



PLANNING COMMISSION

Planning & Development Services Department • 201 N. Stone Ave. • Tucson, AZ 85701

Date: February 23, 2022 for meeting scheduled March 2, 2022 Page 1 of 11

To: Planning Commission

From: Scott Clark
Executive Secretary

Subject: C8-22-03 Commercial Parking Amendments UDC Text
Amendment – Study Session (Citywide)

Issue – The purpose of this public hearing item is to review and discuss amendments to two sections of the Unified Development Code (UDC) related to commercial parking. Those are:

- (1) A new standard to require electric vehicle (EV) readiness in new multi-family residential and commercial development, and large-scale retail development, and
- (2) An amendment to the Individual Parking Plan (IPP) eligibility to allow affordable housing projects, restaurants, and bars to utilize this option to reduce parking onsite when appropriate

These amendments are in response to Mayor and Council direction to staff to develop policy that furthers the goals outlined in the EV Roadmap (adopted April 2021); allows for the continuation of the Expanded Outdoor Seating Program (approved August 2021), part of the City's Covid-19 response; and supports the Housing Affordability Strategy for Tucson (adopted December 2021).

Recommendation – Staff recommends that the Planning Commission recommend approval of the Commercial Parking UDC Text Amendments to the City of Tucson Mayor and Council.

Background

Planning Commission Study Session

On February 2, 2022, the Planning Commission held a study session to review the proposed UDC code amendment related commercial parking requirements. Questions were asked of staff regarding EV ownership forecasts in Tucson, current use of EV incentives, the cost or barriers of completing an IPP, and affordable housing definitions. Feedback from Commissioners included comments that the installation of EV infrastructure should be market driven rather than through code requirements and that in addition to expanding eligibility for parking reduction tools, the City should consider reducing minimum parking requirements, particularly for affordable housing, to reduce car dependency and development costs. The commission recommended staff review EV requirements in retail uses, confirm EV requirements in shopping centers, and consider development size thresholds. At this meeting they voted 10-0 to set the item for a Public Hearing on March 2, 2022.

Staff reviewed a range of development examples and determined that for retail development a threshold of at least 100 parking spaces would capture the most applicable scenarios suitable for EV requirements. In addition, the definitions of low income and affordable housing have been added to the proposed UDC text amendment.

Current Parking Regulations

Parking regulations are generally governed by UDC 7.4. This section specifies the minimum number of motor vehicle and bicycle parking spaces for different land uses, design criteria, and reductions and exceptions. Currently, EV parking is one avenue to reduce parking, with a reduction of one parking space per EV space provided, for up to 20% of the total parking requirement. The Individual Parking Plan allows projects to reduce their required parking on a site-by-site basis, subject to eligibility criteria and certain findings.

Mayor and Council Direction

- **EV Charging:** On June 22, 2021, Mayor and Council voted 7-0 to direct staff to initiate the process of amending the necessary codes to require EV Outlets for multi-family residential and commercial development. (Please see Attachment B for the City of Tucson Electric Vehicle Roadmap, and Attachment C for the Legal Action Report from the June 22, 2021, Mayor and Council study session.) This code amendment follows a change to the building code approved on the same date to require all new residential (one-and two-family) construction to be EV Ready. This building code change was one of the first implementation items resulting from the Electric Vehicle Readiness Roadmap adopted by Mayor and Council on April 20, 2021.
- **Expanded Restaurant Seating:** On August 10, 2021, Mayor and Council approved the continuation of the Temporary Expansion of Restaurant Seating Program and provided direction to staff to develop a permanent program and to initiate amendments to the UDC and other applicable codes to support this program when the temporary program ends January 30, 2023. (see Attachment D for Resolution 23381).
- **Affordable Housing:** On November 23, 2021 Mayor and Council held a study session discussion regarding the [Housing Affordability Strategy for Tucson](#) (HAST) and directed staff to begin working on the Immediate Actions for Consideration, including an amendment to UDC to make affordable housing projects eligible for a parking reduction through the IPP. The HAST was formally adopted by Mayor and Council on December 21, 2021. (See Attachment E for the Legal Action Report from the November 23, 2021, Mayor and Council study session)

Community Outreach and Engagement

From July through December 2021, Planning and Development Services (PDS) conducted research, consultation, stakeholder engagement, and public outreach to inform amendments to commercial parking requirements. Research, analysis, and outreach was focused on distinct topic areas, but are presented as one set of amendments because of the overlapping goals of climate action response, local business support, infill development, walkable neighborhoods, and high-quality public spaces that motor vehicle parking policy affects. Coordination of these

amendments is an efficient and holistic approach to revising parking requirements in support of sustainable development policies.



