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The Town of South Kingstown **2005 Build-Out Model**



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South Kingstown 2005 Build-Out Model: Final Report

1. **Background** on the project
2. **Results** of the Model
3. **Using** the Model (Live Demo by Carol Baker)
4. **Future** uses and possible improvements



The Town developed build-out calculations in 2001 and modified the method that produced them in 2004

The Town's build-out calculations used a series of GIS queries to produce data used by an Excel spreadsheet to develop figures for total build-out and ultimate population

- It produced an overall dataset of information for the “Core” and “Periphery” areas of the Town, and the Town as a whole
- The results were used in many ways:
 - Town's capital planning and budgeting process
 - Growth management program
 - General planning and policy development



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2001 – 2004 Buildout Model

- Model was not parcel specific
- Only vacant land considered for potential development, no Infill allowed
- Land use data evolved, initially RIGIS data
- 2002 – 2004: updated with new subdivisions



The Town was interested in updating the method used to produce build-out for 2005

The requirements for the 2005 update included a model that:

- Re-examined and redefined assumptions
- Re-examined and refined GIS datasets, iterative process with input from many town departments
- Is parcel based, allowing infill
- Is built into GIS so that complex GIS queries are automated
- Is repeatable and verifiable
- Gave the Town the ability to alter assumptions to both test possible policy actions, but to also maintain the system as conditions change
- Is expandable and easily maintainable
- Is transferable to South Kingstown staff for both updating and operations



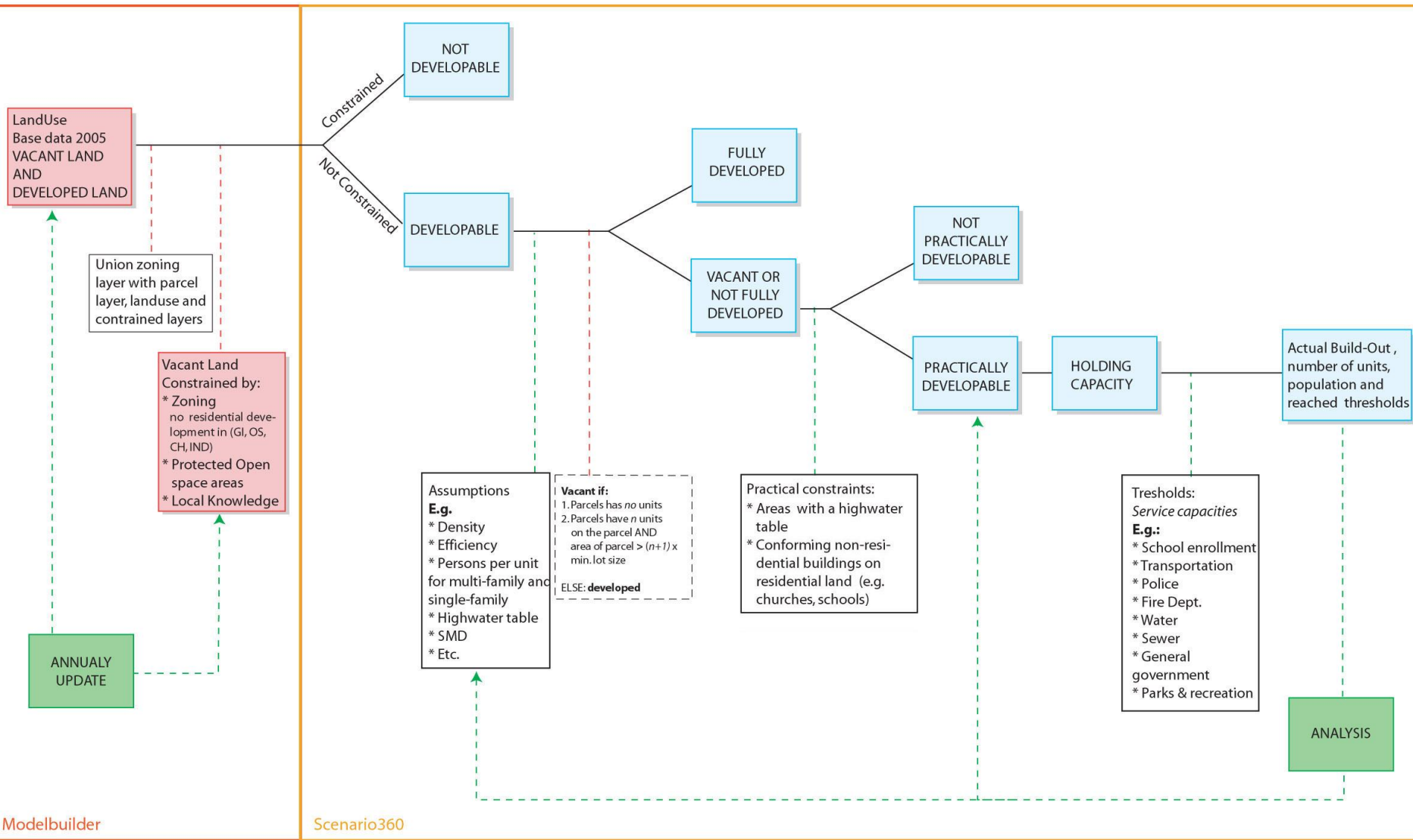
The solution we developed was the 2005 South Kingstown Build-Out model

