Gainesville 2035 LRTP Update
Gainesville-Alachua County Model Validation

presented to

Gainesville MTPO TAC LRTP Subcommittee

presented by

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September 30, 2009

Transportation leadership you can trust.
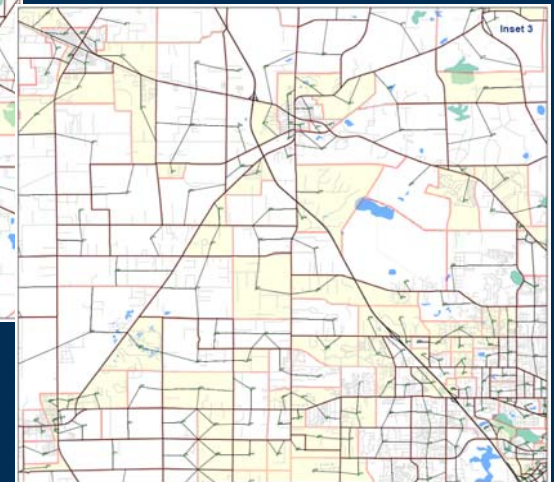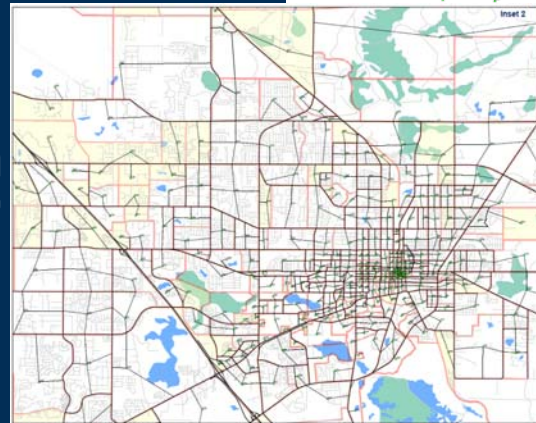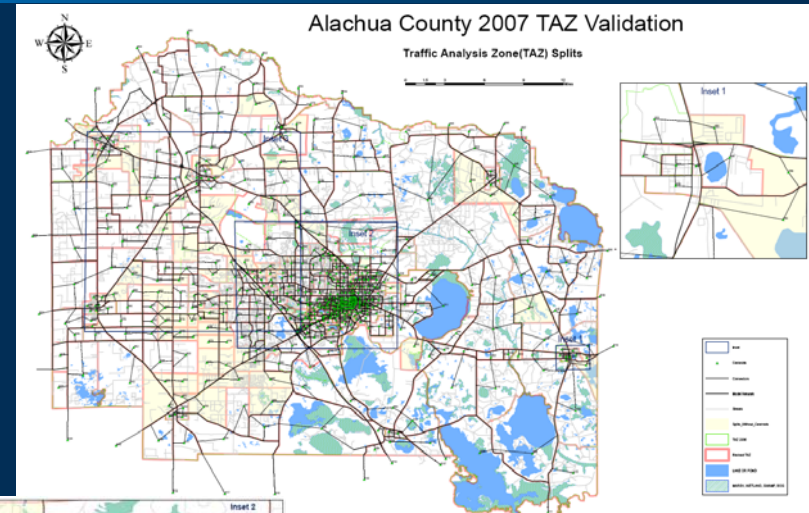
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Gainesville-Alachua County Model Validation
Presentation Overview

