



# Use-Value Program: Income and Rental Rate Approaches

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# Objectives



- Overview
- Current Status
  - TY2012 Map of Usevalue Jurisdictions
- Income Approach
- Rental Rate Approach
- Questions



# Overview



- Virginia use value taxation legislation was passed in 1972
- Virginia law allows for the preferential taxation of **agricultural, horticultural, forestal, and open space land**
- Eligible land in any of these categories can be assessed at the land's value in use (use value) as opposed to the land's market value



# *Virginia's Use-Value Taxation Program*



## **Eligible land**

Land must meet the following requirements in order to be considered for use-value taxation:

- **Agriculture and horticulture** lands: 5 acres minimum and be a *bona fide* agricultural or horticultural operation.
- **Forest** land: 20 acres minimum of productive and nonproductive forest land with certification that the real estate is being used in a planned program of timber management and soil conservation practices.
- **Open space** land: 5 acres minimum lands, other than agricultural, horticultural, or forest lands, are used or preserved for park or recreational purposes, conservation, flood ways, wetlands, riparian buffers, historic or scenic purposes, community shaping purposes, or for the public interest. (Code of Virginia § 58.1-3230 -3233).



# *Virginia's Use-Value Taxation Program*

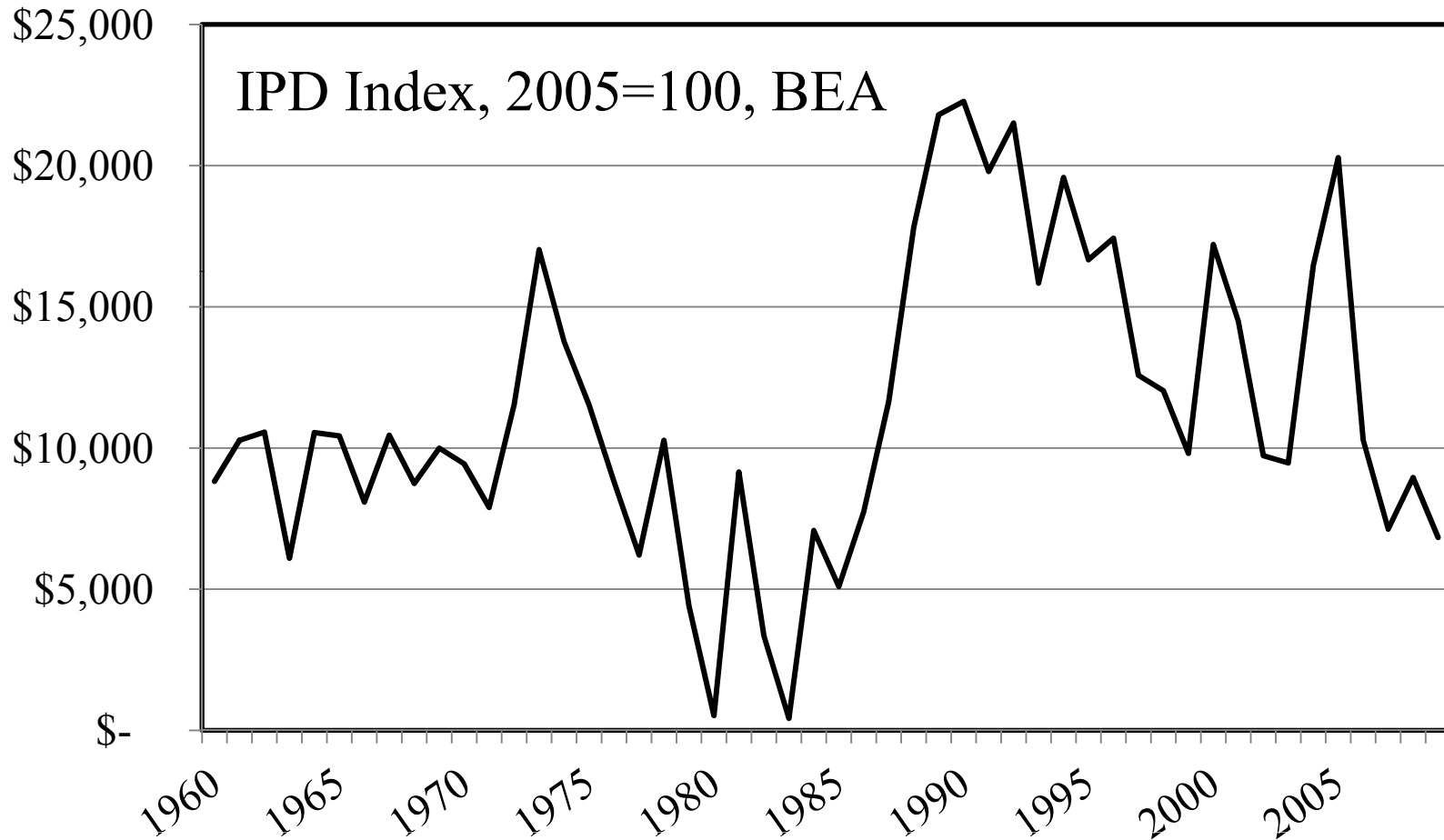


## **Organization/Stipulations**

- State Land Evaluation and Advisory Council (SLEAC) provides annual use-value estimates for each jurisdiction in the program
  - State Tax Commissioner (Chair)
  - Commissioner of Agriculture
  - State Forester
  - Director of VA Department of Conservation and Recreation
  - Dean of Virginia Tech College of Agriculture and Life Sciences
- ***Responsibility for final value of assessment resides with the local assessing officer***
- ***Buildings and other improvements “on the land” are assessed at fair market value***



