RapidPolicy
ASSESSMENT TOOL

Adopting an Integrated Transportation and Land-use Policy Assessment Tool for the Triangle Region *

*** Funded BY FHWA**

What is the Rapid Policy Assessment Tool (RPAT)?

A policy assessment tool which is free, open-sourced, and user-friendly

- Input different smart growth scenarios and estimate the effect on regional travel demand and other parameters
- Evaluates effects on sprawl, energy-reduction, active travel, and carbon footprints.
- Compares different scenarios
- Provides empirical evidence regarding the relationship of smart growth and travel demand.
- Assess what types of smart growth development are most suitable for given areas

Features of RPAT

- A sketch planning tool
- Runs at the regional level but can use dis-aggregated data as inputs, such as parcel data, land use data, TAZ data, etc.
- Quick response: taking about 15-20 minutes to run one scenario for Triangle Region, NC.
- Multiple scenario comparison in one panel
- Performance metrics are designed to address a variety of impacts useful for decision-making: travel demand, environment and energy, financial and economic, community.

RPAT Implementations

- FHWA SHRP-2 C16 Pilot Tests
  - Maryland Department of Transportation (MDOT)
  - **Atlanta Regional Commission (ARC)**
  - Thurston Regional Planning Commission (TRPC)
- Pilot tests for the SHRP 2 C16 workshop at 2013 New Partners for Smart Growth conference:
  - Capital District Transportation Council (CDTC)
  - Houston-Galveston Area Council (HGAC)
- Scenario testing as part of the Elmira-Chemung Transportation Council (ECTC) LRTP

RPAT(C16) Project Overview for Triangle Region

DCHC MPO, CAMPO, NCDOT & ITRE/NCSU work together on adopting RPAT:

- Supporting the pre-screening of transportation and land use scenarios in the MTP process

- Addressing policy questions, such as the impact of smart growth on land use, travel demand, and transportation supply

RPAT (SmartGAP) Structure

- Model and Parameters
- Input Data
  - Built environment: Place Type
  - Demand (Land use by place type)
  - Policy
  - Transportation Supply
- Output
- Report and Visualization

Type of Policy Test

- Increase in Auto Operating Cost
- Employees Offered Commute Options
- Road Miles with ITS Treatment
- Bicycling/Light Vehicle Targets
- Increase in Parking Cost and Supply
- Land use Policy - Growth by Place Type
- Roadway Facility Supply - Increase in Road Lane Miles
- Transit Supply – Increase in Transit Revenue Miles
- Auto Operating Surcharge/Tax per VMT

