



Southeast Cook County Land Acquisition Plan

A STRATEGY FOR THE FOREST PRESERVES OF COOK COUNTY
MAY 2019

PREPARED FOR:

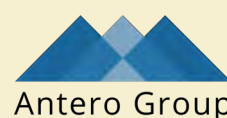


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Executive Summary

In anticipation of its 100th anniversary, the Forest Preserves of Cook County in 2013 launched a year-long public process to develop a vision for the next one hundred years — the Next Century Conservation Plan (NCCP). The NCCP includes an ambitious goal to expand the preserves to 90,000 acres of permanently protected land. Strategies highlighted through the NCCP include: expanding and committing to long-term community partnerships to engage underserved communities; expanding innovative partnerships and capitalizing on connections at the neighborhood, regional and state levels; and engaging new audiences. The NCCP also included a goal of making the Forest Preserves open, inviting and accessible to all.

In 2018, to advance the goals of the NCCP, the Forest Preserves commissioned this land acquisition study for southeast Cook County. This same area had been identified in the Forest Preserves 2012 acquisition planning as the area of the county having the most potential for new acquisitions based on lower land costs, relatively undeveloped areas, and larger opportunity sites. In addition, southeast Cook County is not as well served by the Forest Preserves as other areas of Cook County. As southeast Cook County is also markedly challenged by health, equity and economic factors, this plan was designed to explore ways that land acquisition and restoration can reinforce local priorities around stormwater management, quality of life improvements, and economic development.

The project team of The Conservation Fund, Metropolitan Planning Council, Antero Group, and Rudd Resources, LLC, responded to the call by developing a methodology that integrates criteria related to flood mitigation, economic development, health, and social vulnerability into acquisition prioritization. The data-driven model is complemented by a feasibility assessment that directly responds to community interests and partnership opportunities on the ground. In total, we examined more than 80,000 parcels encompassing approximately 62,000 acres. From these, there are approximately 2,500 acres in the Focus Area (see Map 1) that meet all criteria and could be considered the highest priority under a strategy to maximize multiple benefits. Connecting and buffering these sites represents a potential site aggregation of 3,000 acres or more, representing a potential market value of \$45 million to \$60 million if directly purchased.

The Southeast Cook County Land Acquisition Plan (the “Plan”) represents an integrated model of land conservation and economic development. The Plan identifies a portfolio of parcels of land that, if acquired, restored and programmed by the Forest Preserves, would generate benefits that accrue to residents in the form of improved health, equity, and economic development opportunities, while meeting the Forest Preserves’ mission to acquire, restore and hold natural lands for education, recreation, scenic beauty, and for protecting and preserving the flora and fauna.

The Need for a Southeast Cook County Land Acquisition Plan

The Forest Preserves of Cook County, one of the oldest and largest open space agencies in the United States, was established more than 100 years ago to acquire and hold lands to protect flora and fauna for the education, pleasure and recreation of the public. Today, the Forest Preserves owns and manages approximately 70,000 acres of land that serve the 5.2 million residents of Cook County. In addition to providing more than 300 miles of trails, 250 picnic groves and other amenities, Forest Preserves staff and its partners offer a variety of free, organized events open to the public year-round. The Forest Preserves receives tens of millions of visits each year.

As the sciences of ecology and the human brain continue to deepen, more is learned about the critical benefits and essential functions provided by the natural environment. Green space supports human physical and mental health, cleans and cools the air, purifies the water and prevents flood damage, and stores carbon. Green space also helps communities thrive by building social resilience and supporting economic health. Within Cook County, lands that are currently vacant will almost certainly be developed over time unless permanently protected. Expanding the Forest Preserves, while opportunities to do so remain, ensures a balance of developed land and green space for our future.

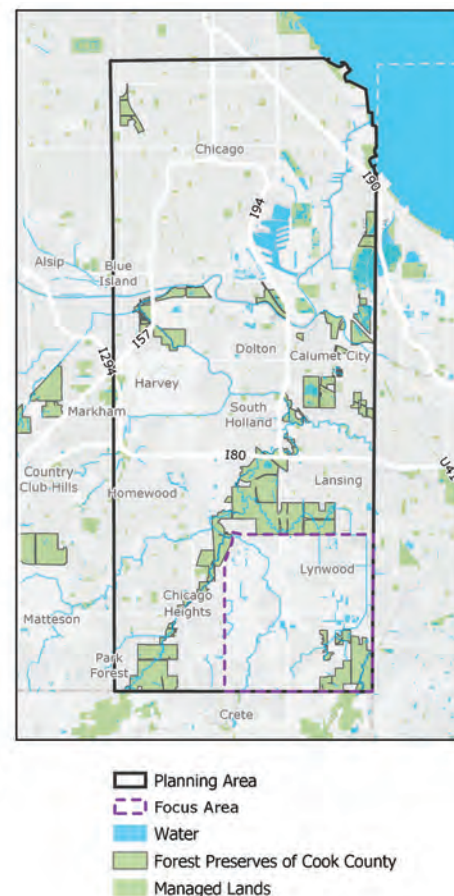
Not only does Cook County as a whole need more protected land, but the southeast portion of Cook County is particularly underserved, both in quantitative and qualitative ways. For example, areas of the southeast have a high number of households with children; have significant health, flooding and air quality concerns that could be partly abated through strategic land protection; and, particularly in the **Focus Area**, do not have many local providers of green space amenities, such as park districts.

The Forest Preserves' 2012 Land Acquisition Plan identified the southeast area of Cook County as having strong potential for new acquisitions. Since that time, the Forest Preserves has been able to acquire some properties adjacent to existing holdings in this region but has not been able to take advantage of the large acreages of lower valued parcels. The Forest Preserves' current acquisition evaluation process is effective at comparing individual parcels, but it was not designed to look at aggregation opportunities across a broader geography.

