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RESOURCE SYSTEMS GROUP, INC.

BMC Synthetic Population Generator

Integration with Travel and Land Use Models

Prepared for:
Baltimore Metropolitan Council

November 9, 2010

Data Formats - Task 2

■ Cube Formats

- Cube native files
- Database Files - DBF
- Geodatabase Files - SHP

■ Cube Data Import/Export Functionality

- Database Files - DBF
- Geodatabase Files - SHP
- Comma Separate Files - CSV
- Text Files - TXT

■ Integration with PECAS population data

- Population outputs

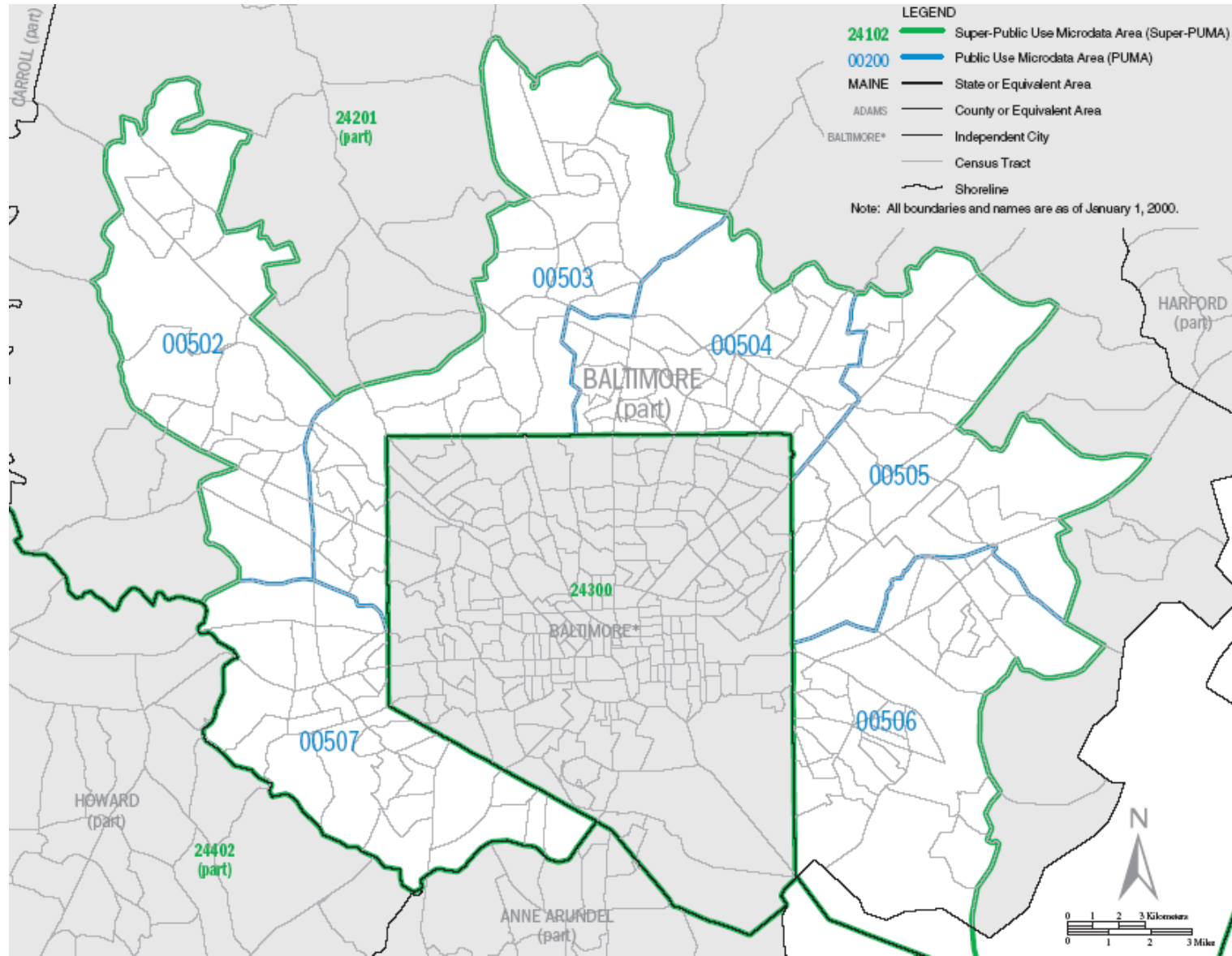