Software Tool Design

Developed for regional decision-makers of transportation and land use policies

Evaluates regional scenarios

- Built environment
- Travel demand
- Transportation supply
- Policies

Considers households and firms individually

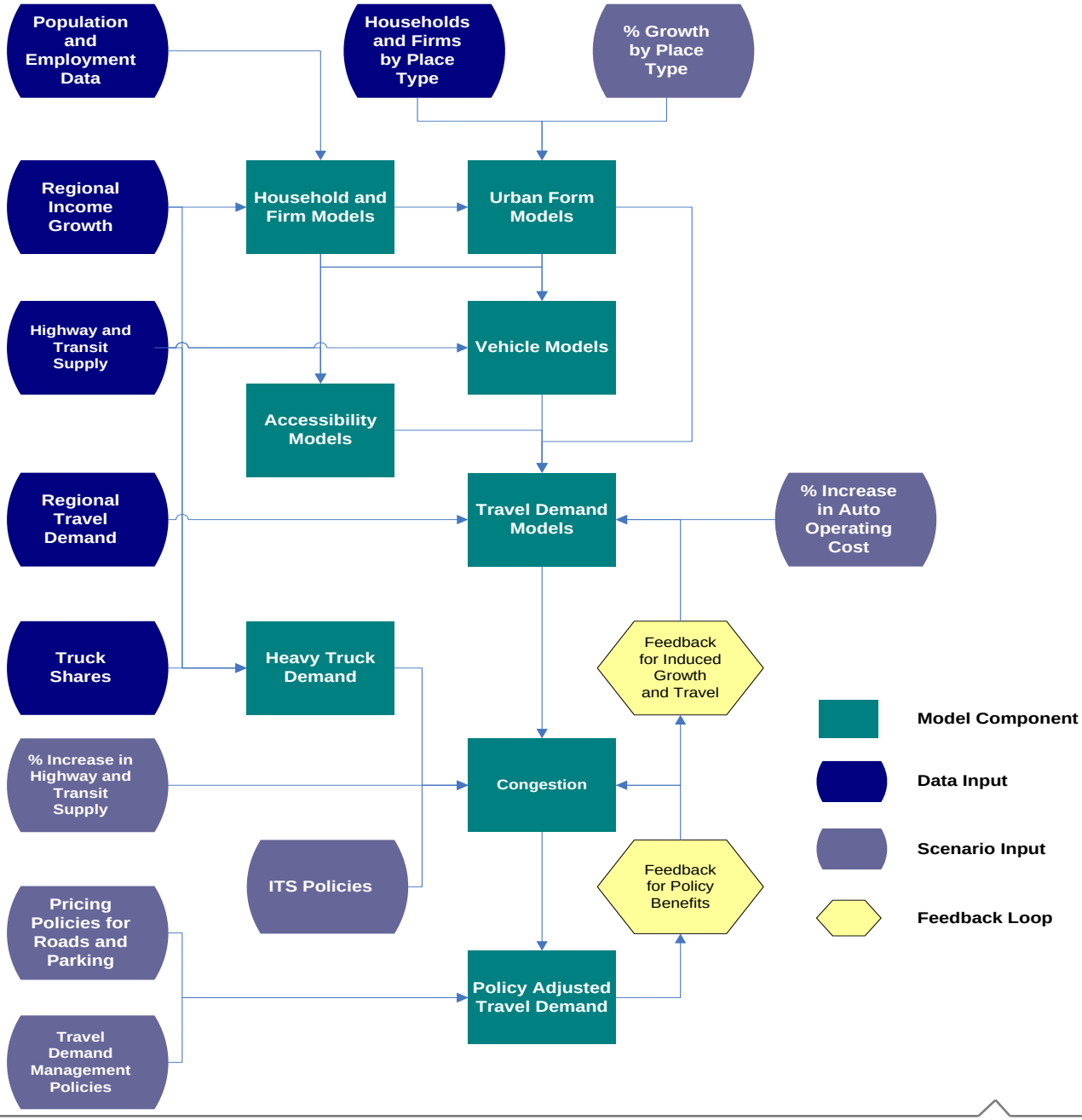
Easy to use and freely distributed

PLACE TYPES

	Area Type			
Development Type	Urban Core	Close in Community	Suburban	Rural
Residential	✓	✓	✓	
Employment	✓	✓	✓	
Mixed-Use	✓	✓	✓	
Transit Oriented Development	✓	✓	✓	
Rural/ Greenfield				✓

RPAT Process

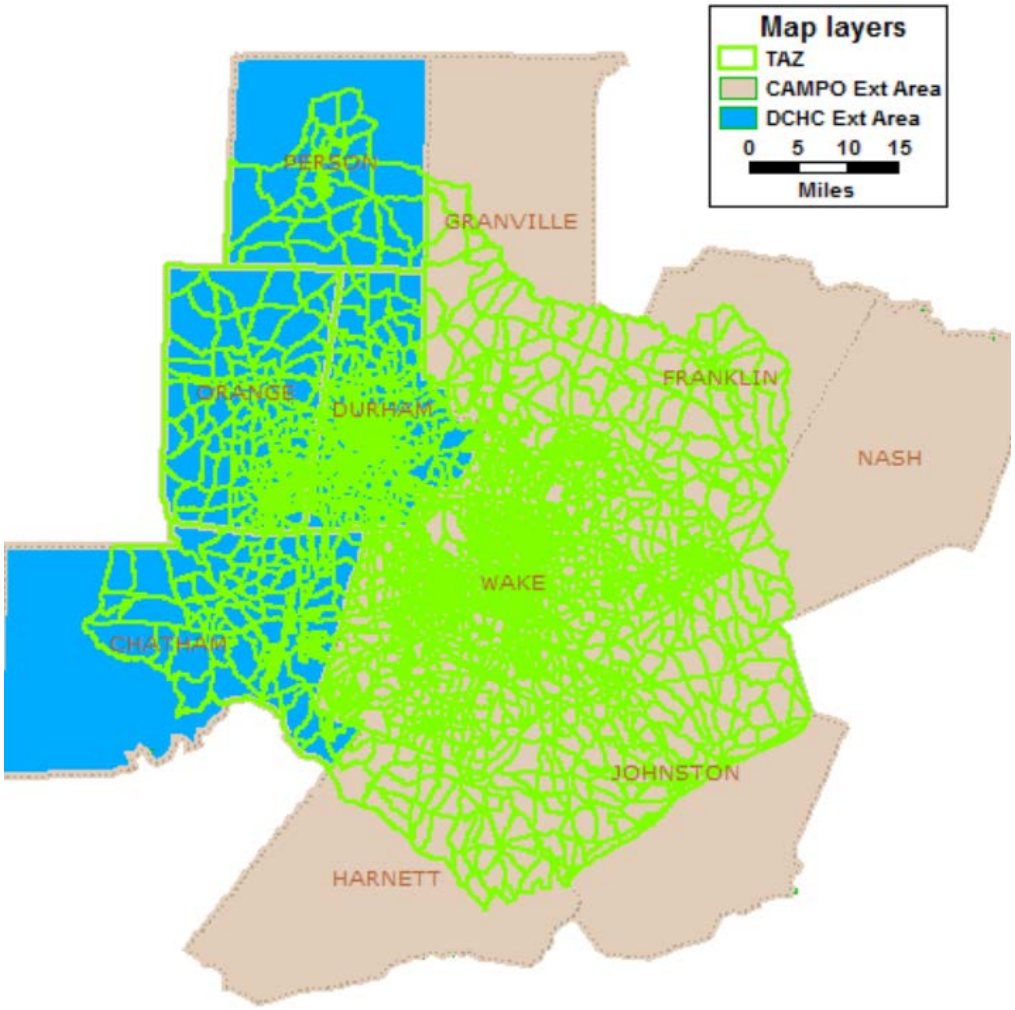
Evaluates transportation impacts of smart growth strategies



