

AQUATIC MASTER PLAN

Howard County, Maryland



COUNSILMAN + HUNSAKER
The Ultimate Aquatic Advantage

Aquatic Master Plan

Howard County,
Maryland



COUNSILMAN • HUNSAKER
The Ultimate Aquatic Advantage

July 2008

Table of Contents

EXECUTIVE SUMMARY	5
SECTION 1: INTRODUCTION	13
Methodology	13
Project Scope	13
Existing Aquatic System	13
SECTION 2: AQUATIC TRENDS	17
Potential User Groups	17
Specific User Groups – Lessons and Fitness	17
Specific User Groups – Aquatic Therapy	20
Specific User Groups – Recreation	21
Specific User Groups – Competitive	24
SECTION 3: DEVELOPMENT CONCEPTS	33
OPTION 1: OUTDOOR ADDITION	34
OPTION 2: COMBINED WITH COMMUNITY CENTER (CC)	36
OPTION 3: OUTDOOR	40
OPTION 4: 50-METER	42
SECTION 4: POPULATION CHARACTERISTICS	51
Population	52
Mosaic Types	52
Income	55
Age Distribution	57
Weather	59
SECTION 5: AREA PROVIDER ANALYSIS	63
SECTION 6: AQUATIC PROGRAMMING	89
Recommended Aquatic Programming	89
Marketing and Branding	89
SECTION 7: PARTNERSHIPS	95
Establishing Partnerships	95
Third Party Management Pros and Cons	96
SECTION 8: OPERATIONS	101
Opinion of Revenue	101
Opinion of Probable Expenses	108
Cashflow	111
SECTION 9: IMPLEMENTATION STRATEGIES	115
APPENDIX A: GENERAL LIMITING CONDITIONS	121
APPENDIX B: MEDIA	123
APPENDIX C: LOCATION DECISIONS OF NEW ECONOMY FIRMS	125

EXECUTIVE SUMMARY

The Need for an Aquatic Master Plan


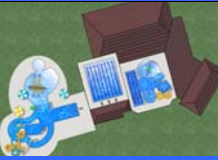

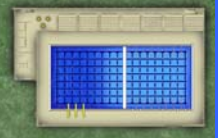
Located in the central portion of the State of Maryland, between Baltimore and Washington D.C., Howard County is recognized for its quality of life and excellent schools. According to the U.S. Census Bureau, Howard County ranked the third wealthiest county by median household income in 2006. In 2008, the main population center of Columbia/Ellicott City was named 8th in *Money Magazine's* "America's Best Places to Live" and ranked 17th in Forbes Magazine's "America's Best Places to Raise a Family."

Demographic analysis for Howard County reveals that the population base in 2007 is expected to increase from 266,700 to 296,400 by 2012. Income analysis reveals that most people living within the county have above national average incomes; median household income is \$90,934 as compared to the national average of \$51,680. The 0-17 age group in Howard County includes 79,077 children (28.5% of the total population). Median age in Howard County is 37.9 due to higher than national averages in age groups 45-64.

The Maryland State Board of Public Works recently awarded a \$50,000 grant to Howard County's Department of Recreation & Parks to fund an aquatic development plan to determine aquatic needs for a growing Howard County. The present Howard County aquatic system consists of one outdoor pool at Roger Carter Recreation Center at 3676 Fels Lane in Ellicott City area. The outdoor aquatic facility features a zero-depth 25-meter pool with diving well, wading pool, locker rooms, and pool party rental area. The center also features a pre-school activity room, computer lab, and a small exercise weight room. It is the intent of the county to create aquatic centers that will be useful for all residents, thereby generating repeat visits.

The consultant developed four concepts for Howard County to consider, including a 50-meter pool concept, and various other indoor and outdoor aquatic facilities with project costs and pro forma. The following options, with varying degrees of amenities, were developed for the county's consideration. Programming is intended to serve swim meet rentals, USA swim team, high school swim team, summer and winter swim lessons, lifeguard training, wellness programming, birthday parties, and private rentals. Option 1 features an outdoor leisure pool to be added to an existing community center. Option 2 features a natatorium with an 8-lane 25-yard pool, a leisure pool, and an outdoor leisure pool. Option 3 features an outdoor leisure pool and an outdoor 6-lane 25-yard pool. Option 4 features a natatorium with a 50-meter pool. Also included in the options are necessary support spaces, i.e., locker rooms restrooms, snack bars, storage rooms and mechanical rooms.



CONCEPT COMPARISON	
 <p style="background-color: #ADD8E6; color: white; padding: 2px;">\$6,500,000</p>	<p>Outdoor Addition Outdoor leisure pool, current channel, play feature, vortex, 2 waterslides, sprayground, pavilion, 7 shade structures.</p>
 <p style="background-color: #ADD8E6; color: white; padding: 2px;">\$20,300,000</p>	<p>Combined CC Indoor 8-lane 25-yard pool, diving, 125 seats, indoor leisure pool, play feature, current channel, vortex, waterslide, spa, outdoor leisure pool, play feature, current channel, 2 waterslides, otter slide, tumble buckets, tot pool/slide, 6 shade structures.</p>
 <p style="background-color: #ADD8E6; color: white; padding: 2px;">\$7,900,000</p>	<p>Outdoor Outdoor leisure pool, play feature, current channel, 2 waterslides, otter slide, tumble buckets, lily pad walk, outdoor 6-lane 25-yard pool, diving, tot pool/slide, 8 shade structures.</p>
 <p style="background-color: #ADD8E6; color: white; padding: 2px;">\$17,300,000</p>	<p>Indoor 50-Meter Indoor 50-meter by 25-yard pool, movable floor, 2 bulkheads, diving, 900 spectator seats.</p>
Source: Counsilman-Hunsaker	



Projected Pro Forma

In the following table, *Revenue* is generated from attendance potential (determined from facility capacity limits and market penetration levels) with attendance revenue (determined from membership structures and per capita revenues). *Expense* is an estimate of operating expenses concentrating on site-specific rates for operations and maintenance, staffing pay structures, and commodities such as chemicals and operating supplies. *Recapture Rate* is used to define the percentage of operating expenses recuperated by operating revenue.

OPINION OF CASHFLOW					
	2008	2009	2010	2011	2012
Outdoor Addition					
Project Cost	\$6,500,000				
Attendance	57,380				
Revenue	\$408,697	\$425,365	\$442,303	\$459,513	\$476,994
Expense	\$373,436	\$382,772	\$392,341	\$402,150	\$412,204
Operating Cashflow	\$35,261	\$42,593	\$49,962	\$57,363	\$64,791
Recapture Rate	109%	111%	113%	114%	116%
Debt Service	(\$566,700)	(\$566,700)	(\$566,700)	(\$566,700)	(\$566,700)
Cashflow	(\$531,438)	(\$524,107)	(\$516,738)	(\$509,336)	(\$501,909)
Combined CC					
Project Cost	\$20,300,000				
Attendance	117,108				
Revenue	\$845,299	\$875,266	\$905,676	\$936,527	\$967,821
Expense	\$1,214,796	\$1,245,166	\$1,276,295	\$1,308,203	\$1,340,908
Operating Cashflow	(\$369,498)	(\$369,900)	(\$370,620)	(\$371,675)	(\$373,087)
Recapture Rate	70%	70%	71%	72%	72%
Debt Service	(\$1,769,847)	(\$1,769,847)	(\$1,769,847)	(\$1,769,847)	(\$1,769,847)
Cashflow	(\$2,139,344)	(\$2,139,747)	(\$2,140,466)	(\$2,141,522)	(\$2,142,933)
Outdoor					
Project Cost	\$7,900,000				
Attendance	66,182				
Revenue	\$474,103	\$493,283	\$512,772	\$532,572	\$552,683
Expense	\$450,844	\$462,116	\$473,668	\$485,510	\$497,648
Operating Cashflow	\$23,259	\$31,167	\$39,104	\$47,062	\$55,035
Recapture Rate	105%	107%	108%	110%	111%
Debt Service	(\$688,758)	(\$688,758)	(\$688,758)	(\$688,758)	(\$688,758)
Cashflow	(\$665,499)	(\$657,591)	(\$649,654)	(\$641,696)	(\$633,723)
50 Meter					
Project Cost	\$17,300,000				
Attendance	72,160				
Revenue	\$584,580	\$603,349	\$622,409	\$641,759	\$661,399
Expense	\$1,022,149	\$1,047,703	\$1,073,896	\$1,100,743	\$1,128,261
Operating Cashflow	(\$437,569)	(\$444,354)	(\$451,486)	(\$458,984)	(\$466,862)
Recapture Rate	57%	58%	58%	58%	59%
Debt Service	(\$1,508,293)	(\$1,508,293)	(\$1,508,293)	(\$1,508,293)	(\$1,508,293)
Cashflow	(\$1,945,862)	(\$1,952,646)	(\$1,959,779)	(\$1,967,277)	(\$1,975,155)
Source: Councilman Hunsaker					



Pools by Population

In 1990 the National Recreation and Parks Association published a recommendation for the number of public pools needed in any U.S. community based on population alone: one pool for every 20,000 population. Although this never became the national standard due to variables such as other providers, area income levels, different types of pools, and desired programming by various age groups, the following chart shows the number of public pools from various cities across the U.S. From these cities it was found that, on average, the U.S. has approximately one public pool for every 45,570 people. In developing the strategy, analyzing a comparison to other areas reveals that Howard County* (excluding the City of Columbia) has one pool for approximately every 180,049 residents.

POOLS BY POPULATION			
City	Population	Municipal Pools	People Served
Houston, TX	2,106,582	39	54,015
Phoenix, AZ	1,461,575	29	50,399
San Antonio, TX	1,256,509	25	50,260
San Diego, CA	1,255,540	13	96,580
Dallas, TX	1,213,825	22	55,174
San José, CA	912,332	4	228,083
Tulsa, OK	803,235	18	44,624
Jacksonville, FL	782,623	34	23,018
San Francisco, CA	739,426	9	82,158
Austin, TX	690,252	47	14,686
Fort Worth	635,800	7	90,829
Kansas City, MO	447,306	9	49,701
Sacramento, CA	407,018	15	27,135
Colorado Springs, CO	360,890	6	60,148
Raleigh, NC	339,500	8	42,438
Laredo, TX	216,912	6	36,152
Lubbock, TX	210,039	4	52,510
Shreveport, LA	199,370	9	22,152
Spokane, WA	197,520	5	39,504
Irving, TX	193,571	7	27,653
Howard County*	180,049	1	180,049
Salt Lake City, UT	178,238	2	89,119
Salem, OR	150,361	2	75,181
Grand Prairie, TX	150,000	4	37,500
Eugene, OR	145,981	3	48,660
Hampton, VA	145,646	7	20,807
Torrance, CA	145,516	1	145,516
Independence, MO	109,159	1	109,159
Edmond, OK	68,315	1	68,315
Rowlett, TX	44,503	1	44,503
Bartlesville, OK	34,300	2	17,150
Upper Arlington, OH	33,686	3	11,229
Collinsville, IL	24,707	1	24,707
Borough of Ephrata, PA	13,600	1	13,600
Lamar, MO	4,425	2	2,213
AVERAGE	453,095	10	45,570

Source: Counsilman-Hunsaker

* - Population does not include area serviced by the Columbia Association

The Columbia Association has been excluded due to the 27 Columbia Association pools, which provide swimming for the Columbia Association residents. Non-Columbia residents can swim at CA pools only if they are a guest of a member or become a nonresident member, which is more than double the price of the resident membership fee. A guest living on CPRA assessed property / Howard County may have a total of six visits per year to any CA facility; however, guests not living in the area may be admitted as often as they choose. Admission for nonmember residents of Columbia or people who work full-time on



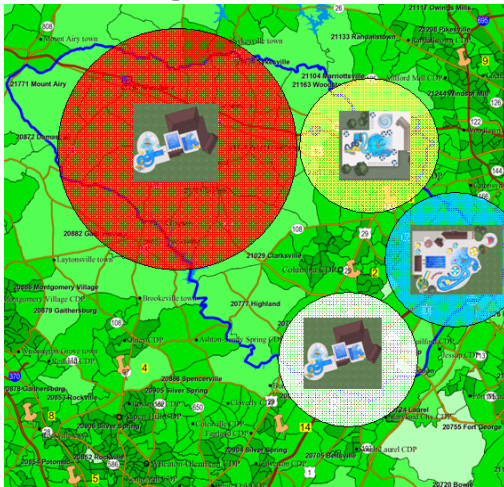
property protected by Columbia Association covenants can swim at a daily fee (see Area Providers Section of this report).

Implementation Strategy

The “toolbox” of options described in this report represents a wide variety of solutions derived from the community and political input to meet the diverse needs of Howard County residents. Alternatives were evaluated on the basis of the effectiveness of response to the community’s needs as well as likely capital costs, revenues, and expenditures. With the Columbia Association owning numerous pools in the area, it is not the goal of Howard County to compete with the association but to fill gaps in service. The consultant is not recommending a 50-meter pool in any of the overall plans, but would like to mention that the Howard County Recreation and Parks Department's goal is to provide recreation and leisure activities for the community with the ability to teach children of all ages to swim. This can be met with the leisure pool concept. The use of a 50-meter pool is geared towards the competitive group, and the county should consider partnerships to help with the additional capital cost and the ongoing subsidy taken to operate a 50-meter pool. Three of the areas chosen were based on a 5-mile diameter not served by other community based pools, and have a heavy population with expected growth. The 10-mile diameter was used in the less dense area of the western part of the county.

Strategy A: Recommended

Using a 10-mile diameter surrounding the Red Site, this site includes a Combined CC. Using a 5-mile diameter surrounding the other sites, the Yellow Site includes an Outdoor Addition, the Blue Site includes an Outdoor Aquatic Center, and the White Site includes a Combined CC for a total of \$55,000,000.

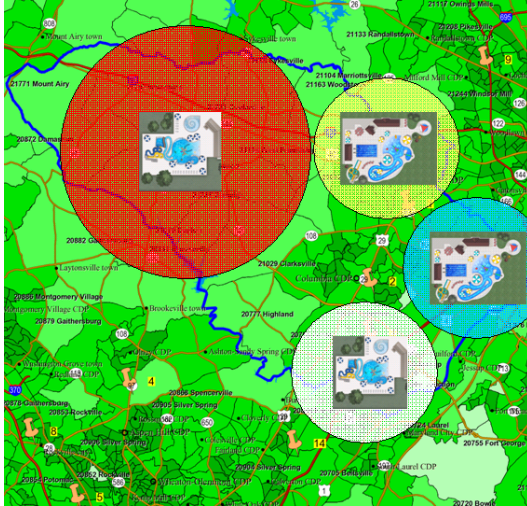


Strategy A - Recommended					
Area	1	2	3	4	
Type	Combined CC	Outdoor Addition	Outdoor	Combined CC	Total
Project Cost	\$20,300,000	\$6,500,000	\$7,900,000	\$20,300,000	\$55,000,000
Attendance	117,108	57,380	66,182	117,108	357,778
Revenue	\$845,299	\$408,697	\$474,103	\$845,299	\$2,573,398
Expense	\$1,214,796	\$373,436	\$450,844	\$1,214,796	\$3,253,873
Operating Cashflow	(\$369,498)	\$35,261	\$23,259	(\$369,498)	(\$680,475)
Recapture Rate	70%	109%	105%	70%	79%



Strategy B: Cost Sustainable

Using a 10-mile diameter surrounding the Red Site, this site includes an Outdoor Addition. Using a 5-mile diameter surrounding the other sites, the Yellow Site and Blue Site include Outdoor Aquatic Centers, and the White Site includes an Outdoor Addition for a total of \$28,800,000.



Strategy B - Sustainable					
Area	1	2	3	4	
Type	Outdoor Addition	Outdoor	Outdoor	Outdoor Addition	Total
Project Cost	\$6,500,000	\$7,900,000	\$7,900,000	\$6,500,000	\$28,800,000
Attendance	57,380	66,182	66,182	57,380	247,124
Revenue	\$408,697	\$474,103	\$474,103	\$408,697	\$1,765,601
Expense	\$373,436	\$450,844	\$450,844	\$373,436	\$1,648,561
Operating Cashflow	\$35,261	\$23,259	\$23,259	\$35,261	\$117,040
Recapture Rate	109%	105%	105%	109%	107%

A good partnership opportunity may exist with a 50-meter pool in Strategies A & B. Possible partnerships include high schools interested in starting a team, private clubs in the area, and other communities such as the Columbia Association interested in using this facility. It is not the consultant's recommendation for Howard County Parks and Recreation to take sole ownership of such a project. Strategy A is recommended based on the percentage of population that participates in swimming (25% compared to the national average of 18%), density of the population in the county who are not served by other pools, and comparison to other communities in the nation.



SECTION 1

INTRODUCTION

Methodology
Project Scope
Existing Pool

SECTION 1: INTRODUCTION

Howard County Department of Recreation and Parks selected Counsilman-Hunsaker to provide aquatic facility options that would help Howard County make an educated decision before proceeding with the construction and operation of additional aquatic facilities.

Methodology

This plan is based on extensive research through the following processes:

- Met with representatives of Howard County.
- Toured the site and region.
- Conducted community meetings.
- Investigated area aquatic providers to understand the programs, operations, and fees of those facilities.
- Identified potential user groups through demographics of the market area and how the proposed plan could market those potential user groups.
- Reviewed national trends in aquatic recreation, fitness, therapy and competition to determine amenities and programs.
- Reviewed construction costs and labor costs in the local area.

Project Scope

The scope of the project is to:

- Recommend aquatic facilities that will meet current and future community needs for health and safety.
- Determine how the facilities will be programmed and staffed.
- Make projections regarding project costs.
- Develop an opinion of financial pro forma.

Existing Aquatic System

Howard County aquatic system includes Roger Carter Recreation Center at 3676 Fels Lane in Ellicott City. The outdoor aquatic facility includes a 25-meter pool with diving well, zero-depth entry, wading pool, locker rooms, and a pool party rental area. The center also features a pre-school activity room, computer lab, and a small exercise weight room.



SECTION 2

RECREATION TRENDS

Potential User Groups

Specific User Groups – Lessons and Fitness

Specific User Groups – Aquatic Therapy

Specific User Groups – Recreation

Specific User Groups – Competitive

Indoor Pools vs Outdoor Pools

SECTION 2: AQUATIC TRENDS

When developing tomorrow's vision for aquatic programming, it is important to understand traditional uses and trends in aquatic programs. The following introduces and defines current experiences in regard to aquatics.

Today's aquatic centers incorporate recreation swimming and wellness pools to augment revenue of competitive swimming. Multi-generational facilities are fully ADA accessible where everyone can benefit from aquatic activities. As more athletes cross train with water fitness components and more doctors recommend water rehabilitation for injured, obese, diabetic, and aging patients, multi-generational aquatic centers are inclusive of the entire community.

Trends evolve in the aquatic industry as swimming expectations evolve. Free-form leisure pools invite recreation with wide, irregularly shaped expanses of water with ample amenities for participation. Multi-generational facilities provide bodies of water for lessons and fitness, wellness needs, competitive needs, and family leisure needs with separate spaces for different age groups. The old theory of building a rectangular pool and expecting everyone to use the same pool is unrealistic for tiny tots, families, the ADA population, and seniors. Often, multiple bodies of water are necessary to accommodate greater representation from the community.

Potential User Groups

Municipal aquatic centers include countless opportunities for aquatic activity that need not be too challenging to be beneficial. National surveys continually rank swimming as a favorite leisure sport, i.e., the National Sporting Goods Association 2007 participation survey in the adjoining table.

2007 Participation (in millions)	
Walking	89.8
Exercise w/ Equipment	52.8
Swimming	52.3
Bicycling	37.4
Weight Lifting	33.2
Running/Jogging	30.4
Aerobic Exercise	30.3
Tennis	12.3
Volleyball	12.0
Yoga	10.7

Source: NSGA

The following describes national trends for four aquatic user groups: lessons and fitness, aquatic therapy, recreation swimmers, and competitive swimmers. The descriptions make evident the very different requirements for each of these aquatic user groups and recommend facility capabilities and amenities essential to accommodating needs when planning and designing aquatic facilities.

Specific User Groups – Lessons and Fitness

Swim Lessons

According to the Centers for Disease Control, drowning is the second leading cause of injury death (after motor vehicle crashes) among children ages 1-14. Knowing how to avoid drowning is essential for children and adults whether living in areas with natural bodies of water or simply being invited to pool parties. With more than one available body of water in an aquatic center, lessons can be maximized to the point where a large number of residents can be taught to swim. Ideally, water depth for instruction should accommodate young participants to stand comfortably in the water. Leisure pools easily provide this preference while deeper competition pools offer moveable floors or other means of altering water depth for instructional purposes.



A well-run water lesson program is an important ingredient in introducing young swimmers to safe aquatic skills. By offering the community a comfortable, controlled aquatic environment, swimming and diving lessons can become an enjoyable learning experience. There are many different types of water safety lessons that can teach children not only how to swim and dive but how to survive in adverse water



conditions. From small water craft instruction to drown-proofing, water safety is an integral part of any community. Many will go on to formal competitive aquatic programs in school or age-group swimming programs. Some will excel to become state champions. Benefits such as scholarship offers may occur when a swimmer or diver selects a college, which could lead to national level competition.

Drown-Proofing

U.S. Consumer Product Safety Commission (CPSC) indicates that the average number of drowning deaths involving children younger than 5 in pools and spas has increased from a yearly average of 267 (for 2002-2004) to 283 (for 2003-2005). The average number of emergency room treated pool and spa submersion injuries decreased from an annual average of 2,800 (for 2004-2006) to 2,700 (for 2005-2007). The report also shows that the majority of deaths and injuries occur in residential settings and involve children ages 1-2. Drowning is the leading cause of unintentional death to children ages 1-4. A new federal pool and spa safety law was signed by the President on December 19, 2007. The Virginia Graeme Baker Pool and Spa Safety Act requires that by December 19, 2008, all public pools and spas must have safety drain covers, and in certain circumstances, an anti-entrapment system. The goal of the law is to improve the safety of all pools and spas by increasing the use of layers of protection and promoting uninterrupted supervision to prevent child drownings and entrapments.

With many different means and methods to teach proper drown-proofing, some mimic the natural environment through instructor creativity (i.e., creating wave action with hands and arms to mimic river tides), while others simply require small children to memorize what they would do in a situation where drowning is likely, and then enact memorized skills with an instructor present. Knowing how to avoid drowning is essential for children and adults, especially when living in areas where natural water bodies are prevalent.



Lifeguarding and CPR

Water rescue skills and CPR are typically taught to all lifeguards. However, teaching water rescue and CPR skills are integral to the community as families are the true lifeguards of each other, whether at the beach or a backyard pool. Often such courses are sponsored or offered by NASCO, the Red Cross, and other American providers of safety training.



Water Craft Instruction

Water crafts may capsize and experience other mechanical difficulties. Drowning often occurs when non-swimmers are aboard a craft that experiences difficulties of a mechanical or climatological nature. Though most aquatic centers, because of size constraints, cannot offer small water craft instruction, 50-meter pools can provide an excellent means to teach water safety skills in the event of an emergency of this nature.



School District Lesson Users

School districts are often valuable contributors to help efficiently program aquatic facilities. Potential programming might embrace swim lessons for elementary students, lifeguarding classes, physical education classes, therapy for high school athletes, and other joint partnership agreements to aid in directing area children to learn to swim. Aquatic sports (water polo, synchronized swimming, underwater hockey, etc.) can contribute to the overall use of the facility as well as fitness use by faculty, special education therapy, and recreation. In addition, an aquatic facility may provide aquatic opportunities to pre-school children cared for by private daycare providers.



Aquatic Fitness

The industry has responded to the continued popularity of aquatic fitness by creating a wide range of activities with related devices and equipment for a greater diversity of water-based aqua exercise options. Aerobic dancing, walking and running in shallow and deep-water environments, including current channels for walking against the current, are just a few of the choices available to people wishing to add less stressful elements of a cross-training regimen or even use aqua aerobics for their entire fitness program. Additionally, businesses might sponsor or subsidize aquatic fitness as part of their employee wellness training discipline.



Aquatic fitness also remains one of the most popular forms of exercise among senior adults. Data taken from the U.S. Census Bureau shows lifetime expectancy is up almost 30 years since 1900. The older adult market now spans four generations from the Depression Era 1900-1939, Silent Gens 1940-1945, Mature Boomers 1946-1958, to Young Boomers 1951-1957. Gray power can be a large, affluent market willing to participate in water fitness, wellness programming, and other recreational opportunities. This diverse group from 55 to 80+ includes sub-groups: some are still working; some have children in college; and some are focusing on retirement, grandkids, and health. Consequently, seniors can be willing, enthusiastic participants if certain requirements are met. They typically feel uncomfortable in an environment with teens and generally respond better to strictly defined programming of well-structured activities such as water aerobics, arthritis water fitness, water walking, physical therapy, adult swim lessons, 'Save a Life' workshops, lap swimming, and Masters Swimming.

LIFETIME EXPECTANCY		
Year	Male	Female
1900	48.2	51.1
1940	60.8	65.2
1950	65.6	71.1
1960	66.6	73.3
1970	67.1	74.7
1980	70.0	77.4
1990	71.8	78.8
2000	74.3	79.7

Source: US Census Bureau

Water Fitness Trends

Aquatic programming accommodates beginner lessons that graduate to higher levels of intensity and skill. The following provides a snapshot of fitness programs.

Walking and Jogging in Shallow and Deep Water: 30 minutes of aqua jogging is equal to 80 minutes of jogging on land (www.waterart.org).

Finning: Requires training fins or flippers and utilizes fitness lap lanes of a pool. The kicking and pulling enhances conditioning and toning.

The Liquid Gym: An aqua training workout that can be as intense as desired.

Navy Seals: Much like The Liquid Gym, but geared for younger swimmers.

Water Yoga: Warm water, as in a therapy pool, enhances asanas (stretching poses) to relax muscles and increase range of motion and balance. Pan flute music and dim lights deepen the experience. yogaafloat.com.

Water Aerobics: Remaining one of the fastest growing segments of the adult fitness industry, fat is burned at a higher percentage than land aerobics.

Water Weight Workouts: A water workout with foam water weights or water-proof plastic weights.

Deep H2O Training: A muscular endurance workout in deep water that consists of simulated running in the deep end of the pool aided by a flotation device (vest or belt) that maintains the head above the water or where the participant is held in one location by a tether cord, essentially running in place.

Boot Camp: Amphibious program that incorporates land and water fitness to add variety to training regimens.

Scuba and Snorkeling: These lessons are growing in popularity and typically start in swimming pools.

Scuba Rangers: Teaches kids 8-12 snorkeling and scuba diving skills while using underwater flash lights, navigation compasses and underwater photography.



Underwater Hockey: Fast moving “no contact” sport played on the bottom of a pool by two teams of six. Scoring depends on teamwork as players must go to the surface to take breaths. Games are two 15 minute halves and can have up to 4 substitutes who can enter on the fly.

Triathlons: Increasing as aquatics are playing a major role in competitions.

Kayak and Canoe Clubs: Growing due to the popularity of Extreme Sports.

Aqua-lympics: Includes skills such as water volleyball, inner tube water polo, and the waterslide speed challenge.

Aquatic Personal Training: Trainers design personalized aquatic programs to help participants achieve fitness goals.

Swim lessons, lap swimming, water jogging, deep-water aerobics, life saving instruction, diving lessons, survival swimming, synchronized swimming, water polo, underwater hockey and scuba instruction can take place in a competitive/lesson pool, which frees up the leisure pool for swimmers who want to use the play features. Fitness classes are usually offered in the morning, at lunchtime and in the early evening. Instructor information and/or training can be acquired through organizations such as the Arthritis Foundation; Red Cross; Aquatic Exercise Association; American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD); and United States Water Fitness.

Specific User Groups – Aquatic Therapy

Aquatic therapy is rehabilitation performed in warm water and involves physical activity of exercise and motion in the presence of an aquatic therapist, also called an aquatic therapy provider. Warm water may increase the dynamics of blood pressure and blood and lymph circulation as well as decreasing swelling in skin and other tissues. Participation in an aquatic therapy program offers improvement in:

- overall health and fitness
- stretching capacity
- range of motion
- movement capabilities
- coordination
- physical stamina and endurance
- swimming skills, safety, and abilities



Though many people who use aquatic therapy are enthusiasts of meditation or massage, some are looking for rehabilitative, improving or maintaining a certain level of health. The Arthritis Foundation certifies instructors to teach arthritis aquatics. Many participants in these programs report reduced arthritis symptoms, including increased mobility, reduced pain and decreased inflammation. New studies suggest that the management of diabetes can be facilitated by water exercise. When moderate exercise is recommended for obese patients, the low-gravity qualities of aquatic therapy can be very appealing to this user group.

Water Wellness Seekers

According to *Physicians and Sports Medicine*, water exercise programs have multiplied in health clubs, pain clinics, and hospitals. Users include:

Injured Athletes: Athletic trainers and sports medicine physicians are prescribing aquatic therapy as a rehabilitative/preventive fitness program.



Post Operative Patients and Disabled (permanent and temporary): Includes patients with physical ramifications such as spinal dysfunctions, post-operative muscle toning, injuries, and arthritis.

Arthritis Sufferers: The Arthritis Foundation certifies instructors to teach arthritis exercises such as Rusty Hinges and Joint Effort.

Diabetics: Though still in the theoretical stages, studies suggest that water exercise and therapy, when applied to diabetics as a regular program, can reduce diabetes symptoms and assist insulin level management.

Aging Baby Boomers: Some 70 million strong, “boomers” invented the fitness movement and show no sign of abandoning it as they age, especially in warm water environments.

Obese Populations: More doctors are prescribing water wellness for weight issues.

Pregnant Women: Soothing effects of the low resistance of water exercise is enjoyable to this user group.

Meditation Enthusiast: Fans of mind and body movements enjoy immersing in warm water environments to complete the tranquil state.

Key components for an aquatic therapy wellness facility include:

- Warm pool water capability with faster pool turnovers, high-quality water chemical treatment systems, including dual sanitization methods and an appropriately designed HVAC/DH system.
- Easy access from the parking lot to the locker/changing rooms, pool deck, and into the pool.
- Ample space in locker rooms and wider pool deck for wheelchairs, walkers, dry and wet equipment, and dry-side therapy.
- In-water amenities such as perimeter railings, aerobic steppers, treadmills, underwater benches, and ramps.
- Flexible pool depths for multiple programmatic needs.
- Aesthetically pleasing and calm light-filled private spaces.

Specific User Groups – Recreation

Successful aquatic centers merge the best features of a community pool and the commercial water park by segregating creative water play areas for various age groups in a safe, friendly atmosphere. While aquatic recreation has become much more age-defined, attractions have age limitations and appropriateness due to elements of thrill and capabilities. Tots enjoy shallow pools with gentle water features and play areas tucked securely out of the way of the more active areas. Once children grow out of the tot stage they can romp in zero-beach leisure pools and make their adventurous way across water walks and participatory play features with “just-their-size” waterslides. Older children speed down flume and drop slides and enjoy larger water play structures. Teens enjoy gathering spots like action islands with access to deep water pools and extreme features. Lazy rivers and current channels cater to a laerge demographic while spas and lap lanes are geared toward adults.



Age Group	Recreational Age-Group National Trends
Age 0-3	Tot Pool, Tot Slides, Gentle Spray Features
Age 4-7	Water Sprayground, Zero-Depth Pool, Participatory Play Features, Sand Play
Age 8-11	Water Walks, Large Play Structures, Full-Size Waterslides, Open Water
Age 12-16	Water Walks, Large Waterslides, Open Water, Diving, Lazy River, Gathering Places, Sand Volleyball, Mat Racer
Age 17-22	Action Island, Bowl Slide, Flow Rider, Mat Racer, Climbing Wall, Open Water, Sand Volleyball
Age 23-45	Zero-Depth Pool (to be w/children), Open Water, Spa, Sun Deck, Lap Lanes, Lazy River, Waterslides
Age 45+	Spa, Sun Deck, Lap Lanes, Lazy River
	Source: Counsilman-Hunsaker

Leisure Pools

The 0 to 4 foot depth of leisure pools provides adults and children aquatic interaction, entertainment, and relaxation. With opportunity for many different sizes and designs, the leisure pool is a desirable attraction for all age and skill levels. Many different amenities can be incorporated for added amusement.



Zero-Depth Entry

Users enjoy easy access into leisure pools that simulate an ocean beach, where the concrete pool bottom slopes gradually toward the deeper water. Instead of jumping or climbing into the pool, patrons simply walk in. Lounging in the zero-depth is a pleasant way to enjoy the water and sun while watching children play.



Participatory Play Feature

An interactive play feature brings recreational value to aquatic facilities where children can slide down just-their-size waterslides, scamper through spraying water, climb across bridges, and scurry over and under tunnels. Valves, chains and ropes can be manipulated and transformed by the imagination. As children interact with these features, they control where and when the water sprays will occur.



Current River

A current river is part of the leisure pool, usually 6-8 feet wide with water traveling at approximately three miles per hour. The channel can provide an ideal floating adventure going with the flow or it can be used for walking against the current as a non-programmed or programmed exercise. This amenity provides a refreshing way for all ages to leisurely enjoy the water.



Tumble Buckets

Tumble buckets offer individual water play stations within the shallow ends of pools. The cone-shaped cylinders fill with water from individual spouts from above, creating suspense and anticipation – the children never know which one will splash down next!



Waterslides

The thrill of mounting the stairs to the exhilaration of sliding down into the water, waterslides can range from family-friendly to surprisingly intense experiences. While some are straight with a steep or gentle gradient, other slides wind and curve their way downward. Waterslides can be a long tube, an open chute with high sides or alternate between an open chute and closed tube.



Otter Slide

For children who are too big for the kiddie slides, otter slides are designed for “in-between” children to enjoy, as the larger slides have height restrictions of 44 to 48 inches.



Water Vortex

Children of all ages enjoy swimming in a water vortex where water jets propel water in a circular motion. Depending on the size of the vortex, when the pump for the vortex is turned off, this area can provide an instruction space for lesson programming.



Deep Water / Diving

A flexible springboard in 1 meter or 3 meters secured at one end and projecting over deep water provides experienced swimmers the challenge of diving. Deep water can also be programmed for advanced swim lessons, lifeguard training, diving lessons, water safety, water polo, scuba, synchronized swimming lessons, and deep water fitness classes.



Water Walks

For hours of water play activity, a foam floating walkway spanning across the pool with a suspended spun braided rope or cargo net overhead incorporates physical action and adventure. Tethered to the bottom of the pool, water walks are available in several themes: lily pads, fossils, crocodiles, seashells, and logs to name a few.



Spray Features

A variety of refreshing surprises from dribbling trickles to gushing torrents, spray features include spray bars, bubblers and water arches that create water wonderland effects to aquatic facilities.



Sprayground/Splashpad

A water sprayground features interactive play elements located in standing water or on a concrete slab (splashpad). Spraygrounds can be manipulated by children, a programmable computer, or turned on and off with timers. Whimsical spraygrounds can be a cost-effective addition for all types of parks, aquatic facilities or recreation centers.



Shade Structures

Fabric umbrellas come in many styles and colors; they cover, connect, and join areas while providing retreats out of the sun and lending a festive atmosphere to aquatic centers.



Specific User Groups – Competitive

Competitive athletes (high school swim teams, Special Olympics, USA Swimming/Diving, US Masters Swim Teams, summer swim and dive teams, water polo teams, etc.) are a very loyal and appreciative group, and, if their needs are met, can be counted upon to provide a steady stream of income.

High School Swimming

High School Varsity Swimming is typically well-supported in most communities across the U.S.; however, many schools lack the ideal facility for training and competition. Because quality pool time is usually scarce in most areas, renting pool time from area facilities can be challenging due to needs and agendas, thus pool availability can diminish as facilities experience capacity. High school competitive swimming requirements include:



- 6-lane 25-yard pool. The course length is 25 yards with a minimum width of 45 feet for six 7' wide lanes or 60 feet for eight 7' wide lanes.
- 125 spectator seats
- Equipment may include pace clocks, stretch cords, mats (for sit-ups, etc.), free weights, medicine balls, weight training equipment, kickboards, fins, paddles, pull buoys, course caps and goggles.

