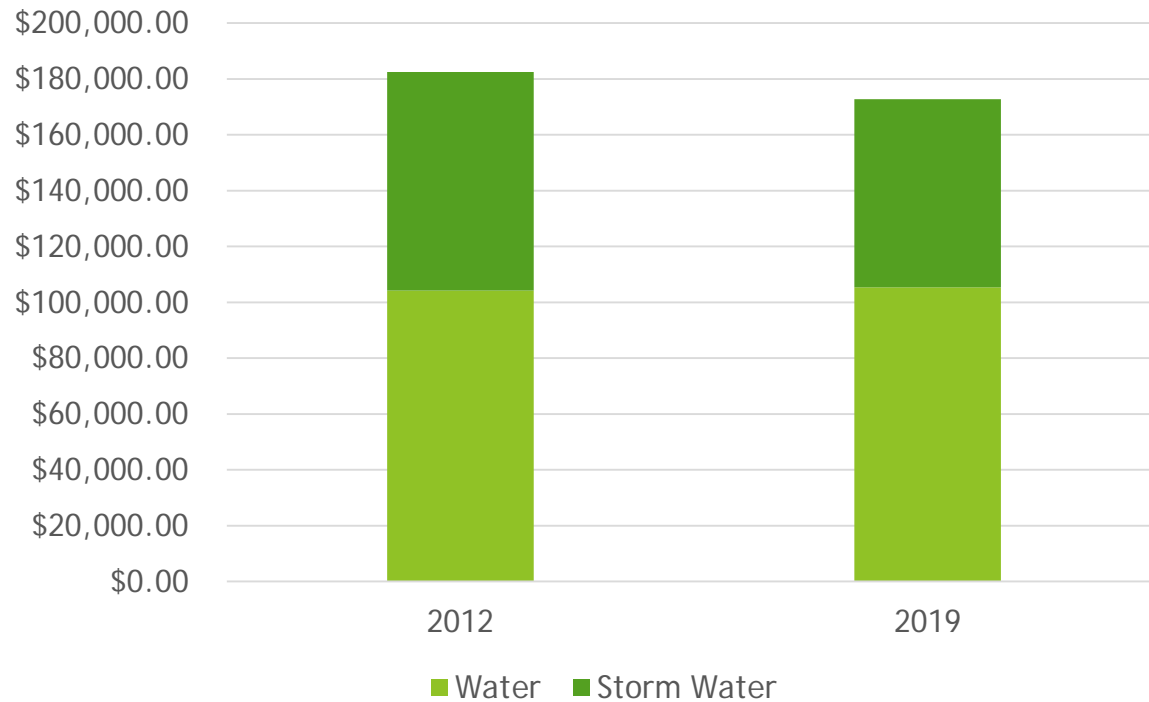


	Irrigation Gallons Used	Total Water Expense
2015	51,013,000	\$77,384.28
2016	45,740,000	\$88,608.55
2017	48,775,000	\$114,813.80
2018	28,967,000	\$102,249.70
2019	30,528,000	\$105,332.70

*Irrigation data directly from control system program
 **Total Water Expense (W/O Stormwater) taken from Water Billing info in MUNIS

Water Utility Comparison of a Dry Golf Season to a Wet Golf Season

2012 VS. 2019 Water Charges



2012	Water	Storm	Total*
Glenway	\$18,272.14	\$3,924.72	\$22,196.86
Monona	\$29,640.07	\$8,191.07	\$37,831.14
Odana	\$56,289.84	\$16,044.55	\$72,334.39
Yahara	\$0.00	\$50,134.50	\$50,134.50
TOTAL	\$104,202.05	\$78,294.84	\$182,496.89

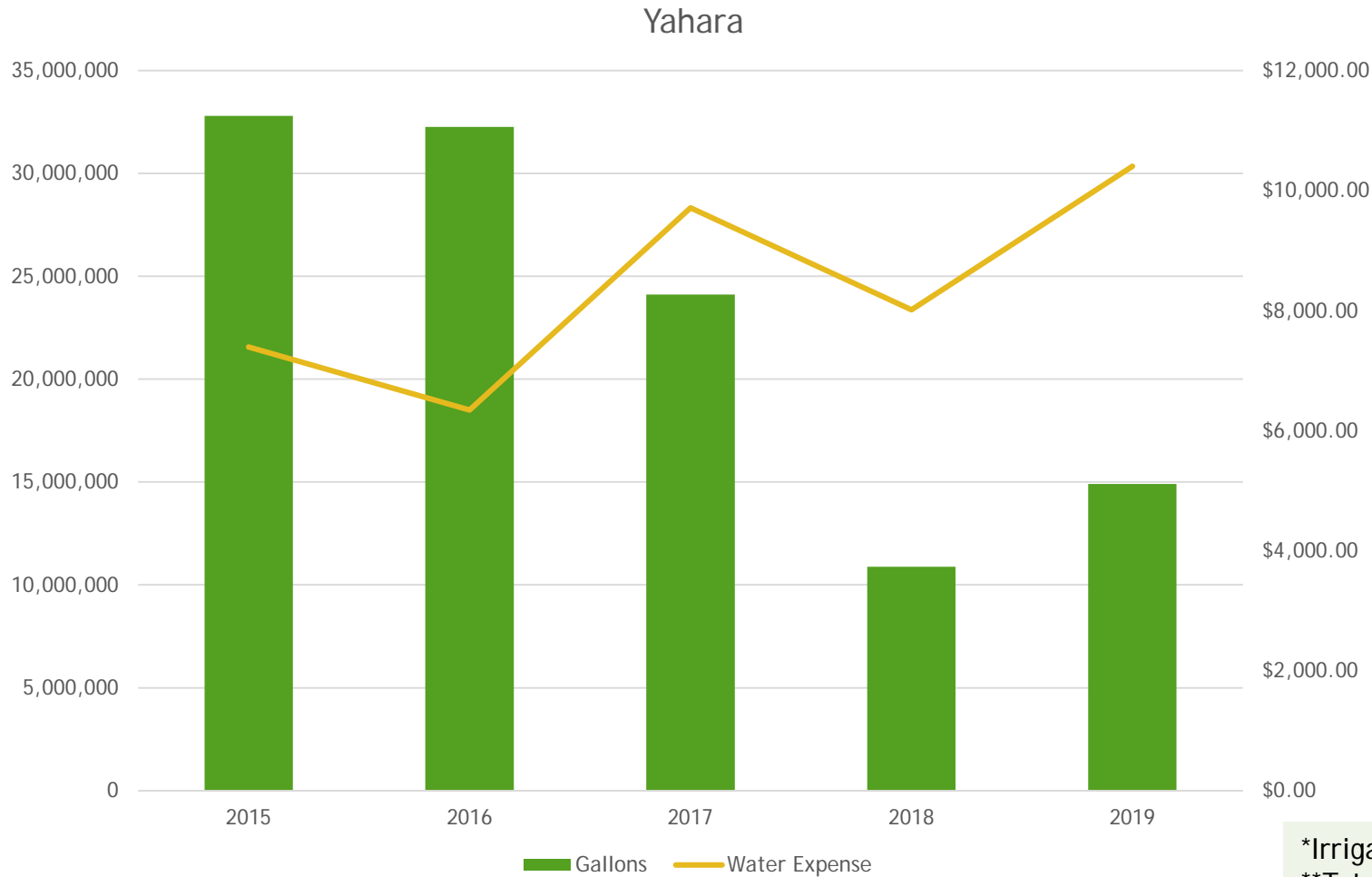
2019	Water	Storm Water	Total*
Glenway	\$14,268.82	\$6,381.22	\$20,650.04
Monona	\$11,176.52	\$3,592.24	\$33,975.97
Odana	\$69,482.88	\$9,983.45	\$60,259.12
Yahara	\$10,404.50	\$47,538.19	\$57,942.69
TOTAL	\$105,332.70	\$67,495.10	\$172,827.80