In review of the EV readiness amendments, PDSO convened a stakeholder group with representation from Mayor’s Office and Council staff, development, utilities, EV companies, energy, and clean transportation. Nationwide and local trends, peer city examples, and cost estimates were discussed at three virtual meetings were held on August 30, October 12, and December 14.

To gather perspectives on the IPP amendment, stakeholders from Mayor’s Office and Council staff, food and beverage advocates and proprietors, architects and designers, and neighborhood representation met virtually on October 27 and December 13 to discuss best practices from the temporary outdoor seating expansion program, suitable IPP approval criteria, and benefits of expanded access to the IPP application. Additionally, Housing and Community Development Department conducted stakeholder interviews in October 2021 to inform an affordable housing study. Representatives from development, affordable housing funders and providers, real estate, and housing policy experts expressed opportunities and challenges in Tucson.

PDSO also held two public meetings to facilitate conversation and obtain feedback about the amendments. A virtual meeting was held on November 15 and an in-person meeting was held on November 17. More than 20 people attended the virtual meeting and three people attended the in-person meeting. Conversations related to EV charging centered around the balance of providing the most amount of access at the lowest cost and which uses are appropriate for the requirement. The discussion about streateries focused on how to expand access to the program, the benefits and challenges of trading parking for outdoor seating, and the concerns about outdoor seating and the impact on neighborhoods. Please see Attachment F for a summary of the public meetings.

Present Considerations

The proposed commercial parking text amendment has two components:

1. A new standard to require electric vehicle (EV) readiness in new multi-family residential and commercial development, and large-scale retail development, and
2. An amendment to the Individual Parking Plan (IPP) eligibility to:
 - a. Allow affordable housing projects to utilize this option to make it easier and more cost-effective to build affordable housing
 - b. Allow restaurants and bars to utilize this option to reduce parking onsite to support expanded outdoor seating as well as adaptive reuse

1. EV Readiness Parking Standards

The proposal for commercial and multi-family EV parking requirements reflects findings on the current state of the EV market. Some of the EV trends that inform this proposal include:

- Electric vehicles are rapidly increasing in popularity and providing the necessary infrastructure for them is essential to their success in Tucson.
- EVs have held steadily at around 2% of the national new car market share the last three years.
- While this share is relatively small, it has shown slight growth while conventional light duty cars sales decreased in 2020.
- Model availability continues to grow with 50 EV models on market in 2021, and approximately 130 by 2030.
- Federal target of 50% EV sale shares by 2030.
- Locally, about one in 300 vehicles in the Tucson Metro area is an EV, and around 1,000 EVs are registered within the City of Tucson itself.
- EV ownership in the Tucson area is concentrated in low density residential communities surrounding the City. For example, Catalina Foothills boasts EV ownership rates greater than 1%.
- Newer models outnumber older ones, suggesting stronger sales in recent years.

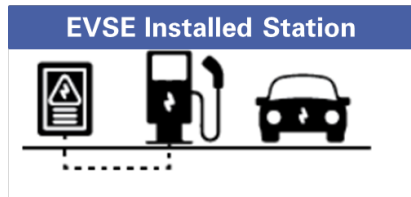
Additional Factors

- Installation of charging outlets during new construction is significantly less expensive versus retrofitting.
- An incentive-only approach for EV infrastructure installation has not resulted in significant EV infrastructure installations in Tucson.
- Eighty percent of EV drivers charge overnight at home because of the efficient use of time and cost savings. Early adopters tend to have the means to charge at home.
- Approximately 50 percent of vehicle owners in the USⁱ do not have reliable access to a dedicated off-street parking space at an owned residence, pointing to the need for EV charging access to be available beyond single-family detached homes and expanded to multi-family unit dwellings, workplaces, and commercial properties.
- Inequitable opportunities for EV adoption in lower income communities may worsen the existing disproportionate exposure to air pollution in minority neighborhoodsⁱⁱ, and excludes these communities from the longer-term cost savings of EV operation and maintenance compared to gasoline-fueled vehicles.
- For EVs to gain widespread adoption, and to meet emissions goals, charging infrastructure needs to be deployed strategically & equitably, with apartment dwellers and lower-income drivers in mind.

