# SERPM 8.0

*LRTP Model Update*

*presented to*

*Miami-Dade 2045 LRTP Steering Committee*

*presented by*

*Cambridge Systematics, Inc.*

*Marty Milkovits*

October 26, 2018

# Outline

- ABM Structure

- SERPM 8.0 design features

- E+C network and 2045 SE data status

CAMBRIDGE SYSTEMATICS

# ABM Structure

CAMBRIDGE SYSTEMATICS
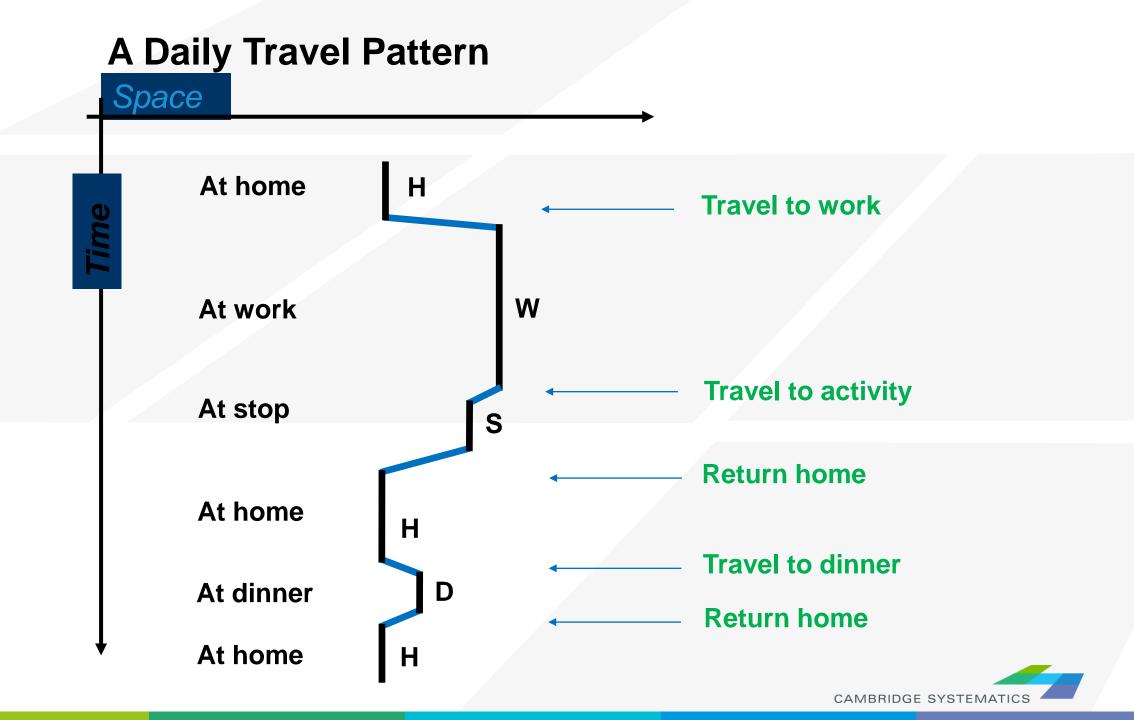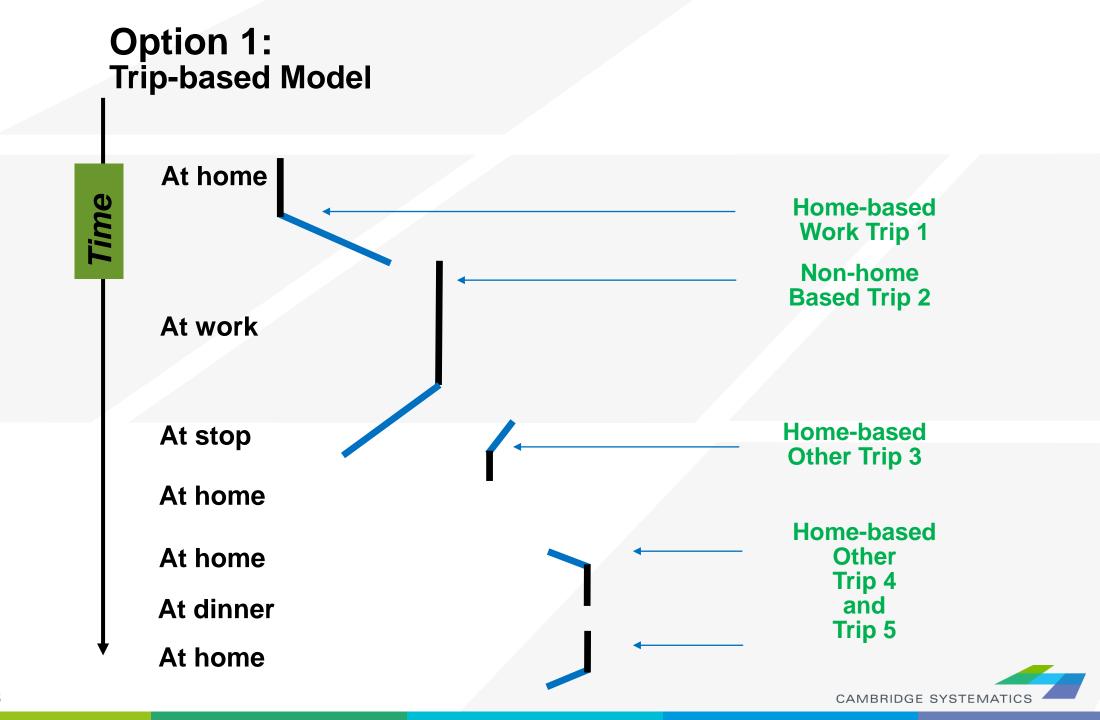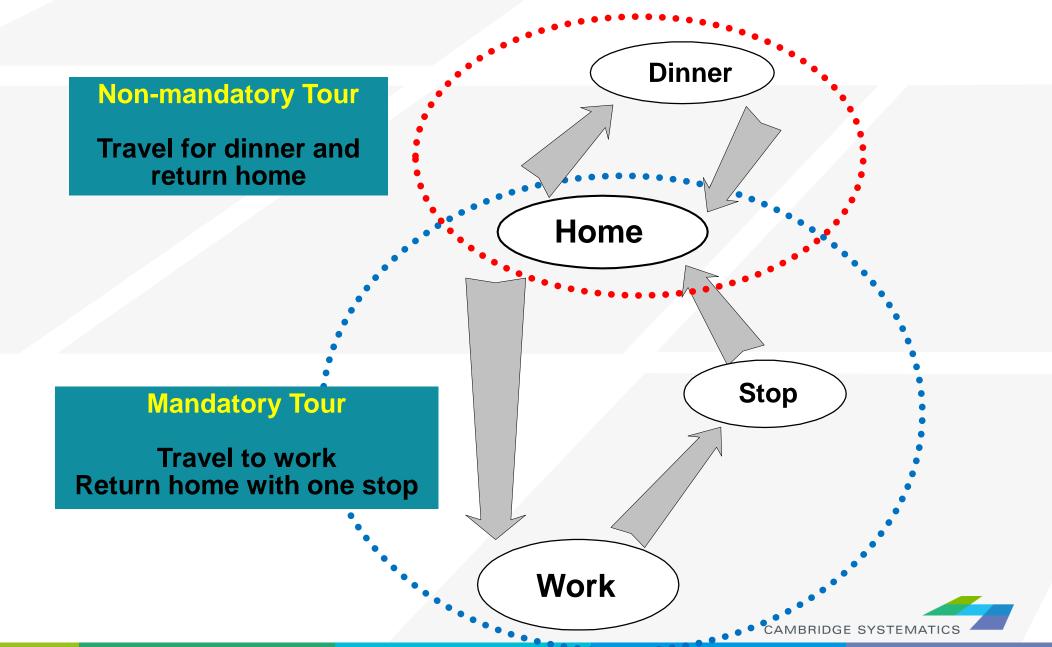
# The Activity-Based Model…

➤ Is *tour based*

  » Tours begin and end at home, or at the workplace

  » Include a *primary activity* and perhaps intermediate stops

➤ *Simulates* individual persons

  » Results can be summed to obtain aggregate measures

  » Many variables are considered, rather than the limited segmentation that is feasible in aggregate models