*Total water + storm water expense taken from water billing

Irrigation Usage

- ▶ Irrigation is critical to the health of the turf
 - ▶ Greens, Tees and Fairways for each hole all have own zone and are individually controlled
- ▶ Systems run only when necessary
- ▶ Custom Programs are determined via multiple methods and adjusted daily
 - ▶ Turf moisture reading gauges
 - ▶ Visual inspection by Greenskeeper
 - ▶ Based on fertilizer applications
 - ▶ Weather related data
 - ▶ Soil compound makeup
- ▶ Yahara's irrigation is run off well water
- ▶ All other courses are run off City water.

Irrigation Usage & Water Expense - Yahara Hills

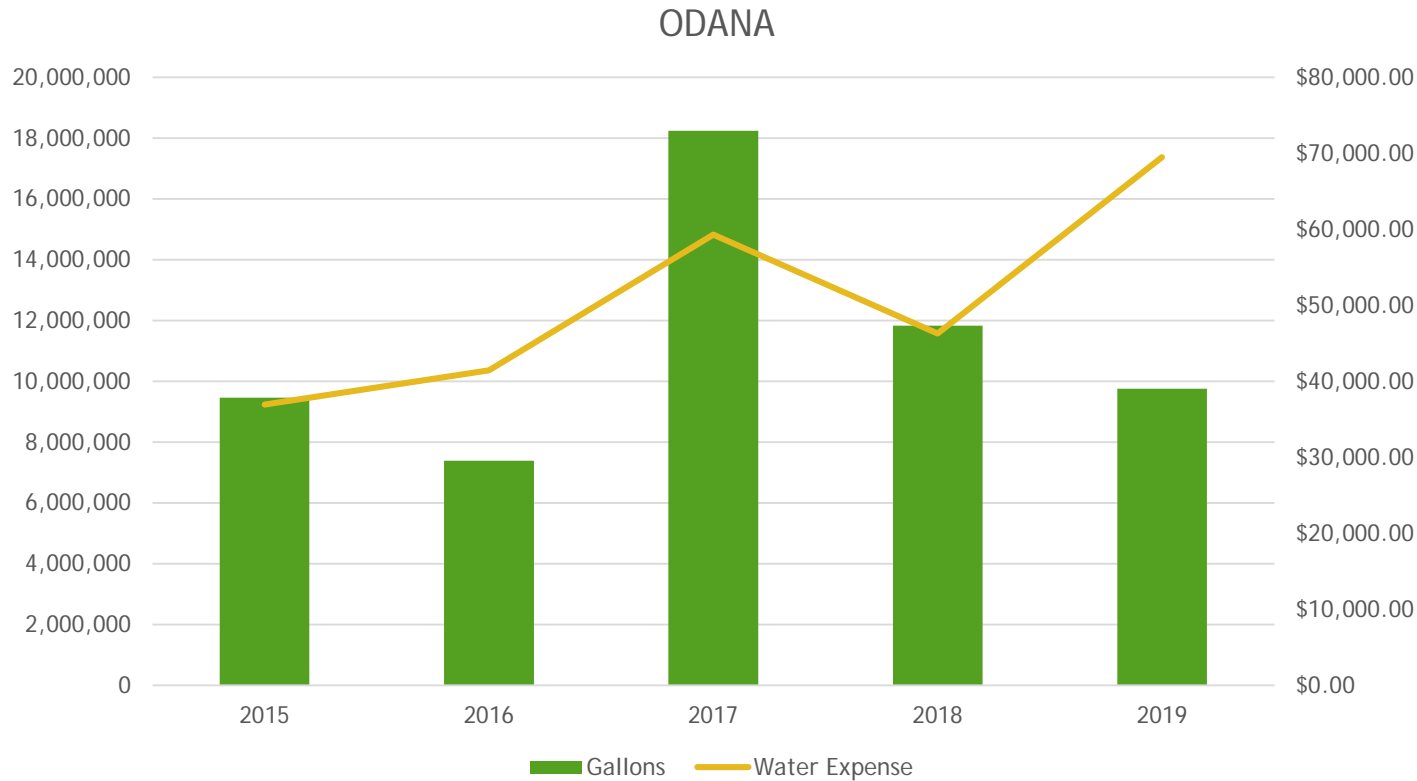


YAHARA		
Year	Irrigation Gallons Used*	Total Actual Water Expense**
2015	32,793,000	\$7,391.65
2016	32,255,000	\$6,340.68
2017	24,117,000	\$9,713.16
2018	10,887,000	\$8,013.04
2019	14,902,000	\$10,404.50***

