CITY OF PLANO

PLANNING & ZONING COMMISSION

September 16, 2019

Agenda Item No. 2A

Public Hearing: Comprehensive Plan Amendment 2019-001

Applicant: City of Plano

DESCRIPTION:

Request to amend the Comprehensive Plan to incorporate the Expressway Corridor Environmental Health Policy. Tabled July 15, 2019, August 5, 2019, and September 3, 2019. Project #CPA2019-001.

BACKGROUND:

The Comprehensive Plan is the key long-range guide for the future growth, development, and redevelopment of the city and serves as a 20 to 30 year visionary guide, providing policy and direction for land use, transportation, housing, city services, and other important aspects of the community. The Comprehensive Plan includes a broad range of policies and implementation actions, as well as five maps that guide city leaders in decisions and directives for land use, development, the provision and delivery of city services, and prioritization and funding of Community Investment Program (CIP) projects.

At its March 18, June 3, and June 17, 2019, Planning & Zoning Commission meetings, the Commission received presentations related to the draft Expressway Corridor Environmental Health Study. Since these meetings, staff has refined the draft study and prepared recommendations for consideration of adding a map and associated guidelines into the Comprehensive Plan.

This request was tabled to allow for additional deliberation regarding the overall direction of updates to the Comprehensive Plan. Since updates to the Comprehensive Plan are still being contemplated, and a firm timeline for completion has not been established, staff is moving forward with this request to finalize the study and implement the resulting recommendations.

REMARKS:

Background

The city's long range planning policies have focused on limiting residential development in expressway corridors for the dual purposes of preserving land for economic development and maintaining quality of life. The goals were previously achieved through a minimum setback from the centerline of expressways of 1,200 feet. The setback was initially applied along the State Highway 121 corridor (before the present expressway was built), this residential setback recommendations was consistent with similar development policies adopted by the City of Allen and the City of Frisco for the State Highway 121 corridor. In 2012, this policy was expanded to include the other three expressway corridors.

As a continuation of the prior comprehensive plan philosophy related to expressway corridor setbacks, the following action statement was adopted within the Comprehensive Plan:

Redevelopment of Regional Transportation Corridors Action Statement RTC4 - *Develop design guidelines for residential development adjacent to expressways that reduce noise and provide for proper filtering, ventilation, and exhaust of vehicle air emissions.*

To complete this action statement, the Planning Department hired Harris Miller Miller & Hanson, Inc. (HMMH), a firm that specializes in the field of acoustical and air quality analysis, to perform a noise and air pollution study and to develop potential policies or regulations based upon the results of the analysis. As part of the study, HMMH examined the science and best practices of associated quality of life issues. The results are anticipated to provide the City Council and Planning & Zoning Commission more solid, defensible data for making decisions on where and how to meet these setback goals. Using this information, staff is proposing policies and regulations to provide more precise, accurate, and flexible tools to aid in determining reasonable development outcomes while preserving the city's quality of life.

Public Health Concern and Land Use

Research provided by HMMH proves that noise and air pollution impact public health for everyone, particularly when sleeping at night. Various studies show an association between traffic-related noise pollution and health concerns such as heart disease, diabetes, hypertension, and other issues generally linked to sleep disruption and increased stress. Additionally, traffic-related air pollution has been found to be associated with conditions such as asthma, heart disease, and pregnancy-related issues. Vulnerable members of our community, such as children, seniors, and adults impacted by other underlying health issues, are at an elevated risk for these health impacts from noise and air pollution.

The study was conducted to provide a technical analysis of these health issues, and create scientific standards for development and land use decisions that were less broad-reaching than the previous policy. Based on the research provided by HMMH, the land uses in the following table were identified as sensitive land uses and may be impacted by noise and air pollution if placed near expressways:

Single-Family and Small Institutional Dwellings	Multifamily and Large Institutional Dwellings	Day Cares and Schools
• Boarding House • Day Care (In-home) • Household Care Facility • Mobile Home Park • Rehabilitation Care Facility • Rooming House • Single-Family Residence (Attached) • Single-Family Residence (Detached) • Studio Residence • Trailer Park • Two-Family Residence	• Assisted Living Facility • Continuing Care Facility • Household Care Institution • Independent Living Facility • Long-term Care Facility • Mid-Rise Residential • Multifamily Residence • Rehabilitation Care Institution	• Day Care Center • Day Care Center (Accessory) • Day Care Center (Adult) • Schools (Private)

Parks
• Park • Playground

Air Pollution

Air pollution is a regional issue created by a variety of pollutants and pollutant sources. These pollutants can spread away from the direct source, through the region and across city and county lines. However, proximity to expressways does increase exposure to some pollutants. The spread of pollutants is affected by a number of variables including wind direction and speed as well as season and time of day.