➤ Explicitly considers some *intra-household interactions*

  » Daily activity pattern coordination

  » Fully joint travel

CAMBRIDGE SYSTEMATICS

# A Daily Travel Pattern



Space

Time

At home — H

Travel to work

At work — W

Travel to activity

At stop — S

Return home

At home — H

Travel to dinner

At dinner — D

Return home

At home — H

CAMBRIDGE SYSTEMATICS

# Option 1:
## Trip-based Model

**Time**

**At home**

**Home-based Work Trip 1**

**Non-home Based Trip 2**

**At work**

**At stop**

**Home-based Other Trip 3**

**At home**

**At home**

**Home-based Other Trip 4 and Trip 5**

**At dinner**

**At home**

CAMBRIDGE SYSTEMATICS

# Option 2: Activity-based Model

**Non-mandatory Tour**

**Travel for dinner and return home**

**Mandatory Tour**

**Travel to work
Return home with one stop**

Dinner

Home

Stop

Work

CAMBRIDGE SYSTEMATICS
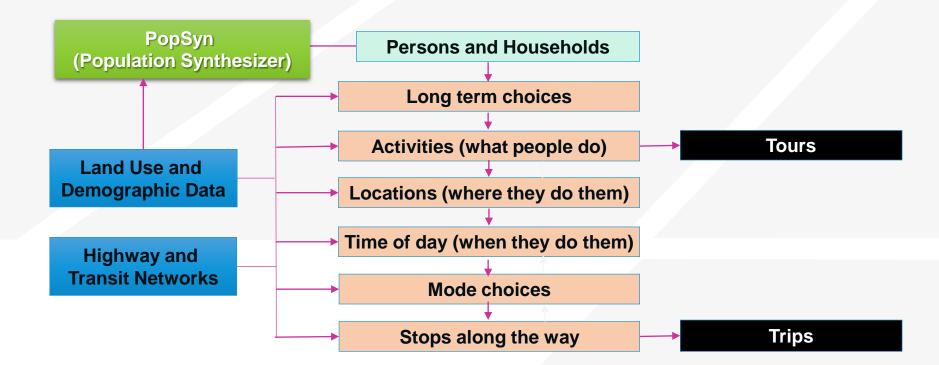
# How the Activity Based Model Fits into the Modeling Process



Population Synthesizer

Highway and Transit Networks

Land Use and Demographic Data

Activity-Based Model Components

Other Model Components Truck, External, Special Generators

Highway and Transit Assignment (Cube)