Calculation of 2019 Irrigation Expense if NOT on well:
\$ 73,100.06

*Irrigation data directly from control system program
 **Total Water Expense taken from Water Billing
 ***2019 Billing Year-to-date, including expense through October

Irrigation Usage & Water Expense - Odana Hills

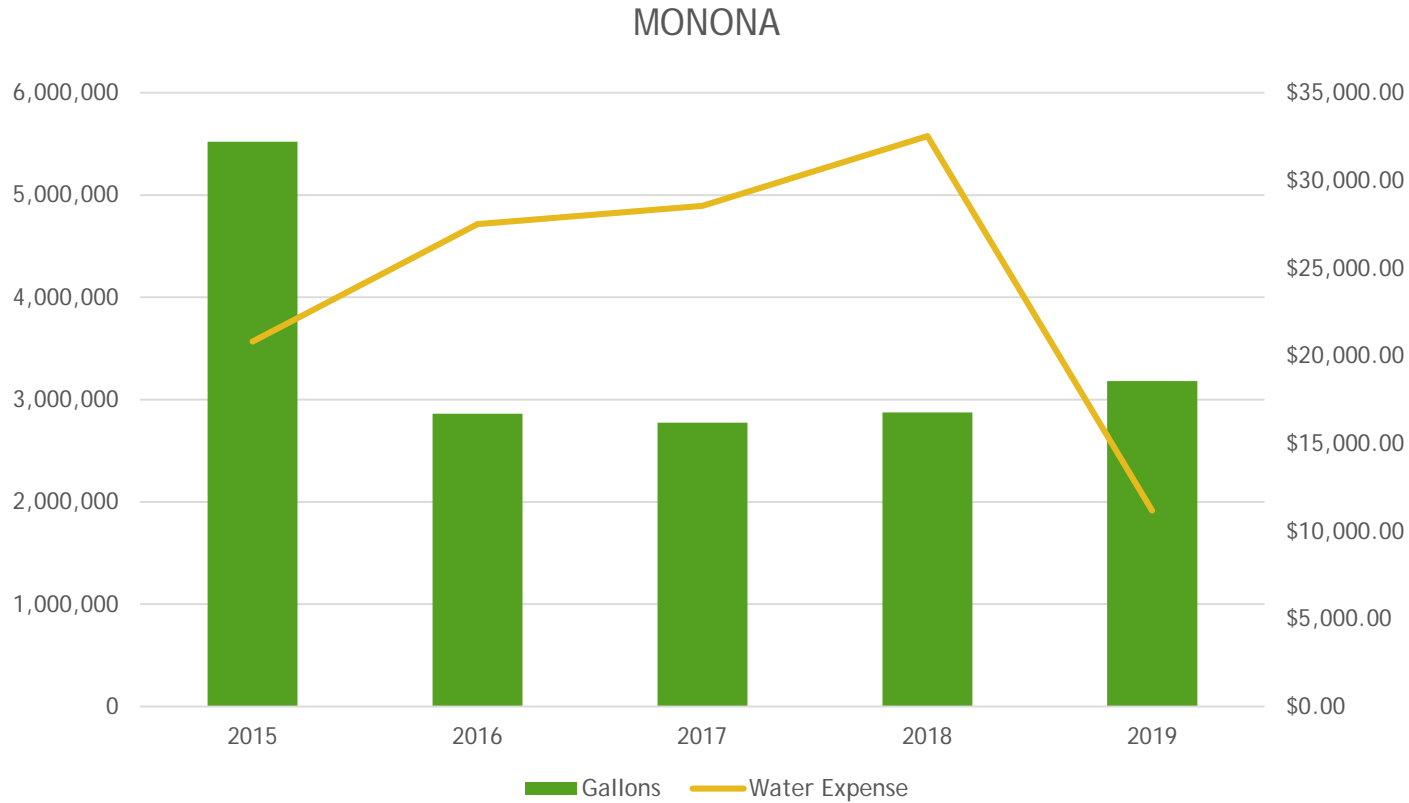


Odana		
Year	Irrigation Gallons Used*	Total Actual Water Expense**
2015	9,463,000	\$ 36,910.07
2016	7,388,000	\$ 41,448.25
2017	18,241,000	\$ 59,284.03
2018	11,830,000	\$ 46,295.12
2019	9,757,000	\$ 69,482.88

2019 Irrigation Expense \$ 47,903

*Irrigation data directly from control system program
 **Total Water Expense taken from Water Billing
 2019 Billing Year-to-date, including November, staff investigating potential discrepancy

Irrigation Usage & Water Expense - Monona



Monona		
Year	Irrigation Gallons Used*	Total Actual Water Expense**
2015	5,522,000	\$ 20,814.80
2016	2,862,000	\$ 27,514.79
2017	2,775,000	\$ 28,542.07
2018	2,874,000	\$ 32,533.10
2019	3,182,000	\$ 11,176.52

