

# Artificial Turf Comment Letter to Glendale City Council

Subject: Proposed Artificial Turf Installations in Glendale

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From:

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To:

Glendale City Council

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Dear Mayor Kassakhian and Councilmembers,

We are writing to respectfully request you to vote NO on artificial turf fields in Glendale, in particular at the 3 proposed school sites and Fremont Park, located in a residential neighborhood. Glendale is striving to be more sustainable and climate resilient, including transitioning to non-fossil landscaping equipment, moving to power the city with 100% clean energy, transitioning to a 100% carbon-free fleet, banning single use plastics at city facilities, and studying ways to mitigate the urban heat island effect through nature based solutions. Installing plastic grass takes us backward, not forward.

Synthetic turf presents many substantial negative impacts. It adds real and significant heat impacts both on the field and around the field, which impact not only field users but also nearby park users and residents. Artificial turf fields contribute to the heat island effects and degradation of open space. Artificial turf is made from virgin plastic. Blades and infill have unknown additives. There is migration of PFAS-laden microplastics off the field and into players' bodies and into the environment. At the end of their lifespans, these materials will be sent to landfills. Injuries are a major concern. **Synthetic turf, when cared for properly, does not save water.** Three of the proposed sites pose an environmental threat to the schools they are within or adjacent to. There are multiple mistaken assumptions and calculations in the Life Cycle Analysis (LCA).

There are reasonable alternatives that use natural grass.

Please find other details of each of these concerns in the following pages.

## Problems with the Artificial Turf vs. Natural Grass Life Cycle Analysis (LCA)

- Dividing a negative environmental impact by field use hours of play does not mitigate that negative impact. The hours of play calculations in the LCA did not account for the number of hot days that should result in closure of the fields.

- The benefits of Shawgrass used in LCA calculations require maintenance that will not be done (such as daily watering on hot days).
- Use of reclaimed water is not calculated at Fremont Park.
- Urban heat island effects were not studied.
- Emissions and carbon were calculated with the assumption that gas and diesel equipment would be used for natural turf when Glendale will not be using such equipment.
- The LCA did not consider organic fertilizers in its calculations.
- The LCA states that trees should be planted around the fields. This tree planting is not in the proposals for field construction.
- Please see a detailed analysis of these and other points in the attached document.

## High Temperatures on Turf

- Synthetic turf absorbs heat the way asphalt does. It reaches 150°F easily and has been measured as hot as 200°F. Fields over 120°F present a safety issue.
  - They contribute to skin burns, dehydration, overheating, and heat stroke.
  - In 2020, Glendale experienced 77 days over 90°F (and 10 over 100°F). Predictive Modeling shows Glendale having 88 days/year over 90°F by mid-century (2035-2064). **On a sunny, 90°F day, artificial turf surfaces (with non-Geofill infill) have had recorded temperatures of 165°F.**
- Synthetic turf causes heat island effects. They absorb heat from the sun all day. They radiate heat and increase the ambient temperature causing a giant heat island in the immediate area and the surrounding neighborhood.
  - In the proposed school and school adjacent installations, predominantly blacktop school campuses would heat up even more, affecting all (often very young) students and staff.
  - Artificial turf fields contribute to the heat island effect (raising surrounding temperatures up to 7°F according to one study included in the LCA).
  - Artificial turf fields contribute to the degradation of precious open space, particularly in the proposed South Glendale installations, (For example, the Fremont Park installation would remove approximately 1/3 of the currently natural space)
- Scientists at Columbia University who analyzed satellite thermal images of New York City over two summers concluded that synthetic turf fields were up to 60° hotter than grass fields.
- The entire surface area of heated plastic constantly off-gasses the greenhouse gases methane and ethylene.

## Hazardous Substances

- Synthetic turf is made from polyethylene, with additional toxic and carcinogenic chemicals. Proposed infill may have unknown additives.
- The five proposed fields with 273,506 ft<sup>2</sup> will use 136,753 lbs of polyethylene for blades and backing. Equivalent to 46,838 gallons of petroleum, 10,940,240 plastic bags, or 157,265,950 plastic straws. Plastic bags and drinking straws were banned in Glendale.
- **Synthetic turf blades, backing, shock pads, and even wood infill have shown a 100% positive test rate for PFAS** (per- and polyfluoroalkyl substances).
  - Each year, 551-661 pounds of PFAS-laden microplastics migrate off each field via dust and rain water.
  - PFAS can cause reproductive (including a 47% decrease in fertility), developmental, liver, kidney, and immunological effects and tumors in laboratory animals.