Triangle Region North Carolina

1) Durham-Chapel Hill-Carrboro MPO (DCHC MPO)

2) Capital Area MPO (CAMPO)



Tested Scenarios - Triangle Region

*Scenarios of the 2040 MTP Study

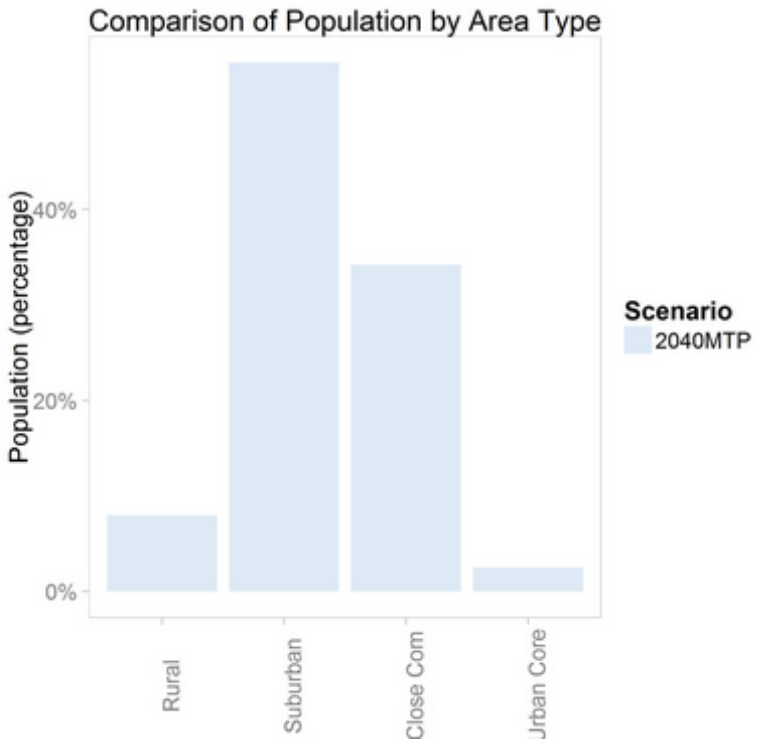
		Demand (& Landuse) Scenarios			
		Community Plan (CommP)	All-In-Transit (AIT)	Metro Transp Plan (MTP-D)	MTP-D w/ 20% Growth Shift to Dense Area
Supply (& Network) Scenarios	Existing Plus Committed (E+C)			*E+C	
	Transit Intensive (TRN)		*TRN		
	Highway Intensive (Hwy)	*Hwy			
	Metro Transp Plan (MTP-S)			*MTP	MTPx20DA
	MTP-S w/ ITS			MTP wITS	MTPx20DA wITS

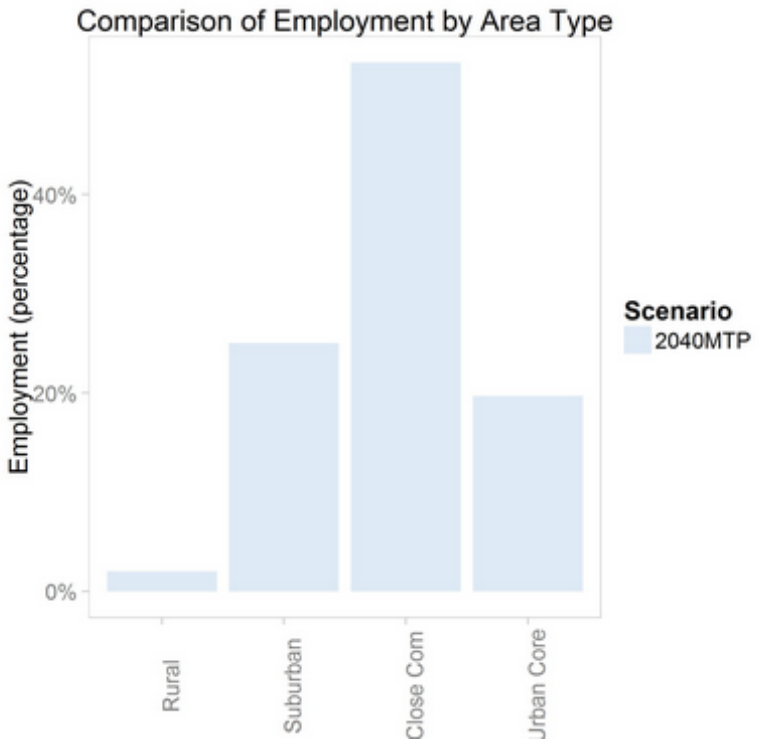
Tested Scenarios:

7 Scenarios Tested

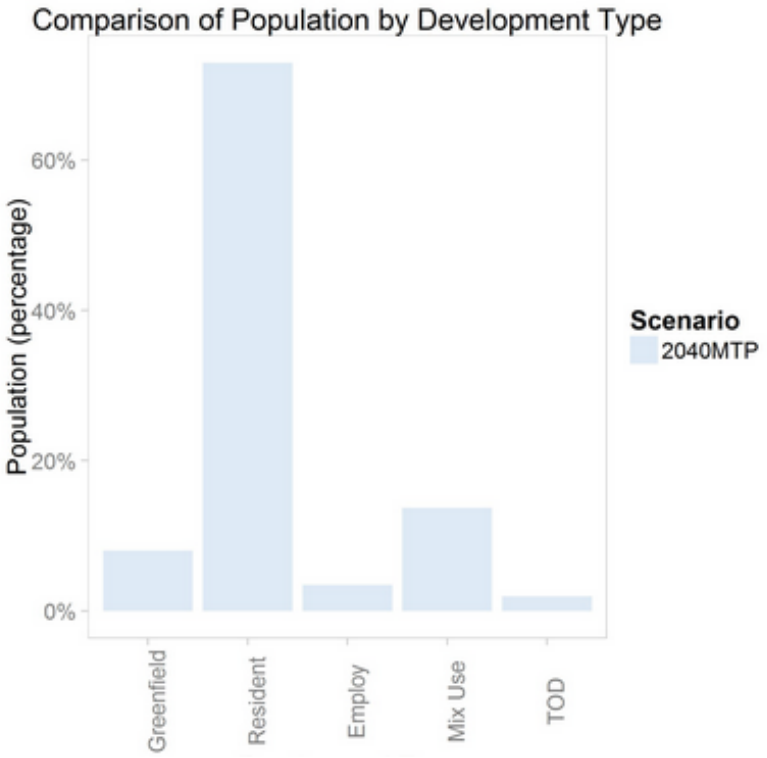
1. 2040 MTP - Baseline
2. E+C: 18% Reduction of Roadway Construction
3. Hwy: 9.8% Increase of Roadway Construction
4. TRN: 276% Rail Mile Increase, 12% Bus mile Reduction and 9.4% Reduction of roadway construction
5. xITS20: 20% Road lane mile with ITS treatment.
6. MTPx20DA: Shift 20% Growth to Dense Areas
7. MTPx20DAwITS: Shift 20% Growth to Dense Areas with 15% lane mile ITS treatment