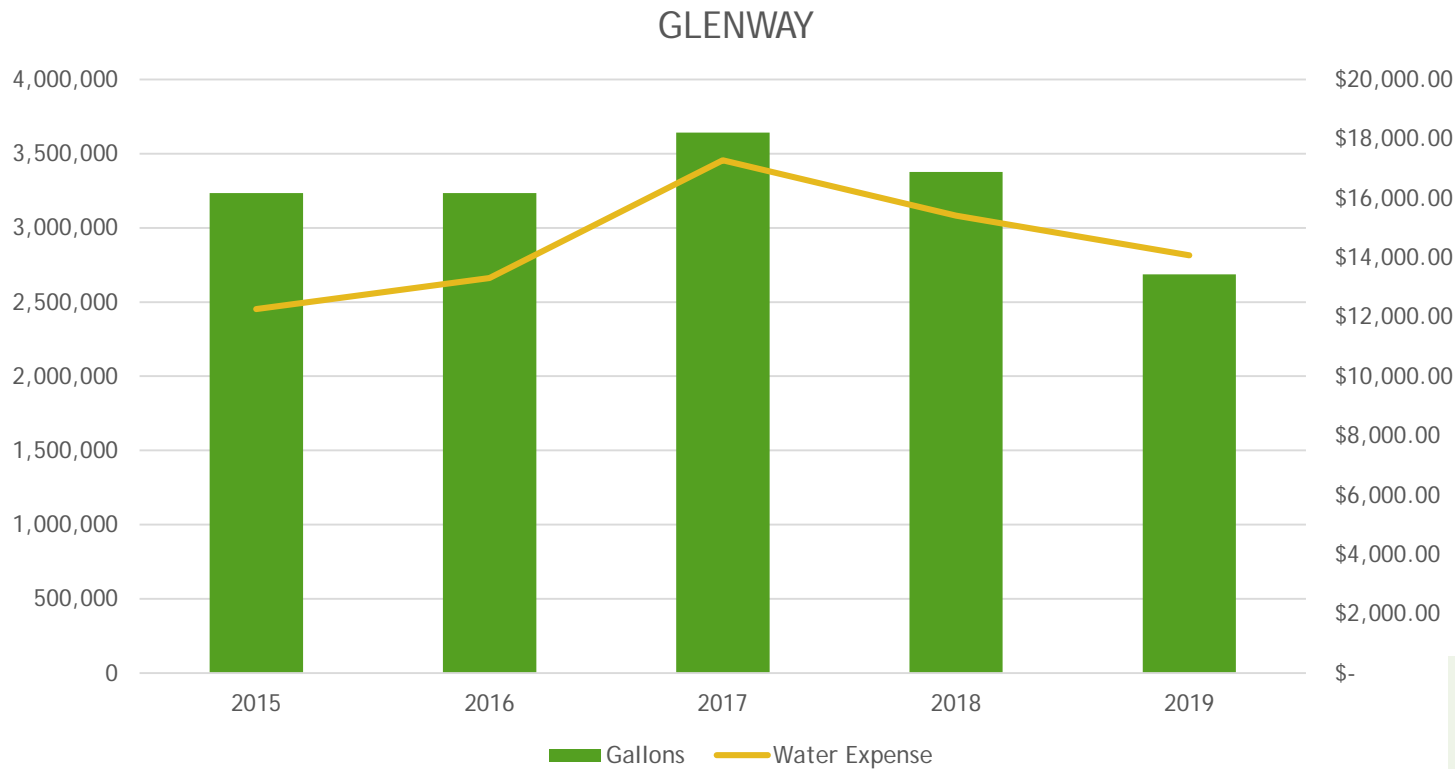
2019 Irrigation Expense \$ 16,143

*Irrigation data directly from control system program

**Total Water Expense taken from Water Billing

2019 Billing Year-to-date, including November, staff investigating discrepancy

Irrigation Usage & Water Expense - Glenway



Glenway		
Year	Irrigation Gallons Used*	Total Actual Water Expense**
2015	3,235,000	\$ 12,267.76
2016	3,235,000	\$ 13,304.83
2017	3,642,000	\$ 17,274.49
2018	3,376,000	\$ 15,408.41
2019	2,687,000	\$ 14,268.82

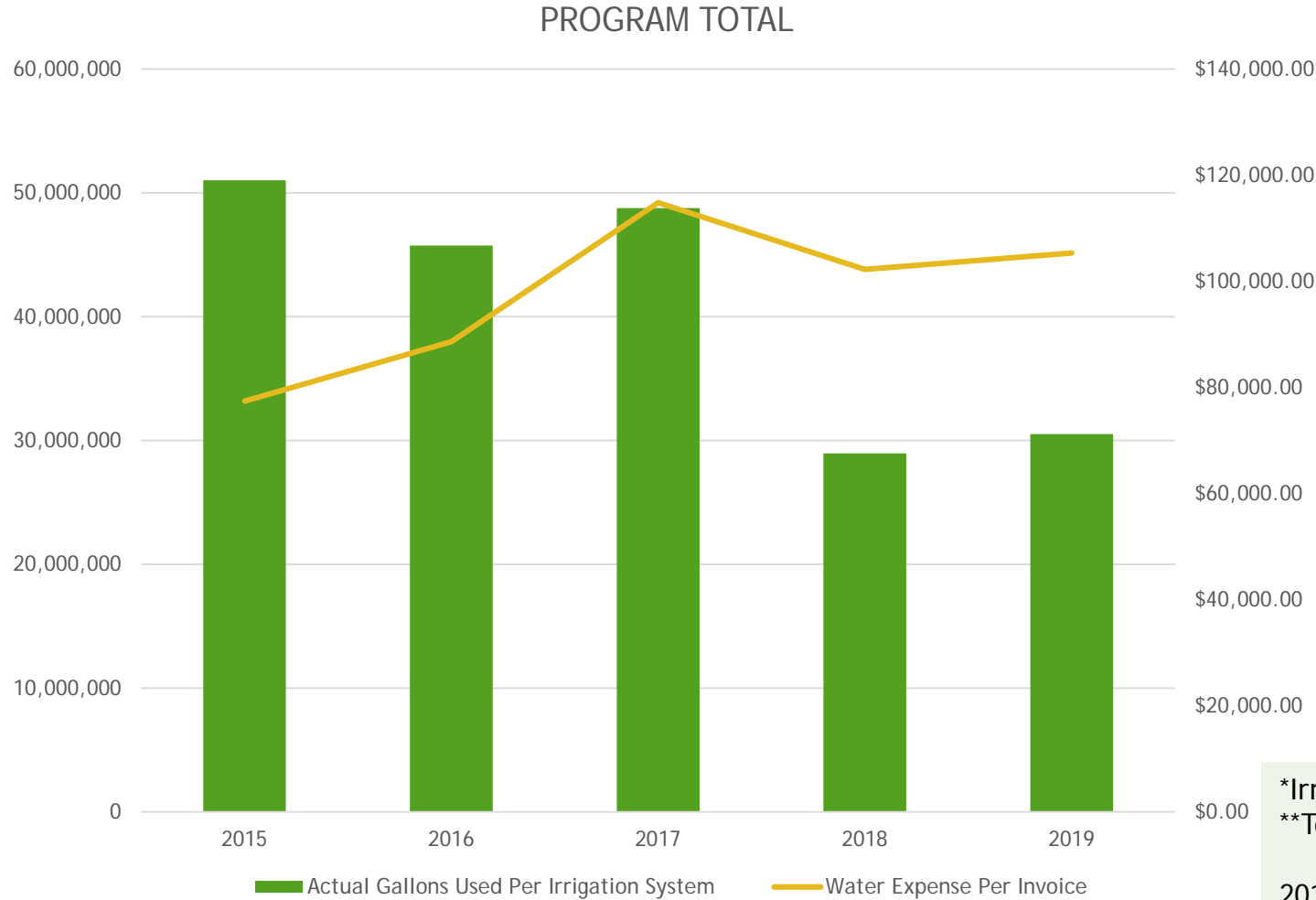
2019 Irrigation Expense \$13,831

*Irrigation data directly from control system program
 **Total Water Expense taken from Water Billing

2019 Billing Year-to-date, including November

2015 & 2016 Gallons based on average of 17'-19', new control system installed in 2017, as a result data unavailable, estimated for report.

