APPENDIX C5: RESIDENTIAL UPZONE PROJECT FOCUSED AIR QUALITY & GREENHOUSE GAS MEMO

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May 14, 2021

Mr. Jeremy Krout
EPD Solutions, Inc.
2 Park Plaza, Suite 1120
Irvine, CA 92614

SUBJECT: RESIDENTIAL UPZONE PROJECT FOCUSED AIR QUALITY & GREENHOUSE GAS MEMO

Dear Mr. Jeremy Krout:

Urban Crossroads, Inc. is pleased to submit this Air Quality & Greenhouse Gas Memo (Memo) to EPD Solutions, Inc. (Client) for the proposed Residential Upzone Project (Project), which is located south of Santa Ana Avenue, west of Linden Avenue, north of Jurupa Avenue, and east of Alder Avenue in the unincorporated area of Bloomington in the County of San Bernardino.

SUMMARY OF FINDINGS

Results of the Memo indicate the construction and operations of the Project would result in less than significant impacts associated with air quality and greenhouse gas (GHG) emissions.

PROJECT DESCRIPTION

For analytical purposes, the Existing Zoning of Residential Single With 20,000 Square Feet Lot Minimums (RS-20M) of 52 dwelling units (DUs). The Project would change the land use of the site to be Medium Density Residential (MDR) and change the zoning to be RM (Multiple Residential). Under the Proposed Zoning, a total of approximately 480 DUs could be developed at the Upzone site. As such, the net increase associated with the Upzone Project is a net increase of 428 DUs. For purposes of this evaluation, two separate model runs have been prepared, as follows:

- Existing Zoning of Residential Single With 20,000 Square Feet Lot Minimums (RS-20M): 52 DU
- Proposed Zoning of Multiple Residential (RM): 480 DU

CALIFORNIA EMISSIONS ESTIMATOR MODEL (CALEEMOD)

On October 17, 2017, the South Coast Air Quality Management District (SCAQMD) in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the CalEEMod Version 2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (volatile organic compounds [VOC], nitrogen oxides [NO_X], sulfur oxides [SO_X], carbon monoxide [CO], particulate matter 10 microns in diameter or less [PM_{10}], and particulate matter 2.5 microns in diameter or less [$PM_{2.5}$]) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (1).

Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Attachments A and B.

PROJECT AIR QUALITY IMPACT ANALYSIS

OPERATIONAL EMISSIONS

Operational activities associated with the Project would result in emissions of CO, VOCs, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. Operational related emissions are expected from the following primary sources: area source emissions, energy source emissions, mobile source emissions, and on-site equipment emissions.

Area Source Emissions

Architectural Coatings – Over a period of time the Project's building will require maintenance and will therefore produce emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings. The emissions associated with architectural coatings were calculated using CalEEMod.

Consumer Products – Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on defaults provided within CalEEMod.

Hearths/Fireplaces – The Project is required to comply with SCAQMD Rule 445, which prohibits the use of wood burning stoves and wood burning fireplaces in new development. In order to account for the requirements of this Rule, the unmitigated CalEEMod model estimates were adjusted to remove wood burning stoves and wood burning fireplaces. As the project is required to comply with SCAQMD Rule 445, the removal of wood burning stoves and wood burning fireplaces is not considered "mitigation" by California Environmental Quality Act (CEQA), although it must be identified as such in CalEEMod in order to treat the case appropriately.

Landscape Maintenance Equipment – Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category could include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in CalEEMod.

Energy Source Emissions

Combustion Emissions Associated with Natural Gas and Electricity – Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because the

Project does not include electrical generating facilities, criteria pollutant emissions from offsite generation of electricity is excluded from the evaluation herein. Additionally, based on information provided by the Project Applicant, the Project would not utilize natural gas.

Title 24 Energy Efficiency Standards – California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity. The 2019 version of Title 24 was adopted by the California Energy Commission (CEC) and became effective on January 1, 2020. The CEC anticipates that residential buildings will use approximately 53% less energy compared to the prior code (2). The CalEEMod defaults for Title 24 – Electricity and Lighting Energy were reduced by 53% in order to reflect consistency with the 2019 Title 24 standard.

