

The logo graphic consists of several overlapping, slanted rectangular shapes in shades of green, blue, and purple, creating a sense of movement and depth.

CAMBRIDGE  
SYSTEMATICS

Think  Forward

# SERPM 8 Project Update

*presented to*  
RTTAC-MS

*presented by*  
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November 15, 2017

# Outline

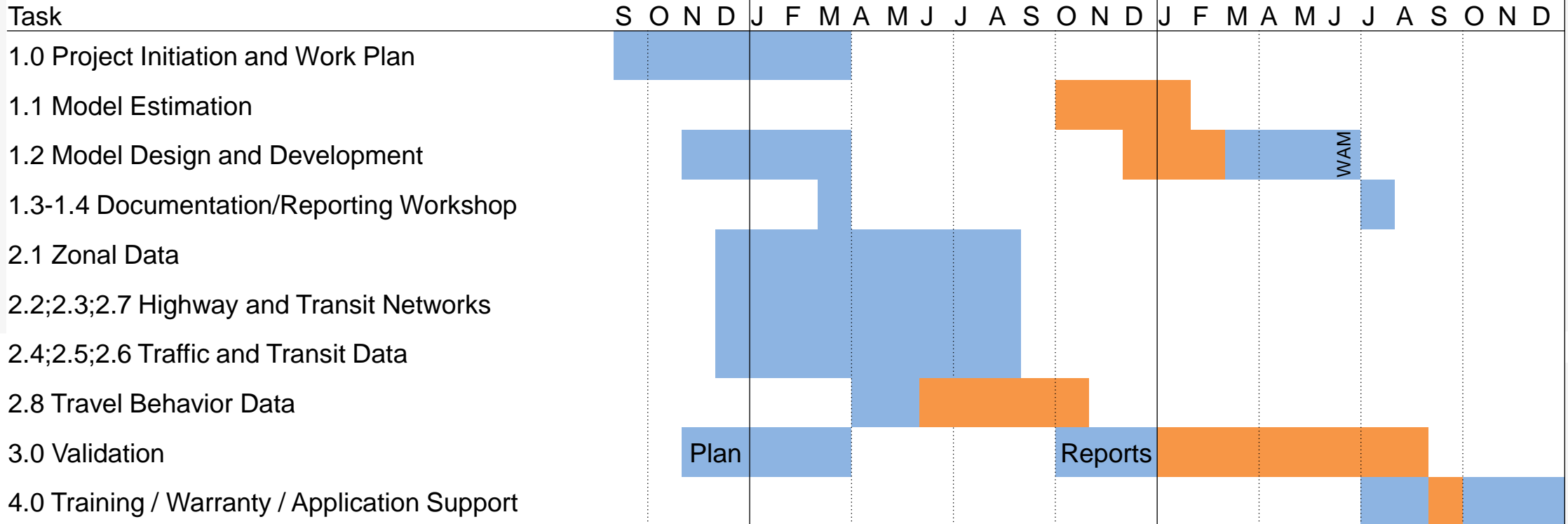
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- Schedule / Next Steps
- Non-ABM component update status
- Survey processing
- Visitor model update\*

*\*RTTAC-MS Action Item*

# Project schedule

## SERPM 8.0 Project Plan



**Critical Path**

*WAM: Windowed Area Model*

*Plan: validation plan development*

*Reports: validation reporting development*

Version: 9/27/2017

# Next steps

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- Update 2015 input data with latest comments
  - » Zonal data
  - » Highway network
  - » Transit network
- Model update
  - » Update ABM models
  - » Review/Update NonABM models
  - » Develop targets for visitor model update
- Begin SERPM 8 implementation

# Non-ABM Component Status

# Non-ABM Models

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- Special generators
- Trucks
- Externals

