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# Storm water costs money

- Local government, developers and citizens bear the cost
- NPDES Storm Water Phase II communities understand best
- Community's choices can reduce these costs

# Storm water costs money

Impact on Tennessee communities by 2020

- \$78 to \$101 million annually

Different choices could reduce impact

- \$31 to \$40 million annual savings

# NPDES Phase II communities

## Phase I

- Medium and large storm sewer systems
- Jurisdictions with population of 100,000 or more
- Construction disturbing five or more acres

## Phase II

- Small regulated storm sewer systems
- Construction disturbing one or more acres

# Communities' questions

- What level of service should we provide?
- How will we fund it?

# Level of service – activities

<b>Incidental</b>	reactive incidental maintenance and regulation; essentially no flood protection
<b>Minimum</b>	minimum maintenance; increased regulation and inspection; some planning; minor capital improvements
<b>Moderate</b>	additional maintenance; better regulations and inspections; upgrades to capital structures
<b>Advanced</b>	system maintenance and planning; regional treatment; some data collection; multi-objective planning and development; utility funding
<b>Exceptional</b>	advanced flood control and maintenance service; increased importance placed on storm water quality, aesthetics and public programs

# Level of service - results

- Maximum flood level below street curb
- Storm level protection
  - 10 year
  - 25 year
  - 100 year

# Level of service – compliance

## **Provide storm water management program:**

- Public education
- Public participation
- Illicit connection discharge control
- Construction site erosion control
- Storm water management in new development
- Pollution prevention and good housekeeping

# How will we fund it?

- **Primary sources**
  - property taxes
  - franchise fees
  - storm water utility fees
- **Secondary sources**
  - impact and plan review fees
  - debt financing, grants
  - government cost share programs
  - connection charges
  - in-lieu-of fees
  - special contributions of land
  - funds by landowners

# What will it cost communities?

## EPA's answer

$$\text{Annual Cost} = \$1,525 + \text{population}/2.62 * \$9.09$$

\$1,525      fixed costs, such as NPDES permit fee

2.62        people per household

\$9.09       average cost/household for services

**\$3.47 per capita**

# What will it cost communities?

Benchmark data from 55 communities

Annual ranges fitting 95% of these communities

- acres served \$81 to \$181
- impervious acres served \$56 to \$76
- per capita \$23 to \$38

# What will it cost developers?

## Structural best practices (treat polluted runoff)

- infiltration devices
- wet and dry basins
- constructed wetlands
- biofilters

## Construction costs per EPA

- 1 acre site \$1200
- 3 acre site \$4600
- 5 acre site \$8700

Annual maintenance to 20% of construction \$'s

# Cost saving strategies

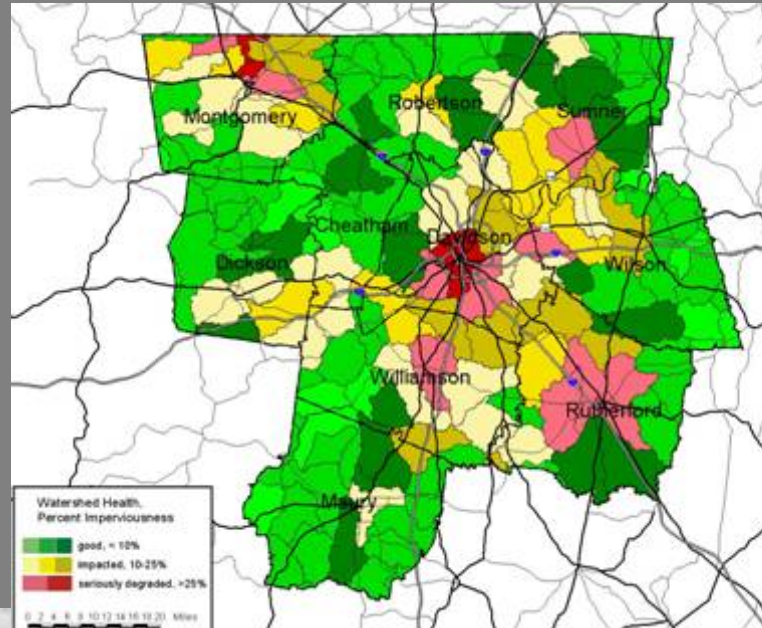
## Non-structural (prevent polluted runoff)