Special Olympics

Creating positive and enduring changes in the lives of people with disabilities, their families, friends, coaches, volunteers and all who cheer them on is the goal of Special Olympics. Special Olympics serve more than 2.25 million persons in more than 200 programs in more than 150 countries. Individual events usually take place in 25-meter pools. Relay events mirror those offered in other international swimming competitions. Currently, there are 159,100 Special Olympic athletes involved in aquatics that include:

- Freestyle Events: 50, 100, 200, 400, 800, and 1,500 Meter
- Backstroke, Breaststroke and Butterfly Events: 25-Meter (Breaststroke, Butterfly), 50, 100, and 200 Meter
- Individual Medley Events: 200 and 400 Meter
- Freestyle and Medley Relay Events: 4 x 25, 4 x 50 and 4 x 100 Meter 4 x 200 Meter Freestyle Relay
- Unified Sports Relay Events: Freestyle: 4 x 100 and 4 x 200 Meter Medley: 4 x 25, 4 x 50 and 4 x 100 Meter

The following aquatic events provide competition for athletes with lower ability levels:

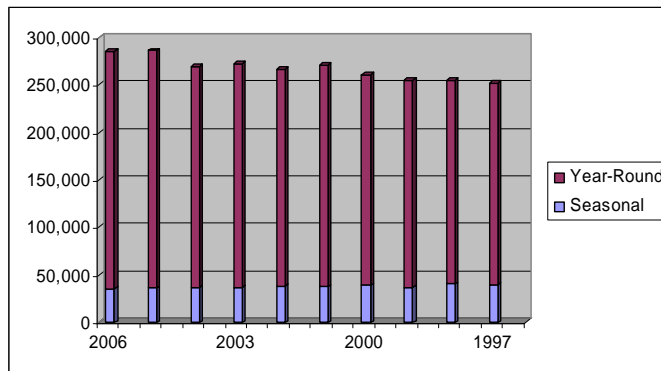
- 25-Meter Freestyle and Backstroke
- 15-Meter Walk
- 15- and 25-Meter Floatation Race
- 10-Meter Assisted Swim
- 15-Meter Unassisted Swim



USA Swimming

As the National Governing Body for competitive swimming in the United States, USA Swimming formulates rules, implements policies and procedures, conducts national championships, disseminates safety and sports medicine information, and selects athletes to represent the United States in international competitions. USA Swimming has almost 300,000 members nationwide and sanctions more than 7,000 events each year. USA Swimming has organized regional and national competitions for age group competitive swimming in the United States. The following chart illustrates the historic growth of this youth sport nationally.

USA Swimming Membership Trend



Source: USA Swimming

The base for popularity is primarily a young age group that begins around age eight and peaks at age 12 as shown in the following chart.

Average Age of Membership, 2006		
AGES	FEMALE	MALE
8 and under	14.9	11.2
9	12.5	8.6
10	15.6	10.5
11	17.2	11.3
12	17.4	11.1
13	15.6	10.3
14	14.4	9.3
15	11.8	7.7
16	10.1	7.3
17	7.8	6.3
18	5.3	4.6
19 and over	4	4.5
Total	146.6	102.7

Source: USA Swimming

All USA Swimming sponsored events must meet the minimum standards listed below. Some minimum facility requirements for USA Swimming National Championships are also listed.

- 25-meter (82 feet and 1/4 inch) pools must have a nominal tolerance of plus .03 meters (1 and 3/16 of an inch) to minus .00 meters on both end walls at all points from .03 meters (1 and 3/16 of an inch) above to .8 meters (2 feet, 7 1/2 inches) below the water surface.
- 50-meter (164 feet and 1/2 inch) pools must have a nominal tolerance of plus .03 meters (1 and 3/16 of an inch) to minus .00 meters on both end walls at all points from .03 meters above to .8 meters below the water surface.

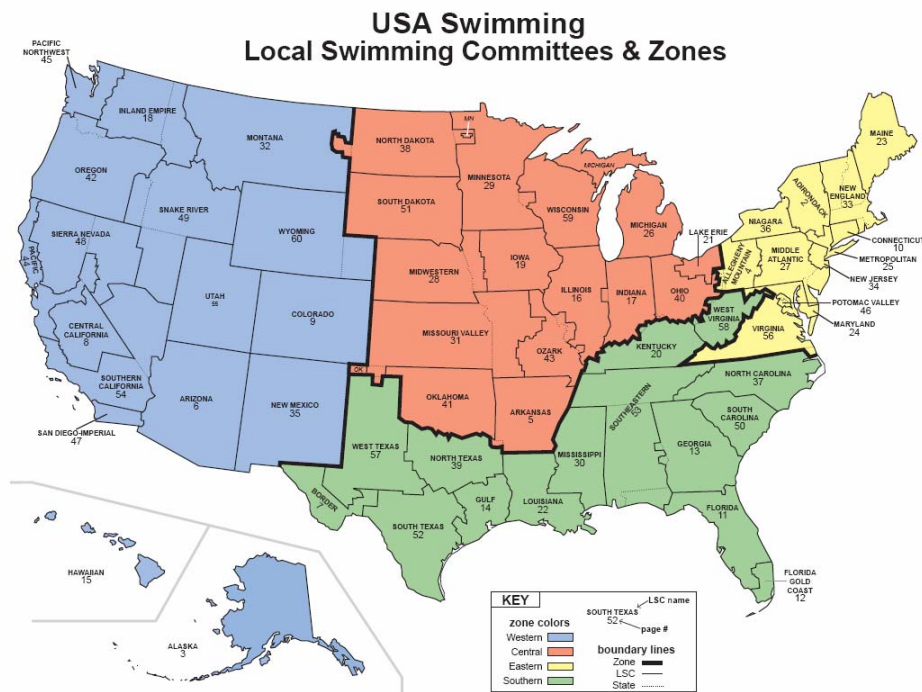


- A minimum depth of 1.22 meters (4 feet) is required for starting block competitions; 2 meters (6 feet 7 inches) is preferred and is also the minimum depth for national championship meets.
- Light intensity over starting platforms and turning ends shall be no less than 100 foot candles (600 lux).
- Lanes must be 2.13 meters (7 feet) wide. For national championships, lanes must be at least 2.5 meters (8 feet 2 and 1/2 inches) wide with additional open water space of at least .45 meters (1 foot 6 inches) outside of each the first and last lanes.
- Water temperature shall not be less than 26 degrees Celsius or 78 degrees Fahrenheit (with a nominal plus or minus 1 degree Celsius and two degrees Fahrenheit).
- Air temperature for indoor pools must be no lower than 76 degrees Fahrenheit (eight feet above deck level); humidity must be no greater than 60 percent and air velocity no less than 25 feet per minute.

The minimum facility requirement for local meets during the school year is a 6-lane 25-yard pool. During the summer months, when long course swimming prevails, 6- or 8-lane 50-meter pools are the norm. In either case, seating for spectators is considered a bonus, especially if that seating is off deck.

Eastern Zone

USA Swimming has four zones subdivided into fourteen regions. As of 2001, each zone is required to host from two to four sectional championships. March of 2001 marked the first of these championships called the Speedo Champions Series. The four Zones are Eastern, Southern, Central, and Western. Howard County is in the Eastern Zone.



Local Swimming Committees

The four Zones are subdivided into 59 Local Swimming Committees (LSC) that have geographic borders (some matching state borders). The system is analogous to the individual states within the Union. The following lists the twelve LSCs in the Eastern Zone with the number of aquatic clubs per LSC as of 2006 for a total of 688 aquatic clubs with approximately 63,641 swimmers.

EASTERN ZONE		
LSC	Clubs	Swimmers
Adirondack	25	1,773
Allegheny Mouna	61	3,612
Connecticut	53	4,554
Maine	22	890
Maryland	36	3,564
Metropolitan	68	7,704
Middle Atlantic	108	8,318
New England	89	6,574
New Jersey	60	7,100
Niagara	79	6,016
Potomac Valley	40	7,796
Virginia	47	5,740
Total	688	63,641
Source: USA Swimming		

Maryland Swimming

The following lists 34 of the 36 aquatic clubs listed in the Maryland LSC with two in Howard County.

Annapolis Swim Club
Pasadena, MD 21122

Eagle Swim Team Inc.
Owings Mills, MD 21117

Baltimore City Swim Club
Baltimore, MD 21218

Frederick Area Swim Team
Frederick, MD 21701

Bay Aquatic Club
Windsor Mill, MD 21244

Great Mills Aquatic Club
Dowell, MD 20629

Bel Air Aquatic Club
Bel Air, MD 21014

Greater Baltimore Swim Assoc.
Laurel, MD 20723

Blue Jays Aquatic Club
Baltimore, MD 21216

Green Terror Aquatic Club
Hanover, PA 17331

Carroll Aquatics Tiger Sharks
Westminster, MD 21158

Harford County YMCA
Baltimore, MD 21212

Carroll County YMCA
Westminster, MD 21157

Health Unlimited Hurricanes
Mount Airy, MD 21771

Chesapeake Bay Aquatic Club
Hollywood, MD 20636

Loyola Blakefield Aquatics
Baltimore, MD 21286

Columbia Aquatics Association
Columbia, MD 21045

Mariner Swim Club
Baltimore, MD 21211



Meade Patriots Swim Club
Odenton, MD 21113

Merritt Athletic Swimming
Towson, MD 21286

Mid-Delmarva YMCA
Selbyville, DE 19975

Monocacy Aquatic Club
Frederick, MD 21701

Naval Academy Aquatic Club
Annapolis, MD 21403

Navy Swimming
Annapolis, MD 21402

North Baltimore Aquatic Club
Baltimore, MD 21209

Potomac Raiders Swim Club
King George, VA 22485

Retriever Aquatic Club

Severn, MD 21144

Severna Park Stingrays
Ellicott City, MD 21043

Spy Swimming
Catonsville, MD 21228

Talbot County YMCA
Easton, MD 21601

Tigerfish Aquatic Club
Edgewood, MD 21040

Towson University Swimming
Edgewood, MD 21040

University of Maryland Baltimore
Baltimore, MD 21250

Western YMCA
Catonsville, MD 21228

US Masters Swimming

United States Masters Swimming (USMS) is a national organization that provides organized aquatic workouts, competitions, clinics and workshops for adults 18+. Programs are open to all adult swimmers (fitness, triathlete, competitive, non-competitive) who are dedicated to improving their fitness through swimming. Founded in 1970, the non-profit corporation is organized with 500 clubs in 53 regions throughout the United States. Membership consists of more than 42,000 members ranging in age from 18 to over 100. Within the clubs, structured workouts (often with a coach) offer well-thought-out training assistance. Pool and open-water races provide opportunities to compete and measure individual progress at the local, state, national and international levels. USMS programs also offer stroke and technique clinics, workshops, and instruction, as well as social functions. All USMS programs are designed to help swimmers improve fitness and/or train for specific goals, and offer active support for a healthy lifestyle through friendship and camaraderie.

Community Swim and Dive Teams

Numerous communities sponsor competitive swimming and diving teams for children and teens. The purpose is to offer opportunity to enjoy the camaraderie and good healthy fun of swimming while supporting individual swimmers in achieving their personal best as well as promoting goal setting, life skills, and sportsmanship. Teams typically adhere to recognized swimming rules, swim the standard strokes, but swim shorter lengths in swim meets. Swimmers with limited or no competitive experience are provided stroke conditioning clinics as a recommended alternative. Teams are usually more active in the warmer months, and not directly associated with a national or world swim organization. Many swimmers who begin their competitive swimming experience on a local swim team proceed to join a nationally-governed team.



Pool Rental

Competitive swimmers, particularly members of independent swimming associations like USA Swimming, are accustomed to renting lane space for training as well as leasing entire facilities, either for long-term use or on a one to three day basis for special events and competitions. Although there is more than one accepted way to receive fees from swim teams, pool lane rental is usually based on a cost per lane/per hour. Entire facilities leased on a per day basis generally have a fixed schedule of costs for such use. Long-term facility leases are generally the product of negotiation and accordingly, are too varied and specialized for consideration in the context of this study. The following is an example for calculating lane rental fees using a cost per lane approach.

1. Multiply days by lane rental hours per day = lane rental annual hours
2. Divide annual expenses by square foot of pool = operation cost per square foot
3. Divide square foot by # of lanes = square foot per lane
4. Multiply operation cost per square foot by square foot per lane = cost to operate each lane
5. Divide cost to operate each lane by lane rental annual hours = lane rental fee

COST PER LANE/PER HOUR CALUCULATION										
days	lane rental hrs per day	lane rental annual hrs	pool size	sq. ft.	annual expenses	operation cost per sq. ft.	# of lanes	sq. ft. per lane	cost to operate each lane	lane rental fee
360	9	3,240	25 x 25	6250	\$ 400,000	\$ 64.00	10	625	\$ 40,000	\$ 12.35
360	9	3,240	50 meter	12500	\$ 1,000,000	\$ 80.00	22	568	\$ 45,455	\$ 14.03

Source: Counsilman-Hunsaker

Indoor Pools vs Outdoor Pools

Indoor pools and outdoor pools have very different functions in most communities. Indoor pools tend to be programmed with classes and are more likely used for fitness and competitions. Outdoor pools tend to be used more for recreation, although many summer swim teams utilize outdoor competition pools and many recreation swimmers utilize indoor leisure pools. Characteristically, outdoor pools have high recreation and entertainment features spread out over acres, whereas indoor pools offer fitness and competitive swimming year-round in compact indoor spaces.

Warm summer days are a catalyst for bringing swimmers in great numbers to seasonal pools. Plentiful pavilions and large umbrellas must provide areas safe from harmful UV rays. Outdoor elements have indirect effects on water chemistry and construction materials. Depending on the area, materials and chemicals must be chosen for durability and safety provisions. Many northern areas, with cooler night temperatures in the summer, require pool heaters, and extreme winters must have piping installed in a manner that allows for draining all the water to prevent freezing water in the piping systems.

Natatoriums offer a fun, inviting year-round environment for swimming while inherently utilizing large amounts of energy. While many factors contribute to the overall success of the facility, such as time spent master planning indoor pools as well as aquatic amenities and programming, an equal amount of time must be spent incorporating systems and equipment that will reduce energy costs of pumps, boilers, lights, and HVAC equipment. Indoor Air Quality (IAQ) includes issues such as humidity, chloramines, temperature control, and energy recovery.



SECTION 3

DEVELOPMENT CONCEPTS

Option 1: Outdoor Addition

Option 2: Combined CC


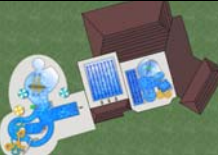

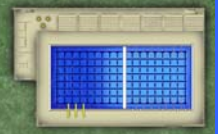
Option 3: Outdoor

Option 4: 50-Meter

Green Technology and Sustainable Construction

SECTION 3: DEVELOPMENT CONCEPTS

After detailed discussions with the steering committee and potential user groups, four facility options were identified for operational analysis. The following chart is an “at a glance” comparison of the concepts and their amenities.

CONCEPT COMPARISON	
 <p>\$6,500,000</p>	<p>Outdoor Addition Outdoor leisure pool, current channel, play feature, vortex, 2 waterslides, sprayground, pavilion, 7 shade structures.</p>
 <p>\$20,300,000</p>	<p>Combined CC Indoor 8-lane 25-yard pool, diving, 125 seats, indoor leisure pool, play feature, current channel, vortex, waterslide, spa, outdoor leisure pool, play feature, current channel, 2 waterslides, otter slide, tumble buckets, tot pool/slide, 6 shade structures.</p>
 <p>\$7,900,000</p>	<p>Outdoor Outdoor leisure pool, play feature, current channel, 2 waterslides, otter slide, tumble buckets, lily pad walk, outdoor 6-lane 25-yard pool, diving, tot pool/slide, 8 shade structures.</p>
 <p>\$17,300,000</p>	<p>Indoor 50-Meter Indoor 50-meter by 25-yard pool, movable floor, 2 bulkheads, diving, 900 spectator seats.</p>
Source: Counsilman-Hunsaker	

OPTION 1: OUTDOOR ADDITION

\$6,500,000

Option 1 includes an 8,000 square foot heated outdoor leisure pool to be added to an existing Howard County community center. Guests wishing to soak up the summer sun can laze away in the zero-depth entry or work off energy in the current channel by water walking against the current. The participatory play feature, basically a water “jungle gym” for children located in the shallow water provides crawling through tunnels, scampering through spraying water, climbing over bridges, and sliding down just-their-size waterslides. Two large waterslides offer older children, teens, and daring adults the excitement of climbing the stairs and the exhilaration of sliding down into the waiting catch pool below. A water vortex creates a play area where the imagination determines the swirling adventure or when the vortex pump is turned off, an excellent instruction space is created. The 2,000 square foot water sprayground adds delightful sprays of water while keeping children busy for hours as they zip around the colorful water play equipment. The 1,800 square foot pavilion offers an area for special events, picnics, and rentals. Seven shade structures scattered throughout transform any day into a celebration while providing a cool break from the sun. The center’s bathhouse offers locker rooms, two family changing rooms, and a snack bar.

NOT TO SCALE



CONCEPTUAL ONLY

OPINION OF PROJECT COST: OPTION 1		
Demolition		Not Included
Unit	Sq. Ft.	Opinion of Cost
Public Spaces	3,050	\$711,300
Lobby	500	
Control / Cashier	150	
Administrative Offices	100	
Snack Bar	500	
Locker Rooms	1,500	
Family Changing Room (2)	300	
Seasonal Aquatics	23,324	\$3,315,108
Recreation Pool	8,000	
Participatory Play Feature	1	
Current Channel	1	
Waterslide (A)	1	
Waterslide (B)	1	
Recreation Deck	9,600	
Spray Ground	2,000	
Pool Mechanical Room	1,350	
Pool Heaters (2)	2	
Pavilion	1,800	
Fence	560	
Overhead Lighting	21,400	
Equipment	1	
Shade Structures	7	
Efficiency	610	\$92,720
Circulation and Walls (20%)	610	
Total Building Construction Costs		4,119,128
Site Construction Costs (parking lot, landscaping, utilities, walks)		\$674,600
Subtotal		\$4,793,728
Inflation (2 year)	12.0%	\$575,247
Contingency	10.0%	\$536,898
Indirect Costs	10.0%	\$590,587
Total Estimated Project Costs:		\$6,496,460
Say		\$6,500,000
Source: Counsilman Hunsaker		



OPTION 2: COMBINED WITH COMMUNITY CENTER (CC)

\$20,300,000

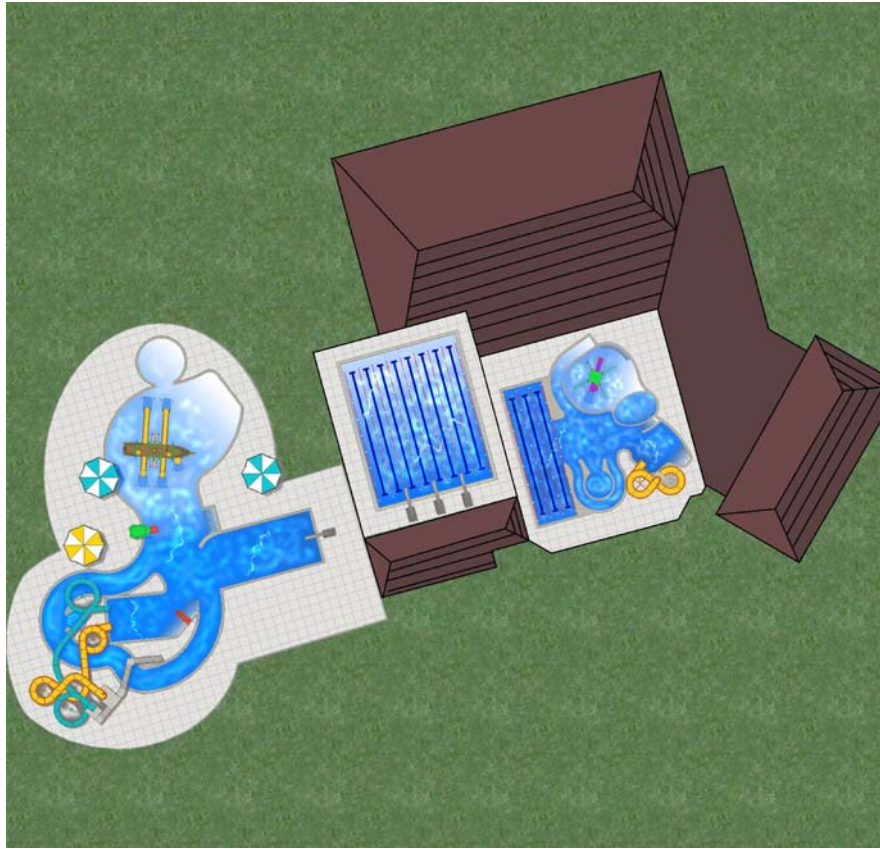
Option 2 features an aquatic center with year-round indoor swimming and outdoor action for those who wish to swim recreationally in the summer.

The natatorium includes both recreation and competitive pools. The competitive component offers an 8-lane 25-yard pool with springboard diving and 125 spectator seats. This traditional pool provides year-round lesson programming, fitness lap swimming, water exercise/aerobics, and competitive swimming and diving. Those yearning for pure relaxation can indulge in the warm water spa, a sanctuary for soothing muscles. The indoor recreation component includes a 5,800 square foot leisure pool with zero-depth entry. Children can climb, crawl, and slide down the participatory play feature. A current channel provides a serene journey for all ages or a great way to water walk with or against the current. The water vortex, a unique area in the pool, propels water in a circular motion. A waterslide offers teens and adventurous families the excitement of plunging into the water.

Guests wishing to soak up the summer sun will enjoy the outdoor 9,200 square foot zero-depth entry leisure pool. Two waterslides supply thrills and spills for older kids, teens, and daring adults while an otter slide is just right for the in-between kids who are too big for the kiddie slides but too small for the large waterslides. The participatory play feature with spraying water, tunnels, and waterslide keeps little ones busy while tumble buckets fill up and splash down onto delighted children waiting below. For a tranquil journey, guests can float the current channel where water travels at approximately three miles per hour or they can use it as water walking fitness class or non-programmed exercise setting. Howard County's youngest guests will enjoy an opportunity to become acquainted with aquatics in an age appropriate tot pool and slide, tucked securely out of the more active areas. Six vibrant shade structures offer a reprieve from the sun-drenched activities. The center's bathhouse offers locker rooms, two family changing rooms, and a concession area.



NOT TO SCALE



CONCEPTUAL ONLY



OPINION OF PROJECT COST: OPTION 2		
Demolition		Not Included
Unit	Sq. Ft.	Opinion of Cost
Public Spaces	3,200	\$722,700
Control / Cashier	400	
Administrative Offices (2)	400	
Vending / Concession Area	450	
Locker Rooms	1,800	
Family Changing Room (2)	150	
Natorium	24,000	\$7,681,100
Lap Pool (8 Lane 25 Yard)	4,500	
Springboard Diving	3	
Recreation Pool (3 Lanes)	5,800	
Participatory Play Feature	1	
Current Channel	1	
Vortex	1	
Waterslide	1	
Spa	300	
Natorium	21,200	
Seating (125 seats)	750	
Pool Mechanical Room	1,300	
Storage	750	
Outdoor Aquatics	26,760	\$3,360,750
Seasonal Bathhouse	3,000	
Leisure Pool	9,200	
Waterslide (A)	1	
Waterslide (B)	1	
Participatory Play Feature	1	
Otter Slide	1	
Tumble Bucket	1	
Current River	1	
Tot Pool	700	
UV Sanitizer	1	
Slide	1	
Pool Heater	1	



Unit	Sq. Ft.	Opinion of Cost
Building Support	1,400	\$394,600
Building Mechanical	800	
Electrical	500	
Janitor	100	
Furnishings & Equipment	1	
Support		\$298,700
Outdoor Deck	13,860	
Fence	617	
Overhead Lighting	23,760	
Shade Structures	6	
Efficiency	6,320	\$960,640
Circulation and Walls (20%)	6,320	
Total Building Construction Costs		13,418,490
Site Construction Costs (Parking Lot, Landscaping, Utilities)		\$1,542,000
Land Acquisition		Not Included
Subtotal		\$14,960,490
Inflation (2 year)	12%	\$1,795,259
Contingency	10%	\$1,675,575
Indirect Costs	10%	\$1,843,132
Total Estimated Project Costs:		\$20,274,455
Say		\$20,300,000
Source: Counsilman Hunsaker		



OPTION 3: OUTDOOR

\$7,900,000

Upon entering the open-air lobby, guests can survey the pool area beyond, deciphering what all there is to dive into, splash around in, and relax in. The outdoor 9,200 square foot leisure pool embodies the ultimate in barefoot fun. Zero-depth entry offers a congregating area complete with a participatory play feature for children to exert lots of action. Two waterslides plunge riders into the waiting pool below while the otter slide entertains “in-between” kids. Tumble buckets refresh by spontaneously splashing cool water onto those waiting underneath, and few kids can resist the lily pad walk where an adventurous jaunt across the water calls. The current channel provides a lazy summer day’s floating experience or a water walking excursion. Competitive and fitness swimmers will enjoy the outdoor 6-lane 25-yard lap pool with diving where a myriad of competitive activities and fitness programs for all ages takes place. Tiny tots will safely enjoy their own separate tot pool with slide and eight festive shade structures invite guests respite from the sunshine while savoring the ambience. The center’s bathhouse offers locker rooms, two family changing rooms, and a snack bar.

NOT TO SCALE



CONCEPTUAL ONLY



OPINION OF PROJECT COST: OPTION 3		
Demolition		Not Included
Unit	Sq. Ft.	Opinion of Cost
Bathhouse	5,430	\$1,019,110
Lobby	100	
Managers Office	125	
Guard Room / First Aid	100	
Pool Mechanical	1,300	
Building Mechanical	200	
Storage	700	
Locker Rooms	1,400	
Family Changing Room (2)	150	
Snack Bar	450	
Efficiency	905	
Aquatics	13,275	\$3,370,700
Leisure Pool	9,200	
Waterslide (A)	1	
Waterslide (B)	1	
Participatory Play Feature	1	
Otter Slide	1	
Tumble Bucket	1	
Current River	3	
Lilly Pad Walk	6	
Lap Pool (6 Lane 25 Yard)	3,375	
Diving Board	2	
Tot Pool	700	
Slide	1	
Pool Heater (2)	2	
Support		\$550,994
Outdoor Deck	15,930	
Fence	634	
Overhead Lighting	29,205	
Equipment	1	
Shade Structures	8	
Total Building Construction Costs		4,940,804
Site Construction Costs (Parking Lot, Landscaping, Utilities)		\$865,875
Land Acquisition		Not Included
Subtotal		\$5,806,679
Inflation (2 year)	12%	\$696,801
Contingency	10%	\$650,348
Indirect Costs	10%	\$715,383
Total Estimated Project Costs:		\$7,869,211
Say		\$7,900,000
Source: Counsilman Hunsaker		

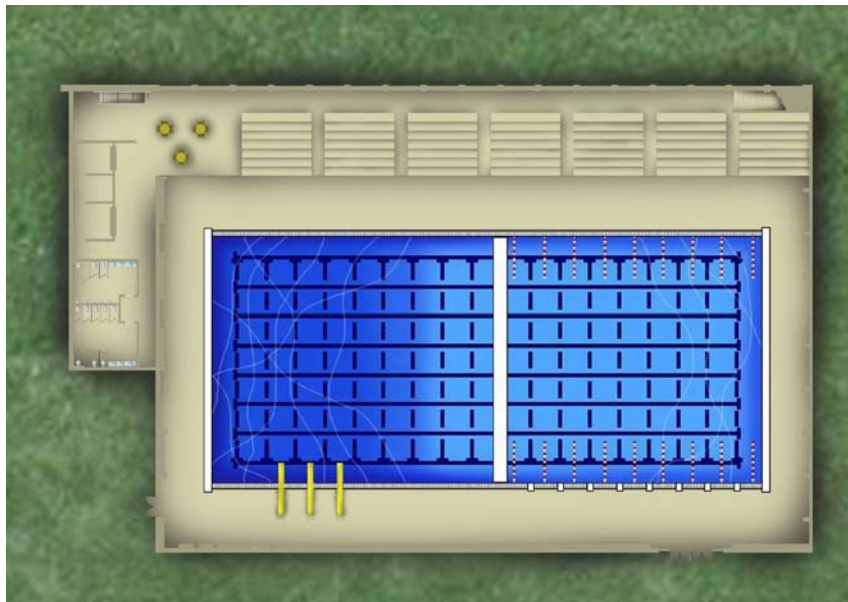


OPTION 4: 50-METER

\$17,300,000

Option 4 features a climate-controlled natatorium offering a light-filled swimming experience designed to meet the needs of championship swimming events. The 50-meter by 25-yard Olympic-sized pool, the serious swimmers' milieu of choice, also features bulkheads to provide the versatility of accommodating short- or long-course meets. A movable floor can alter water depth for various lessons and fitness activities while three springboards provide diving opportunities. A snack bar offers drinks and snacks just a few steps away from 900 spectator seats. Also provided are locker rooms, a lifeguard timing room, meeting room, and family changing room.

NOT TO SCALE



CONCEPTUAL ONLY

OPINION OF PROJECT COST: OPTION 4		
Demolition		Not Included
Unit	Sq. Ft.	Opinion of Cost
Public Spaces	6,300	\$1,332,600
Lobby	2,000	
Administrative	900	
Lifeguard / Timing	250	
Meeting Room	700	
Locker Rooms	1,400	
Family Changing Room	400	
Public Restrooms	450	
Snack Bar	200	
Natorium	27,300	\$8,926,160
50 Meter X 25 Yards	12,920	
Moveable Floor	1	
Bulkhead	2	
Springboard Diving	3	
Natorium	20,200	
Spectator Seating (900)	4,500	
Pool Mechanical & Chemical	1,600	
Pool Storage	1,000	
Building Support	2,200	\$514,200
Building Mechanical	2,000	
Janitor	200	
Furnishings & Equipment	1	
Efficiency	7,160	\$1,088,320
Circulation and Walls (20%)	7,160	
Total Building Construction Costs		\$11,861,280
Site Construction Costs (Parking Lot, Landscaping, Utilities)		\$859,200
Land Acquisition		Not Included
Subtotal		\$12,720,480
Inflation (2 year)	12%	\$1,526,458
Indirect Costs	10%	\$1,424,694
Contingency	10%	\$1,567,163
Total Estimated Project Costs:		\$17,238,794
Say		\$17,300,000
Source: Counsilman Hunsaker		



Green Technology and Sustainable Construction

Twenty years ago the UN World Commission on the Environment and Development provided the first definition of the term “sustainable development” as that which “meets the needs of the present without compromising the ability of future generations to meet their own needs”. In the year 2000, the United States Green Building Council (USGBC) developed Leadership in Energy & Environmental Design (LEED) to rate new construction and major renovation projects. As many buildings are becoming LEED certified, momentum is escalating as aquatic design teams incorporate green components into their designs.

Building a “green” pool as in user well-being and environmentally intelligent benefits a healthier atmosphere for swimmers and the environment and can substantially lower operating costs through water conservation and energy efficiency. With operations impacted by rising costs of utilities, chemicals, and maintenance, the aquatic industry is embracing environmentally responsible methods.

LEED uses established and innovative practices, standards, and technologies to provide a voluntary, consensus-based national standard for green building. As a catalyst for justifiable credits to reduce environment exploitation and occupant safety, prerequisites and credits add up to four levels of award certification that can lead to tax credits: Certified (26-32 points), Silver (33-38 points), Gold (39-51 points), and Platinum (52-69 points). Credits are based on:

- Sustainable Sites
- Water Efficiency
- Energy Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Innovation and Design Process

Not related to aquatic facilities, however, the following U.S. Green Building Council research is helpful in understanding the costs and advantages of designing a LEED certified building.

Cost of LEED (based on a sampling of 40 constructed buildings)

6.8%	Platinum
2.2%	Gold
1.9%	Silver
0.6%	Certified

Advantages of LEED

8 - 9%	decrease in operating costs
7.5%	increase in building values
6.6%	improvement in ROI
3.5%	increase in occupancy
3.0%	rent increase



Aquatic design goals include maximizing sustainable design for efficient operation and being responsible in using natural resources that include:

- Reduce waste sent to landfills
- Lower operating costs and increased asset value
- Conserve energy and water
- Healthier and safer for occupants
- Reduce harmful greenhouse gas emissions
- Qualify for tax rebates, zoning allowances and other incentives in hundreds of cities
- Demonstrate an owner's commitment to environmental stewardship

Investing in high efficiency equipment to support amenities will result in over a 15 to 20-year payback.

Sustainable Sites

Strategies include a comprehensive design analysis related to biodiversity, site preservation, and encroachment issues. Site selection addresses physical intrusion on natural environments. Designers and engineers work together to minimize earth moving erosion problems that prevent impacts on water and air quality while designing pools with minimal footprint. Reduced site disturbance involves designers and engineers to view existing site conditions as naturally occurring elements. For example, boulders, trees, and natural elevations can be used to accentuate an outdoor aquatic center's features or used as sweeping views from inside a natatorium while keeping areas intact for ecological integrity. Development density promotes the reuse of urban sites where utility infrastructure and ingress/egress from previous development exists as well as sites near public transit. As these sites have already been disturbed, this preserves green fields, specie habitats, and natural resources in undisturbed areas.

Water Efficiency

The "water conservation revolution" can result in rapid reimbursement in the pool industry by using innovative wastewater technologies. Stormwater management can be added into the design for the pool waste water treatment system to reuse stormwater in non-potable means such as landscape irrigation, toilet/urinal flushing, and custodial uses. This also includes water conservation infrastructure such as using filter systems that use less water. For example, a high rate sand filtration system's typical backwash is 5,000 gallons of water per filter in automatic, semi-automatic, and manual pressure system operations. By using a Neptune Benson or a Nemato Filtration System, a typical backwash is only 200 gallons. Other benefits include its compact size (minimal footprint), effective filtration with 2 to 3 micron removal capacity, and long filter runs that dramatically reduce water, chemical, and energy demand. Its superior water quality with the ability to handle heavy bather loads reduces maintenance costs.

Moreover, water use reduction uses water-free urinals, water efficient fixtures to reduce wastewater volumes, and low-flow toilets (old toilets use 3.5 to 5 gallons per flush). New toilets, by law, cannot use more than 1.6 gallons per flush. Water level control devices avoid dilution (sending chemical water to waste). Using high efficiency fixtures and sensors can reduce potable water demand by 20%. Consideration can also be used in less frequent backwashing; reusing the pool wastewater from backwashing and deck drains for flushing toilets in the bathhouse; and using water-efficient landscaping with native, drought-resistant grasses, shrubs, trees, plants and perennials with mulch to retain moisture.

Energy Atmosphere

As rising climactic temperatures impact energy costs, energy-management practices and energy-efficient equipment can reduce energy costs. To optimize energy performance, maximizing pump and motor efficiencies can be achieved by installing metering equipment for pool fill lines, waste lines, pump motors, pool heaters, pool chemistry controllers, etc. The metering equipment provides accuracy performance and the thwarting of possible leaks. Renewable energy involves harvesting 5-20% of total energy use from renewable sources: wind, geothermal, and solar. Engineers and designers can specify



maximum efficient pool heaters, variable frequency drive motors, and solar or geothermal pool water heating. The utilization of a pool cover at around a \$1.60 per square foot plus the cost of reels conserves energy consumption by retaining heated water during the night.

Materials & Resources

It is important to consider alternative materials that save on landfills while protecting raw material depletion. By adopting the use of environmentally responsible LEED-compliant materials, green building methods practice the science of reduce, reuse, and recycle. Considerations must be taken to allow time for special ordering and unique structural requirements that may be necessary. Resource reuse involves the professional design team to specify plastics that have a percentage of regrind in lieu of virgin material, but still meet design specification / requirements. Recycled content involves the specification of using recycled metals that meet design specification / requirements, building product materials with recycled content, and product materials that are manufactured regionally. By using these materials, transportation costs are saved (plus cleaner air) and the local economy is supported.

Indoor Environmental Quality (IEQ)

IEQ includes controlling contaminants and minimizing pool water evaporation by controlling the indoor pool environment. Initial investment in designing and maintaining sound carbon dioxide monitoring prevents serious IEQ problems. This is accomplished by installing a permanent CO₂ monitoring system in indoor pool spaces. Ventilation effectiveness involves the mechanical engineer to design the indoor pool environment to have mechanically ventilated spaces in air change effectiveness greater than or equal to 0.9. Thermal comfort includes installing a permanent temperature and humidity monitoring system in the pool building, including humidity control within established ranges per climate zone for pool building, pool mechanical and chemical spaces. To provide optimal air quality, automatic sensors and controls can be integrated with the HVAC system to adjust temperature, humidity, and the percentage of outside air introduced to the natatorium.

Another way to achieve indoor environmental quality is through installing an ultraviolet (UV) light system for purifying pool water. A UV system may provide a 10% reduction in chemical consumption and extend the life of the air handling system by 10-15 years. Benefits include:

- UV is effective against all micro-organisms
- Improves air quality in natatorium
- Improves water quality with less chloramines
- Chloramines (combined chlorine) reduced to below 0.2 parts per million (ppm)
- Treats total water flow
- Reduces or eliminates need to superchlorinate
- UV is not hazardous
- Simple and reliable
- No daily maintenance
- Minimal space requirements



Innovation & Design Process

Pool designers and engineers continue to improve innovation in design and systems. One way is through on-site chlorine generation or Saline. This newer pool sanitizing technology minimizes the necessity for deliveries and handling of chemicals. Benefits include:

- Safer handling and storage
- Easier maintenance
- Lower operating cost
- 3,000 ppm of salt (ocean 35,000 ppm)
 - Less than a teardrop
 - Less than saline solution
 - Not really soft water, just closer to our body makeup
- Only corrosive if salt level gets to 6,000 ppm or higher
- Minimal space requirements

By getting involved and asking design teams questions during the programming and design phase, LEED technology can be determined if appropriate for the project. Success entails a culmination of effort from architects, pool designers, engineers, facility planners, municipal government officials, school officials, maintenance crews, management, and public involvement. It is vital that all interested parties come together and commit to the environmental stewardship of the green aquatic center before, during, and after it is built. The key to wider use is greater public awareness and continued solutions for wider practice so that future generations (both eco and human) will enjoy and endure water on the earth.