# Daily Enplanements / Boardings

	2010	2015	Change*
<b>PBI</b>	11,134	11,718	5%
<b>FLL</b>	33,732	40,684	21%
<b>MIA</b>	46,348	57,157	23%
<b>Port of Palm Beach</b>		1,169	
<b>Port Everglades</b>		8,025	
<b>Port of Miami</b>		11,238	

*\*FAA CY2015 grow over CY2010*

## Review with Streetlight:

- Time of Day Splits
- Distribution parameters

# Internal Trucks

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- Maintain
  - » Generation parameters
- Review with Streetlight data
  - » Time of day splits
  - » Distribution patterns
- 2015 MAZ data produces a new base model table (2015 base)
- Updated ODME based on 2015 truck counts



# Externals

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- Review with Streetlight data
  - » Time of day splits
  - » Distribution patterns
  - » EI / EE Splits
- Update external station targets
- Update auto/truck splits based on 2015 classified counts

# PopSyn Calibration

# Household / Person Market Segments

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- Adjusted to match ACS
  - » Household size
  - » Household income
  - » Household workers
  - » Presence of children
  - » Person age
  - » Person gender
- Not adjusted
  - » Worker type
  - » Ethnicity/Race
  - » Housing type
  - » Spatial allocation of households or persons

# PopSyn Calibration

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- Market segment results of 2015 synthetic population and ACS targets
  - » PopSyn targets = ACS targets
- Mismatches occur due to:
  - » Limited representation in PUMS data for sampling
  - » Hierarchy of control targets
- Synthetic population consistency with targets are consistent with current operation

# Household Size

County_Name	HHSIZE_1	HHSIZE_2	HHSIZE_3	HHSIZE_4PLUS
Palm Beach North	-0.2%	0.0%	0.2%	0.3%
Palm Beach CBD	-0.1%	-0.2%	0.2%	0.6%
Palm Beach Central	-0.3%	0.0%	0.2%	0.2%
Palm Beach West	-0.8%	0.8%	-0.6%	0.4%
Palm Beach South	-0.1%	-0.1%	0.1%	0.2%
Broward North	-0.1%	0.0%	0.1%	0.1%
Broward CBD	0.0%	0.0%	0.1%	-0.2%
Broward Central	-0.2%	0.0%	0.1%	0.2%
Broward South-West	-0.1%	-0.1%	0.0%	0.1%
Broward South-East	-0.1%	0.0%	0.2%	0.2%
Miami-Dade North	-1.2%	0.1%	0.4%	1.0%
Miami-Dade CBD	0.4%	-0.4%	1.6%	-1.8%
Miami-Dade NorthWest	-1.2%	-0.4%	0.2%	1.0%
Miami-Dade Central	-1.2%	-0.4%	-0.2%	2.2%
Miami-Dade West	1.0%	0.1%	-0.1%	-0.4%
Miami-Dade South	-0.9%	-0.2%	0.2%	0.4%
<b>Total</b>	<b>-0.4%</b>	<b>-0.1%</b>	<b>0.2%</b>	<b>0.5%</b>

# Household Income

County_Name	INCOME_25K	INCOME_50K	INCOME_75K	INCOME_100K	INCOME_100KPLUS
Palm Beach North	0.5%	1.3%	1.7%	-0.7%	-1.8%
Palm Beach CBD	-0.8%	2.2%	1.6%	-1.5%	-2.1%
Palm Beach Central	0.3%	0.9%	1.8%	0.4%	-3.6%
Palm Beach West	1.6%	-5.6%	14.2%	0.5%	-6.0%
Palm Beach South	1.4%	0.6%	1.2%	0.6%	-2.6%
Broward North	1.2%	0.4%	0.6%	0.9%	-3.1%
Broward CBD	0.6%	1.6%	0.5%	-2.1%	-1.5%
Broward Central	1.1%	0.3%	0.9%	0.8%	-3.1%
Broward South-West	1.1%	0.7%	0.6%	1.4%	-1.9%
Broward South-East	1.4%	-0.1%	0.5%	-0.1%	-2.9%
Miami-Dade North	0.4%	0.4%	-0.3%	-1.1%	-0.9%
Miami-Dade CBD	2.4%	0.8%	-0.2%	-0.6%	-2.6%
Miami-Dade NorthWest	0.1%	1.8%	0.9%	-4.0%	-1.6%
Miami-Dade Central	0.1%	0.7%	1.3%	-1.6%	-1.5%
Miami-Dade West	2.3%	-0.3%	2.7%	-2.8%	-2.3%
Miami-Dade South	0.0%	2.3%	-1.0%	1.1%	-3.0%
<b>Total</b>	<b>0.8%</b>	<b>0.7%</b>	<b>0.9%</b>	<b>-0.2%</b>	<b>-2.4%</b>

