

2016 Sustainability Report

Principle 1: Purchase and use of environmentally safe and sensitive products

Theme: Paper Purchasing and Reduction in Use

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS
<ul style="list-style-type: none"> • We replace paper with electronic communication whenever practical; including bidding documents, registration confirmations, P-cards, accreditation documents, staff manuals, etc. • We print double-sided pages when possible. • We use 30% recycled content office paper. 	<p>In 2016 we used approximately 810,000 sheets of office paper, 30,000 fewer sheets than in 2015. By using 30% recycled content paper in 2016 we saved:*</p> <ul style="list-style-type: none"> • 29 trees • 13 million BTUs of energy • 2,513 lbs. carbon dioxide • 13,631 gallons of water <p>By switching to direct mailing of our Program Guide, we were able to print 10,500 fewer guides each quarter, resulting in the following paper savings in 2016:</p> <ul style="list-style-type: none"> • 2,898,000 sheets of paper • 348 trees • 472 million BTUs of energy • 331,147 gallons of water 	<p>By using 30% recycled content paper since 2012, we saved:*</p> <ul style="list-style-type: none"> • 135 trees • 62 million BTUs of energy • 11,615 lbs. carbon dioxide • 62,995 gallons of water <p>*Calculations made by the Environmental Paper Network Paper Calculator</p>

Theme: Use of Green Cleaning Supplies and Services throughout the District

SUSTAINABLE PRACTICES	BENEFITS
<ul style="list-style-type: none"> • Parks staff uses a bulk cleaner dispensing system by Metro with lidded, 5-gallon buckets. Cleaners are pre-measured and diluted with water. • Staff uses green cleaners in all facilities and parks, including golf courses, Centennial Beach, Knoch Knolls Nature Center and Fort Hill Activity Center. • Recreation Support is using a 5-filter system for vacuums, resulting in cleaner air. • Recreation Support's eco-flex carpet extractor uses less water and chemical when cleaning carpets. • Recreation Support's eco-flex auto-scrubber strips floors with water and small amounts of low VOC cleaners. • All cleaning machines use cold water only, and peroxide-based cleaners. • All floor finishes have a 0.95% or less VOC. • Restroom paper products are made of 100% recycled content. • Rec Support uses recycled plastic trash can liners. • Fleet uses a solvent-free cleaner to clean vehicle parts. 	<ul style="list-style-type: none"> • Green products are safer for employees using them. • Green products are safe for volunteers to use, including volunteers with special needs. • Containers are refillable, reducing waste. • Green products do not pollute soil, air, or water.

Principle 2: Effective Use and Protection of Air, Water, Soil, and Wildlife

Theme: Use Pervious Materials for Construction of Hardscape When Practical

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS
<ul style="list-style-type: none"> Consider installing pervious pavement in areas where maintenance is practical. Seek grants to assist with initial cost and/or maintenance of pervious pavers. Each of the 6 pervious pavement projects completed between 2009 and 2016 was funded, in part, by grants. Parks Department manages annual sweeping of pervious pavement at Winding Creek Park, Seager Park, Weigand Riverfront Park, Knoch Knolls Nature Center, Sportsman’s Park and Fort Hill Activity Center. 	<ul style="list-style-type: none"> The District maintains approximately 110,000 SF of pervious pavement including 9,918 SF added at Fort Hill Activity Center parking lot in 2016. 	<ul style="list-style-type: none"> 50-year lifecycle cost of pervious pavement is projected to be 25% less than asphalt. Improves water quality of the DuPage River and other streams by reducing runoff and filtering water on site. Pollutants removed include nitrogen, phosphorus, lead, zinc, and total suspended solids.

Theme: Conserve Water in Operations

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS
<ul style="list-style-type: none"> Use water from retention ponds and quarries for irrigation. Synthetic turf fields at Nike Sports Complex and Commissioners Park reduce the need for irrigation. Golf continues to reduce water usage by adjusting the spray patterns of sprinklers. The 1,400 gallon cistern at Knoch Knolls Nature Center reuses rainwater for indoor plumbing, providing approximately 50% of the water used by the building The 10,000 gallon underground cistern at Knoch Park provides approximately 50% of the water used for ball field irrigation. 	<ul style="list-style-type: none"> Knoch Park cistern harvested 545,000 gallons of water in 2016, which is 45% of the total gallons of water used at Knoch Park for irrigation (1,207,000 gallons) saving approximately \$3,815 in water costs. The cistern at Knoch Knolls Nature Center harvested approximately 195,890 gallons of water in 2016, which provided 72% of the water used at the facility, saving approximately \$1,371 in water costs. 	<ul style="list-style-type: none"> Reuse of rain water saves money, local potable water supply, and slows runoff from the site, leading to improved water quality of local streams.