# How the Activity Based Model Works



**Choices are simulated sequentially for every person/household**

CAMBRIDGE SYSTEMATICS
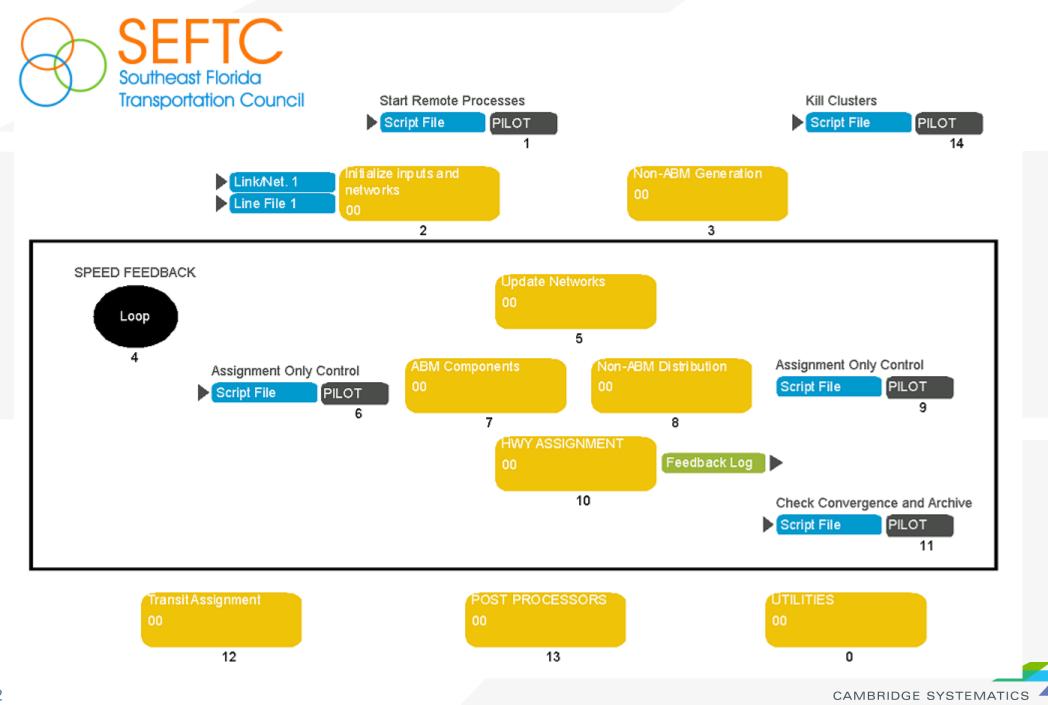
# Activity-Based vs. Trip-Based Models
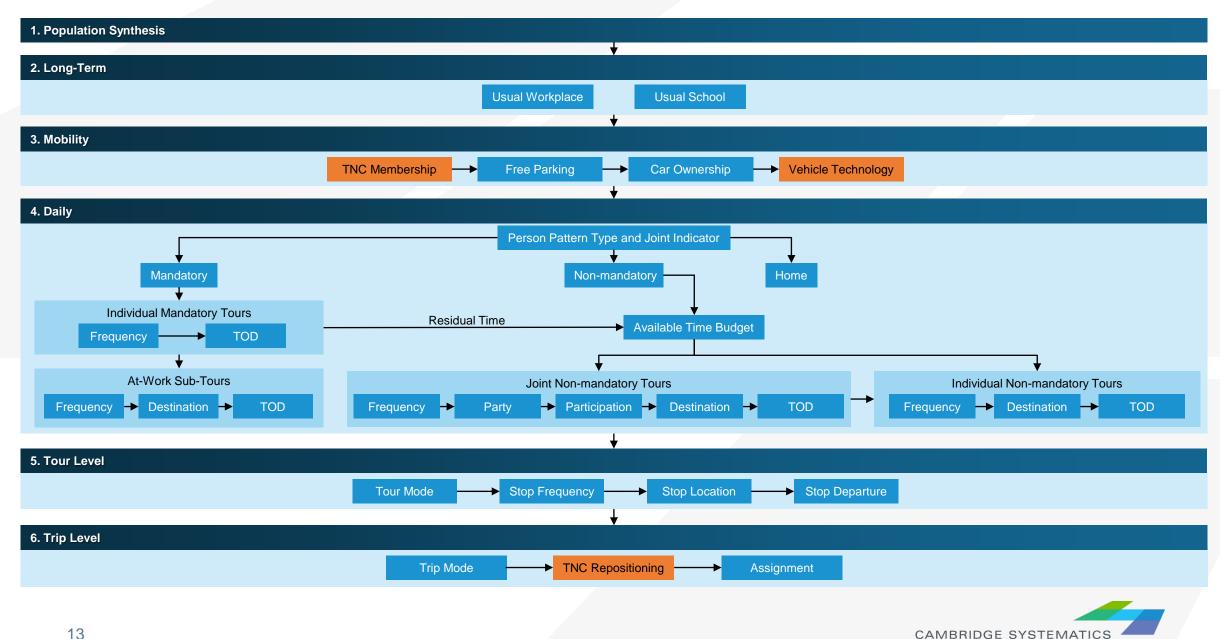
| Trip-Based Model | Activity-Based Model |
|---|---|
| **Aggregate socioeconomic data** | Population synthesis data |
| | Vehicle availability |
| | Transponder/Transit pass availability |
| **Trip generation rates** | Daily activity pattern |
| | Fully joint tour |
| | Individual nonmandatory tour generation |
| | Tour stop generation |
| | Work-based tour generation |
| **Distribution** | Usual workplace (existence and location) |
| | School location |
| | Tour destination |
| | Stop destination |
| **Time-of-day factors** | Tour time of day |
| | Stop time of day |
| **Mode choice** | Tour mode |
| | Trip mode |