The options in this study do not limit the ability to take advantage of these sustainable design practices.



SECTION 4

POPULATION CHARACTERISTICS

Population

Income

Age Distribution

Weather

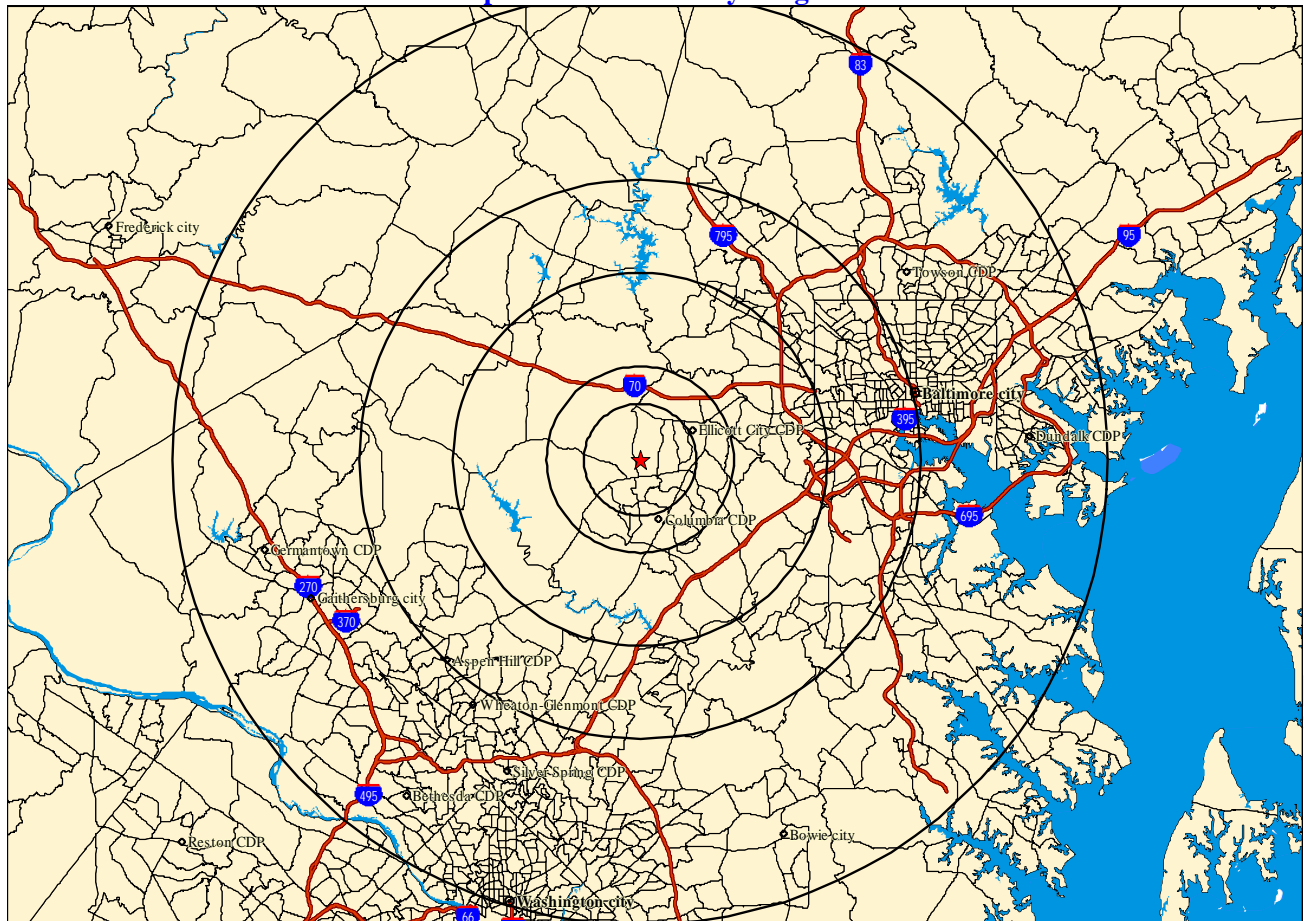
SECTION 4: POPULATION CHARACTERISTICS

Factors that influence attendance of aquatic centers include projections for growth/decline of population, income levels, and age groups. Market studies are used to predict how relevant products, services and fees are to residents. The primary market area for Howard County was defined as a 25-mile radius, which would equate from the center of the county. Within those 25 mile, the rate of market penetration will be highest among community residents residing closest to the facility. To further define this market area, the facility's service area is assumed as a 5-mile radius around the project site. A service area is defined by the distance a patron will travel on a regular basis to a given activity. Training and competition users will customarily drive farther to use a facility than will leisure and fitness users. Thus, a study of demographic patterns in the area is helpful in projecting usage rates. The resident market area for the proposed facility has been divided into the following rings:

Distance From Site

- 0 to 3 Miles
- 3 to 5 Miles
- 5 to 10 Miles
- 10 to 15 Miles
- 15 to 25 Miles

Map of Howard County Rings



Source: DemographicsNow



Population

The following table presents a summary of market area population for Howard County. The 2000 Census was used to estimate the population for 2007 and projections for 2012. The population base for Howard County is projected to increase from 277,600 in 2007 to 296,400 in 2012. Areas (rings) analyzed according to radii surrounding the center of Howard County show that the total market (25-miles surrounding the county's center point) are projected to increase in population.

Distance from County Center	POPULATION BY DISTANCE									
	2000		2007		2012		Average Annual Change			
	Number (000's)	Percent of Total	Number (000's)	Percent of Total	Number (000's)	Percent of Total	Number (000's)	Percent	Number (000's)	Percent
0 to 3 Miles	47.9	1.3%	52.9	1.3%	56.1	1.4%	0.7	1.4%	0.6	1.2%
3 to 5 Miles	80.9	2.1%	88.9	2.2%	93.9	2.3%	1.1	1.4%	1.0	1.1%
5 to 10 Miles	267.5	7.0%	290.3	7.3%	305.8	7.4%	3.3	1.2%	3.1	1.0%
Subtotal	396.2	10.4%	432.1	10.9%	455.7	11.1%	5.1	1.2%	4.7	1.1%
10 to 15 Miles	819.2	21.6%	853.2	21.5%	880.9	21.4%	4.9	0.6%	5.5	0.6%
15 to 25 Miles	2,582.0	68.0%	2,691.5	67.7%	2,771.7	67.5%	15.6	0.6%	16.0	0.6%
Subtotal	3,401.2	89.6%	3,544.8	89.1%	3,652.7	88.9%	20.5	0.6%	21.6	0.6%
Total (0-25 Miles)	3,797.4	100.0%	3,976.9	100.0%	4,108.4	100.0%	25.6	0.7%	26.3	0.7%
Howard County	247.8		277.6		296.4		4.2	1.6%	3.8	1.3%

Source: DemographicsNow

Mosaic Types

Of the population in Howard County, 25.8% participate in swimming as compared to the U.S. national average of 18.8%. Howard County population characteristics consist of the following types as compared to the U.S. national averages.

	Howard County	U.S.
Affluent Suburbia	53%	12%
Upscale America	22%	11%
Small Town Contentment	14%	11%
Metro Fringe	6%	11%
American Diversity	1%	10%
Rural Villages & Farms	1%	10%
Aspiring Contemporaries	3%	9%
Struggling Societies	0%	7%
Urban Essence	0%	7%
Blue-Collar Backbone	0%	6%
Remote America	0%	6%
Varying Lifestyles	1%	1%
	100%	100%

Source: DemographicsNow



The following describes the main groups that comprise Howard County.

Affluent Suburbia (53%) represents the wealthiest households in the nation, outranking all other Mosaic Groups in terms of household income, home value, and educational achievement. Concentrated in exclusive suburban neighborhoods, these households are predominantly college educated typically working in managerial and executive positions with six-figure-plus incomes. They enjoy fashionable homes and belong to country clubs, travel abroad and go sailing, golfing, and skiing. Many are culture buffs who attend the theater, art shows, dance performances and concerts.

Upscale America (22%) is comprised of college educated executives and white-collar professionals living in metropolitan sprawl, earning upscale incomes. They enjoy large homes and very active lifestyles. Leisure pursuits include jogging, biking, and swimming. They are active in community affairs, business clubs, environmental groups, and art associations.

Small-Town Contentment (14%) represents middle-aged and upper middle-class families living in satellite towns and cities. With a split between college degrees and moderate education, they are employed in well-paying white-collar, blue-collar, administrative and service professions. While living right outside major metros, these households live in nice homes and enjoy tennis, swimming, hiking, and camping. They commute to nearby cities to enjoy sporting events, nightclubs, and upscale malls.

Metro Fringe (6%) is a collection of racially mixed, lower middle-class located primarily in satellite cities. Many of the group's households consist of young singles and couples who work at blue-collar and service industry jobs. They tend to live in older single-family homes, semidetached houses, and low-rise apartments. Overall, this group is relatively active in soccer and softball, rollerblading and skateboarding, go-carting and video gaming.

Aspiring Contemporaries (3%) are filled with upward strivers. The households tend to be young Generation Xers between 18 and 34 years old, ethnically diverse (about 40 percent are minorities) and unattached (about two-thirds are single or divorced). Yet despite traditional barriers to affluence, the members of these metropolitan types are already solidly middleclass. Many live in relatively new homes or apartments valued at more than the national average – a reliable sign of upward mobility. They are culture buffs who like to see plays, movies, comics and live bands.

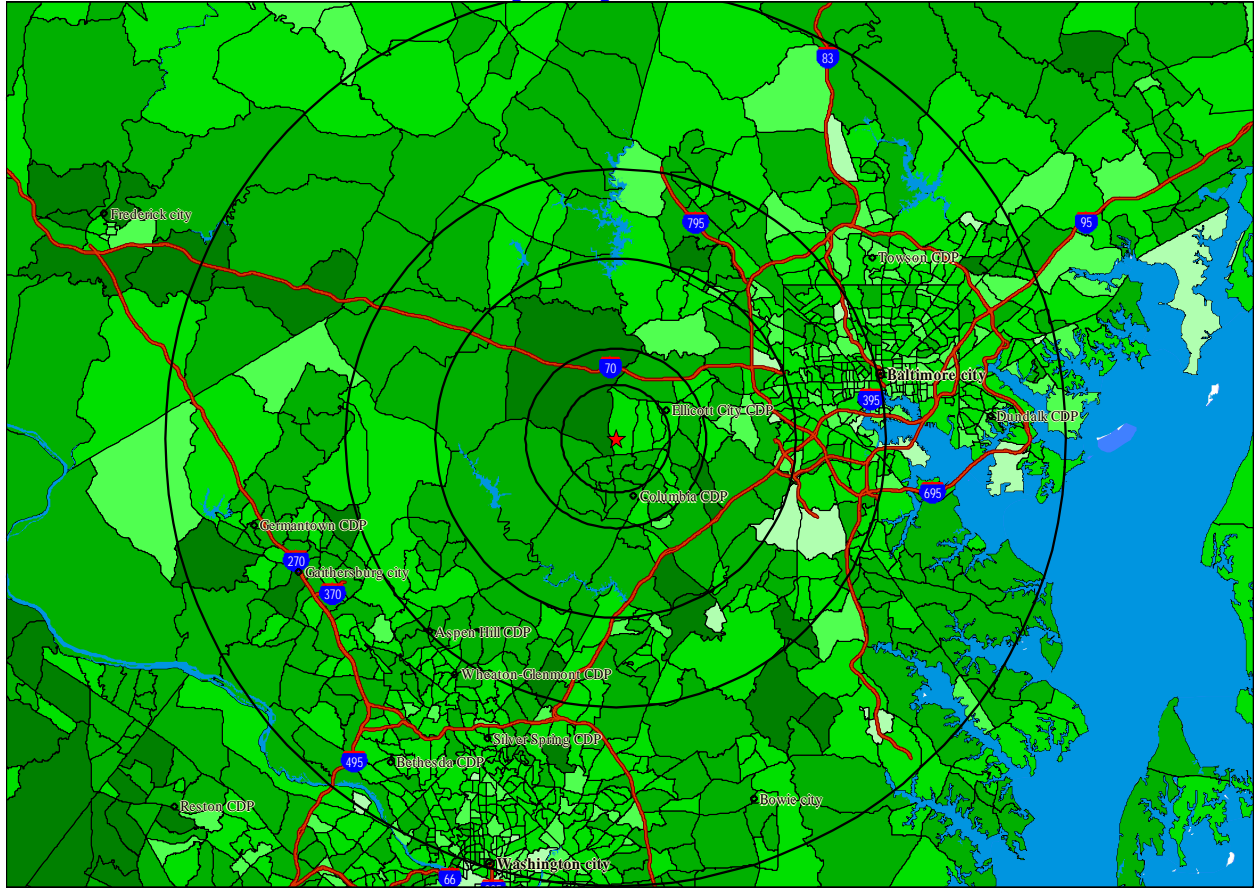
American Diversity (1%) is a contrasting ethnic mix of middle-aged couples, singles and retirees. With a few exceptions, this Mosaic Group consists of households with average educations and middle-class incomes from blue-collar and service industry jobs. Many are older Americans who have already exited the workplace. They tend to have unassuming lifestyles, read books and newspapers, go to movies and plays, and socialize through fraternal orders and veterans clubs.

Rural Villages and Farms (1%) represent America's agricultural and mining communities, filled with middle-class families and couples of varied ages. Most of these households are married and are high school educated. They maintain tranquil lifestyles in unpretentious houses and comfortable mobile homes. They share a fondness for fishing, hunting, camping, motor sports, and attending country-western concerts. Many residents are do-it-yourselfers and enjoy woodworking and needlework.

Varying Lifestyles (1%) live in group quarters such as the military and university dorm life. Those who have the ability are more likely than average Americans to visit museums, zoos and state fairs. They like to stay active in aerobic exercise, hiking, bowling, tennis, baseball, and volleyball. They are frequent travelers who vacation abroad as well as within the United States.










Map of Population (2007)



Source: DemographicsNow

Key:

-  Census Tracts
-  Above 11250
-  5400 to 11250
-  2550 to 5400
-  1225 to 2550
-  Below 1225
-  No Data



Income

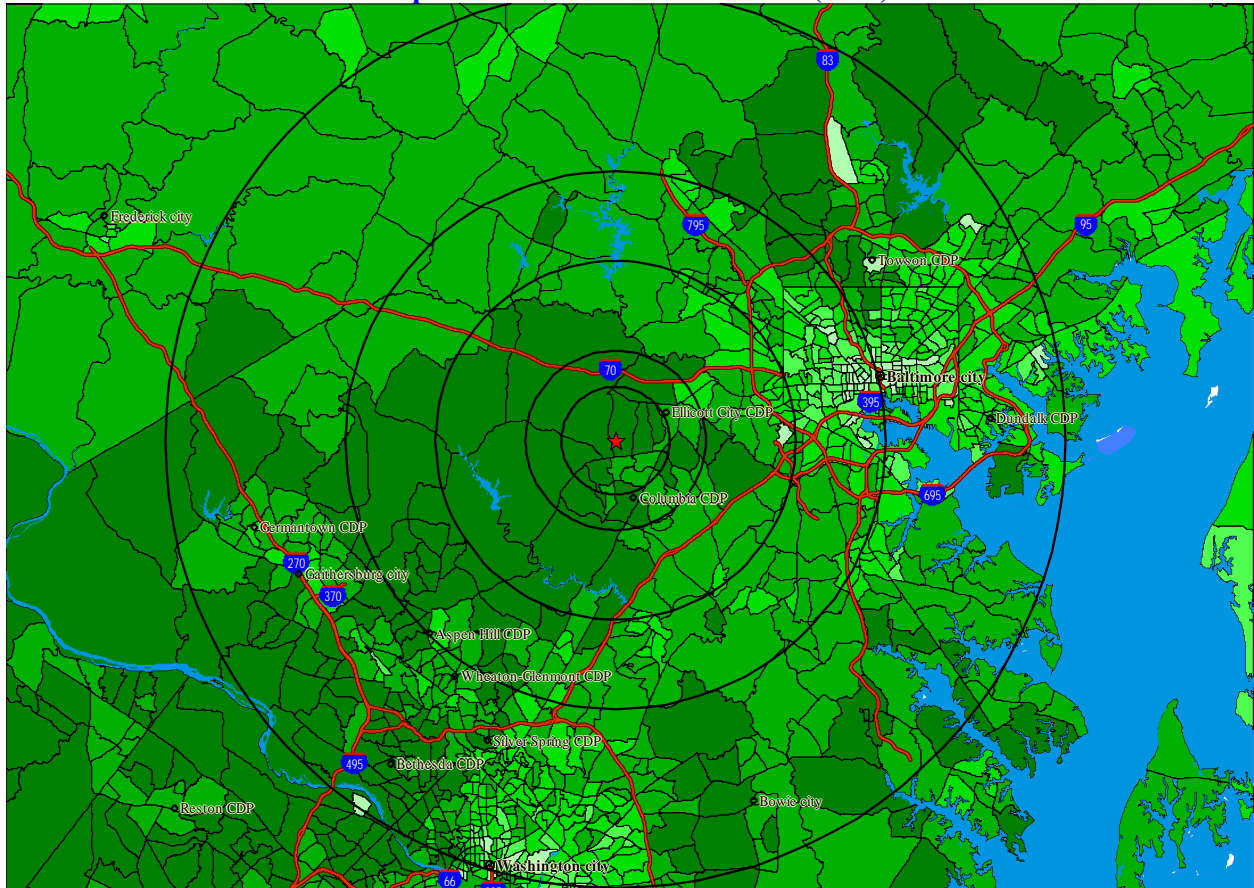
To a certain degree, the likelihood of residents to use county aquatic facilities depends on their ability to pay admission and program fees. In the following table, the U.S. national average is set at 1.00. Index refers to the percentage higher or lower than the national average.

MARKET AREA INCOME				
	Per Capita Income		Median Household Income	
	Dollars	Index	Dollars	Index
3 Miles	\$46,923	1.86	\$89,904	1.74
5 Miles	\$44,059	1.75	\$92,200	1.78
10 Miles	\$37,517	1.49	\$79,161	1.53
15 Miles	\$31,546	1.25	\$63,722	1.23
25 Miles	\$33,677	1.33	\$64,998	1.26
Howard County	\$42,233	1.67	\$90,934	1.76
TOTAL U.S.	\$25,232	1.00	\$51,680	1.00
Source: DemographicsNow				

Howard County is 67% higher than the national average regarding resident per capita income and 76% higher regarding median household income. Income analysis reveals that this market area has above national average incomes.










Map of Median Household Income (2007)



Source: DemographicsNow

Key:

-  Census Tracts
-  Above 98000
-  61000 to 98000
-  38500 to 61000
-  24000 to 38500
-  Below 24000
-  No Data



Age Distribution

Age distribution is another population characteristic used to determine the type and level of use of any type of program. Research has shown that younger age groups are more likely to engage in competitive and recreational activities, while middle-aged and older patrons enjoy wellness and fitness programming. The following table provides the number of residents and the percentage of total population for each age group compared to the U.S. column, which identifies national averages for each age group.

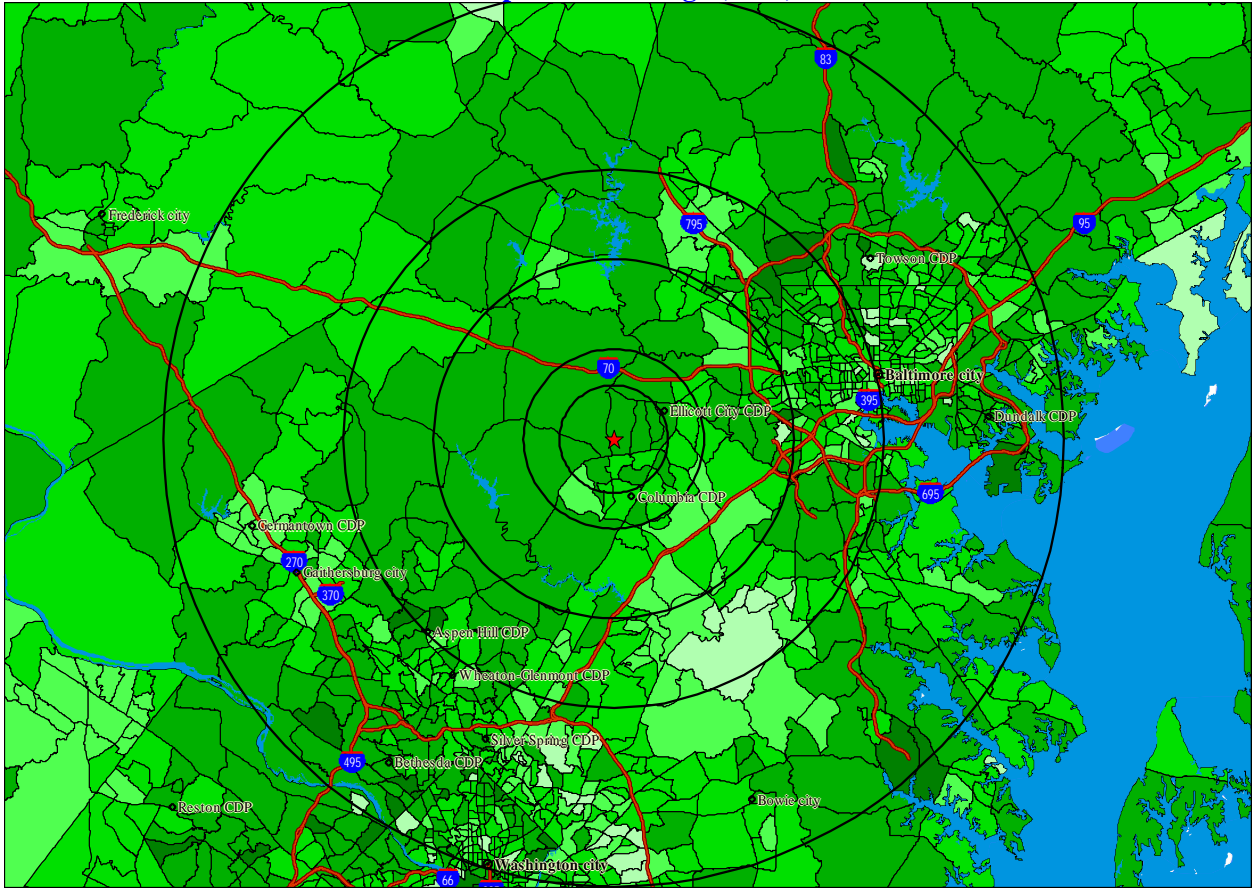
AGE DISTRIBUTION													
Age Groups	0-3 Miles		3-5 Miles		5-10 Miles		10-15 Miles		15-25 Miles		Howard County		U.S. Age Population
	#	%	#	%	#	%	#	%	#	%	#	%	
Under 5	2,740	5.2%	5,624	6.3%	19,331	6.7%	61,110	7.2%	187,347	7.0%	18,103	6.5%	6.8%
5 to 9	3,114	5.9%	6,244	7.0%	19,351	6.7%	57,819	6.8%	172,890	6.4%	19,219	6.9%	7.3%
10 to 14	3,816	7.2%	6,839	7.7%	20,045	7.0%	58,329	6.8%	175,135	6.5%	21,150	7.6%	7.3%
15 to 19	3,999	7.6%	6,740	7.6%	20,905	7.3%	58,314	6.8%	183,290	6.8%	20,605	7.4%	7.2%
Subtotal	13,669	25.8%	25,447	28.6%	79,632	27.7%	235,572	27.6%	718,662	26.7%	79,077	28.5%	28.6%
20 to 24	3,435	6.5%	5,191	5.8%	19,686	6.8%	56,777	6.7%	185,632	6.9%	17,327	6.2%	6.7%
25 to 34	5,501	10.4%	8,789	9.9%	34,706	12.1%	109,265	12.8%	358,621	13.3%	31,220	11.2%	14.2%
35 to 44	7,249	13.7%	13,867	15.6%	46,344	16.1%	121,446	14.2%	399,773	14.9%	44,503	16.0%	16.0%
45 to 54	9,714	18.4%	15,232	17.1%	44,383	15.4%	125,922	14.8%	402,442	15.0%	46,557	16.8%	13.4%
55 to 64	7,742	14.6%	10,691	12.0%	30,729	10.7%	96,497	11.3%	299,844	11.1%	32,684	11.8%	8.6%
65 to 74	3,386	6.4%	5,326	6.0%	16,182	5.6%	54,912	6.4%	169,718	6.3%	15,579	5.6%	6.5%
75 to 84	1,597	3.0%	2,931	3.3%	10,458	3.6%	35,383	4.1%	107,410	4.0%	7,639	2.8%	4.4%
85 and over	619	1.2%	1,440	1.6%	5,312	1.8%	17,509	2.1%	49,560	1.8%	2,968	1.1%	1.5%
TOTAL:	52,912	100.0%	88,914	100.0%	287,432	100.0%	853,283	100.0%	2,691,662	100.0%	277,554	100.0%	100%
Median Age	41.0		39.8		37.8		37.4		37.3		37.9		35.3

Source: DemographicsNow

The 0-17 age group, as a percentage of population, is near the national average in Howard County with 79,077 children (28.5% of the total population). Median age in Howard County is 37.9 compared to the national average of 35.3. Higher than national averages appear in the 45-54 age group and the 55-64 age group in Howard County.










Map of Median Age (2007)



Source: DemographicsNow

Key:

-  Census Tracts
-  Above 48.5
-  40.5 to 48.5
-  34 to 40.5
-  28.5 to 34
-  Below 28.5
-  No Data



Weather

Given the sensitivity of water sports to weather conditions, it is appropriate to include an assessment of local weather patterns in the market analysis. These factors are used when determining user days in the financial models.

CLIMATOLOGICAL DATA					
Month	Temperatures			Precipitation	Precipitation
	Average	High	Low	Inches	Days
January	33	41	24	3.0	10
February	36	44	26	3.0	9
March	44	53	34	3.8	11
April	54	65	43	3.1	11
May	64	74	53	3.6	11
June	73	83	62	3.5	9
July	78	88	67	3.8	9
August	76	85	66	4.0	9
September	69	79	58	3.5	8
October	57	68	46	3.0	7
November	47	56	37	3.2	9
December	37	45	28	3.3	9

Source: Weatherbase

The weather patterns suggested in the above figures will not inhibit participation in seasonal aquatics. In fact, temperatures in the 80s will promote use at outdoor pools.



SECTION 5

AREA PROVIDER ANALYSIS

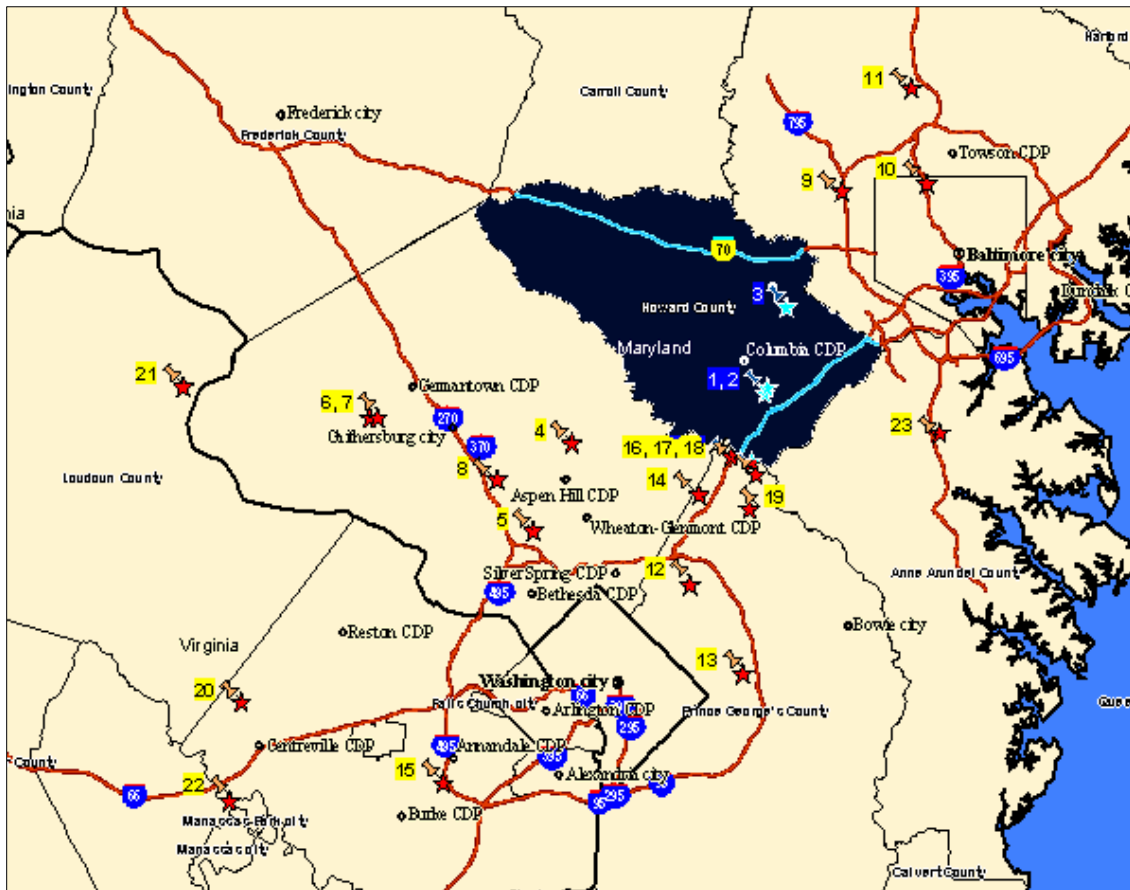
Howard County
Montgomery County
Baltimore County
Prince George's County
Fairfax County
Loudoun County
Prince William County
Anne Arundel County
Area Benchmark Facility



SECTION 5: AREA PROVIDER ANALYSIS

The leisure industry is a competitive market vying for discretionary income driven by population trends, income levels, and demographic profiles. In order to assess performance in the recreation market, reported here is a sample of aquatic facilities within the vicinity. The county's goal is not to compete for services, but to deliver high quality programs at a reasonable cost to taxpayers. The following information is used to locate gaps in programs and services in the area.

Map of Area Providers



Source: DemographicsNow

Howard County

1. Supreme Sports Club

7080 Deepage Dr.
Columbia, MD 21045
410.730.1802

Supreme Sports Club	
Aquatic Amenities	
Indoor 8-Lane 25-Yard Pool	
2 Movable Bulkheads	
Indoor Wading Pool	
Spa	
Membership Resident:	
Individual	\$200
Family	\$305
Membership Nonresident:	
Individual	\$430
Family	\$650
Daily Fee Columbia Resident:	
Adult	\$8
Child	\$5

Columbia Association (CA), formally known as the Columbia Park and Recreation Association, is a major provider of 27 aquatic facilities for homeowners in Columbia, Maryland. Non-Columbia residents can swim at CA pools only if they are a guest of a member or become a nonresident member, which is more than double the price of the resident membership fee. A guest living on CPRA assessed property / Howard County may have a total of six visits per year, to any CA facility; however, guests not living in the area may be admitted as often as they choose. Guest passes may be purchased in groups of 5 (\$50) or 10 (\$80). Columbia residents, who are not members, may pay a daily fee to swim. Admission for nonmember residents of Columbia or people who work full-time on property protected by Columbia Association covenants is \$8 for adults and \$5 for children. Supreme Sports Club (an older sports-type club) features the main 8-lane 25-yard indoor pool geared to competitive/lap swimming that was added in the 1980s. The pool includes a Vacuum DE system and high rate sand filtration for the

wading pool and spa. Programs include lap swimming, swim lessons, swim team, triathlon practice, and water aerobics. This facility is well-suited for recreational swimming. Membership rates are available for all residents in the greater Howard County area. Annual cost of operation for this facility is \$142,000.

Columbia Association 27 Pools

All CA pools have a main pool, a children's wading pool, and are furnished with lounges, chairs, tables, umbrellas, and restroom/changing areas. Additional amenities are listed. Membership fees are reflected in the above table.

1. Athletic Club

5435 Beaverkill Road
Columbia, MD 21044
410.730.6744

2. Bryant Woods

10451 Green Mountain Circle
Columbia, MD 21044
410.730.5326

6 lanes, adjacent tot lot and basketball courts, hot tub, many shaded areas.

3. Clary's Forest

11615 Little Patuxent Parkway
Columbia, MD 21044
410.964.0805



6 lanes, beach entry, hot tub, sand volleyball, mushroom fountain in beach entry, snack bar, handicap accessible, birthday parties offered, shade structures.

4. Clemens

6400 Martin Road
Columbia, MD 21044
410.997.4214

8 lanes, snack bar, adjacent softball and soccer field, large slide in main pool, shade structures.

5. Columbia Gym

6151 Day Long Drive
Clarksville, MD 21029
410.531.0800

6. Dasher

6805 Cradlerock Way
Columbia, MD 21045
410.381.1461

8 lanes, sand volleyball, hot tub, shade structures.

7. Dickinson

7425 Weatherworn Way
Columbia, MD 21046
410.381.3080

6 lanes, beach entry, sand volleyball, snack bar, mushroom feature in beach entry, bubble fountain in baby pool, handicap accessible, birthday parties offered, twin slides in main pool, shade structures.

8. Dorsey Hall

4649 Columbia Road
Ellicott City, MD 21042
410.461.1481

8 lanes, sand volleyball, snack bar, adjacent tot lot and basketball courts, birthday parties offered, play feature frog in baby pool, many shaded areas and shade structures.

9. Faulkner Ridge

15018 Marble Fawn Court
Columbia, MD 21044
410.730.5292

6 lanes, teeter totter in baby pool, many shaded areas.

10. Hawthorn

6175 Sunny Spring
Columbia, MD 21044
410.730.0943

6 lanes, beach entry, hot tub, snack bar, mushroom fountain in beach entry, adjacent tot lot and basketball courts, birthday parties offered, shade structures.



11. Hobbit's Glen

11130 Willowbottom Drive
Columbia, MD 21044
410.730.6770

6 lanes, adjacent basketball courts, no deep end/maximum depth 5 feet, small slide in main pool, shade structures.

12. Hopewell

9200 Rustling Leaf
Columbia, MD 21045
410.381.1460

8 lanes, large slide and spray ground, adjacent field and tot lot across the street, shade structures, small slide.

13. Huntington

7625 Murray Hill Road
Columbia, MD 21046
301.490.3310

8 lanes, hot tub, large deck area, frog slide in baby pool, shade structures.

14. Jeffers Hill

6030 Tamar Drive
Columbia, MD 21045
410.730.1220

8 lanes, sand volleyball, shade structures.

15. Kendall Ridge

8245 Tamar Drive
Columbia, MD 21045
410.715.3074

8 lanes, beach entry, snack bar, hot tub, sand volleyball, play structure in beach entry, mushroom in baby pool, birthday parties offered, shade structures.

16. Locust Park

8 lanes, adjacent basketball and tennis courts, adjacent softball field and tot lot, shade trees.
410-730-5621
8995 Lambskin Lane
Columbia, MD 21045

17. Longfellow

5257 Eliot's Oak Road
Columbia, MD 21044
410.730.4978

6 lanes, small frog slide in baby pool, shade trees.

18. MacGill's Common

11302 Shaker Drive
Columbia, MD 21046



410.730.5995

6 lanes, adjacent tot lot, nearby basketball courts, volleyball, shade structures.

19. Phelps Luck

5355 Phelps Luck Drive

Columbia, MD 21045

410.730.5765

8 lanes, volleyball, shade structures.

20. River Hill

6330 Trotter Road

Clarksville, MD 21043

410.531.0191

8 lanes, beach entry, snack bar, hot tub, sand volleyball, play structure in beach entry, mushroom in baby pool, picnic tables, shade structures.

21. Running Brook

5720 Columbia Road

Columbia, MD 21044

410.730.5293

6 lanes, squirting frogs in baby pool, shade structures.

22. Steven's Forest

6061 Steven's Forest Road

Columbia, MD 21045

410.730.5452

8 lanes, heated, grass volleyball, shade structures.

23. Supreme Sports Club

7080 Deepage Drive

Columbia, MD 21045

410.381.5355

6 lanes, large slide, adjacent basketball courts and tot lot, landscaped plaza, heated main pool, many shaded areas.

24. Swansfield

5659 Cedar Lane

Columbia, MD 21044

410.730.3180

8 lanes, volleyball, basketball court.