- Zone splitting and network disaggregation

- Updated model assumptions and validation standards

- Maximizing consistency with FDOT Cube/Voyager standards

- Incorporating new UF (and perhaps TCSP) survey data into model

- Testing peak oil scenario

- Current status and committee input

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Gainesville-Alachua County Model Validation
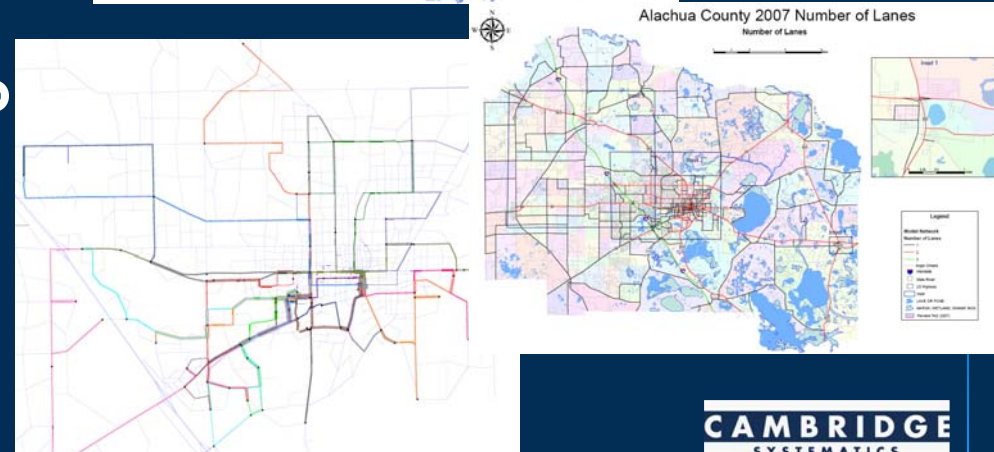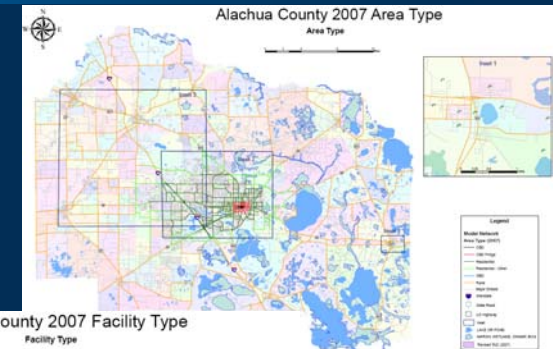## Zone Splitting and Network Disaggregation

- Increased "internal" zones from 453 to 557 (104 splits)

- Renumbered "external" zones by +100 (now 600-625)

- Zones 558-599 remain available as "dummy" zones

- Centroids and connectors modified for all split zones

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Gainesville-Alachua County Model Validation
Zone Splitting and Network Disaggregation (Cont'd)

- Some local streets added to the network for proper loading of newly split zones

- Highway network area types, facility types, laneages, alignments, and directionality verified for correctness

- Transit network updated to reflect latest RTS route configurations, headways, fares, and stops

Alachua County 2007 Area Type

Alachua County 2007 Facility Type

Alachua County 2007 Number of Lanes

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Gainesville-Alachua County Model Validation
Updated Model Assumptions and Validation Standards
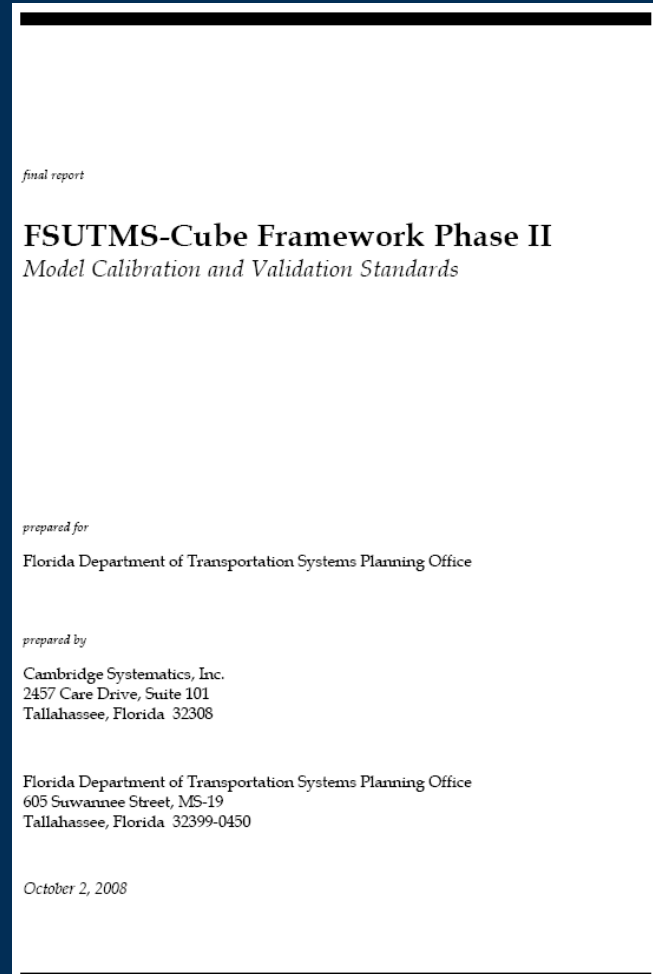
- **Updated all 2000/2006 input files to base year 2007**