CAMBRIDGE SYSTEMATICS
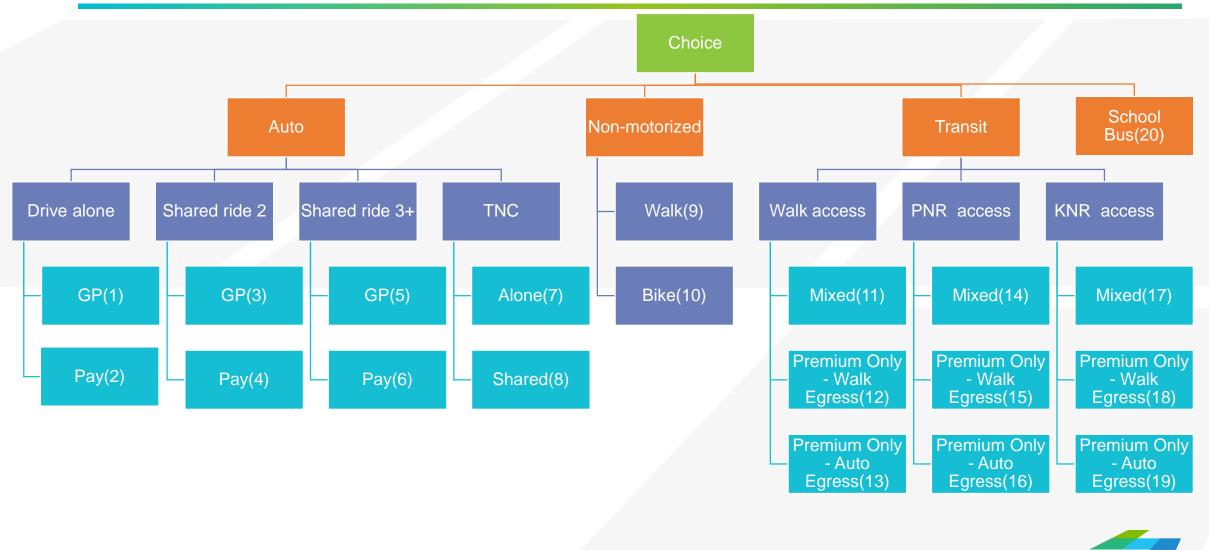
# SERPM8 Design Features

CAMBRIDGE SYSTEMATICS

# New Mode Choice Structure

```
                                    Choice

        Auto              Non-motorized            Transit         School Bus(20)

Drive   Shared   Shared   TNC    Walk(9)   Walk     PNR      KNR
alone   ride 2   ride 3+                   access   access   access

GP(1)   GP(3)    GP(5)    Alone(7)  Bike(10)  Mixed(11)  Mixed(14)  Mixed(17)

Pay(2)  Pay(4)   Pay(6)   Shared(8)          Premium    Premium    Premium
                                             Only -     Only -     Only -
                                             Walk       Walk       Walk
                                             Egress(12) Egress(15) Egress(18)

                                             Premium    Premium    Premium
                                             Only -     Only -     Only -
                                             Auto       Auto       Auto
                                             Egress(13) Egress(16) Egress(19)
```

CAMBRIDGE SYSTEMATICS

# Summary of SERPM 8.0 Key Changes

➤ Transit

- » Simplification of transit sub-modes
- » Drive-egress

➤ Highway

- » HOV vs. GP distinction removed
- » AV segmentation with optional HOT lane exclusivity
- » TNC alternative and trip table

# E+C Network and 2045 SE Data Status

CAMBRIDGE SYSTEMATICS

# Network status

- Coding latest round of inputs received this week

- Network coding complete next week

CAMBRIDGE SYSTEMATICS

# 2045 SE data status

➤ 2045 PopSyn control files

» TAZ and MAZ draft files compiled – resolving consistency checks

➤ Special generator inputs updated

» Enplanements

» Cruiseports

» Externals

➤ MAZ employment file compiled

# References

# SERPM 8.0 References

- PopSynIII info and download:
  - » http://www.fsutmsonline.net/index.php?/user_groups/comments/activity_based_modeling_workshop_may_11_2018_fdot_d4_auditorium

- Model update documentation:
  - » http://www.fsutmsonline.net/index.php?/user_groups/comments/serpm_80

- Model wiki:
  - » https://sites.google.com/site/serpm8reference/

CAMBRIDGE SYSTEMATICS