



MEMORANDUM

To: The Mayor and Alderman of the City of Savannah
From: Joseph A. Melder, City Manager
Date: June 9, 2025
Subject: Wet Bulb Globe Temperature Method for Regulating Horse-Drawn Carriage Operations



THE PURPOSE of this memorandum is to provide information and a recommended ordinance amendment for the regulation of Horse Drawn Carriage operations within the City of Savannah. City Council has discussed this item several times over the last few years and has given me instruction to bring forward this amendment for consideration. Below and attached, please find an overview of the potential adoption of the Wet Bulb Globe Temperature (WBGT) method to regulate horse-drawn carriage operations in the City of Savannah. It includes current operating standards, a summary of expert consultations, and equipment options to support WBGT monitoring.

BACKGROUND

Current Industry Overview

Savannah currently has two licensed carriage companies operating with a combined fleet of approximately 30 horses on a rotation. The Tour Services for Hire Ordinance governs the operations of these tours and is enforced daily by City tourism compliance officers.

Current Regulations

Under the existing ordinance:

- At 85°F or higher: Rectal temperature and respiratory rates of horses must be recorded at the end of each tour circuit, prior to hosing down the animal. Records must be kept on the carriage or at the stand and made available for review.
- At 90–95°F or a Heat Index of 100–110°F: Rectal temperatures must be taken and recorded. Horses should be hosed down and sweat scrapes should be used to remove excess water. Horses must rest for a minimum of 15 minutes per tour hour.
- At over 95°F or a Heat Index of 110+: Carriages are not permitted to operate on city streets.

The City's current heat restrictions follow the State's requirements.

Wet Bulb Globe Temperature (WBGT) Overview:

The WBGT index is a comprehensive measurement of heat stress in direct sunlight. It considers:

- Air Temperature – Measured with a standard outdoor thermometer.
- Natural Wet Bulb Temperature – Reflects the cooling effect of evaporation (simulated with a wet cloth over the thermometer).
- Black Globe Temperature – Captures solar radiation and ambient heat using a thermometer placed in a black globe.

WBGT Formula: $WBGT = (0.1 \times \text{Air Temp}) + (0.7 \times \text{Wet Bulb Temp}) + (0.2 \times \text{Black Globe Temp})$

According to the Fédération Équestre Internationale (FEI) and the U.S. National Weather Service, a WBGT reading above 33°C (91°F) indicates heat stress and reduced equine thermoregulation capacity.

Equine Consultations

Input was obtained from the following equine professionals:

- Dr. Reece Myran, veterinarian for the Savannah Police Department Mounted Patrol: He advised that FEI guidelines are not directly applicable to our context due to their design for competitive, high-intensity equestrian events. Dr. Myran recommends setting the WBGT threshold at 94°F for carriage operations in Savannah.
- Dr. Kylee Jo Duberstein, Professor of Equine Science, University of Georgia: Dr. Duberstein emphasized that fixed temperature thresholds can be arbitrary and advocated for monitoring temperature, pulse, and respiration (TPR) as the most effective approach. However, she supports referencing broader industry standards, such as the Canadian guidelines, which also advise limited work during WBGT readings above 33°C (91°F).

Equipment and Monitoring Options

To implement WBGT monitoring, the following equipment would need to be considered:

1. Permanent Weather Station Installation
 - Potential Vendor: existing City vendor for Sferic Maps/radar services
 - Quoted Estimated Cost: \$3,330
2. Portable Handheld Monitor (Backup)
 - Model: Questemp-32 Heat Stress Monitor (used by the City of Beaufort)
 - Estimated Cost: \$2,125

RECOMMENDATION

Adopting the WBGT method may provide a more comprehensive and science-based approach to protecting equine welfare during hot weather. With expert input and reliable equipment options, the City is well-positioned to consider ordinance updates that reflect the industry's best practices and uphold safety standards.

ATTACHMENTS

1. Draft Ordinance Revision Recommendations
2. Memo to City Council in September 2023 regarding Horse Drawn Carriage Options

AN ORDINANCE
TO BE ENTITLED

AN ORDINANCE TO AMEND DIVISION II, PART 6,
LICENSING AND REGULATION, CHAPTER I, BUSINESS
AND OCCUPATIONS, ARTICLE R, TOUR SERVICES FOR HIRE,
DIVISION 3, HORSE DRAWN CARRIAGES, OF THE CODE
OF THE CITY OF SAVANNAH TO PROVIDE FOR WET BULB GLOBE
TEMPERATURE HEAT STRESS MEASUREMENTS;
TO REPEAL ALL ORDINANCES IN CONFLICT HEREWITH;
AND FOR OTHER PURPOSES.