  - **Traffic counts replaced/added – FDOT, City, County, UF**

  - **2007 SE data received from MTPO staff and reviewed**

  - **External trips updated from 2006**

- **Updated DUWEIGHT (HH sizes) to reflect Census 2000 statistics**

- **Updated speeds, capacities, and variable factors per FDOT standards**

Avg HH size	1-person % HHs	2-person % HHs	3-person % HHs	4-person % HHs	5+person % HHs
1.91	0.46	0.32	0.13	0.06	0.03
1.92	0.44	0.31	0.16	0.09	0.00
1.93	0.45	0.34	0.12	0.05	0.04
1.96	0.41	0.34	0.15	0.09	0.01
1.97	0.39	0.37	0.14	0.10	0.01
2.02	0.34	0.41	0.16	0.08	0.01
2.06	0.33	0.38	0.19	0.09	0.01
2.1	0.33	0.38	0.20	0.07	0.03
2.11	0.33	0.36	0.20	0.08	0.02
Avg	**0.39**	**0.36**	**0.16**	**0.08**	**0.02**

Gainesville-Alachua County Model Validation
Updated Model Assumptions & Validation Standards (Cont'd)

- **CS/FDOT updated model validation guidelines and standards in 2008**

- **New guidelines and standards**
  - presently under MTF review
  - tested for reasonableness
  - incorporated into checklist

- **Checklist updated for relevancy in Gainesville**

- **Checklist filled in for each validation run conducted**

final report

FSUTMS-Cube Framework Phase II
Model Calibration and Validation Standards

prepared for

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October 2, 2008

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COMPARISON SUMMARY

Gainesville-Alachua 2007 Validation

Base Year 2007 Model

DATE: 09/03/09

Comments:

Trip Generation

Comparison of Total Trips by Purpose

| Purpose | Gainesville 2007 Cube | | Unbalanced | New FDOT | Gainesville 2000 Cube | | 2000 | 2003 |
	Productions	%Productions	Attractions	Guidelines *	Productions	% Productions	Travel Survey	CRTPA
Home-Based Work				12-24%	150,235	13.45%		14.00%
Home-Based Shop				10-20%	114,552	10.25%		11.00%
Home-Based Socrec.				9-12%	103,996	9.31%		7.00%
Home-Based Other				14-28%	220,197	19.71%		30.00%
Non Home-Based				20-33%	286,573	25.65%		24.00%
Home-Based University					52,809	4.73%		
UF Campus/Dorm					26,492	2.37%		
Truck-Taxi								8.00%

Gainesville-Alachua County Model Validation
Max Consistency with FDOT Cube/Voyager Standards

- Use of Cube geodatabase for network storage & editing

- Consistent with FDOT model training/C-V standards:
  - File naming conventions
  - File formats
    - Minimize use of text (ASCII) files – mostly DBF, CSV
  - Folder structure

- Eliminate external FORTRAN programs (NERGEN)
  - Use Cube/Voyager scripting instead
  - Some trial-and-error debugging new scripts