Mobile Source Emissions

Project mobile source air quality emissions are primarily dependent on overall daily vehicle trip generation. The Project related operational air quality impacts derive primarily from vehicle trips generated by the Project. The trip generation rates utilized in this assessment are based on *Institute of Transportation Engineers (ITE) 10th edition*.

REGIONAL OPERATIONAL EMISSIONS SUMMARY

Table 1 summarizes the Project's daily regional emissions from on-going operations that would occur under the Existing Zoning land use scenario. Table 2 summarizes the Project's regional emissions from on-going operations that would occur under the Proposed Zoning land use scenario. Table 3 summarizes the Project's total net change when comparing the Existing Zoning and Proposed Zoning regional emissions from on-going operations. Detailed operational model outputs are presented in Attachment A and B. During operational activity, the Project will not exceed any of the thresholds of significance, and accordingly will not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard. Thus, a less than significant impact would occur for regional Project-related operation-sources emissions, and no mitigation is required.

TABLE 1: EXISTING ZONING OPERATIONAL EMISSIONS SUMMARY

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Area Source	22.61	0.91	4.66	5.73E-03	0.09	0.09
Energy Source	0.03	0.23	0.10	1.47E-03	0.02	0.02
Mobile Source	1.42	4.14	13.96	0.04	3.65	1.01
Total Maximum Daily Emissions	**24.05**	**5.29**	**18.72**	**0.05**	**3.77**	**1.12**
SCAQMD Regional Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Winter						
Area Source	22.61	0.91	4.66	5.73E-03	0.09	0.09
Energy Source	0.03	0.23	0.10	1.47E-03	0.02	0.02
Mobile Source	1.34	4.27	12.29	0.04	3.65	1.01
Total Maximum Daily Emissions	**23.97**	**5.42**	**17.05**	**0.05**	**3.76**	**1.12**
SCAQMD Regional Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

TABLE 2: PROPOSED ZONING OPERATIONAL EMISSIONS SUMMARY

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Area Source	20.72	8.42	43.03	0.05	0.86	0.86
Energy Source	0.25	2.13	0.91	0.01	0.17	0.17
Mobile Source	13.06	38.23	128.83	0.39	33.72	9.30
Total Maximum Daily Emissions	**34.03**	**48.78**	**172.76**	**0.46**	**34.75**	**10.33**
SCAQMD Regional Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Winter						
Area Source	20.72	8.42	43.03	0.05	0.86	0.86
Energy Source	0.25	2.13	0.91	0.01	0.17	0.17
Mobile Source	12.33	39.45	113.44	0.37	33.70	9.29
Total Maximum Daily Emissions	**33.30**	**50.00**	**157.38**	**0.44**	**34.74**	**10.33**
SCAQMD Regional Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

TABLE 3: EXISTING ZONING VS. PROPOSED ZONING OPERATIONAL EMISSIONS SUMMARY

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Existing Zoning	24.05	5.29	18.72	0.05	3.77	1.12
Proposed Zoning	34.03	48.78	172.76	0.46	34.75	10.33
Net Change (Proposed – Existing)	**9.98**	**43.50**	**154.05**	**0.41**	**30.99**	**9.21**
SCAQMD Regional Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
Winter						
Area Source	23.97	5.42	17.05	0.05	3.76	1.12
Energy Source	33.30	50.00	157.38	0.44	34.74	10.33
Net Change (Proposed – Existing)	**9.33**	**44.58**	**140.33**	**0.39**	**30.97**	**9.21**
SCAQMD Regional Thresholds	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

AIR QUALITY OPERATIONAL-SOURCE MITIGATION MEASURES

As shown in the analysis above, emissions associated with the net increase in emissions attributable to the Project would not result in an exceedance of any regional operational-source emissions thresholds. As such, the Project would not result in any significant impacts and no mitigation measures are required.