BE IT ORDAINED by the Mayor and Aldermen of the City of Savannah, Georgia, in regular meeting of Council assembled, and pursuant to lawful authority thereof:

SECTION 1: That Article R of Part 6 of the Code of the City of Savannah, Georgia be amended by deleting Section 6-1564 in its entirety and inserting in lieu thereof the following:

Sec. 5-1564. – Equine heat.

a. Monitoring temperature and heat indices. The official thermometer used for determining the wet bulb globe temperature and heat index shall be permanently affixed and located at 248 West Bryan Street in Ellis Square. In the event the thermometer is out of service, as determined by the department of Code Compliance or the office of Special Events, Film, and Tourism, acting through their respective directors or their designees, measurements shall occur at 248 West Bryan Street utilizing a portable Questemp-32 Heat Stress Monitor during such time the affixed monitor is out of service. Such measurements shall be taken by the Code Compliance Director or his/her designee.

b. Heat guidelines. The following heat indices and air temperatures shall apply:

1. Wet bulb globe temperature of 86 degrees Fahrenheit or higher:

(A) Rectal temperature readings and respiratory rates shall be taken by the carriage driver upon the completion of every circuit of the tour route prior to hosing down the horse. This information shall be recorded in writing and maintained on the carriage or at the carriage stand, which shall be made available to the Code Compliance Director or his/her designee upon request.

(B) Upon request, horses shall be made available to the Code Compliance Director or his/her designee to evaluate factors suggestive of undue equine stress or heat exhaustion.

2. Wet bulb globe temperature of 88 degrees Fahrenheit or higher:

(A) Rectal temperature readings and respiratory rates shall be taken by the carriage driver upon the completion of every circuit of the tour route prior to hosing down the horse. This information shall be recorded in writing and maintained on the carriage or at the carriage stand, which shall be made available to the Code Compliance Director or his/her designee upon request.

(B) Horses shall be hosed down with cold water upon the completion of every tour route circuit. Sweat scrapers shall be used to remove excess water from the horse's body after it has been hosed down.

(C) Water stations shall contain fresh and cold water. Electrolytes are recommended as may be needed to avoid equine thirst.

(D) Detection of any sign of heat exhaustion or undue equine stress shall be addressed immediately and the horse returned to its stabling facility.

(E) Horses shall have no less than fifteen minutes of rest per every hour of working tour operations.

(F) Upon request, horses shall be made available to the Code Compliance Director or his/her designee to evaluate factors suggestive of undue equine stress or heat exhaustion.

3. Wet bulb globe temperature of 91 degrees Fahrenheit or higher:

(A) Horse drawn carriage tour operations shall not be allowed to operate on City streets..

(B) Horses on the street may return to the carriage stand to keep cool if returning to the stabling facility could cause undue stress or increase the risk of heat exhaustion. Appropriate emergent care shall be provided if needed.

(C) Upon request, horses at carriage stands shall be made available to the Code Compliance Director or his/her designee to evaluate factors suggestive of undue equine stress or heat exhaustion.

(c) Horse drawn carriage tour service owners and operators shall monitor the Ellis Square wet bulb globe temperature device to ensure ongoing compliance with this section. Designated City staff may monitor the device and transmit electronic communications to tour service owners and operators should this section be implicated; however, responsibility for monitoring and compliance remains the sole responsibility of horse drawn carriage tour service owners and operators.

(d) Inspections. The Code Compliance Director or his/her designee may request to inspect rectal temperature readings and respiratory rate records for any horse in circulation when the wet bulb globe temperature registers 86 degrees Fahrenheit or

higher, which shall be made available upon request. The Code Compliance Director or his/her designee may order the return of any horse to the carriage stand and require performance of a rectal temperature check in his/her presence for any horse in circulation when the wet bulb globe temperature registers 86 degrees Fahrenheit or higher. Horse drawn carriage owners or operators failing to comply with either such request shall result in immediate removal of the horse from the street and return to its stabling facilities for the remainder of the calendar day.

(e) Elevated horse temperatures. If the temperature of any horse registers in excess of 101.9 degrees Fahrenheit as determined by a rectal temperature check, its carriage owner or operator shall recheck the temperature thirty minutes thereafter. If the horse's temperature remains in excess of 101.9 degrees, it shall immediately be returned to its stabling facility for the remainder of the calendar day and the Code Compliance Director or his/her designee shall be notified within thirty minutes of the second temperature reading. Appropriate emergent care shall be provided if needed.

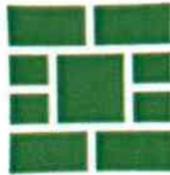
SECTION 2: All ordinances or parts of ordinances in conflict herewith are hereby repealed.

SECTION 3: This Section shall be effective when the Mayor affixes his signature below.