# Real Net Farm Income Virginia \$/farm



Data, Economic Research Service/USDA, years 1960-2009

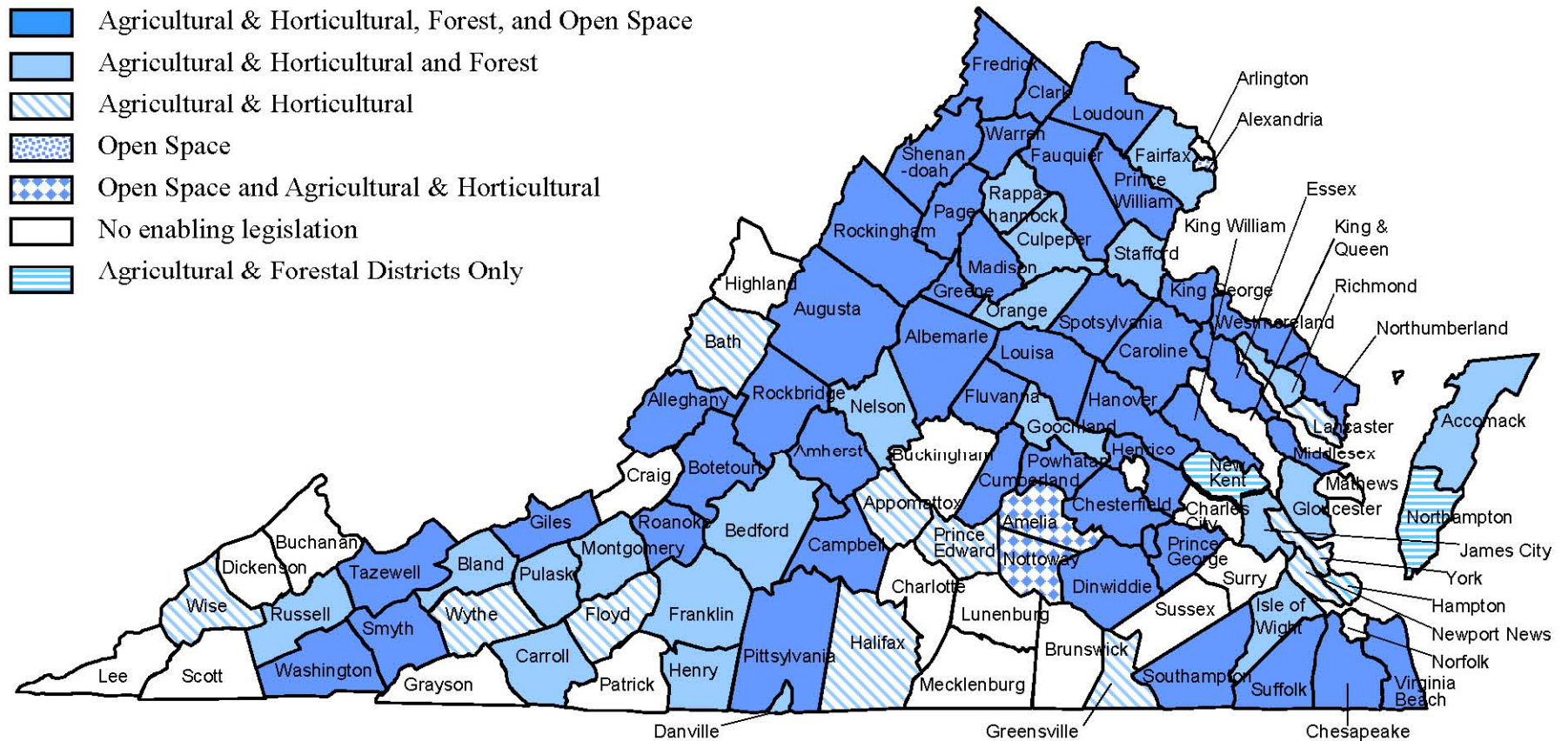


# *Virginia's Use-Value Taxation Program*



- Currently (TY2012):
  - **Agricultural and horticultural** lands: 92 counties/cities
  - **Forest** lands: 75 counties/cities
  - **Open Space** lands: 53 counties/cities

**TY2012: Counties/Cities\* with enabling legislation for use-value taxation  
(Agricultural & Horticultural, Forest, and Open Space)**



\* Counties/Cities are identified from annual use-value reports and may differ from actual implementation. Contact government officials in each county/city for the current use-value implementation. Not all participating cities are identified on this map.



# Two Approaches



Capitalized:

- Net income (Income Approach)
- Rental rates (Rental Rate Approach)



# *Income Approach*

## Data Sources



*Only published secondary sources are used.*

### Source

- 2007 Census of Agriculture
- Virginia Cooperative Extension
- Farm Service Agency
- USDA-RMA
- USDA-NASS
- Virginia Department of Taxation
- AgFirst (Farm Credit Bank)

### Use

- **Composite farm acres**
- **Crop budgets**
- **Federal payments (DCPs)**
- **Crop insurance**
- **Yields and prices**
- **Tax rates**
- **Long and short interest rates**