Theme: Protect Wildlife

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS
<ul style="list-style-type: none"> • Park Police hand out river wildlife cards on the Riverwalk to encourage visitors to refrain from feeding ducks and other waterfowl • Central Parks staff maintains two hives of honeybees at the back of the organic area of the Ron Ory Community Garden Plots. • Central Parks discontinued use of the chemical, Merit, for grub control and uses Acelepyrn instead, which is safer for pollinators. • Approximately 125 milkweed plants, planted by a boy scout, are located near the honey bee hives at the Garden Plots, attracting Monarch butterflies to the area. 	<ul style="list-style-type: none"> • The Park Board passed a resolution on Dec. 13, 2016 to enhance habitat for Monarch butterflies. Initiatives planned for 2017 include a Monarch way station and signage at Knoch Knolls Nature Center and an increase of pollinator-friendly plants throughout the District. • Both golf courses have incorporated native areas with milkweed and other pollinator plants (approx. 2.5 acres at Springbrook and 5 acres at Naperbrook). The native areas receive minimal herbicide treatments, and no insecticide treatments. No pesticides are applied during egg laying periods. Annual mowing and other practices to help minimize invasive weeds, and to sow seeds to increase milkweed plants. 	<ul style="list-style-type: none"> • Honeybees are essential to many of the fruits and vegetables that we enjoy. Providing a safe place for several hives will benefit the garden plots and will help bring back the honeybee population. • Allowing ducks to feed naturally leads to better health for the ducks, prevents crowding and aggression among the ducks, and helps keep the river clean. • Milkweed plants provide habitat for Monarch butterflies.

Principle 2: Effective Use and Protection of Air, Water, Soil, and Wildlife (cont'd)

Theme: Improve and Maintain the District's Natural Areas

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS
<ul style="list-style-type: none"> • The Parks Department actively maintains existing natural areas and works with the Planning Department to restore additional natural areas. • Community volunteers assist with park maintenance projects when possible. 	<ul style="list-style-type: none"> • District-Wide Natural Area Management <ul style="list-style-type: none"> ○ 61,468 LF of shoreline managed ○ 22 acres of prairie managed ○ 184 acres of woodland managed ○ 28 acres of controlled burning ○ 56 acres of invasive removals ○ 34 acres of low mowing ○ 432 trees planted • 1,747 volunteers devoted 15,740 hours to park maintenance projects in 2016. • Planning completed the shoreline restoration at McDonald Creek, located at Knoch Knolls Park 	<ul style="list-style-type: none"> • Benefits of restoring shorelines include less maintenance for staff, improvement in the water quality of rivers and streams, smaller Canadian geese population, and improvement in native riparian animal & insect habitat. • Benefits of increased low-mow areas include reduction of air pollution caused by mowing and reduction in the amount of fuel used for mowing and reduction in labor and related costs. • Pond aerators eliminate the need for chemical applications, reducing pollution.

Theme: Improve and Evaluate Use of Chemical Applications for Landscape Maintenance and Hard Surfaces

SUSTAINABLE PRACTICES	2016 Update	BENEFITS
<ul style="list-style-type: none"> • Golf and Parks are using best management practices in applying fertilizers and herbicides, including soil testing to limit elements only to what are needed for the soil. • Parks staff uses a safer broadleaf weed killer. • Parks staff checks soil reports and applies fertilizers according to what elements are needed. • Parks staff continues to reduce the amount of salt applied in deicing; uses magnesium chloride in all sensitive areas and for walkways. • Central Parks uses microbes to improve turf quality while decreasing the use of synthetic fertilizer and plant protectant chemicals. • Golf continued the use of naturally occurring microbes to reduce thatch in turf, helping to naturally reduce pests and disease problems. • Central Parks top dresses fields with 10 tons of compost, mostly composed of leaves, twigs and landscape waste, reducing fertilizer use, to relieve compaction and feed the soil bacteria that provide nutrients to the turf. • The Riverwalk team applies leaf compost on perennial beds in place of mulch, which helps to add nutrients to the soil, reduce the need for fertilizer and relieve compaction. • The Riverwalk division also uses an organic fertilizer called 3-4-3 Healthy Start Landscape N-P-K Fertilizer on planting beds in place of a chemical fertilizer. • Central Parks uses Fiesta, a mineral based herbicide, for broadleaf control and Acelepyrn for grub control, which is safer for pollinators. • Central uses Finalsan herbicide as a fast-acting weed, grass, algae, and moss killer. 	<ul style="list-style-type: none"> • Ft. Hill Activity Center has heated walkways to the entrance to reduce need for salt in winter. • South Parks is using “Power Melt Green” to melt ice; it is calcium magnesium acetate based and labeled one of the most environmentally friendly ice melt formulations. • Golf is using chicken manure as fertilizer; had limited success with microbes. 	<ul style="list-style-type: none"> • Benefits of best management practices in landscape maintenance include improved water quality in streams and ponds, healthier turf, improved soil, protection of pollinators, and reduced cost. • Benefits for reducing use of salt include reduced replacement costs for salt damaged landscaping trees and shrubs; protection of water quality, plant, and animal life in sensitive wetland areas; and reduced costs from more efficient application of deicers, minimizing waste. (From IPRA’s <i>Environmental Toolkit</i>)