The model is:

- Currently installed at the Town and embedded into its GIS and has produced results for 2005
- Uses all appropriate South Kingstown specific GIS data (Zoning, wetlands, land use, etc.)
- Built in an “open” fashion so that assumptions can be changed for maintenance or to test the impact of a policy change on build-out
- Able to produce built-out and holding capacity for each parcel in the Town
- Once base data are updated, 2006 numbers can be produced in a two-step process



This two-step process first processes the updated data and then runs this saved decision-tree to produce results





The results of the 2005 Build-Out Model are consistent with the results from the previous years

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	2001 Build-Out Model	2004 Build-Out Model	2005 Build-Out Model
Build-Out Potential	7,214 units	5,803 units	5,696 units
Population potential (at zero vacancy)	18,468 people	14,855 people	12,943 people
Years to build-out	45 years	32 years	32 years

The 2004 method showed the Town with room for 5,803 additional units, while 2005 showed room for 5,696 units under current zoning densities

Lessening in gross numbers between years reflects:

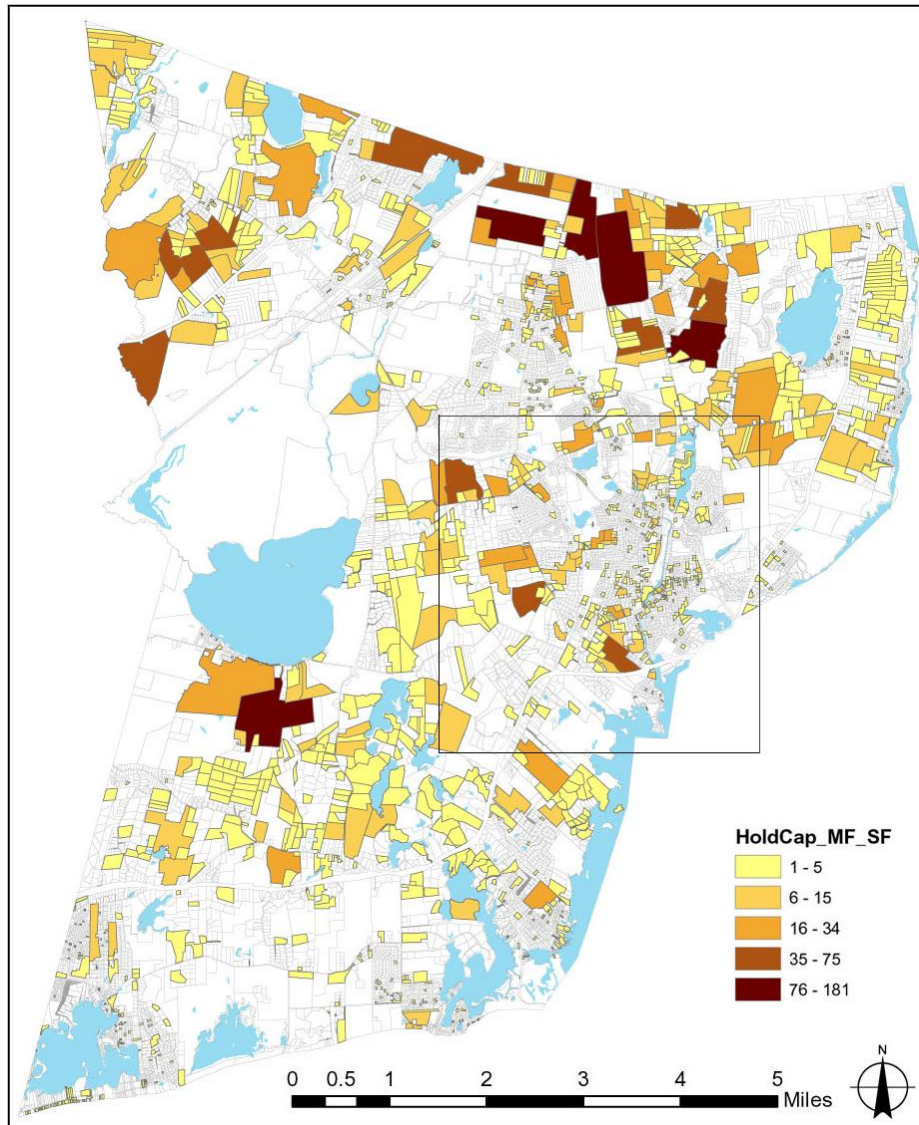
- More accurate data (from statewide to locally-based data)
- Changes in assumptions
- Minor methodological changes
- Development