■ Integration with CUBE travel models

- Socioeconomic data inputs

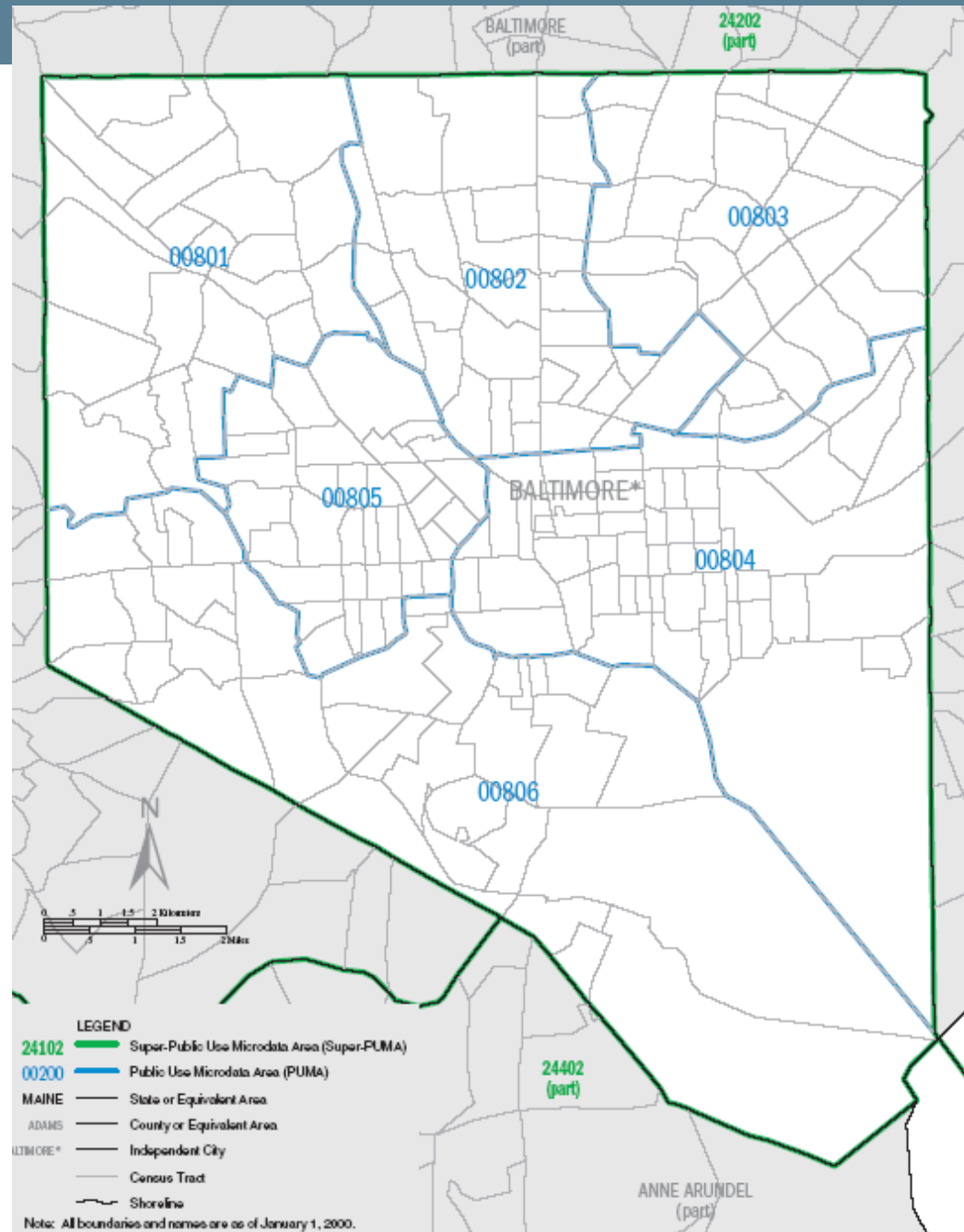
Task 2 Questions

- Will PECAS provide future year marginal distributions?
- Will control variables be set at TAZ or district levels?
- Is BMC considering any other SE data inputs beyond the current household size, income and workers per household?
- Will we use 2000 PUMS or 1-year, 3-year or 5-year ACS PUMS for sample data?
 - 2009 ACS available
 - 3-year ACS (2007-2009) due out in January 2011
 - 5-year ACS (2005-2009) due out in December 2010

Baltimore PUMA (2000 Census)

