CENTRAL PINES

REGIONAL COUNCIL

Pre-2055 MTP Scenario Testing
Final Scenario Technical Details
Central Pines Regional Council
July 2024

I. Baseline Scenario (2050 MTP)

CommunityViz 2020-50 Growth Allocation: 2050 MTP Amended Scenario (December 2022)
Triangle Regional Model version: G2 v1.3.1 (February 2024)

II. Transit-Focused Scenario

Transportation Network
Double transit frequency (halve forecasted peak headways for local/express bus, BRT/LRT, and CRT).

Population and Employment Growth (2020-2050)
All forecasted population and employment growth (except committed development) was allocated in/near **Travel Choice Neighborhoods (TCNs)**[1]. This was achieved by a two-step process.

First, the CommunityViz model was used to allocate forecasted growth in each county within ½ mile of all high-frequency bus routes, BRT/LRT or CRT stations (see CommunityViz suitability details in the table on page 4). Even with the expanded high-frequency bus network that resulted from doubling transit frequency, and thus the additional TAZs that became TCNs, the CommunityViz model maxed out capacity for some types of growth in the TCNs in some counties (e.g. single-family dwelling units; SFDUs). Consequently, CommunityViz allocated some growth outside of TCNs.

Next, all growth that CommunityViz allocated outside of TCNs in Chatham, Orange, Durham, Wake, Franklin, and Johnston Counties (the counties with TCNs) was manually re-distributed to the TCNs within each county, respectively. First, any TCNs with remaining capacity for housing or employment received the growth until capacity was reached. Then, all remaining growth was distributed to the TCNs proportional to their capacity, for example:

Capacity for SFDUs in TCN TAZ #1: **3**
Total capacity for SFDUs in TCN TAZs in the county: **5,527**
Amount of SFDUs to re-distribute in TCN TAZs in the county after maxing out capacity in all TCN TAZs: **38,344**
Additional SFDUs to allocate in TCN TAZ #1 = **3** / **5,527** * **38,344** = **19**

Thus, in this example, TCN TAZ #1 received 22 total SFDUs, which is over seven times its capacity.

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[1] **Travel Choice Neighborhoods, or TCNs**, are Traffic Analysis Zones (TAZs) that are at least partially (10% or more of TAZ area) within ¼ mile of existing or planned high-frequency bus routes (headways of 15 minutes or less during peak period) and/or ½ mile of planned fixed-guideway transit (BRT, LRT, or CRT) stations.

III. VMT Reduction Scenario

Transportation Network
Same as transit-focused scenario.

Population and Employment Growth (2020-2050)
Same as transit-focused scenario.

Other
The following changes were implemented in the G2 model to reduce VMT in 2050:

1. Toll added to all non-tolled roadway links of 5 cents per mile
2. To reflect more WFH trips the production rates for the HBW (commute) purpose was modified approximately 20% to represent decreased WFH vehicle trips. HBW attraction trips were reduced approximately 15% for the office and service job categories.

IV. Flexible Funding Scenarios

Transportation Network
A: Updated road project list from CAMPO that removes the additional 1 cents sales tax and removes the STI tiers; DCHC keeps the same mtp-2050 project list; the transit project list did not change

B: Updated road project list from CAMPO by removing additional funding; DCHC keeps the same mtp-2050 project list; the transit project list was modified by CAMPO to adjust some services; DCHC did not make any transit changes.

C: Update road project list from CAMPO based on additional funding for projects and operations and maintenance; DCHC project list remains the same from the mtp_2050, DCHC updated some project routes.

Population and Employment Growth (2020-2050)
Same as baseline 2050 MTP scenario.

V. Equity-Focused Scenarios

A: Jobs to People

Transportation Network

Same as baseline 2050 MTP scenario except transit was fare-free for all routes/types.

Population and Employment Growth (2020-2050)

Population was the same as the baseline 2050 MTP scenario. For employment, CommunityViz allocated all 2020-50 employment growth in/near disadvantaged TAZs (see CommunityViz suitability details in the table on page 4).

B: People to Jobs

Transportation Network

Same as baseline 2050 MTP scenario.