Studies provided by HMMH indicate most traffic-related air pollution disperses within 350 to 500 feet of the outer edge of an expressway. Additionally, each pollutant disperses at a different rate. Due to the site-specific nature of air pollutant dispersion, there is no commonly agreed upon standard distance from expressways for residential land uses to minimize adverse effects.

Noise Pollution

Noise pollution from expressways is primarily generated from the friction of vehicle tires on pavement. The noise will vary based upon vehicle speeds, the volume of trucks and larger vehicles, and the overall volume of traffic. Many national agencies have adopted noise standards, including the Federal Highway Administration (FHWA) and the Department of Housing and Urban Development (HUD). HUD, much like a municipal government, seeks to carefully balance the need to protect public health with the economic and community development needs of communities.

Measuring Noise

The health impacts of noise are most often evaluated using a measure called day-night sound levels, or **L_{dn}**. This method measures noise levels over 24 hours. Additionally, nighttime sound levels occurring between 10 p.m. and 7 a.m. are more heavily weighted with a nighttime "penalty" of 10 decibels (dBA).

HUD uses L_{dn} (described in the box to the right) as its measurement standard to account for the elevated threat of nighttime noise. Using L_{dn} as Plano's noise management standard will allow the city to consider the public health impacts of noise pollution, while balancing the needs for continuing economic and community development. HUD sets acceptable noise levels at less than 65 dBA L_{dn} for the exterior of residential developments, and considers levels 75 dBA L_{dn} and above as unacceptable. Additionally, HUD has also set a goal for interior noise to not exceed 45 dBA L_{dn}.

Noise levels are also affected by building height. Lower floors often have lower noise levels, since other buildings and structures at ground level can have a buffering effect. Higher floors, however, may have a direct line between the building and the noise source, resulting in higher noise levels. Very high floors (generally stories 10 and higher) would be slightly further away from the noise source, and have somewhat lower noise levels. If a project is subject to a noise analysis, building height can be included in the analysis, and mitigation measures can be proposed to keep each floor under an appropriate noise level.

The city has a noise ordinance that applies to noise generated from residential and commercial sites. However, the noise ordinance does not apply to the lawful operation of motor vehicles. Therefore, the city does not currently have a policy or standard in place to consider the impacts of noise pollution created by vehicles on expressways, beyond the Comprehensive Plan's action statement.

Noise and Air Pollution Mitigation

The methods to mitigate traffic-related air pollution and traffic-related noise pollution are similar, and a combination of methods is recommended for the most effective mitigation. The methods include:

- Increasing distance from the expressway;
- Placing other buildings or parking structures to function as a barrier from the expressway;

- Adjusting the site design so that sleeping areas, outdoor living spaces such as patios and balconies, and open space are located further from and facing away from the expressway; and

- Enhancing building design using improved window, door, and wall materials and/or treatments.

Mitigation methods focused specifically on reducing traffic-related air pollution include:

- Providing indoor air quality filtration systems that reduce at least 90 percent of particulate matter emissions; and

- Locating building air intake vents as far away from the expressway as practical.

Expressway Corridor Environmental Health Study

HMMH developed a study to analyze the impacts of noise and air pollution on sites located near the city's four expressways: U.S. Highway 75, State Highway 121, the Dallas North Tollway, and State Highway 190. Noise monitoring was conducted with strategic considerations to ensure measurements represented typical noise levels in Plano. Monitors (both short- and long-term) were placed in 18 locations near the city's expressways during periods that would best represent normal traffic conditions. Key monitoring considerations included:

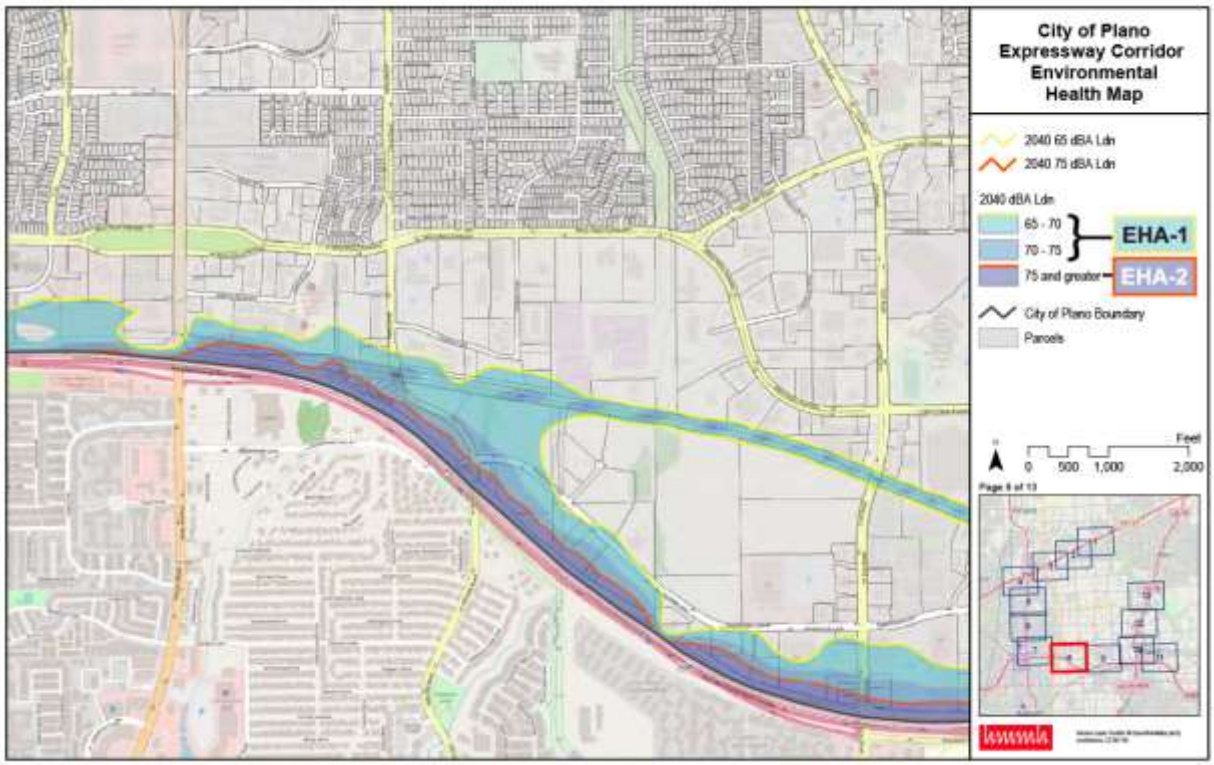
- Placement during the school year (late September 2018)

- Weekday placement to account for school and work travel (Tuesday, Wednesday, and Thursday)

- Avoiding holidays and inclement weather

The monitoring data collected was also analyzed and adjusted for non-standard noise events, such as a generator which happened to be near one of the monitoring stations. This quality control process helped to ensure the noise model most accurately measured typical noise levels for the city. This information was combined with building and elevation data, existing and future traffic projections, rail schedules, and tree canopy information to create a map which shows the health effects in these areas, entitled the Expressway Corridors Environmental Health (ECEH) Map.

A portion of the map is included below:



Sample Expressway Corridor Environmental Health Map

This map displays the following designations:

EHA-1

Expressway Corridor Environmental Health Area One: Properties where outdoor noise levels are greater than or equal to 65 dBA L_{dn} and less than 75 dBA L_{dn}.

EHA-2

Expressway Corridor Environmental Health Area Two: Properties where outdoor noise levels are greater than or equal to 75 dBA L_{dn}.

The completed study is included as an attachment and includes an analysis of scientific studies regarding proximity to noise and air pollution sources, best management practices for air and noise pollution mitigation in land use decisions, and recommendations for Plano. After reviewing the results of the study, and considering options for implementation, staff is proposing two amendments to the Comprehensive Plan as described in the sections below.

Amendment #1: Expressway Corridor Environmental Health Map and Guidelines

The Expressway Corridor Environmental Health Map, included as an attachment, is proposed to be added to the Comprehensive Plan as a sixth map, to assist applicants and staff in determining the locations of the Expressway Corridor Environmental Health Areas and applicability of the guidelines. The associated Expressway Corridor Environmental Health Guidelines establish a goal to protect residents from the negative

effects of proximity to expressways, provide requirements for the placement of sensitive land uses, and list potential mitigation methods.

Goal: Sensitive land uses within the Plano Expressway Corridor Environmental Health Areas should achieve a maximum outdoor noise level of less than 65 dBA L_{dn}.