25. Swim Center

10400 Cross Fox Lane

Columbia, MD 21044

410.730.7000



26. Talbot Springs

9660 Basket Ring
Columbia, MD 21045
410.730.5421

27. Thunder Hill

5134 Thunder Hill Road
Columbia, MD 21045
410.730.5563
6 lanes, volleyball, tot lot, many shaded areas.



2. Lifetime Fitness

7720 Lee DeForest Road
 (Robert Fulton Drive & Snowden River Parkway)
 Columbia, MD 21046
 410.953.0022



Lifetime Fitness	
Aquatic Amenities	
Indoor 25-Meter Pool	
Outdoor 25-Meter Pool	
Waterslides	
Spa	
Fees	
Joining Fee	\$129
Consultation for Fees	

Lifetime Fitness is a privately-held health, fitness, and nutrition product and services company with multi-purpose sports and fitness centers in 15 markets: Arizona, Florida, Georgia, Illinois, Indiana, Kansas, Maryland, Michigan, Minnesota, Nebraska, North Carolina, Ohio, Texas, Utah, and Virginia. Their mission is to provide a 4-in-1 concept: Sports and Athletics, Professional Fitness, Family Recreation, Resort and Spa. In addition to indoor and outdoor pools and spa, dry-side amenities include a fitness center with cardio equipment, resistance training, and free weights; basketball, racquetball, volleyball, and squash courts; indoor climbing wall; LifeCafe; and LifeSpa & Salon.

3. Howard County YMCA

4331 Montgomery Road
 Ellicott City, MD 21043
 410.465.4334

The 25,000 square foot Howard County YMCA is in the process of upgrading the existing building and equipment and adding additional buildings, a therapy pool, and locker rooms. The indoor 6-lane 25-yard pool offers learn to swim programs, aqua exercise classes, swim team, and Masters swimming. Dry-side amenities include a fitness center and gymnasium.

Howard County YMCA	
Aquatic Amenities	
Indoor 6-Lane 25 Yard Pool	
Sauna	
Locker Room	
Fees	
Annual Membership	
Joining Fee	\$99
Individual	\$49 per month
Family	\$74 per month



Montgomery County

4. Olney Indoor Swim

16605 Georgia Avenue
 Olney, Maryland 20853
 301.570.1210

Olney Indoor Swim	
Aquatic Amenities	
Indoor 8-Lane 25 Meter Pool	
1 Meter and 3 Meter Diving	
Indoor Leisure Pool	
2 Therapy Pools	
Sauna	
Fees	
Daily Resident:	
Adult (18+)	\$6
Child (1-17)	\$4
Senior	\$5
Daily Nonresident:	
Adult (18+)	\$8
Child (1-17)	\$7
Senior	\$7
Membership Resident:	
Adult	\$330
Family	\$465
Senior	\$260



Olney Indoor Swim is programmed for lap swimming, recreational swimming, water fitness classes, swimming lessons, lifeguard training, water safety and lifeguard instructor courses, CPR, swim team, dive team, and Masters swimming. Dry-side amenities include a weight and exercise room, multi-purpose room, a meeting room available to rent for classes, birthday parties, and meetings.



5. Montgomery Aquatic Center

5900 Executive Boulevard
 N. Bethesda, Maryland 20852
 301.468.4211

Montgomery Aquatic Ctr.	
Aquatic Amenities	
Indoor 8-Lane L-Shaped Pool	
Indoor Leisure Pool	
2 Therapy Pools	
10 Meter Diving Platform	
Sauna	
Waterslide	
Fees	
Daily Resident:	
Adult (18+)	\$6
Child (1-17)	\$4
Senior	\$5
Daily Nonresident:	
Adult (18+)	\$8
Child (1-17)	\$7
Senior	\$7
Membership Resident:	
Adult	\$330
Family	\$465
Senior	\$260



Montgomery Aquatic Center (MAC) is completely handicapped accessible with ramps, elevators, ladders and lifts. The MAC Pool is fully programmed daily and on weekends. There are times available for lap swimming, recreational swimming, water fitness classes and swimming lessons. Swim team, dive team, masters swimming, scuba and kayaking are available for reasonable fees. Dry-side amenities include an exercise room, snack bar, locker and shower facilities, lighted outdoor jogging trail and enclosed racquetball courts.



6. Germantown Indoor Swim Center

18000 Central Park Circle
 Boyds, Maryland 20841
 240.777.6830



Germantown Indoor Swim	
Aquatic Amenities	
Indoor 25 Meter x 25 Yard Pool	
Diving Tower	
Leisure Pool	
Waterslide	
Therapy Pool	
Sauna	
Kiddie Waterslide	
Tumble Buckets	
Water Feature	
Fees	
Daily Resident:	
Adult (18+)	\$6
Child (1-17)	\$4
Senior	\$5
Daily Nonresident:	
Adult (18+)	\$8
Child (1-17)	\$7
Senior	\$7
Membership Resident:	
Adult	\$330
Family	\$465
Senior	\$260

The Germantown Indoor Swim Center in the South Germantown Recreational Park serves 600-800 people per day. The competition pool attracts regional swimming meets for RMSC and the local high school teams. The meter course is based on FINA regulations; the yard course is based on NCAA regulations. The diving area is also used for recreational swimming, deep water running, water polo, SCUBA, water safety instruction, and non-competitive training (Fire & Rescue). The recreation pool is used for instruction, water exercise, general recreational activities and lap swimming. It includes teaching ledges for the MCRD lesson program. The leisure pool complements the facility so that all patrons including senior citizens, the handicapped and children not comfortable in the other pools will have a warm water, shallow recreation space. The therapy pool includes a ramped area, grab rails and broad shallow steps. This pool is used for swim lessons, adult water exercise, and therapy.

7. South Germantown Splash Playground

18056 Central Park Circle
 Boyds, MD 20841
 301-601-3580



South Germantown Recreational Park Splash Playground offers a waterfall, tumble buckets, a rain tree, water tunnel, and a 36' computer choreographed water maze with 280 ground-level jets, shooting 6,000 gallons of water per minute. Lockers, cubbies, showers, dressing room, restrooms and a vending area are located nearby. The Splash Playground is fully accessible for people with disabilities, and all ages.



8. Rockville Municipal Swim Center

355 Martins Lane
 Rockville, MD 20850
 240.314.8750



Rockville Municipal	
Aquatic Amenities	
Indoor 25-Yard Pool	
Outdoor 50 Meter Pool	
Diving Boards	
Outdoor Leisure Pool	
Waterslide	
Tot Pool	
Sprayground	
Snack Bar	
Indoor Sauna	
Fees	
Daily Resident:	
Adult	\$5
Child	\$4
Daily Nonresident:	
Adult	\$6
Child	\$5
Membership Resident:	
Adult	\$265
Family	\$444

Programming at Rockville’s three pools include swim lessons for all ages, swim team, aquatic fitness, deep water workout, water walking, arthritis fitness, senior swim, aqua MS, lifeguard training, pre and post natal workout, Masters swimming, synchronized swimming,

Baltimore County

9. Milford Mill Park & Swim Club

3900 Milford Mill Road
 Baltimore, MD 21244
 410.655.4818

Built in 1950, Milford Mill Park & Swim Club consists of three outdoor pools and one indoor pool. Two of the outdoor pools are quarry pools and the third is an L-shaped pool. Filtration is a sand based manual/electric system. Programs include Swim America Lessons.

Milford Mill Park & Swim Club	
Aquatic Amenities	
2 Outdoor Quarry Pools	
1 Outdoor L-Shaped Pool	
18' Zip Line	
Tarzan Ropes	
4 foot Waterslide	
Sandy Beach	
Water Umbrella	
Indoor Pool	
Locker Room	
Daily Fee	
Adult	\$13
Child	\$8
Under 2	\$2



10. Meadowbrook Aquatic Center

5700 Cottonworth Avenue
 Baltimore, Maryland 21209
 410.433.8300

Meadowbrook Aquatic Ctr.	
Aquatic Amenities	
Indoor 50 Meter Pool	
Outdoor 50 Meter Pool	
One-Meter Diving Board	
Outdoor Tot Pool	
Indoor Teaching/Therapy Pool	
Bulkheads	
Fees	
Summer Membership	
Individual	\$445
Family	\$595

Originally constructed in 1930, Meadowbrook Aquatic Center is owned by Murray Stephens, Head Coach of the North Baltimore Aquatic Club for 38 years. The main outdoor 50-Meter pool is 10 lanes wide with a separate shallow end and ADA ramp. A movable fiberglass and steel bulkhead allows a 6-lane 25-meter course, a 5-lane 25-yard course, or five 50-meter lanes for training and/or recreation. Most summer days, six 25-meter, two 25-yard, and two 50-



meter lanes are available for lap swimming / training, while a one meter board offers diving opportunity. The 1997 outdoor children's recreational pool measures 70x35 feet with a zero-depth walk-in, gentle water jets, a raindrop fountain, an island with a squirting whale, and four air bubblers. Benches continue around the perimeter of the "deep" end (30" depth) with stairs leading out the entire western edge of the pool. A pavilion, reconstructed with pressure treated lumber and dark green metal roof, offers a place to eat or have a party.

The 1994 indoor pool is 50-meters long by 6 lanes wide with a steel and fiberglass bulkhead to allow for two 25-yard courses or one 25-yard and one 25-meter course. Equipped with stairs, the pool is heated to 80 degrees Fahrenheit and used primarily for lap swimming, training, deep water physical therapy, and advanced swim lessons. The 1994 indoor therapy pool is heated to 90 degrees Fahrenheit and slopes in depth from three to four feet. Equipped with stairs for easy access, the pool is used for adult and child therapy, arthritis classes, and swim lessons. During the winter, the pool is used for recreational use by children on a limited basis. The 1994 indoor hot tub is heated to 102 degrees Fahrenheit and is 4 feet deep. Equipped with stairs, there are benches around three sides. Other aquatic programming include swim lessons, swim team, Masters Swimming, intro to Masters, water aerobics, water running, aqua therapy, lifeguard training, and CPR.



11. Padonia Park Club

12006 Jenifer Rd
 Cockeysville, MD 21030
 410.252.2046

Padonia Park Club	
Aquatic Amenities	
Outdoor Leisure Pool	
Outdoor Training Pool	
Outdoor Children's Pool	
Outdoor Tot Pool	
Cabana Bar	
Waterslides	
Fees	
Membership	
Individual	\$460
Family of 4	\$915
Guest of Member	
3-5 years old	\$6
6-61 years old	\$8
62+	\$6

Situated on a 30-acre site north of Baltimore, the 1960 Padonia Park Club features a swim club, catering, and childcare. Padonia Park Club's aquatic program provides swim and dive team options, American Red Cross swim lessons, scuba, aqua aerobics, day camps with swim lessons, and recreational swim. The on-site day care facility, Padonia Park Child Centers, offers year-round licensed childcare and a preschool program for children ages two through kindergarten. An indoor/outdoor banquet facility and catering operation provides for large and small events, with customized catered menus and experienced event planners. Several indoor banquet facilities and outdoor covered pavilions provide year round options for party and meeting needs in a country setting.

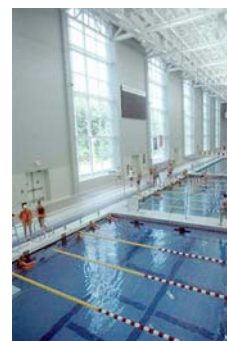


12. University of Maryland

8411 48th Ave.
 College Park, MD 20740
 301.226.9900

University of Maryland	
Aquatic Amenities	
Indoor 50 Meter Pool	
(2) 1 Meter Diving Boards	
(2) 3 Meter Diving Boards	
Indoor 25 x 25 Pool	
Sauna	
Outdoor 25 x 25 Pool	
(2) 1 Meter Diving Boards	
Outdoor Splash Pool	
Mushroom Fountain	

The University of Maryland aquatic program is for students, faculty and staff. Structured events and activities include swim lessons, adult CPR/AED, infant CPR/AED, standard first aid, professional rescuer challenges, lifeguard instruction training, lifeguard training, water safety instructor, pool operators, aqua aerobics shallow water, aqua aerobics deep water, and Master's Swimming. It also offers informal recreation opportunities such as diving and lap swimming. The facility consists of two indoor pools and an outdoor pool to support the aquatics program and intercollegiate swimming and diving events, sport clubs



competitions/practice and other special events.



Prince George's County

13. Prince George's Sports Center

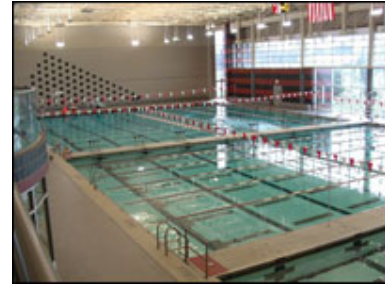
8001 Sheriff Road
Landover, MD 20785
301.583.2400



Prince George's Sports Center	
Aquatic Amenities	
Indoor 50-Meter x 25-Yard Pool	
Indoor Leisure Pool	
Movable Floor	
(2) 1-Meter Diving	
(1) 3-Meter Diving	
1500 Spectator Seats	
Waterslide	
Current Channel	
Water Playground	
Spray Features	
Spa	
Fees	
Daily Resident:	
Adult	\$5
Child	\$4
Senior	\$4
Daily Nonresident:	
Adult	\$6
Child	\$5
Senior	\$5

Prince George's County Sportsplex Center serves as a regional mixed-use facility with an aquatic center, a field house, a gymnastics facility, fitness center, and a learning center. The project was part of a mix of publicly and privately owned and operated facilities on site. The main pool has two moveable bulkheads allowing the creation of one to three pool areas. The pools include a sand filter system and an adjustable floor depth from zero to 6 feet. Programs include national and international swim meets, high school practices and meets, water polo games, recreational swimming, lap swimming, lessons, and water aerobics classes with a 65/35 contract for water aerobics. With the aquatic component just part of the overall complex, annual revenue is \$536,000 (does not include revenue from events) and operational cost is \$840,000 (does not include utilities and insurance shared with other complex venues). The facility shares locker facilities with the rest of the center linked to the central atrium area, which offers retail and food concessions, interactive exhibits, and observation space overlooking the sports venues. Deberor & Parnell Architects and Counsilman-Hunsaker designed the facility. The complex was featured in *Athletic Business Magazine* June 2001.

14. Fairland Sports & Aquatic Complex
 13820 and 13950 Old Gunpowder Road
 Laurel, MD 20707
 301.362.6060



Fairland Sports & Aquatic	
Aquatic Amenities	
Indoor 50-Meter Pool	
Indoor 25 Yard Leisure Pool	
Movable Floor	
Diving board	
Fountain	
Whirlpool	
Spectator Seating	
Outdoor Deck	
Outdoor Sand Volleyball	
Fees	
Daily Resident:	
Adult	\$6
Child	\$4
Senior	\$5
Membership Resident:	
Adult	\$264
Child	\$204
Family	\$432
Senior	\$204

Fairland Sports & Aquatic Complex built for youth competitive swimming and host to swim meets in the Washington Metropolitan Area, recently underwent installation of improved lighting throughout the pool area. Swim teams and synchronized swimming teams that train and compete at Fairland include: Fairland Aquatics Swim Team (FAST); Maryland Suburban Swim Club (MSSC); Potomac Valley Pearls; and Flying Gulls, along with many local high schools. Programming also includes Swimming Classes, Recreational Swimming, Lap Swimming, Water Fitness Classes, Water Walking, Swim Team Practice, Swim Meets, Lifeguard Classes, Junior Lifeguard Camp, and Pool Parties. Water fitness classes are also offered including water aerobics, deep-water aerobics and aqua arthritis. These classes are offered at various times of the day and are offered both on a drop-in basis or registration basis. One free water fitness day per month is offered. Water walking is also available throughout the day on the moveable floor area, as well as lap swimming and recreational swimming. The Senior Aquatics Fitness Enthusiasts Program (S.A.F.E.) is designed for individuals 55 years of age and over who want to maintain their current level of fitness or to get in shape.



Fairfax County

15. Audrey Moore RECenter at Wakefield Park

8100 Braddock Road
 Annandale, VA 22003
 703.321.7081



Audrey Moore Rec Center	
Aquatic Amenities	
Indoor 50-Meter x 25Yard Pool	
(1) 3-Meter Diving	
(2) 1-Meter Diving	
500 Spectator Seats	
Waterslide	
Saunas	
Locker Room	
Family Changing Room	
Fees	
Daily Resident:	
Adult 19+	\$7
Child 5-18	\$6
Senior 62+	\$6
Family	\$15
Child under 5	FREE
Daily Nonresident:	
Adult 19+	\$9
Child 5-18	\$9
Senior 62+	\$9
Family	\$26
Child under 5	FREE

Aquatic programs at the 76,000 square foot Fairfax County Park Authority Recreation Center at Wakefield Park include learn-to-swim, competitive swim and dive instruction, aqua exercise classes, and lifeguard and instructor training. In addition, swimming, diving, synchronized swimming, and water polo teams rent space for practice and meets. The pool was equipped with automatic external defibrillators (AED's) in 2001. The natatorium also leads to a spacious outdoor sundeck. Dry-side amenities include racquetball/wallyball, squash courts, a dance room, a pottery lab and kiln, an arts and crafts room, a photography lab, three multi-purpose activity rooms, a senior center, and a large gymnasium with six basketball hoops and volleyball nets.



16. Laurel Municipal Pool

9th and Main
Laurel, MD
301.776.7419

Laurel Municipal Pool	
Aquatic Amenities	
Outdoor Recreation Pool	
Outdoor Lap Pool	
Tot Pool	
Diving Well	
Snack Bar	
Meeting Room	
Fees	
Membership Resident:	
Individual	\$130
Family	\$230
Senior	\$85
Membership Nonresident:	
Individual	\$180
Family	\$300
Senior	\$100
Daily Resident:	
Age 1-5	\$2
Age 6-12	\$4
Age 13-54	\$6
55+	\$4
Daily Nonresident:	
Age 1-5	\$2
Age 6-12	\$6
Age 13-54	\$7
55+	\$7

Laurel Department of Parks and Recreation operates the 1953 Laurel Municipal Pool Complex. The meeting room can be rented for events or meetings. The complex sponsors a swim team.



17. West Laurel Swim Pool
 7203 Brooklyn Bridge Road
 Laurel, MD 20707
 301.725.8768

West Laurel Swim Club is situated near the Montgomery, Howard, and Prince George County lines, across from the Suplee Dam Recreation area. This 25-year old private residential club is a non-profit organization managed by a small board of directors. The club sponsors the Wahoos Swim Team for children up to eighteen years of age. Swim lessons are offered for a fee.

West Laurel Swim Pool	
Aquatic Amenities	
Outdoor Recreation Pool	
1 Lap Lane	
Diving Well	
Waterslide	
Tot Pool	
Bathhouse	
Snack Bar	
Fees	
Membership:	
Initiation Fee	\$50
Family	\$375

18. SportFit
 314 Marshall Avenue
 Laurel, MD 20707
 301.498.3377

SportFit is a fitness facility with an indoor pool. The club offers, aqua aerobic classes, volleyball, wallyball, racquetball, tennis, group exercise classes, yoga, Pilates, cycle classes, fitness evaluation, and personal program design.

19. Montpelier Oaks Pool
 8496 Snowden Oaks Pl.
 Laurel, MD

SportFit	
Aquatic Amenities	
Indoor 25 Yard Lap Pool	
Whirlpool	
Sauna and Steam	
Fitness Center	
Basketball Courts	
Tennis	
Snack Bar	
Fees	
Membership:	
Adult	\$39/month
Senior	\$34/month



20. Cub Run

4630 Stonecroft Boulevard
 Chantilly, VA 20151
 703.817.9407



Cub Run	
Aquatic Amenities	
Indoor 4,860 sf Leisure Pool	
Indoor 25-Yard x 25-Meter Pool	
2 Waterslides	
Current Channel	
Vortex	
Water Playground	
Spa	
175 Spectator Seats	
(2) 3-Meter Diving	
Spray Features	
Fees	
Daily:	
Individual	\$8
Child 5 & under	FREE

Operated by Fairfax County Park and Recreation, the 2005 Cub Run 65,000 square foot facility features an indoor zero-beach entry leisure pool with a 20-foot corkscrew waterslide, a miniature version for smaller children, and a 30-foot enclosed tube slide that exits and reenters the building. The competition pool includes a Poseidon drowning detection system. Programs include swim team, scuba, synchronized swimming, learn to swim, aqua exercise, and lifeguarding. Dry-side amenities include a 9,600 square foot fitness center; a 3,000 square foot multipurpose room that can be divided in half; another 1,700 square foot multipurpose room; and a 270 square foot party room. In 2006, *Water Conditioning & Purification Magazine* featured the facility on its cover. In 2007, the facility won the ‘Best Overall Community Commitment to Aquatics’ award from *Aquatics International Magazine*. Cub Run was designed by Grimm & Parker Architects and Counsilman-Hunsaker.



Loudoun County

21. Ida Lee Park and Recreation Center

60 Ida Lee Dr. N.W.
Leesburg, VA 20176
703.737.7165

Ida Lee Recreation Center	
Aquatic Amenities	
Indoor 25-Yard x 25-Meter Pool	
Indoor Leisure Pool	
Spa	
Fees	
Daily Resident:	
Adult	\$6
Child	\$4
Senior	\$4
Daily Nonresident:	
Adult	\$8
Child	\$6
Senior	\$6
Membership Resident:	
Adult	\$429
Child	\$124
Family	\$1,035
Senior	\$349
Membership Nonresident:	
Adult	\$584
Child	\$182
Family	\$1,295
Senior	\$502



The Town of Leesburg Parks and Recreation Department operates the 71,000 square foot Ida Lee Park and Recreation Center. Programs include learn to swim, parent/child, private swim lessons, afternoon swim lessons, adapted aquatics, birthday parties, springboard diving, swim team development, conditioning, adult lessons, Masters swimming, stroke refinement, Funtastic Fridays (with water games, whale tales, sing and splash), and aqua exercise classes. An outdoor pool is under construction with a budget of \$7,000,000 and land acquisition of \$1,000,000 slated to open in May 2009. The outdoor facility will feature a leisure pool, a lap pool, a spray park, lagoon, lazy river, and waterslides. Dry-side programming includes a full size gymnasium, two racquetball courts, meeting rooms, and a 6,600 square foot fitness facility.

Prince William County

22. Splashdown Waterpark

7500 Ben Lomond Park Dr.
 Manassas, VA 20109
 703.361.4451



Splashdown Waterpark	
Aquatic Amenities	
Outdoor Leisure Pool	
Outdoor 25 Meter Lap Pool	
Spray Features	
Lazy River	
(2) 4-Story Slides	
Lily Pad Walk	
(4) Children's Waterslides	
Large Waterslides	
Concessions	
Fees	
Membership	
Individual	\$80
Family of 4	\$260
Daily	
Under 48"	\$11
48" & Over	\$15
2 & Under	FREE

Built on 13 acres, Splashdown Waterpark offers different areas for different age groups. For guests under 48", there is an area with zero-beach entrance, pipe fall water falls, bubblers, slides, a mushroom waterfall, and rope climb. If a guest is between 42"-47" tall, they may sign up to take a swim test (offered every hour, consisting of swimming about 10 yards in 8 feet of water without any assistance) and upon successful completion, may ride all rides. Second, if a guest is between 42"-47" tall and unable to pass the swim test, they may wear a Coast Guard Approved lifejacket (available at the park) and ride all slides except for the Double Dunk Cannonball Slides (this slide goes into 12 feet of water and is for strong swimmers only). If a guest is under 48" and does not meet one of the above requirements, that the guest must remain in the kiddie pool or be within arms reach of an adult (preferably in a Coast Guard Approved lifejacket) in one of the various pools.



Anne Arundel County

23. North Arundel Aquatics Center

7888 Crain Highway
Glen Burnie, MD 21061
410.222.0090

North Arundale Aquatic Ctr.	
Aquatic Amenities	
Indoor 8-Lane 25 Yard Pool	
Indoor Leisure Pool	
Zero-Depth Entry	
(2) 20 Yard Lap Lanes	
(1) 34' Waterslide	
Splashdown Area	
Tumble Buckets	
Waterfall	
Vortex	
Spa	
Fees	
Membership:	
Adult	\$175
Senior	\$120
Daily:	
17 & Under	\$4
Adult	\$6
60+	\$4



The North Arundel Aquatic Center offers a variety of adult water fitness classes. Participants must be 48" or taller to utilize the waterslide. Birthday party rentals are available.



Area Benchmark Facility

Hatfield Aquatic Center

1950 School Road
 Hatfield, PA 19440
 215.855.0900



Hatfield Aquatic Center	
Aquatic Amenities	
Outdoor Leisure Pool	
Outdoor Fitness Pool	
Outdoor Therapy Pool	
Movable Bulkhead	
2 Diving Boards	
Waterslides	
Current Channel	
Vortex	
Fees	
Daily Resident:	
Adult	\$10
Child	\$10
Senior	\$5
Daily Nonresident:	
Adult	\$15
Child	\$15
Senior	\$8
Membership Resident:	
Adult	\$130
Child	\$95
Family	\$260
Senior	\$35
Membership Nonresident:	
Adult	\$190
Child	\$150
Family	\$385
Senior	\$75

After studying its 40-year-old pool complex, Hatfield Township officials determined that with so much repair work needed, it was easier to build new. Hatfield Township closed its pool in August 2006 to demolish the facility and begin rebuilding. The township borrowed for a portion of the project, and Hatfield Borough also contributed to the cost as well as donations from the community. The township owns the pool and is responsible for its upkeep through a volunteer team of adults called the Aquatic Angel Brigade who serve the community by helping around the pools, and a PR staff that serves day camps and group parties. Programs include swim team and dive team (must be aquatic center member to join). Colored wristband IDs label children and non-swimmers. The otter slides are always in use. The current channel is in the most demand overall by all ages; the vortex is a bit too strong but they are working on it. Daily attendance in 2007 averaged 700-800, highest attendance was approx. 1250 people. Revenue for 2007 was \$445,000 and expenses and operating costs for 2007 were \$398,000. The facility was designed by Counsilman-Hunsaker and cost \$5.2 million to build. Member surveys were sent at the end of the summer 2007 season with a collective 98% positive response except for the snack bar run by an outside service.



SECTION 6

RECREATION PROGRAMMING

Recommended Aquatic Programming
Marketing and Branding



SECTION 6: AQUATIC PROGRAMMING

It is the county's goal to operate recreation programming as both a public service and a revenue generator. An important goal is to provide health and fitness recreation programming to reverse public obesity trends. A newer swimming facility could accommodate a much needed and growing recreational swim market. Any program schedule will require flexibility to adapt to specific needs of the community. It is the responsibility of the aquatic director to monitor user group demands and adjust schedules accordingly.

Recommended Aquatic Programming

- Swim Meet Rentals
- USA Swim Team
- High School Swim Team
- Summer and Winter Swim Lessons\
- Lifeguard Training
- Wellness Programming
- Birthday Parties
- Private Rentals

Marketing and Branding

Branding refers to the summation of all the aquatic amenities—state-of-the-art pools and attractions, customer service and aquatic programming—in an eye-appealing package with a competitive advantage. Strong aesthetic visuals include a cohesive logo, website, brochures, video spots, and staff uniforms. Competitive advantages may include cross-generational multiplicity, daily admission fees versus membership fees, cultural diversity, or perhaps the facility will be the only championship venue in the region. Encouraging residents to use public facilities requires helpfulness of the promotional materials, perceived value against other providers, and public awareness that the facility addresses the prevailing needs and concerns of the community. The aquatic center ought to be seen as integral to economic development through:

- Stimulant to the creative economy
- Business retention
- Attraction of creative, active people to the area
- Property tax
- Promoting tourism

According to the Importance of Quality of Life in the Location Decisions of New Economy Firms, 2003, “Modern businesses typically choose communities with cultural and recreational amenities that will attract and retain a well-educated workforce” (see complete study in conjunction with the Center for Urban and Regional Studies in Appendix C of this report). This enlarges the tax base and stimulates the economy, which then provides more tax revenue that parks and recreation agencies can use to enhance or expand infrastructure, facilities, and programs. Park and recreation amenities stimulate happier and healthier families, positive business growth and economic development opportunities = quality of life. Creative, active people choose to live in communities with high quality amenities and experiences. Further, championship venues bring tourism revenue to local hotels, restaurants, and retail businesses. Activities enlarge the tax base and stimulate the economy, which then provide more tax revenue that the agency can use to enhance or expand infrastructure, facilities, programs and services.



Many marketing efforts will focus on the sales budget, developing an easy and concise means of explaining activities and fees to users, and creating a simple protocol for scheduling rentals and other events. For a loyal customer base, a great deal of marketing effort will be focused on customer outreach.

Customer Outreach

Marketers understand their target market—a vital investment to success—by identifying potential user groups while developing a clear message that explains how the aquatic center can fulfill their needs. Marketers define the identity and mission (sell the experience) by branding around one or two core competencies of the facility. They continue to benchmark successful aquatic providers who are meeting the needs of a market segment and generating demand while finding out what makes it work and determining what would make it better.

Their single most important ingredient is customer relationships (getting them and gaining their loyalty). Customers are a source of innovative ideas. Valuing customers and their opinions gives users a sense of ownership and pride in the facility, a perfect combination for continued word-of-mouth promotion. Marketers must:

- Identify customer groups and verify that the message of each marketing campaign is being successfully communicated.
- Ask for feedback through focus groups and surveys of programs and be open to customers' observations and suggestions to help build a network within the community.
- Evaluate customer feedback to measure how users and nonusers view the image of the facility. Use the information to determine current levels of satisfaction, program fulfillment, and future needs.
- Make quantitative and qualitative improvements based on data (from what makes programs and services successful) so that services are consistently high quality to increase revenue.
- Set objectives for improvement to increase market share.
- Identify resources and means of implementation by listing key action plans and cycle times.
- Brand services with consistency; position each service to fit the market segment and promote the experience (benefit); people buy benefits.

When times are tough do not cut customer outreach and do not cheapen the quality of facilities or services to save money. Take time to address market conditions and challenges; then define steps to solve the challenges and improve all aspects of the event or program by using a marketing development plan.

Marketing Development Plan

When developing a special event or program, answer the following questions:

(sample)

1. What is the current situation you are addressing?
2. What are the market conditions?
3. What are the objectives of this marketing plan?
4. What are the key elements you wish to implement?
5. What are the timelines for each element?
6. What resources will be used for this implementation?
(funds, staff and external support)
7. How will you measure the success of the plan?
8. What measures will you take to refine the outcome?
(Revenues, participants, market segments reached)
9. What will you do to replicate the successful elements and outcomes?



Media and Community

Traditional advertising such as program brochures, school flyers, visual displays, newspaper, radio, and television can target specific campaigns. As a not-for-profit entity, various local media outlets represent a valuable opportunity for free or low-cost publicity.

Develop public relation contacts with local broadcast and print media by submitting articles or suggesting topics on the aquatic center's activities and services, include issues involving education and accident prevention. The use of local celebrities such as sports and radio personalities can also help promote events or sponsoring organizations and outreach programs to local groups, including girl/boy scouts, hospitals, retirement communities and corporations. Such programs can be tailored to the needs and interests of individual groups by focusing on wellness, safety, training, competition or recreation. Utilize small segmented promotions to create an individualized plan for items of user interest, special events and fun activities.

Corporate Sponsorship and Venue Signage

Shrinking funds and tightening budgets result in seeking opportunities to subsidize expenses of construction and operation. Marketing opportunities look to local, regional, and even national businesses for sponsorship and advertising signage. These opportunities can range from naming the entire facility for an individual or commercial benefactor, to naming individual rooms, benches, tiles and so forth. Opportunities for revenue include selling permanent and temporary venue signage.

Digital Marketing

Marketers widen the scope of multimedia plans through the increased use of on-demand media such as utilizing e-mail marketing, online broadcasting, and video spot DVDs. Marketing must thrive in this culture in order to grab and retain potential customers to positively affect revenue, influence attendance, and promote sponsorships.

Customer email addresses may be submitted when registering for memberships, classes, and special events. With customer permission, marketers may use these email addresses for email marketing campaigns of monthly newsletters and promotional messages regarding upcoming events and classes.

Websurfers looking for exciting visual examples of aquatic opportunities will stop and shop cutting-edge websites that showcase the aquatic portfolio in an outstanding way. Online photo galleries and streaming video can demonstrate exciting swim meets, families playing in shallow water, teens sliding down waterslides, and seniors swimming laps, thus allowing potential customers to browse the facility without having to be on site. An immediate price quote offers a means to sell rental opportunities for birthday parties, reunions, and corporate picnics. Voice-overs can communicate classes, programs, drop-in activities, meets and special events.

The face of fundraising is also enhanced by interactive media. When sent a video spot, potential sponsors can witness a cohesive branding package accompanied by exciting video of an event showing crowds of people in attendance as well as other sponsors' booths.

A study conducted by Media Life Research reveals that 63% of moviegoers are not opposed to onscreen commercials; 79% of U.S. theaters offer commercial spots before a movie. Onscreen ads can promote local recreation attractions to a receptive young demographic. Video spots of a thrilling aquatic center / waterpark on a hot summer day can potentially reach thousands of people in one month.

Other ways of utilizing video spots to help launch the new facility campaign include looping video spot DVDs on in-house TVs at the park and recreation headquarters, the city welcome center, the visitors' bureau, and realtor offices to communicate to the community, visitors, and potential residents the creative aquatic amenities that the community has to offer.



SECTION 7

PARTNERSHIPS

Establishing Partnerships
Third Party Management Pros and Cons

SECTION 7: PARTNERSHIPS

Establishing Partnerships

The establishment of a partnership can be a positive experience for the desired aquatic facility. Recent years have provided many examples of existing partnership relationships to establish major facilities. Partnerships have allowed organizations to create useful recreational facilities that otherwise would not be possible. Effective partnerships have helped communities build recreation centers, fitness facilities, school gymnasiums, aquatic parks, etc.

The following are some of the reasons an organization may wish to engage into a partnership relationship:

- Cost to provide government service is high
- Creates budget and creative programming opportunities
- Spreads the risk among the partners
- Merging resources creates a higher level of service delivery
- Offers entrepreneurial opportunities not always affordable to public agencies
- Planning changes the mindset of the players and forces them to think creatively
- Encourages a market driven approach rather than a product driven approach

The desire to partner with others is popular when there is mutual interest in building a major capital asset. What potentially exists in partnership relationships frequently occurs between one or more sectors such as two or more public sector organizations, and the public sector and the not-for-profit organizations, and the private sector and the public sector.

Partnership relationships usually exist in one of two forms as outlined in the following examples:

- **Investment Partnerships:** public sector organizations such as schools or park organizations, and/or the private sector, and/or the not-for-profit engage in equity construction of a capital asset. In recent years these facilities have included gymnasiums and fitness facilities.
- **Program Partnerships:** public sector organizations such as schools or park organizations, and/or the private sector, and/or the not-for-profit engage in the provision of programs to benefit the community or facility. These programs are typically outsourced by the public or not-for-profit sector organization to the private sector. In these instances, it is determined that the public sector is better off managing the activity rather than to produce it. In recent years these programs have included facility management, specialized training programs, and specific skill activities.

Establishing an Investment Partnership relationship can be tricky, especially when considering a partnership involving several entities. The structure of such a relationship must allow for consistent operations, policy making and operational management of the facility after it is open. There is a potential for the relationship to be very complex and challenging given the financial structure, the differences in the makeup of the policy making boards, and the administrative structures of each entity.

Program Partnerships would come after the Investment Partnership relationship is created and executed. Program Partnerships could be as complex as determining financial access to the facility to use and the allocation of time or identifying how the facility will incorporate programs. Each of these issues will



need to be discussed so a clear idea of financial and operational issues are understood and agreed upon among the partners before the facility is ready to open.

Typically, before any successful partnership is undertaken, these three critical considerations must be addressed.

1. **There is a Common Vision:** a compelling picture of the possibilities must be shared by all. This does not mean that everyone necessarily needs to have the same goals, but all partners must be able to achieve their goals within the “big picture” of the project.
2. **Impact of the New Relationship:** adding real value to the agencies involved. If the involved agencies see the partnership creating the ability to improve productivity, efficiency and profitability while achieving the desired goals, then the desired impact is mutual and the partnership is one step closer to achieving the desired goals.
3. **Knowing through Intimacy:** closeness, sharing and trust. Intimacy is never achieved easily or quickly. To achieve intimacy, there must be no hidden agendas; the ideas of all potential partners regarding the goals of the project must be out in the open. There must be similar interest but separate expertise regarding the project, which is to say that each partner should “bring something to the table.”

Third Party Management Pros and Cons

Although some municipalities compete for scarce aquatic professionals, others contract management to a third party. While the municipality would remain the face of the facility, there are considerable strengths and weaknesses for a public/private management relationship with a third party to manage the facility. The main concern for acquiring outside management—a developer, a USA Swimming Club, a local aquatic management company, a YMCA—is that the city relinquishes control, including control of tax dollars and programs.

Strength of a developer management relationship includes knowledge and expertise in design-build project logistics and management responsibility logistics. Weakness entails that the city relinquishes control of design decisions, which may not be in concert with the community. Moreover, the city lacks control of accounts payable / receivable and achieving city goals of competitive and lesson programming, which could be thwarted as the developer would typically have a recreational emphasis. Opportunities include a community hub profile and market marker if the developer has a draw name. Marketing and branding will be a top priority; however, not necessarily via community outreach. Threats include high admission fees that could be double or triple the resident expected rate; lack of equal opportunity compliance in concert with the city; lack of effectiveness of competitive bidding practices; and the city might wind up with an obsolete pool if the facility isn't profitable when the management contract ends.