# *Income Approach*

## *Crops in Model*



<b>Traditional</b>	<b>Added for TY2009/20010</b>	
Alfalfa hay Barley Corn Cotton Hay (grass) Potatoes Soybeans Wheat	Peanuts Tobacco	Pasture  Cucumbers Pumpkins Snap Beans Sweet Corn Tomatoes Watermelons



# *Income Approach*



## **The Composite Farm**

- The county's composite farm is a *typical farm* within the county
- Crop acreage from latest Census of Agriculture
- Only crops with 1 or more acres in the composite farm are considered

$$\text{Acres of crop} \div \text{number of farms} \geq 1 \text{ acre}$$

- Net returns/profits are based on the totals for the jurisdiction's composite farm



# Prince Edward County TY2012

(DY2010 Crop Budgets and DCP Payments)



(Number of Farms = 446)

	<u>Acres*</u>	<u>Composite Farm</u>	<u>Net Returns</u>
<b>Corn</b>	<b>1,540</b>	<b>3</b>	<b>\$ 77.76</b> (i.e., <b>\$7.87</b> + \$69.90)
<b>Alfalfa</b>	<b>326</b>	<b>1</b>	<b>\$ 21.67</b>
<b>Hay</b>	<b>14,477</b>	<b>32</b>	<b>\$ 0.00</b>
Wheat	143	0	
Barley	144	0	
Soybeans	185	0	
Potatoes	2	0	
Cotton	---		
<b>Pasture</b>	<b>19,793</b>	<b>44</b>	<b>\$ 0.00</b>
Peanuts	---		
Tobacco	156	0	
Snap Beans	---		
Cucumbers	D		
Pumpkins	D		
Tomatoes	2	0	
Sweet Corn	3	0	
Watermelons	D		
<b>Double-cropped</b>	<b>(-) 287</b>	<b>(-) 1</b>	
<b>Totals</b>	<b>36,484</b>	<b>79</b>	<b>\$3.48</b>