Irrigation Usage & Water Expense - Program Total



Program Total		
Year	Gallons (Irrigation)*	Total Actual Water Expense**
2015	51,013,000	\$77,384.28
2016	45,740,000	\$88,608.85
2017	48,775,000	\$114,813.80
2018	28,967,000	\$102,249.70
2019	30,528,000	\$105,332.70

*Irrigation data directly from control system program
 **Total Water Expense taken from Water Billing

2019 Billing Year-to-date, including November

Efforts Made to Reduce Water Use

- ▶ Utilize Data and Observations to adjust irrigation programs
- ▶ Irrigation systems are run only when necessary
- ▶ Reduction in recent years largely due to weather
- ▶ Repairs made as quickly as possible when a leak is discovered
 - ▶ Sections are isolated when a leak is discovered

Electrical Utility

- ▶ Madison Gas and Electric is service provider for all four courses
- ▶ Fees calculated based off Demand and vary by Category and Classification:
 - ▶ Multiple meters and types of service per course and rates vary per season
 - ▶ Example of Odana Hills Course Billing

Account: 4635 Odana Rd, Madison (11206992)		Next Meter Reading: 1/06/2020		
Electric	E332715	Odana Golf	Electric: Comm & Ind Time-of-Use (CG-4A)	View Chart
Electric	E333775	Odana Golf	Electric: Comm & Ind Lighting and Power Service (CG-5)	View Chart
Electric	E279792	Odana Golf	Electric: Comm & Ind Lighting and Power Service (CG-5)	View Chart
Gas	G229241	Odana Golf	Gas: Commercial and Industrial Services (GSD-1, FS-1)	View Chart

Electrical Utility

▶ Example Rate Calculation:

- ▶ Cg-5=Small Commercial and Industrial Lighting and Power Service (Demands 20kW or less)

Demand 20kW or Less	Summer	Winter
Grid Connection and Customer service charge per day	\$0.78669	\$0.78669
Distribution Service : All kWh, per kWh	\$0.02295	\$0.02295
Electricity Charge: All kWh, per kWh	\$0.10224	\$0.09082