EV Infrastructure Definitions and Purpose

Percent Total Readiness – EV infrastructure falls into the following Readiness Levels:

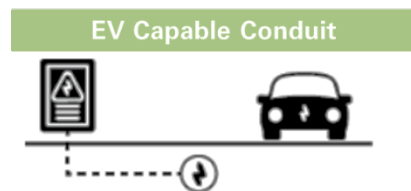
EV Readiness Levels, *listed from highest to lowest cost*



- **EV Installed Stations** – Installed charging station accessible to an EV parking space. The purpose of EV Installed EV is to provide easy access for EV charging to a wide range of the general public. This is the most visible investment in EV infrastructure. The cost per installed station ranges from \$500 - \$1,700.



- **EV Ready Outlet** – Installed electrical panel capacity and raceway with conduit to terminate within reach of an EV parking space. The purpose of EV Ready EV is to provide lower cost ready access to EV charging in locations with familiar or semi-regular users. Location-specific management strategies can be utilized to monitor or bill for charging access. Users may be required to provide their own charging cables to connect to an available outlet, or management may opt to provide this component. The cost per outlet alone ranges from \$15 - \$50.



- **EV Capable Conduit** - Installed electrical panel capacity with a conduit from the panel to a future EV parking space. The purpose of EV Capable conduit is to provide cost effective 'future proofing' for future EV charging at a site. The cost per foot of conduit is \$22 - \$43.

EV Readiness Requirements Proposal

To further the goals outlined in the EV Roadmap, staff proposes amendments to the UDC to require EV charging infrastructure for specific types of new commercial development to support the following goals:

- Ensure equitable access to the benefits of advancing technology, cost savings, and environmental benefits of EV adoption
- Provide significant cost savings by avoiding extensive future retrofits to add EV charging infrastructure in the future
- Implement baseline requirements at various commercial locations, based on visitation frequency, parking time, and diverse users.
- Require the most usable readiness for the least cost in building lifetimes that span the next 30 years and beyond.

The proposed requirements aim to strike a balance of the goals of the EV Roadmap with the existing local rates of EV ownership. While requirements will set the minimum baseline commitment for EV investment in new development and significant cost savings by avoiding

major retrofits, it is expected that market factors will also influence future levels of EV infrastructure.

Due to different use patterns at various commercial and multifamily locations and the associated charging habits, the proposal is tailored to specific land uses. The proposed code amendment would establish a minimum percentage of parking spaces that feature installed stations, EV-ready outlets, and EV capable conduit as part of any new development. In addition to these minimum standards, the proposed amendment includes incentives that reduce the number of total required parking spaces for sites that provide additional EV infrastructure installation beyond the minimum. A cost estimate analysis for each proposal is provided in Attachment G.

Multifamily EV Requirements

Proposed	
MULTIFAMILY25%
 Stations	0%
 Outlets	10%
 Conduit	15%

More than 80 percent of EV drivers charge overnight at home, most likely because of the efficient use of time and lack of detour to their transportation patterns. However, more than half of residents do not have access to a dedicated off-street parking space that they can equip with EV infrastructure. Providing charging access for existing and future EV drivers who live in multifamily development is the

most important location to contribute to equitable access to citywide EV adoption.

The EV requirements for multifamily development are the largest of the three use areas in this proposal at 10 percent EV Ready and 15 percent EV Capable. Ten percent EV Ready outlets provide charging points that are ready to be used. Property management will need to determine a billing and access strategy and can opt to install fixed stations, charging cordsets, or require that drivers provide their own. Fifteen percent EV Capable conduit accessible spaces ensure a lower overall cost if the spaces should be upgraded to EV Ready or higher in the future as demand and tenant preferences evolve.

EV Installed station spaces or additional EV Ready spaces can be installed with an incentive to reduce total required spaces at a 1 for 1 ratio, up to a 30 percent parking reduction.

Commercial EV Requirements

Proposed	
COMMERCIAL20%
 Stations	0%
 Outlets	5%
 Conduit	15%

Expanding EV access in workplace locations will help increase access for a wide range of existing and future EV drivers that may not be able to charge overnight at their homes. The regularity and duration of a work shift is a good match for charging needs.

Five percent of parking spaces with EV Ready outlets would provide charging points that are ready to be used. Similar to the proposed multifamily requirements, property management will need to determine a billing and access strategy. Fifteen percent EV Capable conduit accessible spaces ensure a lower overall cost if the spaces should be upgraded to EV Ready or higher in the future.

EV Installed station spaces or additional EV Ready spaces can be installed with an incentive to reduce total required spaces at a 1 for 1 ratio, up to a 30 percent parking reduction.