With goals to expand the Forest Preserves' holdings and recognizing that the southeast area needs to play a bigger role in the Forest Preserves' efforts, the Forest Preserves commissioned this plan for land acquisition in southeast Cook County (the "**Planning Area**"; see Map 1). The resulting plan supplements — not replaces — the current acquisition policy and process.

The charge of this project was to identify opportunities to acquire large tracts or create assemblages of smaller tracts of land in southeast Cook County based on such factors as ecological restoration potential, water and trail connectivity, and information gathered from local municipalities, land owners, developers and other stakeholders in the region. In addition, given the significant fiscal constraints facing the Forest Preserves, the project team explored partnership opportunities to leverage resources on implementation. The project team specifically incorporated a health and equity impact review into the process.

Map 1. Southeast Cook County Planning Area



Overview of Research Process

The research process that informed this land acquisition plan consisted of the following general elements:

- a. Data Inventory.** The project team identified and secured relevant countywide datasets from the Forest Preserves of Cook County, Chicago Metropolitan Agency for Planning (CMAP), Centers for Disease Control (CDC), US Census, South Suburban Mayors and Managers Association (SSMMA), and others. Datasets were assembled into a GIS geodatabase for use in the geospatial analysis.
- b. Site Visit.** The project team and Forest Preserves staff spent time in the field viewing potential and current Forest Preserves sites in the project area.
- c. Plan Review.** The project team identified and reviewed relevant past planning documents and other resources. Large-scale planning and guidance documents, such as CMAP's On To 2050 and the Forest Preserves' Recreation Master Plan, were chosen as reference in part due to their heavy stakeholder involvement and widespread adoption as overall regional and local guidance. Local municipal comprehensive plans were also key resources.
- d. Health Impact Review.** The project team identified the existing demographic makeup, social vulnerability, and health status of the Focus Area (see Health Conditions section on page 6).
- e. Outreach.** Through a series of focus groups and interviews, community priorities, community concerns, and opportunities for partnership were solicited from residents and elected officials. Subject-matter experts were also consulted for their expertise (see Outreach Process section on page 8).
- f. Suitability Analysis.** The project team employed a Logic Scoring of Preference (LSP) methodology within a GIS platform to generate a series of five weighted scenarios, with one resulting composite scenario reflecting data-driven acquisition priorities (see Suitability Analysis section on page 9).
- g. Feasibility Assessment.** The Focus Area was studied through a refined screening that encompassed an integrated research and community engagement process blending geospatial analysis, community outreach, and collaborative mapping methods (see Feasibility Assessment section on page 10).

Figure 1. The Research and Analysis Process

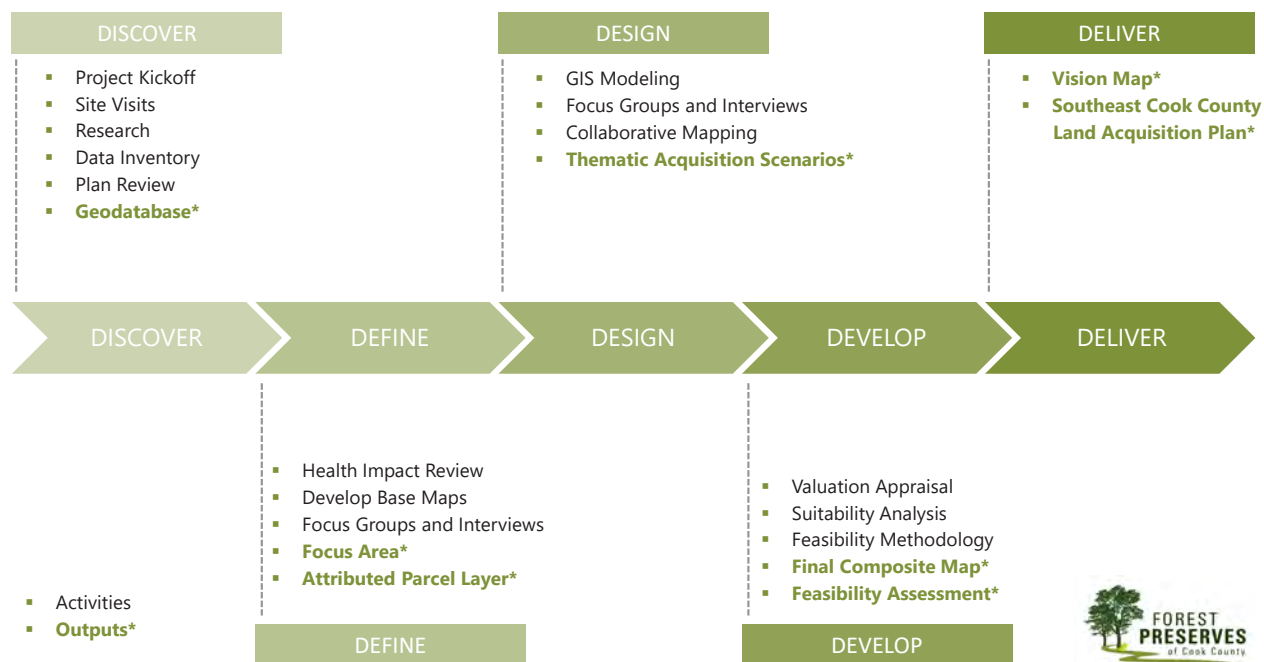


Table 1. General Economic Demographics of the Focus Area and Cook County

	NUMBER OF RESIDENTS	MEDIAN AGE	PER CAPITA INCOME (\$)	MEDIAN HOME VALUE (\$ (2013-2017))	MEDIAN HOUSEHOLD INCOME
Glenwood	8,853	42.9	24,058	126,400	\$56,713
Lynwood	9,232	36.2	25,225	141,200	\$50,171
Ford Heights	2,775	29.7	17,288	62,900	\$23,220
Chicago Heights	30,249	34.0	19,928	98,300	\$40,611
Sauk Village	10,541	30.9	18,758	77,600	\$42,532
Cook County	5,222,575	36.1	33,772	227,400	\$56,902

Sources: CMAP Community Data Snapshots (2016), Census data (2013-2017) and CDC BRFSS

The Economic and Health Conditions in Southeast Cook County

Research shows that the presence of green space can positively benefit a community's physical health, financial well-being, resiliency, and social cohesion. Before elaborating on these benefits, this plan first summarizes the current economic, demographic and health conditions of southeast Cook County.