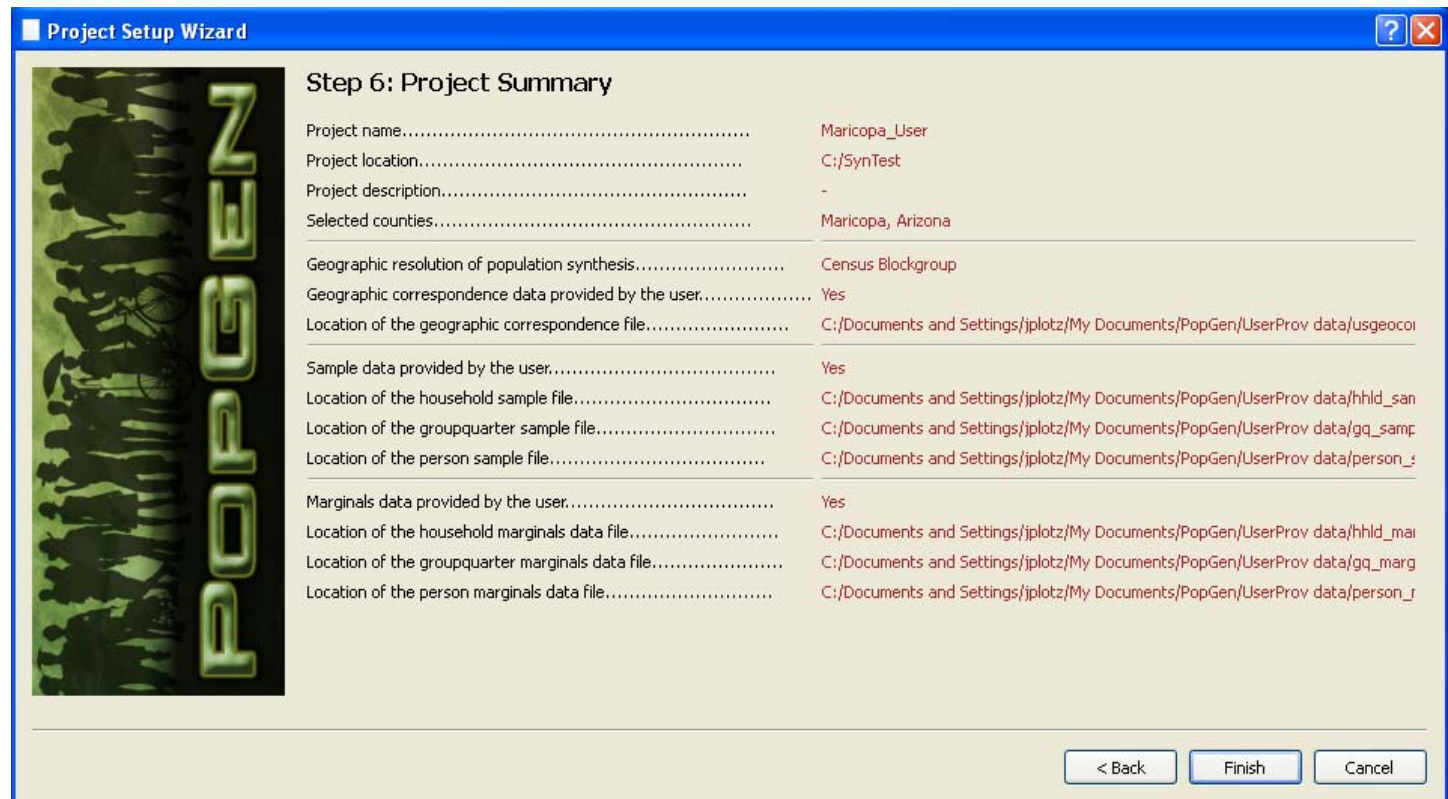


Baltimore PUMA



Software Development Version 1 - Task 3.2

- Software that is stand-alone, user-friendly
 - Complete graphical user interface (GUI)
 - Output visualization capabilities in QGIS
 - Customized POPGEN, Improved performance
 - Python code, MySQL database



Customized Cube Reporting

