

Backyard Putting Greens in Markham: Performance & Ball-Roll Analysis

Stimpmeter physics, course-speed benchmarks, construction factors and a ten-year cost-per-use model for the home practice green

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ABSTRACT

This report reviews the published evidence on backyard putting-green performance for Markham homeowners: how ball roll is measured, what green-speed numbers mean, which construction choices set speed, how long Markham's climate keeps a synthetic green playable, and what a home practice surface costs per use over ten years. Every figure comes from published sources — the stimpmeter reference literature and its USGA speed bands, a Markham installer's published price schedule, GTA cost guides, Markham's 2026 water rate and watering by-law, and Environment and Climate Change Canada climate normals for the Buttonville station located inside Markham — with modelling assumptions stated where they are used.

We find that a backyard green built at the published Markham price of **\$23/sq ft with full base preparation** lands at **\$6,900 for a 300 sq ft reference project**; that Markham's climate supports a modelled **24-week practice season**; and that at three 45-minute sessions a week the ten-year cost works out to roughly **\$11 per practice session**. We also report a gap in the record: no independently measured stimpmeter rating is published for the residential products reviewed, so a post-install reading is the buyer's only verification tool.

KEY FINDINGS AT A GLANCE

\$23/sq ft

published Markham price,
putting-green turf with full
base preparation

6.00 ft/s

stimpmeter ball-release
speed — the constant
behind every green-speed
reading

24 wks

modelled Markham
practice season, May–mid-
October (stated
assumption)

≈\$11

ten-year cost per 45-min
practice session, 300 sq ft
reference green

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1 Ball roll and the stimpmeter: what the numbers mean

Green speed is measured with a stimpmeter, a simple angled track that turns ball roll into a number. A ball set in a notch 30 inches from the track's lower end is released down a roughly 20-degree incline and enters the surface at a repeatable **6.00 ft/s (1.83 m/s)**; the distance it rolls out, in feet, is the green's speed — its "stimp" reading [1]. Because the release speed is fixed by the device, the rollout distance isolates the surface itself: its firmness, smoothness and the friction of the playing layer.

A proper reading averages three balls rolled in one direction and three in the opposite direction, cancelling the effects of slope and grain [1]. The instrument dates to 1935, when Edward Stimpson devised it; the USGA issued an aluminum redesign in 1976, and the current third-generation device appeared in 2013 [1]. Nine decades on, it remains the accepted way to state, in a single number, how fast a ball rolls.

The number is surface-agnostic — it measures rollout, not grass — so it applies as readily to a synthetic backyard green as to a course. That comparability underpins this report: it lets a homeowner specify a target speed, and verify it, in the same units the USGA publishes. What those units look like in practice is the subject of Section 2.

2 Backyard green speeds vs course speeds

The USGA's published bands put everyday club greens at 8 ft (slow), 10 ft (medium) and 12 ft (fast); U.S. Open setups run 10–14 ft, and the fastest championship example on record is Oakmont at roughly 15 ft [1]. Table 1 sets out the ladder; Figure 1 (next page) plots it.

Table 1 — USGA green-speed bands and the fastest recorded championship example. *Source: [1].*

Playing context	Band	Stimp reading (ft)
Everyday club play	Slow	8.0
Everyday club play	Medium	10.0
Everyday club play	Fast	12.0
U.S. Open	Slow	10.0
U.S. Open	Medium	12.0
U.S. Open	Fast	14.0
Championship maximum (Oakmont)	—	≈15.0

Where do residential synthetic greens sit on this ladder? The record is thin, and this report says so plainly: none of the products in the Markham price basis carries an independently published stimp rating. The local schedule for the National Pro putting surface, for example, publishes price — \$18.00/sq ft install-only, \$23.00/sq ft with full base preparation [2] — but no ball-roll figure. Speed on a synthetic green is set at installation (Section 3), so the workable approach is contractual: name a target band in the quote — the USGA club-medium band is 10 ft — and ask for a stimpmeter reading at handover to confirm it.

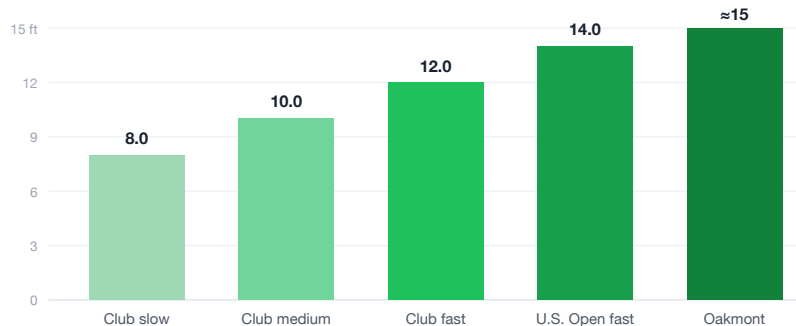


Figure 1 — USGA green-speed ladder in stimpmeter feet, from a slow club green (8 ft) to the fastest recorded championship setup (Oakmont, ≈15 ft). *Source: [1].*

3 Construction factors that set speed

A synthetic green's roll is engineered rather than grown, and published price schedules show where the engineering sits. Markham's local schedule prices the National Pro putting surface at \$18.00/sq ft install-only and \$23.00/sq ft with full base preparation — a \$5/sq ft delta that is, in effect, the price of the engineered base [2], and the market's own evidence that the base, not the carpet, is the performance-critical layer.