Economic Conditions

The total population of the Focus Area hovers around 62,000 people. This area is slightly younger than the rest of Cook County. All five communities within the Focus Area have median household incomes that are below the Cook County average, with the exception of Glenwood, which is comparable. According to CMAP's Community Data Snapshots (2016) and Census data (2013-2017), African Americans represent about 66% of the population in the Focus Area, as opposed to 23.6% in Cook County as a whole. Per capita income in the five communities averages \$21,051, versus \$33,772 for the Cook County average.

Health Conditions

A Health Impact Review (HIR) is a research process to assess the positive and negative health impacts that could result from a proposed plan, policy or project. Once the potential health impacts are assessed, recommendations can be made to maximize health benefits and mitigate health threats. The project team employed elements of the Health Impact Review methodology to develop an understanding of the current health needs of the broader Planning Area and the health impacts that may be derived from fulfilling the Plan's vision. The elements employed included:

- Data on existing health conditions in the Planning Area
- Questions about health in the outreach interviews and focus groups
- Research on the health benefits of green space
- Review of Community Health Needs Assessment (CHNA) reports

Table 2. The Rate of Adverse Health Conditions in the Focus Area and Cook County

HEALTH INDICATOR	COOK COUNTY RATE (%)	FOCUS AREA RANGE (%)
Obesity	31.3	31.6–41.3
Asthma	7.6	7.2–10.4
Diabetes	12.2	11.4–17.8
High Blood Pressure	33.9	33.5–45.0
Depression	15.1	13.8–16.6

Source: CDC BRFSS (2013) via PolicyMap

The project team examined the following health indicators in the Focus Area: asthma, diabetes, high blood pressure, physical activity, overweight/obesity, and depression. These indicators were chosen due to their relationship with the natural environment and because they align with community health priorities as captured in CHNAs conducted by local hospitals. The team also looked at the Social Vulnerability Index (SVI) as a measure of community vulnerability to health and inequity (see the Suitability Analysis section on page 9).

The Focus Area communities are experiencing long-term divestment and depopulation, making them areas of high economic hardship and indicating worse economic conditions relative to Chicago and the rest of Cook County. As a result, many of these communities are experiencing higher rates of adverse social, economic, and health conditions when compared to Cook County overall. For example, the rate of obesity in the Focus Area exceeds the rate in Cook County by as much as 10% (see Table 2). Within the Focus Area, the census tracts with the worst health outcomes and highest vulnerability are in Ford Heights and Chicago Heights.

CHNAs are conducted by hospitals every three years and include community engagement to understand the priorities of residents in the service area. CHNA reports from Franciscan Health St. James and Ingalls Memorial Hospital were reviewed. Franciscan Hospital (closing in 2019) is located in Chicago Heights and Ingalls Memorial has locations in Calumet City and Harvey. The service areas of these

two hospitals cover the entirety of the Planning Area. As reflected in Table 3, both hospitals revealed heart disease and cardiovascular conditions as top concerns in southeast Cook County. Also, physical activity and nutrition were listed as top hospital priorities.

Projected Health Impacts of Increased Forest Preserves Land

The adverse health outcomes described previously are exacerbated by limited access to high-quality parks and recreational space. Urban green space, and parks and trails designed for health equity can contribute to many health benefits, as discussed in more detail in the Plan Benefits section on page 12.

The Plan's methodology intentionally maximizes health benefits in two specific ways. First, the GIS-based Suitability Analysis applies an equity scenario that prioritizes the most vulnerable areas. Second, the Feasibility Assessment was designed to prioritize land acquisition opportunities that align with broader economic development goals. Since poverty is one of the biggest social determinants of health, the Plan intentionally maximizes health benefits by establishing a vision that integrates economic development and land conservation.

Table 3. Top Health Priorities in Southeast Cook County Based on Hospital Assessments

FRANCISCAN HEALTH ST. JAMES	INGALLS MEMORIAL HOSPITAL
physical activity and nutrition to combat obesity	heart disease (#1 concern)
diabetes	nutrition
cardiovascular conditions	physical activity
behavioral and mental health related to depression and stress	weight
respiratory health and asthma	respiratory health and asthma

Source: Community Health Needs Assessment reports from Franciscan Health St. James (2016) and Ingalls Memorial Hospital (2015)



Outreach Process: The Community Desire for Green Space

Outreach and research of stakeholders' usage of and desire for green space further informed the Plan. Interviews with subject-matter experts and civic leaders offered knowledge about land uses in the Planning Area and feedback on the feasibility of proposed strategies. Interviews with residents focused on community values and needs related to parks, green space and natural areas. Conversations with elected officials and stakeholders centered on current land usage in their areas and their vision for undeveloped land.

Through these conversations, two key conclusions were drawn about southeast suburban communities' receptiveness to green space:

- 1) Civic leaders, subject matter experts and residents expressed support for the Forest Preserves and high interest in partnership opportunities. This is particularly true regarding stormwater management, recreation and expanding and connecting trails

and corridors. Most were familiar with the Forest Preserves.

- 2) Residents will champion projects to create green space access in their communities. Residents interviewed expressed an urgent need for more trails in existing Forest Preserves holdings, better access to green space, and regional trail connections. They want green space that offers recreation for families, especially children and teenagers. While they value green space, they do not engage in outdoor activities due to lack of access.

There is currently only one municipal park district in the Focus Area offering municipal parks and recreation programming. Although the Forest Preserves, as owner of natural areas that are open sunrise to sunset, is not going to meet all of the recreation needs of this area, it can be a partner in helping to address those needs.