The value added of the 2005 Model includes fine geographic detail

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The 2005 Model both works and produces data at the parcel level





Which allows for summary by various levels of geography

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Vacant holding capacity by zoning district

Zone	Vacant Holding Capacity (number of units)	Total Town Area (acres)
R10	332	823
R20	413	1,989
R30	162	720
R40	1,900	5,522
R80	1,357	12,339
R200	206	4,420
RM	61	137
CW	19	35
CN	92	94
CD	112	76
MU	47	16
Split lots	4	45

Can analyze data by different geographical regions:

- Zone
- Core / Periphery
- Neighborhoods
- Any sublevel the town defines

Or by queries:

- Type or size of parcel

Does not include 991 units that have already been approved that Town staff added as an assumption in the Model. Most of these units are in the Special Management District zoning district.



The assumptions are all viewable and changeable using slider bars

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The screenshot shows the 'Assumptions' window with a 'Graphical' tab selected. The 'Scenario' is set to 'Active (Base Scenario)'. The interface displays a list of 18 assumptions, each with a slider bar and a numerical value. The assumptions are:

Assumption Name	Current Value	Unit
R10_MinLotSize	10,000	s.f.
R20_MinLotSize	20,000	s.f.
R30_MinLotSize	30,000	s.f.
R40_MinLotSize	40,000	s.f.
R80_MinLotSize	80,000	s.f.
R200_MinLotSize	200,000	s.f.
CW_MinLotSize	10,000	s.f.
MultiFamUnit	7.71	units/acre
PersonsUnit_MF	1.25	pers/unit
PersonsUnit_SF	2.56	pers/unit
EfficiencyFactorVac	15	%
EfficiencyFactorDev	50	%
ApprovedUnits_MF	936	units
ApprovedUnits_SF	55	units
ActualNumUnits	12,633	units
ActualNumPeople	30,269	people
NumUnitsYear	180	units
NonResBldg	Yes	
HighWaterTable	50	%

A user can alter, view, or collect information on assumptions that drive the model in this interface



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Live Demo

By

Carol Baker



The South Kingstown Build-Out Model is designed to be a planning tool

Example 1: Using the South Kingstown Build-Out Model for Policy Simulation and Scenario Planning

Imagine the Town is interested in reducing the number of residential zoning districts and wants to explore folding the R30 district into the R40 district. In a few minutes the Build-out Model tells us that the Town's total vacant holding capacity for all zones would drop by 24 units

Current vacant
holding capacity
5,696 units

Simulated vacant
holding capacity
5,672

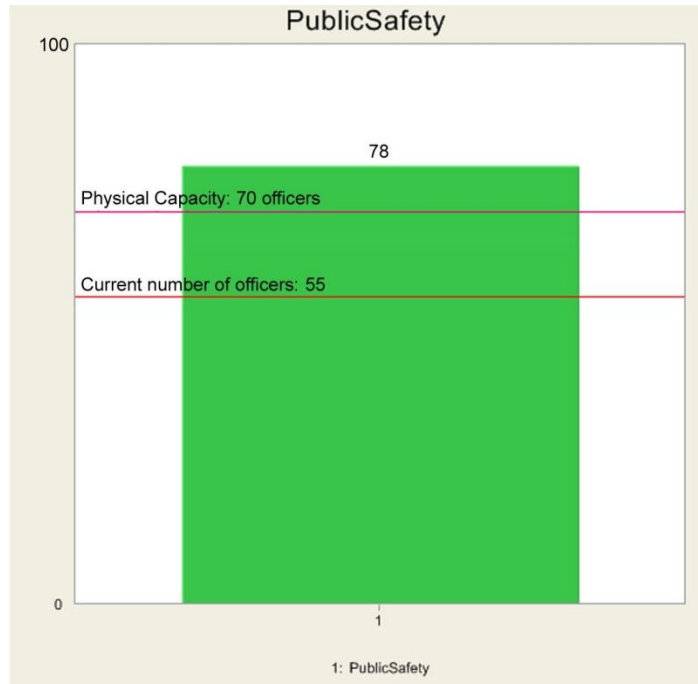


Example 2: Using the South Kingstown Build-Out Model for long-range facility planning

Built in to the Model are capacity thresholds which are triggered when growth exceeds a capacity. Here is an example for public safety*.

	Town Population	Public Safety Officers	Ratio	Facility Capacity	Vacant Facility Capacity
Current	30,000	55	1 per 550	70	15
Buildout	43,000	78	1 per 550	70	-8

* Facility capacity for illustrative purposes only, not based on capacity of existing Public Safety Building



Capacities and per capita (or per housing unit) measures can be added as thresholds that are triggered when growth causes a service to exceed capacity



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Questions, Comments?

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