\* From 2007 Ag Census

D = Withheld to avoid disclosing data of individual farms



# Prince Edward County TY2012

## \*Crop Budgets (\$/acre):

### *Olympic Averaging (7 years)*



<b>Corn</b>			<b>Alfalfa</b>			<b>Hay</b>		
		<i>OlyAvg</i>			<i>OlyAvg</i>			<i>OlyAvg</i>
DY2010	<b>39.33</b>	<b>39.33</b>	DY2010	-230.53	<b>0.00 L</b>	DY2010	-55.31	<b>0.00</b>
DY2009	-69.57	<b>0.00 L</b>	DY2009	-181.84	<b>0.00</b>	DY2009	-105.85	<b>0.00</b>
DY2008	<b>48.04</b>	<b>48.04 H</b>	DY2008	-164.95	<b>0.00</b>	DY2008	-51.43	<b>0.00</b>
DY2007	-39.72	<b>0.00</b>	DY2007	<b>33.43</b>	<b>33.43</b>	DY2007	-47.19	<b>0.00</b>
DY2006	-166.23	<b>0.00</b>	DY2006	<b>55.54</b>	<b>55.54</b>	DY2006	-59.08	<b>0.00</b>
DY2005	-177.22	<b>0.00</b>	DY2005	<b>52.79</b>	<b>52.79</b>	DY2005	<b>103.29</b>	<b>103.29 H</b>
DY2004	-182.15	<b>0.00</b>	DY2004	<b>191.94</b>	<b>191.94 H</b>	DY2004	-322.35	<b>0.00 L</b>
OlyAvg <b>\$7.87</b>			OlyAvg \$21.67			OlyAvg \$0.00		

\* Crop Budgets lag a given tax year by 2 years due to data reporting by NASS.

In an Olympic Average, the **highest** and **lowest** values are dropped prior to calculating an arithmetic mean; all negative values are set to zero.



# Federal Direct and Counter-Cyclical Program Payments (DCPs)



- Currently, federal program payments exist for:
  - Corn
  - Soybeans
  - Cotton
  - Wheat
- Federal payment for a crop is divided by the crop acreage, resulting in per acre payment

For example, in **Prince Edward County TY2012: Corn**

DY 2010  $\$73,492/1,540 \text{ acres} = \$47.72$

Olympic Averaging (7-years; high and low values dropped):

DY 2010	<i><b>\$47.72 L</b></i>	DY 2006	\$78.47
DY 2009	\$57.01	DY 2005	\$78.47
DY 2008	\$57.07	DY 2004	\$78.47
DY 2007	<i><b>\$78.47 H</b></i>		

**Olympic Average = \$69.90**



# *Prince Edward County TY2012 Capitalization*



$$\text{Use value} = \frac{\text{Net Return}}{\text{Capitalization Rate}}$$

**Net Use Value:** **\$3.48**

**Capitalization Rates:**

<i>a) Interest rate component</i>	<i>0.0682</i>	
<i>b) Property tax component</i>	<i>0.0041</i>	
<i>c) Rate without risk</i>		<b><i>0.0724</i></b> ( <i>a + b</i> )
<i>d) Risk component</i>	<i>.0036</i> ( <i>0.05 times c</i> )	
<i>e) Rate with risk</i>		<b><i>0.0760</i></b> ( <i>d + c</i> )

**Unadjusted Use Values:** **\$48.04** (without risk)

**\$45.75** (with risk)



# *Income Approach*



## *Adjusting for Land Class*

<b>Class</b>	<b>Index</b>	
<b>I</b>	<b>1.5</b>	Soils have few limitations restricting use.
<b>II</b>	<b>1.35</b>	Soils have moderate limitations that reduce choice of plants or require moderate conservation practices.
<b>III</b>	<b>1</b>	Soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
<b>IV</b>	<b>0.8</b>	Soils have very severe limitations that restrict the choice of plants, require very careful management, or both.
<b>V</b>	<b>0.6</b>	Soils are subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife food and cover.
<b>VI</b>	<b>0.5</b>	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover.
<b>VII</b>	<b>0.3</b>	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to grazing, woodland, or wildlife.
<b>VIII</b>	<b>0.1</b>	Soils and land forms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, or water supply, or to aesthetic purposes.