The Suitability Analysis – GIS-Based Modeling

Logic Scoring of Preference Method

Research for the Plan established that southeast Cook County communities desire more green space and that health conditions in the communities reflect a need for such space. The next step is assessing the relative suitability of different parts of the Planning Area for future land acquisition.

A key element of identifying land acquisition priorities is assessing each parcel's relative potential to contribute to the overall goals of the Forest Preserves. This requires an approach that efficiently evaluates the benefits of potential land acquisitions and provides: (1) a scientific, objective, and defensible methodology for establishing land acquisition criteria; and (2) a logical and transparent decision-making framework to identify priorities and select the best possible land for acquisition.

To do this, the project team employed the best practice methodologies outlined in the book, *The Science of Strategic Conservation: Protecting More with Less* (W. Allen and K. Messer). A land use suitability analysis is used to evaluate parcels for their value as additions to managed green space in the Planning Area. The suitability analysis is incorporated into a structured decision-making process called the Logic Scoring of Preference (LSP) method. The LSP criteria are organized into a logical structure that generates a suitability score from 0-100. Criteria can have different logic relationships, such as mandatory requirements and desired characteristics. Feedback from the community outreach process informed the weighting of the criteria. This logic is incorporated into an 'attribute tree' that lists the criteria that are used to evaluate suitability for a particular objective.

For the Plan, five scenarios were developed to help differentiate parcels based on their ability to fulfill a set of objectives outlined by the Forest Preserves:

1. Ecological Value
2. Flood Mitigation
3. Inholdings/Adjacency
4. Connectivity (Streams, Trails)
5. Equity/Social Vulnerability

More than 80,000 parcels encompassing approximately 62,000 acres were evaluated for each scenario. Criteria include considerations such as proximity to streams; parcel size; flood susceptibility; and adjacent to existing forest preserves.

The analysis identified which parcels were considered suitable under one or more of the five scenarios. The analysis determined that 175 parcels in southeast Cook County were considered suitable for consideration to achieve all five of the scenarios, representing 5,496 acres.

Within the Focus Area, 61 parcels were determined to be suitable for consideration to achieve all five of the scenarios, totaling 2,503 acres. Since not all of these parcels are adjacent to one another, an implementation strategy would be to select clusters of these sites and then build buffers and connections between them through protection of additional parcels.

The results of the LSP are embedded in a confidential attributed parcel layer that was delivered to the Forest Preserves as part of this project.

Table 4. Focus Area

SUITABILITY ANALYSIS RESULTS FOCUS AREA	NO. OF PARCELS	NO. OF ACRES
Total	24,807	20,477
Meets 5 of 5 scenarios	61	2,503
Meets 4 of 5	131	2,328
Meets 3 of 5	110	1,638
Meets 2 of 5	159	1,161
Meets 1 of 5	658	2,025
Meets 0 of 5	23,688	10,822

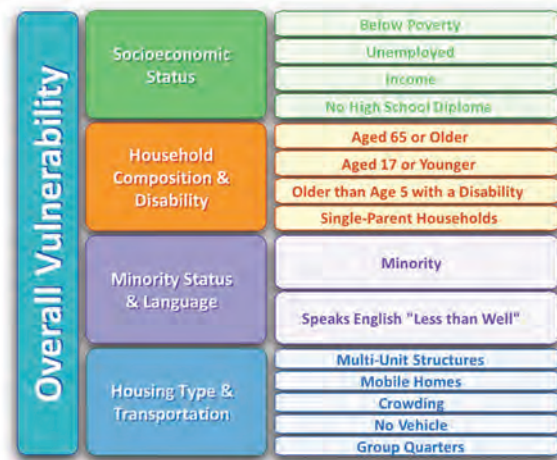
Source: The Conservation Fund

The Social Vulnerability Index in the Suitability Analysis

The Social Vulnerability Index (SVI) is an index created by the Centers for Disease Control and Prevention (CDC) designed to capture a number of factors that make communities more vulnerable, particularly to environmental exposures. Due to its inclusion of factors such as socioeconomic status, race/ethnicity, and housing and transportation, the SVI is a good way to understand the distribution of the populations facing the highest amount of inequity and highest amounts of hardship.

Due to the relationship between many factors on the SVI and health outcomes (many of these variables are considered social determinants of health), the SVI is also a good proxy for understanding where the deepest health inequities, and therefore the poorest health outcomes, likely exist. Therefore, the SVI was included in the LSP method as a full index represented in all scenarios and having the highest weight in the Equity/Social Vulnerability scenario. In this case, the project team decided to use the full SVI in aggregate, although the subsections of the

Figure 2. Social Vulnerability Index



Source: US Centers for Disease Control and Prevention

SVI can be used independently if the Forest Preserves is interested in focusing in on a specific factor (e.g., socioeconomic status, household composition, disability, minority status and language, transportation and housing).

Feasibility Assessment

The *suitability* of a given parcel of land for use as a Forest Preserve may or may not align with the *feasibility* of acquiring that parcel. For example, land that may be suitable for potential use as a forest preserve (i.e. large acreage, adjacent to existing Forest Preserve holdings, adjacent to a stream) may not be feasible if that same parcel or area is the subject of a pending land development project.

To equip Forest Preserves staff with information about the feasibility of acquiring specific parcels, the data-driven Suitability Analysis was complemented with an iterative, community-driven Feasibility Assessment. To complete the assessment, the Focus Area was subdivide into six discrete Implementation Areas that roughly align with major transportation corridors. These Implementation Area boundaries were used to organize information gathered through

reviewing local plans and community outreach activities. Since acquisition of any individual parcel is ultimately opportunity driven, factors such as timing, seller willingness, and availability of purchase funds also influence the strategy. Only a subset of the suitable lands will in fact be feasible for acquisition at any given time. The goal of the feasibility work is to highlight particular opportunities from among all the LSP high-value parcels. This information was synthesized into the Vision Map “Opportunity Areas,” to focus the attention of Forest Preserves staff and other stakeholders involved with implementing the Forest Preserves’ land acquisition strategy. Given the dynamic nature of land development, these Opportunity Areas should be considered as a snapshot of the current conditions, local priorities, and partnerships opportunities.