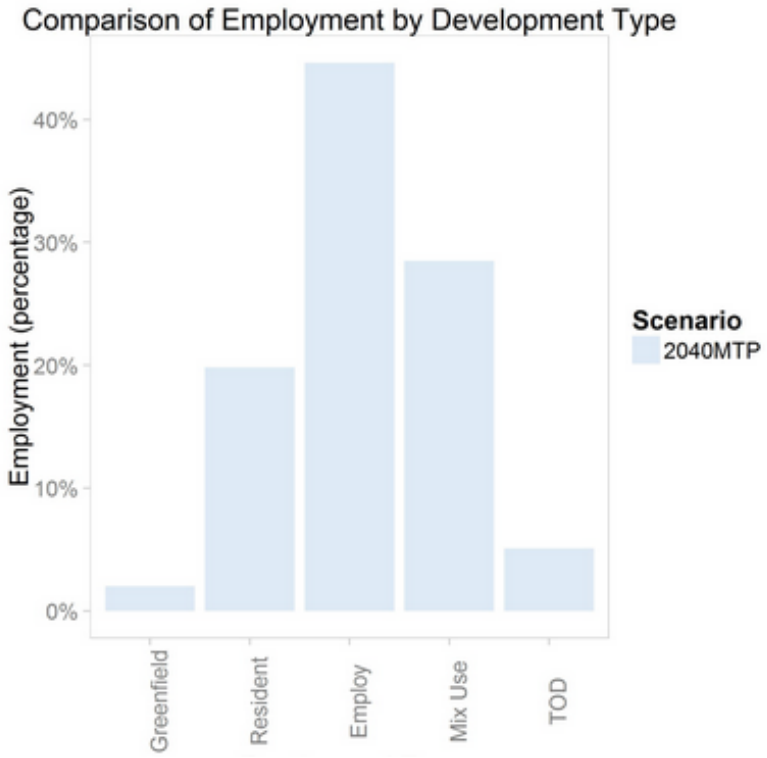
2040 MTP Pop. & Emp. By Area Type





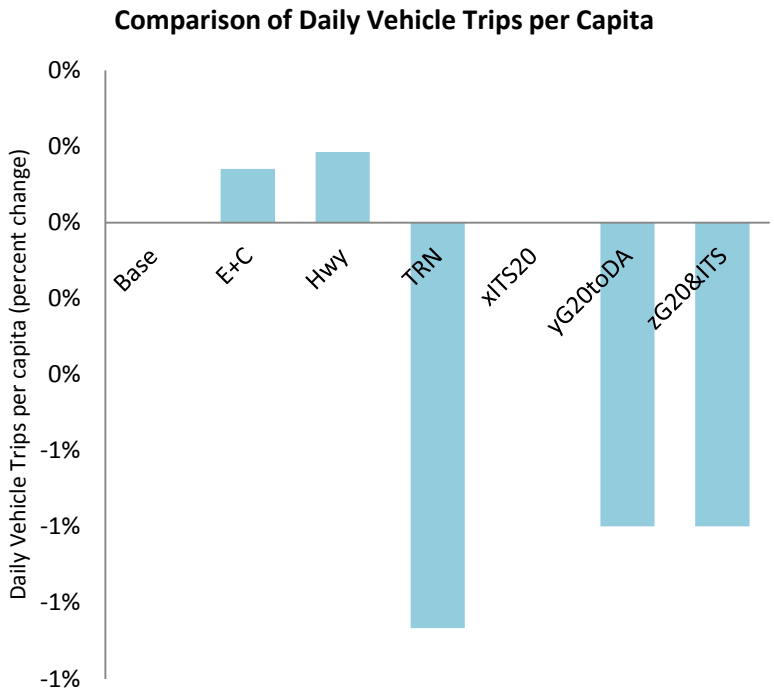
2040 Pop. & Emp. by Development Type





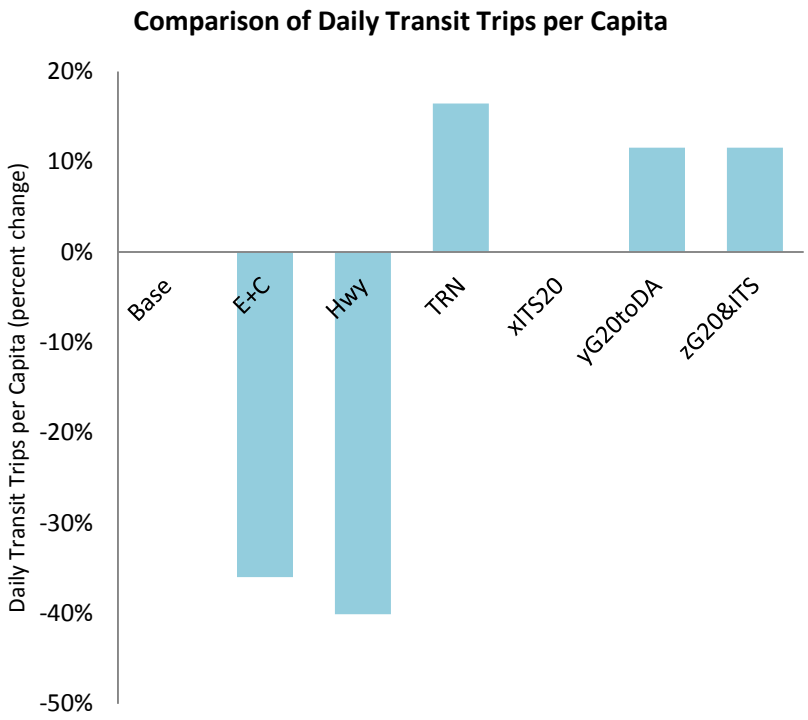
Vehicle Trips by Scenario

1. 2040 MTP - Baseline
2. E+C: 0.14% Trip Increase
3. Hwy: 0.19% Trip Increase
4. TRN: 1.07% Trip Reduction
5. xITS20: No change
6. MTPx20DA:
   0.8% Trip Reduction
7. MTPx15DAwITS:
   0.8% Trip Reduction