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Gainesville-Alachua County Model Validation
Max Consistency with FDOT Cube/Voyager Standards (Cont'd)

Model	Error Message	Cause of Error	How Error Fixed	Person	Date	Version of Software
Alachua MTPO Model (Original)	Assignment, 7 thru 10 steps	In earlier steps, Cube new version 5 is renaming variables of headway[2] into headway_2, seemingly due to new use of GIS database as input file. - Once fixed, all scenarios should run so no more fix needed	Change "ri.HEADWAY[2]" to "ri.HEADWAY_2" in 9 and 10 steps. Also, change "ri.HEADWAY" to "ri.HEADWAY_1" in 7 and 8 steps, because it has automatically added '_1' in earlier steps.	Taka/Daniel	11/11/2008	Cube 5.0.1 / 5.0.2
Alachua MTPO Model (Original)	Mode Choice, 2 step	Path for PEV is easily overlooked for an update, because it is on 4th page of scenario manager - This should be resolved later	Scenario manager for each scenario (doubleclick scenario from "Scenarios" on the left top window) - 4th pages "PEV" path needs to be updated	Taka	08/27/2009	Cube 5.0.2
Alachua MTPO Model (Refined 2007)	Transit Networks, 2 of 13, AM Walk Access	supposedly, 2007 transit file (currently work in progress July 2007) needs to be updated	SARAH corrected and added appropriate transit stops to transit route file so that highway nodes match with transit stops.	Taka	08/27/2009	Cube 5.0.2
Alachua MTPO Model (Refined 2007)	Distribution, 2nd step	P and A file, and other zonal data matrices are in the original zone range 1-525	All zonal data files and matrices have to be recoded using new zone range 1-625 (external zone shift)	Taka	09/25/2009	Cube 5.0.2

Model Step	File Name	File Format/Extension	File Type	Folder Location	Initial Source	Initial File Ready?	Date Last Modified	File Edits/Replacements/Co
	ATTRRATES	DBF	Parameters	\Parameters	Olympus			*Compare Olympus against NERPM an 2000*
	DUWEIGHTS	DBF	Parameters	\Parameters	Census 2000			*Calculate and compare against NERPI*
	EETARGETS	DBF	Input	\Base\Input	I-75 Master Plan	eeTARGET2006		*Adjust from 2006 to 2007 base*
	EETRIPS	DBF	Input	\Base\Input	I-75 Master Plan	can't locate 2006?		*Similar format as NERPM; adjust from base*
Trip Generation	INTEXT	DBF	Input	\Base\Input	I-75 Master Plan	ZDATA4.prn start		*Same comments as EE above plus co*
	PRODRATES	DBF	Parameters	\Parameters	Gainesville 2000	INTEXT_07A.dbf		*Format modified per Olympus*
	SPECGEN	DBF	Input	\Base\Input	I-75 Master Plan	SPECGEN_07A.dbf		*Minimize special generators initially; co*
	UFData	DBF	Input	\Base\Input	Gainesville 2000			*it appears that UFData is already in ZC*
	ZONEDATA	DBF	Input	\Base\Input	MTPO staff	yes, 4-28-2009		*Mike P. prepared plots and numbering reviewed*
	HNET	NET	Input	\Base\Input	I-75 Master Plan	almost there		*Taka finishing counts; new centroids a zones split*
Highway Network	VFACTORS	CSV	Parameters	\Parameters	Olympus	yes, 8-2-2006 file		*Use default from Olympus*
	SPDCAP	DBF	Parameters	\Parameters	Olympus	yes, 8-2-2006 file		*Use default from Olympus*
	TURN	PEN	Input	\Base\Input	Gainesville 2000			*Remove all prohibitors and recheck pe*
Trip Distribution	FF	DBF	Parameters	\Parameters	Gainesville 2000			*Convert to format used in Olympus*
	AMPNR	DBF	Parameter	\Parameter	Gainesville 2000			*Assumptions, route enumeration & eva*