Principle 3: Effective Use of Energy Resources

Theme: Energy Conservation - Vehicles and Equipment

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS										
<ul style="list-style-type: none"> Using bio-based fuel and fluids, including B20 Dieselelex Gold fuel during the warm season, EcoTerra hydraulic fluid, fully synthetic engine oil, and canola based lubricant. Continue to purchase or convert vehicles for alternative fuel, including hybrid, electric and propane. Continue to test efficiency and economy of new fuels, fluids and types of vehicles. Reuse oil from Centennial Grill and Springbrook and Naperbrook clubhouses to fuel the vegetable oil tractor. Recycle excess oil via a vender. The fleet now has a propane fueling station and 6 trucks that run on propane fuel. Funding for purchasing/converting the vehicles was provided, in part, by a \$24,000 grant. 	<div data-bbox="659 272 1346 630" data-label="Figure"> <table border="1"> <caption>% Fleet Using Alternative Fuel</caption> <thead> <tr> <th>Year</th> <th>% Fleet</th> </tr> </thead> <tbody> <tr> <td>2013</td> <td>33</td> </tr> <tr> <td>2014</td> <td>50</td> </tr> <tr> <td>2015</td> <td>58</td> </tr> <tr> <td>2016</td> <td>60</td> </tr> </tbody> </table> </div> <p data-bbox="751 662 1360 686">NPD has been designated as an Illinois Green Fleet since 2011.</p> <ul style="list-style-type: none"> North purchased an EGO Lithium Ion Battery powered blower for use in Central Park. The Riverwalk purchased a lithium battery-powered string trimmer and handheld blower. The blower is quiet and it is not necessary to leave it idling. 	Year	% Fleet	2013	33	2014	50	2015	58	2016	60	<ul style="list-style-type: none"> Electric vehicles produce no emissions. Hybrids are expected to provide twice the gas mileage of the vehicles they replaced. Synthetic oil improves fuel economy, uses less oil. Propane is cleaner and costs less than gasoline. Use of vegetable oil is carbon neutral.
Year	% Fleet											
2013	33											
2014	50											
2015	58											
2016	60											

Theme: Renewable Energy Use

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS												
<ul style="list-style-type: none"> Rooftop solar panels provide renewable energy at Knoch Knolls Nature Center, Nike Sports Complex, and Knoch Park. Parks operates 2 solar-powered pond aerators at Hobson West Ponds. Solar panels are considered for buildings when grants or rebates are available. 	<ul style="list-style-type: none"> 117 solar panels were installed at Ft. Hill Activity Center and began operating in October 2016. Funding was provided, in part, by a \$50,000 renewable energy grant from the City of Naperville. The system capacity is 33.35 kW with an estimated annual production of 39,962 kWh, which will lead to a reduction of 27.5 metric tons of carbon dioxide and an estimated cost savings of \$3,776 annually. Fleet installed a solar panel to power a diesel pump. A trailer that has no ramp is using an electric hydraulic lift that is being recharged by a solar panel. <div data-bbox="667 1182 1411 1206" data-label="Section-Header"> <p>2016 Solar Output at Nike Sports Complex and Knoch Knolls Nature Center</p> </div> <table border="1" data-bbox="537 1206 1518 1357"> <thead> <tr> <th>Facility</th> <th>kWh Generated by PVs</th> <th>Est. Cost Savings</th> <th>CO2 Avoided</th> </tr> </thead> <tbody> <tr> <td>Nike Sports Complex</td> <td>15,833</td> <td>\$1,583</td> <td>11.1 metric tons</td> </tr> <tr> <td>Knoch Knolls Nature Center</td> <td>21,986</td> <td>\$2,198</td> <td>15.5 metric tons</td> </tr> </tbody> </table>	Facility	kWh Generated by PVs	Est. Cost Savings	CO2 Avoided	Nike Sports Complex	15,833	\$1,583	11.1 metric tons	Knoch Knolls Nature Center	21,986	\$2,198	15.5 metric tons	<ul style="list-style-type: none"> Solar panels produce clean, renewable energy. Annual cost savings throughout lifecycle. Educational value for the community.
Facility	kWh Generated by PVs	Est. Cost Savings	CO2 Avoided											
Nike Sports Complex	15,833	\$1,583	11.1 metric tons											
Knoch Knolls Nature Center	21,986	\$2,198	15.5 metric tons											