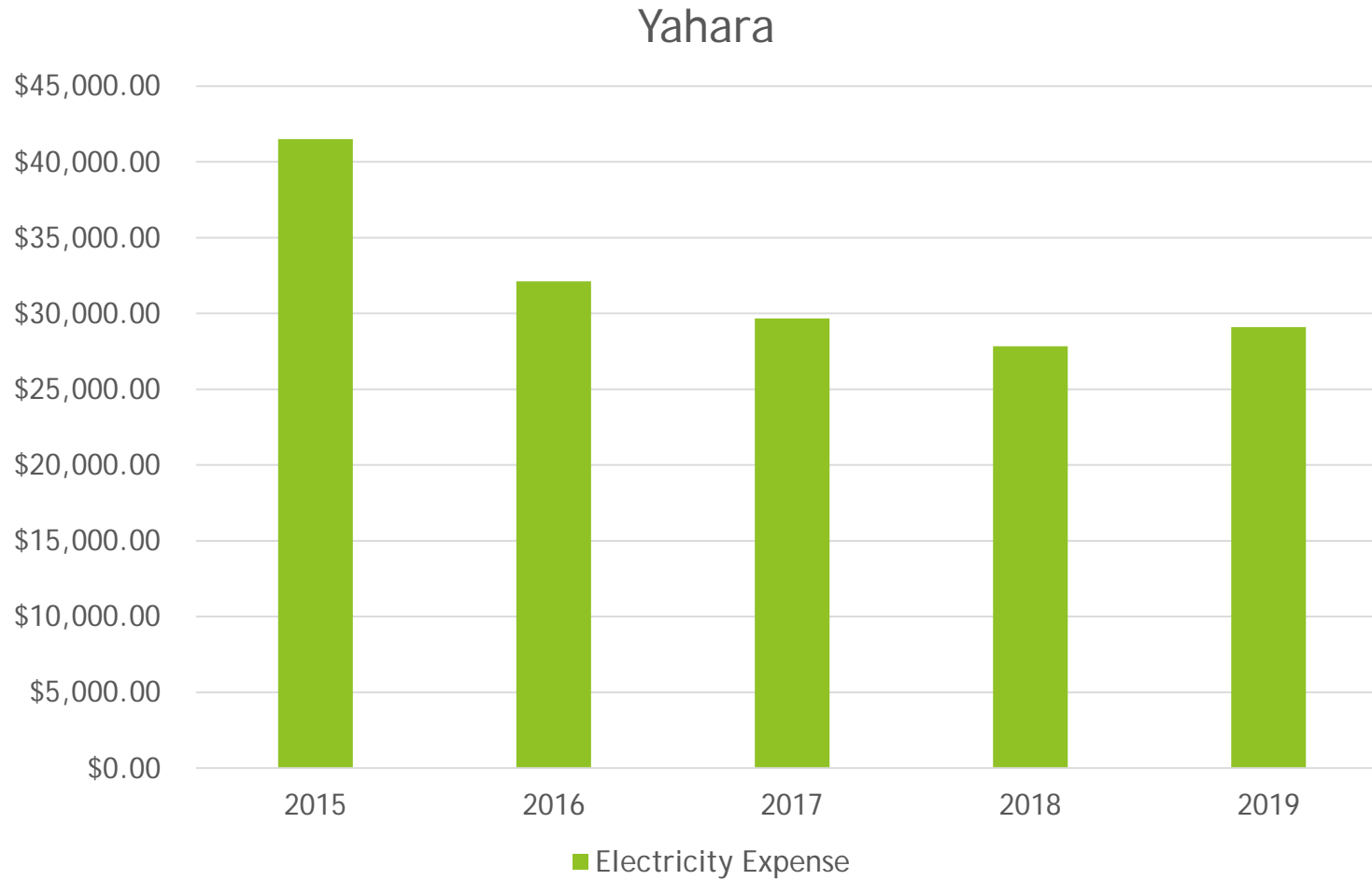
Electrical Utility Calculation

Example: Meter E333775: Odana Golf (Cg-5)			
Date of reading :	5-Nov		
Number of days=	33		
kWh/day	1.88		
kWh	60		
	Rate	Use	Total
Grid Connection	0.78669	60	\$47.21
Distribution	0.02295	1.88 X 60	2.59
Electricity	0.10224	1.88 X 60	\$11.54
			\$61.34

Electrical Usage

- ▶ Pump stations for irrigation systems
- ▶ Clubhouses
 - ▶ Glenway and Monona are seasonal facilities
 - ▶ Odana Hills and Yahara Hills are year-round facilities
- ▶ Maintenance shops
- ▶ Outdoor shelters and lighting
- ▶ Pond aerators where in use

Electric Expense - Yahara Hills

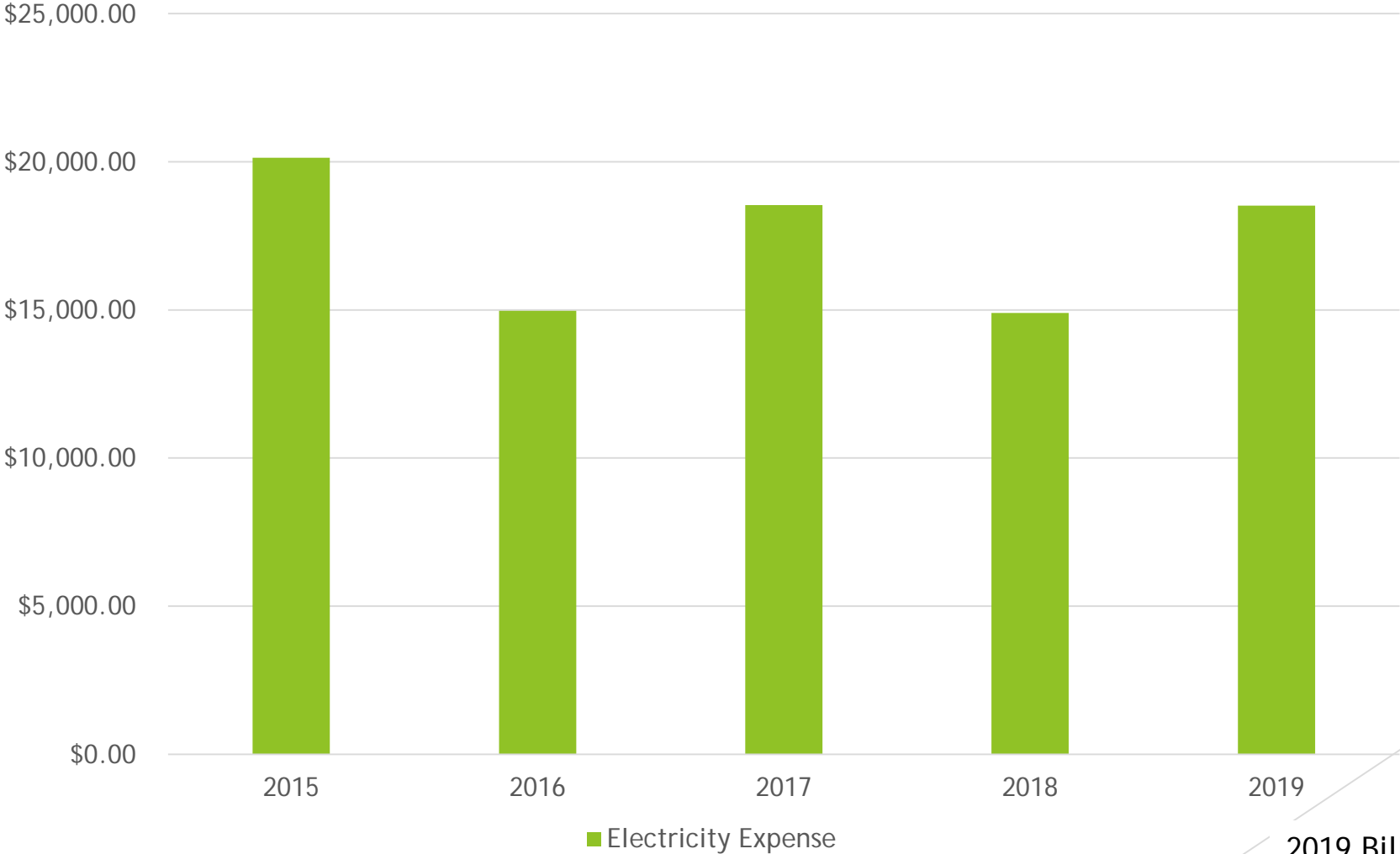


Yahara	
Year	Electricity Expense
2015	\$41,500.47
2016	\$32,126.52
2017	\$29,682.86
2018	\$27,832.42
2019	\$29,096.38