Strength of a USA Swimming Club management relationship includes their reputable aquatic governing status for the sport. USA Swimming formulates the rules, implements policies and procedures, conducts national championships, disseminates safety and sports medicine information, and selects athletes to represent the U.S. in international competitions. Known in competitive sports with a strong program, USA Swimming has a built-in feeder system of interested parties for staff and management with aquatic experience of operations. Weakness again entails the lack of city control and USA's primary focus on competitive swimming, which could dampen the city's effort to seek a balance of competitive, lesson, and recreational swimming, which may lead to a dissatisfied community reaction to a team-run pool. On the other hand, opportunities include a great swim program and increase contractual financial responsibility for performance. Threats include prioritization participation; city requirement to cover shortfall of financial risk; and the ability to have financing capability (start-up capital, working capital, financing capability, and credit).



Strength of being managed by a local aquatic management company includes industry knowledge to meet critical repair needs before and during the season and major renovations during the off-season. An aquatic management group will handle the permit process with the local Health Department. Their professional management knowledge in recruiting, hiring, and training of staff includes pool managers, assistant managers, lifeguards, and swim instructors with experience to oversee the day-to-day operations of the facility, including chemical knowledge to operate the facility within local Health Department requirements. They typically have additional insurance coverage, and their service business is consistent with regional management protocol. Additionally, they define scope, role, and definition of success with their own company expansion. Weakness includes lack of city control, community reaction to a profit-based service provider, contract responsibility versus ownership, and lack of responsibility for coaching staff. Opportunities include balancing programming priorities with a business approach and often times they offer certain needs ala carte (i.e., chemical balance, lifeguards, concessions, etc.). Threats include not achieving city recreational goals, equal opportunity compliance, and their effectiveness of competitive bidding practices.

Strength of being managed by the YMCA includes their professional reputation as a world-wide, largely nonsectarian and apolitical social movement with a special emphasis on community and families. The “Y” uses a holistic approach to individual and social development encompassing spiritual, intellectual, and physical methods. It is common for Y’s to have swimming pools, weight rooms, fitness, and various sports such as basketball, volleyball, and racquetball, thus providing synergy for community fitness. On a global programming perspective, 2,600 Y’s are present in 124 countries. Service is closely aligned with municipal protocol. Likewise, hiring and training of staff includes lifeguard management. Weaknesses include community reaction as it is known as religious based (conflict of church and state), and contract responsibility versus ownership. Opportunities include balanced programming priorities and an in-sync municipal-type business approach. Threats include another market marker for the Y.



SECTION 8

OPERATIONS

Opinion of Revenue
Opinion of Expenses
Cashflow

SECTION 8: OPERATIONS

Opinion of Revenue

The revenue model for estimating revenue for major areas first determines facility capacity based on square footage, which determines parking. Projected attendance by option is based on local population trends. Programming revenue is based on user groups and local programming fees. Fee structure is based on income and other providers to project per capita income. Revenue is estimated, taking into account recommended fee schedules.

Facility Capacity

Types of spaces and associated capacity will determine the degree the facility will be used. Generally, recreation swimmers prefer shallow water of four feet or less, allowing participation in a variety of water-related activities while still touching the pool bottom. In estimating capacity for recreational use, a maximum density of 25 square feet per person is assumed. Based on a length of stay of two to three hours, turnover in-house attendance is two and a half times per day for the recreation swimmer.

For deep water, the maximum density is assumed to be 100 square feet per person. Based on a length of stay of two to three hours, turnover in-house attendance is three times per day for the competitive swimmer. Additional spaces not listed such as office space and locker rooms have no impact on programming; therefore, market penetration has not been included in this analysis. Capacity of spaces is directly correlated to attendance. The following table is one way to view the contribution the available capacity has to the projected attendance.

CAPACITY ANALYSIS				
	Addition	Combined CC	Outdoor	50 Meter
WET-SIDE CAPACITY				
Training (Available 25-Yard Lanes)				
Competition Pool	0	8	6	22
Indoor Leisure	0	3	0	0
Outdoor Leisure	0	0	0	0
Spraypad	0	0	0	0
Tot Pool	0	0	0	0
Spa	0	0	0	0
Total	0	11	6	22
Estimated Training Holding Capacity	0	55	30	110
Daily Training Capacity	0	165	90	330
Spectator Seating (Square Feet)	0	750	0	4,500
Speccator Seating Capacity	0	125	0	900
Recreation (Surface Area Sq. Ft.)				
Competition Pool	0	4,500	3,375	12,920
Indoor Leisure	0	5,800	0	0
Outdoor Leisure	8,000	9,200	9,200	0
Spraypad	2,000	0	0	0
Tot Pool	0	700	0	0
Spa	0	300	0	0
Total	10,000	20,500	12,575	12,920
Total Holding Capacity	400	721	439	290
Total Daily Facility Capacity	1,000	1,831	1,112	779
Source: Counsilman-Hunsaker				



Parking

On-site parking must provide for easy drop-off and pick-up. The parking requirement for the concepts assumes that, on average, three participants will arrive in each car. The final design must also provide safe access from the parking area to the main entrance and service vehicle access to the mechanical areas.

PARKING ANALYSIS				
	Outdoor Addition	Combined CC	Outdoor	50 Meter
Parking	160	289	175	116
Parking Sq. Ft.	52,000	94,000	58,000	38,000
Impervious Structure	26,984	64,680	34,635	42,960
Total Program Sq. Ft.	78,984	158,680	92,635	80,960
Total Sq. Ft. with Efficiency	157,968	317,360	185,270	161,920
Minimum Site Size Requirements (acres)	3.63	7.29	4.25	3.72
Recommended Site Size (acres)	5.44	10.93	6.38	5.58

Source: Counsilman-Hunsaker

Projected Attendance

Based on the preceding methodology, the following attendance numbers are projected for the options. It has been well documented that attendance increases as amenities become more diverse and exciting. Attendance is projected to increase during the five-year span due to increasing levels of population in the area. For this analysis, 2008 is considered the first year of operation. The further into the future projections are made, the more limited the accuracy of the data becomes.

PROJECTED ATTENDANCE: OPTION 1					
(Recreation Market Only)					
Outdoor Addition					
Market Population	2008	2009	2010	2011	2012
0 to 3 Miles	53,543	54,171	54,798	55,426	56,054
3 to 5 Miles	89,908	90,900	91,893	92,885	93,878
5 to 10 Miles	293,387	296,494	299,602	302,709	305,816
10 to 15 Miles	858,786	864,324	869,862	875,400	880,938
15 to 25 Miles	2,707,564	2,723,608	2,739,653	2,755,697	2,771,741
Market Penetration Rate					
0 to 3 Miles	40.0%	40.0%	40.0%	40.0%	40.0%
3 to 5 Miles	40.0%	40.0%	40.0%	40.0%	40.0%
5 to 10 Miles	0.0%	0.0%	0.0%	0.0%	0.0%
10 to 15 Miles	0.0%	0.0%	0.0%	0.0%	0.0%
15 to 25 Miles	0.0%	0.0%	0.0%	0.0%	0.0%
Projected Attendance					
0 to 3 Miles	21,417	21,668	21,919	22,170	22,422
3 to 5 Miles	35,963	36,360	36,757	37,154	37,551
5 to 10 Miles	0	0	0	0	0
10 to 15 Miles	0	0	0	0	0
15 to 25 Miles	0	0	0	0	0
TOTAL	57,380	58,028	58,676	59,325	59,973

Source: Counsilman-Hunsaker



PROJECTED ATTENDANCE: OPTION 2					
(Recreation Market Only)					
Combined CC					
Market Population	2008	2009	2010	2011	2012
0 to 3 Miles	53,543	54,171	54,798	55,426	56,054
3 to 5 Miles	89,908	90,900	91,893	92,885	93,878
5 to 10 Miles	293,387	296,494	299,602	302,709	305,816
10 to 15 Miles	858,786	864,324	869,862	875,400	880,938
15 to 25 Miles	2,707,564	2,723,608	2,739,653	2,755,697	2,771,741
Market Penetration Rate					
0 to 3 Miles	50.0%	50.0%	50.0%	50.0%	50.0%
3 to 5 Miles	50.0%	50.0%	50.0%	50.0%	50.0%
5 to 10 Miles	5.0%	5.0%	5.0%	5.0%	5.0%
10 to 15 Miles	2.0%	2.0%	2.0%	2.0%	2.0%
15 to 25 Miles	0.5%	0.5%	0.5%	0.5%	0.5%
Projected Attendance					
0 to 3 Miles	26,771	27,085	27,399	27,713	28,027
3 to 5 Miles	44,954	45,450	45,946	46,443	46,939
5 to 10 Miles	14,669	14,825	14,980	15,135	15,291
10 to 15 Miles	17,176	17,286	17,397	17,508	17,619
15 to 25 Miles	13,538	13,618	13,698	13,778	13,859
TOTAL	117,108	118,265	119,421	120,578	121,734
Source: Counsilman-Hunsaker					

PROJECTED ATTENDANCE: OPTION 3					
(Recreation Market Only)					
Outdoor					
Market Population	2008	2009	2010	2011	2012
0 to 3 Miles	53,543	54,171	54,798	55,426	56,054
3 to 5 Miles	89,908	90,900	91,893	92,885	93,878
5 to 10 Miles	293,387	296,494	299,602	302,709	305,816
10 to 15 Miles	858,786	864,324	869,862	875,400	880,938
15 to 25 Miles	2,707,564	2,723,608	2,739,653	2,755,697	2,771,741
Market Penetration Rate					
0 to 3 Miles	40.0%	40.0%	40.0%	40.0%	40.0%
3 to 5 Miles	40.0%	40.0%	40.0%	40.0%	40.0%
5 to 10 Miles	3.0%	3.0%	3.0%	3.0%	3.0%
10 to 15 Miles	0.0%	0.0%	0.0%	0.0%	0.0%
15 to 25 Miles	0.0%	0.0%	0.0%	0.0%	0.0%
Projected Attendance					
0 to 3 Miles	21,417	21,668	21,919	22,170	22,422
3 to 5 Miles	35,963	36,360	36,757	37,154	37,551
5 to 10 Miles	8,802	8,895	8,988	9,081	9,174
10 to 15 Miles	0	0	0	0	0
15 to 25 Miles	0	0	0	0	0
TOTAL	66,182	66,923	67,665	68,406	69,147
Source: Counsilman-Hunsaker					



PROJECTED ATTENDANCE: OPTION 4					
(Recreation Market Only)					
50 Meter					
Market Population	2008	2009	2010	2011	2012
0 to 3 Miles	53,543	54,171	54,798	55,426	56,054
3 to 5 Miles	89,908	90,900	91,893	92,885	93,878
5 to 10 Miles	293,387	296,494	299,602	302,709	305,816
10 to 15 Miles	858,786	864,324	869,862	875,400	880,938
15 to 25 Miles	2,707,564	2,723,608	2,739,653	2,755,697	2,771,741
Market Penetration Rate					
0 to 3 Miles	30.0%	30.0%	30.0%	30.0%	30.0%
3 to 5 Miles	30.0%	30.0%	30.0%	30.0%	30.0%
5 to 10 Miles	7.0%	7.0%	7.0%	7.0%	7.0%
10 to 15 Miles	1.0%	1.0%	1.0%	1.0%	1.0%
15 to 25 Miles	0.0%	0.0%	0.0%	0.0%	0.0%
Projected Attendance					
0 to 3 Miles	16,063	16,251	16,440	16,628	16,816
3 to 5 Miles	26,972	27,270	27,568	27,866	28,163
5 to 10 Miles	20,537	20,755	20,972	21,190	21,407
10 to 15 Miles	8,588	8,643	8,699	8,754	8,809
15 to 25 Miles	0	0	0	0	0
TOTAL	72,160	72,919	73,678	74,437	75,196
Source: Councilman-Hunsaker					

Program Revenue

Program revenue projections include age-group competitive swimming, swim lessons, birthday parties and private rentals. It is assumed these user groups, because of their high volume of use, will pay a lower fee per person admission. Programming will need to be scheduled so as not to significantly impact community recreation programming. The following tables summarize recreation program demand, per capita spending, and revenue potential for the Howard County aquatic center. The table assumes the cost of the program has been deducted from generated fees and shows the “net” program revenue. For example, the revenue projected for swimming lessons is after the instructor cost.

Visits per Program Day: number of participants in a particular activity per day. Swim team rental refers to one swim meet on a particular day.

Programming Days: number of days each activity will be programmed during the summer season.

Per Capita Spending: revenue generated per participant per day of activity after related costs are paid, for instance, the \$2.00 assumed for each swim lesson participant per day is after the instructors are paid.

Opinion of Revenue (Net): the resulting revenue generated by each activity. (Visits per Program Day) multiplied by (Programming Days) multiplied by (Per Capita Spending) = Opinion of Revenue (Net).



PROJECTED USER GROUP REVENUE				
Visits per Program Day	Outdoor Addition	Combined CC	Outdoor	50 Meter
Swim Meet Rental	-	1	1	1
USA Swim Team	-	80	-	100
High School Swim Team	-	30	-	60
Summer Swim Lessons	60	50	60	40
Winter Swim Lessons	-	30	-	30
Lifeguard Training	10	10	10	10
Wellness Programming	-	10	-	10
Birthday Party	2	2	2	2
Private Rental	1	1	1	1
Programming Days	Outdoor Addition	Combined CC	Outdoor	50 Meter
Swim Meet Rental	-	20	5	30
USA Swim Team	-	300	-	300
High School Swim Team	-	80	-	80
Summer Swim Lessons	40	40	40	40
Winter Swim Lessons	-	190	-	190
Lifeguard Training	20	40	20	40
Wellness Programming	-	150	-	150
Birthday Party	45	52	45	12
Private Rental	15	30	15	30
Per Capita Spending (Net)	Outdoor Addition	Combined CC	Outdoor	50 Meter
Swim Meet Rental	\$0.00	\$1,200.00	\$800.00	\$1,200.00
USA Swim Team	\$2.00	\$2.00	\$2.00	\$2.00
High School Swim Team	\$2.00	\$2.00	\$2.00	\$2.00
Summer Swim Lessons	\$2.00	\$2.00	\$2.00	\$2.00
Winter Swim Lessons	\$2.00	\$2.00	\$2.00	\$2.00
Lifeguard Training	\$2.50	\$2.50	\$2.50	\$2.50
Wellness Programming	\$1.50	\$1.50	\$1.50	\$1.50
Birthday Party	\$30.00	\$30.00	\$30.00	\$30.00
Private Rental	\$25.00	\$25.00	\$25.00	\$25.00
Opinion of Revenue (Net)	Outdoor Addition	Combined CC	Outdoor	50 Meter
Swim Meet Rental	\$0	\$24,000	\$4,000	\$36,000
USA Swim Team	\$0	\$48,000	\$0	\$60,000
High School Swim Team	\$0	\$4,800	\$0	\$9,600
Summer Swim Lessons	\$4,800	\$4,000	\$4,800	\$3,200
Winter Swim Lessons	\$0	\$11,400	\$0	\$11,400
Lifeguard Training	\$500	\$1,000	\$500	\$1,000
Wellness Programming	\$0	\$2,250	\$0	\$2,250
Birthday Party	\$2,700	\$3,120	\$2,700	\$720
Private Rental	\$375	\$750	\$375	\$750
User-Group Revenue	\$8,375	\$99,320	\$12,375	\$124,920

Source: Counsilman-Hunsaker



Fee Structure

In order to project revenue, fee schedules are established. Three general approaches to evaluating the fee structure of an aquatic center include:

1. Maximize revenue by charging what the market will support. Programs and facilities operate with positive cashflow. If excess funds are available at season's end, they can be used to support under-funded programs.
2. Break-even in the operation of the facility. This approach is increasing in popularity as funding is becoming limited to organizations. Capital funds are used to create the facility; operational funds are generated from the user on a break-even basis.
3. Subsidy pricing historically has been the policy of many community facilities and is currently the strategy of the county's pools.

A critical component of an enterprise fund management protocol is the revenue and pricing policy. The following tables are sample fee structures developed in 2008 dollars based on local providers, target markets, and similar existing facilities.

FEE STRUCTURE: Indoor	
Category	Rate
Residents	
Adult (18 & Older)	7.00
Children (3-17)	5.00
Free	0
General Admission	
Adult	8.00
Child	6.00
Season Pass	
Resident	
Individual	280.00
General Admission	
Individual	320.00

FEE STRUCTURE: Outdoor	
Category	Rate
Residents	
Adult (18 & Older)	7.00
Children (3-17)	5.00
Free	0
General Admission	
Adult	10.00
Child	8.00
Season Pass	
Resident	
Individual	140.00
General Admission	
Individual	200.00



Per Capita Income

Per capita income is the projection of increased revenues that will be generated from increases in projected annual attendance. The formula reflects the category for admission, the rate of each category, and the percentage of attendance that might be expected from that category. The following tables take into consideration the revenue streams from programs and classes offered for each facility. Attendance projections reflect the number of people who will attend the facility during the course of operations.

PER CAPITA PROJECTION: Indoor				
Category	Rate	Percent of Visits	Per Visit Unit	
Residents				
Adult (18 & Older)	7.00	23%	1.61	
Children (3-17)	5.00	17%	0.85	
Free	0	2%	-	
General Admission				
Adult	8.00	18%	1.44	
Child	6.00	15%	0.90	
Season Pass				
Resident				
Individual	280.00	10%	0.56	
General Admission				
Individual	320.00	15%	0.96	
Subtotal / Average		100%	6.32	
Food / Merchandise			\$	0.05
Total				\$6.37
Source: Counsilman-Hunsaker				

PER CAPITA PROJECTION: Outdoor				
Category	Rate	Percent of Visits	Per Visit Unit	
Residents				
Adult (18 & Older)	7.00	23%	1.61	
Children (3-17)	5.00	17%	0.85	
Free	0	2%	-	
General Admission				
Adult	10.00	18%	1.80	
Child	8.00	15%	1.20	
Season Pass				
Resident				
Individual	140.00	10%	0.47	
General Admission				
Individual	200.00	15%	1.00	
Subtotal / Average		100%	6.93	
Food / Merchandise			\$	0.05
Total				\$6.98
Source: Counsilman-Hunsaker				

The following table takes into consideration the revenue streams from special user group and general attendance, resulting in an opinion of revenue for each option.

OPINION OF REVENUE					
		Outdoor Addition	Combined CC	Outdoor	50 Meter
Attendance	2008	57,380	117,108	66,182	72,160
	2009	58,028	118,265	66,923	72,919
	2010	58,676	119,421	67,665	73,678
	2011	59,325	120,578	68,406	74,437
	2012	59,973	121,734	69,147	75,196
Per Capita Spending (3% increase annually)		\$6.98	\$6.37	\$6.98	\$6.37
Special User Group Spending		\$8,375	\$99,320	\$12,375	\$124,920
Revenue	2008	\$408,697	\$845,299	\$474,103	\$584,580
	2009	\$425,365	\$875,266	\$493,283	\$603,349
	2010	\$442,303	\$905,676	\$512,772	\$622,409
	2011	\$459,513	\$936,527	\$532,572	\$641,759
	2012	\$476,994	\$967,821	\$552,683	\$661,399
Source: Counsilman-Hunsaker					



Opinion of Probable Expenses

This plan recommends an expense model for estimating probable expenses for major areas of labor, contractual services, commodities, and utilities. User projections are made based on programming. Expenses are estimated, taking into account hours of operation, attendance projections, local weather patterns, local utility rates, and other key items. Operating data from other facilities are reviewed and taken into account to form projections.

Facility Staff

Projected annual payroll expenses are listed by full-time and part-time classifications reflecting benefits and taxes. Scheduling employees is determined by programming demand and management procedure. Wherever possible, pay rates were determined using existing city job classifications and wage scales. Cost for swim instructors and other employees associated with program income are factored in the following table as cost against net programming revenue.

LABOR BUDGET													
Job Description	Hours Per Day				Cost Per Hour		Days per Season			Total Employer Expense			
	Outdoor Addition	Combined CC	Outdoor	50 Meter	Hourly Rate	Rate with overhead	Indoor	Outdoor	Sprayground	Outdoor Addition	Combined CC	Outdoor	50 Meter
<i>Summer</i>													
Cashier	0	0	11	15	9.00	\$10.89	90	90	100	0	0	10,781	14,702
Pool Manager	12	16	15	16	13.00	\$15.73	90	90	100	16,988	22,651	21,236	22,651
Comp Lifeguard	0	39	17	56	9.00	\$10.89	90	90	100	0	38,224	16,662	54,886
Indoor Leisure Guard	0	50	0	0	9.00	\$10.89	90	90	100	0	49,005	0	0
Outdoor Leisure Guard	120	82	87	0	9.00	\$10.89	90	90	100	117,612	80,368	85,269	0
Maintenance	4	5	6	4	21.00	\$25.41	90	90	100	9,148	11,435	13,721	9,148
Summer Total	136	192	136	91						\$143,748	\$201,683	\$147,668	\$101,386
<i>Winter</i>													
Cashier	0	0	11	15	9.00	\$10.89	265	10	50	0	0	1,198	43,288
Pool Manager	12	16	15	16	13.00	\$15.73	265	10	50	1,888	66,695	2,360	66,695
Comp Lifeguard	0	27	17	35	9.00	\$10.89	265	10	50	0	77,918	1,851	101,005
Indoor Leisure Guard	0	37	0	0	9.00	\$10.89	265	10	50	0	106,776	0	0
Outdoor Leisure Guard	96	68	69	0	9.00	\$10.89	265	10	50	10,454	7,405	7,514	0
Maintenance	4	6	6	4	21.00	\$25.41	265	10	50	26,935	40,402	1,525	26,935
Winter Total	112	154	118	70						\$39,277	\$299,197	\$14,447	\$237,922
Annual Labor Expense										\$183,025	\$500,880	\$162,116	\$339,308

Source: Counsilman-Hunsaker



Repairs and Maintenance

The manufacturers of some types of mechanical equipment recommend annual maintenance programs to ensure proper performance of their equipment. Much of this work will be performed by outside contractors. In addition, for daily operation of the facilities, miscellaneous items will need to be repaired by outside firms.

Commodities

Commodities are day-to-day products used to operate aquatic centers. Office supplies, program supplies, custodial supplies, repair supplies and chemicals are included. In determining annual chemical expense, chemical treatment assumes the use of calcium hypochlorite and muriatic acid (pH buffer). Chemical use can depend upon bather load and chemical balance of the water. In estimating annual costs, medium bather load figures are assumed. In the preceding marketing strategy section, mass-marketing and direct-marketing strategies are discussed.

Heating/Dehumidification

In determining utility costs, current energy costs at other facilities in the area were reviewed. Total costs include energy, energy demand and delivery charges. Caution must be used when comparing this cost with operating expenses of other facilities across the country.

Electricity

The calculations below are based on 2008 utility rate information. A figure of \$0.080 cents per kWh was estimated, including both demand and energy costs. The table conveys the estimated electricity costs for all options.

ANNUAL ENERGY ANALYSIS					
	Outdoor	Addition	Combined CC	Outdoor	50 Meter
Motors	\$ 31,733	\$ 154,502	\$ 38,651	\$ 38,065	
Lighting	\$ 6,358	\$ 37,969	\$ 8,802	\$ 39,462	
Total Electric Costs	\$ 38,091	\$ 192,471	\$ 47,453	\$ 77,527	

Source: Counsilman-Hunsaker

Miscellaneous Electric Use

Miscellaneous electric use includes chemical feeders, blow dryers, office equipment, etc.

Water and Sewer

Water and sewer services will be needed for domestic use and compensation for evaporation and backwashing purposes. Backwash water and domestic water will be released to the sanitary system. This does not include landscape irrigation.



Expenses

The following table reflects a summary of all operating expenses, assumptions and estimates detailed by the expense category.

OPINION OF OPERATING EXPENSES				
	Outdoor Addition	Combined CC	Outdoor	50 Meter
Facility Staff				
Facility Supervisor	\$0	\$0	\$40,950	\$81,900
Aquatic Director	\$19,825	\$39,650	\$19,825	\$39,650
Summer Employment	\$143,748	\$201,683	\$147,668	\$101,386
Winter Employment	\$39,277	\$299,197	\$14,447	\$237,922
Training	\$2,000	\$6,000	\$2,000	\$4,000
Total Labor	\$204,850	\$546,530	\$224,891	\$464,858
Contractual Services				
Insurance	\$38,540	\$118,029	\$44,850	\$97,697
Repair and Maintenance	\$19,500	\$60,900	\$23,700	\$51,900
Total Contractual Services	\$58,040	\$178,929	\$68,550	\$149,597
Commodities				
Operating Supplies	\$11,700	\$36,540	\$14,220	\$31,140
Chemicals	\$14,914	\$66,817	\$23,040	\$63,788
Advertising	\$10,000	\$20,000	\$25,000	\$50,000
Total Commodities	\$36,614	\$123,357	\$62,260	\$144,928
Utilities				
HVAC	\$5,710	\$144,115	\$8,471	\$163,660
Electricity	\$38,091	\$192,471	\$47,453	\$77,527
Pool Heating	\$15,015	\$13,506	\$19,020	\$0
Trash Service	\$3,840	\$6,240	\$4,800	\$12,480
Telephone	\$960	\$2,880	\$2,880	\$960
Water & Sewer	\$10,317	\$6,769	\$12,520	\$8,140
Total Utilities	\$73,932	\$365,981	\$95,144	\$262,766
Total Operating Expenses	\$373,436	\$1,214,796	\$450,844	\$1,022,149
Capital Replacement Fund	\$32,500	\$101,500	\$39,500	\$86,500
Total Expense	\$405,936	\$1,316,296	\$490,344	\$1,108,649

Source: Counsilman-Hunsaker



Cashflow

The following table represents projections of gross operating performance for all options based on revenue projections and expense estimates.

OPINION OF CASHFLOW					
	2008	2009	2010	2011	2012
Outdoor Addition					
Project Cost	\$6,500,000				
Attendance	57,380				
Revenue	\$408,697	\$425,365	\$442,303	\$459,513	\$476,994
Expense	\$373,436	\$382,772	\$392,341	\$402,150	\$412,204
Operating Cashflow	\$35,261	\$42,593	\$49,962	\$57,363	\$64,791
Recapture Rate	109%	111%	113%	114%	116%
Debt Service	(\$566,700)	(\$566,700)	(\$566,700)	(\$566,700)	(\$566,700)
Cashflow	(\$531,438)	(\$524,107)	(\$516,738)	(\$509,336)	(\$501,909)
Combined CC					
Project Cost	\$20,300,000				
Attendance	117,108				
Revenue	\$845,299	\$875,266	\$905,676	\$936,527	\$967,821
Expense	\$1,214,796	\$1,245,166	\$1,276,295	\$1,308,203	\$1,340,908
Operating Cashflow	(\$369,498)	(\$369,900)	(\$370,620)	(\$371,675)	(\$373,087)
Recapture Rate	70%	70%	71%	72%	72%
Debt Service	(\$1,769,847)	(\$1,769,847)	(\$1,769,847)	(\$1,769,847)	(\$1,769,847)
Cashflow	(\$2,139,344)	(\$2,139,747)	(\$2,140,466)	(\$2,141,522)	(\$2,142,933)
Outdoor					
Project Cost	\$7,900,000				
Attendance	66,182				
Revenue	\$474,103	\$493,283	\$512,772	\$532,572	\$552,683
Expense	\$450,844	\$462,116	\$473,668	\$485,510	\$497,648
Operating Cashflow	\$23,259	\$31,167	\$39,104	\$47,062	\$55,035
Recapture Rate	105%	107%	108%	110%	111%
Debt Service	(\$688,758)	(\$688,758)	(\$688,758)	(\$688,758)	(\$688,758)
Cashflow	(\$665,499)	(\$657,591)	(\$649,654)	(\$641,696)	(\$633,723)
50 Meter					
Project Cost	\$17,300,000				
Attendance	72,160				
Revenue	\$584,580	\$603,349	\$622,409	\$641,759	\$661,399
Expense	\$1,022,149	\$1,047,703	\$1,073,896	\$1,100,743	\$1,128,261
Operating Cashflow	(\$437,569)	(\$444,354)	(\$451,486)	(\$458,984)	(\$466,862)
Recapture Rate	57%	58%	58%	58%	59%
Debt Service	(\$1,508,293)	(\$1,508,293)	(\$1,508,293)	(\$1,508,293)	(\$1,508,293)
Cashflow	(\$1,945,862)	(\$1,952,646)	(\$1,959,779)	(\$1,967,277)	(\$1,975,155)
Source: Counsilman Hunsaker					



SECTION 9

Implementation Strategy

Recommended Strategy
Cost Sustainable Strategy
Other Strategies

SECTION 9: IMPLEMENTATION STRATEGIES

The preceding “toolbox” of options described in this report represents a wide variety of solutions derived from the community and political input to meet the diverse needs of Howard County residents. Alternatives were evaluated on the basis of the effectiveness of response to the community’s needs as well as likely capital costs, revenues, and expenditures.

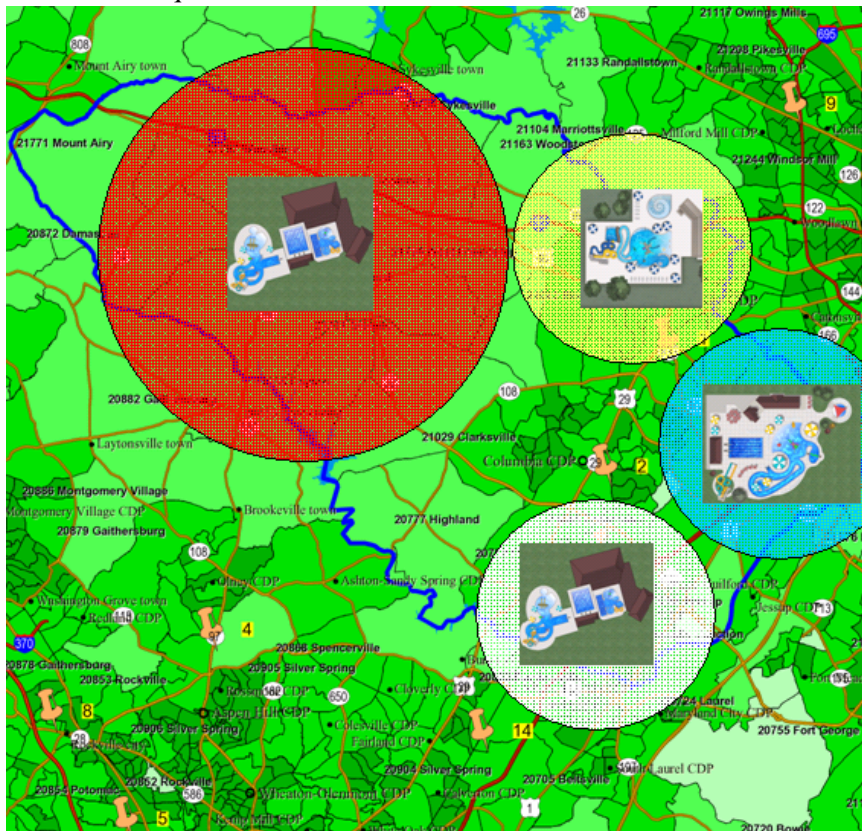
With the Columbia Association owning numerous pools in the area, it is not the goal of Howard County to compete with the association but to fill gaps in service. The consultant is not recommending a 50-meter pool in any of the overall plans, but would like to mention that the Howard County Recreation and Parks Department's goal is to provide recreation and leisure activities for the community with the ability to teach children of all ages to swim. This can be met with the leisure pool concept. The use of a 50-meter pool is geared towards the competitive group, and the county should consider partnerships to help with the additional capital cost and the ongoing subsidy taken to operate a 50-meter pool. A good partnership opportunity may exist with a 50-meter pool in Strategies A & B. Possible partnerships include high schools interested in starting a team, private clubs in the area, and other communities such as the Columbia Association interested in using this facility. It is not the consultant’s recommendation for Howard County Parks and Recreation to take sole ownership of such a project.

Strategy A is recommended based on the percentage of population that participates in swimming (25% compared to the national average of 18%), density of the population in the county who are not served by other pools, and comparison to other communities in the nation. Three of the areas chosen were based on a 5-mile diameter not served by other community based pools, and have a heavy population with expected growth. The 10-mile diameter was used in the less dense area of the western part of the county.



Strategy A: Recommended

Using a 10-mile diameter surrounding the Red Site, this site includes a Combined CC. Using a 5-mile diameter surrounding the other sites, the Yellow Site includes an Outdoor Addition, the Blue Site includes an Outdoor Aquatic Center, and the White Site includes a Combined CC for a total of \$55,000,000.

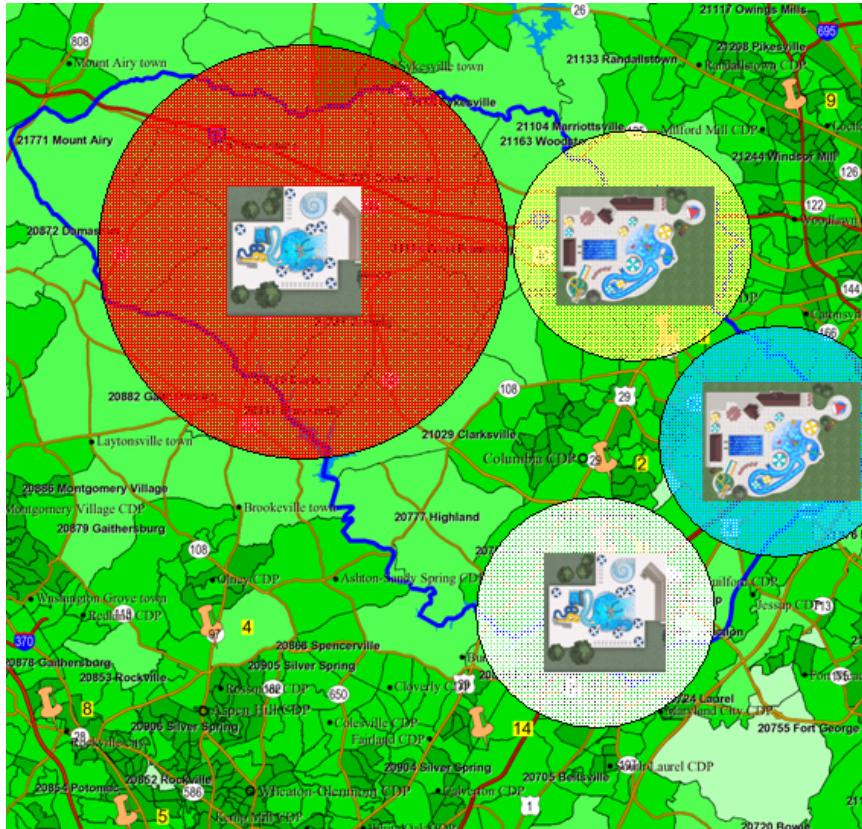


Strategy A - Recommended					
Area	1	2	3	4	
Type	Combined CC	Outdoor Addition	Outdoor	Combined CC	Total
Project Cost	\$20,300,000	\$6,500,000	\$7,900,000	\$20,300,000	\$55,000,000
Attendance	117,108	57,380	66,182	117,108	357,778
Revenue	\$845,299	\$408,697	\$474,103	\$845,299	\$2,573,398
Expense	\$1,214,796	\$373,436	\$450,844	\$1,214,796	\$3,253,873
Operating Cashflow	(\$369,498)	\$35,261	\$23,259	(\$369,498)	(\$680,475)
Recapture Rate	70%	109%	105%	70%	79%



Strategy B: Cost Sustainable

Using a 10-mile diameter surrounding the Red Site, this site includes an Outdoor Addition. Using a 5-mile diameter surrounding the other sites, the Yellow Site and Blue Site include Outdoor Aquatic Centers, and the White Site includes an Outdoor Addition for a total of \$28,800,000.