# *Income Approach: Soil Index Adjustment*



## Adjusting for Soil Type (Prince Edward County)

<u>Class</u>	<u>Acres</u>	<u>Productivity Index</u>	<u>Weighted Acreage</u>
I	418	1.5	627
II	21,273	1.35	28,718.55
III	10,617	1	10,617
IV	<u>8,196</u>	0.8	<u>6,556.80</u>
Totals	40,504		46,519.35

$$\begin{aligned} \text{Soil Index Factor} &= 46,519.35/40,504 \\ &= 1.149 \end{aligned}$$

<u>Adjusted by class:</u>	<u>Class</u>	<u>Land Index</u>	<u>Without Risk</u>	<u>With Risk</u>
	III	1.0	\$41.83	\$39.84
<i>Rounded</i>			\$40	\$40



# *Income Approach*



## Prince Edward County TY2012

**Table 1a: Estimated use-values of agricultural land by jurisdiction.**

**Estimates apply to tax-year 2012**

		<i>Cropland</i>					<i>Pastureland</i>						
		I	II	III	IV	AVG I-IV	V	VI	VII	AVG V- VII	AVG I-VII	VIII	
<b>Prince Edward</b>	<i>W/Out Risk</i>	60	60	40	30	<b>50</b>	30	20	10	<b>10</b>	<b>40</b>	0	
	<i>W/Risk</i>	60	50	40	30	<b>40</b>	20	20	10	<b>10</b>	<b>40</b>	0	



# *Income Approach*



## **Increasing Stability**

- Average Crop Budgets
  - based on a moving 7-year Olympic average
- Average Interest Rates
  - Capitalization rate is based on a moving 10-year straight average



# *Income Approach*



## **Caveats and shortcomings of estimation techniques**

- Not all existing crops budgeted
- Data lags
- Averaging process



# Jurisdictional Profile Differences



## East of I-95

## West of I-95

### Westmoreland TY2012

Number of farms = 171

	<i>Acres</i>	<i>CF</i>	<i>Net Return</i>
Corn	20,510	120	\$30.39
Hay	1,216	7	\$ 0.57
Wheat	9,123	53	\$65.02
Barley	2,308	13	\$12.91
Soybeans	17,482	102	\$24.84
Pasture	2, 122	12	\$20.97
DoubleCrp	(-)11,496	(-) 67	
Totals	41,949	243	<b>\$41.22</b>

*Type III (w/o risk)*

**\$430**

### Wise TY2012

Number of farms = 178

	<i>Acres</i>	<i>CF</i>	<i>Net Return</i>
Alfalfa	197	1	\$38.97
Hay	2,429	14	\$ 0.00
Pasture	12, 586	71	\$ 0.00
DoubleCrp	(-) 0	(-) 0	
Totals	15,230	86	<b>\$ 0.50</b>

*Type III (w/o risk)*

**\$10**



# Jurisdictional Profile Differences



## Shenandoah Valley

### Rockingham TY2012

Number of farms = 1,970

	<i>Acres</i>	<i>CF</i>	<i>Net Return</i>
Corn	36,520	19	\$58.07
Alfalfa	11,353	6	\$136.94
Hay	43,846	22	\$ 2.71
Barley	2,370	1	\$11.37
Soybeans	6,281	3	\$144.03
Pasture	89,621	45	\$19.44
DoubleCrp	(-)3,839	(-) 2	
<b>Totals</b>	<b>187,339</b>	<b>94</b>	<b>\$34.53</b>