- preserve open space and forest canopy
- increase density
- reduce imperviousness

## Could reduce costs

- Local government                      up to 65%
- Developers                                10% to 33%

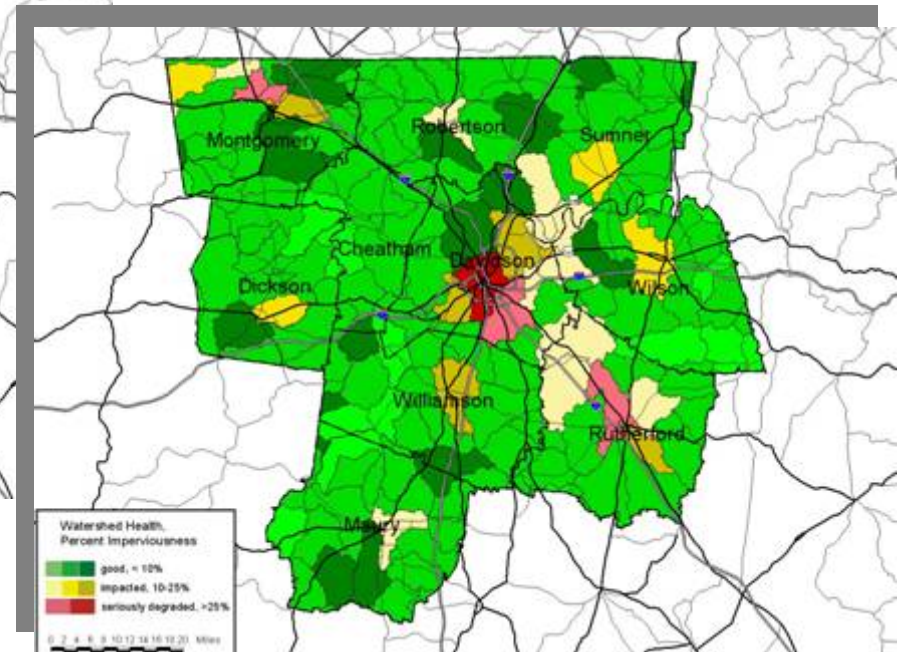
# Cost savings - government



base case

“business as usual”

Cumberland Region Tomorrow  
2020 projections



preferred

“walkable communities  
and open space”

# Cost savings - government

Inferred from CRT data for 2020

	impervious acres	
base case	447,000	100%
preferred	155,000	35%
potential savings	292,000	65%