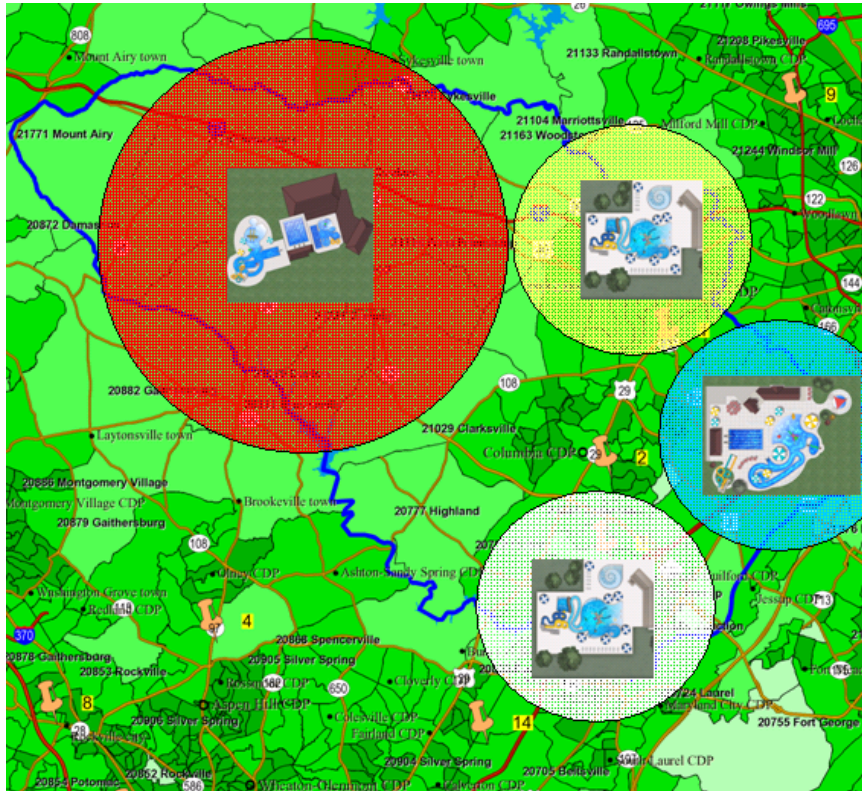
Strategy B - Sustainable					
Area	1	2	3	4	
Type	Outdoor Addition	Outdoor	Outdoor	Outdoor Addition	Total
Project Cost	\$6,500,000	\$7,900,000	\$7,900,000	\$6,500,000	\$28,800,000
Attendance	57,380	66,182	66,182	57,380	247,124
Revenue	\$408,697	\$474,103	\$474,103	\$408,697	\$1,765,601
Expense	\$373,436	\$450,844	\$450,844	\$373,436	\$1,648,561
Operating Cashflow	\$35,261	\$23,259	\$23,259	\$35,261	\$117,040
Recapture Rate	109%	105%	105%	109%	107%



Other Strategies Explored

Strategy C

Using a 10-mile diameter surrounding the Red Site, this site includes a Combined CC. Using a 5-mile diameter surrounding the other sites, the Yellow Site includes an Outdoor Addition, the Blue Site includes an Outdoor Aquatic Center, and the White Site includes an Outdoor Addition for a total of \$41,200,000.

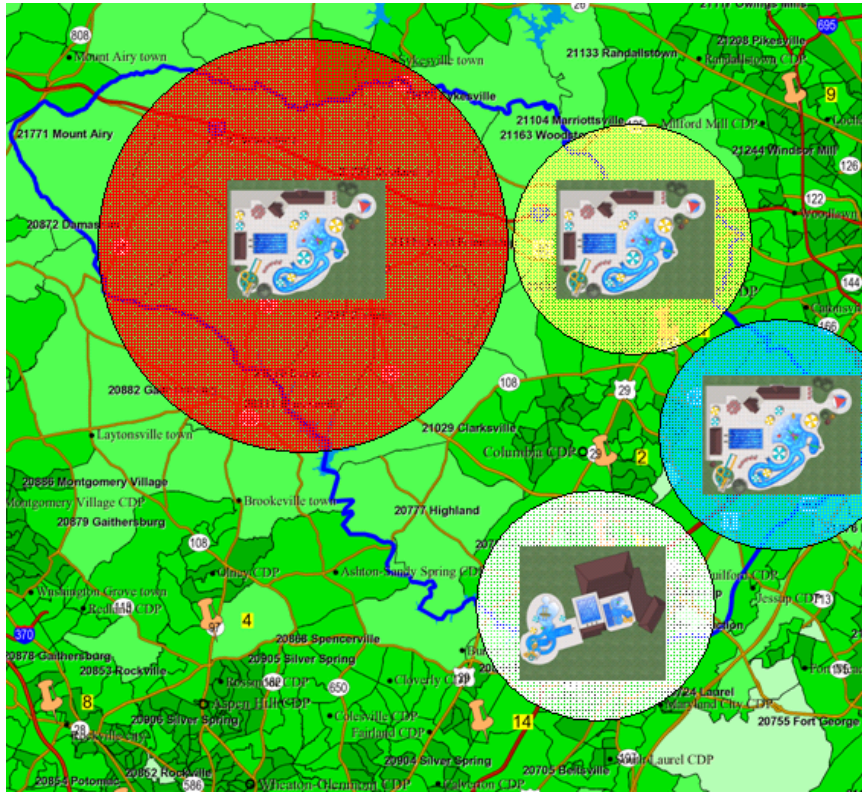


Strategy C					
Area	1	2	3	4	
Type	Combined CC	Outdoor Addition	Outdoor	Outdoor Addition	Total
Project Cost	\$20,300,000	\$6,500,000	\$7,900,000	\$6,500,000	\$41,200,000
Attendance	117,108	57,380	66,182	57,380	298,050
Revenue	\$845,299	\$408,697	\$474,103	\$408,697	\$2,136,796
Expense	\$1,214,796	\$373,436	\$450,844	\$373,436	\$2,412,513
Operating Cashflow	(\$369,498)	\$35,261	\$23,259	\$35,261	(\$275,716)
Recapture Rate	70%	109%	105%	109%	89%



Strategy D

Using a 10-mile diameter surrounding the Red Site, this site includes an Outdoor Aquatic Center. Using a 5-mile diameter surrounding the other sites, the Yellow Site and Blue Site include an Outdoor Aquatic Center, and the White Site includes a Combined CC for a total of \$44,000,000.

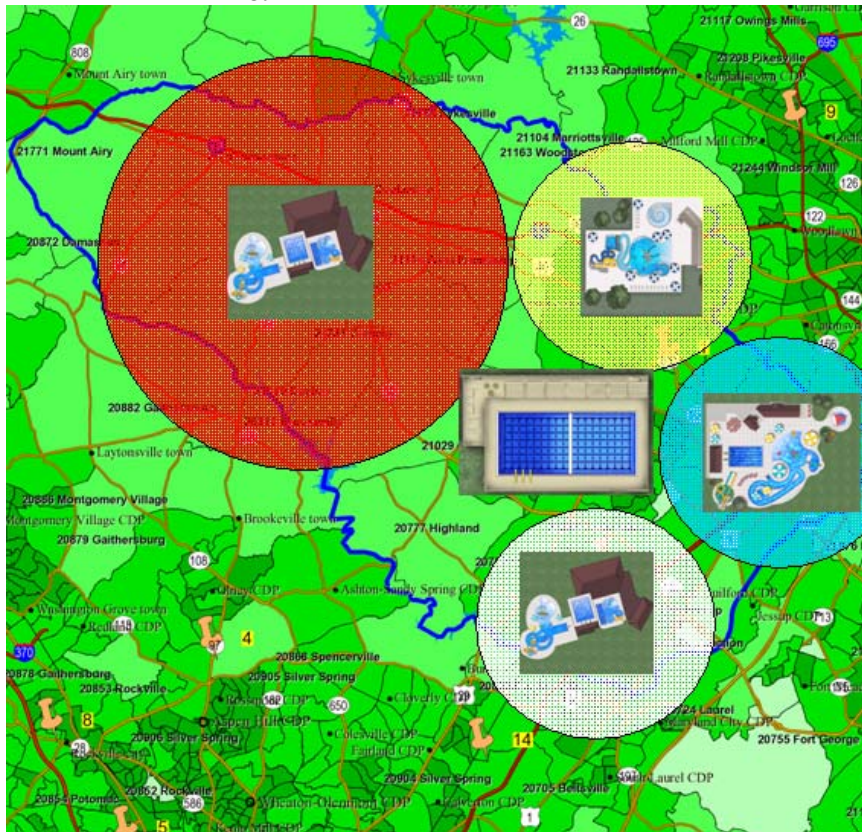


Strategy D					
Area	1	2	3	4	
Type	Outdoor	Outdoor	Outdoor	Combined CC	Total
Project Cost	\$7,900,000	\$7,900,000	\$7,900,000	\$20,300,000	\$44,000,000
Attendance	66,182	66,182	66,182	117,108	315,653
Revenue	\$474,103	\$474,103	\$474,103	\$845,299	\$2,267,608
Expense	\$450,844	\$450,844	\$450,844	\$1,214,796	\$2,567,330
Operating Cashflow	\$23,259	\$23,259	\$23,259	(\$369,498)	(\$299,721)
Recapture Rate	105%	105%	105%	70%	88%



Strategy E

Using a 10-mile diameter surrounding the Red Site, this site includes a Combined CC. Using a 5-mile diameter surrounding the other sites, the Yellow Site includes an Outdoor Addition, the Blue Site includes an Outdoor Aquatic Center, the White Site includes a Combined CC and the White Site includes a 50-Meter Pool for a total of \$72,300,000. This strategy shows the effect a 50-meter pool would have on the recommended Strategy.



Strategy E - 50 Meter Addition						
Area	1	2	3	4	County Wide	
Type	Combined CC	Outdoor Addition	Outdoor	Combined CC	50 Meter	Total
Project Cost	\$20,300,000	\$6,500,000	\$7,900,000	\$20,300,000	\$17,300,000	\$72,300,000
Attendance	117,108	57,380	66,182	117,108	72,160	429,938
Revenue	\$845,299	\$408,697	\$474,103	\$845,299	\$584,580	\$3,157,978
Expense	\$1,214,796	\$373,436	\$450,844	\$1,214,796	\$1,022,149	\$4,276,022
Operating Cashflow	(\$369,498)	\$35,261	\$23,259	(\$369,498)	(\$437,569)	(\$1,118,045)
Recapture Rate	70%	109%	105%	70%	57%	74%

Strategy Summary Comparison

Strategy	A	B	C	D	E
Project Cost	\$55,000,000	\$28,800,000	\$41,200,000	\$44,000,000	\$72,300,000
Attendance	357,778	247,124	298,050	315,653	429,938
Revenue	\$2,573,398	\$1,765,601	\$2,136,796	\$2,267,608	\$3,157,978
Expense	\$3,253,873	\$1,648,561	\$2,412,513	\$2,567,330	\$4,276,022
Operating Cashflow	(\$680,475)	\$117,040	(\$275,716)	(\$299,721)	(\$1,118,045)
Recapture Rate	79%	107%	89%	88%	74%

APPENDIX A: GENERAL LIMITING CONDITIONS

This Aquatic Development Plan is based on information that was current as of July 2008. Every reasonable effort has been made in order that the data reflects the most timely and current information possible and is believed to be reliable. This plan is based on estimates, assumptions and other information developed by the consulting team from independent research.

No warranty or representation is made by Counsilman-Hunsaker or their consultants that any of the projected values or results contained in this study will actually be achieved. No responsibility is assumed for inaccuracies in reporting by the client, its agents and representatives or any other data source used in preparing or presenting this study.

This entire report is qualified and should be considered in light of the above conditions and limitations.



APPENDIX B: MEDIA



Office of Public Information
3450 Courthouse Drive
Ellicott City, Maryland, 21043

410-313-2022 / FAX 410-313-3299 / www.howardcountymd.gov

Kevin Enright, Director
kenright@howardcountymd.gov

July 10, 2008

Media Contact:

Kathy Sloan-Beard, Deputy Director, Office of Public Information, 410-313-2018

Howard County is only Maryland County to make list

Forbes Magazine Ranks Howard County 17th “Best Place to Raise a Family” in the Nation

ELLCOTT CITY, MD – *Forbes Magazine* recently released its list of America’s “Best Places to Raise a Family,” and Howard County came in at #17 in the nation -- the only county in Maryland to receive this honor.

According to the June 30 issue of *Forbes*:

“Situated between Baltimore, Maryland and Washington, D.C., Howard County is one of the smartest counties in the country. Its average SAT score of 1,113 trails only Marin County, Calif., on our list. Howard’s public library system holds the top spot in Hennen’s American Public Library Ratings. “

“I agree; our schools are among the best in the nation, and our library is second-to-none,” said County Executive Ken Ulman. “We are excited by this new national designation and honored that Howard County made the ‘Top 20.’ While schools and libraries are critical to our quality of life, I am so pleased to see that many other County programs helped earn this honor: our outstanding parks, recreation programs and more personal factors like community personality, religious climate and proximity to friends and family -- all factors that make Howard County a great place to call home.”

Other national recognitions Howard County has received in the past few years include:

- *USA Today* -- 2nd “Most Technologically Advanced Community”
- *Money Magazine* -- 4th “Best Place to Live” – Ellicott City/Columbia
- *CNN & Money Magazine* -- “Top 5 Most Desirable Places to Live in America”
- *Sports Illustrated* -- “Good Sports Community” (one of eight)
- *American Business Journal* -- 9th for “Best Quality of Life”
- National Association of Counties – “Leadership in the Arts” Award





Howard County Government News Release

Office of Public Information
3450 Courthouse Drive
Ellicott City, Maryland, 21043

410-313-2022 / FAX 410-313-3299 / www.howardcountymd.gov

Kevin Enright, Director
kenright@howardcountymd.gov

July 14, 2008

Media Contact:

Kevin Enright, Director, Office of Public Information, 410-313-2022

Howard County is only Maryland County to make list

Money Magazine Ranks Ellicott City/Columbia #8 “America’s Best Places to Live 2008”

ELLICOTT CITY, MD – Three days after announcing that *Forbes Magazine* had named Howard County as one of its top-20 “Best Places to Raise a Family,” Howard County Government is pleased (once again) to announce that *Money Magazine* has ranked Ellicott City/Columbia #8 on their “America’s Best Places to Live 2008” list. In both magazines Howard County is the only county in Maryland honored.

“As a resident of Columbia who works in Ellicott City, I could not agree more with *Money Magazine*’s ranking, unless of course it was *Forbes Magazine*,” said County Executive Ken Ulman. “This is truly a special place, and it’s wonderful when outsiders see in Howard County what we see every day.”

According to *Money Magazine*:

One of the nation’s oldest settlements (it was founded in 1772), Ellicott City snuggles up to one of its newest, Columbia (a planned community conjured up out of 14,000 acres of farmland in 1967). This duo remains a perennial contender on our Best Places list thanks to its mix of charm, comfort and careful zoning.

Historic Ellicott City’s steep Main Street is lined with antique shops and teahouses, while Columbia, a cluster of nine residential villages around a town center, is home to offices of such high-powered tech companies as Arbitron, Merkle and Northrop Grumman. No wonder residents’ median household income has risen more than 20% since 2000.

Though traffic can be a headache, it’s easy to escape it: More than a third of Columbia’s acreage has been set aside as open space, including a 950-acre nature preserve, a skateboard park and three lakes.



APPENDIX C: LOCATION DECISIONS OF NEW ECONOMY FIRMS

THE IMPORTANCE OF QUALITY OF LIFE IN THE LOCATION DECISIONS OF NEW ECONOMY FIRMS

David Salvesen

Henry Renski

January 2003

Center for Urban and Regional Studies

Hickerson House, CB# 3410

University of North Carolina at Chapel Hill

Chapel Hill, NC 27599

TEL: (919) 962-7045

FAX: (919) 962-2518

E-MAIL: salvesen@unc.edu

This report was prepared by the Center for Urban and Regional Studies under award number 99-07-13815 from the Economic Development Administration, U.S. Department of Commerce. The statements, findings, conclusions and recommendations are those of the authors and do not necessarily reflect the views of the Economic Development Administration or the Department of Commerce.

ACKNOWLEDGEMENTS

We would like to thank the Economic Development Administration for providing support for the research for this paper. The report also benefited from the review and comments of a number of EDA staff, including John Fieser, John McNamee and Kay Fronk. We would also like to thank the firms who participated in the pilot study for their insights on the importance of quality of life in business location decisions. Finally, we would also like to thank Mary Margaret Shaw, a doctoral student in City and Regional Planning at the University of North Carolina, for her assistance in completing the pilot study.

EXECUTIVE SUMMARY

Traditionally, the location decisions of firms have been driven primarily by factors such as land costs, labor costs and access to materials and markets. Today, however, quality of life for employees is becoming an important factor as well, particularly for knowledge-based industries such as telecommunications, computers, entertainment, and biotechnology that are part of the so-called New Economy. In the New Economy, knowledge, rather than natural resources, is the raw material of business.

An increasing number of firms are seeking locations that will attract and retain a well-educated work force. Thus, areas offering cultural and recreational amenities (e.g., theaters and bike trails) could have a competitive advantage over places that do not.

This study consists of two parts: (1) a review of the literature on business location, focusing specifically on the links between location decisions and quality of life, and (2) a pilot study on business location decisions in the Raleigh-Durham-Chapel Hill (Triangle) region of North Carolina. The pilot study included interviews with ten firms that recently located to the Triangle region.



The literature review and pilot study suggest that quality of life is becoming an increasingly important consideration in modern business location decisions. This is particularly true for high-technology firms that are less tied to traditional location factors such as transportation costs, proximity to raw materials, and cheap labor. It is also likely that firms in other sectors will become more sensitive to quality of life factors as the diffusion of information technology and other global forces continue to push the United States toward a more knowledge- and technology-intensive economy.

Still, despite the initial buzz surrounding quality of life, there is, as of yet, little empirical evidence of the effectiveness of an economic development strategy based on quality of life. The research on the importance of quality of life is too anecdotal and generalized to provide a strong policy foundation, while the literature on the impacts of the new technologies on business location remains largely speculative.

In general, there is a great need for more empirical research into the relationship between quality of life and business location decisions. There have been no major survey studies of industrial location in well over a decade. Recently, however, the interest in quality of life as an economic development strategy has grown considerably. Policy makers see quality of life strategies as a potentially effective means of business development while furthering other developmental goals such as reducing congestion, improving air and water quality, preserving the local natural environment and open space, and upgrading cultural and recreational amenities for residents. However, to inform policy, local decision makers need to know how specific quality of life factors influence business location choice and how the importance of quality of life varies by industry, firm size, and corporate function.

This report should be helpful to economic development researchers and practitioners who are interested in understanding the importance of quality of life in the business location decisions of firms in the New Economy.

INTRODUCTION

The New Economy has become a hot topic in both the academic and popular media in recent years. Yet, like so many other popular catch phrases, the actual meaning of the New Economy is unclear. The term New Economy became a popular explanation for the seemingly paradoxical and historically unprecedented economic expansion of the 1990s, during which the U.S. experience the longest period of economic growth in modern history, but it did so without rampant inflation. This was all made possible by a burst of innovative, productivity-enhancing technologies that allowed firms to keep excess employment and product inventories down. The prospects of productivity gains coupled with declining computer cost kept businesses investing in new equipment (Horan, Chinitz, and Hachler, 1996). What emerged was a leaner business firm, able to respond quickly to changing economic circumstances and remain stable under fluctuating economic conditions. The most optimistic observers prophesied the end of the business cycle, claiming that technology had led to the dawn of a New Economy. The New Economy has come to symbolize an entire new paradigm for economic behavior and human life in general made possible through new technologies. The United States had already been moving toward a more knowledge-oriented and service based economy. The rapid proliferation of new technologies accelerated this shift. The rapid advancement in computing power, fiber optics and satellite communications brought an “information revolution” that generated entirely new forms for media and commerce and expanded the possibilities for reaching a global audience without every leaving the home. One new type of commerce, e-commerce, seemed to create commercial value out of information and streams of electronic



transactions. At the start of the 1990s, only the most technologically sophisticated were regular users of the Internet. By the end of the decade, nearly everyone was logged on and surfing the web, exchanging emails with friends and clients and meeting with others in virtual chat-rooms. The recent slowdown of the American economy and the burst of the dot com bubble has cooled much of the early fever over the New Economy. But the debate still smolders, although in a slightly altered form. The debate over the death of the business cycle has shifted from prophecies of perpetual growth to the speed of recovery (Landefeld and Fraumeni, 2001). New Economy proponents claim that the technology-driven cost cutting and leaner firms of the 1990s will dampen the current recession and lead to quick recovery (U.S. Department of Commerce, 2000). Skeptics question whether the boom of the 1990s was nothing more than another cyclical peak whose time has passed.

Despite the popular rhetoric over the New Economy, most academics remain cautious and critical. There is no denying that the high growth/low inflation of the 1990s was unprecedented, or that the information technology (IT) revolution has expanded the possibilities for remote human interaction. What is debated is whether these changes will herald a fundamental and permanent shift in economic behavior, or whether they were just a temporary anomaly brought on by a flurry of innovation and speculation.

Technology can change the ways in which people live and do business. The forces of technological change do not proceed evenly through the course of time, but cluster in bursts of

2

rapid change as innovations spur the creation of other technological developments (Office of Technology Assessment, 1995). Periods of rapid advancement can have profound impacts on the spatial distribution of economic activity within a relatively short period of time. For example, the early 20th Century was marked by many technological marvels such as the widespread distribution of electricity, internal combustion engines and assembly-line production technologies. These developments spawned the ascendancy of new industrial cities that became the engines of economic growth for decades to come. As these new centers grew, other places rooted in obsolescent industries and technologies began the slow and gradual process of decline. Many liken the recent developments in IT to the massive revolutions in transport and other technologies in the early 20th century. Modern developments in computer and IT are generating entirely new modes of communication and offering new possibilities for economic transactions that are freed from traditional space and time constraints (Atkinson, 1998). These developments could significantly reshape America's industrial geography. New technologies have enabled more and improved means of communication, reducing the necessity of proximity in many forms of human transaction. Some researchers have even gone so far as to proclaim the 'death of distance' and the dawn of a world where knowledge workers interact via telephone or satellite from across the globe, friends and family converse mainly through email, and people shop predominantly from on-line retailers (Cairncross, 1997).

As researchers attempt to assess the significance of changing technology on economic behavior, local policy makers seek guidance for developing effective economic development policies to ensure a stable role for their communities in the years ahead. Traditional state and local economic development strategies are based on an implicit view of the business firm as a cost-minimizing agent. By offering tax abatements, interest-free development bonds, or other cost reducing incentives, local officials seek to stimulate local investment by reducing the costs of business and thus luring investment away from other areas. Despite the continued popularity of fiscal incentives, most empirical research indicates that they are relatively ineffective in altering business location decisions (for example, see reviews by Blair and Premus, 1987; and Morgan, 1964). Over the long run these strategies may do more harm than good. Incentives drain scarce fiscal resources that could be spent on other development strategies, such as



upgrading infrastructure, providing for local education, developing local amenities – in general, improving the local quality of life (QOL).

A growing body of research suggests that QOL is becoming an increasingly important consideration in modern business location decisions. This is particularly true for high-technology firms that are less tied to traditional location factors such as transportation costs, proximity to raw materials, and cheap labor. It is also likely that firms in other sectors will become more sensitive to quality of life factors as the diffusion of information technology and other global forces continue to push the U.S. toward a more knowledge- and technology-intensive economy. The pilot study suggests that quality of life, among other factors, influences business location decisions and is viewed by firms as important in attracting and retaining a high-quality work force.

With this in mind, planning and economic development theorists are extolling the virtues of a QOL and amenities based approach to local economic development. They see QOL as a

3
unifying paradigm that satisfies the need for attracting business investment while simultaneously working to improve the lives of existing and future residents. Many local officials have followed suit, incorporating a QOL-based agenda into their development and urban revitalization strategies. Starting in the early 1980s, many cities have made massive investments in civic improvements and rebuilding the inner-city as a center for culture and recreation. Although the evidence is largely anecdotal, it is apparent that many cities have been successful in attracting tourists, shoppers, fun-seekers, residents and even businesses back to downtown (McNulty et al., 1984). Suburbs, small cities and even rural areas are starting to get into the QOL act through the provision of residential amenities designed to cater to the sensibilities of professional households and other highly sought after knowledge workers.

Despite the initial buzz surrounding quality of life and numerous case study success stories of urban revitalization, there is, as-of-yet, little empirical evidence of the effectiveness of an economic development strategy based on quality of life. The research on the importance of quality of life is too anecdotal and generalized to provide a strong policy foundation, while the literature on the impacts of the new technologies on business location remains largely speculative.

Scope of the Paper

The purpose of this paper is not to debate the existence or non-existence of the New Economy, but rather to explore a narrower issue – how recent technological changes are changing business location requirements. Of particular interest is whether businesses are becoming more sensitive to QOL factors in their location decisions as a result of these changes. We examine this issue primarily through a review of the recent literature and through several interviews with small business owners based in the Research-Triangle area of North Carolina, a leading region in pharmaceuticals, university research, information technology, and other knowledge-intensive industries. There have been several recent papers that review empirical studies on the importance of quality of life factors to business location decisions (Blair and Premus, 1987; Dissart and Deller, 2000; Gottlieb, 1994; Segedy, 1997). Rather than replicate these studies, our review attempts a broader synthesis of how recent technological changes will alter business location decisions and the relative importance of QOL. We will assess both what is known and, perhaps more importantly, what is not known about the forces shaping our spatial distribution of economic activity. We hope this knowledge will provide a useful foundation upon which to build future empirical study. Our work should be of greatest interest to policy makers and researchers interested in the possible spatial impacts of new technologies, and what these changes mean for urban and regional economic development.

The remainder of this paper is organized into six sections and a conclusion. Section II



provides a primer on the economic theory of business location decisions. Understanding business location theory is important because it remains the dominant perspective of most academic researchers in the field and lies at the heart of traditional industrial recruitment policies. Section III describes how location decisions are made by business, what is also known as the industrial site selection process. Both business location theory and the site selection process are well known and understood by many scholars and policy makers, and therefore the review of this material will be brief. Section IV reviews a selected set of empirical studies of business location decisions and examines how location requirements vary according to industry–

4

specific requirements, corporate function, firm size, and other firm–specific characteristics. Particular attention is given to the location preferences of high–tech industries. Section V discusses how recent technological changes are expected to affect business location requirements in the near future. Section VI provides a more detailed account of the influence of quality of life factors as a location determinant and which QOL factors are most influential to business location decisions. Section VII explores the use of quality of life as an economic development strategy. Finally, the paper concludes by summarizing the major findings of our study, offering suggestions for areas for future research, and commenting upon the prospects for an amenity–based local economic development strategy.

5

INDUSTRIAL LOCATION THEORY

Location theory has a long and rich historical tradition, its early development is associated with authors such as Weber (1929), Hoover (1948), Lösch (1954), among others. Traditional economic theory views the business firm as an optimizing agent that selects a location to maximize profits. Although simplistic, the profit maximization perspective has withstood the tests of time and proven to be a useful construct for understanding business location behavior. In this framework, the firm is an economic entity that takes a combination of inputs and, through the production process, reconfigures these inputs to produce some type of good. Typical inputs include raw materials, physical and financial capital, and labor. Materials, capital, and labor are represented by their price (wages for labor) at any location. Factors that are not available on–site must be imported, and the cost of transport is typically assumed to increase with shipping distance and weight. The availability and cost of these inputs are likely to vary over geographic space. A firm’s optimal location is determined by the combined cost of each input (including transport costs) weighted by the importance of the input to production. If market demand for the firm’s product is spatially invariant, or if there are zero transportation costs in bringing the good to market, the profit maximization problem reduces to that of minimizing input costs. If market demand varies across space, the firm must also consider spatial variations in revenues and the costs of transporting goods to market from any location. Most of the early work on industrial location focused primarily on the minimization of transport costs (Blair and Premus, 1987) and the historical legacy of viewing the location process as a search for the least–cost location is still prevalent in the work of most industrial recruiters. The optimization paradigm need not be restricted to traditional cost factors. Any factor that could potentially affect the costs of production at a particular site can be incorporated into a firm’s location decision. Some of these factors may directly affect the cost of doing business at a particular site, such as state and local taxes, property values, site construction costs, stringency of local environmental regulations (including clean–up for brownfield sites), strength of local labor unions, and worker compensation laws. Indirect cost factors may also have a potentially large impact on a firm’s bottom line, such as the ease and efficiency of the local permitting process, community attitudes toward business, quality and availability of infrastructure and government services, availability of post–secondary educational institutions to name but a few. Quality of



life factors such as recreational and cultural amenities, regional climate, or local environmental quality may also be considered indirect cost factors. Historically the emphasis of the economic literature has been on testing the importance of direct cost factors although attention has recently shifted to the study of less tangible considerations. The specific findings of some of these empirical studies will be reviewed in greater detail in a later section of this paper.

6

THE INDUSTRIAL SITE-SELECTION PROCESS

Although a useful construct for modeling firm behavior, theoretical models of firm location often fail to appreciate the complexity or richness involved in actual business location decisions. Theoretical models are a simplification of reality. The applicability of these models ultimately rests upon the validity of their simplifying assumptions. Profit maximization models typically assume that firms are rational economic actors operating in an environment of perfect competition and information. In reality, location decisions are not entirely rational, information is imperfect and costly, and large firms often engage in strategic bargaining with local governments when considering alternate sites. Theoretical models reveal little about the process of location choice itself – how decisions are actually made and how decision makers evaluate the trade-offs among different locations. This information is vital for policy makers wishing to take a proactive role in the development of their communities.

Firms approach major relocation and expansion decisions with caution. The decision to expand or relocate is best understood as a strategic decision, part of the larger corporate planning process (Blair and Premus, 1987; Cohen, 2000). Firms are not as mobile as assumed in theoretical models and the opportunity costs associated with moving are high. Planning, building and operating at a new location is expensive and risky, involving a considerable redistribution of existing resources, and dedication of resources for many years to come. For this reason, the first preference of many firms is to remain or expand at or near an existing site, unless some fundamental deficiency prohibits local expansion or makes operation at the existing location unacceptable.

Lacking perfect information and foresight, many corporations engage in a formal site selection process whereby alternative sites are examined and evaluated according to a limited set of key criteria. This is especially true for large businesses seeking to expand or re-locate existing operations. In a limited number of cases, businesses will contract with site-selection specialists to help them find a suitable location for production, but most often, companies make location decisions on their own (Cohen, 2000).

It is just not feasible to evaluate all possible sites according to all potential operational criteria. The site selection process is designed to limit consideration to the most relevant factors for the most likely candidate locations, while making sure that all viable alternatives are considered (Ritter, 1990). The recent development and proliferation of massive electronic databases of regional characteristics permit a much more comprehensive analysis than in the past, enabling firms to evaluate a wider range of criteria and locations, but for most firms the process still remains largely incremental and limited in scope (Blair and Premus, 1987).

To limit the search and information to reasonable parameters, the site selection is carried out in several rounds of elimination, with each successive round involving the collection of more detailed information and the consideration of more criteria. First, the site selection team develops a list of criteria important to the successful operation of the new facility, taking into account its overall role in corporate strategy. The list is often divided into “must-haves” and “would-like” criteria (Blair and Premus, 1987). The must-haves are elements that the firm cannot do without, they are instrumental if the firm wishes to remain profitable or achieve the

7

strategic objectives that motivated the move in first place. The would-like list includes factors



that are desirable, but less instrumental than the factors on must-have list. The must-haves and would-likes are often negative attributes: things the firm wishes to avoid, such as a high-degree of unionized labor or an unfavorable climate. Eliminating locations because they lack essential elements is far easier than assessing and comparing perceived advantages (Ritter, 1990).

The next step is to gather information about potential locations and compare them against the “must have” and would-like” list. Failure to satisfy the must-haves knocks a location out of contention. Often, many locations are deemed acceptable according to the must-have list, in which case the firm begins consideration of would-like characteristics. As the search goes on, more locations are eliminated and the list of evaluated criteria is expanded and viewed with increasing stringency. Locations vary greatly in the existence, strength, and the quality of their would-like attributes. Rarely does one location stand out above all others. As the firm weighs the advantages and disadvantages of each site against one another, it also evaluates the relative importance of the would-like factors to corporate strategy.

When several locations match on the most important attributes, seemingly idiosyncratic or insignificant factors can play a large role in deciding the ultimate choice (Schmenner, 1982). For example, most government fiscal incentives are small when compared to total operations costs for large manufacturing facilities. For this reason, most researchers believe that tax incentives make little difference in influencing corporate choice. However, Bartik (1991) found that finalists in many location searches are often so close in terms of profitability based on traditional cost and market factors that variations in local incentives could potentially make the difference in final location choice.

In addition to the “must have/would like” rounds of elimination, the location search is typically carried out in different stages of geographic specificity, with each succeeding stage focusing on a smaller geographic area. The first stage looks across broad regions, with regions typically defined as states or multi-state areas (i.e. the South-Atlantic, Midwest, etc.). There is often enough variation among regions on key criteria to warrant an initial choice at such a broad level. With the region selected, the search becomes increasingly focused on smaller geographic units. The final stage of analysis considers the attributes of particular communities and/or alternate sites. There are usually multiple suitable sites available within the larger region. Important location criteria often differ between the regional and site-specific stages of analysis (Blair and Premus, 1987). An attractive site situated in an unattractive region may not even be evaluated, and policies aimed at improving site-specific attributes will be less effective if the larger region has fundamental deficiencies. For this reason, both Myers (1987a) and Gottlieb (1994) advocate a coordinated approach to improve the overall QOL for the entire region. Localities within the same state are most likely to be in competition against one another, and therefore state-level resources aimed at improving particular sites may be wasteful. Many economic development professionals are beginning to recognize the hierarchical nature of the site selection process and are designing their economic development organizations accordingly. For instance, North Carolina is divided into seven regional partnerships, each constituting a large and relatively homogenous geographic entity. The partnership staff is responsible for marketing its region as a whole.

8

EMPIRICAL STUDIES OF BUSINESS LOCATION DECISIONS

There have been many empirical studies aimed at identifying the common factors that influence the location decisions of businesses. A certain portion of any firm’s business location choice is likely to be conditional to the peculiar circumstances of the firm. Despite the inherent subjectivity, the empirical literature has been able to detect much empirical regularity across firms. Most businesses have requirements in common with other firms that are in the same or related industries, perform a similar corporate function, are of similar size, or share a common



level of technological sophistication and/or maturity.

Revealed and Stated Preference Studies

There are two classes of empirical studies of business location: revealed preference (econometric) studies and stated preference (survey) studies. Revealed preference studies use statistical techniques to examine correlations between the distribution of economic activity and variations in regional attributes. This technique is primarily useful for researchers wishing to test theory and determine the statistical significance of a limited number of variables while controlling for outside factors. The data for revealed preference studies usually comes from governmental secondary data sources, such as the U.S. Census Bureau. The nature of the data puts strict limitations on the researcher (Calzonetti and Walker, 1991). To ensure respondent confidentiality, records of individual firms are generally not released for public use. Instead, the research must use general measures of economic activity, such as employment or establishment growth by industry, measured across broad geographical units such as Metropolitan Statistical Areas (MSAs) or states. Aggregate measures capture changes in local economic activity that may arise from a variety of sources, such as firm births, deaths, relocations, and in the case of employment measures, layoffs and on-site expansions. Furthermore, relocating firms that conducted an explicit location search may comprise only a small share of these aggregate outcomes (Calzonetti and Walker, 1991).

There has also been an historical bias in revealed preference studies in favor of costs and other “quantifiable” factors over less tangible location factors such as quality of life. Part of this bias reflects the academic interests of economists, and part reflects the limitations of secondary data sources. Secondary data sources do not routinely measure many factors related to site selection forcing researchers to proxy measures to value intangible factors. It is also difficult to develop adequate quantitative proxy measures for qualitative phenomena, such as quality of public services (including education), public infrastructure and amenities, or the region’s quality of life. Government expenditures are a common proxy for public services, but these measures are imperfect because cost does not necessarily represent quality of output. In a worst-case scenario, high costs may reflect government inefficiency in service provision rather than superior quality of service. Despite the persistent difficulty in measuring QOL and other soft factors, there have been notable improvements in proxy measures as researchers have become more and more interested in the role of qualitative factors in economic outcomes (for example, see Blomquist et al., 1988).

9

Stated preference studies are the preferred method for researchers interested in studying the site selection process. Survey studies go directly to the corporate decision makers and ask them specifically to rank the importance of different locational attributes. The researcher does not infer the importance of factors based upon aggregate measures of economic change as in econometric studies (Calzonetti and Walker, 1991). Surveys and interviews can gather a greater depth of information than possible through secondary data sources. Through surveys the researcher can inquire into a greater number of criteria and include open-ended questions to identify seemingly idiosyncratic, subjective or atypical factors (Schmenner, 1982). They can also question directly about the relevance of qualitative factors without the need of proxy measures and distinguish criteria that are separately important at the regional and site selection stages. In the analysis of firm-level data, the researcher can relate locational factors to individual plant characteristics and isolate plant-specific factors from those that are common to firms sharing membership in the same industry, corporate function, plant size, ownership structure or other commonality. Lastly, survey results can easily be presented as ordered rankings of location criteria to indicate the strength of preference across respondents. These results are much more straightforward for policy-makers to understand than coefficient estimates



developed through sophisticated econometric techniques.