*Type III (w/o risk)* **\$430**

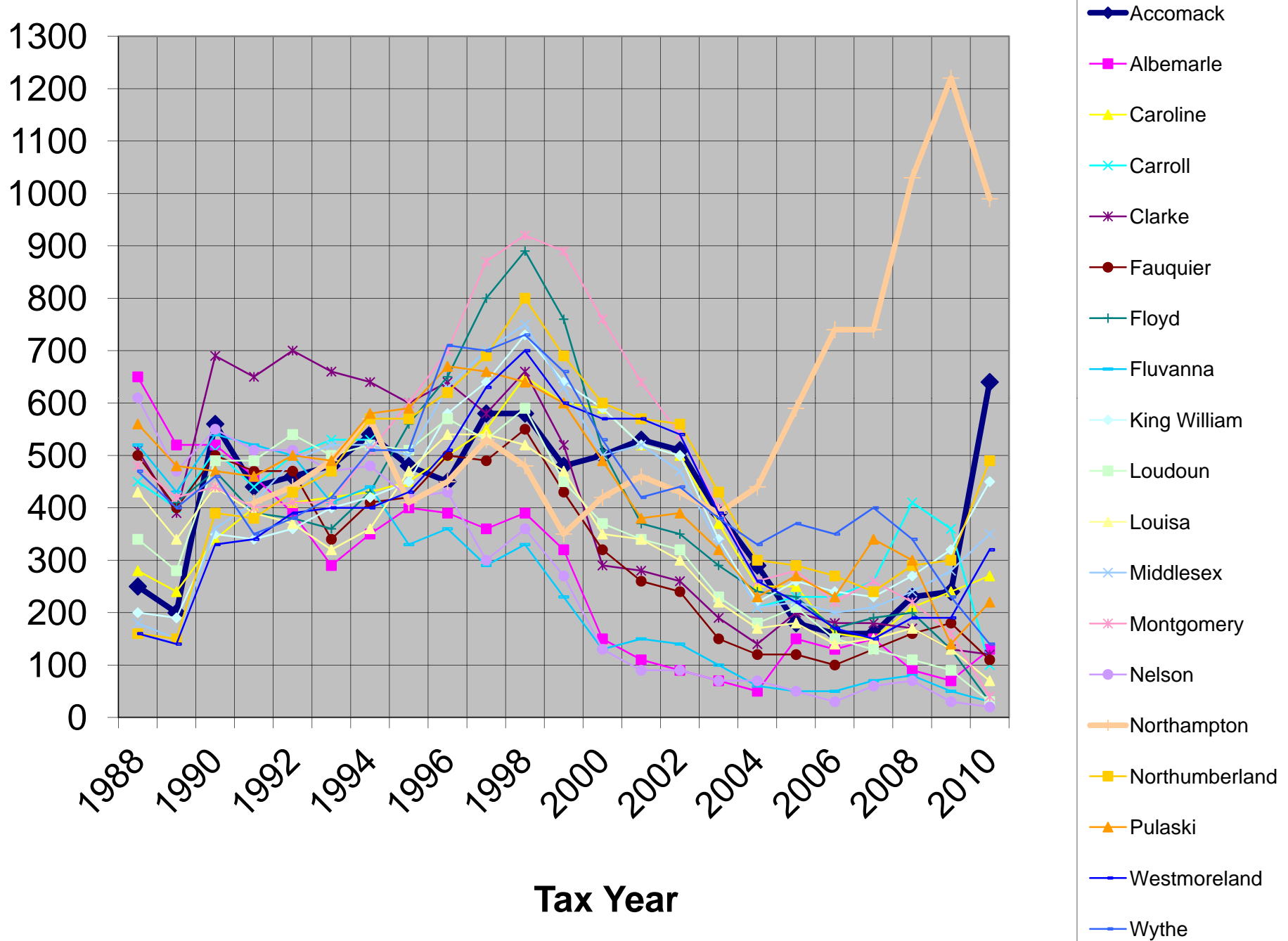
## Southside

### Henry TY2012

Number of farms = 340

	<i>Acres</i>	<i>CF</i>	<i>Net Return</i>
Hay	9,207	27	\$ 0.00
Pasture	16,768	49	\$ 0.00
DoubleCrp	(-) 0	(-) 0	
<b>Totals</b>	<b>26,133</b>	<b>76</b>	<b>\$ 0.00</b>