# Household Workers

County_Name	WORKERS_0	WORKERS_1	WORKERS_2	WORKERS_3PLUS
Palm Beach North	0.0%	0.0%	0.0%	0.3%
Palm Beach CBD	0.1%	0.0%	-0.3%	0.6%
Palm Beach Central	-0.3%	0.2%	0.1%	-0.1%
Palm Beach West	0.6%	-0.3%	-0.4%	0.6%
Palm Beach South	0.1%	-0.1%	-0.1%	0.3%
Broward North	0.0%	0.0%	0.0%	0.2%
Broward CBD	0.0%	0.0%	0.0%	-0.5%
Broward Central	0.0%	0.0%	0.0%	0.0%
Broward South-West	0.0%	0.0%	0.0%	0.0%
Broward South-East	-0.1%	0.0%	0.0%	0.4%
Miami-Dade North	-0.1%	0.0%	0.1%	0.4%
Miami-Dade CBD	-0.4%	-0.3%	0.5%	4.3%
Miami-Dade NorthWest	-0.1%	-0.1%	0.0%	0.5%
Miami-Dade Central	0.1%	0.1%	-0.2%	-0.2%
Miami-Dade West	0.0%	0.1%	-0.1%	0.0%
Miami-Dade South	-0.1%	-0.1%	0.0%	0.3%
<b>Total</b>	0.0%	0.0%	0.0%	0.2%

# Household Children

County_Name	CHILDREN_0	CHILDREN_1PLUS
Palm Beach North	-1.9%	6.2%
Palm Beach CBD	-2.5%	9.6%
Palm Beach Central	-3.6%	7.0%
Palm Beach West	-4.0%	5.4%
Palm Beach South	-1.4%	4.9%
Broward North	-2.7%	6.3%
Broward CBD	-1.4%	6.5%
Broward Central	-3.2%	7.9%
Broward South-West	-4.6%	6.8%
Broward South-East	-2.5%	6.7%
Miami-Dade North	-6.5%	13.3%
Miami-Dade CBD	-1.7%	6.6%
Miami-Dade NorthWest	-8.2%	12.4%
Miami-Dade Central	-4.4%	11.0%
Miami-Dade West	-6.4%	9.6%
Miami-Dade South	-7.9%	9.6%
<b>Total</b>	<b>-3.8%</b>	<b>8.6%</b>