Because the vision map is based on a combination of property boundaries and natural resource features, and incorporates existing protected lands owned by conservation partners that augment the Acquisition Plan, the Opportunity Areas shown are over-inclusive.

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The Land Acquisition Plan

The Vision Map (see Figure 3) depicts the result of the research and analysis and represents the Strategic Land Acquisition Plan for Southeast Cook County. Because the Vision Map is derived from a combination of parcel data and county-wide data, it is over-inclusive: The Opportunity Areas will inherently encompass some areas that a site-level inquiry will later exclude

Plan Benefits to Cook County

Fulfilling the vision of the Plan provides multiple cross-sector benefits. Below are highlights of some of the benefits, in the areas of health, climate resiliency, economic development and contribution of ecosystem services.

Green space can influence physical and mental health

Urban green space, parks and trails designed for health equity can contribute to many health benefits in communities by:

- Creating destinations and venues for physical activity
- Contributing to improved physical condition related to blood pressure and weight
- Reducing depression and stress and improving mental wellness
- Supporting attention spans, creative problem-solving skills, and cognitive development
- Fostering community interactions and social cohesion
- Mitigating environmental stressors related to urban heat islands, air quality, noise pollution, and flooding

Several studies have assessed the correlation between proximity to park space and increased physical activity, reduced rates of obesity, and increased likelihood to repeat exercise. In one study, people most proximate to green space were three times more likely to meet recommended physical activity guidelines (*Coombes et al, 2010; Coon et al, 2011; Cutts et al, 2009*). In another study, walking through green space lowered glucose levels and depression as compared to a suburban street (*Horton, 2018; Bratman et al, 2015*). Studies support the conclusion that exposure to nature and park space can reduce stress, anxiety, anger, and depressive symptoms. In addition, land that is providing flood mitigation services helps reduce or prevent the long-term

health effects of chronic flooding, including higher levels of worry and stress (*Decent, 2018*).

Protecting and restoring land is a climate resiliency strategy

Implementation of the Plan supports the Forest Preserves' goals around climate resiliency, as articulated in the Forest Preserves' *Sustainability and Climate Resiliency Plan*.

- Land in its natural or undeveloped state holds carbon. Converting vacant land to development can release that carbon into the atmosphere. The resulting real estate development will also generate new carbon emissions during construction and through the end use, for example, through production of concrete and vehicle trips. A UC Davis study found that an acre of urban land emitted 70 times more greenhouse gas compared to an acre of irrigated cropland. Permanently protecting vacant land within the Planning Area will help the region avoid these additional carbon emissions.
- Restoring native ecosystems stores additional carbon. Forests, natural habitats and soils absorb atmospheric carbon dioxide and can be a more cost-effective way to reduce greenhouse gases than eliminating emissions. In fact, reducing emissions alone is not enough to meet overall climate targets; removing carbon from the atmosphere and storing it in soils and plants is essential.
- Climate change will generate shifts in location by mobile species. Preserving biodiversity will require connected green spaces and corridors to eliminate barriers that would otherwise impact species migration.
- As the climate changes, frequency and intensity of flooding will increase. Protecting floodplains and natural floodplain management can mitigate the impacts of flooding.
- Open public spaces help build community and social resilience for human populations.

Green space supports economic development

Multiple research studies document that regional and community green space generates economic benefits by:

- Increasing property values of houses adjacent to and close to parks and trails.

Table 5. Value of Ecosystem Services

LANDSCAPE TYPE	WATER FLOW	WATER PURIFICATION	GROUNDWATER RECHARGE	CARBON STORAGE
Wetlands	\$22,000/ac/year	\$4,350/ac/year	\$660/ac/year	\$136/ac/year
Grasslands/Prairie	\$16,000/ac/year	\$57/ac/year	\$269/ac/year	\$82/ac/year
Woodlands/Forest	\$1,603/ac/year	\$1,300/ac/year	\$269/ac/year	\$133/ac/year
Natural Floodplains	\$6,500/ac/year		\$4,806/ac/year	
Lakes	\$37,000/ac/year		\$566/ac/year	

Source: 2014 Chicago Wilderness Green Infrastructure Vision 2.3

- Triggering economic activity from businesses and visitors drawn to parks and trails.
- Avoiding public costs associated with new residential development, since public costs of new residential construction typically exceed the public revenues that accrue from it over time.

Underscoring this point, the *South Suburban Economic Growth Initiative Phase 1* report identifies seven strategies to support economic growth in the south suburbs, including establishing the south suburbs as the region’s “Green Playground” through a shared vision and coordinated investments in recreational infrastructure and complimentary amenities.

“The south suburbs are home to abundant natural resources that contribute to a better quality of life for residents, workers, and visitors. A network of waterways, trails, forest preserves, grasslands, and other ecological amenities provide recreational and economic benefits, and the protection of these resources is critical as the region strives to retain and attract residents and businesses.”

—South Suburban Mayors and Managers Association’s report, *Chicago Southland’s Green TIME Zone: Transit, Intermodal, Manufacturing, Environment*

Forest Preserves protect and enhance ecosystem services

Implementing the Plan also protects and enhances ecosystem services. Forests, wetlands, prairies, water bodies, and other natural ecosystems support human existence and drive human welfare. According to the 2014 Chicago Wilderness GIV 2.3 Ecosystem Service Valuation project, natural ecosystems contribute more than **\$6 billion per year** in economic value to the seven-county CMAP region (Cook, DuPage, Kane, Kendall, Lake, McHenry and Will Counties). This undercounts the total value since this estimate is only from ecosystem services that could be reliably measured. Other ecosystem services that are challenging to translate into a dollar value include pollination, air purification, food production, and aesthetic value. The \$6 billion total value also does not include any of the economic activity supported by the region’s recreation and ecotourism infrastructure. Estimates from the GIV 2.3 study of the value of some of the ecosystem services provided by nature are shown in Table 5.