ADOPTED AND APPROVED: _____

Van R. Johnson II, Mayor

Mark Massey, Clerk of Council



MEMORANDUM

To: Mayor and City Council
From: Joseph A. Melder, City Manager
Date: September 19, 2023
Subject: Horse Drawn Carriage Ordinance

This summer the City received several calls and emails concerning Savannah's Horse Drawn Carriage Industry. In response, I directed the Special Events, Film and Tourism Department to research industry best practices, and work with the Tourism Advisory Committee (TAC) on any proposed amendments to the Tour Service for Hire Ordinance.

TAC is a 10-member City board comprised of neighborhood, tourism, and preservation leaders that makes policy recommendations to the City Manager concerning tourism management regulations and other factors impacting the balance between quality of life and Savannah's hospitality industry.

Staff has conducted initial research, which is provided below. Next week staff will begin holding discussions on the matter with TAC, which will engage horse-drawn carriage companies, local advocacy groups raising concerns, and subject matter experts. Final recommendations will be made to me on any proposed ordinance amendments to be considered by City Council for adoption.

Operations and Compliance

There are currently two carriage companies offering tours with a combined fleet of approximately 30 horses operating on a rotation. This number is down from four companies, pre-pandemic. The Tour Service for Hire Ordinance governs the operations of these tours and is enforced daily by City tourism compliance officers. While officers observe tours throughout the year, that work is especially important during the hot summer months. Tourism officers conduct daily checks to ensure the operators are monitoring rectal temperatures, employing proper hydration practices, and ensuring the equipment is operating safely.

These practices are in place to support the overall health of the horses. Proper hydration practices are particularly important, and the officers are trained to identify any troubling indicators including:

- the amount of sweat that is produced, which is an indication of cooling and stress
- the color of the gums for signs of dehydration
- chaffing on the skin from equipment
- color of urination

- visual signs of tiredness such as the position of the head and stomping of the feet

It was noted by the tourism compliance officers that the two local horse carriage companies have voluntarily ceased operations between the hours of 1 and 6 p.m. during the hot summer months. Special Events, Film, and Tourism (SEFT) staff reached out to company owners to determine the reason for this change. Each owner stated they are proactively and voluntarily ceasing tours during this time to guarantee the horses and guides are not put at risk with the high temperature and heat indices. The owners and operators monitor the weekly forecast and update their websites to communicate the daily schedule to prospective tour patrons.

Possible Areas of Research/Options for Ordinance Changes

Staff continues to research best practices concerning regulation of the horse-drawn carriage industry. Below are areas that will be further explored for potential modification to the Tour Service for Hire Ordinance:

- **Wet Bulb Temperature Reading:** Integrate the Wet Bulb Temperature reading into the ordinance to measure the combined effects of temperature and humidity on the horses. This would help to ensure tours are suspended or shortened when conditions exceed safe levels.
 - Staff reached out to various large animal veterinarians, Savannah College of Art and Design's Equestrian Studies Program, and the University of Georgia for insight regarding this method and how it can be applied in an urban setting.
 - The use of Wet Bulb Temperature readings would most likely have a significant impact on horse-drawn carriage operations, particularly during the summer months.
 - Depending on the physicality of each horse, work and rest time would vary. This would restrict the length of tours and the number of hours a horse could work without significant rest.
- **Routes:** Work with the horse-drawn carriage companies to establish routes that provide more shade during the hotter months. This will offer the horses relief from direct sunlight and reduce the risk of heat stress.
- **Weight Requirements:** Set clear and appropriate weight limits for carriages to avoid undue strain on the horses. Regularly inspect carriages to ensure compliance. This will require the addition of weight stations at various check points.
- **Seasonal Time Adjustments:** Codify time restrictions on the allowable tour hours to avoid operations during the hottest parts of the day during the summer.
- **Staging Shelters:** Encourage the installation of staging shelters at strategic points along the tour routes to provide temporary respite for the horses, minimizing the heat absorbed from the concrete. It should also be considered to place a

cushioned, permeable surface under the staging areas to prevent heat absorption and reduce joint stress.

- **Banning the Use of Horse-drawn Tour Service Vehicles:** City Council could also take the step of banning the use of horse-drawn carriages as a tour service vehicle option. Some communities have transitioned horse-drawn carriages to electric powered carriages. This could be an option in Savannah; however, it would have the potential to negatively impact upwards of 30 local jobs.

TAC will begin discussions about the horse-drawn carriage ordinance during its monthly meeting next week. While TAC normally only meets monthly, staff has been directed to host additional meetings, if necessary, in order to address this matter as thoughtfully and expeditiously as possible.

I will provide you updates on this process as it progresses.