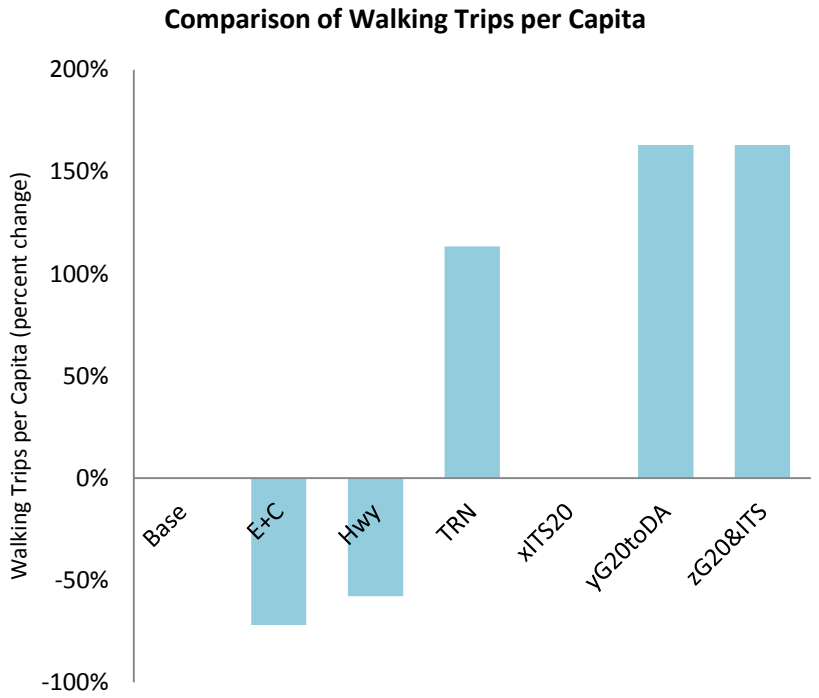
Transit Trips by Scenario

1. 2040 MTP - Baseline
2. E+C: 36% Trip Reduction
3. Hwy: 40% Trip Reduction
4. TRN: 16% Trip Increase
5. xITS20: No change
6. MTPx20DA:
   12% Trip Increase
7. MTPx20DAwITS:
   12% Trip Increase



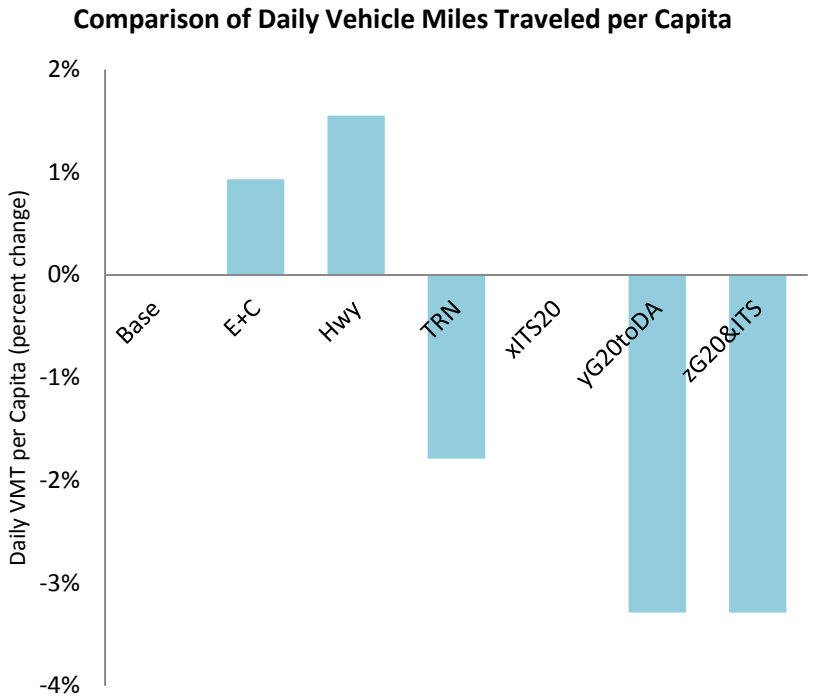
Walk Trips by Scenario

1. 2040 MTP - Baseline
2. E+C: 72% Trip Reduction
3. Hwy: 58% Trip Reduction
4. TRN: 114% Trip Increase
5. xITS20: No change
6. MTPx20DA:
   163% Trip Increase
7. MTPx20DAwITS :
   163% Trip Increase