Some Examples of Ecosystem Services

Water Flow Regulation/Flood Control: Natural systems are the least costly and most efficient way to control flooding. Flooding has significant economic and social costs, and investment in managed green space helps avoid some of these costs and reduces private property losses and damages. Maintaining natural land helps ensure that water can infiltrate into the soil rather than enter sewer and stormwater systems. Woodlands and forests, for instance, help to reduce both the volume of stormwater runoff and the cost of stormwater treatment, and a forest stand can intercept over 200,000 gallons per acre per year.

Water Purification: Clean water is essential to public health and ecosystem health. Natural systems are an effective way to reduce pollution, sediment, nutrients (i.e., nitrogen and phosphorus), bacteria, and other pollutants in water supplies that provide drinking water and opportunities for fishing and swimming. Natural systems also can help avoid the need to invest in or replace expensive, energy intensive grey infrastructure systems that treat water or manage stormwater. For instance, the cost of restoring and operating wetlands to remove nitrogen and phosphorus can be 50-70% less than the cost of constructing and operating engineered wastewater treatment systems.

Air Purification: Forests and urban trees can remove sulfur dioxide (SO₂), nitrogen oxide (N₂O), ozone (O₃), carbon monoxide (CO), and fine particulate matter from the air, all of which can be harmful to humans. The forest soil is also a large and important sink for many air pollutants. This ecosystem service is especially important because of the immediate human health effects.

Native Flora and Fauna: Natural systems provide opportunities for native vegetation and wildlife to thrive, which helps maintain ecosystem functions and processes. A functionally connected network of natural lands and waters provides benefits as a whole that is greater than the sum of its parts. While native flora and fauna help support other ecosystem services, including pollination, it also contributes to preserving biodiversity.

Recreation and Ecotourism: Natural areas not only provide ecological services, they provide recreational opportunities that contribute to our quality of life. These include hunting, fishing, hiking, bird watching, camping, canoeing, and many others. In 2011, Illinois residents and non-residents spent \$3.8 billion on wildlife-associated recreation. They also spent 13.3 million days and \$973 million on fishing in Illinois (excluding Lake Michigan). In a 2008 survey, over 97% of Illinois residents thought outdoor recreation areas are important for health and fitness, and almost 94% thought community recreation areas are important for quality of life and promote economic development. Over 80% thought more lands should be acquired for green space and/or for outdoor recreation.

Carbon Storage: The ability for natural systems to capture carbon helps mitigate the emission of greenhouse gases like carbon dioxide (CO₂) into the atmosphere, and thereby helps reduce future climate change. Carbon is stored above ground in leaves and woody matter and below ground in roots and the soil.

Implementation Opportunities Recommended for Further Exploration

Traditional methods of land acquisition include direct purchase for full value, bargain sale (partial donation), conservation easement (purchase of development rights), and full donation. In areas like the Focus Area, which is experiencing increasing development pressures, much of the vacant land is held for development as an investment. In such cases, donations, bargain sales, and conservation easements are unlikely since the landowner is motivated by profit, not charitable purposes.

With land values in the Planning Area currently ranging from \$10,000-\$25,000 per acre and up, the cost to acquire even just the 61 high-priority parcels (2,503 acres) in the Focus Area through direct land purchases well exceeds current Forest Preserve acquisition resources. In addition to land acquisition costs, funds for ecological restoration, trails and other amenities are needed. Accordingly, Plan implementation will rely on a combination of cooperative management agreements, innovative collaborative partnerships, multiple-use strategies, and financing mechanisms. While building partnerships requires a significant up-front and ongoing investment of time to cultivate opportunity, learn different partners' priorities and constraints, and identify how collaboration might be of mutual benefit, it is an investment that pays dividends over the long term.

Below are broad categories of leverage and partner opportunities on land acquisition, ecological restoration, or capital improvements such as trails or programming, identified through this project:

- **Continue to build and strengthen relationships with municipal leadership to capitalize on economic development synergies.** Glenwood, Ford Heights, and Sauk Village all have newly-approved or pending large-scale real estate developments at play. The developers may be legally required to mitigate impacts to habitat, wetlands, or to address stormwater impacts, which could yield an opportunity for the Forest Preserves to provide the mitigation solution and increase ecological value in the process. The municipalities could also request voluntary mitigation, land for trail connections, or green space set-asides. In addition, construction offers opportunities to integrate trail connections into a design and build. In at least one case, the land for the intended development has been assembled through a series of purchase options. This means that these landowners are already willing sellers and the parcels have

been aggregated into a larger site. If the development proves infeasible, this could be a candidate for Forest Preserves acquisition.

- **Engage in planning initiatives to embed Forest Preserves priorities into partner directives.** The Cook County Department of Transportation intends to develop a countywide on-road trail plan. On-road trails in some places can provide connections between Forest Preserves sites, either permanently or temporarily while acquisitions are assembled. Participation in this process allows opportunity to align vision, establish shared priorities, build access and connections between Forest Preserves, and partner on implementation. There are other ongoing relevant planning initiatives: Ford Heights is developing a comprehensive plan through CMAP's Local Technical Assistance program; the Cook County Homeland Security and Emergency Management Department will be updating Cook County's Hazard Mitigation Plan which establishes eligibility for FEMA Pre-Disaster Mitigation Grants; and the Metropolitan Water Reclamation District of Greater Chicago (MWRD) is undertaking a Stormwater Master Planning process.
- **Consider agricultural land strategies.** According to CMAP's 2013 Land Use Inventory for Northeastern Illinois, the Focus Area contains 4,600 acres of land currently in agricultural production. There are also local assets and businesses tied to agriculture and food production that generate economic value, including four farmstands/greenhouses and a processing facility. For the farmers and landowners in this area who have a longer term commitment to ongoing agricultural operations (as opposed to holding land for speculative development), the Forest Preserves could purchase land in agricultural production and then lease it back for farming as a way to generate revenue while concurrently meeting Forest Preserves goals around habitat and recreation through site planning and best practices. There is significant funding available from the US Department of Agriculture under the federal Farm Bill for agricultural conservation programs (i.e., Agricultural Conservation Easement Program — Agricultural Land Easements). Through agricultural conservation easements, the Forest Preserves could ensure that farmland is not subdivided or paved, preserving its ability to be restored over time, while requiring best management practices and negotiating for compatible recreational rights.