The survey approach has several weaknesses. Survey studies are expensive, time consuming, and often difficult to implement. Most corporate surveying is done within a single state or sub-state region, because of state or regional funding sources. Surveys conducted over a narrow geographic scope may not be applicable to other regions and may bias results due to the self-selection of businesses to particular geographic areas. Gottlieb (1994) recognizes that preference surveys always include an implicit evaluation of their existing location and should not be used to compare the pure preferences of two groups. For example, Love and Crompton (1999) found that firms that relocated within Colorado ranked quality of life lower than firms that relocated from out-of-state. The authors argue that since Colorado is favored with natural beauty and abundant recreational amenities, firms relocating in-state might take these things for granted in their survey responses and choose to focus on deficiencies of the region. On the other hand, Johnson and Rasker (1995) found that businesses in the Yellowstone National Park region gave the highest rankings to scenic beauty and recreational amenities and that older firms gave significantly higher rankings to quality of life factors than more recent arrivals. In this case, it is likely that the self-selection of firms that located in the Yellowstone region may have resulted in a more positive evaluation of amenities than would be the general case. It is also possible that local concerns about over-development, deforestation, or the industrialization of Yellowstone compelled existing businesses to rank environmental factors highest in the hope of protecting these resources. In any case, localized respondent bias limits the applicability of survey findings to other regions. Overcoming this bias requires careful wording of survey questions and, preferably, the use of random or stratified sampling techniques with surveyed firms pulled from a range of locations.

The validity of survey findings is also threatened by low response rates, the adequacy of the sample frame, and improper completion of questionnaires. Corporate decision makers give a low-priority to filling out surveys. Despite follow-up calls and reminders, many studies still suffer from painfully low response rates. If the response rate is too low, the sample may not be representative. Furthermore, the survey should be limited to firms that have recently undergone

10

a site selection decision. Developing a representative list of newly relocated firms can be difficult. For example, in our pilot study we found that several firms that had relocated to the Research Triangle area within the last two years already had gone out of business. With the passing of time, many decision makers leave the firm or forget about the original reason prompting the location choice. It is also difficult to correctly identify the key decision maker within the firm. Even if the decision maker is identified, there must be assurances that the correct person answered the questionnaire. It is also possible that a respondent will intentionally misrepresent their answers in hopes of skewing policy in their favor. For example, a business owner may inflate the importance of tax incentives as a determinant of site selection in their response, hoping that government will continue to offer more and larger incentives. These and other types of respondent bias are very difficult to identify and control in surveys.

Evidence from Empirical Studies

The evidence from empirical studies largely confirms the conventional wisdom of the traditional profit maximization models. Firms primarily choose locations that satisfy the input requirements, access to markets, and the balance of the costs of these factors given transport costs. This is particularly evident in older empirical studies. In a review of empirical studies of the 1940s, 1950s and early 1960s, Morgan (1964) found that traditional factors such as market access, labor costs, and raw materials were the most commonly mentioned by manufacturers. Yet, these traditional factors are becoming relatively less important to firm location decisions as a result of changes in production and communications technologies, faster and cheaper forms of



transport, and overall changes in the industrial composition of the United States. In a more recent review of the empirical literature, Blair and Premus (1987) found productivity, education, taxes, community attitudes toward business and other quality of life factors are increasingly recognized as influential, although they still lagged behind traditional factors on most accounts. Quality of life factors are predominantly viewed as “would-like” items for most firms, becoming important when other production costs are similar across two or more locations (Ryans and Shanklin 1989; Ritter, 1990). Some believe that QOL factors are important considerations from the onset, particularly for high tech and other knowledge intensive sectors of the economy (Myers, 1987a, 1987b). Love and Crompton (1999) believe that both perspectives are likely to be partially correct, depending upon the peculiarities of the industry or firm.

There appears to be a general consensus among researchers on the most important factors driving industrial location decisions when measured on a broad cross-section of businesses. Some of the most comprehensive work on the industrial site selection process has been conducted by Roger Schmenner (1982). In his study of Fortune 500 companies, Schmenner found that favorable labor climate was the most important factor. His study also stressed the importance of proximity to markets for many firms, while QOL and government incentives were found to be of relatively lesser importance. A Fortune Magazine survey (1977) of the 1000 largest corporations found labor availability to be the most important factor in the choice of location for the most recently sited plants, with access to markets the most important consideration for future plant sitings. An Industrial Week (Goldstein, 1984) survey of 1000 executives found transportation to be the most important locational factor, followed by worker productivity, unionization, and tax credits/exemptions. QOL and education were described as

11

becoming increasingly important, but had much lower rankings. Most of the surveys on business location decisions were conducted in the late 1970s and early 1980s. There have been few comprehensive surveys of business location decisions over the past decade.

The rankings vary when businesses are classified by industry sector, corporate function, size or technological intensity. Retail and personal service businesses locate to maximize sales revenue rather than to minimize transportation costs (Cohen, 2000). The location of retail and personal service firms are largely dictated by existing and anticipated patterns of target residential populations, particularly affluent households with greater disposable income. There is also a tendency for specialty retail and personal service establishments to cluster in specialty shopping or entertainment districts, typically in or near the downtowns of major urban centers. Such agglomerations of similar activities tend to attract more patrons than if they were spread across a larger area.

In general, corporate headquarters tend to locate in the central business districts of world-class cities, such as New York or San Francisco, although several recent high-profile relocations of corporate headquarters to suburban campuses have some questioning the continued advantage of the downtown as corporate hub. Corporate headquarters are usually found in cities with excellent airline connections, an abundance of professional support services, and a variety of amenities that appeal to the sophisticated tastes of the managerial elite (Cohen, 2000). There are several reasons why headquarters are located downtown. Managerial elites and executives prefer the amenities and lifestyle of the big city. Location in the CBD may also minimize commuting times from a variety of locations in the metropolitan area as suburban commutes continue to become more and more congested. The downtown setting also offers a variety of restaurants for luncheon meetings and abundant entertaining opportunities for out-of-town clients (Fortune, 1977). Having a downtown address in a major city is also seen as more prestigious by some firms. Downtowns also offer more opportunities for the face-to-face exchange of information and ideas so as to keep abreast of the latest developments. Large law offices and other major



professional service industries also find downtowns appealing, primarily for proximity to their corporate and government clients.

Large-scale manufacturing branch plants are the most sensitive to the locational cost-differentials, and therefore are most sensitive to the traditional economic factors of location, such as labor costs, proximity to markets or raw materials, transport costs, utilities and so on. Tax and other policy-related variations may also be important to cost-sensitive manufacturing plants, but the empirical evidence on this point is less clear. Most researchers believe that taxes and other fiscal incentives become a consideration in the location of when regions are matched on most other criteria, or when businesses are evaluating specific sites once a region has been selected. Quality of life is generally of lesser importance for traditional manufacturing sectors. For example, in a study of comprised largely branch plants in the South Atlantic states, Hekman and Greenstein (1985) found state and local industrial climate, labor productivity, transportation, land availability and cost to be the dominant factors, while QOL factors were given generally lower rankings. Granger and Blomquist (1999) found that manufacturers that are more labor-dependent (measured as annual payroll divided by annual value added) are more attracted to high-amenity urban locations.

12

The Location of High-Tech Industry

Except for the recent setbacks in the computer and telecommunications industries, high-technology firms have been a fast-growing sector of the domestic economy and are highly prized by economic development officials. High-tech industries also serve as an indicator of changing location requirements of other economic sectors, as these other sectors become more technology and knowledge oriented in their production processes (Cortright and Mayer, 2001). High-technology firms are usually defined by large expenditures for research and development and a high percentage of employees that are scientists, engineers and technicians. High-tech industries are also more science-based in that they bring scientific advances to the marketplace in the form of new products and production methods (Premus, 1982).

The availability and cost of technical labor is perhaps the most important determinant of location for high-tech firms, followed by proximity to universities (Schmenner, 1982; Premus, 1982). Premus (1982) also found taxes, cost of living and transportation an important regional determinant of high-tech location. In a review of the site selection literature, Gottlieb (1994) found the presence of skilled labor or a local university engineering program with strengths in the firm's field are commonly cited as top location factors for high-tech firms. High-tech firms also consistently give higher ranks to QOL factors than do other firms, and QOL factors frequently rank higher than traditional factors for high-tech companies (Blair and Premus, 1987). For example, Stafford (1983) found that quality of life ranked seventh out of ten factors for all plants in choice of region, but third out of ten for high-tech firms. When the sample is restricted to only R&D facilities Lund (1986) found that QOL was the most highly ranked factor among high-tech R&D facilities whereas all R&D facilities ranked QOL third out of six.

High-technology manufacturing is more concentrated in metropolitan areas than less technology intensive industries (Herzog and Schlottman, 1991), although it may become more geographically dispersed over time as the technology matures and production becomes more routine (Schneider and Kim, 1996). Within metro areas, much of the growth in high-technology employment has been in the suburbs (Herzog and Schlottman, 1991; OTA, 1995; Schneider and Kim, 1996).

Research and development (R&D) facilities, an important subset of the high-tech industry, have been the focus of several notable studies (Malecki and Bradbury, 1992; Harding, 1989; Lund, 1986). The location decision for R&D facilities is dominated by the need for communication with other units of the firm and access to technical and professional workers



(Harding, 1989; Lund, 1986). Operating costs are rarely a major consideration in the location of a research lab. The largest costs are often compensation for researchers whose salaries are set to national scales (Harding, 1989). The need for close interaction between R&D, marketing and administration has historically tied the location of many R&D facilities to close proximity with corporate headquarters. Firms with only one R&D facility nearly always have them located near the corporate headquarters while firms with more than one R&D facility are also likely to have at least one facility near headquarters (Harding, 1989; Howells, 1990). R&D facilities are highly sensitive to quality of life issues mostly due to their need to recruit and maintain “knowledge workers” (Ritter, 1990). R&D facilities are drawn to major research universities to recruit graduates and provide up-to-date training for employees (Malecki and Bradbury, 1992; Harding, 13

1989). Universities tend to provide cultural and recreational opportunities that appeal to knowledge workers and are otherwise unavailable outside of the largest urban areas. Proximity to research universities also offers opportunities to engage in direct collaborative research between industry and university faculty. This may be of great importance for cutting-edge sectors, such as bio-tech, that are more science-based and where the product development and testing requires frequent interaction. Some researchers argue, however, that many R&D facilities maintain ties with distant major research universities for access to research information and employee recruitment and therefore do not necessarily need to be within close proximity (Howells, 1986; Malecki and Bradbury, 1992).

Region Versus Site Selection

As mentioned previously, the formal site selection process is usually conducted in stages, starting with the choice of a general region and ending with the selection of a specific site within that region. It is important for policy makers to differentiate regional, community and/or site-specific factors, because the effectiveness of different policy instruments varies at different stages of the search. Cohen (2000) provides the following examples of regional and site-specific attributes:

Regional attributes:

- Access to major roads
- Skill level and suitability of the labor market
- Availability and cost of housing
- Adequacy of transportation systems
- Access to suppliers and contractors
- Proximity to natural resources
- Presence of competitors
- Position within the market for the company’s products
- General taxation and tax policies of the state
- Workers compensation costs

Site attributes:

- Road/rail/truck access
- Presence or absence of tax liens
- Title complexities
- Cost and availability of water, sewer and solid waste disposal
- Telecommunications capacity
- Possible environmental remediation

Few studies distinguish among the factors relevant to selection of the region from those that are relevant to the selection of the particular site or community. Revealed preference studies are almost universally restricted to regional attributes because of their reliance on secondary data



reported in aggregate geographic units. Most stated preference studies do not make an explicit distinction between site and regional criteria, and it is often unclear whether the respondent was thinking of regional or site selection when ranking different factors. This is especially true when the survey form uses vague and general terminology. For example, “local property taxes” are

14
clearly a site or community factor, and “state tax policies” are clearly regional, but the more general “tax burden” is less clear.

To make a distinction between regional and site factors, Schmenner, Huber, and Cook (1987) developed a two-staged logit model for 114 new plants for large companies that underwent a multi-state site search. Lower labor-union activity, lower building costs, warmer climates, and lower population densities were found significant at the first stage (regional level), but the researchers could not determine a significant determinant of location choice at the second stage (site level). In his study of 691 high-tech firms, Premus (1982) found that proximity and cost of technical and skilled labor was an important factor at both the regional and site level choice. He also found that taxes, good schools, space for expansion, local transportation, and recreational and household amenities were also considered important at the site-specific level of search. From a national survey of new manufacturing plants recorded in Dunn and Bradstreet, Calzonetti and Walker (1991) reported that markets and labor were tied as the most important regional factors, followed by land and taxes. For the local search, markets were the major factor, followed by unions, highways, wages and livability. Based upon his review of the site-selection literature, Haug (1991) concluded that availability of plant and office sites, property costs, construction costs, community attitudes and ample space for expansion are also critical site factors.

15

THE SPATIAL IMPACTS OF TECHNOLOGICAL CHANGE

Technological change alters the geography of industry in two fundamental, but interrelated, ways. The first is the aggregate change in industrial composition that results from shifts in consumer demand. Growing demand from both households and businesses for new technologies and products stimulates the growth of industries supplying these technologies, and spawns entirely new industries. In general, the creation of new products makes older products and technologies obsolete and the industries producing older technologies must either modernize or face decline. Because particular industries tend to concentrate in space, the rise and fall of industry fortunes is often paralleled by regional growth and decline. For example, the employment of the traditional U.S. manufacturing base has steadily eroded for the past half century, resulting in the slow and steady decline of the factory towns of the industrial Midwest and Northeast. As these sectors wane, knowledge intensive sectors such as research and development, advanced producer services, and high-tech manufacturing are emerging as the driving force behind American economic power. Areas with an early advantage in these breakthrough industries, such as California’s Silicon Valley, Austin, Texas and the Research Triangle region of North Carolina, have been blessed with strong economic growth over the past several decades, although they have suffered setbacks recently.

The second effect of technological change results from the application of new technologies in production and/or service provision. New methods of production alter the relative importance of inputs and thus the location requirements of firms. For example, a factory that once selected a location near cheap labor now has greater need to be near engineers that can operate and maintain the capital equipment of their largely automated production lines. The potential spatial impacts of the information technology (IT) revolution has captured the imaginations and interests of researchers, but most of the work remains theoretical, anecdotal and speculative (DeMichelis, 1995–96). The IT revolution is just too recent and rapidly evolving



to make accurate predictions based upon empirical evidence. Many of the information technologies at the forefront of the New Economy were originally developed in the late 1960s and 1970s, but only recently have these technologies been widely adopted (Atkinson, 1998). The major debate is whether the continued diffusion of IT will lead to further concentration or dispersal of economic activity. Historically, the location of many cities was determined by natural advantages such as waterways and harbors, but industry and commercial activity concentrated in a small number of cities because of agglomerative benefits associated with physical proximity among firms, suppliers, and customers (Glaeser et al., 1992). Modern information technologies allow economic activities to be physically separated, yet functionally close, thus reducing the necessity of physical proximity (Johnson, 1991). If the traditional advantages of urban agglomerations can be replaced by remote forms of communication, many believe that desire for low-cost locations will disperse economic activity and result in further deterioration of the economic base of cities and inner suburbs, with growth continuing to spread to the urban fringe, smaller urban centers, and possibly rural areas (Atkinson, 1998; OTA, 1995). The affect is somewhat similar to the improvements in ground and air travel over the 20th century that fueled the growth of metropolitan suburbs and the decline of the central city. The difference is that IT transactions need not necessarily be constrained to within reasonable travel

16
distances, opening the possibilities for an even more diffuse pattern of spatial location than seen in the past.

The fact that IT allows for the further dispersal of many economic transactions does not ensure deconcentration. There are many solid arguments in favor of a greater concentration of economic activity as a result of the proliferation of IT, although none go so far as to predict a massive revival of the dense urban settlements of yesteryear. Many argue that technological change is increasing the importance of agglomeration economies. Some believe that the proliferation of IT is shortening product life cycles, forcing firms to continually innovate in response to swift changes in consumer preferences (Markusen, 1996; Barkley and Hirschberger, 1992). Innovation thrives in a more open and diverse environment where there is a continual influx of ideas facilitated by the formal and informal exchange of ideas across people, firms and industries (Jacobs, 1969). Innovative firms favor core locations close to markets, suppliers, and a skilled, adaptable work force. It is likely that communications technologies work in both directions, concentrating some and dispersing other economic activities, leading to the consolidation of managerial and administrative functions in a handful of world-class cities while other functions are spread to less expensive locales (Moss, 1998; Gaspar and Glaeser, 1998). The core of this debate relates to the ascendancy of new modes of communication and whether these are substitutes or complements to spatial proximity. In his book *E-Topia* (1999), W.J. Mitchell classifies the possible modes of communication as being either local or remote, and synchronous or asynchronous (Table A). Face-to-face interaction offers the most intense, high-quality, potentially enjoyable interaction, but it is also the most expensive option both in opportunity and direct costs. Asynchronous and remote forms communications are both far less direct and intense than direct personal contact, but they are also far cheaper in most situations. Asynchronous communication allows contact across time, reducing the need for coordination of the parties involved. Remote communication removes the distance barrier, removing the need for a direct physical presence.

Table A: Modes of communication, costs and benefits

Synchronous Asynchronous

Local *Face to face meeting*

Requires transportation

Requires coordination



Intense, personal

Very high cost

Leaving handwritten message

Requires transportation

Eliminates coordination

Displaces in time

Reduces cost

Remote Telephone, Video Conferencing

Eliminates transportation

Requires coordination

Displaces in space

Reduces cost

Email, Telephone Message

Eliminates transportation

Eliminates coordination

Displaces in time and space

Very low cost

Source: W.J. Mitchell, E-Topia (1999)

17

Improvements in IT expand the possibilities for more remote and asynchronous types of communication. To reduce costs, firms will likely substitute more expensive forms of communication (i.e. synchronous–local) with less expensive, more–remote forms. Improved remote communication also permits new forms of corporate organization and control.

Historically, corporate headquarters, research and development, back–office administrative and clerical functions, and manufacturing facilities had to be located within relative proximity to ensure coordination and proper oversight. Advances in telecommunications technologies have greatly reduced the constraints of distance, and are permitting the spatial separation of corporate functions (Cohen, 2000; Ewers, 1995; Harding, 1990). The quick and reliable transmission of information frees each function to locate in optimal location according to its own production requirements (Office of Technology Assessment, 1995).

Despite the greater use of remote and asynchronous methods of communication, many functions still depend on face–to–face interaction. Firms with these needs will continue to find it advantageous to remain in a central city or other area of urban agglomeration. Functions with relatively low cost pressures and high communication needs are best suited to the central city (Harding, 1990). Face–to–face communication is essential where there is a need for on–going collaboration and where instructions can be easily misunderstood (Gasper and Glaeser, 1998).

As such, corporate headquarters are likely to favor downtown locations that maximize opportunities for interaction, in spite of the high real estate costs. The need for concentration is also likely to remain in other areas of professional service such as accounting, law, and consulting. R&D facilities also have high information requirements and may prefer the urban setting. The most advanced R&D facilities may find it advantageous to locate closer to research universities where there is potential for collaboration with groundbreaking researchers and access to highly skilled recent graduates and graduate students.

Routine service and production activities with relatively low–information requirements will continue to move out of the central business district. Back office functions in particular are becoming more footloose with the diffusion of IT (Richardson and Gillespie, 1996).

Historically, the back office was similar to an assembly line for processing information (Moss, 1998). When information was mainly processed in paper form, these functions had to be located close to corporate headquarters or other managerial units. With information in electronic form



routine back-office work can be easily divorced from front-office management functions. Back-office functions first were relocated to the suburbs and to small and mid-sized cities – places that combine cheaper land and labor costs with solid telecommunications infrastructure and abundant moderately skilled and articulate workers for clerical and customer service positions. More recently, several companies have moved such operations overseas. Routine manufacturing operations have long abandoned the central city in search of cheap and abundant labor and relaxed environmental standards. Improved methods for remote control and coordination, cheaper goods transport, and loosened international trade barriers have acted in concert to intensify the spatial decoupling of manufacturing from corporate management (Scott, 1988). Over the past quarter-century, the most cost-sensitive manufacturing operations have found it most profitable to relocate to offshore production facilities or automate routine functions, eliminating many domestic jobs in low- and semi-skilled positions. The remaining manufacturing jobs require a greater degree of skill and technical know-how to operate

18

sophisticated machinery and equipment. In essence, firms in traditional manufacturing sectors are becoming more and more like their high-tech sector counterparts, in both productive inputs and in location requirements. As domestic manufacturing becomes more technology dependent, labor availability and QOL factors will likely take on an even greater importance.

The globalization of production is also intensifying quality and cost pressures and increasing the importance of speed and flexibility in production (Harding, 1990). In response, many domestic manufacturers have turned away from large-scale mass-production systems opting for more flexible forms of production, such as just-in-time (JIT) delivery systems. Flexible production enables firms to respond swiftly to changes in consumer demand and reduces the need to store and maintain large stockpiles of inventory. As a result, there is less need for large warehousing facilities, but a greater need for access to airports and major shipping nodes. Flexible production also requires more direct interaction between producers and customers, pushing producers closer to their markets and suppliers (Harding, 1990).

The Prospects for Rural Economic Development

Several writers describe great possibilities for a rural renaissance in the New Economy, and argue that technological change, corporate restructuring, and the growing emphasis on quality of life is likely to lure businesses and knowledge workers back to the nation's small cities and towns. Daniels (1993) argues that technological and production changes such as telecommuting, “right-sizing” of resident corporate personnel, outsourcing and the geographic separation of corporate divisions offers an opportunity for many small and rural communities to get into the corporate location process by the marketing their amenities and high quality of life. The small town environment, reports Daniels, fosters “traditional values” that are attractive to professionals wishing to balance work, family, and community. Heenan (1991) similarly finds that QOL amenities found in small towns offer many advantages over the more traditional urban, suburban, and even edge city locations. He argues that decentralized firms tend to relocate into smaller, more amenity-rich communities, and do so at a lower cost (in terms of land, labor and taxes) than for comparable metropolitan sites. Rural places with sufficient telecommunications infrastructure and with high social and environmental amenities are well-suited for routine information processing activities, particularly back-office functions such as data processing (Johnson and Rasker, 1995).

Despite this hope and optimism for revival, it is somewhat doubtful that the IT revolution will result in an American rural renaissance at any appreciable scale. Several authors have cited a recent trend toward decentralization in American population patterns (OTA, 1995), but this decentralization has mainly been from the largest urban areas to smaller and mid-sized metropolitan areas, not to remote rural areas. For rural places, the most likely beneficiaries in



the New Economy will be those places with particularly outstanding natural amenities or rural areas on the metropolitan fringe as a result of continued decentralization.

There is a common perception that a high quality of life is only available in rural areas, that is, it is purely a rural trait. It is true that some highly valued amenities (clean air, outdoor recreational opportunities, less traffic congestion, and greater public safety) are more common in rural areas, but other quality of life factors such as museums, concerts, parks, major sporting

19 venues, restaurants, and shopping districts are more likely to be found in highly diversified urban areas. There is some evidence that QOL factors associated with small places are more highly prized by professional workers. For example, in a national survey of R&D professionals, Malecki and Bradbury (1992) found that environmental quality, cost of housing, recreational opportunities, crime rate, climate, community attitudes and traffic congestion were the most important attributes in the valuation of an 'ideal' future location. Despite an implicit preference for a rural QOL, most high-tech and knowledge professionals choose to live in large metropolitan areas (Glasmeier, 1986; Markusen et. al., 1986). Furthermore, many employers have found it difficult to recruit, transfer and relocate highly skilled workers to remote locations (Glasmeier, 1986; Harding, 1989). Access to better job opportunities is the primary draw of professionals to larger urban areas (Herzog and Schlottman, 1986, 1989). These urban labor-pooling benefits are especially important for the dual-career professional couples (Malecki, 1987). Although perhaps not ideal, urban professionals and professional couples do show a favorable appreciation of the available urban amenities at their present location (Malecki and Bradbury, 1992).

Recognizing the growing importance of skilled workers and QOL factors in an increasingly technologically and knowledge-oriented economy does not mean that these are the only relevant factors to industrial location in the New Economy. There is no evidence that firms will seek out amenities to the exclusion of all other location factors (Gottlieb, 1994). This is consistent with the findings of our pilot study (see Appendix). Firms may be more cognizant of the QOL attributes of particular places, but certain amenities generally associated with threshold city size remain crucial. The bundle of agglomeration benefits offered by large metro-areas is likely to outweigh the singular QOL benefits of smaller places for most firms. Overall corporate needs are still best satisfied in larger metropolitan areas, and these areas also provide the best match between the entire spectrum of employer and employee requirements (Malecki and Bradbury, 1992).

Telework

The same advances in IT that are permitting corporate decentralization also allow for a separation between individual workers and the traditional workplace. Telework or telecommuting refers to the partial or complete substitution of an employee's normal working hours in a traditional office for the home or neighborhood telework center. The U.S. Congress' Office of Technology Assessment (1995) reports that three kinds of tasks are amenable to telework: routine information-handling tasks, mobile activities, and professional and other knowledge-related tasks. The prospect for widespread telecommuting has gained the attention of many transportation researchers as a possible relief for urban rush-hour congestion. The potential for telework has also spawned speculation of the death of the traditional office and the large-scale emergence of "lone-eagle" workers who reside in remote rural locations to satisfy lifestyle preferences and interact with co-workers and colleagues almost exclusively through remote contact. Others view a knowledge economy powered by electronic migrants who perform contract work on a per-job basis for corporate employers around the globe (Blakely, 2001).

20



Initial empirical evidence suggests that potential for telework to bring about sweeping changes in workplace and residential location patterns has largely been exaggerated (Handy and Mokhtarian, 1995). Even in the growing service industries of the New Economy, many jobs still rely on a direct physical presence (Salomon, 1996). Even for those with a job amenable to telework, many workers and managers have been reluctant to make the shift (OTA, 1995). Physical interactions around the office, including informal conversations by the water cooler, are still important to many kinds of work and organizations. Fears of social isolation and being forgotten by supervisors, the difficulties of managing large-scale tele-work schemes, the risk of losing both creativity and team spirit within organizations, and the economic precariousness of much freelance work have proven to be significant barriers (Gillespie, et. al., 1995; OTA, 1995). Those who do telecommute tend to work at home only two or three days a week, with the balance of their work done in an office (OTA, 1995).

Technological Change and Quality of Life

Quality of life is most important for “footloose” firms and industries (Sedegy, 1997). A company is footloose if its financial performance is relatively independent of its location (Love and Crompton, 1999). These firms are marked by a greater reliance on employees and less reliance on access to raw materials, land, labor capital and transport costs, utility rates, and other cost factors. By definition, a firm is amenity-oriented in its location-decision only if it is footloose (Gottlieb, 1994). The simplistic classification of a firm as being either footloose or non-footloose disguises the fact that there are degrees of “footlooseness.” Declining transport costs, the spread of global networks of telecommunications infrastructure, and other technological innovations have been equalizing regions on many traditional cost factors for many types of firms, thus freeing the firm to concentrate on other factors that remain spatially variant (Granger and Blomquist, 1999). Being relatively footloose does not guarantee that the firm will choose a QOL-rich region. In some cases, the footloose firm may choose to focus on QOL factors, while in others the firm may become hyper-sensitive to even minor cost differentials. As traditional costs equalize across regions, it is possible that fiscal incentives can have a relatively larger differential on a firm’s bottom line and tip the scales in favor of one location over another (Bartik, 1991).

Many researchers also contend that loosened traditional constraints will allow for decision makers to increasingly choose locations according to their own personal preferences. Personal preferences and other seemingly idiosyncratic factors often make the difference in the final choice of location (Blair and Premus, 1987; Glaser and Bardo, 1991). There is also an inter-relationship between preference of decision makers and high QOL. When the key decision makers relocate with the firm, QOL factors are given a higher ranking (Love and Crompton, 1999; Ritter, 1990).

What is not clear is how far a decision maker is willing to go to realize their own personal lifestyle preferences, when these preferences conflict with basic profitability and/or location preferences of key employees. Although a few contradictory cases exist, most researchers agree that personal preferences make a difference mainly in cases where regions are tied on critical factors. The major exception is perhaps the case of small businesses and start-up companies. Small businesses put higher emphasis on personal preference and QOL than large firms. These

21

firms do not typically engage in a comprehensive site search as do their larger counterparts, but rather tend to locate for proximity to the residence of the owner/founder of the firm (Galbraith and DeNoble, 1988; Haug, 1991). The potential contribution of small businesses to local economies should not be underestimated. Small firms are a large part of the U.S. economy. As the trend from large to small companies continues, the relative importance of QOL on business location decisions is expected to increase in importance (Love and Crompton, 1999). Smaller



firms are often more innovative than larger firms. Although roughly half of all small business ventures fail within the first few years, those that survive often become a powerful source of future regional growth (Birch, 1987).

22

QUALITY OF LIFE AND SITE SELECTION

Thus far, we have assembled considerable evidence regarding the importance of QOL to modern business location decisions. Quality of life factors are commonly cited as important factors to the location of firms, but still lag traditional cost and market access factors in their relative importance. Quality of life factors are also growing in their relative importance: factors which were rarely considered significant to business location decisions prior to the 1970s are becoming increasingly important as the composition of the U.S. economy shifts to more high-tech and knowledge intensive sectors (Blair and Premus, 1987). Globalization and technological change have increased competitive pressures in all sectors of the U.S. economy, leading to greater capitalization and the use of sophisticated productive methods (Harding, 1990). There is a growing dependency on skilled labor and less need for large pools of cheap labor.

Areas that are able to attract and retain skilled workers are most likely to be successful in the near future, and pools of highly educated and technically skilled labor can only be maintained in areas with an appealing QOL and favorable amenities (Schmenner, 1982). A high local QOL can also reduce labor force turn-over, a factor that is all the more critical because of the longer time frame it takes to get knowledge workers up to speed (Lyne, 1991). In this section we examine QOL in greater detail by reviewing studies that look specifically at QOL.

What is Quality of Life?

Up to this point, we have approached quality of life primarily as a singular entity, in large part because many of the more general studies of business location decisions often treat it as such. When defined in such a broad and generic manner QOL is a fairly meaningless tool for informing policy. It is inherently vague and subjective. Simply asking a firm or a person whether high QOL of life is important is pointless: the term will have a different meaning to each person, but in nearly all cases the overall response will be positive. To an executive, a high QOL may invoke visions of a large estate in a gated community with world-class golfing facilities and low property taxes. To another person, a high quality of life may mean a walkable community with bike trails and a solid public school system.

At present, there is no consensus on which factors should be included in a QOL analysis (Venable, 1991). Still, there is a great need for the concept of QOL to be more specifically defined by its component elements. Myers (1987b) recommends that communities begin internal monitoring of their local QOL to guard against deterioration of positive local resources that may deter future economic activity. There are many possible contributors to an area's overall quality of life: recreational amenities, cultural opportunities, environmental quality, climate and affordable living costs, to name but a few. Before communities begin tracking QOL indicators, they must first understand what it is they should be tracking and the relative importance of these individual elements to the overall QOL of a region. Rarely does one QOL factor sway business and residential decisions, but rather the entire bundle of offerings of a local area.

There is a general consensus among researchers that popular indices of regional QOL, such as the Places Rated Almanac, are exceptionally poor indicators, because they use arbitrary

rankings and fail to appreciate intra-metropolitan diversity (Gottlieb, 1994; Luger, 1996).

Cushing (1997) notes that many studies use a broad definition of QOL contributors, including both traditional economic factors (income opportunities, employment opportunities, and cost of living) as well as local amenity factors (climate, quality of schools, and cultural and recreational opportunities). Other studies only include local amenities. Cushing argues the more restrictive



definition is the more informative. At a minimum environmental quality and growth issues, local education quality and opportunities, and crime and public safety issues should also be included in QOL location studies, although perhaps listed under separate categories from amenities. These factors should be included primarily due to their policy relevance for local governments.

Which Quality of Life Factors are Important?

A few recent studies include a more in-depth analysis of the factors that contribute to local quality of life and provide a much more specific itemization of which of these factors singularly influence business location decisions. In general, there is little agreement or evidence over which QOL factors are most vital to economic development (Segedy, 1997; Kumcu & Vann, 1991). In a review of several of these studies, Gottlieb (1994) found environmental quality to be the highest-ranking QOL factor for both high-tech and non high-tech firms. He also found that cost of living, cost of housing, and commuting issues were often reported to be of greater relative importance while school quality, cultural amenities, and public safety to be of lesser relative importance to high-tech firms when compared against responses of all firms. Gottlieb explains his surprising findings as the likely result of location bias in survey studies, reflecting urgent problems at a firm's present location rather than criteria used to make choices between alternate locations. High-tech firms tend to locate in suburbs of large urban areas where traffic congestion and housing affordability are severe problems. The suburbs also tend to have relatively good schools and low crime. Several authors argue that high-tech firms are highly sensitive to push-factors such as crime, environmental degradation, and traffic congestion that make fast-growing areas less desirable to skilled workers, (Gottlieb, 1994; Myers, 1987a; Taylor, 1987).

Several studies measure the importance of quality of life factors in local development by surveying economic development professionals, rather than surveying particular firms. Surveying economic developers may be advantageous in that each usually can draw from a broader range of experiences than a business executive who may have experience with only a few actual site selections. Then again, the responses of economic developers may be biased by their professional orientation. Most economic developers continue to define their roles largely in terms of targeting large branch plants with incentives rather than developing long-term endogenous development strategies (Fusi, 1991), and may be more likely to view traditional recruitment tools more favorably in survey responses.

In general, economic developers are beginning to recognize the growing importance of quality of life factors and amenities to industrial site selection (Gottlieb, 1992), although they still regard cost-related issues as the most critical factors and QOL factors as primarily tie-breakers (Fusi, 1991). For example, in a recent survey study of local economic development policy-makers in England, Wong (2001) found that traditional factors (defined as physical resources, location, human factors, finance and infrastructure) tended to rank higher than

24
intangible factors such as institutional capacity, business culture, community identity and image. Wong also found that economic development professionals in the more high-tech areas give greater weight to QOL factors than their counterparts in the areas with a more traditional manufacturing base.

When QOL does become an important location factor, economic development professionals consistently rate education at or near the top of the list. In the 1991 Site-Selection Magazine survey of U.S. economic development professionals, 48% of respondents said that reasonable cost of living was the most important QOL factor, followed by proximity to colleges and universities, nature-oriented recreational opportunities, and quality of K-12 education (Fusi, 1991). In a survey of 50 Indiana communities, respondents ranked education as the most important QOL factor, followed by infrastructure, health and safety, public services and



community life (Segedy & Truex, 1994).

Does Quality of Life Influence Location Decisions of Firms or Workers?

There is an implicit assumption of most researchers that QOL factors have little or no direct impact on business criteria that is truly independent from worker preferences. Most studies assume that while amenities enter the utility functions of residents directly, they only influence firm location decisions indirectly through their effects on employees and their families. Gottlieb (1994, 1995) defines amenities as location-specific, non-exportable goods or services that primarily benefit employees in their role as residents or commuters. Under this definition, the impact on businesses is necessarily indirect. The businesses themselves do not benefit from amenities and a high quality of life, but rather seek out high-amenity areas to satisfy labor-force requirements.

There are several alternative perspectives pertaining to how amenities and other QOL factors influence business location decisions through labor force preferences. Some authors emphasize the market power of skilled workers in an increasingly high-tech and knowledge-intensive economy (Herzog and Schlottman, 1991; Malecki and Bradbury, 1991; Lyne, 1988). The speed of technological change in conjunction with a reduction in the number of entrants into the U.S. labor force, particularly those with technical skills, have created a skills gap that places a major constraint on corporate location (Lyne, 1991). Corporations are finding it more difficult to find areas with a work force sufficient to staff many of their firm's facilities, and thus are drawn to areas that can attract and retain scarce and highly-skilled talent. In skills-short markets, location is one of few ways that companies can compete for talent without beginning a salary war (Harding, 1989).

Realizing their advantageous position, knowledge workers choose to reside in amenity-rich areas, and knowledge-intensive firms follow in order to gain access to deep pools of highly skilled labor. Knowledge workers are highly mobile and display strong locational preferences (Malecki, 1987; Malecki and Bradbury, 1991). Wage rates for professional workers are often set at national scales and tend not to vary significantly among local labor markets (Topel, 1986). Because compensation levels vary only slightly, professionals tend to distinguish locations according to quality of life factors rather than wage rates (Morgan and Sayer, 1988). Knowledge workers not only gravitate to areas with a high quality of life, but reinforce the local QOL advantages by advocating policies to improve local schools, upgrading recreation and cultural

amenities, and supporting growth management strategies that abate the adverse impacts associated with unconstrained development. Furthermore, the immigration of firms to areas where they can attract and retain skilled labor encourages further in-migration of skilled workers who benefit from a greater choice of local employers (Krugman, 1991).

An alternative, but compatible, perspective argues that local amenities can affect a firm's bottom line directly by lowering wages or reducing costly labor force turnover for key personnel (Granger and Blomquist, 1999; Gottlieb, 1994, 1995; Taylor, 1987). Taylor (1987) further notes that corporate executives are realizing that the quality of their employees' lives has a direct impact on their bottom line through absenteeism, loyalty, productivity and health-care costs. Under this model, workers will accept lower wages and higher housing costs to live in amenity-rich areas. Amenity-poor regions must offer higher wages and cheaper rents to retain workers. There is ample evidence that workers are willing to accept lower wages and higher rents in exchange for better amenities (Rosen, 1979; Roback, 1982). Firms view amenities as they would any other input into the production process, but unlike most other cost factors, the bundle of local amenities can only be altered by changing location. As profit maximizers, labor-intensive manufacturers will choose to locate in amenity-rich areas, and land-intensive manufacturers will tend to locate in amenity-poor regions (Granger and Blomquist, 1999).