**\$16 to \$22 million annually  
in 10 county region**

# Cost savings - developers

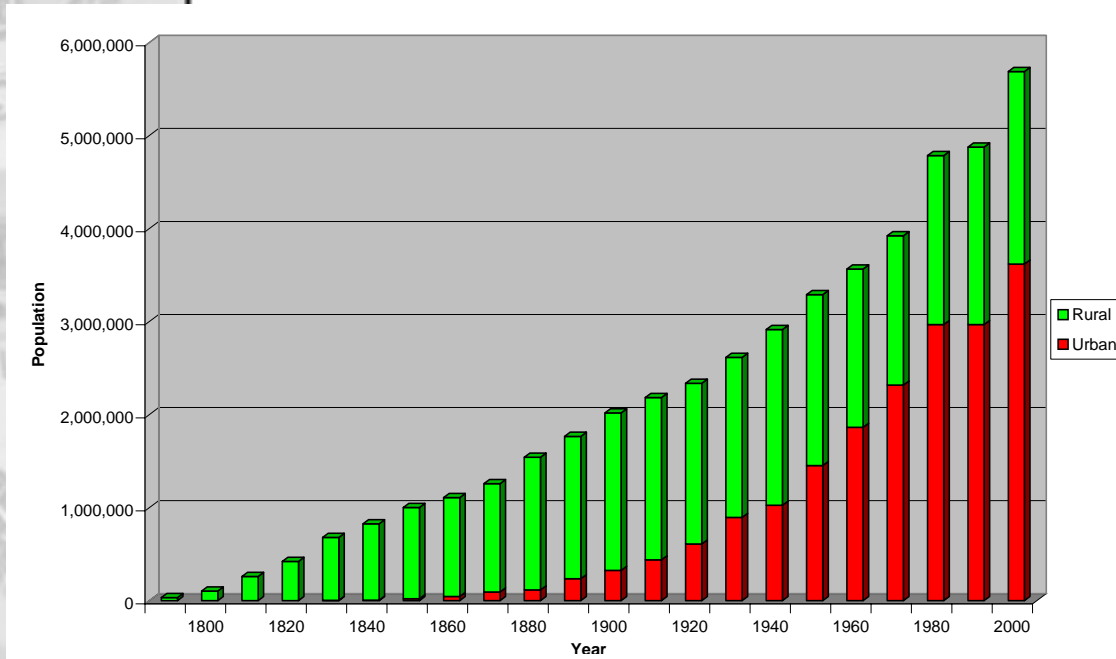
- 10% to 33% of construction costs
  - reduced length of roads and other infrastructure
  - reduced storm water management infrastructure



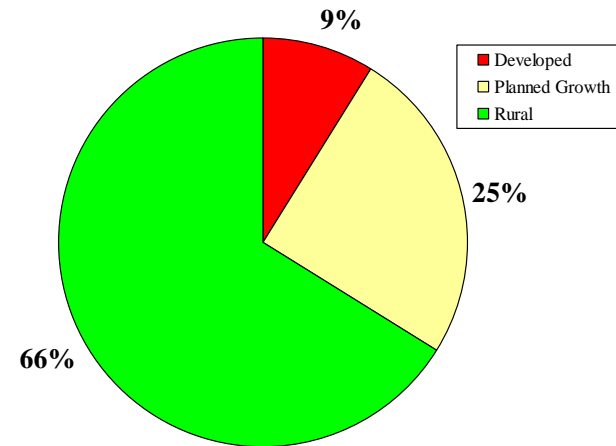
# What does it mean for Tennessee?