2019 Billing Year-to-date, including November

Electric Expense - Odana

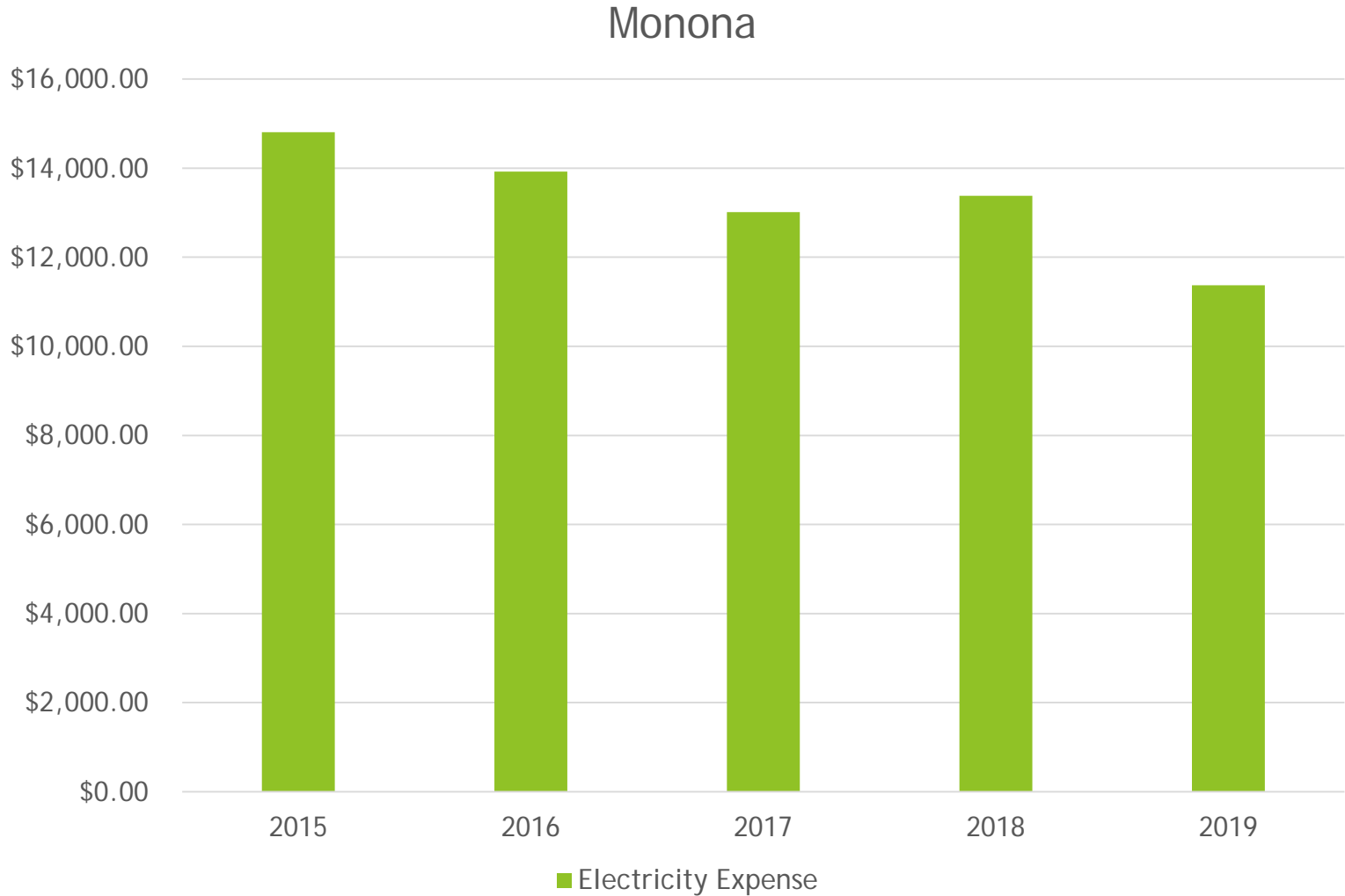
Odana



Odana	
Year	Electricity Expense
2015	\$20,138.15
2016	\$14,970.48
2017	\$18,538.25
2018	\$14,899.35
2019	\$18,515.26