Regional figures fill out the picture. A GTA-wide guide puts premium fully installed work at \$19–25+/sq ft [3]; a regional breakdown attributes \$3–8/sq ft of a \$12–22 installed total to material, and notes that heavy clay soils add base-preparation cost [4]. What published schedules do not disclose are per-product pile heights, infill schedules or measured rollout distances — until a builder's spec sheet and a handover stimpmeter reading exist, any product-specific speed claim is unverified.

Table 2 — The priced layers of a green build, Markham and GTA published figures. *Sources: [2][3][4].*

Build component	Published figure	Source basis
Putting carpet + install labour (National Pro, install-only)	\$18.00/sq ft	Markham installer schedule
Same surface with full base preparation	\$23.00/sq ft	+\$5/sq ft for the engineered base
GTA premium landscape tier (context)	\$19–25+/sq ft	GTA-wide guide, fully installed
Material share of a landscape-turf project	\$3–8 of \$12–22/sq ft	Regional pricing breakdown
Heavy clay soil conditions	adds base cost	Deeper base, drainage grading

LOCAL CONTEXT — BUILT FOR MARKHAM'S WETTEST DAYS

July is among Markham's wetter months, averaging 85.2 mm [5], and on 16 July 2024 slow-moving thunderstorms dropped more than 100 mm of rain in a few hours across the GTA; insured damage topped \$940 million, the costliest Ontario weather event of 2024 [6]. TRCA maps flood-vulnerable areas inside the city, including Unionville's provincial Special Policy Area where Bruce and Middle-Beaver Creeks meet the Rouge River [7]. A green's base must move water away as designed; on lots near mapped flood zones, drainage grading is not an optional extra.

4 Markham's playing season: climate and playable days

Markham is unusually well served by its climate record: the 1991–2020 Canadian Climate Normals come from Toronto/Buttonville A, a station located inside Markham itself [5]. They describe a four-season practice environment — a July average high of 27.3°C against a January average low of –10.1°C — with **862.4 mm of annual precipitation**, split between 728.9 mm of rain and 146.4 cm of snow [5].

A synthetic green needs no growth, so its playable window is set by snow and ice rather than turf health. This report models a **24-week practice season**, May through mid-October — the standard southern-Ontario lawn-growing window, used here as a labelled assumption — roughly 168 playable days a year. Winter's 146.4 cm of snowfall effectively closes outdoor practice for the balance. Within the season, rain is handled by the engineered base rather than by a living plant; this report counts all 168 days as playable and treats rain closure as negligible for a well-drained build — itself a stated assumption (\$M).

The season matters for a second reason: it is exactly when Markham's watering rules bite. From June 1 to September 30, Water Use By-law 2019-53 confines outdoor watering to alternate days — odd-numbered addresses on odd calendar days, even-numbered on even — and to a single three-hour window per permitted day, either 6–9 a.m. or 6–9 p.m. [8]. A natural-grass surface kept at putting height needs intensive summer irrigation that such a regime cannot deliver, in this report's assessment; and the water that is used is billed at Markham's 2026 combined rate of **\$5.90634/m³**, water and wastewater together [9]. A synthetic practice green is indifferent to both.

LOCAL CONTEXT — MARKHAM WATER USE BY-LAW 2019-53 IN BRIEF

Odd-numbered addresses water outdoors only on odd-numbered days, even-numbered addresses on even days, June 1–September 30; on a permitted day, one window only — 6–9 a.m. or 6–9 p.m., not both; newly laid sod or seed earns a two-month exemption [8]. A synthetic green never needs the window, the exemption, or the water.

5 Practice value and cost per use

Markham's housing stock explains the appeal of the home green. The city counts 338,503 residents in 110,867 households, 81.7% of them owner-occupied [10]. Its post-1990s growth subdivisions — Wismer, Cornell, Box Grove, Greensborough — are dominated by detached homes on narrow-frontage lots, standard detached frontages running roughly 10–13 m (33–43 ft) [11], with Cornell's rear-lane format narrower still [12]. Backyards measured in hundreds of square feet size the typical project.