- Human epidemiology studies show an increase in serum cholesterol levels, effects on infant birth weight and the immune system, cancer, and thyroid hormone disruption.
- PFAS exposure is bioaccumulative. This impacts multiple generations.
- Plastics contain endocrine-disrupting chemicals which can cause neurological and behavioral disorders, obesity, metabolic dysfunction, reproductive disorders, and cancer.
- At the end of the 8-12 year lifespan of each proposed artificial turf field, the 40,000 pounds of polyethylene and 400,000 pounds of infill on each field will be sent to a landfill. Though the current proposal claims recycling of the turf, it will eventually end in the landfill. Only the blade part of the turf is included in the recycling proposal.
  - A 2016 report prepared for the state of California on recycling and reuse of synthetic turf fields stated that no examples of an actual recycling project for all the components of a removed field in California could be found.
- Toxins, plastic fragments, and infill are washed out into the environment. They are carried off into storm drains rather than soaking into the ground. Frequent brushing and disposal can help prevent some of the larger fragments from entering storm drains, but this requires much worker maintenance and might not be practical. Also, the smaller fragments cannot be collected.

## Degradation of Open Space

- Synthetic turf can reach temperatures in excess of 160°F, baking and compacting the underlying soil, killing all living organisms below it, and negatively impacting natural filtration, cooling, and carbon sequestration.
- Chemicals in the plastic surface leachate out and allow runoff containing a toxic load of mixed proprietary chemicals, as well as PFAS and heavy metals.
- Synthetic turf and microplastics have caused a decrease in bird populations and accumulation of microplastics on bees, negatively impact ocean habitats, and kill soil biomes. Some PFAS have also been linked to phytotoxicity, aquatic toxicity, and terrestrial ecotoxicity.
- Artificial turf does not adequately handle stormwater. Studies show that artificial turf generates more runoff than grass.

## Player Injuries

- Blood and other biologics absorb into the soil and degrade naturally and quickly on grass fields. They do not degrade on artificial turf without cleaning.
- Exposure to Methicillin-resistant Staphylococcus aureus (MRSA ) and other bacteria is a potentially life threatening consequence of dermal abrasions, known as turf burns, due to friction on synthetic turf. Inhalation and ingestion are additional exposure pathways. Glendale reported one such injury at the previous Parks Commission hearing. In an EPA study, 70% of synthetic fields had MRSA, an antibiotic-resistant life threatening infection.
- Lower-body injuries are significantly higher on synthetic turf, as are concussions and heat stroke. These lower-body injuries can be far more severe. Glendale reported several severe injuries at the previous Parks Commission hearing.
- The NFL reports 103% more injuries on synthetic turf.

## Problems with Plant-based Infills<sup>1</sup> (PBI)

- Choosing PBI (plant-based infills) means using an expensive and controversial product that requires the use of carcinogens and many chemicals, in addition to being a respiratory risk.
- PBI infill turns to dust, and it also blows away and floats readily during storm events, fouling waterways with suspended solids (TSS) and nutrients, plus any binders/adhesives and biocides/antifungals, etc., used on the field, and increasing maintenance costs.
- 7,000 lbs of infill migrate out of PBI artificial turf fields and into the environment every year. This also puts athletes at higher risk for concussions unless the field is groomed, and/or more infill is added.
- **Unknowns**
  - The source of the infill is undisclosed and its chemical treatment in prior use is undisclosed
  - Longevity & play-performance of the newer non-tire infills is untested.
  - Numerous unknown issues have not been reliably measured, pro or con, by reliable, third party researchers or analysts.
  - No long-term study on the effects of children inhaling chemical-laced PBI has ever been conducted.
  - Plant based turf infills can contain pesticides and or PFAS. They have been implicated in increased toxic algae blooms.
- **Coconut husk infill issues** (Proposed by Shawgrass)
  - Coconut husk is sourced primarily from Indonesia and India, where there is exceptionally poor regulation or quality control over pesticides or chemicals added prior to harvesting, during processing, or post processing.
    - The largest producer of the world's coconuts is Indonesia, where the process of retting coconut husk is hastened by adding bacteria to the water the husks are left to soak in for several months, making it easier to extract the "coir."
  - The extracted coir may be chemically treated to reduce the risk of bacterial spore growth.
    - Copper sulfate fungicide (used in combination with petroleum oil in the US), malathion, and chlorpyrifos and many others are used on coconut plantations.
  - Coconut husk infill floats, leading to a possible problem in heavy rain.
- **This raises this critical question: are we willing to take the risk posed to our children by this non-uniform, variable toxic mix, over time, in high heat?**