PROJECT GHG ANALYSIS

GHG EMISSIONS THRESHOLDS

The County of San Bernardino adopted the GHG Plan in September 2011 (updated March 2015), which provides guidance on how to analyze GHG emissions and determine significance during the CEQA review of proposed development projects within the County of San Bernardino (3).

The County includes a GHG Development Review Process (DRP) that specifies a two-step approach in quantifying GHG emissions (4). First, a screening threshold of 3,000 metric tons of carbon dioxide equivalent per year ($MTCO_2e$/yr) is used to determine if additional analysis is required. Projects that exceed the 3,000 $MTCO_2e$/yr will be required to either achieve a minimum 100 points per the Screening Tables or a 31% reduction over 2007 emissions levels. Consistent with CEQA guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.

GHG EMISSIONS

As shown in Table 3-7, the Project will result in approximately 30,181.98 $MTCO_2e$/yr; the proposed project would exceed the screening threshold of 3,000 $MTCO_2e$/yr. This would be considered a significant impact.

TABLE 4: EXISTING ZONING GHG EMISSIONS

Emission Source	Emissions (MT/yr)			
	CO_2	CH_4	N_2O	Total CO_2e
Area Source	13.36	1.08E-03	2.30E-04	13.46
Energy Source	146.79	4.93E-03	1.76E-03	147.44
Mobile Source	687.63	0.04	0.00	688.75
Waste	12.40	0.73	0.00	30.72
Water Usage	18.45	0.11	2.76E-03	22.05
Total CO_2e (All Sources)	**902.42**			
Screening Threshold	3,000			
Threshold Exceeded?	**NO**			

MT/yr = metric tons per year

TABLE 5: PROPOSED ZONING GHG EMISSIONS

Emission Source	Emissions (MT/yr)			
	CO_2	CH_4	N_2O	Total CO_2e
Area Source	123.35	0.01	2.11E-03	124.23
Energy Source	1,354.97	0.05	0.02	1,360.96
Mobile Source	6,336.71	0.41	0.00	6,347.06
Waste	114.27	6.75	0.00	283.10
Water Usage	170.32	1.03	0.03	203.56
Total CO_2e (All Sources)	**8,318.90**			
Screening Threshold	3,000			
Threshold Exceeded?	**YES**			

TABLE 6: EXISTING ZONING VS. PROPOSED ZONING GHG EMISSIONS

Emission Source	Emissions (MT/yr)
	Total CO_2e
Existing Zoning	902.42100
Proposed Zoning	8,318.90330
Net Change (Proposed – Existing)	**7,416.48**
Screening Threshold	3,000
Threshold Exceeded?	**YES**

GHG MITIGATION MEASURES

MM GHG-1

Prior to issuance of building permits, the Project Applicant shall provide documentation to the County of San Bernardino Building Department demonstrating that the improvements and/or buildings subject to the building permit application include measures from the County of San Bernardino Development Review Processes (March 2015) Greenhouse Gas Emissions Screening Tables (Attachment C), as needed to achieve the required 100 points (4).

Alternatively, the Project Applicant may demonstrate that other Implementation Measures from Appendix F of the Country's CAP have been incorporated into the building permit application and/or plans to achieve the required minimum of 100 points.

MM GHG-1 requires the Project Applicant to complete the County's GHG Emission Reduction Screening Tables, which requires the Project Applicant to commit to 100 points of GHG emissions reduction measures that are listed in the Screening Tables. According to the County's GHG Emissions Reduction Plan, any project that adopts at least 100 points of GHG reduction measures listed in the Screening Tables, the proposed Project would be consistent with the County's GHG Plan. Therefore, since the Project will incorporate at least 100 points from the screening tables, the Project's impact on GHG emissions is less than significant.

PROJECT ENERGY ANALYSIS

Title 24 of the California Code of Regulations establishes energy conservation standards for new construction. These standards relate to insulation requirements, glazing, lighting, shading, and water and space heating systems. Construction-related energy consumption will consist largely of temporary power consumption related to the use of power tools, more specialized equipment (welding equipment, elevators, cranes, etc.), and lighting. A second major source of energy consumption will be related to temporary lighting used for both work and security. Security lighting would likely be required for the site during the course of the construction period. For purposes of this analysis, the entire construction period was assumed to be approximately 9 months. The construction-related electrical consumption rate will be minimal in comparison to the operational consumption once the building is occupied. In addition,

construction-related activities do not require the use of natural gas.