Principle 3: Effective Use of Energy Resources (cont'd)

Theme: Energy Conservation – Indoor and Outdoor Facilities

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS																																								
<ul style="list-style-type: none"> The District conducts an ongoing energy audit, tracking electric and gas bills. Trades is upgrading to LED lights whenever budget allows. Energy efficient lighting and HVAC systems are installed in new buildings Athletic fields use energy-efficient lighting that can be controlled remotely to accommodate schedule changes. All sports lighting is now integrated into the Control Link system. Drop-in tennis and basketball court lighting is now on push button controls, for more energy savings. 	<ul style="list-style-type: none"> Trades replaced high pressure sodium lights with LED lights at the Commissioners Park parking lot, with support from a \$5,000 grant from the Illinois Municipal Electric Agency through the City of Naperville. The project is expected to result in annual savings of 56,070 kWh of energy. Trades also added LED lights at Seager Park and Frontier S.C. and upgraded 5 spotlights at the Riverwalk Dandelion Fountain with LED fixtures. LED lighting was used throughout Fort Hill Activity Center and in the parking lot and 40 solatubes provide natural sunlight in the gymnasium. IT ordered new cell phones with lithium batteries that require less time (and energy) to charge. Trades added spray-on insulation to the Naperbrook Golf Maintenance garage where there was no insulation previously. <p style="text-align: center;">Energy and Cost Savings for Control Link System</p> <table border="1" data-bbox="415 646 1436 974"> <thead> <tr> <th>Year</th> <th>kWh Saved - Early Offs</th> <th>kWh Saved Using Push Buttons</th> <th>Total kWh Saved</th> <th>Tons CO2 Saved</th> <th>Cost Savings in Early Offs</th> <th>Cost Savings Push Button</th> <th>Total Cost Savings</th> </tr> </thead> <tbody> <tr> <td>2013</td> <td>18,589</td> <td>118,373</td> <td>136,962</td> <td>94</td> <td>\$1,673</td> <td>\$10,654</td> <td>\$12,327</td> </tr> <tr> <td>2014</td> <td>21,767</td> <td>106,342</td> <td>128,109</td> <td>88</td> <td>\$1,959</td> <td>\$9,272</td> <td>\$11,231</td> </tr> <tr> <td>2015</td> <td>23,700</td> <td>238,477</td> <td>262,177</td> <td>181</td> <td>\$2,133</td> <td>\$23,848</td> <td>\$25,981</td> </tr> <tr> <td>2016</td> <td>20,189</td> <td>222,646</td> <td>242,835</td> <td>171</td> <td>\$1,817</td> <td>\$22,265</td> <td>\$24,082</td> </tr> </tbody> </table> <p>Reduced electricity demand with Control Link saved 171 metric tons of carbon emissions in 2016.</p>	Year	kWh Saved - Early Offs	kWh Saved Using Push Buttons	Total kWh Saved	Tons CO2 Saved	Cost Savings in Early Offs	Cost Savings Push Button	Total Cost Savings	2013	18,589	118,373	136,962	94	\$1,673	\$10,654	\$12,327	2014	21,767	106,342	128,109	88	\$1,959	\$9,272	\$11,231	2015	23,700	238,477	262,177	181	\$2,133	\$23,848	\$25,981	2016	20,189	222,646	242,835	171	\$1,817	\$22,265	\$24,082	<ul style="list-style-type: none"> Reducing energy use realizes cost savings and reduction in pollution, water consumption & use of fossil fuels.
Year	kWh Saved - Early Offs	kWh Saved Using Push Buttons	Total kWh Saved	Tons CO2 Saved	Cost Savings in Early Offs	Cost Savings Push Button	Total Cost Savings																																			
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Principle 4: Reduction and Handling of Waste