*Type III (w/o risk)* **\$0**





# Rental Rate Approach



$$\text{Use value (RentalRate)} = \frac{\text{RentalRate}}{\text{Capitalization Rate}}$$

An example:

Rockingham County TY2012

Cap Rate = .07364

Rental Rate (\$/acre) = \$59 (cropland)

$$\begin{aligned} \text{Use value (Rental Rate)} &= 59/.07364 \\ &= \mathbf{\$800} \text{ (cropland)} \end{aligned}$$

**Use value (Income Approach) = \$430 (Type III w/o risk)**



# Rental Rates TY2012



**Table 1:** 2010 cropland and pastureland values based on NASS<sup>1</sup> capitalized rental rates (see end of table for footnotes)

Jurisdictions Counties	Capitalization Rate <sup>2</sup>	----- Cropland -----		Irrigated cropland		----- Pastureland -----	
		Rental Rate \$/acre <sup>1</sup>	Value \$/acre <sup>3</sup>	Rental Rate \$/acre <sup>1</sup>	Value \$/acre <sup>3</sup>	Rental Rate \$/acre <sup>1</sup>	Value \$/acre <sup>3</sup>
Accomack	0.07206	59.5	830	109	1510	35 <sup>ep</sup>	490
Albemarle	0.07474	31	410	--	--	18.5	250
Alleghany	0.07404	25 <sup>wc</sup>	340	--	--	19.5 <sup>wp</sup>	260
Amelia	0.07177	25	350	--	--	21	290
Amherst	0.07313	17	230	--	--	15	210
Appomattox	0.07322	18.5	250	--	--	12.5	170
Arlington	0.07602	32.5 <sup>nc</sup>	430	--	--	22.5 <sup>np</sup>	300
Augusta	0.07293	40.5	560	--	--	28	380
Bath	0.07204	21.5	300	--	--	19.5	270
Bedford	0.07345	20	270	--	--	14.5	200
Bland	0.07337	19 <sup>swc</sup>	260	--	--	17.5	240
Botetourt	0.07409	25	340	--	--	13.5	180
Brunswick	0.07171	33.5	470	--	--	20	280
Buchanan	0.07217	19 <sup>swc</sup>	260	--	--	9.4 <sup>swp</sup>	130
Buckingham	0.07225	19.5	270	--	--	16	220
Campbell	0.07286	19.5	270	--	--	14	190
Caroline	0.07382	48.5	660	--	--	29.5	400



# Income Approach vs Rental Rate Approach TY2010



## TY2010 Use-Value Estimates and Capitalized Rental Rates Compared

	Use-value Estimates		Rental Rates
		Cropland	Cropland
		Type III (\$/acre)	\$/acre
Accomack	w/o risk	640	770
Albemarle	w/o risk	130	330
Alleghany	w/o risk	60	310
Amelia	w/o risk	120	320
Amherst	w/o risk	10	330
Appomattox	w/o risk	60	310
Augusta	w/o risk	200	510
Bath	w/o risk	70	320
Bedford	w/o risk	150	390
Bland	w/o risk	260	360
Botetourt	w/o risk	60	310
Campbell	w/o risk	20	360
Caroline	w/o risk	270	330
Carroll	w/o risk	100	380
Chesapeake	w/o risk	500	610
Chesterfield > Amelia	w/o risk	110	320



# *Virginia's Use-Value Taxation Program*



## **Example: Cumberland County**

- Consider a farm in Cumberland County in TY2011 with 400 acres (150 ac cropland, 150 ac pastureland, and 100 ac timber land)
- Comprised of
  - 100 acres (Class I land),
  - 50 acres (Class III),
  - 150 acre (Class IV), and
  - 100 acres (Good forest)
  - **Assume that the Fair Market Value** of the land is **\$1,500/acre**
- Use-value assessment values are based on 2 approaches
  - Capitalized income (Ag, hort, and forest)
  - Capitalized rental rates (Ag)