Comparable to other states in Southeast

- Population growth
- Increased urban development



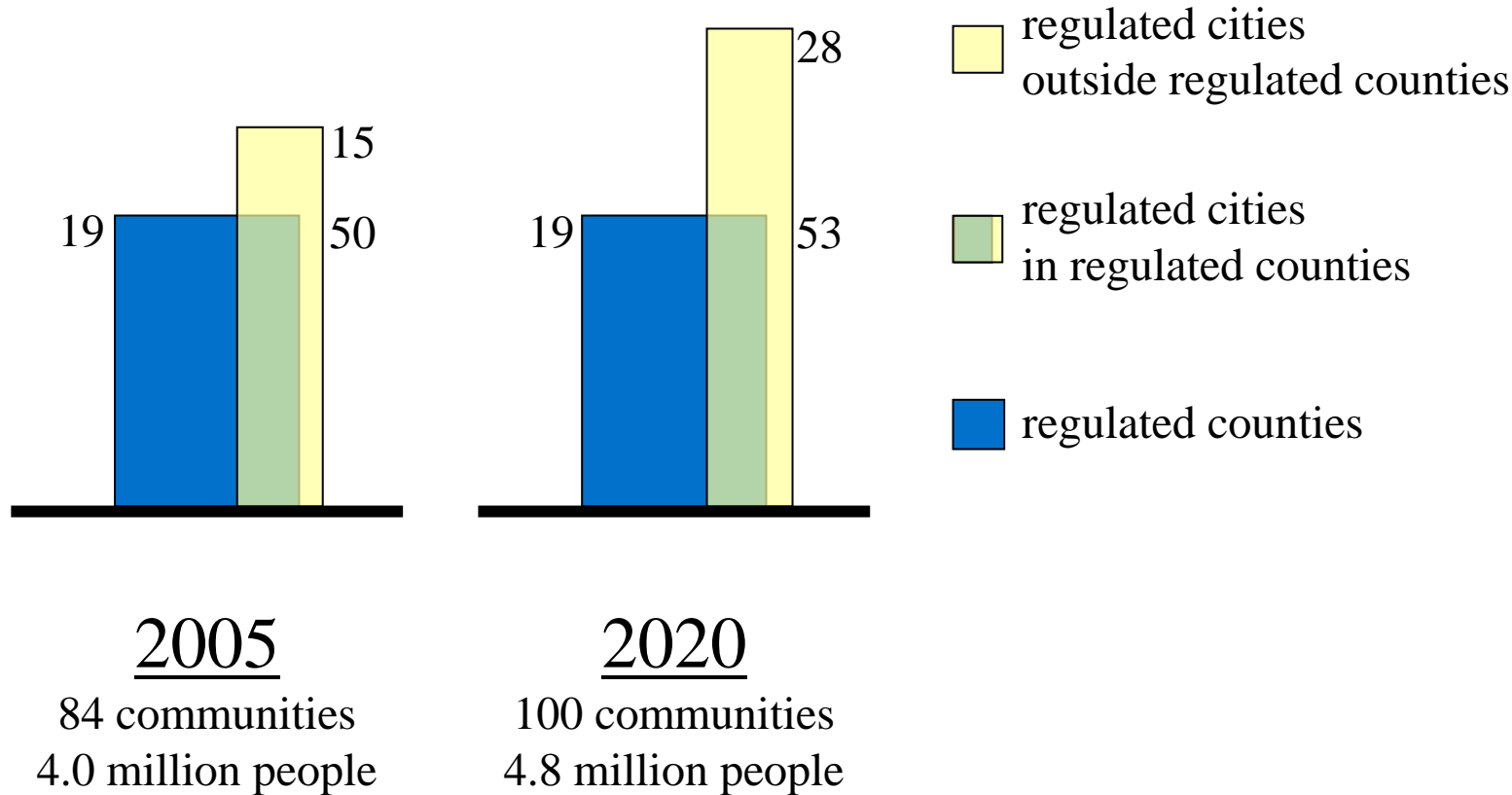
population



land area

# Who is most effected?

## Tennessee Storm Water Phase II communities

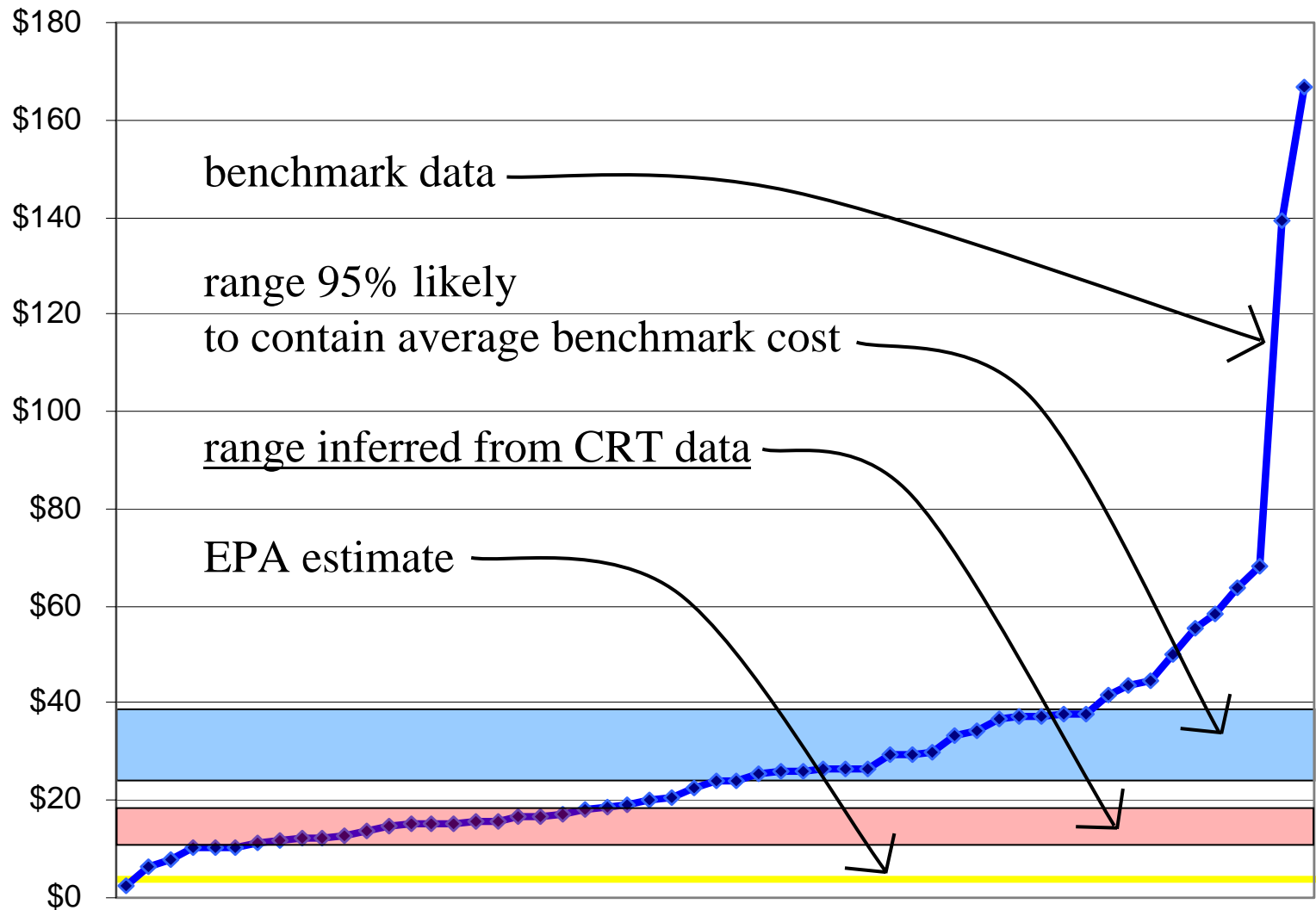


# What will it cost?

Annual cost to local government inferred from CRT data

	Low	High
2020 base case imperviousness	447,000 acres	
\$ per acre	\$56.25	\$75.87
	\$25.1 million	\$33.9 million
2020 population	1.9 million people	
\$ per capita	\$13.51	\$18.22

# How does this compare?



# What will it cost?

Cost to local government annually

	Low	High
2020 population	4.8 million people	
\$ per capita	\$13.51	\$18.22
	\$65 million	\$88 million

# What will it cost?

Developers' additional construction costs annually

Site Size	Starts	\$ per Start	Total
1½ acre	1510	\$2054	\$3 million
2½ acre	799	\$3750	\$3 million
3½ acre	541	\$5626	\$3 million
4½ acre	511	\$7681	\$4 million
	3361		\$13 million

# Bottom line in 2020

For 100 communities and 4.8 million people

	Low	High
Local government	\$65 million	\$88 million
Developers	\$13 million	
	\$78 million	\$101 million

nearly double today's costs

# Bottom line savings

Non-structural (prevent polluted runoff)

- preserve open space and forest canopy
- increase density
- reduce imperviousness

Could reduce costs

- Local government                      up to 65%
- Developers                                10% to 33%

# Bottom line savings in 2020

Savings in non-structural best practices

	Low	High
Local government	\$27 million	\$36 million
Developers	\$4 million	
	\$31 million	\$40 million

bottom line is 25% more than today  
- not double