Table 7 below provides an estimate of electrical and natural gas consumption for operation of buildout of the site at the existing zoning designation. As indicated in the table, the buildout of the site at the existing zoning is estimated to consume approximately 382,689 kilowatt (kWh) per year (or 31,891 kWh per month) of electricity and 913,957 therms of natural gas.

TABLE 7: EXISTING ZONING ESTIMATED ANNUAL ENERGY CONSUMPTION

Energy Source	Total Project Consumption
Electrical Consumption	382,689 kWh/year
Natural Gas Consumption	913,957 kBTU/year

Table 8 below provides an estimate of electrical and natural gas consumption for buildout of the site at the proposed zoning. As indicated in the table, the project is estimated to consume approximately 3,532,510 kWh per year (or 294,376 kWh per month) of electricity and 8,436,520 therms of natural gas.

TABLE 8: PROPOSED ZONING ESTIMATED ANNUAL ENERGY CONSUMPTION

Energy Source	Total Project Consumption
Electrical Consumption	3,532,510 kWh/year
Natural Gas Consumption	8,436,520 kBTU/year

Table 9 shows the net increase in electricity and natural gas usage between buildout of the site under the existing and proposed zoning.

TABLE 9: EXISTING ZONING VS. PROPOSED ZONING ENERGY CONSUMPTION

Energy Source	Total Project Consumption
Electrical Consumption	3,149,821 kWh/year
Natural Gas Consumption	7,522,563 kBTU/year

It is important to note that the project will include energy efficient fixtures such as energy efficient lighting, appliances, windows, roofing materials, air conditioning, and insulation. In addition, the energy consumption rates do not reflect the more stringent 2019 California Building and Green Building Code requirements. Title 24, Part 6 contains energy requirements for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. These energy requirements include the use of energy efficient appliances and fixtures such as air conditioning units and lighting. The purpose of the California Green Building Code (Title 24, Part 11) is to improve public health, safety, and general welfare

by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. Title 24, Part 6 requirements have been incorporated into the California Green Building Code. These California Green Building Code requirements include the use of energy and water efficient appliances and fixtures such as double paned windows, insulation, low flow faucets, and stormwater treatment appurtenances. Furthermore, depending on when the construction plans are submitted to the City for plan check, the project would be subject to, at a minimum, the 2019 California Building Standards Code and the 2019 Building Energy Efficiency Standards or any subsequently adopted code in effect at the time which would likely be more stringent than the 2019 code. As a result, the Project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operations nor would the Project conflict with or obstruct a state plan for renewable energy or energy efficiency and a less than significant impacts will occur.

If you have any questions, please contact me directly at hqureshi@urbanxroads.com.

Respectfully submitted,

URBAN CROSSROADS, INC.

Haseeb Qureshi,
Associate Principal

REFERENCES

1. **California Air Pollution Control Officers Association (CAPCOA).** California Emissions Estimator Model (CalEEMod). [Online] September 2016. www.caleemod.com.
2. **The California Energy Commission.** 2019 Building Energy Efficiency Standards . *California Energy Commission.* [Online] 2018. https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.
3. **County of San Bernardino.** Greenhouse Gas Emissions Reduction Plan. [Online] September 2011. http://www.sbcounty.gov/Uploads/lus/GreenhouseGas/FinalGHGFull.pdf.
4. —. Greenhouse Gas Emissions Development Review Processes. [Online] March 2015. http://www.sbcounty.gov/Uploads/lus/GreenhouseGas/FinalGHGUpdate.pdf.

ATTACHMENT A

EXISTING ZONING CALEEMOD EMISSIONS MODEL OUTPUTS

ATTACHMENT B

PROPOSED ZONING CALEEMOD EMISSIONS MODEL OUTPUTS

ATTACHMENT C

SCREENING TABLES