Population and Employment Growth (2020-2050)

Employment was the same as baseline 2050 MTP scenario. For population, Equity population contained in Disadvantaged traffic analysis zones were summed and distributed proportionally in all traffic analysis zones based on the percentage of employment growth in the zones.

C: Equity + Transit

Transportation Network

Same as transit-focused development scenario.

Population and Employment Growth (2020-2050)

Same as transit-focused development scenario.

Other

The median income of 175 TCNs in Durham and Raleigh was lowered to $40,000. As a result, 131 of those TCN TAZs were considered poverty disadvantaged TAZs in the G2 model output, meaning that 20% or more of the households in the TCN TAZ were presumed to be at or below 150% of the poverty level based on the model's synthetic population (20% was the 75th percentile threshold to be considered a poverty disadvantaged TAZ). This increased the number of poverty households in TCNs by about 11,000 households compared to the transit-focused development scenario. Since ITRE developed automated tools for the G2 model to output certain performance measures for poverty disadvantaged TAZs, this allowed for a direct comparison of the impact of locating more low-income households/affordable housing near high-quality transit when compared to the transit-focused development scenario.

VI. Highway-Focused Development Scenario

Transportation Network
Double freeway lane miles.

Population and Employment Growth (2020-2050)
All forecasted population and employment growth (except committed development) was allocated near current and future major roadways, major intersections, and interchanges using CommunityViz (see CommunityViz suitability layer details in the table below).

CommunityViz Model Scenario Suitability Factors

Pre-2055 MTP Analysis Scenarios
CommunityViz Suitability Factors

Layer Description	Measurement Type	Correlation	Scenario Scores/Weights (R = randomness factor)			
			I. 2050 MTP Amend R = 3	II. Transit Scenario R = 0	V. Equity Scenario A R = 0	VI. Highway Scenario R = 3
Highway System						
Current Major Roadways	Proximity	Positive	4	0	0	8
Future Major Roadways	Proximity	Positive	3	0	0	8
Interchange Locations	Proximity	Positive	6	0	0	10
Major Intersections	Proximity	Positive	5	0	0	8
Development Activity Centers						
Metropolitan City Activity Centers	Overlap	Positive	8	1	1	8
Town Center & CBD Activity Centers	Proximity	Positive	7	1	1	7
Anchor Institutions	Proximity	Positive	7	1	1	7
Regional & Community Activity Centers	Proximity	Positive	7	1	1	7
Mobility Hubs	Proximity	Positive	10	1	1	0
Policy Incentive Centers (eg US Opportunity Zones)	Overlap	Positive	5	0	0	0
Transit System						
High-Frequency Transit Corridors[1]	Proximity[2]	Positive	5	9	5	0
Hi Frequency Service Transit Infrastructure Stations (1/2 mile radius)[3]	Overlap	Positive	7	10	5	0
Lo Frequency Service Transit Infrastructure Stations (1/2 mile radius)	Overlap	Positive	3	10	5	0
Environmental Features						
100-Year Floodplain Protection Areas	Overlap	Negative	3	3	3	3
VAD	Overlap	Negative	3	3	3	0
Utility & Service Area Footprint						
Emerging Growth Areas (Extra Territorial Jurisdiction Boundaries)	Overlap	Positive	4	0	0	0
Public Sewer Service Area	Overlap	Positive	7	0	0	0
Equity Scenario (A) Layers						
Poverty Disadvantaged TAZs	Proximity[4]	Positive	N/A	N/A	10	N/A
Zero Car Disadvantaged TAZs	Proximity[4]	Positive	N/A	N/A	10	N/A
Senior Disadvantaged TAZs[5]	Proximity[4]	Positive	N/A	N/A	1	N/A

[1] For II. Transit-Focused Development Scenario: includes additional HF bus routes with double transit frequency
[2] Capped distance at 1/2 mile for II. Transit-Focused Development Scenario
[3] New RTC-to-Apex BRT stations added (not in 2050 MTP Baseline)
[4] Cap distance at 5 miles
[5] Except TAZs where senior is the only disdvantage