Retail EV Requirements

Proposed	
RETAIL	10%
 Stations	5%
 Outlets	5%
 Conduit	0%

The presence of public charging stations can increase the daily useful range of EVs. It is recommended that charging stations should be located where EV drivers are highly concentrated and parked for long periods of time, such as shopping centers.

Five percent of EV Installed stations in retail use areas provides the appropriate interface for various EV drivers to charge their vehicles at locations that may or may not be part of their daily transportation patterns. Five percent of EV Ready outlet spaces ensure a lower overall cost if the spaces should be upgraded to EV Installed stations in the future. Retail uses with less than 100 parking spaces are exempt from minimum EVSE requirements.

EV Stations can be installed with an incentive to reduce total required spaces at a 1 for 2 ratio, up to a 30 percent parking reduction.

EV Readiness - Additional Considerations

Four percent (e.g., 1 in 25 spaces) but no less than one of the electric vehicle (EV) charging spaces, in any given parking facility, must be accessible compliant. These spaces are accessible electric vehicle (EV) charging spaces, not ADA parking spaces.

In addition to the code amendment, it is recommended that guidelines be developed regarding lot design for maximum EV visibility, user ease and safety, and cost savings. Guidelines for consistent and effective signage and markings for regulatory and wayfinding are also crucial for successful implementation.

2. Expanded Eligibility for the Individual Parking Plan (IPP)

Staff proposes permitting the following land uses and types of development to utilize the Individual Parking Plan – a site specific application, analysis, and approval process to provide fewer parking spaces than the standard UDC requirement for a given land use.

- Affordable Housing
- Restaurants
- Bars

Expanding the IPP option to these types of land uses will advance the following goals:

- Provide site-specific flexibility in standards to incentivize and increase the feasibility of affordable housing projects.
- Support more adaptive reuse projects outside of the Infill Incentive District (IID).
- Encourage efficient use of space, infill development, and the appropriate density that contributes to more walkable, bikeable and public transit-accessible neighborhoods.
- Encourage vibrant community atmosphere and appealing activation of public and outdoor space.
- Provide business relief as well as space for health and safety standards in restaurant and bar operations through ongoing pandemic conditions.

The Individual Parking Plan, or IPP, (UDC Sec. 7.4.5) is a tool that allows for site-specific flexibility in parking requirement standards based on analysis and a review process. It is an important tool for sites that have unique site constraints, operational or parking needs and can allow more efficient use of space. However, this tool is not available to all uses and types of development. By limiting access to this option, this restricts feasible responses to current day challenges including a lack of affordable housing and business support in the face of Covid-19 health and safety concerns. Expanding use of the IPP to include affordable housing, restaurants and bars advances citywide goals of climate action, local business support, infill development, public health, walkable neighborhoods, and high-quality public and outdoor spaces.

Existing IPP Requirements and Process

An IPP application may be submitted to make the case that fewer parking spaces are needed on site than required by code. Each application is reviewed on a case by case to ensure that adequate parking needs, site design, mitigation strategies and transportation options are provided to allow for a reduction in parking minimums, and approval or denial is ultimately granted by the PDSD Director. Site specific zoning conditions may also be added by the PDSD Director to help mitigate potential impacts on surrounding properties. The application must include a traffic study and peak parking demand analysis. If the site is within 300 feet of residential or historic preservation zones, the applicant is required to give notice, present the proposal at a meeting, and address neighborhood comments as part of the application. Precedents of mitigation strategies exist for various sites across the City.

Eligible land uses and types of development include mixed-use development, projects within a quarter mile of a transit stop or public parking facility, religious uses with parking availability on weekends and evenings, and other uses. Currently, affordable housing is not a qualifying development type for an IPP, and restaurants and bars are specifically prohibited from applying unless they are part of a mixed-use development.

IPP Eligibility for Affordable Housing

In Tucson, multifamily housing requires onsite parking, usually provided on a surface lot or structured garage. Parking typically utilizes a substantial portion of the lot and can be a significant piece of the project cost. There is no distinction in the UDC parking requirements between affordable and market-rate multifamily housing, despite evidence that parking demand is lower for affordable housing projects. While residential care services or housing developments for the elderly or people with physical disabilities are eligible for an IPP, other forms of affordable housing are not. Adding affordable housing as a qualifying type of development to utilize the IPP and make a project-specific request to reduce parking requirements would help mitigate development costs, making affordable housing, particularly on constrained infill sites, more financially viable.