In either perspective, the emphasis is on work force preferences, suggesting that the growing importance of QOL factors is unequivocally tied to the attraction and retention of workers. Several studies look at the migration decisions of knowledge workers, assuming that high-tech firms are influenced by the locational preferences of their employees. There is little doubt that attractive amenities are a major consideration in the location decisions of mobile households, although the relative importance of specific amenities is still subject to some debate (see Graves, 1983). For instance, Herzog and Schlottman (1991) found that high-technology workers were less likely to relocate in the face of lower home prices and property taxes, quality education, and higher levels of transportation accessibility. Highly skilled workers are also much more willing to pay for a high-quality public school or park system (Malecki, 1984; Rosenberg, 1985).

Very little empirical work has been conducted to test whether amenities attract firms directly or to link business location choice to worker residential preferences. Based upon a national survey of R&D facilities and their employees, Malecki and Bradbury (1991) found that firm preferences tended to closely match the preferences of their workers at the present location, indicating that firms were well aware of their employees' preferences. Quality of education and environmental quality were cited as the top two attributes that firms believe are most important to their employees. Firms and employees also gave high ranks to housing costs, recreational opportunities, climate, cost of living, presence of a university, and cultural amenities.

Gottlieb (1995) provides a more direct test of whether firms evaluate employee preferences in the determination of their location choices. His hypothesis is that the firm selects a site to maximize amenities on behalf of employees in its commuter shed. His study is also among the few econometric studies that models location choice at a sub-metropolitan level, using data collected from 365 New Jersey municipalities on the location of engineering and professional service (SIC 87) firms. Gottlieb also generates a sizable list of independent

26 variables to measure business requirements, traffic conditions, crime, pollution, recreational opportunities, public education, and public services. His model accounts for the employee commuting by measuring amenities both within and across local municipalities as a declining function of distance from the worksite. The results are largely supportive of his hypothesis of the firm as an amenity-maximizing agent. Significant commuter-shed variables include proximity to rush-hour trains, property crime, toxic wastes and teachers per pupil. Violent crime is one of the few factors that influence firm location when evaluated at the work site.

Is Quality of Life a Regional or Site-Specific Factor?

If QOL is of greatest value to residents, then it follows that most QOL factors are most important at a regional or metropolitan stage of site selection. Workers can choose to live nearly anywhere within commuting distance from the worksite to satisfy their lifestyle preferences, allowing businesses to focus on the broader QOL attributes of the larger region. Although employees may prefer to live within a relatively short distance of the work-site, research suggests that workers are often willing to suffer longer commutes for better living conditions (Rogerson et al., 1989). There are almost always likely to be some decent areas to live within commuting distance of the worksite within a metropolitan area (Wong, 2001). Following this logic, several analysts recommend that a QOL-oriented economic development strategy would be more effective if it improved the overall attractiveness of the region through a coordinated strategy across localities (Gottlieb, 1994; Blair and Premus, 1987). Local efforts to improve residential amenities as a local business development strategy are likely to fall short of their intended goals. The firm is likely to be more attracted to a worksite with cheaper local taxes, property costs, and/or better local infrastructure than a community with a higher taxes but better residential amenities so long as the worksite is not plagued by high-levels of violent crime or



other great disamenities. The major exception is perhaps small, owner-operated businesses where the choice of worksite is conditional upon the residence of the owner-manager (Halstead and Deller, 1997).

The fact that the amenities are valued most as a factor in residential location does not mean that localities should completely abandon QOL as a potential economic development strategy. QOL factors have spillover effects for neighboring jurisdictions. A firm may prefer low taxes and amenity expenditures at its immediate location, but it also considers residential amenities in neighboring areas (Gottlieb, 1995). The poor quality of life of one or a few localities is likely to impede the development of all other jurisdictions within the same metropolitan area. This is particularly true for a central city whose condition is likely to dominate perceptions of the entire region. Recent empirical work suggests that the fate of a central city and its suburbs remains inextricably bound and that a declining central city stifles the long-term development of its suburbs (Voith, 1998). The centrality of the traditional downtown makes it an ideal location for large-scale amenities such as museums, stadiums, zoos, and entertainment districts that require wide regional patronage to be viable. These centrally located, large-scale developments can have significant spillover benefits for the entire region. They may also have more localized benefits for the inner-city itself. Although beyond the focus of this study, existing anecdotal evidence suggests that many cities have successfully lured businesses and residents back to the inner city through their large-scale revitalization strategies (McNulty et al., 1985). Despite this, many suburban jurisdictions and suburbanites mistakenly

27

view themselves as largely isolated from their respective central cities. The recent growth of suburban and edge-city economies have further fostered this perception of independence. Many suburban workers now commute from suburb to suburb and have little direct contact with the urban center.

28

QUALITY OF LIFE AS AN ECONOMIC DEVELOPMENT STRATEGY

Quality of life is increasingly being viewed as a viable justification and operational paradigm for community planning efforts. QOL is an attractive concept for planners because it entails a comprehensive and proactive approach to local action. If effective, a shift to a QOL based economic development strategy offers a balance between a community's desires for business development and a diversified tax-base with other residential and community concerns. Under a QOL paradigm economic development expenditures become a long-term investment in the community, in other words, allowing local communities to have their cake and eat it too (Gottlieb, 1994). This is particularly attractive to advocates of sustainable development and smart growth, as residents grow increasingly concerned over the problems caused by unabated growth, such as traffic congestion, air quality, public safety and losing the feelings of community.

The arguments in favor of basing an economic development strategy on amenities and quality of life over traditional industrial recruitment strategies are based upon both equity and efficiency grounds. There is an intrinsic incompatibility between an amenity-based strategy and the traditional economic development strategies. Historically, economic development and amenity provision in local government have been separate functions. The goals of the two groups are often in conflict. The job of the economic developer is to attract growth while others work to clean up the congestion, pollution, or public safety hazards that are generated as a by-product of growth (Gottlieb, 1994). Many criticize the traditional tools of the economic developer to attract and retain business (i.e. grants, loans, abatements, etc...) as a waste of public monies that only work to the narrow benefit of a handful of firms (Love and Crompton, 1999; Segedy, 1997). Under an amenities paradigm, expenditures on abatements and incentives may



be wasteful and possibly self-defeating. Tax abatements and incentives results in less money available for infrastructure, transportation systems, cultural amenities, education, and social equity, creating a downward cycle for future investment and lowering the quality of life for existing residents (Segedy, 1997). A switch to an amenities- and QOL-based strategy is not without equity concerns of its own. A local QOL strategy narrowly centered on providing residential amenities to attract professional workers and high-tech businesses may shift resources away from the region's low-skilled workers that are being left behind in the New Economy.

It is unclear whether a QOL strategy would be a more effective economic development strategy than traditional methods (Gottlieb, 1994). QOL advocates point to the mounting evidence that QOL factors are an important location determinant for both highly-skilled workers and footloose businesses. Although it is undeniable that QOL is important, the concept is too vague and subjective to warrant any claims as to its effectiveness as a policy strategy. Amenities are also much more of a long-term approach whose payoffs may not be felt for decades, making them a poor counter-cyclical development strategy (Gottlieb, 1994). Offering bonds, incentives, and subsidized training to help attract and retain businesses is much simpler and quicker than building community and combating sprawl. Lastly, as mentioned before, the residential mobility of households within a metropolitan area implies that the most effective amenity strategies would be regional, casting some doubt on the ability of individual communities to spur development by

29
upgrading residential amenities. A reasonable balance between taxes, amenities, and infrastructure is more likely to be successful approach than one that narrowly pursues amenities without regard to local business costs.

Wholesale abandonment of a traditional economic development strategy in favor of an active QOL strategy is likely to meet with strong resistance. While most economic development officials recognize the importance of local amenities in attracting jobs, few are committed to undertaking a widespread amenity strategy at the expense of more traditional tools (Gottlieb, 1994). Much of the profession remains mired in traditional thinking, although there is some evidence of a broadening of the profession in recent years. There is evidence that a "third wave" of economic development strategies is emerging. These strategies view the role of government as mainly enabling individual action or providing assistance as a stimulus for change, rather than as a direct provider of services (Eisinger, 1995). Some examples of emerging third wave strategies include job training and education, industrial modernization initiatives, community development, and developing industrial clusters to increase regional competitiveness. These changes are likely due to an awareness of the limitations of past policy efforts in light of the shift from an industrial to knowledge-based economy (Segedy, 1997). In general, third wave strategies are much more compatible with a QOL based strategies than traditional programs, but traditional strategies are far from dead. Along with the shift to third wave strategies, Eisinger (1995) also found evidence of a shift back toward traditional industrial recruitment methods as a response to political pressures for immediate results.

A focus on regional QOL requires closer coordination between economic developers and local planning personnel. It would also require a broader educational background for economic development professionals. Many economic developers come from a background in business and are ill-prepared to address wide-ranging issues such as growth management, education and community development that are likely to be central to a QOL program. Lastly, it would require a shift in the way that economic developers are evaluated and rewarded. The performance of economic developers is generally measured by the number of jobs created. Furthermore, the politics of economic development still strongly favors landing "big game" over long-range strategies whose payoff is rarely seen within a political term of office. An amenities strategy



requires a much more solid commitment that must survive changing administrations and fluctuating business cycles.

30

CONCLUSIONS

The existence and scope of the New Economy is still hotly debated in academic and policy circles, but there is little doubt that new technologies, particularly those related to information technology, are likely to have widespread impacts on the spatial distribution of economic activity. The ultimate realization of these impacts is still uncertain. Thus far, only a handful of specific regions have emerged as “high-tech” centers, although there is evidence of the diffusion of high-tech industry across metropolitan areas as technologies mature.

In the past, high-tech and knowledge-intensive industries have demonstrated a distinct preference for metropolitan areas, particularly for suburban locations within these metropolitan areas. The agglomeration economies that provide the historical explanation for the concentration of activity in metropolitan areas remain important to modern business competitiveness. The agglomeration advantages of such areas are cumulative and historically dependent, making it unlikely that entirely new agglomerations will arise without a pre-established base upon which to build. It is doubtful that we will witness a massive rural renaissance in the near future.

Although IT allows for a massive decentralization of both firms and individual workers through telework, the remaining advantages of agglomeration remain a strong force luring both workers and firms to co-locate in existing metropolitan areas.

The rapid proliferation of IT is leading to a decoupling of corporate functions, allowing each function to move to its own optimal location. Headquarters can remain in central cities, where corporate amenities abound, R&D functions can be moved closer to universities or areas with favorable quality of life that attract scientific workers, while back-office functions can be moved to smaller metros or suburban locations areas where land and semi-skilled labor are cheaper. The critical factor in the location of function in the New Economy is the trade off between communications needs and costs of location. Functions with great need for proximate communication will locate in cities, while functions with lower interaction needs can locate according to other requirements. Routine functions, such as back-office operations, are likely to be drawn to smaller metropolitan areas or suburban locations within these areas.

Quality of life factors has increased in importance to business location decisions in recent years, although they still lag traditional location factors when measured across all industries. Quality of life may still be thought of as “would-like” rather than “must-have” factors, whose value may be greatest when business executives must choose between regions that are fairly even on most cost and market access factors. There are several notable exceptions to this rule.

Quality of life consistently ranks near the top of locational criteria for high-technology, R&D labs and other facilities that are more footloose in relation to traditional cost-sensitive location factors and place a greater emphasis on attracting and retaining skilled labor. Highly skilled workers are more mobile than other workers and often have market power over firms who desperately need their scarce talents. Quality of life is also critical as a location determinant for many small businesses for whom the choice of business location is contingent upon proximity to the residence of the owner/manager.

31

Quality of life is almost always associated with residential lifestyle preferences in empirical work. Furthermore, most researchers assume that quality of life matters only indirectly to the firm’s location choice through worker preferences. Workers can reside nearly anywhere within a metropolitan area and commute to the worksite and thus quality of life matters most to the firm when choosing a region and not a particular site. If, for example, amenities only matter to regional business location choice, policies aimed at improving local amenities at the expense



of business needs will do little to attract business to the community itself, although there may be some generalized benefit if the local amenities help improve the overall image of the region. In general, there is a great need for more empirical research into the relationship between quality of life and business location decisions. To our knowledge, there have been no major survey studies of industrial location in well over a decade. The research interest in large-scale survey studies of business location preferences peaked in the early to mid 1980's with the notable work done by Schmenner (1982), Premus (1982) and others. Since that time, the interest in QOL as an economic development strategy has grown considerably. Policy makers see QOL strategies as a potentially effective means of business development while furthering other developmental goals such as reducing congestion, improving air and water quality, preserving the local natural environment and open space, and upgrading cultural and recreational amenities for residents.

Empirical research into the economic potential of QOL has not kept pace with the growing need for policy guidance. Much of the recent evidence on the value of QOL to business location decisions has been based upon revealed preference studies using highly aggregated geographic units of analysis and generalized measures of QOL. While recent stated preference studies have become more specific in their measurement of QOL factors and amenities, the scope of analysis remains confined to single regions. Thus, these studies have limited application outside of their region of focus. Furthermore, recent changes in information technologies and in other modes of production have significantly altered the domestic economy. These technologies have the potential to dramatically revise the historical importance of physical proximity to businesses and workers. The location needs of businesses have changed. The survey findings from two decades ago may not be applicable in modern circumstances. Theory and the past experience of high-tech sectors of the economy provide clues as to the modern evolution of firm behavior, but without empirical backing these clues remain largely speculative. Future survey research must include more precise measures of individual amenities and QOL factors. Early studies of business location decisions treated QOL as a holistic entity. QOL is a subjective concept with inherently favorable connotations. To inform policy, local decision-makers need to know how specific QOL factors influence business location choice. Survey research has been moving in this direction as QOL factors have taken center stage recent years. Future survey work needs to continue along this line of research and expand by investigating the influence of specific QOL factors as they differ by industry, firm size, and corporate function. Just as different industries and firms have different location preferences, so do workers. Recognizing the importance of knowledge workers to the New Economy, more research is needed to identify the specific factors that are most highly associated with a favorable QOL across different types of workers. Econometric studies need to continue to refine proxy measures of local amenities and QOL and to base their analysis at more disaggregated units of

32
spatial analysis. In recent years there have been great advances in the routine collection of disaggregated geo-referenced data driven by the growing use of geographic information systems (GIS) as a tool of local planning and governance.

Any additional research into business location and quality of life needs to respect the sequential nature of the site location decision process. Few studies attempt to distinguish the factors important for the choice of region from those important for the choice of the specific site, particularly in the context of specific QOL factors. A central assumption of the existing research is that QOL and amenities only matter to the residential preferences of workers, and as such amenities are only valuable as a regional development strategy. Although logically sound, this assumption remains largely untested and needs to be verified. A potentially fruitful line of research would be to investigate the relationship between spatial gradient of residential amenities



and intra-metropolitan commuting – how far people are willing to commute in order to balance preferred residential amenities with their workplace location.

There has been relatively little research on whether QOL factors or other amenities influence the choice of a firm's location independent from worker location preferences. The single study to specifically address the issue of workplace amenities found that only violent crime had an effect on the firm's choice of a particular locality (Gottlieb, 1995). Amenities are almost always considered to be residential amenities, factors that offer direct benefits to residents but only indirectly to businesses. More attention needs to be paid to amenities and other factors that may have a differential impact on the location of residence and at the workplace. Workplace amenities may include more than just attributes that are attractive to residents. Localized workplace amenities are likely to include other business ventures, such as nearby restaurants, retail, and personal services (dry-cleaning, child-care, etc). Such concentrations of complementary business activity offer numerous possible benefits that may affect the site choice. The favorable mix of local area development offers convenience advantages for both the firms themselves and for the lifestyles of busy professional employees. Executives can hold lunch meetings or entertain clients in nearby eateries and clubs. Workers can drop off their children at day care in the morning, pick-up dry cleaning during their lunch break, and stop at the local grocer on the way home. Thus far, the rigorous measurement of such extremely localized agglomeration advantages has received scant attention in the empirical literature.

33

LITERATURE CITED

- Atkinson, R. D. (1998). "Technological Change and Cities." *Cityscape: A Journal of Policy Development and Research*, 3 (3): 129-170.
- Barkley, D. L., and S. Hirschberger (1992). "Industrial Restructuring: Implications of the Decentralization of Manufacturing to Nonmetropolitan Areas." *Economic Development Quarterly*, 6 (1).
- Bartik, T. J. (1991). *Who Benefits from State and Local Economic Development Policies*. Kalamazoo, Michigan, W.E. Upjohn Institute for Employment Research.
- Birch, David L. (1987). *Job creation in America: how our smallest companies put the most people to work*. New York: Free Press; London: Collier Macmillan.
- Blair, J. P. and R. Premus (1987). "Major Factors in Industrial Location: A Review." *Economic Development Quarterly*, 1: 72-85.
- Blakely, E. (2001). "Competitive Advantage for the 21st Century City." *Journal of the American Planning Association*, 67 (2): 133-145.
- Blomquist, G. C., M. C. Berger, et al. (1988). "New Estimates of Quality of Life in Urban Areas." *American Economic Review*, 78: 89-107.
- Bradley, S., and J. Taylor (1996). "Human Capital Formation and Local Economic Performance." *Regional Studies*, 30(1): 1-14.
- Cairncross, Frances. (1997). *The Death of Distance: How the Communications Revolution Will Change Our Lives*. Boston, MA: Harvard Business School Press.
- Calzonetti, F. J. and R. Walker (1991). "Factors Affecting Industrial Location Decisions: A Survey Approach." in Herzog, H.W.J. and A. M. Schlottman (eds.). *Industry Location and Public Policy*. Knoxville, U. of Tennessee Press.
- Cohen, N. (2000). "Business Location Decision-Making and the Cities: Bringing Companies Back." *The Brookings Institution: Center on Urban and Metropolitan Policy*. Washington, DC.
- Commerce, U.S. Department of. (2000). *Digital Economy 2000*, Office of Policy Development, US Department of Commerce, Economics and Statistics Division.
- Cortright, J., and H. Mayer (2001). *High Tech Specialization: A Comparison of High*



Technology Centers. The Brookings Institute: Center on Urban and Metropolitan Policy, Washington DC: 1–13.

34

Cushing, Brian. (1997). “Commentary on ‘Quality of Life’ in Location Decisions,” in *Dilemmas of Urban Economic Development: Issues in Theory and Practice*. Richard, B. and R. Myer (eds). Thousand Oaks, Sage Publications. 47.

Daniels, T.L. (1993) “Big Business and Small Towns: Threats and Opportunities in Industrial Deconcentration.” Paper presented at the annual meeting of the Association of Collegiate Schools of Planning Conference, Philadelphia.

DeMichelis, N. (1995–96) “Cities on the Information Highway.” *The OECD Observer*, 197 (December/January): 12.

Dissart and Deller (2000). “Quality of Life in the Planning Literature.” *Journal of Planning Literature*, 15 (1): 135–159.

Eisinger, P. (1995). “State Economic Development in the 1990s: Politics and Policy Learning.” *Economic Development Quarterly*, 9(2): 146–158.

Ewers, H. (1995) “The Locational Impact of Declining Costs of Transportation and Communications,” in *Urban Agglomeration and Economic Growth*, H. Giersch, ed. Heidelberg/Berlin: Springer-Verlag.

Fortune Inc. (1977). *Facility Location Decisions*. New York: pg.6.

Fusi, D. S. (1989). “Major Quality of Life Factors Improvements Impact Communities' Wide-Ranging Spectrum of Lifestyles.” *Site Selection*, 34: 924–930.

Fusi, D. S. (1991). “Education Continues to Score High as a Factor in Quality of Life Location Equation.” *Site Selection*, 36: 732–738.

Galbraith C., and A.F. DeNobel (1988) “Location Decisions by High Technology Firms: A Comparison of Firm Size, Industry Type and Institutional Form.” *Entrepreneurship Theory and Practice* 13: 31–47.

Gaspar, J. and E. L. Glaeser (1998). “Information Technology and the Future of Cities.” *Journal of Urban Economics* 43(1): 136–56.

Gillespie, A., Richardson, R., and J. Cornford (1995). *Review of Telework in Britain: Implications for Public Policy*. New Castle, England: University of Newcastle upon Tyne, Center for Urban and Regional Development Studies, February.

Glaeser, E.L., Kallal, H.D., Scheinkman, J.A., and A. Shleifer. (1992). “Growth in Cities.” *The Journal of Political Economy*, 100 (6): 1126–1152.

Glaser, M.A., and J.W. Bardo (1991). “The Impact of Quality of Life on the Recruitment and Retention of Key Personnel.” *American Review of Public Administration*, 21: 57–72.

35

Glasmeyer, A.K. (1986). “High-Tech Industries and the Regional Division of Labor.” *Industrial Relations*, 25: 197–211.

Goldstein, M. (1985) “Choosing the Right Site.” *Industry Week*, 15: 57–60.

Gottlieb, P. (1994). “Amenities as Economic Development Tools: Is There Enough Evidence?” *Economic Development Quarterly*, 8: 270–285.

Gottlieb, P. (1995). “Residential Amenities, Firm Location and Economic Development.” *Urban Studies*, 32 (9): 1413–1436.

Graham, S. (2001). “Information Technologies and Reconfigurations of Urban Space.” *International Journal of Urban and Regional Research*, 25 (2): 405–410.

Granger, M. D., and G. C. Blomquist (1999). “Evaluating the Influence of Amenities on the Location of Manufacturing Establishments in Urban Areas.” *Urban Studies* 36(11): 1859–1873.

Halstead, J.M. and S.C. Deller, (1997). *Public Infrastructure in Economic Development and*



Growth: Evidence from Rural Manufacturers.” *Journal of the Community Development Society*, 28: 97–116.

Handy S.L., and P.L. Mokhtarian, (1995). “Planning for Telecommuting.” *Journal of the American Planning Association*, 61 (1): 99–111.

Harding, C. F. (1989). “Location Choices for Research Labs: A Case Study Approach.” *Economic Development Quarterly* 3: 223–234.

Harding, C. F. (1990). “Facilities Location in the 1990s.” *Site Selection and Industrial Development*, (June): 11–14.

Haug, P. (1991). “The Location Decisions and Operations of High Technology Organizations in Washington State.” *Regional Studies* 25(6): 525–541.

Hekman, J.S. and R. Greenstein (1985). *Factors Affecting Manufacturing Location in North Carolina and the South Atlantic.* In Whittington, D. (ed.) *High Hopes for High Tech.* University of North Carolina Press, Chapel Hill: 147–72.

Heenan, D.A. (1991). *The New Corporate Frontier: The Big Move to Small Town, U.S.A.* New York: McGraw–Hill.

Herzog, H. W. J., and A. M. Schlottman (1991). “Metropolitan Dimensions of High–Technology Location in the U.S.: Worker Mobility and Residential Choice.” in Herzog, H.W.J. and A. M. Schlottman (eds.) *Industry Location and Public Policy.* The University of Tennessee Press, Knoxville, TN: 169–189.

36

Herzog, H.W., and A.M. Schlottman (1989). “High Technology Location and Worker Mobility.” in Andersson, A., Batten D.F. and C. Karlsson, (eds.) *Knowledge and Industrial Organization.* Springer Verlag, Berlin: pp. 47–61.

Herzog, H.W., and A.M. Schlottman (1986). “High–Technology Workers and Worker Mobility.” *Journal of Regional Science* 26: 445–459.

Hoover, E.M. (1948). *The Location of Economic Activity.* McGraw–Hill, New York.

Horan, T.A., Chinitz, B. and D. Hachler, (1996) *Stalking the Invisible Revolution: The Impact of Information Technologies on Human Settlement Patterns.* Claremont, CA: The Claremont Graduate School, November.

Howell, D. R., and E.N. Wolfe (1992). “Technological Change and Demand for Skills by US Industries.” *Cambridge Journal of Economics* 16: 127–46.

Howells, J. (1990). “The Location and Organization of Research and Development: New Horizons.” *Research Policy* 19: 133–46.

Howells, J. (1986). “Industry–Academic Links in Research and Innovation: A National and Regional Development Policy Perspective.” *Regional Studies* 20: 472–76.

Jacobs, J. (1969). *The Economy of Cities.* New York: Random House.

Johnson, J. D. and R. Rasker (1995). “The Role of Economic and Quality of Life Values in Rural Business Location.” *Journal of Rural Studies* 11(4): 405–416.

Johnson, L. L. (1991) “Advances in Telecommunications Technologies That May Affect the Location of Business Activities.” *Rand Note N–3350–SF*, RAND Corporation.

Landefeld, J.S. and B.M. Fraumeni, (2001). “Measuring the New Economy.” *Survey of Current Business*, (March): 23–40.

Lösch, A. (1954). *The Economics of Location;* Translated by Woglom, W.H., from *Die räumlich Ordnung der Wirtschaft* (1940). Yale University Press, New Haven, Conn.

Love, L., and J. Crompton (1999). “The Role of Quality of Life in Business (re) Location Decisions.” *Journal of Business Research*, 44: 211–222.

Luce, T. (1994). “Local Taxes, Public Services, and the Intrametropolitan Location of Firms and Households.” *Public Finance Quarterly*, 22(2): 139–167.

Lund, L. (1986). *Locating Corporate R&D Facilities.* New York: Conference Board.



- Luger, M. (1996). "Quality of Life Differences and Urban and Regional Outcomes: A Review." 37
Housing Policy Debate, 7(4): 749–771.
- Lyne, J. (1988). "Quality of Life Factors Dominate Many Facility Location Decisions." Site Selection Handbook, 33 (August): 868–870.
- Lyne, J. (1991). "U.S. Work–Force Woes Limiting Many Corporate Facility Location Choices" Site Selection Handbook, 36 (August) 722–728.
- Krugman, P. (1991). "Increasing Returns and Economic Geography." Journal of Political Economy, 99: 483–99.
- Kumcu, E., and J.W. Vann (1991). "Public Empowerment in Managing Local Economic Development: Achieving a Desired Quality of Life Profile." Journal of Business Research, 23: 51–65.
- Malecki, E.J. (1984) "High Technology and Local Economic Development." Journal of the American Planning Association, 50: 262–69.
- Malecki, E.J. (1987). "The R&D Location Decision of the Firm and Creative Regions—A Survey." Technovation, 6: 205–222.
- Malecki, E.J., and S. Bradbury (1992). "R&D Facilities and Professional Labour: Labour Force Dynamics in High Technology." Regional Studies, 26(2): 123–136.
- Markusen, A. (1996) "Sticky Places in Slippery Space: A Typology of Industrial Districts." Economic Geography, 7(3): 293–312.
- Markusen, A.R., Hall P. and A. Glasmeier (1986). High Tech America: The What, How, Where and Why of Sunrise Industries. Allen and Unwin, Boston.
- McNulty, R. H., D. R. Jacobson, et al. (1985). The Economics of Amenity: A Policy Guide to Urban Economic Development. Washington D.C., Partners for Livable Places.
- Mitchell, W. J. (1999). E–Topia. Cambridge, MIT Press.
- Morgan, W. (1964). "The Effects of State and Local Tax and Financial Inducements on Industrial Location." (Ph.D. dis.), University of Colorado.
- Morgan, K., and A. Sayer (1988). Microcircuits of Capital. Polity Press, Oxford.
- Moss, M. (1998). "Technology and Cities." Cityscape: A Journal of Policy Development Research, 3 (3): 107–127.
- Myers, D. (1987a). "Community–Relevant Measurement of Quality of Life: A Focus on Local Trends." Urban Affairs Quarterly, 23: 108–125.
- 38
- Myers, D. (1987b). "Internal Monitoring of Quality of Life for Local Economic Development." Economic Development Quarterly, 1: 268–278.
- Myers, D. (1988). "Building Knowledge about Quality of Life for Urban Planning." Journal of the American Planning Association, summer: 347–358.
- Office of Technology Assessment (OTA), U.S. Congress. (1995) "The Technological Reshaping of Metropolitan America." OTA–ETI–643. Washington, DC: U.S. Government Printing Office.
- Premus, R. (1982). Location of High Technology Firms and Regional Economic Development. U.S. Congress Joint Economic Committee, Washington D.C.
- Richardson, R., and A. Gillespie (1996) "Advanced Communications and Employment Creation in Rural and Peripheral Regions: A Case Study of the Highlands and Islands of Scotland" The Annals of Regional Science, 30(2): 91–110.
- Ritter, J. A. (1990). "The Industrial Location Decision: A Practitioner's Perspective." Economic Development Quarterly: 154–156.
- Roback, J. (1982). "Wages, Rents, and the Quality of Life." Journal of Political Economy, 90: 1257–1278.



- Rogerson, R., Morris, A.S., Findlay, A.M., Henderson, J. and R. Paddison. (1989) *Britain's Intermediate City: A Comparative Study of Quality of Life*. Department of Geography, University of Glasgow.
- Rosen, S. (1979). "Wage-Based Indexes of Urban Quality of Life." In Mieszkowski, M. and M. Straszheim (eds.), *Current Issues in Urban Economics*. Baltimore: Johns Hopkins University Press.
- Rosenberg, R. (1985). "What Companies Look For." *High Technology*, 5 (January): 30–37.
- Ryans, Jr. J.K., and W.L. Shanklin (1989). "Cities for Sale." *American Demographics*, 11 (April): 55–58.
- Salomon, I. (1996). "Telecommunications, Cities and Technological Opportunism." *The Annals of Regional Science*, 30 (1): 75–89.
- Schmenner, R. (1982). *Making Business Location Decisions*. Englewood Cliffs, NJ, Prentice–Hall.
- Schmenner, R., J. Huber, et al. (1987). "Geographical Differences and the Location of New Manufacturing Facilities." *Journal of Urban Economics*, 21(1).
- Scott, A. (1988). *Metropolis: From the Division of Labor to Urban Form*. Berkeley: University of California Press.
- Scott, A. (1992). "The Spatial Organization of a Local Labor Market: Employment and Residential Patterns in a Cohort of Engineering and Scientific Workers." *Growth and Change*, Winter: 94–115.
- Segedy, J. (1997). "How Important is 'Quality of Life' in Location Decisions and Local Economic Development?" *Dilemmas of Urban Economic Development: Issues in Theory and Practice*. Richard, B. and R. Myer (eds). Thousand Oaks, Sage Publications. 47.
- Segedy, J.A., and S.I. Truex (1994). "Indiana Total Quality of Life 1993 Pilot Report." Muncie, IN: Ball State University, Department of Urban Planning.
- Schneider, M., and D. Kim (1996). "The Effects of Local Conditions on Economic Growth, 1977–90: The Changing Location of High–Technology Activities." *Urban Affairs Review*, 32 (2): 131–156.
- Stafford, H. (1983) "The Effects of Environmental Regulations on Industrial Locations." Working paper, University of Cincinnati.
- Taylor, H. (1987). "Evaluating our Quality of Life." *Site Selection*, 156: 1–4.
- Topel, R. (1986). "Local Labor Markets." *Journal of Political Economy*, 98: 111–43.
- Venable, T. (1991). "Recreation, Cultural Attraction Top List of Communities 'Quality of Life' Improvements." *Site Selection*, 36: 740–742.
- Voith, R.A. (1998). "Do Suburbs Need Cities?" *Journal of Regional Science*, 38 (3): 445–64.
- Weber, A. (1929), *Alfred Weber's Theory of the Location of Industries*; translated by Friedrich, C.J., from *Über den Standort der Industrien* (1909). University of Chicago Press, Chicago.
- Wong, C. (2001). "The Relationship Between Quality of Life and Local Economic Development: An Empirical Study of Local Authority Areas in England." *Cities*, 18(1): 25–32.

40

APPENDIX A: PILOT STUDY OF BUSINESS LOCATION DECISIONS IN THE RALEIGH–DURHAM–CHAPEL HILL AREA OF NORTH CAROLINA

Introduction

This study contains two parts: a review of the literature and a pilot study of business location decisions. The purpose of the pilot study is to examine the actual location decisions of a



small sample of firms that have recently located in the Raleigh, Durham and Chapel Hill (the Triangle) metropolitan area of North Carolina. The pilot study, though limited in scope, sheds light on the relative importance of quality of life, among other factors, in the location decisions of firms.

Sample Selection

For the pilot study, we contacted, by telephone, firms that had located in the Triangle within the last two years: from January 2000 to January 2002. Our sample of firms was derived from information provided by local Chambers of Commerce, from a local economic development firm that specializes in attracting new businesses to the Triangle, and from lists of new business permits from local jurisdictions. This approach resulted in an initial sample of over 200 new firms in the Triangle. There were some problems with this initial sample, however. Many firms registered with more than one Chamber of Commerce, so we ended up with some double listing of firms. Also, many firms in the initial sample had not yet opened for business or had gone out of business since opening in January 2000. And some of the “new” firms were actually old firms that had reorganized under new names. Other firms had changed their plans and decided not to move to the Triangle. Finally, for many of the firms listed, no telephone numbers were available. As a result, we whittled down the list to thirty-eight firms that met our criteria (located in the Triangle since January 2000 and involved in telecommunications, computing or consulting) and that could be readily contacted (i.e., had a listed telephone number). From this sample of 38 firms, we began contacting firms by telephone until we had 10 firms that agreed to be interviewed. This constituted our final sample. Thus, we did not attempt to conduct a comprehensive survey of businesses selected randomly from a large sample. Instead, we contacted a rather limited number of firms from the Triangle that met our criteria and spoke with ten of those who were willing to be interviewed. Again, the purpose of the pilot study was to gain some insight into the relative importance of quality of life in the location decisions of firms. Table 1 shows the number of each type of firm in the sample. Respondents, which in most cases were either the head of the firm or the director of human resources, were asked to identify the factors that were most important in making their business location decision. Most of the firms in the sample were small—less than 50 employees. About half had less than 10 employees and only two had more than 30. Several of the firms were started by entrepreneurs who already were working (at another firm) in the Triangle. Others relocated from Georgia, Kentucky, New York, Virginia and as far away as England.

41

Table 1: Types of Firms Selected for the Pilot Study

Type of Firm	Number in Sample
Manufacturing	2
Consulting	2
Research and Development	2
Corporate Headquarters	1
Computer and Telecommunications	3

Interviews

The interviews contained structured and unstructured questions. An interview protocol was used to ensure some uniformity across interviews (see interview questions in Figure 1). Each respondent was asked about the type of business and length of time it had been located in the Triangle. In addition, respondents were asked to identify the main reasons for locating in this region, the importance of quality of life in the site selection process, and what quality of life means to them. Finally, we asked each respondent to rank, in order of importance to their location decision, the following factors: costs of land, cost of labor, cost of capital and quality of life.



Figure 1: Survey Questions

1. How long has your firm been in its current location?
2. Were you involved in making the decision to move the firm to the Triangle?
3. What were the three main reasons why your firm chose to locate in the Triangle?
4. How important was quality of life in your firm's site selection process?
5. How does quality of life compare to other factors that were considered in your firm's decision to locate in the Triangle?
6. What does quality of life mean to you?

Responses

None of the respondents cited quality of life as being the most important factor in their business location decision. Several firms stated that quality of life was one of several important factors, including cost of land and the quality and cost of labor. "It's not just one thing," stated 42

one respondent, "it's the mix." Another respondent stated that "Quality of life wasn't the most important factor, but if it [the Triangle] was a dump, we wouldn't have come here."

Other location factors cited as important include proximity to an international airport, a hospital system, universities, and to cultural and recreational opportunities. "We needed to be near an international airport and major highways, but access to restaurants, art, music, and entertainment was also important." According to another respondent, "Sure, quality of life was important, but it wasn't our only consideration. We also wanted to be near a major university and an airport with reasonable airfares." Two firms stated that while quality of life was not the most important factor in deciding where to locate the firm, quality of life factors had become important in attracting and retaining good employees.

The meaning of quality of life varied among respondents. To some, quality of life meant a safe environment, mild climate, short commutes and low cost of living relative to income. To others, it meant access to cultural, recreational and professional opportunities.

A number of traditional factors in business location theory were also mentioned as important. Two respondents indicated that they had initially located in the area because a local university has a program that makes space available at below market rates. One, however, indicated that the cost of space was greater in the Raleigh–Durham–Chapel Hill area than elsewhere, but they came to the Triangle anyway because of access to a high quality work force. Two of the respondents stated that being near the founder's home was important in choosing to locate in this area.

Conclusions

The literature review indicates that quality of life is becoming an increasingly important factor in business location decisions. The pilot study suggests that quality of life is just one of many factors firms consider in deciding where to locate. None of the firms interviewed in the study cited quality of life as the most important factor, although a number of respondents mentioned its importance to attracting and retaining employees. It appears that location decisions are generally based on a mix of factors, including costs of land, quality and cost of labor, access to decent transportation facilities, and in at least a few cases, proximity to a university and to the chief executive's home. Also, quality of life means different things to different people. Given the small sample size (10) in the pilot study, the findings can only be considered suggestive at best. A larger, more targeted study could examine in greater detail the importance of quality of life in the location decisions of firms. It could examine its importance by size, type (e.g., manufacturing or research) and location (central city, suburban, rural) of firms.