- Sample Socioeconomic Data Report

Scenario Summary Report



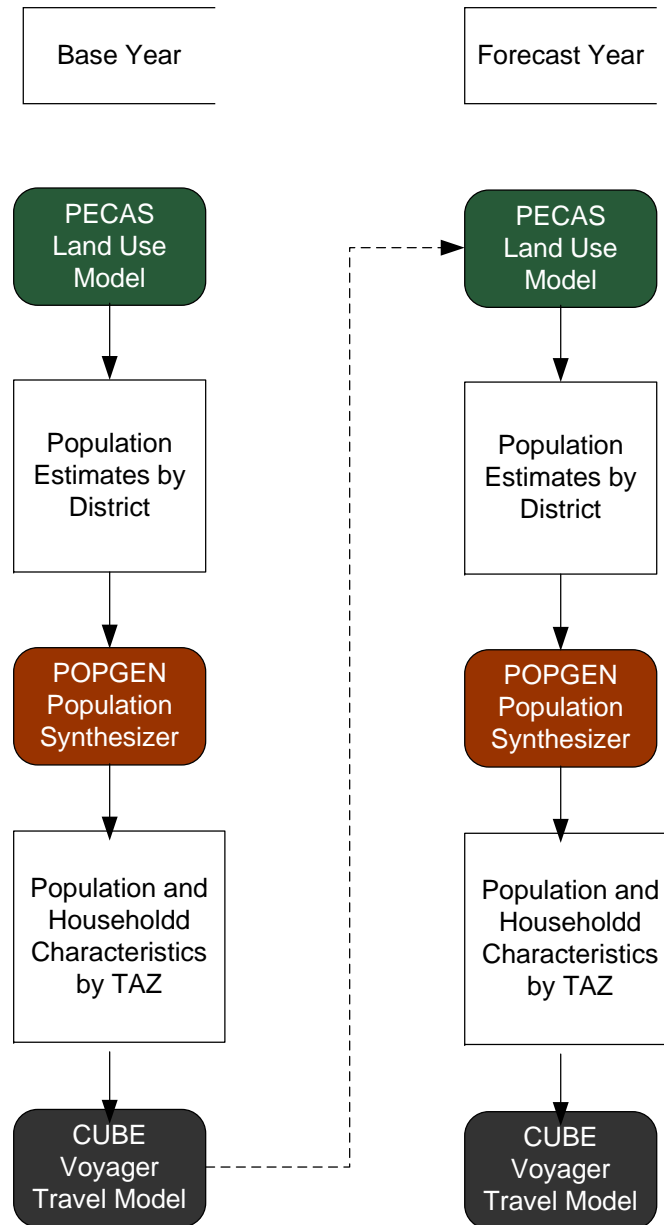
This report is summary of results from scenario **BY**

Scenario Year 2005
Scenario Network C:\Modeltools\USTM\INPUTS\GIS\USTM_INPUT.mdb\Network_909_Lin
Scenario Variable 05
File Location C:\Modeltools\USTM\Base\BY
Run Date 9/30/2009
Run Description Base Year