# Person Age

County_Name	AGE0TO17	AGE18TO24	AGE25TO34	AGE35TO49	AGE50TO64	AGE65TO79	AGE80PLUS
Palm Beach North	0.1%	0.1%	0.0%	0.0%	0.0%	-0.1%	-0.1%
Palm Beach CBD	-0.3%	-0.3%	-0.6%	-0.3%	0.1%	0.2%	0.3%
Palm Beach Central	0.2%	0.0%	0.2%	0.0%	0.0%	0.0%	-0.6%
Palm Beach West	0.3%	0.2%	-1.0%	0.3%	0.1%	-0.5%	-0.8%
Palm Beach South	0.1%	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.1%
Broward North	0.1%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%
Broward CBD	0.0%	-0.2%	0.0%	-0.1%	0.0%	0.1%	0.3%
Broward Central	0.1%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%
Broward South-West	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Broward South-East	0.1%	0.1%	0.0%	0.0%	0.0%	-0.1%	-0.1%
Miami-Dade North	0.4%	-0.3%	-0.6%	-0.4%	-0.5%	-0.5%	-0.3%
Miami-Dade CBD	-1.0%	2.3%	2.5%	1.6%	1.4%	1.1%	-0.1%
Miami-Dade NorthWest	0.3%	0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%
Miami-Dade Central	1.3%	0.0%	-0.6%	-0.2%	-0.1%	0.1%	0.3%
Miami-Dade West	-0.7%	-0.4%	-0.4%	-0.4%	-0.1%	-0.4%	-0.2%
Miami-Dade South	0.0%	-0.1%	-0.2%	-0.2%	-0.2%	-0.3%	-0.4%
<b>Total</b>	0.2%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%

# Person Gender

County_Name	MALE	FEMALE
Palm Beach North	0.0%	0.0%
Palm Beach CBD	0.0%	0.0%
Palm Beach Central	0.0%	0.0%
Palm Beach West	0.0%	0.0%
Palm Beach South	0.0%	0.0%
Broward North	0.0%	0.0%
Broward CBD	0.0%	0.0%
Broward Central	0.0%	0.0%
Broward South-West	0.0%	0.0%
Broward South-East	0.0%	0.0%
Miami-Dade North	0.0%	0.0%
Miami-Dade CBD	0.0%	0.0%
Miami-Dade NorthWest	0.0%	0.0%
Miami-Dade Central	0.0%	0.0%
Miami-Dade West	0.0%	0.0%
Miami-Dade South	0.0%	0.0%

# HH Survey Processing

# Context

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## ➤ Purposes

- » Mandatory
  - Work, School, University
- » Non-Mandatory
  - Meal, Shop, Soc/Rec, Personal Business, Discretionary
  - Fully-Joint
  - Individual

## ➤ Modes

- » Auto
  - Occupancy
  - Toll / Non-Toll
- » Non-Motorized
  - Walk
  - Bike
- » Transit
  - Mixed (includes Local Bus) or Premium only
  - Walk / PnR / KnR access
  - Drive egress (premium only)

# Trips -> Tours

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## ➤ Tour Purpose: Hierarchy of trip purposes

### » Mandatory

- (Adults – work #1; Children – school #1)

