

**20 Year Cost Summary - MCPS**

		Artificial Turf	Bermuda (Sand Base)	Kentucky BG (Sand Base)	Bermuda (native soil)	Cool Season (native soil)
20 Year Net Costs	Initial Capital Cost	1,125,000	530,000	580,000	150,000	75,000
	20 Year Replacement/Rehab Cost*	1,130,000	150,000	175,000	100,000	60,000
	20 Year Maintenance/Other Costs	206,000	1,000,000	1,000,000	900,000	500,000
	<b>20 Year Total Costs</b>	<b>2,461,000</b>	<b>1,680,000</b>	<b>1,755,000</b>	<b>1,150,000</b>	<b>635,000</b>
	20 Year Revenue - MCPS**	2,000,000	-	-	-	-
	<b>20 Year Net Cost - MCPS</b>	<b>461,000</b>	<b>1,680,000</b>	<b>1,755,000</b>	<b>1,150,000</b>	<b>635,000</b>
	<b>20 Year Net Cost - Net Present Value</b>					
	3 Percent Discount Rate	532,751	1,363,644	1,429,722	885,255	486,835
	5 Percent Discount Rate	564,483	1,211,398	1,272,938	759,340	416,394
	7 Percent Discount Rate	587,512	1,091,630	1,149,459	661,319	361,585
Cost Per Hour of Use	<b>Annual Hours of Use</b>	<b>2,300</b>	<b>600</b>	<b>500</b>	<b>400</b>	<b>300</b>
	<b>20 Year Net Cost Per Hour of Use - MCPS</b>	<b>10.02</b>	<b>140.00</b>	<b>175.50</b>	<b>143.75</b>	<b>105.83</b>
	3 Percent Discount Rate	11.58	113.64	142.97	110.66	81.14
	5 Percent Discount Rate	12.27	100.95	127.29	94.92	69.40
	7 Percent Discount Rate	12.77	90.97	114.95	82.66	60.26

\*Assumes two artificial turf carpet replacements (after years 8 and 16) and one major natural grass rehab after year 12.

\*\*No revenue assumed for natural grass fields since MCPS would reserve these fields only for MCPS team games and practices.

**Findings – MCPS Stadium Fields:**

- Artificial turf fields cost approximately twice as much to construct as either of the sand base fields.
- The least expensive field, by far, over a 20 year period is the cool season grass native soil field.
- However, when taking into account revenue generated, the net cost of artificial turf fields is less than the cool season grass native soil fields and far less than the other field types.
- Because of the high up-front cost for artificial turf and sand base natural turf fields, a net present value calculation increases the net costs of these fields (over a 20 year time horizon) in comparison to the native season natural grass fields. However, the sand base fields still have a much higher net cost than the artificial turf field.
- Despite the higher up-front and future replacement costs, an artificial turf MCPS Stadium field provides a substantially lower net cost per hour of use than any of the natural grass options because of the substantially increased hours of use and additional revenue generated from that increased use.
- Assigning various discount rates to the hours of use partially reduces the hours of use cost disparity, but the artificial turf field still has a much lower cost per hour of use than all of the other fields.

**20 Year Costs - Parks**

		Artificial Turf	Bermuda (Sand Base)	Kentucky BG (Sand Base)	Bermuda (native soil)	Cool Season (native soil)
20 Year Net Costs	Initial Capital Cost	1,125,000	530,000	580,000	150,000	75,000
	20 Year Replacement/Rehab Cost*	1,130,000	150,000	175,000	100,000	60,000
	20 Year Maintenance/Other Costs	206,000	1,000,000	1,000,000	900,000	500,000
	<b>20 Year Total Costs</b>	<b>2,461,000</b>	<b>1,680,000</b>	<b>1,755,000</b>	<b>1,150,000</b>	<b>635,000</b>
	20 Year Revenue - Parks**	2,000,000	1,200,000	1,000,000	280,000	220,000
	<b>20 Year Net Cost - Parks</b>	<b>461,000</b>	<b>480,000</b>	<b>755,000</b>	<b>870,000</b>	<b>415,000</b>
	<b>20 Year Net Cost - Net Present Value</b>					
	3 Percent Discount Rate	532,751	488,109	685,848	676,971	323,183
	5 Percent Discount Rate	564,483	475,547	649,828	584,869	279,310
	7 Percent Discount Rate	587,512	464,297	619,758	513,003	245,050
Cost Per Hour of Use	<b>Annual Hours of Use</b>	<b>1,000</b>	<b>600</b>	<b>500</b>	<b>500</b>	<b>500</b>
	<b>20 Year Net Cost Per Hour of Use - Parks</b>	<b>23.05</b>	<b>40.00</b>	<b>75.50</b>	<b>87.00</b>	<b>41.50</b>
	3 Percent Discount Rate	26.64	40.68	68.58	67.70	32.32
	5 Percent Discount Rate	28.22	39.63	64.98	58.49	27.93
	7 Percent Discount Rate	29.38	38.69	61.98	51.30	24.51

\*Assumes two artificial turf carpet replacements (after years 8 and 16) and one major natural grass rehab after year 12.

\*\*Natural Grass Revenue = same \$ rate as AT for sand-based fields, current rates (\$22/hr assumed for native soil fields)

**Findings – Parks Fields:**

- The lifecycle costs for the various fields are closer to each other than for MCPS, because all Parks fields are assumed to generate some revenue and the artificial turf field is assumed to be used fewer hours (only 1,000 hours of community use) compared to MCPS stadium fields (2,300 hours).
- When taking into account revenue generated, the net costs of all the field types are relatively close, with the cool season grass native soil field having the lowest net cost followed by the artificial turf field and the Bermuda grass sand base field.
- Because of the high up-front cost for artificial turf and sand base natural turf fields, a net present value calculation increases the costs of these fields (over a 20 year time horizon) in comparison to the native season natural grass fields.
- Despite the higher up-front and future replacement costs, an artificial turf field is much lower in net cost per hour compared to any of the natural grass options because of the many more hours of use, and the additional revenue generated.
- Assigning various discount rates to the hours of use makes the artificial turf field and the cool season native soil field comparable in per hour cost. The other fields are still more expensive per hour, primarily because of higher annual maintenance costs and lower overall revenue generation.