TABLE 1: Socioeconomic Data Summary

County	Population	Household	Employment
Beaver	6,342	2,112	3,191
Box Elder	45,320	14,597	26,195
Cache	107,363	34,355	45,369
Carbon	19,340	7,279	12,312
Daggett	963	377	650
Davis	292,634	85,939	119,040
Duchesne	15,239	5,041	9,236
Emery	10,492	3,590	6,483
Garfield	4,705	1,652	3,246
Grand	8,828	3,702	6,192
Iron	41,424	13,219	21,658
Juab	8,973	2,770	4,501
Kane	6,211	2,377	4,107
Millard	13,165	4,304	6,739
Morgan	8,517	2,605	3,434
Piute	1,367	504	675
Rich	2,062	719	1,252
Salt Lake	988,276	330,334	616,675
San Juan	14,570	4,511	5,685
Sanpete	25,459	7,616	10,492
Sevier	19,648	6,565	10,910
Tooele	36,282	13,023	29,204
Uintah	44,512	14,192	12,095
Utah	26,887	9,098	16,865
Wasatch	446,874	132,656	199,636
Washington	21,278	6,384	5,509

Integration of POPGEN with Travel and Land Use



Control Variables - Examples

■ Household Attributes

- Household Size (7 categories)
- Household Income (8-10 categories)
- Household Workers (3-4 categories)
- Presence of Children (yes, no)

■ Person Attributes

- Age (10 categories)
- Employment Status (5-7 categories)

Cube Application Manager

The screenshot displays the Cube Application Manager interface. The title bar reads "Cube (Licensed to Resource System Group Inc.) - [UTAHST02.APP, 03GU_TRIP GEN UTAH (Scenario 'Base' Catalog USTM...". The menu bar includes File, Scenario, Edit, View, Data, Program, Control, Functions, Application, Group, Settings, Run, Tools, Other Apps, Window, and Help. The left sidebar contains three panels: "Scenarios" with a "Base" scenario, "Applications" with a tree view showing "USTM" and sub-items like "01NT_INPUT PROCESSING", "02HH_HOUSEHOLD", "03GU_TRIP GEN UTAH", and "04GR_RECREATION"; and "Data" with "Inputs", "Outputs", and "Reports". The main workspace shows a workflow diagram titled "Calculate Internal Utah Trips (Short and Long)". The workflow starts with a "Script File" block, followed by a vertical stack of "Zonal Data 1" through "Zonal Data 7" blocks. These feed into a central "GENERATION" block. From the "GENERATION" block, three output paths lead to "Print File", "ZonalPAData 1", and "Record File 1" blocks.

Task 3.2 Questions

- Will BMC want to use Application Manager as the Graphical User Interface?
- Will BMC want to set more control variables than are currently required by the trip generation model?
- Will the interface between POPGEN and PECAS be direct (i.e. to read native file formats) or indirect (i.e. to export and import data)?
- Will the interface between POPGEN and CUBE be direct (i.e. to read native file formats) or indirect (i.e. to export and import data)?

Replace Existing SE Model - Task 5

- Compare PopGen outputs with current SE Model
 - Cross-classification of households by income, size, workers by district
- Report differences in outputs
 - Compare to Census
- Run 4-step model with PopGen and compare to current 4-step model with SE Model
 - Compare VMT, VHT, delay by district
- Report differences in outputs
 - Compare to counts
- Resolve differences

Comparison Tools in Cube

- Compare Scenarios in Application Manager



- Produce Comparison Tables

- Example Congested VMT

Functional Classification	BY	EOP3
Rural - Interstate	2%	21%
Rural - Principal Arterial	21%	46%
Rural - Minor Arterial	9%	40%
Rural - Major Collector	5%	33%
Urban - Interstate	50%	60%
Urban - Freeway or Expressway	13%	18%
Urban - Principal Arterial	59%	64%
Urban - Minor Arterial	52%	65%

- Produce Comparison Charts

- Example Lane Miles by Region