Racial equity factors to consider in land acquisition

Quality over quantity holds true with relation to the equitable distribution of health benefits of green space. Some studies have found that black and Latino/a communities, on average, live closer to green space but that the quality (e.g., acreage, maintenance) of that green space is usually lower than for their white (non-Hispanic) counterparts and/or access may be hindered in other ways (e.g., perceived safety, lack of programming). Such circumstances could prevent usage of green space in minority communities and thus negate its health benefits.¹

It is important to note that the economic benefits of land acquisition for open and green space can be mixed. On one hand, property val-

ues tend to increase with the nearby development of new, publicly-owned, large-scale green space. Property near publicly-owned green space tends to be valued higher than similar properties farther away. However, some high-use amenities — or areas perceived as unsafe — can decrease property values, e.g., popular parks that clog residential parking.² Improvements to green space that result in property value increases may also lead to displacement of residents in the long-run, which would carry negative equity impacts along racial and economic lines (Wolch et al, 2014).

¹ Rigolon, 2016; Wolch et al, 2005; Gobster, 2002

² Curran, 2001

- **Initiate a dialog with MWRD at the strategic level.** MWRD is currently in the planning process for improvements along Deer Creek to address overbank flooding into neighborhoods in Ford Heights, and MWRD already owns several parcels of land along or in the vicinity of Deer Creek. While potential collaboration on this immediate project is being explored, a conversation can be initiated about a partnership on a regional stormwater management project. MWRD's longer-term workflow is documented in their Detailed Watershed Plans. MWRD continues to work through the list of recommended projects but does not own all of the required land and, accordingly, is opportunistic as partners and land owners come forward to help implement the projects, i.e., there is flexibility in how projects are ultimately achieved. Although using existing Forest Preserves land for stormwater management raises concerns, there are opportunities to partner with MWRD to select, acquire, design and build new multi-functional Forest Preserve sites. A current barrier to this type of partnership is MWRD's preference for the ultimate land owner to become responsible for maintenance upon project completion. Further research should document existing models where maintenance responsibilities are allocated through separate agreements with third parties, combined with maintenance endowments, or retained by the stormwater management entity.
- **Explore cooperative management opportunities.** The largest parcel within the Focus Area is just over 100 acres in size, so any new aggregated Forest Preserves site will require a series of separate real estate transactions to reach scale. As a supplement or interim approach to direct acquisition, outreach should be conducted to form partnerships with "good neighbors" (e.g., golf courses, cemeteries, and institutions with large land holdings that can be programmed for outdoor recreational use or managed for habitat value) to create connections (e.g., ecological, recreational, cultural) between Forest Preserves holdings. In addition, the Forest Preserves should be receptive to the concept of participating in a 'mosaic' of land ownership, where different but aligned landowners coordinate to advance ecological health, human health, and other goals across connected sites.
- **Investigate wetland mitigation banking.** There is an existing, privately-developed wetland bank within the Focus Area, the Sauk Trail Wetland Mitigation Bank, which was established in 1998 with 79.2 acres available, of which approximately 0.1 credits remain. When all credits are sold, the site will be transferred to the Forest Preserves at no charge for permanent ownership and management. Since there is land potentially suitable for wetland restoration within the acquisition priorities of this Plan, there may be opportunities to partner with an entity that will be impacting wetlands to provide the mitigation solution.

In addition, wetland mitigation banking opportunities could be screened through initial meetings with one or more private wetland mitigation bank developers to consider the overlap between sites that are priority acquisitions for the Forest Preserves and are also financially and physically feasible to serve as a wetland mitigation bank.

- **Approach active solar project developers in the region about partnership opportunities.**

The renewable energy mandates of Illinois' Future Energy Jobs Act and other ongoing legislative efforts are creating an engine for growth of solar energy in the state. Project developers are seeking 20+ year leases of suitable land; stable lease payments could be a source of financing to support Forest Preserve land acquisition.