### » Non-Mandatory

- Primary purpose determined by duration

## ➤ Tour Mode: Hierarchy of trip modes (where multiple modes exist)

### » Mixed Transit

### » Premium-Only Transit

### » School Bus (school tours only)

### » Auto toll modes (descending occupancy)

### » Auto non-toll modes (descending occupancy)

### » Bike

### » Walk

# Survey Processing Results

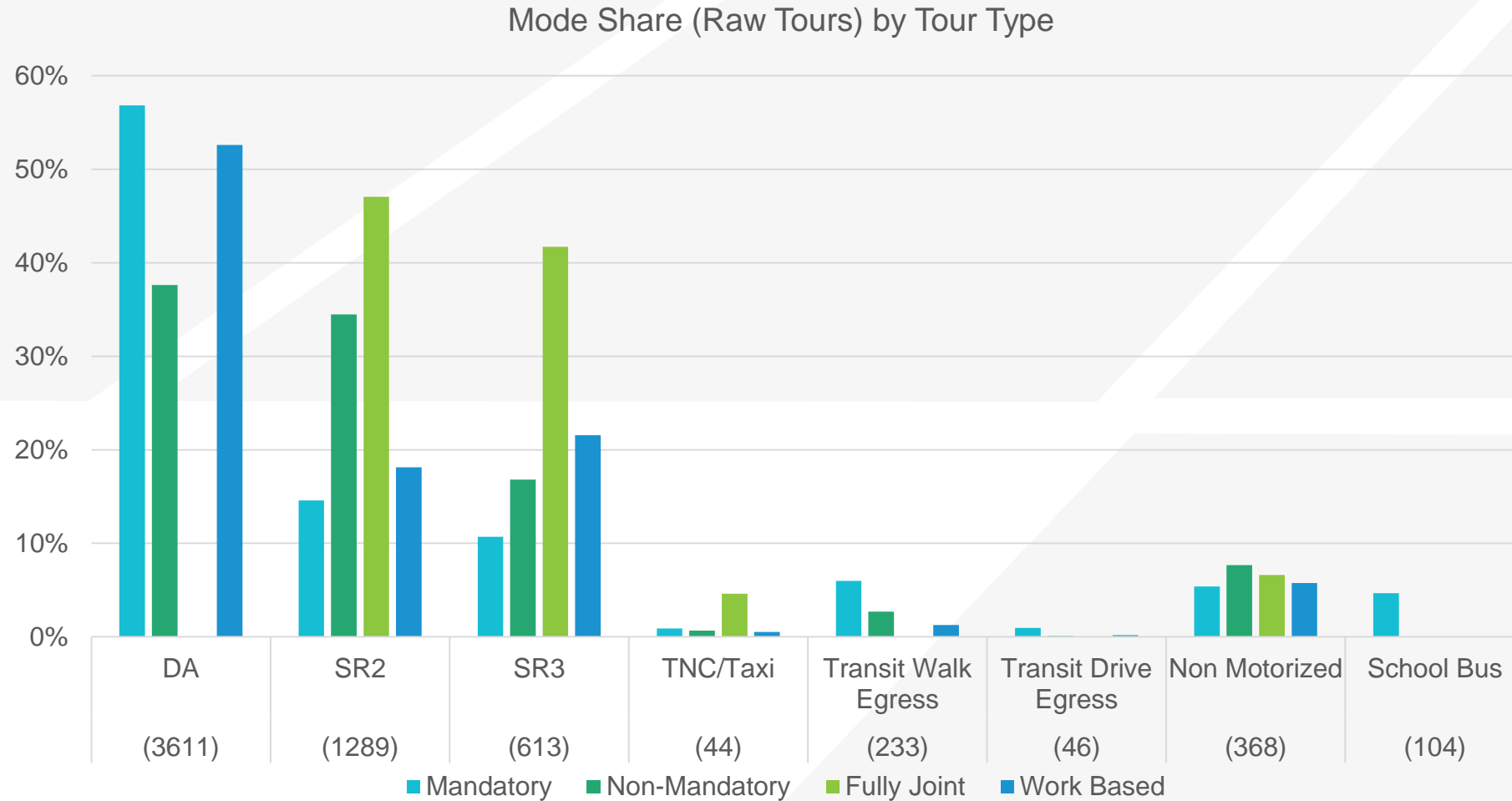
- 16,356 initial sample of trips with complete response joined into tours

Description	Frequency
Tours with the same start and end time for primary activity and tour purpose is not escort	72
Incomplete Tours	247
Out of area/Travel Tours	41
Tours with unresolved mode	8
Tours with mixed mode but drive egress	19
<b>Total Tours (Trips) Remaining</b>	<b>6,308 (15,731)</b>

# Tour Records by Type and Purpose

	Purpose	Home-Based	Fully Joint	Work-Based
<b>Mandatory</b>	Work	2,889		56
	School	406		0
	University	171		0
	SubTotal	3,466		56
<b>Non-Mandatory</b>	Escort	373	0	3
	Shopping	111	8	2
	Maintenance / Personal Business	1,050	41	14
	Meal	294	28	65
	Visit/Social Recreation	718	39	6
	Discretionary	34	0	2
	SubTotal	2,578	116	92
<b>Total</b>		<b>6,160</b>	<b>116</b>	<b>148</b>