2019 Billing Year-to-date, including November

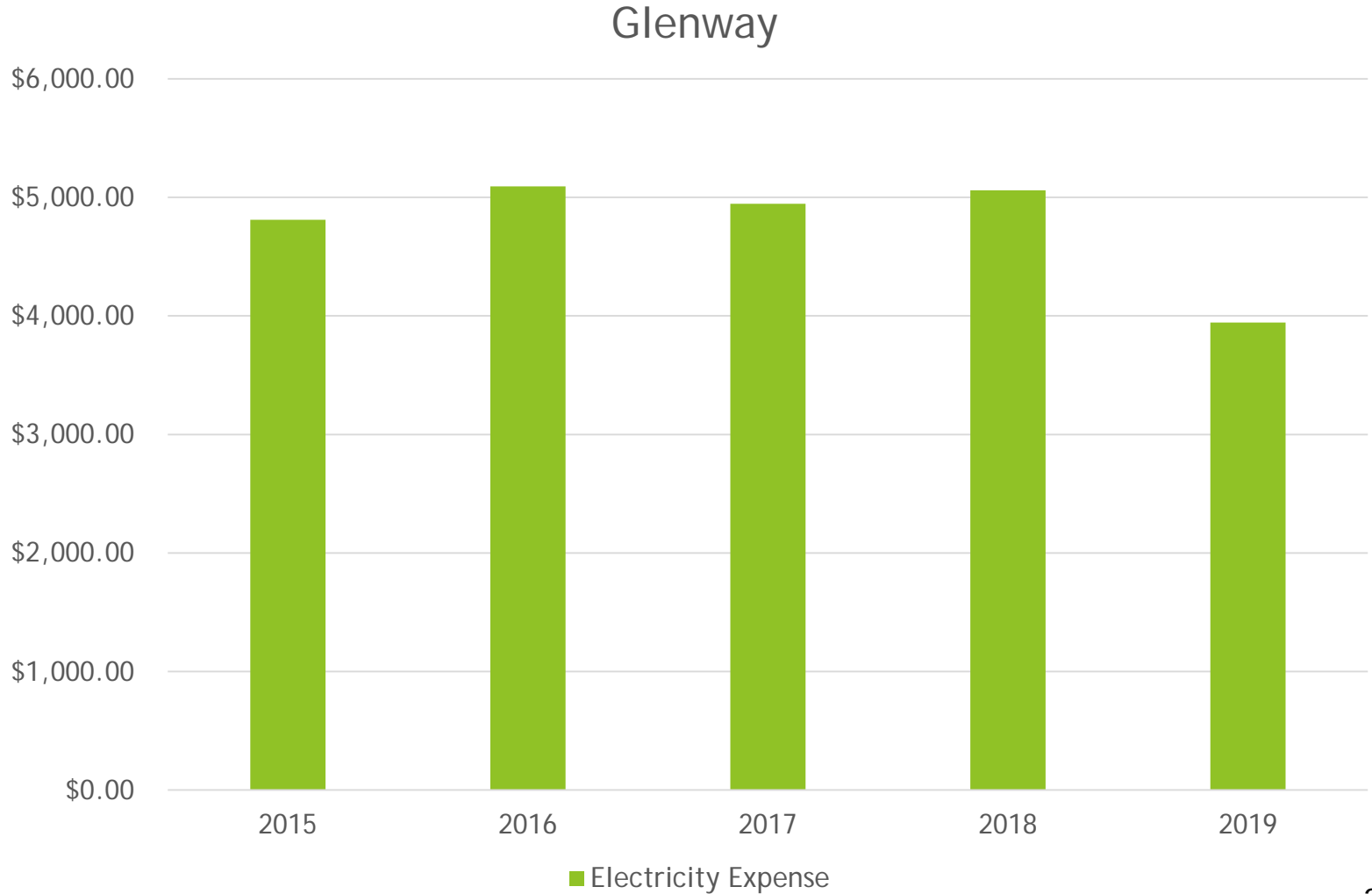
Electric Expense - Monona



Monona	
Year	Electricity Expense
2015	\$14,806.03
2016	\$13,919.67
2017	\$13,014.64
2018	\$13,378.90
2019	\$11,373.30

2019 Billing Year-to-date, including November

Electric Expense - Glenway

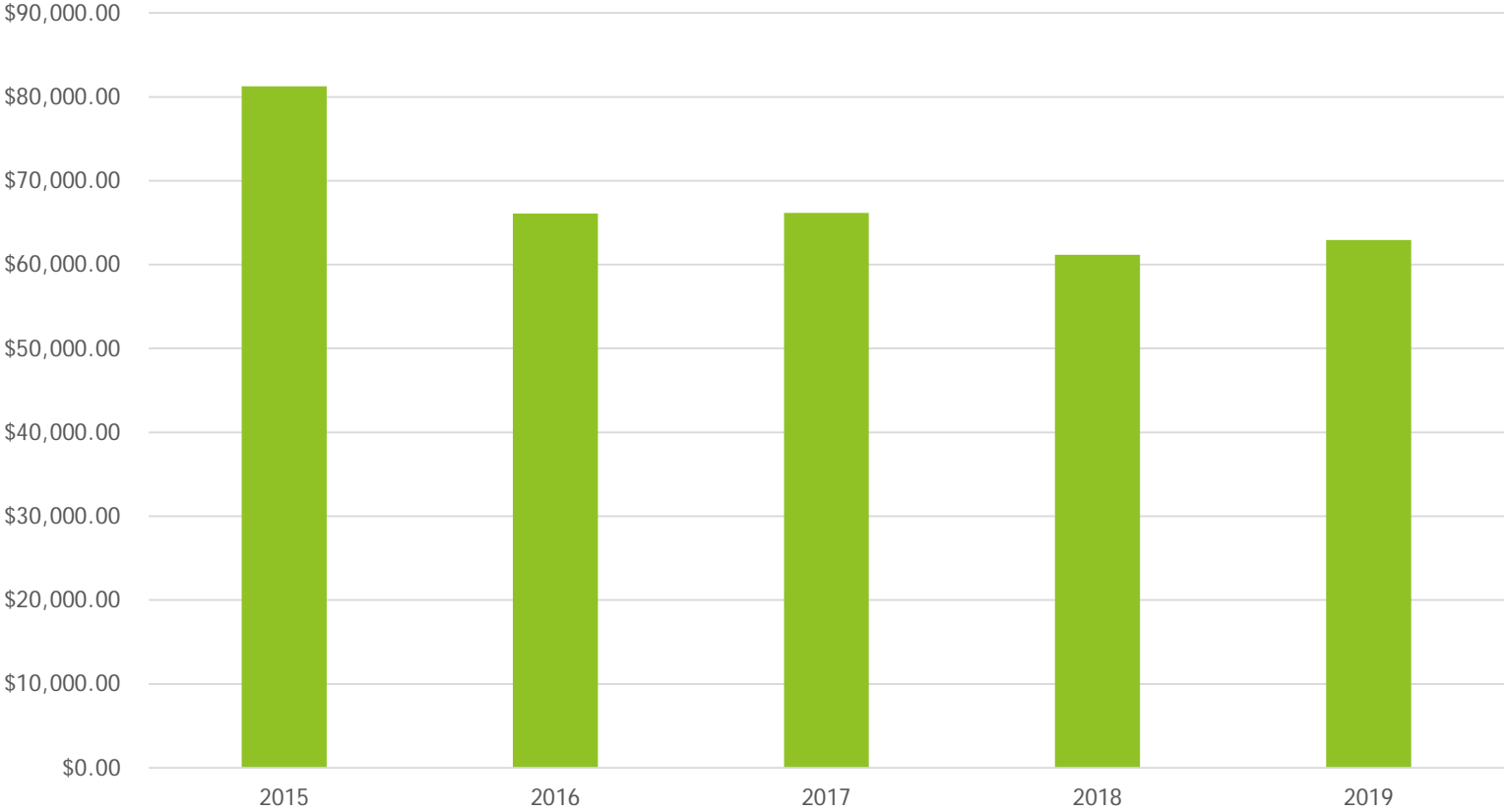


Glenway	
Year	Electricity Expense
2015	\$4,811.92
2016	\$5,093.14
2017	\$4,945.65
2018	\$5,058.87
2019	\$3,944.03

2019 Billing Year-to-date, including November

Electric Expense - Program Total

PROGRAM TOTAL ELECTRIC EXPENSE



PROGRAM TOTALS	
Year	Electricity Expense
2015	\$81,256.57
2016	\$66,109.81
2017	\$66,181.40
2018	\$61,169.54
2019	\$62,928.97

2019 Billing Year-to-date, including November

Efforts Made to Reduce Electrical Use

- ▶ Installed solar panels at Yahara Hills in 2017
- ▶ Less irrigation usage due to weather conditions
- ▶ Convert lighting to LED/energy efficient bulbs
- ▶ Occupancy sensors in buildings
- ▶ Replaced outdated HVAC system at Yahara in 2016 and made clubhouse improvements
 - ▶ Project total \$568,780



Photo Courtesy of City of Madison Engineering

Questions?