Gainesville-Alachua County Model Validation
Incorporating new UF (and TCSP) survey data into model

- **Supplemental UF multi-modal counts**

- **Supplemental UF intercept survey**

- **Transportation & Community System Preservation Survey**
  - **Supported through TCSP grant**
  - **Conducted circa 2000-2001**
  - **Basis for sketch planning tools**
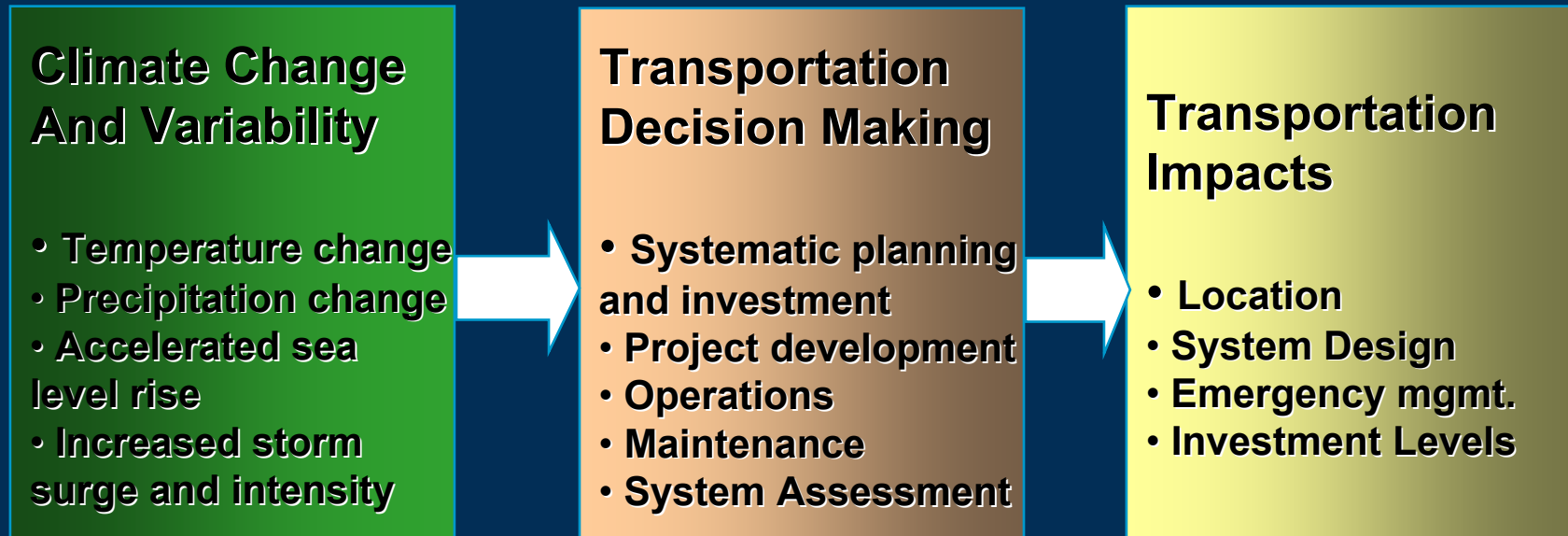 - **Possible implementation after validation is complete**