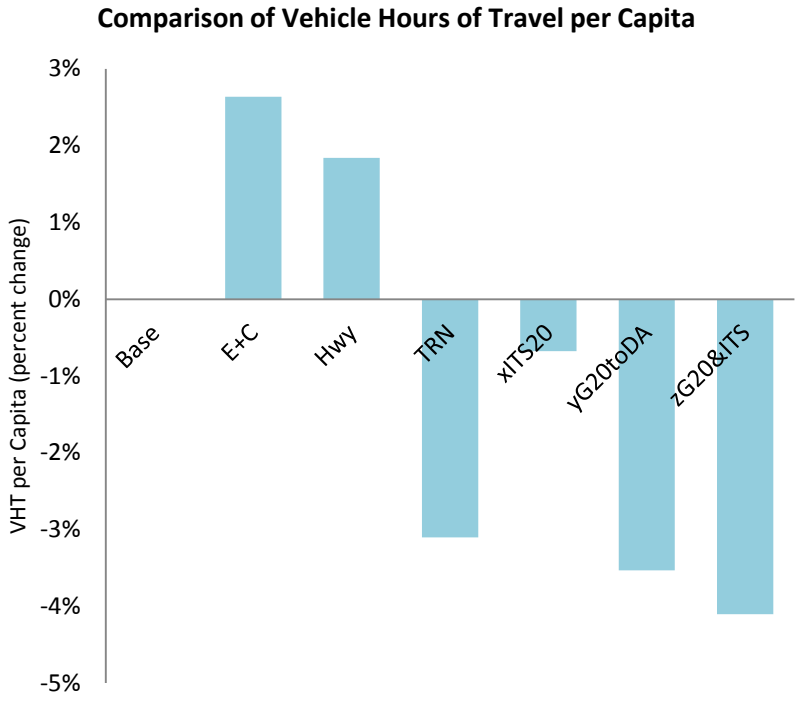
Vehicle Miles Traveled by Scenario

1. 2040 MTP - Baseline
2. E+C: 0.9% VMT Increase
3. Hwy: 1.6% VMT Increase
4. TRN: 1.8% VMT Reduction
5. xITS20: No change
6. MTPx20DA:
   3.3% VMT Reduction
7. MTPx20DAwITS:
   3.3% VMT Reduction



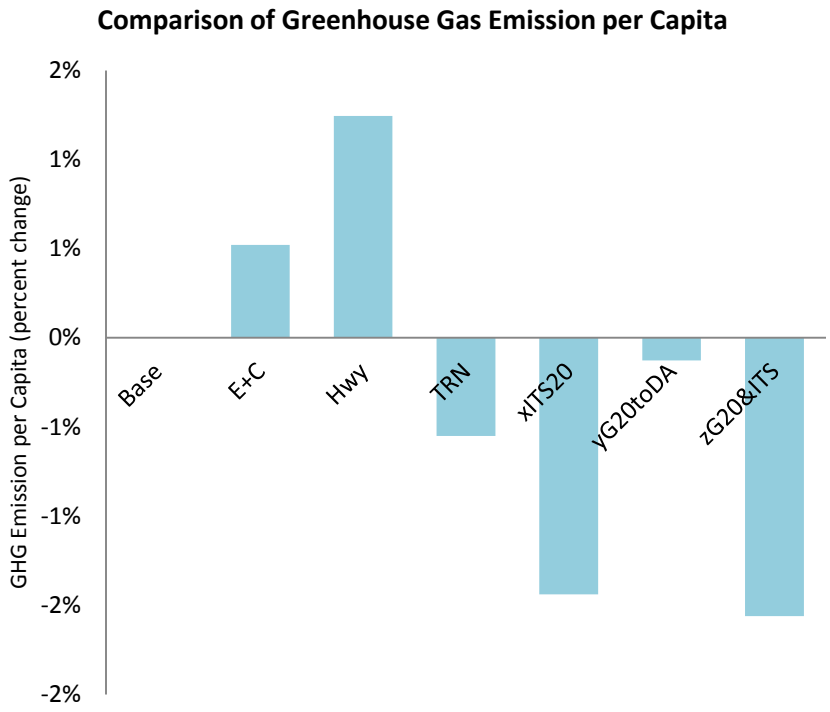
Vehicle Hours Traveled by Scenario

1. 2040 MTP - Baseline
2. E+C: 2.6% VHT Increase
3. Hwy: 1.8% VHT Increase
4. TRN: 3.1% VHT Reduction
5. xITS20:
   0.7% VHT Reduction
6. MTPx20DA:
   3.5% VHT Reduction
7. MTPx20DAwITS:
   4.1% VHT Reduction



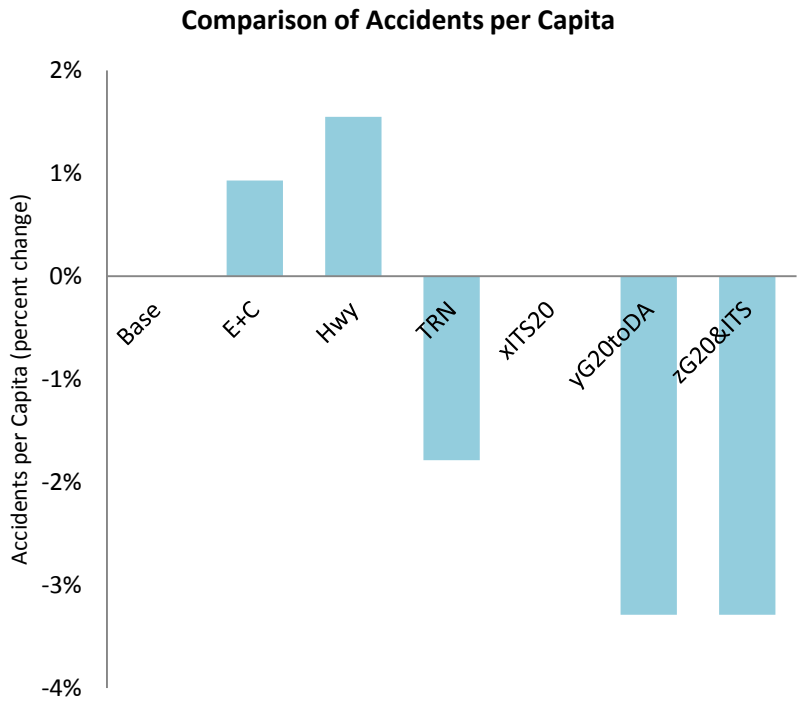
Greenhouse Gas Emission by Scenario

1. 2040 MTP - Baseline
2. E+C: 0.52% Increase
3. Hwy: 1.24% Increase
4. TRN: 0.55% Reduction
5. xITS20: 1.44% Reduction
6. MTPx20DA :
   0.13% Reduction
7. MTPx20DAwITS :
   1.56% Reduction