IPP Eligibility for Restaurants and Bars

Expanded Outdoor Seating Program – Health and safety considerations from the ongoing Covid-19 pandemic still present challenges to local businesses. Tucson implemented a program to allow the temporary expansion of outdoor restaurant seating in June 2020, pursuant to the Mayor’s Emergency Proclamation issued on May 15, 2020. Expanded outdoor seating

programs have been positively received in Tucson and nationwide to support business and provide safe options for customers, while initiating a larger discussion of the use of public and outdoor spaces. Tucson is unique in that its development patterns result in two approaches to expanded outdoor seating.

Parklets and Streateries (ROW)

- Parklets and streateries are seating areas designed to expand safely onto sidewalks and roadways. Because of their jurisdiction over the Right of Way (ROW), Tucson Department of Transportation and Mobility oversees the application and approval of these expansions.

Patio Seating Expansions (Private Sites)

- Seating areas that are designed to safely expand onto private property, in most cases, parking lots, are subject to different considerations, because they have the potential to both increase the required number of parking spaces through increasing square footage, while likely repurposing and reducing the number of spaces currently on site. Additionally, restaurants and bars have the highest requirements for parking spaces based on their square footage/gross floor area (GFA).

From UDC Table 7.4.4-1 Minimum Number of Motor Vehicle Spaces Required:

- Food Service: 1 space per 100 sq. ft. GFA and outdoor seating areas
 - Alcoholic Beverage Service (including Large Bar): 1 space per 50 sq. ft. GFA
- Tucson Planning and Development Services Department has jurisdiction over expansions on private sites, where the UDC is applicable.

This proposed amendment to the UDC is specific to private sites and would not apply to sites in the ROW. An analysis of current participants in the temporary expansion program who have implemented expanded seating on private property shows a range of lots sizes and configurations. Out of 21 sites that have participated in the temporary program on private property, at least 14 sites would be unlikely to be able to continue outdoor seating under existing code requirements, for many of these sites due to an inability to meet parking requirements while maintaining outdoor seating options. To support citywide expansion of outdoor seating on private property, staff proposes to amend the UDC to allow restaurants and bars to utilize the IPP option.

In stakeholder and public meetings, discussion about expanding use of the IPP option centered around achieving the right balance of protections for surrounding neighborhoods when reduced commercial parking is proposed and excessive program barriers that could put some businesses at a disadvantage. While an option to require additional IPP criteria for restaurant and bar applicants was discussed, it is recommended to avoid adding barriers by maintaining the existing IPP process, which already includes a robust review process. This process includes a neighborhood meeting, a parking analysis, and the ability to add site-specific conditions to deal with concerns such as noise. Particular site configurations may be part of the approval, for example, to require that outdoor seating be located adjacent to street frontage/parking areas rather than adjoining residential areas.

Adaptive Reuse – In addition to the benefits for expanded restaurant seating, amending the UDC to allow restaurants and bars to utilize the IPP also supports adaptive reuse of existing structures. The restriction has prevented restaurants and cafes from occupying existing, often historic, structures where standard parking requirements cannot be met, which is a common constraint on older sites. Updating the IPP to allow restaurants to use this option was identified by staff as an action that could promote adaptive reuse as part of developing the Adaptive Reuse Toolkit, as presented to Mayor and Council in 2018.

Summary: Proposed Commercial Parking Requirements UDC Text Amendment

The following is a brief description of the proposed amendments to the UDC (see Attachment A for proposed text changes):






1. Require EV Readiness in new multifamily and commercial development and provide incentives for additional infrastructure beyond minimum standards.

Summary – Pursuant to Mayor and Council direction, the following amendments seek to require specific amounts of EV infrastructure in parking areas of new development.

Current Regulation – Currently, no EV infrastructure is required in multifamily and commercial development. An incentive for installing EV infrastructure is provided per UDC Section 7.4.5.E.4., the number of spaces required may be reduced at a ratio of one space for every one space for electrical vehicle parking spaces/recharge station.

Proposed Revision – Amend UDC to add EV readiness requirements in multifamily and commercial development. The minimum amount of EV infrastructure required, as a percentage of the overall parking requirement is shown below. Retail uses with less than 100 motor vehicle parking spaces are exempt from required EVSE.

The proposed code amendment includes an incentive for additional EV infrastructure beyond the established minimum standards through reductions in total onsite parking spaces.