The reference project for this report is a **300 sq ft practice green** — a stated assumption, smaller than the 400–700 sq ft backyard projects the GTA guide calls typical [3] — at the published \$23.00/sq ft with full base preparation: **\$6,900 installed** [2]. Adding \$100/yr of upkeep (rinse, brushing, infill attention — assumption) gives a ten-year cost of **\$7,900**. Against the Section 4 use model — three 45-minute sessions a week over the 24-week season, 72 sessions or 54 hours a year — that is 720 sessions and 540 hours across the decade: about **\$10.97 per session, \$14.63 per hour** (Table 3). Figure 2 shows the per-hour cost falling from roughly \$130 after year one to about \$15 by year ten.

Table 3 — Ten-year cost-per-use model, 300 sq ft Markham practice green. (A) = stated assumption (\$M). Price from [2]; use model from §4.

Item	Basis	Ten-year value
Installed cost	300 sq ft (A) × \$23.00/sq ft, National Pro with base prep	\$6,900
Upkeep	\$100/yr (A): rinse, brush, infill attention	\$1,000
Ten-year cost	—	\$7,900
Practice sessions	3/week × 24 weeks (A)	720
Practice hours	45 min per session	540
Cost per session / per hour	\$7,900 ÷ 720 / \$7,900 ÷ 540	\$10.97 / \$14.63

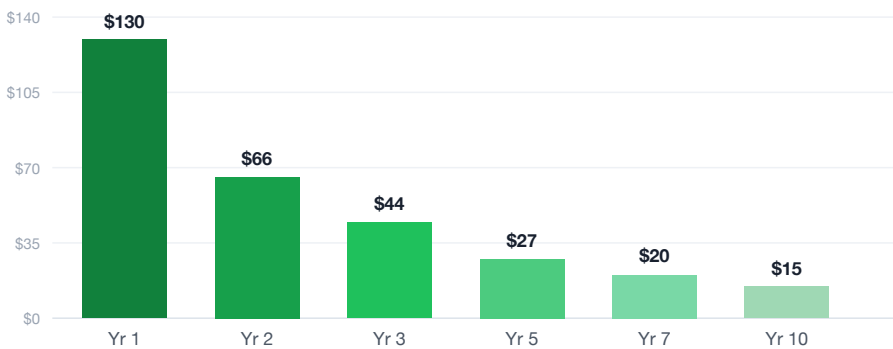


Figure 2 — Cumulative cost per practice hour at successive ownership milestones, 300 sq ft green at 54 hours of use per year. Derived; price from [2], assumptions in §M.

The model cuts both ways. At half the use — 36 sessions a year — the cost per session roughly doubles to \$22: a green that is not played is a garden ornament. This report collected no published driving-range or green-fee pricing, so no dollar comparison with off-site practice is offered; what the home surface returns is access — roughly 540 hours of practice a decade, steps from the back door.

M Methodology & data sources

This is a desk-research report. Figures were collected in August 2026 from the published sources listed under References: the stimpmeter reference literature (device mechanics, USGA speed bands, device history), a Markham installer's published price schedule, GTA installer cost guides, Environment and Climate Change Canada's 1991–2020 climate normals for Toronto/Buttonville A as tabulated on Wikipedia's Markham article (ECCC's own normals portal could not be rendered programmatically, so the weatherbox is the cited carrier of its figures), the City of Markham's 2026 rates page (WAF-blocked to direct fetch; the rate is from its indexed official content), York Region's outdoor water-use by-law summary, the Insurance Bureau of Canada, TRCA flood-risk pages, the 2021 Census via Canadian Data Insights, and a local development firm's summary of Markham lot standards.

Stated assumptions (not sourced facts): (i) practice season — 24 weeks, May to mid-October, the standard southern-Ontario growing-season guideline, used as a conservative playable window with rain closure treated as negligible; (ii) reference green — 300 sq ft; (iii) use — three 45-minute sessions per week in season (72 sessions, 54 hours per year); (iv) upkeep — \$100/yr; (v) prices held flat in nominal dollars over ten years. Derived figures combine these assumptions with the cited published rates; changing any assumption changes the result, and Section 5 shows the sensitivity to use. As an internal check, the data pack's trend note — Markham's 2023 combined water rate of \$4.7937/m³ against the 2026 rate of \$5.90634/m³ — was recomputed: a 23.2% rise over three years, consistent with the "roughly 23%" figure the pack quotes.

Limitations

No stimpmeter measurements were taken for this report, and no residential product reviewed carries an independently published speed rating; USGA bands describe course greens, not specifications of synthetic products. Prices are published planning figures, not quotations; actual quotes vary with site conditions. Climate normals are 30-year averages, not forecasts, and the playable-day model is illustrative. No driving-range or green-fee data was collected, so off-site practice is not monetized. Ten-year figures are undiscounted nominal dollars. This report is not a site assessment, an engineering review, or an endorsement of any specific product.

R References

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