## Specific Problems with Shawgrass

- The field must be swept with a machine, once per week.
- The field must be groomed with a towed apparatus after each 48 hours of play.
- Sanitation must be done promptly using chemicals provided by Shawgrass.
- It is recommended that the field be watered regularly to maintain the safest level of play. If the field is not watered regularly, the turf will harden.
  - Shaw recommends watering the field 5-10 minutes each morning. If the field is watered in this way, it can cool approximately 20-30°F, which may in fact not be enough to cool the field to below 120°F, or the cooling may not last the entire day. A starting temperature of 157° (typical high temperature on hot days) cools to 127°-137°.
  - **This is more water than natural grass requires.** Natural grass does not require daily watering.

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<sup>1</sup> Without infill, artificial turf would lie flat and would be unplayable. Players are in contact with both the blades and the infill.

## Environmental Justice

- Three of these sites are in South Glendale, already burdened by lack of open space and high levels of heat. These three sites are already 5-6° F hotter than North Glendale.
- These sites in South Glendale are already hard hit with pollution in all categories.
- This is particularly true in Fremont Park, where the proposed field would remove one third of the open green space. And although Fremont Park is just north of the 134 Fwy, it is accessible to homes south of the FWY. Much of the community utilizes this open space, especially as there are so few parks in South Glendale, a densely populated area with a large population living in apartments and condos that do not have yard space. This makes available open green space all the more in demand.
- As natural fields, these spaces would be available for other use at times when games are not played.
- A Site-by-Site Analysis of Pollution and Heat Conditions is located [here](#).

## Benefits of Real Grass

- Real grass is a sustainable carbon sink, absorbs carbon in the atmosphere, and improves air quality.
- Grass is a natural coolant. It cools the air around it and doesn't absorb solar heat. It counteracts the heat island effects of hot asphalt and buildings.
- The soil in which grass grows contains bio-diverse communities of organisms that are essential for clean water and air. Nitrogen-fixing bacteria and other live micro-organisms help soil break down harmful contaminants such as body fluid spills—an essential ecosystem service for a healthy environment.
- Grass is an important component of the water cycle. Rain is infiltrated through grass from the surface into the soil and then replenishes groundwater supplies.
- The staff report also says that “A well-maintained natural grass field is an ideal surface for soccer play. Grass benefits the environment by reducing the urban heat island effect, filtering rainwater and pollution, and providing habitats for birds and insects. Natural grass reduces temperatures even on hot days, with the temperature rarely rising above 85°F.”

## Possible Alternatives

- Modifications to natural turf to increase longevity include changing the seed mix, use schedules, and blade height. Native grasses can be used.
- Add additional fields in Glendale (for example at the Sports Complex) to reduce the amount of field play on individual fields. Find ways to prioritize Glendale residents and leagues.
- Use a hydroponics style system, which can be supplied sub-surface with greywater and above or below surface with stormwater, such as the [EPIC system](#) or [Permavoid System](#). These systems do not require regular (wasteful) overhead watering and promote much deeper root growth to allow for more field play. They have an indefinite lifespan with only components needing replacement, versus entirely new installations of artificial turf fields every 8-12 years. Do a pilot of one field.
- Apply for Measure W stormwater capture funding for natural grass athletic field projects that utilize greywater or captured stormwater. These funds can include money for ongoing maintenance costs, addressing a concern of our Parks Department. The Safe, Clean Water Program (Measure W) provides local, dedicated funding to increase water supply, improve water quality, and provide community enhancements throughout LA County. A mixed-use, natural grass athletic field utilizing a system that captures stormwater from the surrounding neighborhood and/or onsite, connected to an

intake for a hydroponics-style system or for use with a typical natural grass field installation, would make an attractive grant proposal. The Fremont site, for example, could be assessed for the feasibility of capturing on-site greywater and via bioswaling, onsite stormwater, and/or Verdugo Wash runoff or water via a connection to purple-pipe reclaimed water.

- Use reclaimed water at all sites. Reclaimed water is already there at 4 of the 5 sites. Reclaimed water could be brought into Fremont if stormwater capture is not possible.

## For more information

All resources used for the above points are referenced at:

[docs.google.com/document/d/1ABYr6x7cGIhywuPmTtECm65CayAl8N9fKK4k9vIxXLM/edit?usp=sharing](https://docs.google.com/document/d/1ABYr6x7cGIhywuPmTtECm65CayAl8N9fKK4k9vIxXLM/edit?usp=sharing)