# Weighted Mode Share by Tour Type





# Visitor Model Calibration

# SERPM Visitor Model Structure

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- Implemented as a mix of input shares and models
- Shares
  - » Number and purpose of visitor parties by MAZ
  - » Income, party size, auto availability by visitor party
  - » Tour by purpose and TOD
  - » Stop frequency and purpose
- Models
  - » Tour destination and mode
  - » Stop location and trip mode
- Model framework transferred from SANDAG
  - » Most parameters transferred, some recalibration / simplification

# Available Calibration Data

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- Greater Miami Convention and Visitor's Bureau 2016 Annual Research Report
  - » Believe that 2010 version of report supported SERPM 7 calibration
  - » Richest visitor travel dataset for the region
- The Palm Beach County Tourist Development Council Annual Report
- Greater Ft. Lauderdale Convention and Visitors Bureau Vital Statistics

# Proposed Recalibration

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- Hotel occupancy rate (all sources)
  - » Based on 5 year average occupancy rate
- Household occupancy rate (all sources)
- Trip purpose (Greater Miami only)
  - » Purpose is not segmented by lodging, but assume correlation between business and hotel occupancy
- Party size (Greater Miami only)
- Travel mode (Greater Miami only)
  - » Overall targets

# Model Enhancements

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- Differentiate by county
  - » hotel/household occupancy rates
  - » business/personal splits
- AirBnB usage is increasing
  - » Recommend monitoring and consider for future updates, but no changes to SERPM 8

We are requesting a motion today to approve this plan to update the visitor models