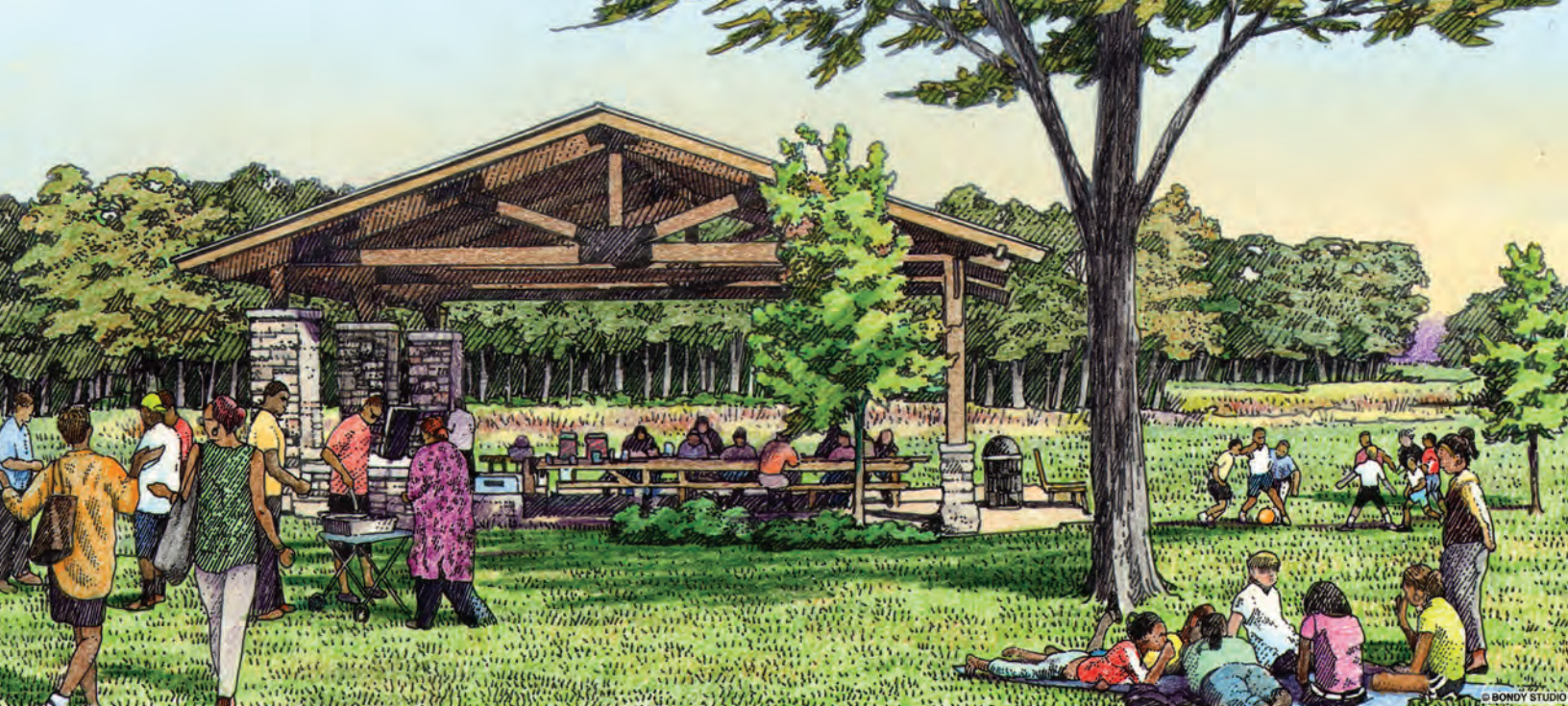
- **Consider partnership opportunities for stormwater management with the private sector.**

The Cook County Watershed Management Ordinance (WMO), administered by MWRD, requires that certain new development activity address impacts of the development on the county's stormwater system through on-site stormwater detention and volume control. Under the current WMO

language, developers are allowed to develop off-site stormwater detention and volume control if there is a documented reason why it would be infeasible to have it on site, such as a site with a high groundwater table or a brownfield site with contaminated soils. The way this ordinance was originally envisioned, a single developer would acquire and manage both properties, but it may be possible to enter into a one-to-one agreement where the Forest Preserves would be paid for offering those services, similar in scope to wetland mitigation structure. The precise fee structure would have to be negotiated independently. Additionally, there are limitations in where, geographically, trades would be allowed. In the current language of the WMO, trades are allowed between sites within the same subwatershed.

- **Follow updates of nascent stormwater credit trading marketplace.**

A marketplace for the purchase and sale of stormwater credits exists in Washington, D.C. Metropolitan Planning Council and The Nature Conservancy are currently exploring the feasibility of establishing a similar market within MWRD's jurisdiction, meaning this option may become viable in the future.



Conclusion

The Southeast Cook County Land Acquisition Plan identifies significant opportunities for the Forest Preserves of Cook County to expand its holdings and deliver on its mission in southeast Cook County. As the area of the county offering a dual combination of lower land costs and more undeveloped land, southeast Cook County holds the most promise in moving towards the land acquisition goals of the Next Century Conservation Plan. The Plan uses a combination of research, outreach, GIS-based modeling, and feasibility

analysis, and it specifically integrates health, equity, and economic development factors into its recommendations. This methodology can be replicated in other areas of the county in the future. The Plan includes the technical tools for ongoing Forest Preserves application, along with recommendations on non-traditional ways to implement the Plan through partnership and leverage opportunities. Finally, the Plan documents the multiple and substantial benefits that accrue across the spectrum from realizing the Plan's vision.

Acknowledgements

The project team for the Southeast Cook County Land Acquisition Plan extends its sincerest appreciation to the following people for giving us their time and sharing their perspectives as we created this plan:

- South Suburban Mayors and Managers Association (SSMMA)
- Reggie Greenwood, Chicago Southland Economic Development Corporation
- Randy Nyboer
- Mayor Annie R. Coulter, Village of Ford Heights
- Scott Goldstein, Teska Associates/Sauk Village Comprehensive Plan
- Paula Porubcan-Branstner, Prairie Research Institute, Illinois State Archeological Survey
- Leslie Phemister, Transportation Planner, SSMMA
- Kenneth Bedford, FPCC permit holder
- Mayor John Ostenburg, Village of Park Forest
- Sara Race, ComEd
- Sue Davis, US Army Corps of Engineers
- Gene Fleming, US Army Corps of Engineers
- Ders Anderson, Openlands
- Mayor Gene Williams, Village of Lynwood
- Gina Massuto Barnett, Cook County Department of Public Health
- Buddy Bates, Cook County Department of Public Health
- Ernestine Beck-Fulgham, Mayor's Assistant, Village of Ford Heights



GAYLORD AND
DOROTHY DONNELLEY
FOUNDATION

Thank you to the Gaylord and Dorothy Donnelley Foundation for its support of this project.

Forest Preserves of Cook County staff:

- David Kircher
- Christopher Adas
- Chris Slattery
- Charles O'Leary
- Garrett Wais

The Project Team:

- Will Allen, The Conservation Fund
- Bruce Bondy, Bondy Studio
- Emy Brawley, The Conservation Fund
- Josh Ellis, Metropolitan Planning Council
- Chloe Gurin-Sands, Metropolitan Planning Council
- Yolanda Harris, Rudd Resources
- Justin Keller, Metropolitan Planning Council
- Catherine Lange, Lange Creative Services
- Sonya Lewis, Rudd Resources
- Bob Newport, Metropolitan Planning Council
- Kimberley Rudd, Rudd Resources
- Curtis Witek, Antero Group



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