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS																
<ul style="list-style-type: none"> • Conduct periodic waste audits. • The District specifies mixed-source recycling for its waste hauler contract. • NPD requires contractors to recycle construction waste. • Staff continues recycling and reusing materials whenever possible. • Parks staff chips trees and uses mulch for trails, etc. • The District hosts community recycling opportunities when practical. 	<ul style="list-style-type: none"> • Mixed Source Materials and Yard Waste Diverted from the Landfill: Approximately 35% of the District’s waste was diverted from the landfill, with 20% comprised of recycled materials (plastic, aluminum, paper and glass) and 15% comprised of yard waste. • Trades salvaged refrigerant from the Barn demolition, which can be used in other air conditioning units for years. • Trades also salvaged the Barn’s HVAC system and installed it at the Riverwalk Café. • Central Parks collected 3,400 leftover Christmas trees from local businesses to create 15 truckloads of valuable mulch. <p style="text-align: center;">Other Materials Recycled/Reused in 2016</p> <table border="1" data-bbox="548 570 1566 727"> <thead> <tr> <th>Tires (#)</th> <th>Engine Oil (gal.)</th> <th>Oil Filters</th> <th>Electronics</th> <th>Holiday Lights</th> <th>Used Vegetable Oil (gal.)</th> <th>Pallets</th> <th>Metal</th> </tr> </thead> <tbody> <tr> <td>161</td> <td>800</td> <td>200*</td> <td>1,528 lbs.</td> <td>680 lbs.</td> <td>**</td> <td>110</td> <td>42,840 lbs.</td> </tr> </tbody> </table> <p>*Plus, one 40-gallon tote of filter recycled by Golf **Kitchen oil saved for future recycling by Golf</p>	Tires (#)	Engine Oil (gal.)	Oil Filters	Electronics	Holiday Lights	Used Vegetable Oil (gal.)	Pallets	Metal	161	800	200*	1,528 lbs.	680 lbs.	**	110	42,840 lbs.	<ul style="list-style-type: none"> • Materials are kept out of the landfill. • Reuse and recycling generates cost savings and rebates.
Tires (#)	Engine Oil (gal.)	Oil Filters	Electronics	Holiday Lights	Used Vegetable Oil (gal.)	Pallets	Metal											
161	800	200*	1,528 lbs.	680 lbs.	**	110	42,840 lbs.											

Principle 5: Environmental Education and Interpretation

SUSTAINABLE PRACTICES	2016 UPDATE	BENEFITS
<ul style="list-style-type: none"> • The District maintains a page on its website with information about our environmental initiatives. • Interpretive signs are installed where appropriate to educate park visitors about our natural areas. • “Conservation at Home” signs showcase restoration and demonstration projects at the Ron Ory Community Garden Plots, Winding Creek Park, Frontier Sports Complex and Knoch Knolls Nature Center. • We promote Earth Day with associated volunteer opportunities and a rain barrel sale with The Conservation Foundation. • A volunteer training video is now available at www.napervilleparks.org. 	<ul style="list-style-type: none"> • There are now 34 outdoor interpretive signs throughout the District educating park visitors about natural area restoration, water quality improvements, renewable energy, and native plants and animals in our parks. • New interpretive signs installed in 2016 included a sign at Fort Hill Activity Center explaining the solar panels, permeable pavers and native plantings, and 2 signs at Knoch Knolls Park, interpreting the woodland and savanna habitats at the park. • 27,951 people visited Knoch Knolls Nature Center in 2016, including participants in environmental education programs, special events and mobile tours. Special events included nature art week that attracted 667 visitors, Creepy Critters Day, involving 300 participants, and Nature Discovery Days with 450 participants. • Two mobile tours were created for visitors at Knoch Knolls Nature Center. The first is an audio described tour for those with visual impairment, allowing them to hear detailed descriptions of the interpretive signs along the nature trail. In 2016, 100 people accessed the tour, including online visitors in other states. The second is a nature scavenger hunt geared for children and families, which served 58 visitors from Illinois and other states. • The District’s Adopt-A-Park program continues to grow, with some groups adopting athletic fields or sections of trails. • The prairie and wetland areas surrounding Knoch Knolls Nature Center were certified by The Conservation Foundation as a “Conservation at Work” site. • Naperville Park District staff participated in the Molex Earth Week environmental fair, sharing information about Park District green initiatives. • In addition to posting the 2015 Sustainability Report on our website, we posted a ParkTalk blog, entitled, “Earth Day 2016: 7 Ways We’re Greener This Year.” The post received more than 10,000 views. 	<ul style="list-style-type: none"> • NPD is known as a leader in promoting green practices. • Education and communication leads to growth in sustainable practices within NPD and in the community.