<p>Proposed MULTIFAMILY25%</p> <p> Stations 0%</p> <p> Outlets 10%</p> <p> Conduit 15%</p>	<p>Proposed COMMERCIAL20%</p> <p> Stations 0%</p> <p> Outlets 5%</p> <p> Conduit 15%</p>	<p>Proposed RETAIL10%</p> <p> Stations 5%</p> <p> Outlets 5%</p> <p> Conduit 0%</p>
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2. Expand the use of the Individual Parking Plan (IPP) by including affordable housing as a permitted type of development and removing the restaurant and bar exception.

Summary – The following amendment seeks to expand eligible use of the IPP for affordable housing, restaurants, and bars, allowing these types of projects to apply for site modification to the number of required motor vehicle parking spaces.

Current Regulation – Per UDC Section 7.4.5.A.3, affordable housing is not listed as a qualifying development type, and restaurants and bars are specifically excluded from requesting an IPP unless the restaurant or bar is within a multiple or mixed-use development per Section 7.4.5.A.3.g, Exception. Restaurants and bars (Food Service and Alcoholic Beverage Service uses).

Proposed Revision – Amend UDC to add affordable housing as a permitted use eligible to request an IPP and remove the restaurant and bar exception under permitted uses and types of development. All existing IPP requirements, findings, and approval procedures would remain in place and apply to these uses.

Related Items for Future Consideration

The following items are related to the proposed code amendment but are beyond the scope of this action. Mayor and Council may wish to consider these items for future discussion.

- **Review parking requirements for affordable housing and other land uses**
The Housing Affordability Strategy for Tucson (HAST), adopted by Mayor and Council in December 2021 identifies potential zoning reforms to support the creation of affordable housing (Policy Initiative 5). One potential action item is to review and consider reducing the minimum parking requirements for affordable housing projects, and potentially other residential uses, and/or other land uses. Parking requirements contribute to overall project cost by reducing the amount of developable land and adding to construction cost. Such a review could examine the demand for parking at affordable housing projects that have recently been developed in Tucson to identify an appropriate parking ratio.
- **Review of Liquor Mitigation Plan requirement for bars and restaurants**
Arizona Department of Liquor Licenses and Control (AZDLLC) has recently changed department policy and will no longer grant extensions for Liquor License applications. This has created a conflict with our requirements for the Liquor Mitigation Plan (LMP) where Mayor and Council require an approved LMP to approve a state liquor license, but the LMP is generally submitted and reviewed later in the process when the applicant submits their Development Package. The timing of these two processes no longer line up. Mayor and Council could direct PDS to review the Liquor Mitigation Plan requirement for its effectiveness and consider amending the UDC to remove this requirement if it is no longer warranted.

Plan Tucson Consideration(s) – This item is related to the Plan Tucson Elements of (1) Business Climate, (2) Energy and Climate Readiness and (3) Land Use, Transportation, and Urban Design. Specifically, this item is supported by the following policies:

BC5 - Foster the success of commercial areas, including downtown; major corridors; and arts, entertainment, and business districts through targeted investment, incentives, and other revitalization strategies.

BC8 - Support a safe, distinctive, well-maintained, and attractive community with neighborhoods made up of residences and businesses that contribute to Tucson's quality of life and economic success.

EC4 – Increase the use of low carbon and renewable energy sources, high fuel efficiency vehicles, and non-motorized transportation.

LT1 – Integrate land use, transportation, and urban design to achieve an urban form that supports more effective use of resources, mobility options, more aesthetically-pleasing and active public spaces, and sensitivity to historic and natural resources and neighborhood character.

Attachments:

A – Draft Proposed Commercial Parking Requirements UDC Text Amendment

B – City of Tucson Electric Vehicle Roadmap

C – Legal Action Report from the June 22, 2021, Mayor and Council study session

D – Resolution 23381

E – Legal Action Report from the November 23, 2021, Mayor and Council study session

F – Commercial Parking Requirements Public Meeting Summary

G – EV Research, Analysis & Cost Estimates

ⁱ Access to Electric Vehicle Charging in the United States. D. Keith, J. Long, B. Gaiarin, W. Chernicoff. Mobilyze.ai and Toyota Mobility Foundation Aug 2021

ⁱⁱ Inequity in consumption of goods and services adds to racial-ethnic disparities in air pollution exposure. C. W. Tessum, J. S. Apte, A. L. Goodkind, N. Z. Muller, K.A. Mullins, D. A. Paoletta, S. Polasky, N. P. Springer, S. K. Thakrar, J. D. Marshall, J. D. Hill Proceedings of the National Academy of Sciences Mar 2019, 116 (13) 6001-6006; DOI: 10.1073/pnas.1818859116