# Virginia's Use-Value



## TY2011 Values for Cumberland County

<b>Income Approach:</b> 2011 Estimated use values of agricultural land (\$/acre)											
	<i>Cropland</i>					<i>Pastureland</i>					
	I	II	III	IV	<b>AVG I-IV</b>	V	VI	VII	<b>AVG V-VII</b>	<b>AVG I-VII</b>	VIII
<i>W/Out Risk</i>	190	170	130	100	<b>140</b>	80	60	40	<b>50</b>	<b>120</b>	10
<i>W/Risk</i>	180	160	120	100	<b>130</b>	70	60	40	<b>50</b>	<b>110</b>	10

<b>Rental Rate Approach:</b> 2011 Estimated use values of agricultural land (\$/acre)	<i>Cropland</i>	<i>Pastureland</i>
	300	220

2011 Forest Land Use Values	Fair	Good	Excellent	Non-Productive land
Cumberland County	340	471	682	100



# *Income Approach*



## **Farm Example**

<b>Income Approach TY2011</b>				<b>Fair Market Value (Estimated)</b>	
Class I	100 acres	(\$190/acre)	= \$19,000	400 acres	(\$1,500/acre) = \$600,000
Class III	50 acres	(\$130/acre)	= \$6,500		
Class IV	150 acres	(\$100/acre)	= \$15,000		
Good forest land	100 acres	(\$471/acre)	= \$47,100		
<i>Total Assessment (using land classes) = \$87,600</i>				<i>Fair Market Value = \$600,000</i>	
<i>Total Assessment (using AVG \$140/acre) = \$89,100</i>					
<i>Fair Market Assessed Value</i>				<b>\$600,000</b>	
<i>Use-value Assessed (income) Value</i>				<b><u>-\$89,100</u></b>	
<i>Deferred Value</i>				<b>\$510,900</b>	



# Rental Rate Approach



## Farm Example

Rental Rate Approach: TY2011	Fair Market Value (Estimated)						
<p><i>Cropland 150 (\$300/acre) = \$45,000</i></p> <p><i>Pastureland 150 acres (\$220/acre) = \$33,000</i></p> <p><i>Forest 100 acres (\$471/acre) = \$47,100</i></p>	<p><i>Fair Market Value \$600,000</i></p>						
<p><i>Total Assessment (Rental rates) and Good Forest = \$125,100</i></p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td><i>Fair Market Assessed Value</i></td> <td><i>\$ 600,000</i></td> </tr> <tr> <td><i>Use-value Assessed (rental) Value</i></td> <td><i><u>-\$ 125,100</u></i></td> </tr> <tr> <td><i>Deferred Value</i></td> <td><i>\$ 474,900</i></td> </tr> </table>		<i>Fair Market Assessed Value</i>	<i>\$ 600,000</i>	<i>Use-value Assessed (rental) Value</i>	<i><u>-\$ 125,100</u></i>	<i>Deferred Value</i>	<i>\$ 474,900</i>
<i>Fair Market Assessed Value</i>	<i>\$ 600,000</i>						
<i>Use-value Assessed (rental) Value</i>	<i><u>-\$ 125,100</u></i>						
<i>Deferred Value</i>	<i>\$ 474,900</i>						



# *Deferred Taxes*



## **Farm Example**

	<b>Fair Market Value</b>	<b>Income Approach</b>	<b>Rental Rate Approach</b>
Total Values	\$600,000	\$89,100	\$125,100
Property Tax Rate	\$0.68/\$100		
Property Tax	\$4,080	\$606	\$851
Deferred Taxes for 5 years		\$3,474	\$3,229



# Useful Reports

- *Use-Value Website* <http://usevalue.agecon.vt.edu/>
- The following reports are available on the website at:  
<http://usevalue.agecon.vt.edu/publications.htm>
  - Why Use-Value Estimates Differ: Comparing Halifax and Pittsylvania Counties (2008)
  - Use-Value Taxation in Virginia: A Brief Discussion (2006)
  - Results of the 2003 Agricultural and Horticultural Use-Value Taxation Program Survey (2004)
  - Measuring the Impact of Use-Value Taxation for Northampton County, Virginia (2004)



*Thanks!*  
*&*  
*Questions?*

*[usevalue.agecon.vt.edu](http://usevalue.agecon.vt.edu)*