# Reference Slides

# Trip Purpose Mapping

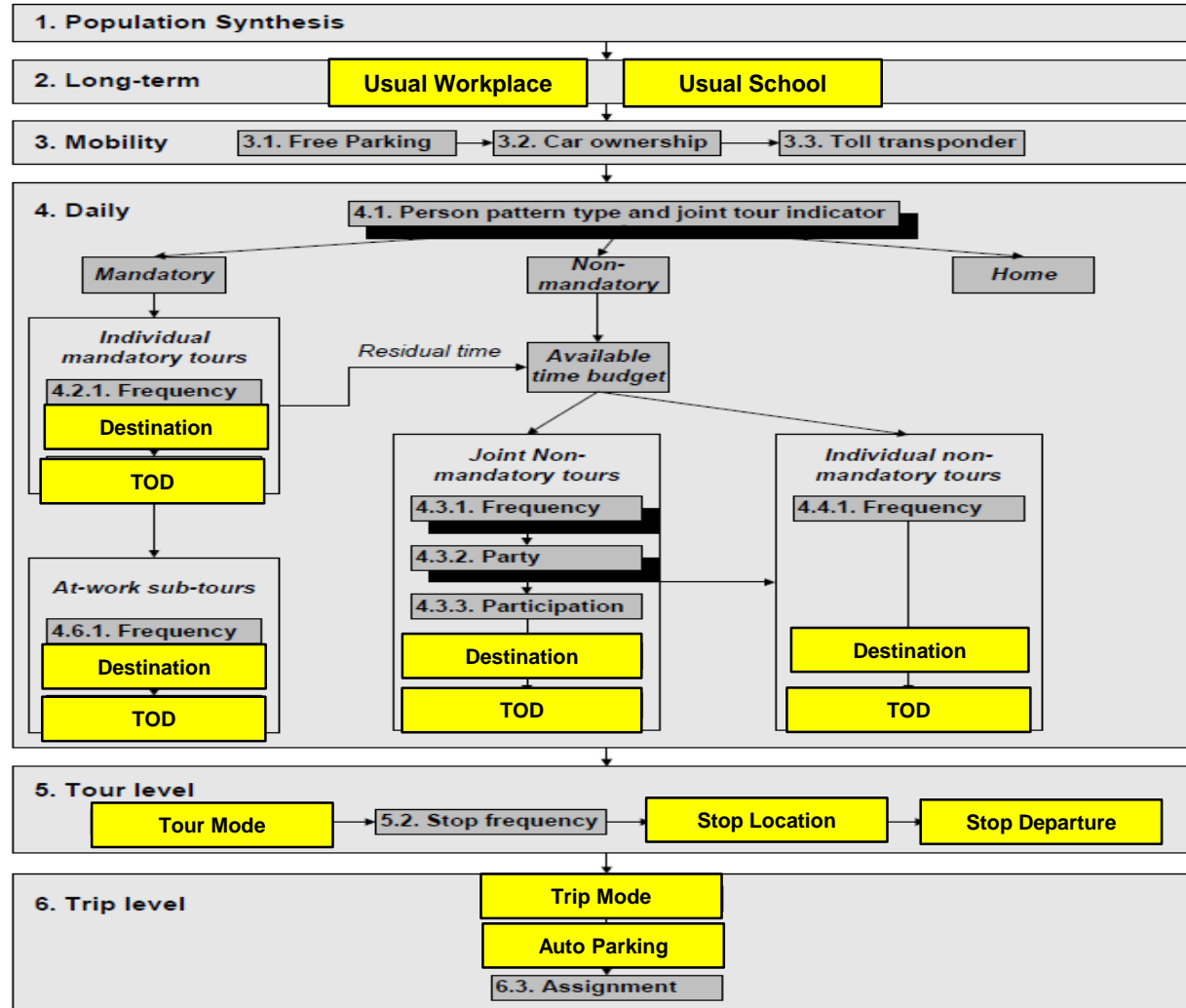
Purpose coded in household survey	SERPM model trip purpose
<1> Paid work (employment/job-related work at place of employment, home, or remotely)	Work
<2> Home activities (sleeping, chores, walking dog)	Home
<3> Attend classes (daycare, childcare, elem. school, high school, college, professional)	School (University by non k-12 students)
<4> Other school activities (studying, student meetings, school clubs/associations)	School (University by non k-12 students)
<5> Personal business (ATM, banking, medical, salon)	Other / Maintenance / Personal Business
<6> Major shopping (appliances, cars, home furnishings, clothes)	Shopping
<7> Everyday shopping (grocery, drug store, gas)	Other / Maintenance / Personal Business
<8> Visiting friends/relatives	Visit / Social Recreation
<9> Participate in recreation/leisure (running, hiking, playing sports, exercising, social groups)	Visit / Social Recreation
<10> Attend entertainment, sports, cultural events (watching concerts, movies, plays, museum, attending sports games)	Visit / Social Recreation
<11> Dining and drinking (restaurant, drive-thru, cup of coffee, bar and pub)	Meal
<12> Religious/community (worship, wedding, funeral, volunteer work, civic meetings)	Visit / Social Recreation
<13> Pick-up/Drop-off passenger(s) (pick up spouse, drop-off child)	Escort
<14> Change transportation type (drive to Tri-Rail, walk to local bus stop)	Change Mode
<15> Other: _____ text box size: 1 row, 50 alphanumeric characters>	Other / Discretionary

# Mode Mapping

Modes coded in household survey	SERPM model Modes
<1> “Car, truck, or van, This includes station wagons, company cars, light trucks of 1-ton capacity or less, truck cabs, mini buses, and private limousines	DA/SR2/SR3+
<2> “Motorcycle/Moped”	DA/SR2
<3> “Local Bus (Breeze, Metrobus, Palm Tran)”	Mixed
<4> “School Bus”	School Bus
<5> “Commuter Bus”	Premium/Mixed
<6> “Metrorail”	Premium/Mixed
<7> “Metromover”	Premium/Mixed
<8> “Tri-Rail”	Premium/Mixed
<9> “Taxicab”	Taxicab
<10> “Shared-car services (Lyft, Uber, Zip Car)”	Shared-car services
<11> “Bicycle”	Bike
<12> “Walked”	Walk
<13> Other method	Other



# Summary of Components to Be Reestimated



Yellow color highlights components we will try to reestimate