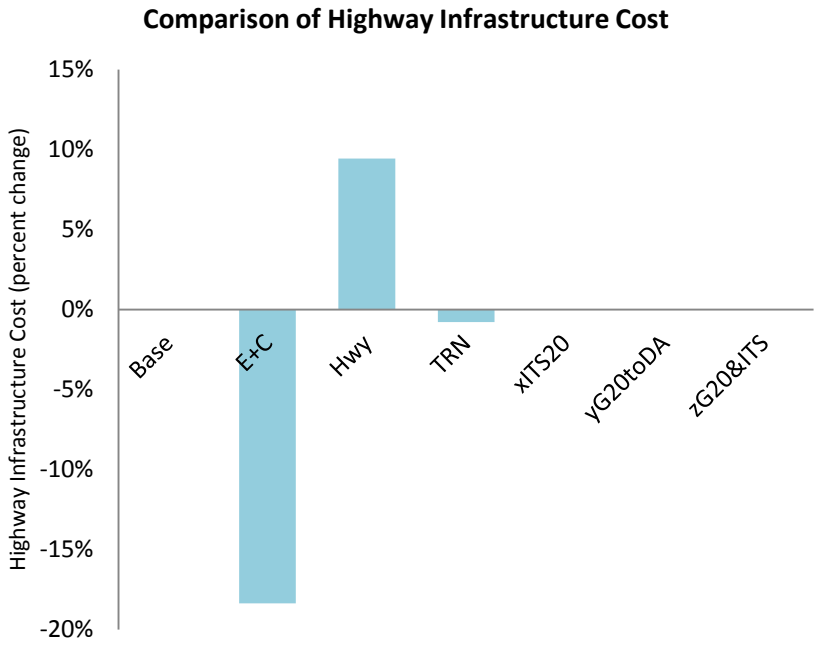
Traffic Accidents by Scenario

1. 2040 MTP - Baseline
2. E+C: 0.9% Increase
3. Hwy: 1.6% Increase
4. TRN: 1.8% Reduction
5. xITS20: No change
6. MTPx20DA :
   3.3% Reduction
7. MTPx20DAwITS :
   3.3% Reduction



Highway Infrastructure Cost by Scenario

1. 2040 MTP - Baseline
2. E+C: 18.4% Reduction
3. Hwy: 9.4% Increase
4. TRN: 0.8% Reduction
5. xITS20: No change
6. MTPx20DA : No change
7. MTPx20DAwITS : No change



Input and Result Summary

	Scenario	E+C	Hwy	TRN	xITS	yG20toDA	zG20toDA&ITS
Input	Population	0.00%	0.20%	2.60%	0.00%	0.00%	0.00%
	Highway Lane Mile	-9.10%	9.39%	-1.59%	no change	no change	no change
	Transit Service Mile	30.52%	6.65%	131.93%	no change	no change	no change
Output	Vehicle Trips	0.14%	0.19%	-1.07%	0.00%	-0.80%	-0.80%
	Transit Trips	-35.97%	-40.09%	16.45%	0.00%	11.55%	11.55%
	Walking Trips	-71.93%	-57.85%	113.53%	0.00%	163.12%	163.12%
	VMT	0.93%	1.55%	-1.79%	0.00%	-3.29%	-3.29%
	VHT	2.64%	1.84%	-3.10%	0.7%	-3.53%	-4.10%
	Greenhouse Gas Emission	0.52%	1.24%	-0.55%	-1.44%	-0.13%	-1.56%
	Accident Number	0.93%	1.55%	-1.79%	0.00%	-3.29%	-3.29%
	Hwy Construction Cost	-18.36%	9.44%	-0.77%	0.00%	0.00%	0.00%

Summary

- RPAT is a quick response tool for policy tests.
- RPAT provides more performance measures than traditional TDM to address policy questions, such as land use pattern, transportation supply, and economic efficiency.
- RPAT transit trip prediction was nearly unresponsive to future year transit supply increases. DCHC MPO staff refined parameters in order to get RPAT to respond.
- Understanding the impacts of growth on existing development is difficult to tease out of RPAT outputs. DCHC would like to see RPAT provide more outputs for the assessment of policy impacts on *existing* development.

RPAT – Information & Downloading

https://planningtools.transportation.org/551/rapid-policy-analysis-tool.html