Requirements for Sensitive Land Uses: As zoning cases proposing new sensitive land uses are proposed, the Expressway Corridor Environmental Health Map would be used to provide additional analysis, and would be considered in concert with other city goals and policies of the Comprehensive Plan. Implementation would vary by land use type and EHA area, as shown in the table below:

<table>
<tr><th></th><th>EHA-1</th><th>EHA-2</th></tr>
<tr><td>Residential and Institutional Dwellings:
• Assisted Living Facility
• Boarding House
• Continuing Care Facility
• Day Care (in-home)
• Household Care Facility
• Household Care Institution
• Independent Living Facility
• Long-term Care Facility
• Mid-Rise Residential
• Mobile Home Park
• Multifamily Residence
• Rehabilitation Care Facility
• Rehabilitation Care Institution
• Rooming House
• Single-Family Residence (Attached)
• Single-Family Residence (Detached)
• Studio Residence
• Trailer Park
• Two-Family Residence</td><td>EHA Site Analysis</td><td>Inappropriate; except redevelopment of existing sensitive land use may be considered with EHA Site Analysis</td></tr>
<tr><td>Day Cares and Schools
• Day Care Center
• Day Care Center (Accessory)
• Day Care Center (Adult)
• School, (Private)</td><td colspan="2">Air intake vents away from expressway, Open space away from expressway, and Enhanced landscape edge</td></tr>
<tr><td>Parks
• Park
• Playground</td><td colspan="2">Enhanced landscape edge</td></tr>
</table>

Requirements for Residential and Institutional Uses: Within Expressway Corridor Environmental Health Area One, zoning changes proposing new residential and institutional dwelling uses would require an EHA Site Analysis of the proposed development to demonstrate the level of sound on the property and mitigation to meet the goal of less than 65 dBA L_{dn}. The EHA Site Analysis should meet the following criteria:

1. Be prepared by a recognized expert experienced in the fields of environmental noise and air pollution assessment and architectural acoustics;

2. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and predominant noise sources on the project site;

3. Estimate existing, future, and projected cumulative noise at ground level and for all proposed floors of the building and compare those noise levels to the adopted standards of the Expressway Corridor Environmental Health Policy;

4. Recommend appropriate mitigation options; and

5. Estimate resulting noise exposure after the mitigation measures have been implemented.

The results of this analysis will be used to assist applicants in considering the impacts of locating in expressway corridors. With this policy, mitigation can be considered early in the development process, rather than making significant site and building design changes during or post-construction.

Within Expressway Corridor Environmental Health Area Two, new residential and institutional dwelling uses would be inappropriate when requesting a zoning change. However, Planning & Zoning Commission may consider an EHA Site Analysis for redevelopment of existing residential or institutional uses in EHA-2.

Site Design Standards for Other Uses: Zoning change requests for day care uses, private schools, parks, and playgrounds within EHA-1 and EHA-2 will need to show mitigation of the effects of noise and air pollution through protective site design standards for future development.

The following would apply to day care and private school uses:

- Locating air intake vents on the opposite side of the building from the expressway.

- Locating any playgrounds or open space on the opposite side of the building from the expressway.

- Providing an enhanced landscape buffer on an approved landscape plan.

The following would apply to parks and playgrounds:

- Providing an enhanced landscape buffer on an approved landscape plan.

<u>Amendment #2: New Action Statement</u>

Adoption of the ECEH Map and Guidelines effectively completes the Redevelopment of Regional Transportation Corridors Action Statement RTC4; however, work is not complete. To ensure the map and guidelines are kept up-to-date, the following action statement is proposed for the Redevelopment of Regional Transportation Corridors policy:

Redevelopment of Regional Transportation Corridors Action Statement RTC5 - *Implement the Expressway Corridor Environmental Health Guidelines in order to mitigate the impacts of noise and air pollution for sensitive land uses. Update the Expressway Corridor Environmental Health Map and Guidelines at least every 5 years or as changes in expressway corridor conditions warrant reassessment.*

The update is to be conducted by a consultant experienced in the field of environmental planning involving regulatory analysis, data collection, modeling, and mitigation analysis of road noise and air quality impacts along major roadways. Regular updates will keep the map current to reflect future development and expressway construction, and will incorporate any updates to environmental conditions, advances in road or vehicle technology, and measurement techniques.

SUMMARY:

This is a request to amend the Comprehensive Plan to incorporate the recommendations of the Environmental Health Study along expressway corridors. The proposed recommendations are in conformance with the recommendations of the Comprehensive Plan. The amendments will create more precise, accurate, and flexible tools to aid the city in determining reasonable development outcomes while preserving the city's quality of life for sensitive land uses. For these reasons, staff is recommending approval of this request.

RECOMMENDATION:

Recommended for approval as submitted.