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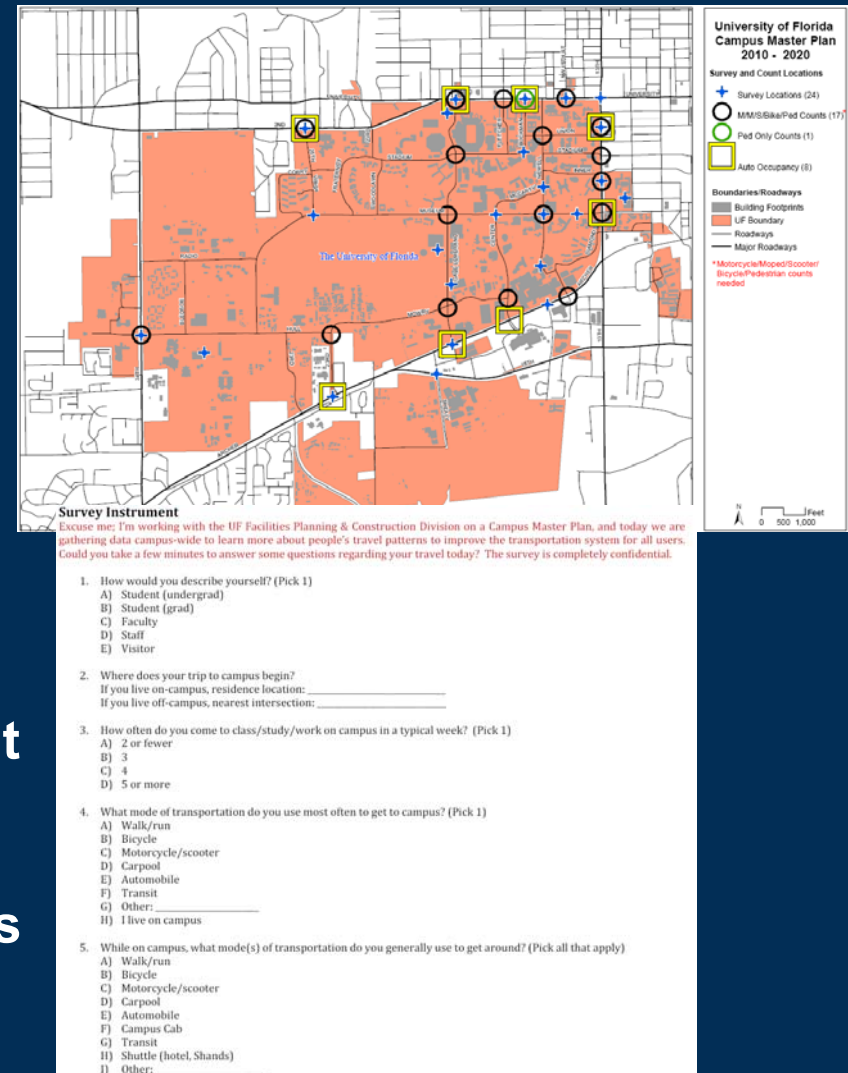
Gainesville-Alachua County Model Validation
Testing Peak Oil Scenario

- Testing within constraints of model's capabilities

- Models should provide insights into changes in travel behavior from measures taken to mitigate climate change

- Models should be able to answer questions such as

  - Impacts of carbon taxes on travel behavior

  - Impacts of congestion pricing

  - Impacts of changes in transit service

  - Impacts of changes to land use

- Models should support mitigation policy options

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Gainesville-Alachua County Model Validation
Testing Peak Oil Scenario (Cont'd)

Climate Change And Variability

- Temperature change
- Precipitation change
- Accelerated sea level rise
- Increased storm surge and intensity

Transportation Decision Making

- Systematic planning and investment
- Project development
- Operations
- Maintenance
- System Assessment

Transportation Impacts

- Location
- System Design
- Emergency mgmt.
- Investment Levels

Gainesville-Alachua County Model Validation
Current Status and Committee Input

- **Complete**
  - **Zone-based inputs (TAZs, SE data, UF, external trips)**
  - **Highway network editing and refinement**
  - **Transit network editing and refinement**

- **In progress**
  - **Final quality control checks on above**
  - **Scripting changes for model execution**
  - **Compiling comparative statistics for validation**

- **Deadlines**
  - **Complete validation by end of December 2009**

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Gainesville-Alachua County Model Validation
Current Status and Committee Input (Cont'd)

- **Committee input:**

    - **Concerns about previous model for addressing this time**

    - **Confirmation of data assumptions**

    - **Review of final draft model results**

    - **Open discussion**

    - **Questions**